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- Infrared communication port (IrDA 1.1 compatible)
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- High Performance 19" Colour SVGA Monitor (0.26 dot pitch 17.9" Viewable Area)
- 2 PCI, 1 ISA, 1 PCI/ISA Shared and 1 AGP Expansion Slots
- 14/32X CD-ROM Drive
- Turtle Beach Montego 64 Voice PCI Sound Card and Altec Lansing ACS 295 speakers
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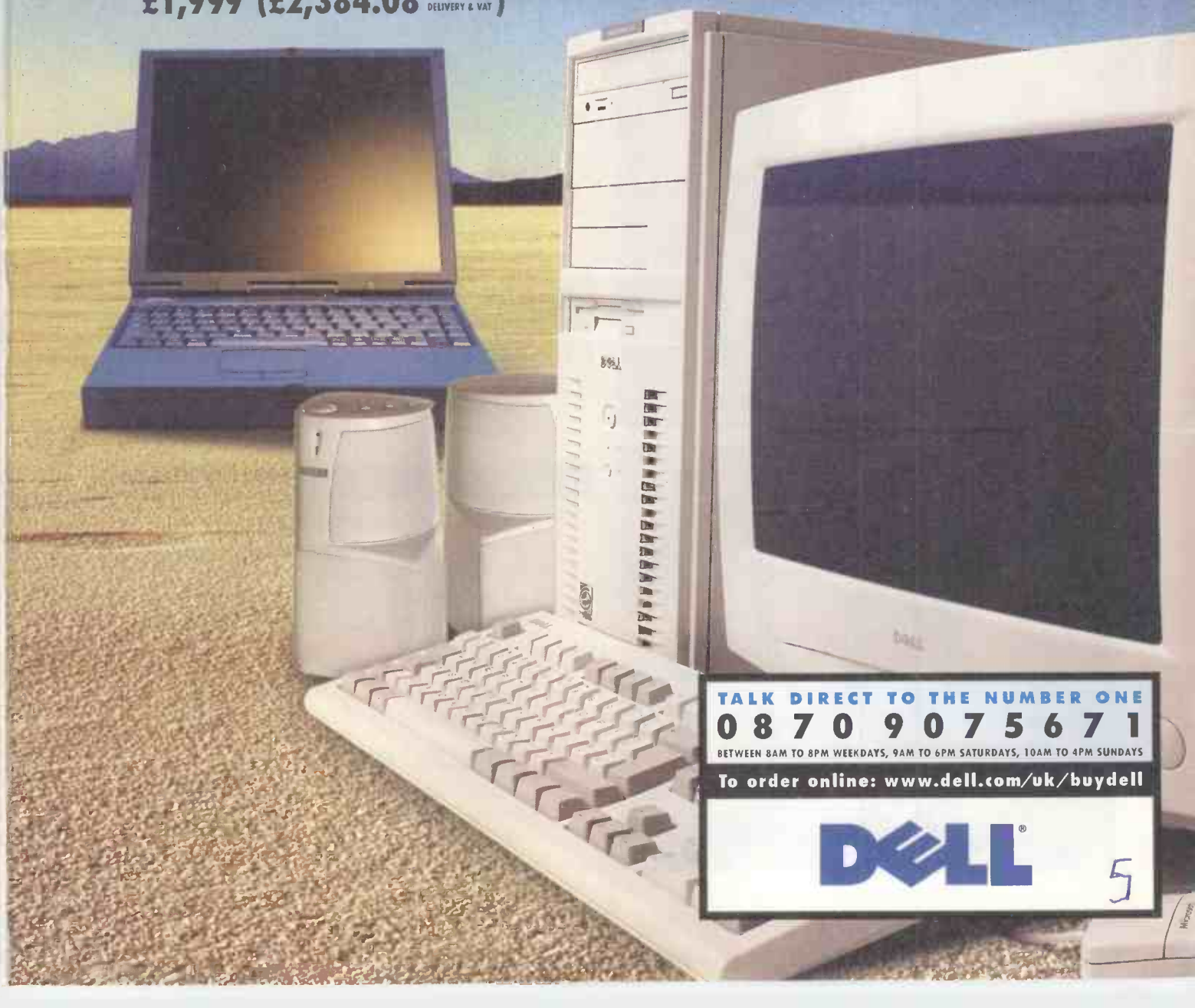

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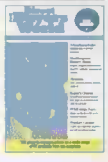

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Subs prices (including postage and packing)

3-year subscription	£57.95
1-year subscription	£24.95
Overseas subscription Europe	£95
Rest of the World	£125
Back issue cost	£5 (UK)

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Advertisement typesetting by Typematters, London N1.
Origination by Westside Digital Media, 9 Bridle Lane, London W1.
Printed and bound in the UK by St Ives plc, Plymouth.
Distributed by Marketforce (UK) Ltd, 247 Tottenham Court Road, London W1P 0AU.

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Editorial

Few computer magazines can claim to be ten years old. Only one can boast about being 20 years old. The magazine in question is, of course, *PCW* and you're holding our 20th Anniversary issue in your hands. *PCW* was launched in 1978 as the first dedicated personal computer magazine in the UK. The first issue was put together by its founder, Angelo Zgorelec, and timed to coincide with the launch of "Britain's own microcomputer", the NASCOM 1. The first issue sold out of its 30,000-copy print run, went monthly from the second edition and has not looked back since.

To celebrate, we've put together a special section (starting on page 71) looking at the past 20 years of personal computing and the evolution of key companies and products. We've asked our founder how it all began and we've taken a look into what the future might hold.

While our anniversary is an event of which we're very proud, you can be sure it has not got in the way of providing you with the monthly buying advice on which you've come to rely. In fact, we've used our 20th anniversary as the perfect excuse to conduct our biggest-ever PC group test of no less than 20 systems.

Can't decide how much to spend on your new PC? No problem. We've reviewed five systems at four popular price points from £500 to £2,000. Prepare to be surprised at the quality of the entry-level £500 systems and the sheer power of those weighing-in at £2,000. If you fancy something in-between, check out the great value offered in the £1,000 and £1,500 price points.

Handhelds have never been as flexible nor powerful so we thought it was about time we rounded up and compared the latest contenders. Check out this month's PDA group test to see which best suits your pocket.

If you've already bought a PC we want to hear about it. Our reliability survey (p180) gives you the chance to tell us what you think of your PC, printer and ISP.

We've thoroughly enjoyed reporting on PCs over the past two decades and look forward to continuing to provide you with the best buying advice, reports and cutting-edge features in the future. Thanks for reading *PCW* and here's to the next 20 years.

Gordon Laing

Managing Editor

Next Month

333MHz Pentium IIs

All the threes next month as we group test PC systems based around the powerful, yet affordable 333MHz Pentium II processor.

Desktop Publishing

Layout and relax as we guide you through the best in desktop publishing packages. We look at packages starting at as little as £50 and going right up to the sort of systems we use at *PCW*.

Accounting

If your finances just do not add up, it could be time to invest in accounting software. We do the sums on packages which are suitable for small to medium-sized enterprises.

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June '98 issue
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** Next month's contents subject to change.*

Personal Computer World

May Cover disc

Welcome to the 20th Anniversary *PCW* CD-ROM. This month we have not only demos of some of the latest games and software around, we also have some classic software and games from those famous machines of the past 20 years, specially packaged to run on your PC.

System requirements

You need a PC with Windows 3.1 or later and a colour VGA display. For best results run our CD-ROM on a Pentium PC with at least 16Mb of memory.

How to use the CD-ROM

1. Quit existing applications. If you have 16Mb or more of memory you don't have to do this but you will get better performance if not too many other applications are running.
2. Put the disc into your CD drive:

• Windows 95 — If you've got Win95, the *PCW* interactive loader will appear on your screen. If your CD doesn't autoload, go to Start/Run and type

```
<CD Drive>:\pcw.exe
```

• Windows 3.1 — From Windows Program Manager choose File/Run, then type

```
<CD Drive>:\pcw.exe
```

and press enter.

Uninstalling Software

Please note that VNU Business Publications takes no responsibility for damage caused to computers, or to the data contained on them, as a result of following these instructions. This information is supplied by popular request to assist readers with the management of their machines. Before removing anything from your system, make sure you are confident about what you are doing and that your data is adequately backed up. Deleting anything from your system could result in errors.

Uninstall menu option

Contemporary software will often create an UNINSTALL option in its program or menu group at the time it is installed. By selecting UNINSTALL from the menu when you no longer want to use the application, a program will be run that will remove all the files, icons, and menu entries it added to your system during its installation. This is the best way to remove an unwanted application and should be your first choice.

Windows 95 file management

This method is the best alternative to running a supplied uninstall program but depends on Windows 95 having kept a record of the installation.

If you are using Windows 95, and no UNINSTALL menu item is created, you may be able to get Windows 95 to tidy up for you by following these instructions:

1. Click on the START button, select SETTINGS and then CONTROL PANEL.
2. In the CONTROL PANEL window, click on ADD/REMOVE PROGRAMS.
3. From the grey box, scroll through the list that is displayed until you find the application you want to remove and then click once to highlight.
4. Click on the ADD/REMOVE button in the bottom right corner of the grey box — the uninstall program will run.

Other removal options

Some software will only be installed into its own specially-created directory. If no STARTUP options or menu groups were created by the installation, simply deleting the directory will remove all files that were added to your system. *NB: This method should be used with care!*

Unexpected leftovers

If, after having deleted a directory, you find that the program still shows in your START MENU, or you get messages looking for the application every time you restart your machine, you may have to remove the entries manually:

1. Click on the START button, select SETTINGS and then TASKBAR & STARTMENU.
2. On the grey box which appears, click the START MENU PROGRAMS tab.
3. Click the REMOVE button.
4. From the displayed list, select the program you want to remove then click the REMOVE button at the bottom of the box. The entry will be deleted from your STARTMENU.

Programs which run every time you start your machine may be found in the specially-named sub-folder called STARTUP.

Important notice

The publisher, VNU, has checked the Personal Computer World CD-ROM for known viruses at all stages of production but cannot accept liability for damage caused either to your data or your computer system which may occur while using either the disc or any software contained on it. *If you do not agree with these conditions you should not use the disc.* It is good practice to run a virus checker on any new software before running it on your computer and to make regular backup copies of all your important data.

• *Unless otherwise stated, all software contained on the CD is for demonstration only. This means it may be restricted in some way: it may, for instance, be time limited or have certain functions disabled.*

Getting *your* software on to our CD

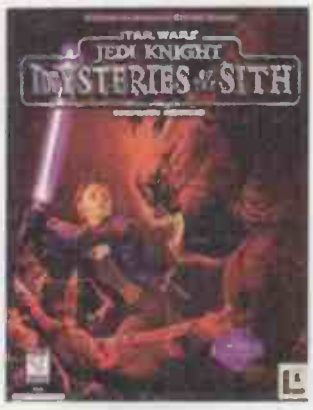
Personal Computer World is keen to promote quality software and would like to hear from you if you are interested in having your product included on a future cover disc. Please telephone **Afshan Nasim** on 0171 316 9761 or email afshan_nasim@vnu.co.uk

Technical Helpline 01274 736990
Calls cost 50p per minute

CD-ROM problems

Our technical helpline (01274 736990) is open weekdays, from 10.30am to 12.30pm and from 1.30pm to 4.30pm. Calls cost 50p per minute.

If you experience problems with the CD-ROM: perhaps a message such as "Cannot read from drive D:" please return the disc with a covering note bearing your name and address, and clearly marked **PCW CD May 98** to: **TIB plc, TIB House, 11 Edward Street, Bradford, BD4 7BH**. A replacement disc will be posted to you.



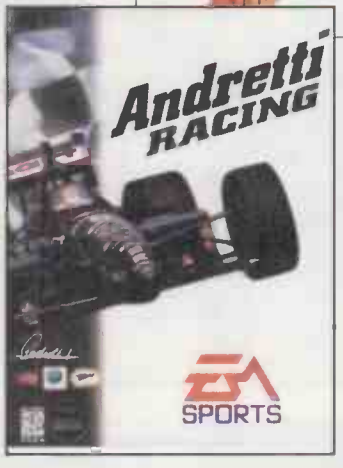
Using a better version of the Jedi Knight engine, you can really gain control

Follow in the tracks of Jacques Villeneuve in this Indy Car racing game

Hands On

The Hands On section of our CD brings you the entire contents of the past 12 months' of *Hands On* from the magazine, in a fully searchable format using Adobe Acrobat. The files are sorted into chronological order under their section headings. These include in-depth facts, tutorials and workshops across diverse topics such as Visual Programming, Word Processing, 3D Graphics and Sound.

Please note that if your installed version of Acrobat is less than version 3.0, you may get error messages accessing these files. You can upgrade your version to Acrobat Reader 3.0 by installing it from the Utilities section of the Software Library.



Featured software

FileMaker Pro 4.0 (Windows 95 only). This package provides easy information management by allowing FileMaker Pro databases to be viewed and modified within web browsers. You can also transform Excel spreadsheet documents into fully functional FileMaker Pro databases in seconds. Other features include the ability to store GIF / JPEG images, and exporting databases directly to HTML tables.

Featured games

Jedi Knights Mysteries of the Sith

Mysteries of the Sith uses an enhanced

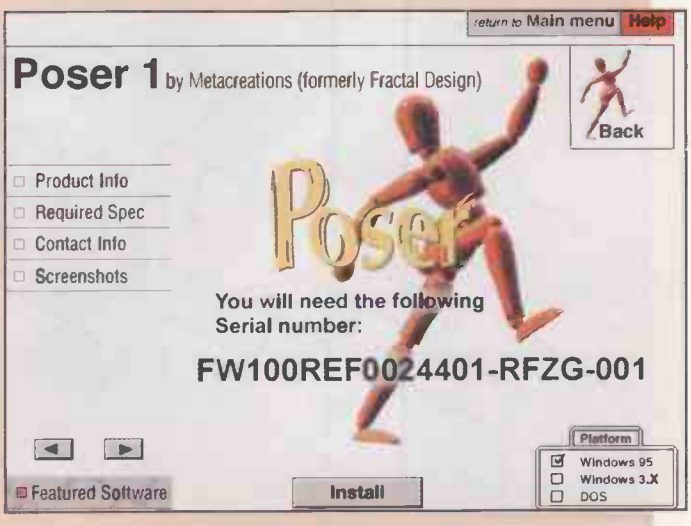
Poser1: full version

You will need the following serial number to run and install Poser1:

FW100REF0024401-RFZG-001

Poser1 provides digital artist's models that let you integrate the human form into illustrations, 3D scenes and graphics. Essentially a 3D modelling and rendering application, it helps users create an infinite variety of body figures which can be posed, rendered and incorporated into designs. Poser1 allows graphic designers and illustrators to accurately draw the human form. This is the full version of Poser1 but if you like the program enough, the latest version, Poser 2, adds the benefits of animation, new characters with clothing, the ability to add props, the ability to substitute 3D models for body parts, and powerful import/export capabilities.

■ *Upgrade to version 2 for only £59 (ex VAT) (£78.14 inc delivery and VAT) Please call Upgrades Unlimited on 0181 358 5855.*



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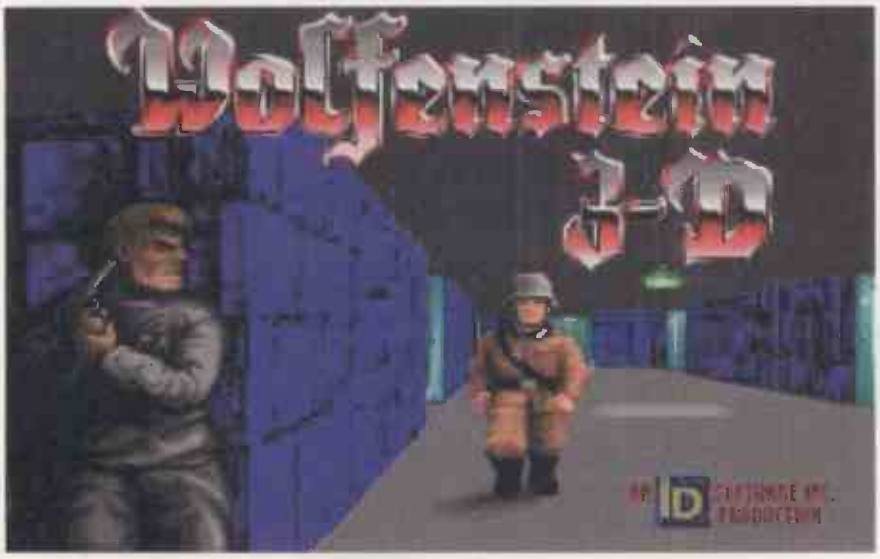

version of the Jedi Knights engine. Amongst the new features are better sabre control, advanced networking, coloured lighting support, improved artificial intelligence and better internet cheating protection.

You play Kyle Katarn and, as Imperial troops launch a surprise attack against the base, you must help to repel the invaders. Find your way to an Imperial Shuttle on the far side of the compound and you will be able to counter-attack the Imperials in subsequent levels.

Andretti Racing

Andretti Racing is an excellent racing game with many realistic gameplay options. The game sets you on a career in stock car and Indy Car competition. If you do well during one season, a new company may offer to sponsor you, changing your car as your career progresses.

Sega Touring Car Championship

(Windows 95 only). This Sega's conversion of its Touring Car racing game, from the Satum to the PC. The demo lets you play a single two-lap race, choosing from four different cars. Other features include two-player split-screen action and network play, eight-player Network Play via TCP/IP, IPX, modem or serial link, and excellent 3D sound.

Top Beware of danger in the Wolfenstein prison
Middle Get to grips with Doom again
Bottom Quake in your boots while you play the original and await the new release: Quake II

Technical Helpline 01274 736990 Calls cost 50p per minute

WINCheckIt 4: full version

You will need the following Serial code to install and run WINCheckIt:

W4-1315792

WINCheckIt is an all-in-one Windows problem solver; a comprehensive tool for use with your PC which enables you to troubleshoot hardware problems, clean up disk space, resolve setup conflicts, free-up Windows memory, analyse system performance and rescue startup and INI files. Featured on the disk is the full version 4 and from this readers can upgrade to version 5.

CheckIt version 5 features a new approach to troubleshooting which finds problems and leads the user directly to the tools that can provide the solution. First, QuickCheck tests and locates problems automatically. If a problem is detected, whether it is a hardware glitch, setup conflict or change in performance, the program's exclusive Troubleshooter guides the user to the tests and information needed to solve it quickly. These include powerful hardware tests, extensive system information and a fast, easy way to compare system changes.

No other program provides such precise system information, whether the user wants an overall summary of their system, or

specific details about a particular component. CheckIt's Find It feature allows users to search for the specific information they need, rather than having to look through pages of system information. In all, CheckIt offers over a dozen comprehensive Information displays, identifying everything that users need to know about their motherboard, memory, modem, drives, video, ports, printer and internet connections.

CheckIt 5.0 has a recommended retail price of £49.99 (incl VAT) and CheckIt Professional Edition is £99.99 (incl VAT). An upgrade is available for existing CheckIt 4.0 users (Win95) priced at £29.99 (incl VAT). Existing CheckIt Diagnostic Kit users can upgrade to CheckIT Professional Edition for £49.99 (incl VAT) by calling 01494 455560.

Featured id classics

To celebrate *PCW*'s 20th Anniversary we bring you the original demo versions of three of the the legendary games from id Software and preview screens of the forthcoming and long-awaited Quake II.

Wolfenstein 3D As an escapee from a Nazi prison, you move smoothly through a 3D world full of detail and animation.

Doom A technological breakthrough in combat action games, Doom introduced a new 3D graphics engine that set the gaming world on fire.

Quake Just when you thought it was safe to go back to the keyboard, id Software released another game — one that was to prove more popular than either Doom or Doom II.

Software and Retro Library Contents

Our Software Library has passed through a bit of a time-warp this month. As part of *PCW*'s 20th Anniversary, we have created a special Retro section which contains an abundance of old and new versions of some of the classic games and software from bygone days.

For those of you who remember the joys of hammering away at the rubber keys of a Sinclair Spectrum or waiting impatiently for the Commodore 64 datasette to load up the latest game, take a look in the emulators section. Here you'll find a crop of ZX81, Commodore 64 and Spectrum emulators as well as some classic Jeff Minter games (remember "Attack of the Mutant Camels"?) to play on them. You're in serious danger of suffering nostalgia overload!

● *Many thanks to Tulip Computers and Amstrad for giving us permission to place the emulated ROMs on the CD.*

Staying traditional, we've got full versions of the grandfather of all adventure games: Zork Parts 1 and 2, courtesy of Activision. Get ready to "go North".

If you prefer your nostalgia with a modern twist, check out a range of fresh takes on the old classics with BrainWave (Galaxian), AstroFire (Asteroids), and Microsoft's Return to Arcade (Pacman).

Don't forget, you can find all the usual essential utilities in our Software Library, along with the latest crop of new titles. Mixman Studio enables anyone to create and play CD-quality music. PAYE Master is a flexible and speedy approach to payroll processing. GPSS is Global Positioning Software that you can use on the desktop as well as on the road and iTV is a special internet browser that tells you when your favourite TV programmes are on, and more.

Retro Software Library

Emulators

- Win64 / Win95 Commodore 64: a Windows version of the Commodore 64 emulator. Run this program and then use it to run Commodore games in our Retro Library Games section.
- Commodore 64 original games by YAK: a standalone package with the integrated OS and original versions of C64 games.
- Spectrum popular original games by YAK: a standalone version of a Spectrum emulator with integrated original Spectrum games.
- X128 DOS Spectrum emulator: a DOS version of the Spectrum emulator. Run the program and then use it to run Spectrum games contained in our Retro Library Games section.
- Z80 Spectrum emulator: an alternative DOS version of the Spectrum emulator. You can use this program instead to run our Spectrum games.
- ZX81 emulator: a DOS version of the ZX81. Run this emulator and then use it to run our ZX81 games.

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May 1998

PCW INTERACTIVE

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FEATURED SOFTWARE:

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GAMES
Jedi Knights Mysteries of the Sith, Andretti Racing, Sega Touring Car Championship

id CLASSICS
Wolfenstein 3D, DOOM, QUAKE

Personal Computer World

F O L D H E R E

Software Library

Acrobat Reader	—	Acrobat PDF file Viewer
Atoms	—	Interactive graphical atoms demo
Cachecheck	—	Cache Analyser
DirectX	—	Microsoft multimedia drivers
GDidb	—	Create web sites from databases
GPSS	—	Satellite navigation software
Internet Explorer	—	Latest Microsoft Internet browser
iTV	—	Internet TV listings from the web
Mixman	—	Music-making software
Nico's Commander	—	File manager
Norton Anti Virus	—	Anti virus software
Paintshop Pro	—	Paint package
PAYEMaster	—	Payroll software
WinZip	—	File compression utility

Retro Software Library

Win64 / Win95 Commodore 64 emulator
X128 DOS Spectrum emulator
Z80 Spectrum emulator
ZX81 ZX81 emulator
AstroFire
Brainwave
Brainwave 2
Commodore 64 original games by YAK
Invaders 78
JumpStar
Llamatron
Microsoft Return to Arcade
Revenge of the Mutant Camels
Spectrum popular original games by YAK
Terrafire
Zork1
Zork II

Games

- AstroFire — Fast and furious update of the classic Asteroids.
- Brainwave — Battle for the Mind.
- Brainwave 2 — Return of the Nanabots.
- Invaders 78 — A version of Taito's original Space Invaders, for the PC.
- JumpStar — Hostile creatures on alien worlds in this side-scrolling arcade game.
- Llamatron — PC Version of a Jeff Minter classic.
- Microsoft Return to Arcade — Trial of Microsoft's compendium featuring PacMan.
- Revenge of the Mutant Camels — a PC version of another Jeff Minter classic.
- Terrafire — Blast your ship through heavily defended underground caverns.
- Zork1 — This is the full version of the original PC DOS classic "The Great Underground Empire". Zork1 is a text-based adventure game. Quite fascinating. (A clue: go north).
- Zork II — The second (and full) version of the above classic. No clues this time.

Web access

If you have an internet connection, you can access our *PCW* web site direct from the CD. Ensure your connection is open and click on the bar on the opening screen of the CD.

vnunet www.vnunet.com Europe's largest IT and business publisher is online at vnunet. The site contains minute by minute news updates, via our Newswire Service, and some of the best editorial features from VNU's 15 printed publications.

Jobworld www.jobworld.co.uk Jobworld is the fastest, most convenient internet recruitment site, displaying real-time contract and permanent vacancies. Free to UK and international job-seekers, Jobworld carries thousands of IT contract and permanent vacancies, including permanent vacancies in accountancy and management consultancy. To find the right job for you, apply online there and then. Or, register for our email alert service, which posts vacancies direct to your mail box.

Cover stories

Maybe you remember the first issue of *PCW* from 20 years ago? You almost certainly remember some of the important events that have happened along the way, like the first IBM PC, Windows and multimedia. We have been there all along and here you can view 25 covers which featured these events.

Infopedia UK

On our front cover, there's a full version of Infopedia; a compilation of best-selling reference works. This version is available in the shops for £39.99 (if you bought all the separate works they would set you back around £300) — but this is yours, FREE with *PCW*.

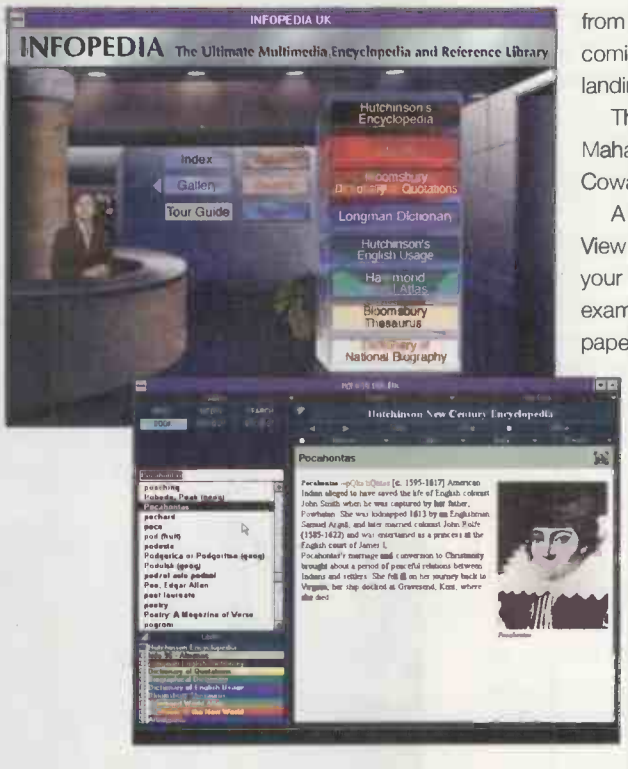
Infopedia is perfect both for study and for general reference. It is based around the *Hutchinson New Century Encyclopaedia* (all 12 volumes of it) and you get seven other essential reference works: Longman Dictionary of the English Language, Bloomsbury Thesaurus, Bloomsbury Dictionary of Quotations, Hammond World Atlas a three-volume Concise Dictionary of National Biography, HutchInson Concise Dictionary of English Usage, Hutchinson Info '96 (a yearbook, almanac and fact finder).

There are over 250,000 entries in Infopedia, along with 5,000 photographs, over 150 videos, 450 sound clips, as well as narrations and 3D animations.

All the reference books are accessible from the same interface, which makes learning about and using Infopedia easy. When Infopedia is run for the first time you are welcomed by the on-screen librarian and a stack of books. Click on any book and the librarian will explain about the book's contents.

You can access the information in Infopedia in several ways. You can browse an alphabetical list of all the topics in the whole reference collection or type-in a word for whatever you are interested in.

In search view you can find entries which contain a specific word or phrase. You might type in "London" and be directed to references in the encyclopaedia, on the map, and even to some quotations. All the information you may need for that article, essay or report, plus a few pithy quotes to add lustre, and all at a keystroke or two.



You can, of course, browse a particular book, or look for information by subject, or even by just those entries which are accompanied by photos, videos, maps, sound bites or an animation.

In the video section there is plenty from which to choose: Margaret Thatcher's resignation; the Beatles receiving an MBE from the Queen; the Berlin Wall coming down; or the first lunar landings.

There are sound clips of Mahatma Gandhi and Noel Coward, to name but two.

A neat feature is Project View which lets you create your own list of entries. For example, if your were writing a paper about UK Prime Ministers, you could create a list of entries in the form of a timeline. In other words, Infopedia has everything you could want from a reference work. In fact, it is a whole bookshelf of indispensable reference titles all on one CD which is quick and easy to search.

Systems requirements: Windows 3.1, 95 and Mac System 7.1; 486 or higher; 8Mb RAM; mouse; sound card; double-speed CD-ROM drive or better. Please ensure you have loaded the latest drivers for all devices to avoid compatibility problems. CD-ROM support i available on 01274 736990.

■ *Infopedia is only available to* PCW *subscribers or from issues bought off UK newstands.*

Technical Helpline 01274 736990 Calls cost 50p per minute

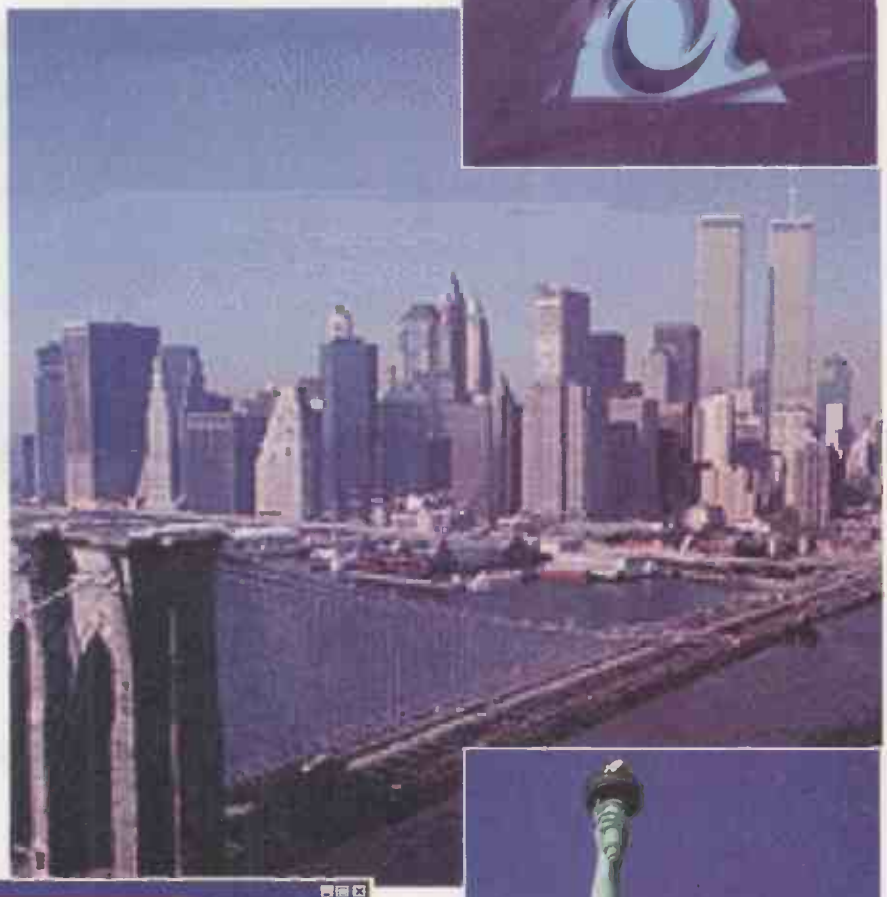
NET SOFTWARE.

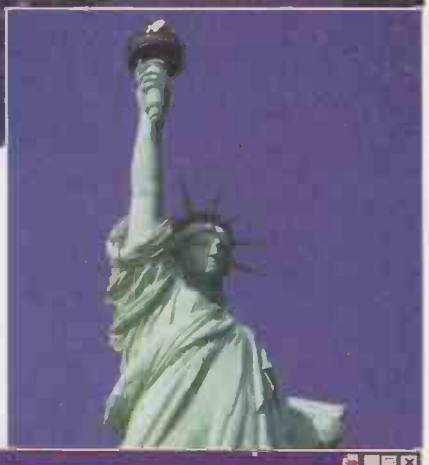
Every package, every program, starting on p380 in PCW Direct Buyers World

Win a trip for two to New York **with AOL**

Fancy a free trip to the Big Apple? *Personal Computer World* and AOL, the world's biggest internet online service, have teamed up to bring you a fantastic competition this month. Try AOL's free 50-hour trial and you could be a winner!

First prize is a short break for two to New York! From the glittering signs of 42nd Street, to Carnegie Hall, to the largest selection of museums and galleries in the US, NYC has something for everyone. Second prize winners will get one of five free AOL accounts for a year, while 25 lucky third prize winners will walk away with a year's free subscription to *Personal Computer World*.





How do I enter?

All you have to do is install the cover CD and you are less than five minutes away from your 50-hour free trial. Once you are online, click on the K (for Keyword) on the menu bar and type AOL WIN. Then follow the simple instructions to enter the competition. It's that easy!

Note the closing date is 31st May 1998. (See "Competition Rules" online for full details).

What is AOL?

AOL is a fun, affordable, easy-to-use information service covering everything from the latest News & Sport to Travel & Entertainment — and all of it is bang up to date! It is also the service on which you can communicate with fellow users by sending and receiving messages quickly and easily (like sending a letter but without the wait, or phoning long-distance for the price of a local call).

Now boasting more than 11 million subscribers worldwide (over 350,000 in the UK) AOL brings you far more than the internet, thanks to a vast selection of exclusive areas. Take a look at the 14

The Statue of Liberty would be clearly within your sights, if you won our fabulous trip to New York

expanded AOL channels — AOL offers something for everyone. The content and programming is developed locally by AOL UK and its team of partners, including some of the world's top media brands such as Lonely Planet, The Economist Intelligence Unit and Thomas Cook.

Take your pick: all hobbies and special interests are featured within AOL's up-to-date pages

AOL's unique features

So what exactly are you missing out on? Well, for starters, your AOL account gives you five different screen names or email addresses which you can choose yourself. This way, you can have one for business one for pleasure, and one for perhaps each member of the family. Your screen name then becomes your email address by adding @aol.com to the end.

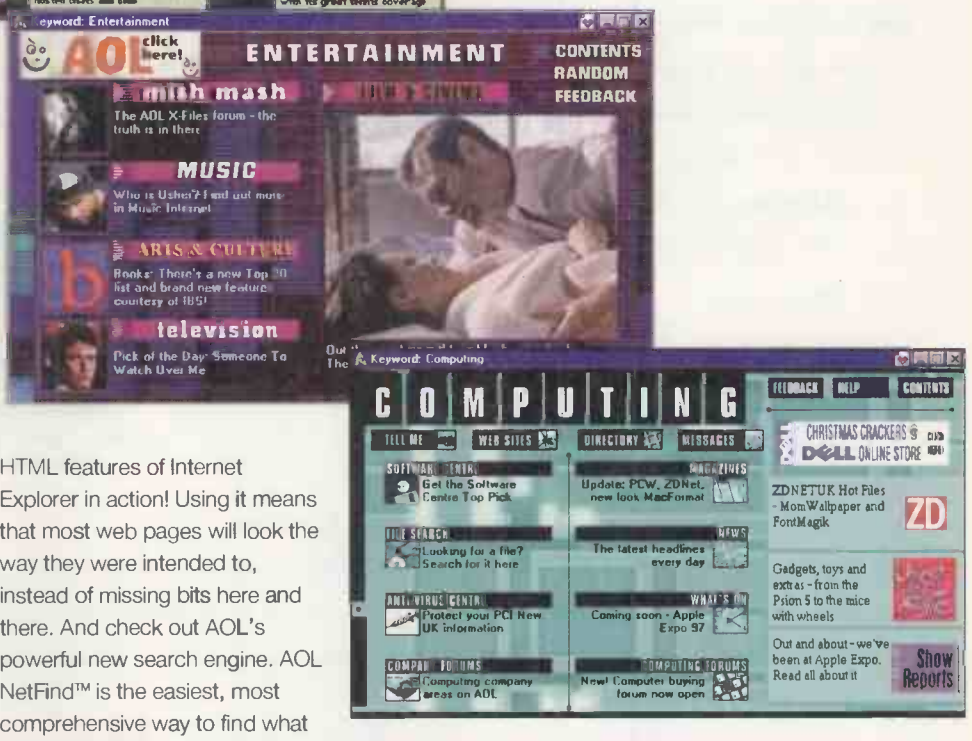
Get creative with your email by editing it to your personal taste: you can choose from a huge range of background and text colours. Add bold type and italics or whatever you like! Instant Messages give you the ability to have a one-to-one conversation with your AOL friends anywhere in the world in real time! You can even create a Buddy List to find out when your friends are online. When they sign on to AOL, their names appear in the Buddy List window to let you know they are online at the same time as you.

With your AOL Account you are given a generous 10Mb of web space, so why not create your own personalised web site? AOL even provides you with online tools to help you! Try out (Keyword:) Personal Publisher to get started, or (Keyword:) AOLPress for more advanced tools. To access Keywords just hold down your Control Key and press K, then type the Keyword and you'll go straight to that area.

Other cool features include the Favourite Places function that lets you earmark a web site, email or instant message for future reference. The Parental Control feature allows you to block various types of access to the net, such as downloads from Newsgroups or Chat rooms, or you can block all internet access so that the kids can play safely.

What's new?

AOL's great Windows 95 version has Microsoft Internet Explorer 3.0 integrated as its main browser — see the enhanced HTML features of Internet Explorer in action! Using it means that most web pages will look the way they were intended to, instead of missing bits here and there. And check out AOL's powerful new search engine. AOL NetFind™ is the easiest, most comprehensive way to find what you are looking for, fast! Whether you're looking for phone numbers, email addresses, Newsgroups on quilting, or web sites for kids, AOL NetFind™ can help you.



If you'd like a quick tour around the service once you've signed on for your free trial, then go to (Keyword:) TOUR. So go ahead! Sign on to AOL now and enter our competition — you could soon be winging your way to New York.

Just take a look at what's up for grabs in this great competition

- *Free* — 50 hours online!
- *Free* — One month's AOL membership!
- *Free* — Five email addresses per account!
- *Free* — Technical support!
- *Free* — 10Mb of web space!
- 100 percent local call access

Sign up for your free trial now!

Competition Rules and How to Enter

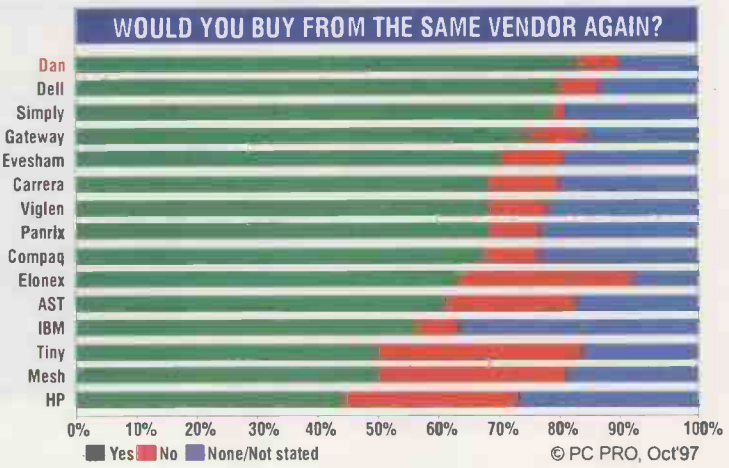
- All entries must be made by midnight 31st May 1998. Only one entry per household.
- Paid employees of AOL, VNU and their immediate families and agents are not eligible to enter. All winners will be selected at random.
- The short-break trip to New York is based on a three-night duration, staying in a luxury hotel for two adults prior to 30th June 1998 or any time during the period 1st September to 12th December 1998.
- The first randomly drawn entry will win £1,200-worth of Lunn Poly travel vouchers (which more than cover the cost of the trip to New York, as promoted, but vouchers can be used on a different holiday of the winner's choosing). The next five randomly drawn entries will each win an AOL account free for a year (excluding telephone connection costs) and the next 25 randomly drawn entries will each win a year's subscription to *Personal Computer World* magazine.
- No cash alternatives will be substituted for the prizes.
- Winners will be notified by post or phone within three weeks of the closing date.
- A list of winners can be obtained by sending a SAE to the promoters after the closing date.
- If you enter the competition by post, send your name and address details on a postcard, marking your entry "PCW Competition" and send it to: AOL, 18-21 Cavaye Place, London SW10 9PG. (Promoted by AOL, 18-21 Cavaye Place, London SW10 9PG).

Which is the best computer value-for-money or one with

With Dan

Dan Technology has enjoyed enormous success in polls conducted this year by the nation's leading computer magazines. In recent months, we've won top honours from the readers of PC Direct, PC Magazine, PCW, What PC? & PC Pro.

Our products, the Dan PCs featuring Intel Pentium® processors, after-sales service, overall reliability – all have always received more than enough votes to place Dan in the first rank of PC vendors. But this year we've done even better. Two of the leading magazines asked readers the most important question of all: would they buy from the same vendor again? We are proud and delighted to reproduce the answers here.



The August 1997 Service and Reliability Survey in PC Magazine revealed that Dan users were more likely to stick with their current PC vendor than owners of *any* other brand. (Incidentally, this is the third year in a row that Dan has headed PC

MMX™ intel inside pentium® II

dan Ultimate PC

with Pentium® Processor

- Intel Pentium® Processor with MMX™ Technology
- 512KB Pipeline Burst Cache Memory
- 64MB SDRAM
- Fast 6.4GB UDMA Hard Disk Drive
- Iomega 100MB Zip Drive + cartridge
- ATi Xpert@Work 4MB Video Card
- 17" Iiyama L/R N/I Monitor (9017T) (Viewable size 16.2" - 405mm)
- 32MAX Speed CD-ROM
- SoundBlaster AWE 64 OEM
- Hi Fi Power Speakers (150W PMPO)
- 56KBPS VoiceFax/Modem (UK only)
- Microsoft IntelliMouse™, Microphone
- Windows 95 UK Keyboard
- Midi Tower Case with PSU
- **Software:** Windows 95 or Win 3.11 MS Works 95, Serif Page Plus, Intuit Quicken 6sE & Encarta'98 US

200MHz	£ 1391	£ 1635 incl. VAT
233MHz	£ 1424	£ 1674 incl. VAT

dan Ultimate 2

with Pentium®II Processor

- Intel Pentium® II Processor with 512KB Cache Memory
- 64MB SDRAM
- Fast 6.4GB UDMA Hard Disk Drive
- Iomega 100MB Zip Drive + cartridge
- ATi Xpert@Work 4MB AGP Video Card
- 17" Iiyama L/R N/I Monitor (9017T) (Viewable size 16.2" - 405mm)
- 32MAX Speed EIDE CD-ROM
- SoundBlaster AWE 64 OEM
- Hi Fi Power Speakers (150W PMPO)
- 56KBPS VoiceFax/Modem (UK only)
- Microsoft IntelliMouse™, Microphone
- Windows 95 UK Keyboard
- Midi Tower Case with PSU
- **Software:** Windows 95 MS Works 95, Serif Page Plus, Intuit Quicken 6sE & Encarta'98 US

266MHz	£ 1536	£ 1805 incl. VAT
300MHz	£ 1642	£ 1930 incl. VAT
333MHz	£ 1739	£ 2044 incl. VAT

All systems also include: Fast EIDE PCi HDD Controller, 1 Parallel, 2 Fast Serial and 2 USB Ports, 1.44MB Floppy Disk Drive, MMX™ Brand Software – 5 titles (except dantum 2 WS) and FREE of charge access to the Internet for 28 days (or max 24 hrs) through PIPEX DIAL.

go direct to dan

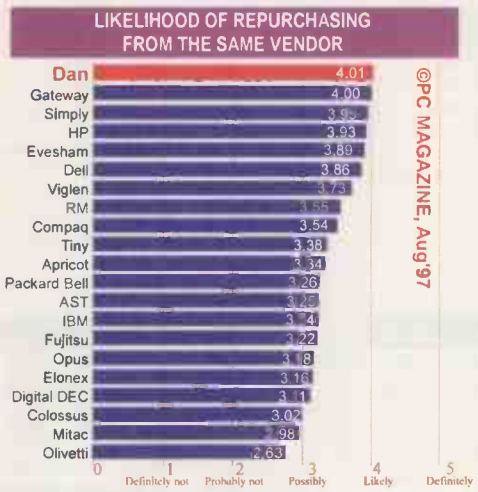
vendor? One which gives the happiest customers?

you get both.

custom build and price your own system on-line

dan on the web

www.dan.co.uk



Magazine's brand loyalty league table.) PC Pro's 1997 PC Awards (October issue) confirmed the trend.

The performance difference between two makes of PC is often measured in fractions of a second. These polls clearly show that service, support and overall reliability are now just as important to users as speed, if not more so.

Ask yourself, are you really satisfied with your PC supplier when it comes to these matters? If not, give us a call and we'll show you why our users keep voting us Number One. If the answer is yes, you're probably a Dan owner already.

YEAR 2000 COMPLIANT

All Dan PCs are year 2000 compliant

1997 Annual Awards

from Computer Magazine Reader Surveys and Editorial Teams

Sevice & Reliability Award
PC Magazine, 1997 Survey

Best Service Award
PC Pro, 1997 Survey

Best On-Site Maintenance
PCW 1997 Survey

Best Customer Service Award
PC Plus 1997 Survey

Best Server Award
PC Direct Hits 1997 Survey

Best Budget PC
What PC? 1997 Annual Awards

Best Professional PC
What PC? 1997 Annual Awards

In addition, Dan has also received numerous monthly editorial Awards.

dantum 2 /MM

with Pentium®II Processor

- **Intel Pentium® II Processor** with 512KB Cache Memory
- 16MB SDRAM RAM
- Fast 3.2GB UDMA Hard Disk Drive
- ATI 4MB 3D Charger AGP Video Card
- 14" Super VGA L/R N/I Monitor (Viewable size 13.4" - 335mm)
- 32MAX EIDE CD-ROM
- Sound Blaster 16 Soundcard
- Advanced Speakers (10W PMPO)
- 56KBPS VoiceFax/Modem (UK only)
- Microsoft IntelliMouse™, Microphone
- WIndows 95 UK Keyboard
- Midi Tower Case with PSU
- **Software:** Windows 95 MS Works 95, Serif Page Plus, Intuit Quicken 6SE & Encarta'98 US

233MHz	£ 922	£ 1084 incl. VAT
266MHz	£ 961	£ 1130 incl. VAT
300MHz	£ 1067	£ 1254 incl. VAT

By adding a network card all the above systems can be connected to your network.

dantum 2 WS

Dual Pentium®II Processor option

- 64MB SDRAM
- Choice of Hard Disk Drive
- Choice of single or dual Intel **Pentium® II Processor** with 512KB Cache Memory
- Iomega 100MB ZIP Drive + 1 cartridge
- 8MB Xpert@work AGP Video Card
- 17" Iiyama L/R Monitor (9017T) (Viewable size 16.2" - 405mm)
- 56KBPS VoiceFax/Modem (UK only)
- 32MAX EIDE CD-ROM
- Dual Port SCSI Controller (Ultra & Wide)
- Midi Tower Case with PSU
- Microsoft IntelliMouse™
- Windows 95 UK Keyboard
- **Software:** Windows NT Workstation MS Works 95

with single processor	266MHz	300MHz	333MHz
8.0GB UDMA EIDE	£ 1825	£ 1936	£ 2036
4.1GB WIDE SCSI	£ 1945	£ 2056	£ 2156
9.0GB WIDE SCSI	£ 2165	£ 2276	£ 2376
with dual processor	PLEASE CALL FOR DUAL PROCESSOR SYSTEM PRICES		

Above prices exclude VAT@17.5%.

PRICES VALID FROM 1ST APRIL 1998. CALL NOW FOR LATEST OFFERS.

All systems have Lifetime Guarantee (first year full back-to-base parts and labour, then lifetime free labour - excludes certain monitors and printers - and Lifetime Telephone Support Hotline only). Optional next-working-day (subject to customer location and time of call) response ON-SITE maintenance (£42 for the first year). **14 DAY MONEY BACK GUARANTEE IF NOT SATISFIED (excludes printers & software).** Dan Technology systems prices and specifications are subject to change without notice. All sales are subject to Dan Technology terms and conditions, a copy of which may be obtained on request. Dan Technology is a tradename of Dan Technology Ltd which is a subsidiary of Dan Technology Holdings plc. Intel Inside logo & Pentium are registered trademarks and MMX is a trademark of the Intel Corporation. All trademarks acknowledged.

PCW

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LEEDS: 10-11 Feast Field, Town Street, Horsforth, Leeds LS18 4TJ. FAX: 0113-239 0652

Internet: www.dan.co.uk e-mail: sales@dan.co.uk

VAT @17.5%. E.&O.E.

dan technology

Business PCs, Workstations and File Servers

> "Dan has a deserved reputation for producing well specified, solidly built machines."
>
> *Personal Computer World (PCW), March '97*

Prices valid from 1st April '98

All prices exclude delivery & VAT @ 17.5%. E. & O.E.

YEAR 2000 COMPLIANT
All Dan PCs are year 2000 compliant

In Dan Technology's ten years of supplying built-to-order computers direct to UK end users, we have earned universal acclaim for our "quality first" approach. Our products enjoy an unrivalled reputation for solid reliability, class-leading performance and great value for money.

Our customer service has won accolades too, with readers' awards this year from no fewer than four of the country's leading magazines — **PCW, PC Magazine, What PC?** and **PC Pro**. And when two of them asked their readers if they'd buy again from the same vendor, *both* found that **Dan has the nation's most satisfied customers.**

So if you care about quality as well as price, look at Dan's range. We think you'll like what you see.

dantum

Pentium® Processor Based System

- 16MB EDO RAM
- Choice of Hard Disk Drive
- Intel Pentium® Processor with MMX™ Technology
- 512KB Pipeline Burst Cache Memory
- 2MB EDO RAM/64-bit Video Card
- 14" Super VGA L/R N/I Monitor (Viewable size 13.4" - 335mm)
- 24MAX EIDE CD-ROM
- Fast EIDE PCI HDD Controller
- 1.44MB Floppy Disk Drive
- Desktop Case with PSU
- 1 Parallel & 2 Fast Serial Ports
- Win95 UK Keyboard
- Microsoft IntelliMouse™
- Windows 95 or Win 3.11
- MS Works Suite

Pentium® Processor	200MHz	233MHz
2.1GB	£ 639	£ 673
3.2GB	£ 660	£ 694
4.3GB	£ 672	£ 706
5.2GB	£ 709	£ 743
6.4GB	£ 721	£ 755
2.10GB	£ 864	£ 898
4.10GB	£1049	£1083

8.4GB HDD upgrade from 6.4GB £ 42

dantum 2

Pentium® II Processor Based System

- 32MB SDRAM RAM
- Choice of Hard Disk Drive
- Intel Pentium®II Processor with 512KB Cache Memory
- 4MB 3D Charger AGP Video Card
- 15" Super VGA L/R N/I Monitor (Viewable size 14.4" - 351mm)
- 32MAX Speed EIDE CD-ROM
- Fast EIDE PCI HDD Controller
- 1.44MB Floppy Disk Drive
- Desktop Case with PSU
- 1 Parallel, 2 Fast Serial & 2 USB Ports
- Win95 UK Keyboard
- Microsoft IntelliMouse™
- Windows 95
- MS Works Suite

Pentium®II Processor	233MHz	266MHz	300MHz
2.1GB	£ 846	£ 887	£ 998
3.2GB	£ 867	£ 908	£1019
4.3GB	£ 879	£ 920	£1031
5.2GB	£ 916	£ 957	£1068
6.4GB	£ 928	£ 969	£1080
SCSI 2.10GB	£1071	£1112	£1223
SCSI 4.10GB	£1256	£1297	£1408

ATi TV & Teletext Card £ 60
Sound Blaster 16 & Speakers £ 27

dantum 2 WS

Dual Pentium® II Processor Option

- 64MB SDRAM
- Choice of Hard Disk Drive
- Intel Pentium®II Processor (single or dual) with 512KB Cache Memory
- Iomega 100MB ZIP Drive + 1 cart.
- 8MB Xpert@work AGP Video Card
- 17" Iiyama L/R Monitor (9017T) (Viewable size 16.2" - 405mm)
- 56KBPS VoiceFax/Modem (UK only)
- 32MAX EIDE CD-ROM
- Dual Port SCSI Controller (Ultra & Wide)
- 1.44MB Floppy Disk Drive
- Midi Tower Case with PSU
- 1 Parallel, 2 Fast Serial & 2 USB Ports
- MS IntelliMouse™, Win95 UK Keyboard
- Windows NT Workstation
- MS Works Suite

single Pentium®II Processor		266MHz	300MHz	333MHz
8.0GB	UDMA EIDE	£1825	£1936	£2036
4.1GB	WIDE SCSI	£1945	£2056	£2156
9.0GB	WIDE SCSI	£2165	£2276	£2376

As above with 2 CPUs installed as standard

dual Pentium®II Processor		266MHz	300MHz	333MHz
8.0GB	UDMA EIDE	£2036	£2258	£2458
4.1GB	WIDE SCSI	£2156	£2378	£2578
9.0GB	WIDE SCSI	£2376	£2598	£2798

Delivery cost to mainland UK for one system is £19.

Call for low cost upgrade to Office 97 & Office 97 Pro

Dan Desktop Case with 15" Monitor

Network Workstations

All dan PCs can be used as workstations by adding a network card. The most popular card is the 16-bit Ethernet Novell NE2000 compatible. However, the 3COM 509 or the Intel PCi card can give higher performance.

Example of Workstations:

Entry level Station		*Best Seller Station*		*Power User Station*	
dantum/200MHz /W		**dantum 2/233MHz /W**		**dantum 2 WS /W**	
dantum/200MHz	£ 639	*dantum 2/233MHz*	£ 846	*dantum 2 WS/266MHz*	£1825
16-bit Ethernet card	£ 19	*3COM509 card*	£ 57	*Intel Express Pro card*	£ 45
Workstation price	£ 658	Workstation price	£ 903	Workstation price	£1870

custom build and price your own system on-line
dan on the web
www.dan.co.uk

5 Years Winner

Annual P.C Magazine Service & Reliability Reader Survey

"When it comes to customer satisfaction, Dan is still top of the desktop PC vendors. For the fifth year in a row it has won the Overall Satisfaction category. The first year Dan won, cynics said that the company was small so customer service was easy, and that as it grew standards would fall. But five years on , Dan is still growing and still at the top...Dan can truly be said to be the best organisation at delivering excellence in customer satisfaction."

PC Magazine, August 1997, Service & Reliability 1997 Reader Survey

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ISO 9002/EN 29002 (BS 5750 Pt 2)

go direct to dan

"One company has become synonymous with servers and that is dan, which has a wide range of options to suit many different network needs."

Winner & Runner-up of Network Servers Category, Readers Survey - Direct Hits 1994, 95, 96 & 97, PC Direct, June '96

Dan Servers for Novell and other Networks

When so much depends on one machine, it makes sense to go for the best in reliability and quality, as well as price and performance. In short, you have to choose the right supplier.

We understand that your business will depend on your network; no one is more reliable than Dan with its numerous magazine and reader awards, including beeing the winner and runner-up in the Server category of PC Direct's Reader survey for the last 4 years.

Complete Network Services

- Cable & data outlet installations
- Network Configuration backed by 30 day ON-SITE and HOTLINE support by qualified engineers
- Network Administration training courses available

Call for more information

dantum Server

Award Winning Fileservers

- 64MB SDRAM
- Choice of Ultra DMA HDD from table
- Intel Pentium®Processor with MMX™ Technology
- 512KB Pipeline Burst Cache Memory
- Intel TX Chipset
- 2MB EDO RAM 64-bit Video Card
- 14" Monochrome VGA Monitor (Viewable size 11.6" - 290mm)
- 32MAX Speed EIDE CD-ROM
- Intel Express Pro PCi Network Card
- Fast EIDE PCi HDD or Adaptec AHA-2940 PCi SCSI Controller
- 1.44MB Floppy Disk Drive
- Full Size Tower Case with PSU
- 1 Parallel & 2 Fast Serial Ports
- Win95 UK Keyboard
- Microsoft IntelliMouse™
- Windows 95 or NT (at extra cost)
- MS Works Suite

Pentium® Processor	200MHz	233MHz
3.2GB	£ 804	£ 838
5.2GB	£ 853	£ 887
2.1GB SCSI	£1008	£1042
4.1GB SCSI	£1193	£1227

dantum 2 Server

Pentium® II Processor Based System

- 64MB SDRAM
- Choice of Ultra DMA HDD from table
- Intel Pentium®II Processor with 512KB Cache Memory
- Intel LX Chipset
- 2MB EDO RAM 64-bit Video Card
- 14" Super VGA L/R N/I Monitor (Viewable size 13.4" - 335mm)
- 32MAX Speed EIDE CD-ROM
- Intel Express Pro PCi Network Card
- Fast EIDE PCi HDD or Adaptec AHA-2940 PCi SCSI Controller
- 1.44MB Floppy Disk Drive
- Full Size Tower Case with PSU
- 1 Parallel, 2 Fast Serial & 2 USB Ports
- Win95 UK Keyboard
- Microsoft IntelliMouse™
- Windows 95 or NT (at extra cost)
- MS Works Suite

Pentium®II Processor	266MHz	300MHz	333MHz
3.2GB	£ 969	£1080	£1180
4.3GB	£ 981	£1092	£1192
5.2GB	£1018	£1129	£1229
6.4GB	£1030	£1141	£1241

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- Windows NT Server (5 user licence)

single Pentium®II Processor	266 MHz	300 MHz	333 MHz
4.1GB WIDE SCSI	£2007	£2118	£2218
9.0GB WIDE SCSI	£2227	£2338	£2438

As above with 2 CPUs installed as standard

dual Pentium®II Processor	266MHz	300MHz	333MHz
4.1GB WIDE SCSI	£2218	£2440	£2640
9.0GB WIDE SCSI	£2438	£2660	£2860

For Novell Netware File Servers: you must upgrade the EIDE CD-ROM to SCSI add £ 24 (plus £ 110 for SCSI controller if needed - Adaptec AHA 2920)

Call for Windows NT WS Upgrade from Windows 95

Please Call for Info on RAID CONTROLLED SYSTEMS

Network upgrades for dantum systems

Miscellaneous

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800VA UPS ON- Line (Fiskars)	£ 574
1000VA UPS Line Interactive (Fiskars)	£ 388

Network Cards

16-Bit Network Card Ethernet (Novell NE2000 Compatible - Thin Ethernet & Twisted Pair)	£ 19
16-Bit Network Card Ethernet (3COM509)	£ 57
32-bit PCi Ethernet Card (3COM900)	£ 59
32-bit PCi 100Mbps base-T Ethernet Card (3COM905)	£ 52
32-bit PCI Intel Express Pro 100UTP Card	£ 45

Network 10-Base-T Hubs

8 Port 10 base-T Mini Ethernet Hub	£ 33
16 Port 10 base-T Mini Ethernet Hub	£ 106

Tape Streamers for Servers
(Controller, Tapes & Backup Software not included)

2GB (4GB compressed) DAT Streamer	£ 456
4GB (8GB compressed) DAT Streamer	£ 569
12GB (24GB compressed) DAT Streamer	£ 814

4 Years Winner & Runner-up

Network Servers Category, Readers Survey - Direct Hits 1994, 95, 96 & 97

"The number of servers available through the direct channel rose ... as more companies installed networks and users found it just as easy to buy servers as workstations off the page. Yet while the competion did increase, long-time off-the-page server champion Dan Technology continued its dominance of this particular market, taking not only one of the runners-up slots, but also retaining its victor's laurels with the Dantum Pro Server, direct prices for which start at under £1,500. [Dan has won the Network Server category every year since 1993.]"

PC Direct, June 1997, Direct Hits Readers Awards 1997

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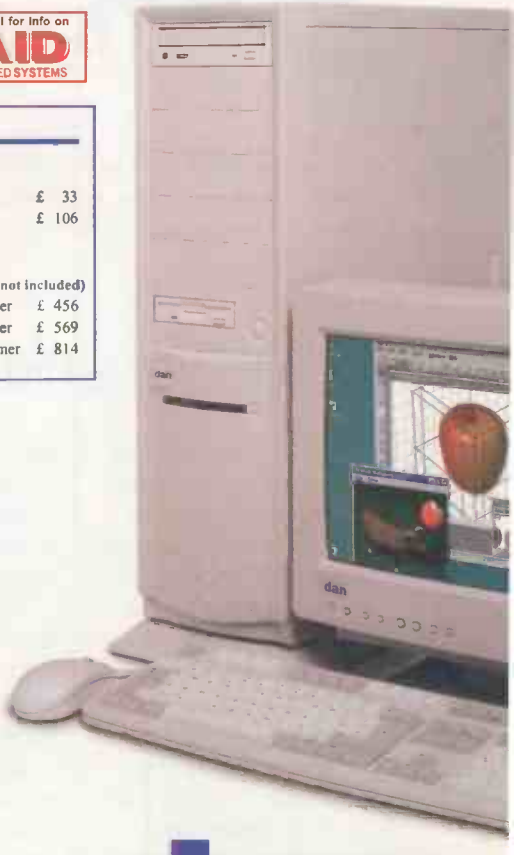

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dan technology

Further dan technology adverts can be found on pages 381 to 385

Newsprint

Free web access

A Canadian company is offering free web access to anyone in the UK. You download software from www.xtream.com and fill in a lot of personal information which will be used to target advertising at you.

This advertising, said to occupy "at most" 15 percent of the screen, pays for the service from Colt Internet. Users are given a local number and a free email account.

Director Chris Sukornyk said: "We're able to offer a real service ... for users wanting to bypass the monthly fee."

Rattled Intel pitches to power the sub-$1000 PC

Intel has outlined its roll-out of new processors amid its most uncertain trading climate for years. Chip sales so far this year have been less than expected, partly because of the Far East slump.

But Intel seems to have been rattled by cheap highly-integrated processors from Cyrix, AMD and Centaur. It has gone downmarket with a processor called Celeron, a PII with no on-chip cache, which is intended to power a sub-$1,000 PC for home users.

Intel will shortly announce mobile chips in two new packages: one a single edge connector and the other a cartridge.

There will also be three high-performance PII chips running at up to 400MHz, and an as-yet unnamed chip using the new Slot II. All the new range is based on the P6 architecture used in both the PII and Pentium Pro. There seems to be an element of wishful thinking in Intel's breakdown of the market. First reactions to Celeron were muted and the first PCs (from NEC in the US) announced that the chips were aimed at businesses rather than homes.

It is home users with their demanding games who have gone for the current generation of multimedia PCs. Word processing and spreadsheeting, which account for a huge proportion of business work, do not need top-spec PCs.

So, in going downmarket, Intel risks undercutting its own lucrative corporate market, at least until new applications such as videophoning are mature enough to create a market for the new fast chips. Microsoft and Intel announced they will work together to migrate to the desktop applications like computer-aided design which are currently run on expensive high-end machines.

Meanwhile, Intel was keeping tight-lipped about its plans for using its newly licensed StongARM technology (see *page 28*). Much of the information about the new Intel processors was confidential at press time. Watch out for more details next month.

Clive Akass

World view from IBM

The 1998 edition of IBM's two-CD World Book multimedia encyclopaedia goes on sale this month priced at £39.99. Watch out for a review in next month's *Personal Computer World*.

Microsoft hacked off as anti-Trust pressure grows

■ The Win98 launch looks like being as much of a cliffhanger as that of Win95, which was dogged by claims of monopoly abuse, writes *Clive Akass*.

Bill Gates had his back uncharacteristically against the wall last month when he defended Microsoft's record at a Senate Judiciary Committee hearing.

Ranged against him were Jim Barksdale of Netscape and Sun's Scott McNealy, who urged senators to encourage the Department of Justice to pursue its investigation of Microsoft. A new hearing of the DoJ case, which centres on the bundling of Gates' Explorer browser with Win95, is due on 21st April.

Many observers believe the case is bigger even than Microsoft in that it is testing the administration's ability to control the abuse of market power.

Win98 adds a whole new can of legal worms. It absorbs the browser into the operating system, which Gates argues plausibly is where it should be. But if the courts accept this, and also that Microsoft is abusing its market position, do they then ban a computing architecture on legal grounds?

Sue Pederson writes: An attack by hackers which crashed hundreds of NT net servers all across America appeared to be timed to coincide with Gates' Senate testimony.

The attack, which exploited a well-known weakness in NT, came only a week after a leading watchdog group warned of a "dramatic increase" in computer security breaches.

Meanwhile, two Californian high school students orchestrated what Defense Department officials called "the most organised and systematic" hacking yet of the Pentagon.

Reportedly under the tutelage of a hacker based in Israel, the pair logged on to at least 11 US military computers and accessed unclassified information.

● More than six in ten US organisations have suffered a computer security breach in the past year says a Computer Security Institute survey.

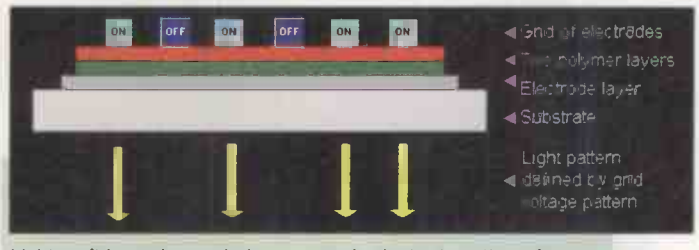
News edited by Clive Akass; news@vnu.co.uk Internet News edited by Adam Evans; adam_evans@vnu.co.uk

'Electronic paper' screens arrive earlier than expected

A revolutionary new display technology, highlighted two years ago in *Newsprint*, has borne fruit earlier than expected with a demonstration of a mono TV screen.

It uses a Light Emitting Polymer (LEP) screen developed by Cambridge Display Technology (CDT) in partnership with Seiko-Epson.

The prototype screen was only 2in wide and 0.07in thick but a 10in colour demonstration model is expected later this year. Commercial products should be available within five years.



Light-emitting polymers behave much like the LEDs used as status lights: they light up when a forward voltage is applied. But LEPs can be produced as a flexible sheet and light up only at the point of electrical contact, so pixels that make up an image can be defined by a simply-made electrode pattern. An active matrix screen needs a self-contained transistor for each pixel. Current active-matrix screens convert into light only three percent of the battery power they drain; LEPs may increase this to 25 percent.

Flexible LEP screens have been likened to electronic paper. They emit about as much light as a cathode ray tube and, like a CRT, can be viewed from any angle. Unlike a CRT, they need only a low drive voltage. The prototype had a response fast enough for video.

CDT has tended to be conservative about how soon products will emerge. The first were expected to be backlights and simple numeric displays and indeed these are already in the pipeline from Philips, which has also licensed the technology.

LEP screens are easier to make than LCD screens and so should be cheaper.

Clive Akass

● *See Tim Bajarin, page 28, and Caroline Swift, Fenwatch page 34*

CDT 01223 276351; www.cdtltd.co.uk

Short stories

400Mb per inch

■ IBM has developed a 1in hard drive holding up to 400Mb and costing as little as £120, say US reports. It is unlikely to ship until the middle of next year.

● 11.5Gb Maxtor drive, see p36

100MHz Socket 7

■ Elite released what it says is the first board with a 100MHz bus supporting Socket 7 processors.

Elite 0181 847 3332

Hang it all...

■ The Plasma Screen Company is selling the 6in x 42in Fujitsu Plasmavision 4203 for £7,800 (incl VAT). It can hang on a wall and is four times brighter than its £5,880 predecessor. You can hire the 4203 for £300 per day

PSC 0700 0752 762
www.plasmascreen.co.uk

Users get the pip as Apple knocks Newton on the head

■ Apple killed off its Newton-based devices last month amid a welter of appaling puns and protests. Apple invented the term Personal Digital Assistant for the original pen-based Newton, which failed largely because its handwriting recognition was not up to the job.

The move will halt production of the MessagePad range and the ergonomically excellent eMate, the best mobile design never to be sold as a mobile. Both use the Newton operating system.

Newton software developers picketed Apple, and there were predictions that some would offer to buy out the Newton.

Tim Bajarin writes: Jobs was not a fan of Newton, but he grudgingly acknowledged that the Palm Pilot (a usable implementation of the Newton concept) was catching on. This has led some to speculate that he will bring out a Pilot-like product that will use a sub-set of the Mac OS. Another idea apparently is a CE-type device that uses the sub-set.

However, the most likely scenario is that a business version of the eMate will emerge.

Apple 0181 569 1199

"I thought he realised the gravity of the situation"

p28 ➤

Tim Bajarin reports from the US

■ News of Cambridge Display Technology's plastic flat panel display (see p27) was greeted with interest in Silicon Valley, where various companies are working on next-generation portable devices for which the Light-Emitting Polymer screen has serious ramifications.

Some were surprised that the Japanese partner was Seiko-Epson. Yet, given Seiko-Epson's LED history, the move makes sense. You can imagine Seiko will find a way to use the screen in a Dick Tracey-like watch. Of CDT's list of investors (including Acorn's Herman Hauser and the group Genesis) no name spoke louder than that of Ester Dyson's, counsellor to the likes of Bill Gates, and the most powerful women in cyberspace: when she backs a technology, Silicon Valley listens.

■ The Networked Entertainment World conference is where Hollywood and Silicon Valley flush out ways to use technology creatively. This year news emerged that the LA area is being dubbed the Digital Coast to mark its "burgeoning new-media community". LA mayor Richard Riordan said: "Digital Coast companies exemplify the region's creative and entrepreneurial strengths."

LA is the movie and TV capital of the world and the content it produces is destined to become digital in a marriage of technology and the arts. The term Digital Coast is Hollywood's way of showing that it has finally joined the digital revolution.

■ Last month, I wrote of Intel's forthcoming Covington chip for low-cost PCs. Intel has resisted creating such products but had to get one out to stay competitive. The cacheless Pentium II will allow vendors to create PCs under $700 by the year's end.

Intel CEO Andy Grove told a semiconductor conference that Intel has other plans to cut PC costs. One is a project that integrates separate hardware functions and introduces software versions of hardware-accelerated functions such as audio or DVD. Intel has the low-cost religion and plans to be a major player in this area soon.

Elbow room for ARM

UK chip designer Advanced Risc Machines got a boost last month with news that Intel is licensing its StrongARM technology.

Neither company wanted to talk about plans for the chip as the deal needs federal approval. An Intel spokeswoman said: "We can see many interesting possibilities."

Digital and ARM developed StrongARM from an ARM core. Intel got a toehold on it in January as part of a $700m deal settling a long-standing patent dispute with Digital. It also licensed Digital's Alpha chip .

ARM's years of RISC design work has paid off with the interest in digital appliances. An oblique endorsement came last month when Digital's StrongARM team leader went to Cadence, an ARM customer which has just bought ARM's Cambridge neighbour, Symbionics (see *page 36*).

ARM md Robin Saxby shrugged off the demise of the Newton (*p27*); the highest profile Strong ARM user. "Newton accounted for only a small portion of our sales," he said. ARM chips were sold in 9.8 million devices last year: an increase of 134 percent. "R&D costs so much that it is simply not worthwhile for many manufacturers to invest in it when they can buy core designs from us," said Saxby.

ARM chips were in demand because they support many OSes and offer the best mix of price, performance and low power (250mw at 200MHz, less than a 20th of the drain of a notebook). "Things are going right for us," said Saxby.

ARM 01628 427700

Siemens (01344 396 396) reckons it has its finger on the pulse of security with this sensor which packs a fingerprint digitiser onto a single chip to identify users.

Light work for road controllers

■ Big business has a responsibility to help smaller companies address year 2000 (Y2K) problems, says Don Cruickshank, chairman of the DTI-sponsored Action 2000 Millennium Bug Campaign. He has called on larger firms to urge those "below them in the supply chain" to take action. One in three small businesses have made no preparations for Y2K.

■ The DTI is sponsoring a major EU Y2K conference in May. Public and private sector representatives from each member state will be invited to share their experiences and solutions. Slow-to-act member states will also be urged to set up their own national campaigns.

CONTACTS

Millennium Bug hotline: 0845 601 2000
DTI 0171 215 5000;
www.open.gov.uk

■ The *Users' Guide to Year 2000 Conformity*, which explains the Y2K problem and offers advice, is available from The Computing Services and Software Assoc. (0171 395 6710, www.csssa.co.uk/cssa) and the Federation of Electronic Industries (0171 331 2002, www.fei.org.uk/fei)

■ Sailors, pilots and walkers are the latest to be warned about the Y2K bug. It seems that older global positioning systems could go astray after 31st December, 1999. Receivers more than three years old may become completely disorientated.

■ Speaking of possible disasters, we had a call from a man in the Highways Agency saying that it had the Y2K bug well in hand.

"Nice of you to tell us," we said. But, er, why *are* you telling us?

"Haven't you seen the papers today? They're saying traffic lights will stop working," he said.

"Will they?"

"We're making sure that they'll work. We've had a standing committee working on the problem for a year."

There was not only lights to consider, he said. "We cover motorways, too. All the sign lighting, the fog warnings the flood..."

We think we'll take a rain check on that millennial outing, after all.

p29 >

Intuit's £1-a-minute support charge Quickens user pulses

A consumer rights group has lashed out at accounts software specialist Intuit for axing its free technical support line.

Intuit has begun charging £1 a minute (ex VAT) for phone support, claiming that only one in five customers used the free service so that it was effectively subsidised by the other four.

The new charge meant Intuit could cut the price of its flagship Quicken 98 product by £10, said Markus Reighwiesner, director of European marketing. "Most people are pretty good with a PC and prefer to use online help services. Why should they pay for something they are never going to use?"

But Alan Stevens, editor of Which? Online, the web version of the Consumers' Association magazine, says it shouldn't matter how many people used the service.

"What's relevant is that people get a good service. We think it's inappropriate and quite unfair for people to charge for technical support."

Both Sage and Microsoft offer 90 days' free support for their financial products to get customers through the teething problems which account for most calls. Then they charge.

"Ninety days pretty well covers it," says Gillian Kent, group marketing manager for consumer products at Microsoft. "It shows customers that you are looking after them..."

Intuit acknowledges that its service is expensive, but says the cost may drop if it can get a fixed-rate scheme with a phone company.

"It was never our objective to make money from it," says Reighwiesner. "If we charged less than 50p, 90 percent of it would go to the telecom provider. That wouldn't even cover our overheads."

Susan Pederson

Intuit 0800 585 058;
www.intuit.com;

The web version of the Consumers' Association magazine is to pilot a micropayments scheme which could be a pointer to the way much online material is financed in the future.

Reports from *Which?* and other CA publications will be on sale individually for a few pence, initially at Barclay Square <www.barclaysquare.com>. Limited access to the reports is also available at www.which.net

Which? Online is also a service provider selling web access for £7.75 (incl VAT) a month, or £5.75 for subscribers to a printed CA magazine. These prices include unlimited access to the CA's online reports.

Which? Online 0645 830240

Mini-server takes on the copier

■ Vendors and users have long noted how many office machines duplicate functions like paper feeding, scanning and printing. The result has been a plethora of machines combining the functions of a fax, phone, copier and printer.

Fujitsu has taken a different approach with this Axis Network Scan Server, which works with various of its office scanners. The tiny box (*right*) is a computer with an LCD screen which acts as a supposedly foolproof scan management system for office networks.

A simple menu system gives you a choice of scanning to a file in a centralised management system which can be accessed by any authorised user. Or it can be sent as an email attachment offering a potentially cheaper and higher-quality distribution than fax. Or it can be scanned for viewing on any browser.

The Axis NSS costs £2,300 with Fujitsu's ten page-a-minute ScanPartner 10c colour scanner, or more with other models.

But if the box works as well as claimed, it can replace both a copier and a fax, making it far more cost effective.

Fujitsu 0181 573 4444

Short stories

56K (V90) pledge

■ The two companies behind the rival 56K technologies, now merged into a new standard called V90, say they have completed tests showing their products can interoperate.

The move by 3Com and Rockwell was designed to reassure users who are waiting for the technology to mature before buying a new modem.

■ Telefficiency claims its eSaver helps internet users cut phone bills by routing calls via the cheapest network. The device fits the modem and the phone socket. Telefficiency offers local call rates at a claimed 20 percent cheaper than BT's. Its ePlan 18, which includes the service and the device, is £18 per year.

Telefficiency 0800 980 5200

■ Sharedware offers two PCs for £320 more than the price of one. The money buys a kit consisting of a monitor, keyboard, mouse, ISA card, connection module and network cable.

Linked to an existing PC this gives an independent Windows 95 desktop and shared use of all peripherals.

Sharedware 01274 401 010
www.sharedware.com

p31 >

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Novell plays wary over new common networking standard

Novell has backed a move, pushed by arch rivals Microsoft and Cisco, for a directory architecture that will allow different networks to work together.

Novell originally backed the move for a standard called the Directory Enabled Network (DEN). Last November it was endorsed by 150 other vendors including Hewlett-Packard, Intel and IBM.

But Novell was conspicuous in withholding public support. Its own NDS services face competition from Microsoft's forthcoming Active Directory, itself intended to improve interoperability.

In a further twist, Cisco is integrating its Internet-working Operating System with Active Directory.

Dominic Storey, Novell UK's director of technologies, said Novell held back until it received assurances that the specifications will be submitted to the independent Desktop Management Task Force (DMTF) standards body so "the chance of vendors hogging them for competitive means is eliminated."

The standard will enable network devices such as routers to be managed within directories in a uniform way.

Products adhering to the standard are expected in the first half of next year.

Linda Leung *VNU Newswire*

Business aid

The Government has set up a new body to nurture a UK software industry. The Software Business Network will provide advice, training and discussion, with some funding from Microsoft and British Telecom.

The plan is for local forums to co-ordinate events and services, with experts setting up meetings with potential investors.

Image boost

UK designers were praised at the national Imaging Awards sponsored by Mitsubishi. Officials said the standard was "supremely high", with improved entries from educational establishments. Blackpool-on-Fylde College, described as "head and shoulders above the rest", carted off most of the educational honours.

Short stories

Oh Brother!

Brother has launched its new MX range of multi-media notebooks, aimed at the business user. The machines use 200MHz or 233MHz MMX processors and removable 2.0Gb hard drives

Brother 01279 416888
kyodai.brother.co.uk

Carrera has extended its PII range with the 333MHz Power Pro II with 64Mb SDRAM, 6.4Gb drive, and AGP graphics. Prices start from £1,799.

Carrera 0171 830 0586
www.carrera.co.uk

UPS is down

Home PCs can be protected from power surges and failures from as little as £100 with a new Power Start UPS range from Chloride Power Electronics.

CPE 01703 646 000
www.chloridepower.com

Rights and wrongs of BBC digital broadcasting

The BBC has set up a trial run of digital broadcasting. It is not yet open to the public but is a means of figuring out with programme makers, schedulers and rights people the issues that need to be resolved before the service is launched.

These include whether the entire back catalogue is available, whether all programming is available all the time, or whether slots are needed.

The rights side is perhaps more complicated: who gets paid how much and when for repeat screenings, and what constitutes a repeat screening.

The BBC, in partnership with Informix, has put infrastructure in place for transferring material into digital formats, editing and accessing the content, and finally presenting it to the viewer.

All digital material is currently stored in three formats, depending on how it will be viewed: MPEG2 for home use, MPEG for business and VXtreme for streaming over the internet.

The content is presented in a way that would be familiar to internet and CD users: there is a graphical interface, where you make choices by clicking on pictures and icons.

There is a variety of categories, such as drama, news, documentary and sport and some clever ways of getting to the footage you want to see.

For example, you can choose to see football matches by selecting dates and teams; or you can pick scenes or whole episodes from serials by specifying characters that may appear.

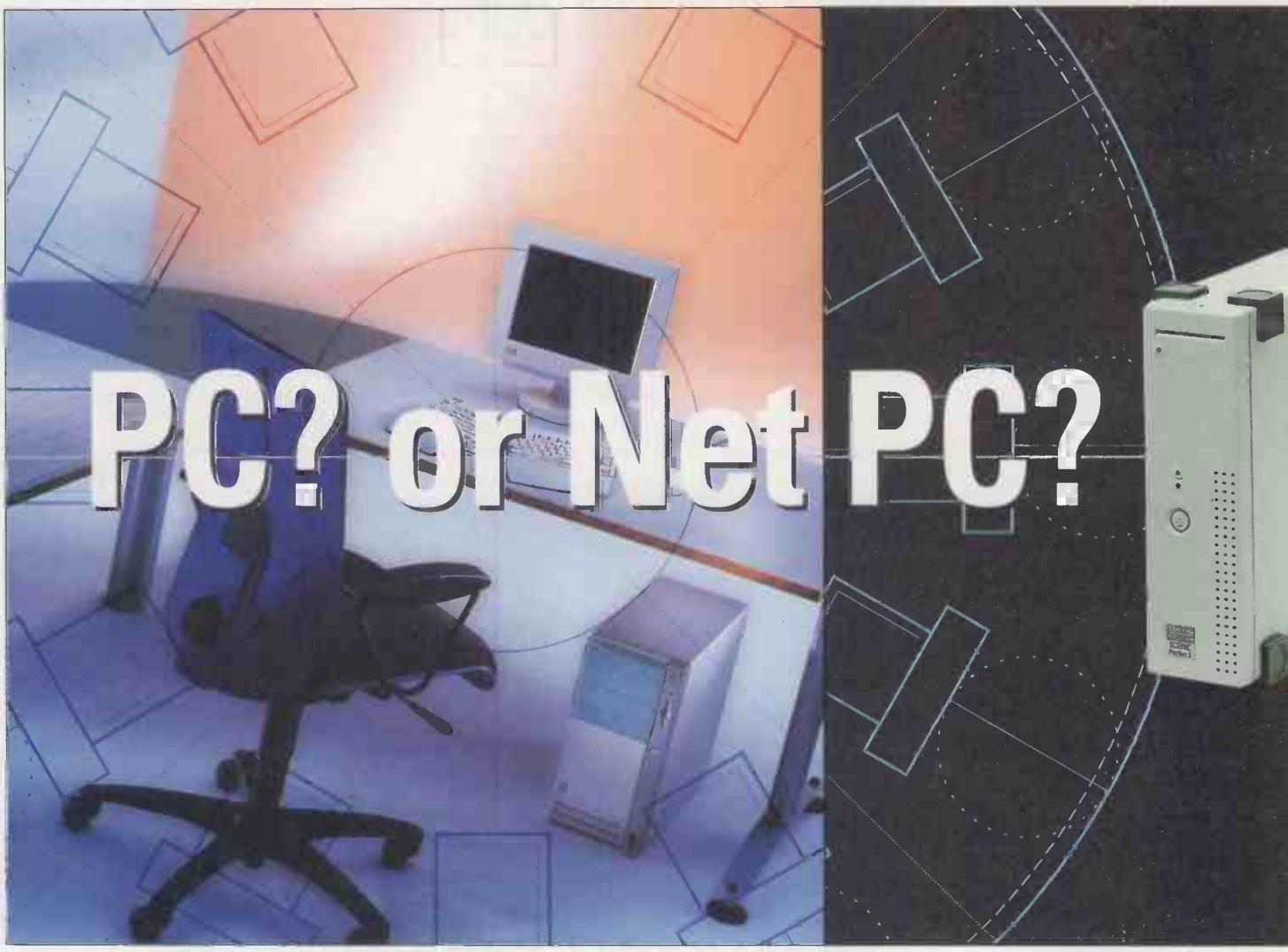
The BBC is adding "metadata" or editorial as it goes along, creating not only a comprehensive indexing system, but also creating pages about the programmes they are showing.

Content will not just be limited to TV programs, but the BBC's vast audio collections will also be available. As you might imagine, the service will have to use a broadband system but the BBC is not interested in providing this. It maintains that it is a content provider only and has always depended on hardware manufacturers to get this content into homes. Nor does it expect the new service to take viewers away from their terrestrial service, but rather it will simply make programming more accessible to consumers.

Adele Dyer

p34 ➢

SIEMENS
NIXDORF



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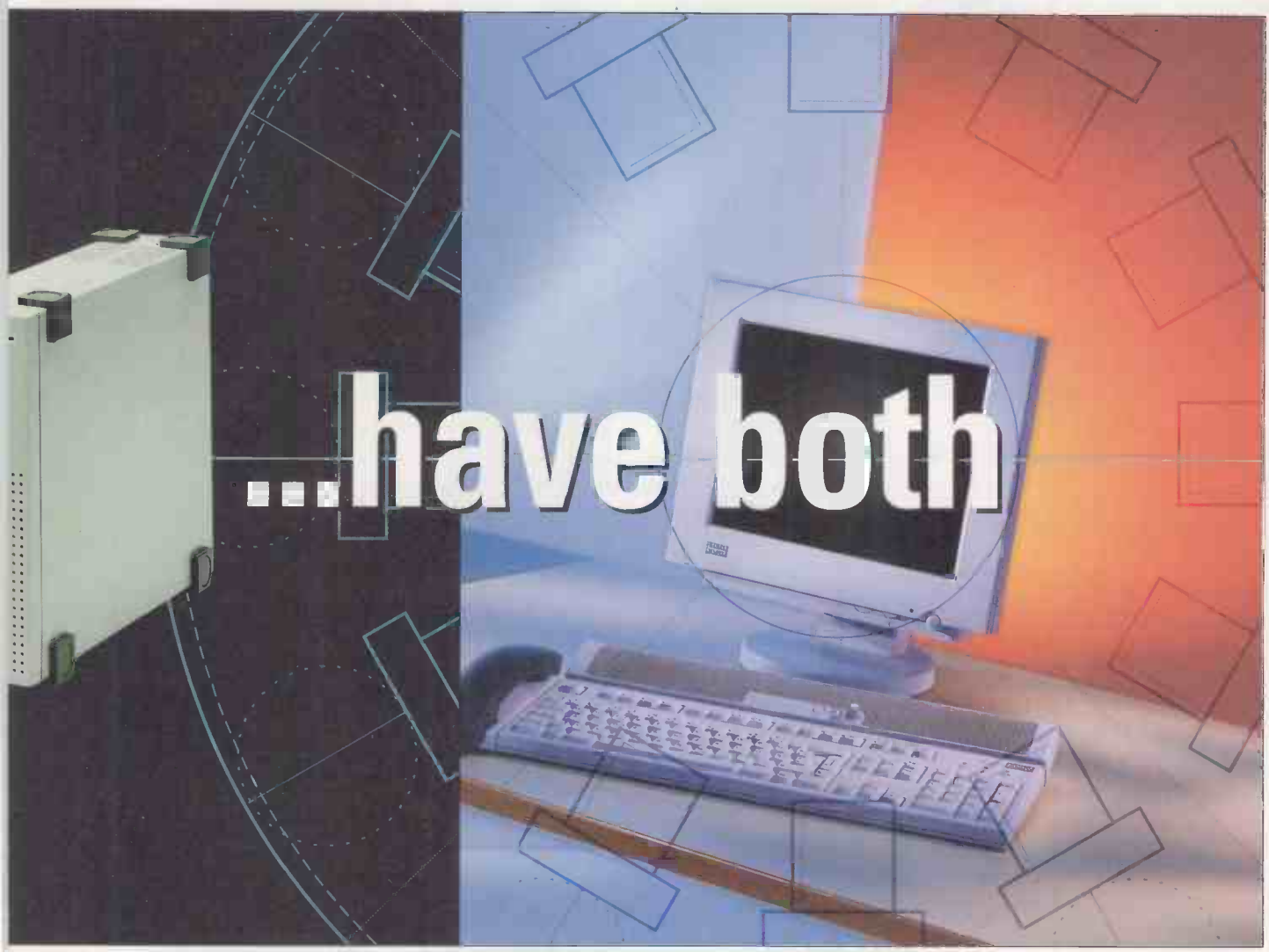

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As the leading European supplier of information technology, Siemens Nixdorf can offer your organisation both PC or Net PC configurations best suited to your company's needs. The advantages of our SCENIC Pro PCs with a Pentium® II processor which combines the benefits of the Pentium® Pro processor and Intel's™ MMX technology are well documented, but would a SCENIC Pro Net S, Net PC, be more appropriate to your business? This depends on a number of factors. In general, the Net PC can significantly improve employee productivity, particularly where that activity demands a specific range of access or repetitive IT functionality.

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Psion oils Windows for the Series 5

Psion has made the Series 5 more Windows friendly with a new version of its PC docking software. PsiWin 2.1 now includes converters and synchronisers for Office 97, Outlook and Corel WordPerfect Suite 8, and contact database synchronisers for Schedule+, Outlook and Lotus Organizer. Upgrades from earlier versions of PsiWin can be downloaded free (www.psion.com)

Psion has also released MacConnect, which links the Series 5 to work with Macs. Psion plans to provide access to Lotus Notes and Novell Groupwise from the Series 5. The first plug-in, In*Sync*, synchronises Psion apps with the Notes Calendar and Address Book. Notes database and email facilities will follow this year.

New Pilot flies with infra-red

3Com has announced the latest in its line of Palm Pilots. The new model is slightly smaller and lighter, with a more rounded styling, and for the first time has a removable flip-up lid.

It supports infra-red both for synchronising with a PC and for beaming files to another Palm III.

The HotSync link has been improved, so you can update information over intranets or the internet, or download files from a PC.

RAM has been increased to 2Mb to fit on more of the apps that are being created for the platform. It has sound for the first time and an enhanced screen giving you a choice of four fonts.

Email functionality has been extended with a Notes client in development. Old Pilots can be given the IR functionality, the increased memory, the lid and the new software.

To upgrade the hardware, you simply replace a card at the back of the Pilot. The upgrade price is expected to be under £150 (incl VAT), while the full version has a suggested street price of £299 (incl VAT).

Street prices for the professional and the personal

Pilots have been cut to an expected £229 and £169 (incl VAT) respectively.
3Com 0800 225252

Stand by for 3D TV and the robot that lets the dog out

Caroline Swift continues her reports from Silicon Fen

A band of Cambridge millionaires made the cover of *Business Week* recently. They included Roger Needham, director of Microsoft Research in Cambridge; Acorn founder Hermann Hauser; and Andy Hopper, director of the Olivetti and Oracle research lab. Not pictured was Stewart Lang, a co-founder of Micro Focus (first to put COBOL on a microchip).

He now has his sights on 3D TV with his firm Autonomy Stereoscopic Displays (formerly Auto Stereo Systems), an R&D house which licenses technology to US companies.

Lang, 49, who did a PhD in the university computer lab, has just moved his team to larger premises. They are working on a way of using a cathode-ray or LCD display to give an impression of depth by screening multiple images of a subject in very fast sequence.

A fast-switching LCD shutter dictates which image is visible to which eye and the view moves as you move your head. The image on a 2D changes 50 times a second to avoid flicker so an auto-stereo picture with, say, 16 views will need to refresh 800 times a second. Thorn has produced an LCD shutter with a switching speed below 100 microseconds.

ASD prototypes of these displays are getting larger: a 25in one is ready and a 50in is being developed. The focus is on games for now, but Lang does not rule out using advanced 3D viewing for electronic shopping. He aims to develop one version for portability and size and the other for quality: high resolution and more realism.

"The challenge is to make it into a product that appeals at a cost that appeals. All volume is related to finding an industry which will bootstrap it — it can't be introduced overnight."

Lang sees the US games market with its predilection for theme parks as one avenue.

ASD (01223 509905) is one of only a handful of players in the world working on 3D TV. Other pioneers, Cambridge Display Technology and Screen Technology, are nearby.
www.cl.cam.ac.uk/Research/Rainbow/projects/asd/brochure.html

Symbionics, a little-heralded success story, will stay in the fens after being bought by US-based Cadence Design Systems. The company develops wireless, multimedia and digital TV technology and has built a team of 150, doing work for the likes of Ericsson, Panasonic, Sony, Samsung and HP.

It has just completed an important contract for a GSM radio module for Matsushita Components. It has designed cellular phones, PC network cards, set-top boxes and PDAs.

Last year, it developed the most advanced Digital Enhanced Cordless Telecommunications (DECT)-compliant chipset and embedded software for wireless handsets and PBX systems. It has emerged as a leader in digital TV design.

Simbionics (01223 421025) is also on the group working on an open specification (Shared Wireless Access Protocol, or SWAP) to allow home PCs, phones and appliances to interoperate using wireless links.

The new standard, to be published this year, will let data and voice arriving by phone and/or digital TV be distributed in the home. It will enable devices to be controlled remotely, setting heating, security systems and turning the oven on.

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PC Direct HITS AWARDS '97 Winner 486 Portables

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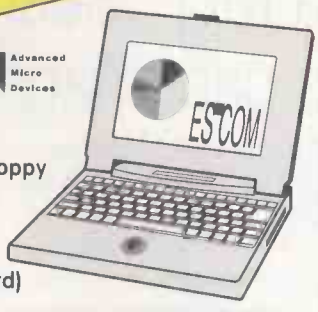
Advanced Micro Devices



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Dimensions 286 x 224 x 49mm, weight 2.6Kg.

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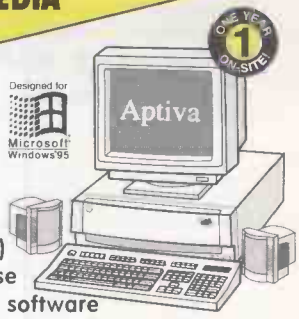
intel inside pentium

Designed for Microsoft Windows 95



- IBM Aptiva model 440
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- 8x CD, 3D sound and speakers
- 14" SVGA colour monitor (non IBM)
- IBM Windows 95 keyboard, mouse
- 1 year IBM on site warranty + CD software

Excellent build quality with plenty of scope for expansion, total system RAM can be upgraded via standard SIMMs to a maximum of 128Mb and video memory can be allocated up to 2Mb.

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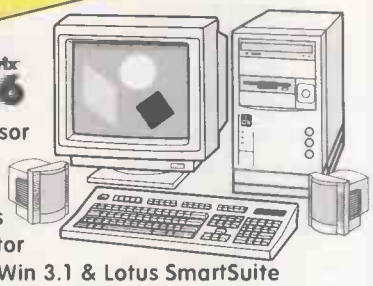
Cyrix 6x86



- Cyrix CX6x86 166MHz processor
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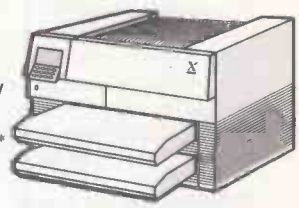

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Short stories

Maxtor speeds in with a £399 11.5Gb drive

■ Maxtor leapt from the starting gates in April with one of the largest and fastest 3.5in EIDE / UltraDMA hard drives available. The DiamondMax 2880 stores an astonishing 11.5Gb and has an average seek time of 9.0ms.

Because of the limitations of BIOS and operating systems, many PCs are unable to use hard drives with more than 8.4Gb. Maxtor's MaxBlast installation software, however, will allow most PCs to use the 11.5Gb DiamondMax drive.

Maxtor says its Diamond Max 2880 range starts at £149 (incl VAT) for 2.88Gb and rises to £399 for the 11.5Gb model. The price includes the drive, fixing kit, software and installation guide.

Maxtor Europe 01483 747356
www.maxtor.com

Sure thing from HP

■ HP's latest rewritable, the SureStore CD-Writer Plus 7200, comes with software from Adobe, Symantec, and Corel. It reads at a 6x transfer speed and writes at a 2x transfer speed. The internal 7200i lists at £325, while the external 7200e is £399.

HP 0990 474 747, www.hp.com

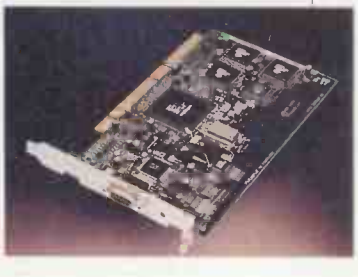
16Gb Travan tapes

■ Imation has launched a new range of minicartridges for network servers. The Travan NS8 offers 8Gb compressed storage capacity. The MLR 16/32Gb holds 16Gb uncompressed. Prices start below £30.

Fibrechannel card

■ Adaptec has launched two PCI to Fibre Channel cards, the 32-bit AHA-F940 and the 64-bit AHA-F950 (*below*). The company believes FC will link next-generation storage devices because it can deliver 100Mb/sec up to 30m via copper, or 10Km via fibre. Up to 125 devices can be daisy-chained and hot-plugged using a hub.

Adaptec www.adaptec.com



Hang on a MO...Seagate pushes hard disks past magnetic barrier

Inside an OAW drive — note the optical fibre. MO drives normally use an open beam

Storage specialist Seagate has released details of a technology which it claims breaks through the "super paramagnetic limit" of data you can pack on a hard disk.

Data densities, which have been growing by 60 percent a year, are expected to tail off between 20 and 40Gb per square inch due to factors like media granularity.

Seagate has bought a company called Quinta, which has wedded magneto-optical technology to the Winchester hard-drive to enable data densities of 250Gb/in^2 and beyond. The system uses Winchester disk sizes and spacing, and a similar flying head. A hair-thin fibre takes laser light to a micromirror-and-lens assembly which melts a tiny pit of material. This melt, not the surrounding solid, is then magnetised by a coil. The mirror is moved for fine positioning. The arrangement has advantages over a standard Winchester head. The head can be ten times further away from the disk, making it more tolerant of uneven surfaces. This means cheaper plastic substrate can be used. Data density can be higher because coding is vertical rather than horizontal. The magnetic domains are pits rather than splodges.

Quinta marketing manager Philip Montero said products will be announced late this year but the first are unlikely to have high-data densities. He admitted that what Seagate calls "Optically Assisted Winchester" drives are a form of MO drive. "We didn't call it an MO drive because MO is [seen] as not performing well."

Seagate 01628 890366

Superfloppy drive gets cheaper

■ The price of the SuperDisk, formerly known as the LS-120 superfloppy, is getting closer to that of a standard floppy.

Nexus has launched an upgrade pack including Norton Utilities and Norton Antivirus for just £84.95 (ex VAT).

The drive is bootable and can read and write both 1.44Mb and 720Kb floppies as well as its own 120Mb disks, making it a viable replacement for a standard floppy. This is especially so in new systems because, unlike with the rival Zip, you do not have to pay for a floppy drive as well.

The SuperDisk could until recently achieve full capacity only in a new PC. But new 32-bit drivers for Windows 95 means the upgrade version performs to spec.

Both the SuperDisk and the Zip are available in notebook formats. But both face competition from a 200Mb floppy-compatible drive announced last year by Sony, which has yet to ship.

Nexus 01491 413 663
www.nexusp.com;
www.superdisk.com.

Iomega has launched the 2Gb version of its Jaz drive in the UK, claiming it is 40 percent faster than the 1Gb original, with a claimed maximum sustained transfer rate of 8.7Mbps. It costs a recommended £449 for the internal version and £519 for the external. A single disk goes for £149, and a three-pack for £349.

The new drive also supports the 1Gb disks of the older Jaz, the price of which has been cut by £20 to £249 internal and £269 external. Compare these prices with those of the Syquest SparQ reviewed on page 153.

Norton Utilities for Windows 95, available for £89, now includes a disaster recovery module for Iomega's Zip.

Iomega: 0700 046 6342; www.iomega.com

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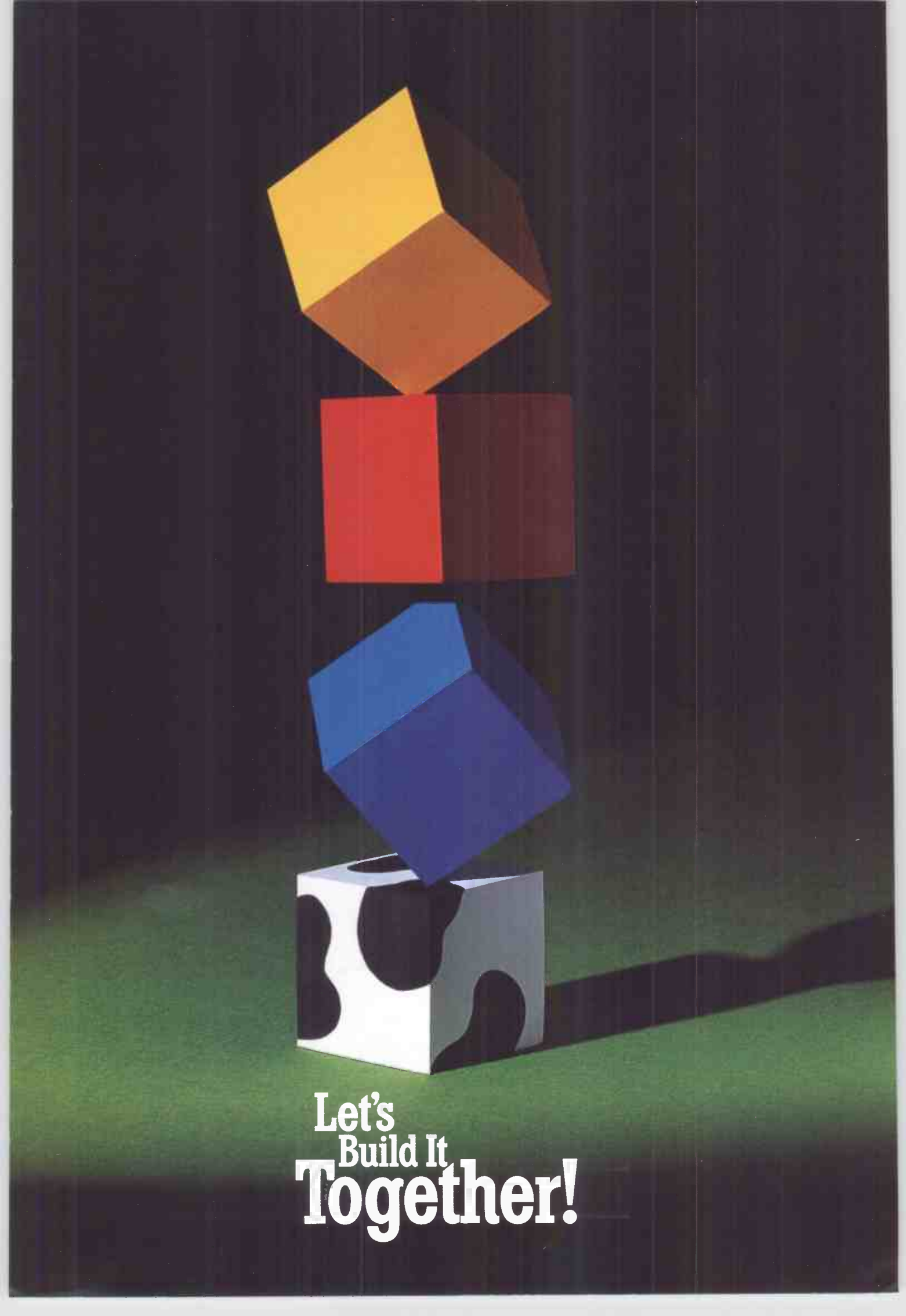
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– Natasha, Props Buyer

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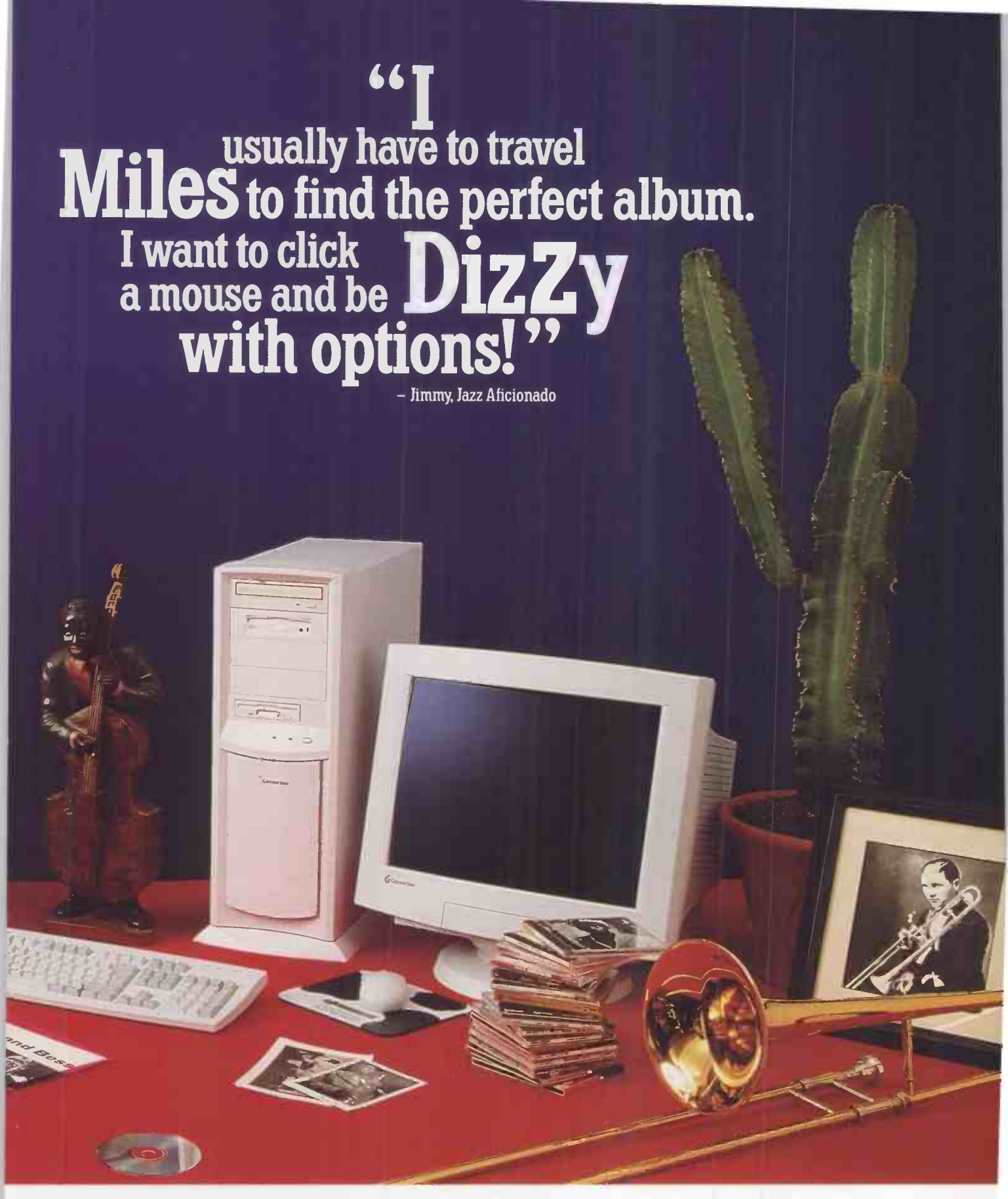
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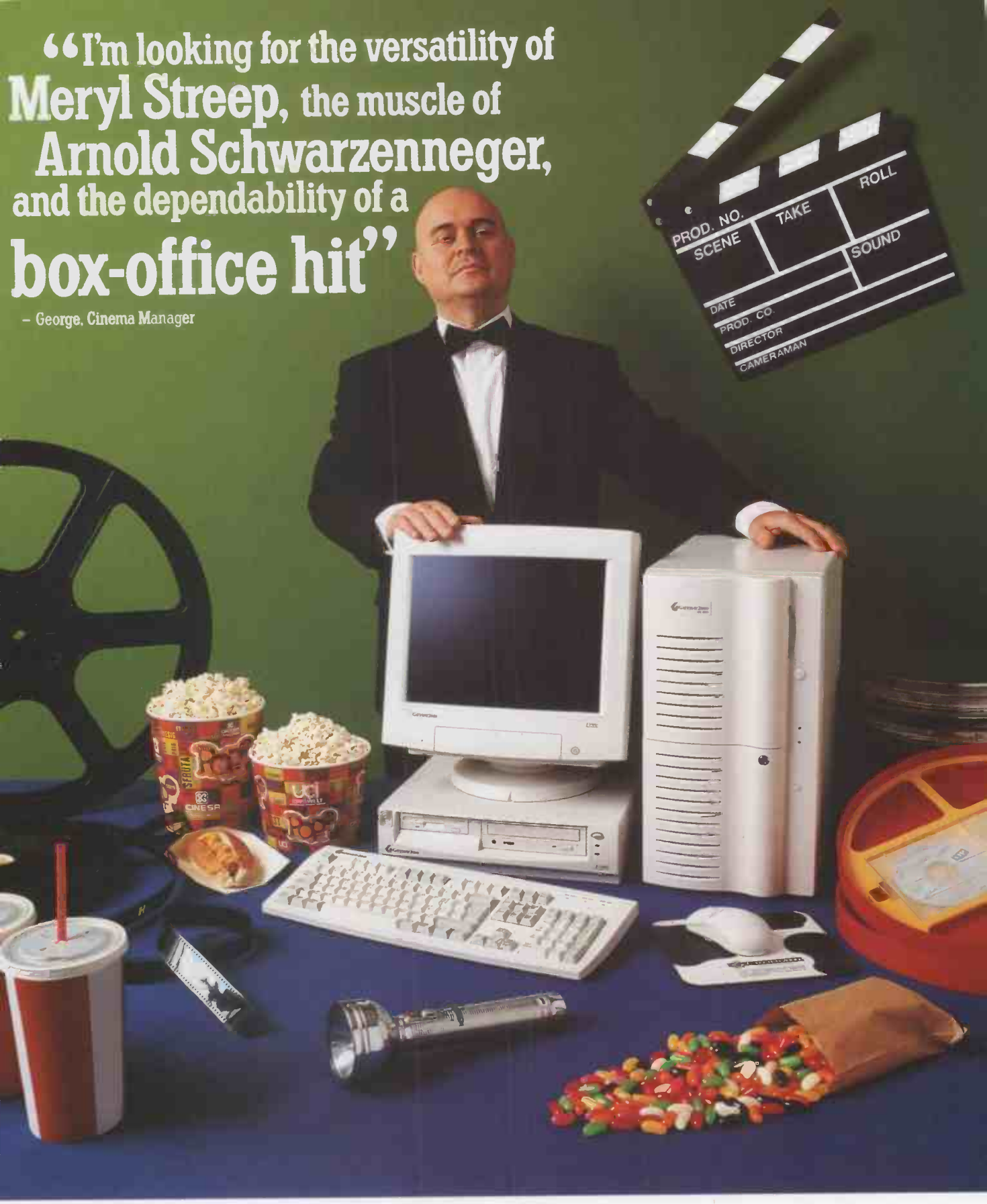

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[1] **Microsoft Home Essentials contains** MS Word 97; MS Works 4.0; MS Encarta World Atlas®; MS Money 97; MS Football

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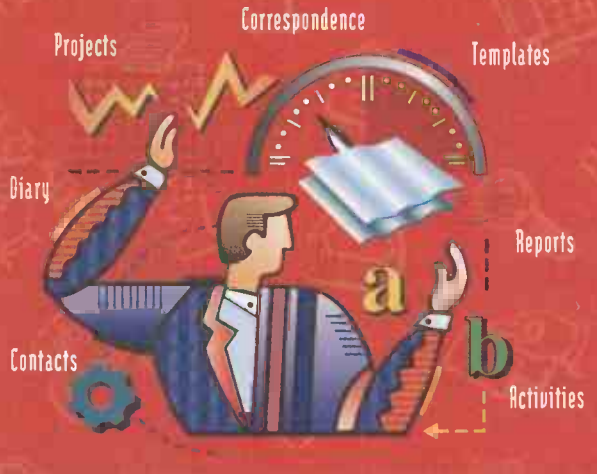

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Next-generation chip will give Java legs

Hewlett-Packard (HP) is to port Java to the Merced chip it is developing with Intel as the next-generation 64-bit processor.

The news came as Java developer Sun had a minor setback in its battle over Microsoft's implementation of the portable language.

A California judge refused to grant a temporary injunction to stop Microsoft calling its products Java "compatible".

Sun complains that Microsoft's implementation includes Windows-specific calls which destroy Java's universality. A full hearing is expected early this month.

A move to faster platforms like Merced will remove a major drawback of Java — the fact that its portable applets are slowed by the need to interpret or compile Java code.

First Merced systems are likely to be servers delivering Java applications to desktops. But John Saw, Hewlett-Packard's technical and architecture manager, believes Merced will end up on desktops.

HP is working with software vendors to ensure that applications are available when Merced (also called IA 64) ships next year.

An HP survey of 400 business and government delegates at Java seminars found that seven out of ten were interested in its ability to run the same code on widely differing machines. Eight in ten were interested in using it on the web.

HP internet product marketing manager Jolanta Polecka said she believed the next year would be make or break for Java. "Once the applications arrive and it overcomes the traditional criticisms of speed and reliability, Java will come of age."

● *Rival for Java — see p40*

Java received another boost last month when IBM's chip division announced that it is licensing Sun's "hardwired Java" — the picoJava I processor core.

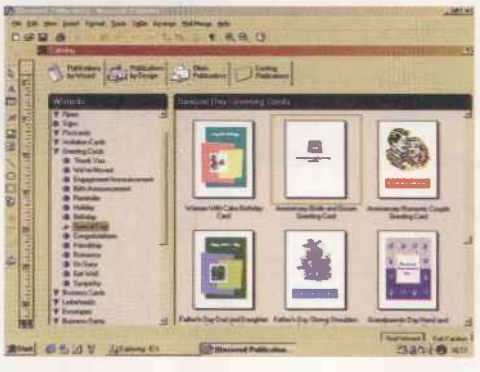
IBM Microelectronics will be able to build custom chips around the core to accelerate the processing of Java applets downloaded to appliances such as games modules, PDAs and set-top boxes.

New Microsoft Office for small firms goes a bundle on desktop publishing

■ Microsoft has sold more than 20 million copies of Office 97 in less than a year, the company claims. Version 2.0 of its small-business edition is on sale this month with a canny bundle of applications including Word Excel, AutoRoute Express 98 and Outlook 97, plus a free upgrade to Outlook 98.

The £475 bundle (inc VAT), or just £195 to users of any Microsoft office product or selected rivals, includes templates for importing data from UK accounts packages and doing tasks such as debt tracking. It also has the latest Publisher 98, launched last month for £99 (inc VAT) standalone (£50 to upgraders).

David Bennie, desktop apps marketing manager, said small firms are increasingly designing brochures and other literature themselves. Publisher 98 includes a template

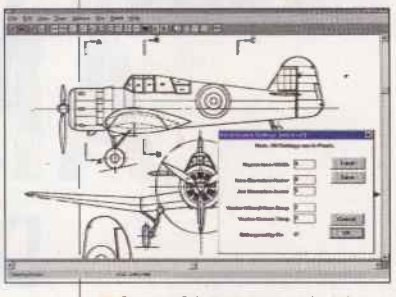


library which enables anyone to produce professional-looking documents (*above*).

Bennie said Outlook 98 has been speeded up a lot. Also, a shared calendar can be viewed (although not amended) across a network: 97 users could do this only by installing Express server.

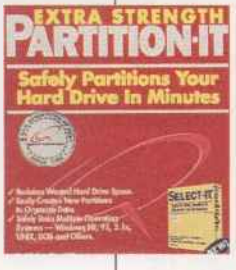
Microsoft 0345 002000

Short stories



■ Scan2CAD claims to be the first budget-priced (£69 ex VAT) utility to convert scanned images into accurate vector (DXF) files for use in CAD programs,
Softcover 0171 259 2100

Partition extra



■ The latest version of Partition-It Extra Strength, priced at £50, contains advanced boot manager technology allowing multiple operating systems to inhabit the same hard disk drive. Quarterdeck claims that the software's more efficient data storage techniques can reclaim up to 40 percent of wasted hard disk space.
Quarterdeck 00 800 7212 7212;
www.quarterdeck.com

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■ Demand for a software package that gives your home

an "environmental health check" is growing, says the Going for Green campaign.

Its CD, EcoCal, measures how "green" your lifestyle is and then gives hints on how you can help preserve resources. The first run of the £2 CD sold out in less than five months.
Going for Green 0161 272 5221
www.gfg.iclnet.co.uk

...or save your screen

■ Non-programmers are said to be able to produce spectacular multimedia screensavers using the new £30 Screen Saver Studio from Guildsoft.
Guildsoft 01752 895100

p40 ➢

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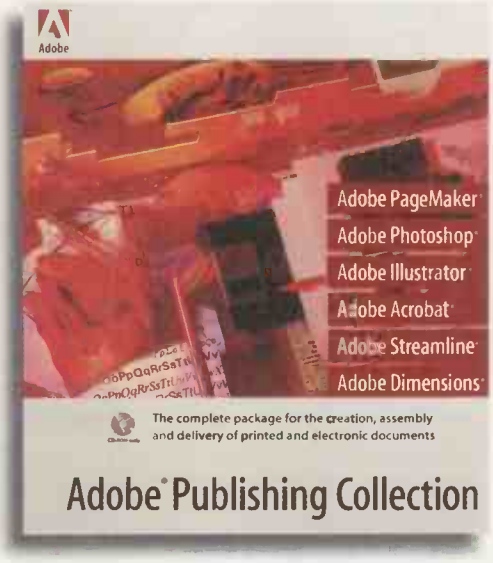

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Magic genes

The Turing-inspired Gene Machine promises tiny programs that could kill off the operating system and challenge Java as a global platform. Clive Akass reports.

Software has inspired more hare-brained wheezes than the perpetual motion machine, so startling claims made of an emerging technology called the Genetix Gene Machine might be viewed with a certain scepticism.

Developer Bernard Hodson, a British-born Canadian, says it could cut applications to a fraction of their current size, do away with the operating system, have the portability of Java and change software development largely into a matter of specifying what a program should do. Yet Hodson is no crackbrain: an adjunct professor of the University of Ottawa, he has been working in computing since its earliest days. He studied at Manchester University under Audrey Bates, who worked with IT founding father Alan Turing at Bletchley Park during the war.

Alan Turing, who committed suicide in 1954 — Hodson says previous attempts to create a Turing machine failed because they concentrated on his most famous 1936 work. In fact, Turing did some post-war work on how to implement the machine

Now the Gene Machine, from Hodson's company Genetix, has been endorsed by UK analyst Robin Bloor, although he is careful to point out that many of its promises have yet to be fulfilled. Hodson says his Gene Machine is based on the original Universal Turing Machine, described by Turing in 1936 as part of a formal proof that there is no process by which all mathematical questions are decidable. Turing had no concept of disks, working memory or application programs. He envisaged an infinite tape carrying symbols operated on by a read-write machine with a finite number of "states of mind": a symbol X read by the machine in state Y pointed to a rule (stored on tape) which dictated what the machine did next.

This abstraction was the first description of a generic computer. Today's machines use the more immediately practical model devised by John van Neumann. But Hodson, who in his early days perforce approached programming from first principles, returned on his retirement to Turing's model which he claims produces far more efficient software.

He replaced the paper-tape rules by an array of pointers to a library of operations fundamental to all classes of software. As these could be strung together to form complex operations, he called them genes. A gene consists of only a few bytes holding either calls to other genes, or Virtual Machine instructions typically translating to a few bytes of machine code. A gene can also call itself recursively. In addition, the Gene Machine needs only a tiny program of less than 2Kb which is called by an application to run a required sequence of genes: that is, the application runs the gene machine rather than the other way around.

Oddly, a growth in the number of genes does not result in a commensurate increase in library size: 400 genes occupied 24Kb, yet all 600 in the prototype occupied only 2Kb more. This is because the more of the genes there are, the more can be reused by other genes. One layer is hidden and immutable but custom genes may be added to an exposed layer.

Clearly the design of these base genes is crucial to the Gene Machine's efficiency. But Bloor, whose office is coincidentally virtually next door to Bletchley Park, says no other architecture has come close to its level of software reuse. The current Gene Machine uses an operating system but it can dispense with one if it uses drivers. The Genetix Virtual Machine, which translates VM code into local machine code, can be easily adapted for different platforms making it a rival for Java, Bloor says. He believes it can also be easily hardwired into a custom processor and can also be easily adapted to parallel processing.

Early applications are likely to be in embedded systems and the system is being assessed by the US Department of Defense and Cern particle-physics lab.

Hodson claims to have silenced critics who liken the Gene Machine to the Forth programming language. I cannot claim to have penetrated the subtleties enough to judge the technology, but Bloor, who spent months studying it concludes: "In our opinion, the Genetix Turing Machine is the most significant development in computing since the invention of the compiler "...it is still immature... and some time will elapse before it makes a visible impact on the computer industry. However, if it is allowed to mature we expect it to become dominant in the embedded processor market, to supersede Java and eventually become the primary means by which software is developed."

Genetix should not be confused with genetic algorithms, which BT's Dr Chris Winter predicted would revolutionise software over the next decade (*see Newsprint* May '97).

● Robin Bloor's report, *The Gene Machine: an analysis of a Universal Turing Machine*, costs £95 from Bloor Research, Chailenge House, Sherwood Drive, Bletchley MK3 6DP.

Bloor Research 01908 373311; www.bloor.co.uk ■

MSN discontented

MSN is getting out of the home grown content business. The company stopped producing the last of its unique programming at the end of March, saying, "We no longer need to be in the position of doing everything ourselves."

The provider will still offer "best of breed lifestyle content" but from outside partnerships such as Disney and *Private Eye*.

Cinemania Online and Music Central will also get the chop in December.

In its heyday, MSN offered 30 shows based on a TV-season model, but half of its offerings had already been cancelled last February. Oliver Roll, MSN's group marketing manager, says: "What we learnt is that consumers are not yet ready to veg-out in front of their PC. They use the internet to get information and take advantage of services."

Access to all parts of www.msn.co.uk, which will likely be rebranded as Start.com later in the year, is now free.

MSN says that it still offers added value for its members via its subscription service. "A lot of consumers still want a complete, integrated, service that includes access, email, content and community," says Rolls. "But we don't really mind where people get their net connection. It's just a commodity. We want to focus on reaching the broadest set of online users possible."

Susan Pederson

Potential for TM: nice but dim

■ NetNames is warning companies that if they don't snap up the latest top-level domain name, they may find that others have got there before them.

The global domain name registry says it has received applications for over 1,000 .tm domain names: the most ever recorded by a top-level domain in its first week of operation.

The domain name of Turkmenistan (a republic of Central Asia), .tm, is seen as an alternative to .com and will be used by companies to indicate trademark. Safeway, British Telecom and British Petroleum were among the first to register via NetName's automated online system.

NetNames says that some companies do not yet realise the potential of .tm. "We are trying to help those companies by holding back some names similar to famous trademarks..." says domain name manager Mark Henderson-Thynne.

Susan Pederson

NetNames 0800 269049; www.netnames.co.uk

● See also, p289.

Out of site, out of mind

■ A co-operative of web site developers and managers says it can help small firms to find a one-stop solution for their internet service needs. Web-Sights' company listings include design, development and marketing. It is a free scheme but members must provide links to at least two web sites they have created.

Web-Sights 01788 330054; www.web-sights.co.uk

The Tate Turners to the web

■ **The Tate Gallery is inviting visitors to take in a Turner, online. The world-famous London gallery hopes to attract new visitors by promoting itself on the web at www.tate.org.uk/. The best part of the site is the online catalogue, which will eventually list the gallery's 25,000 artworks. Gallery shop addicts will also be delighted with its mail order service.**

Internet shorts

The big web store

■ Having signed up its 100th UK vendor, Atlantic Coast is claiming to be the largest software web store in the world. The Atlantic Coast Soft Shop's "pay and download" web site offers over 12,000 applications, most of which can be downloaded after users have made a secure credit card payment.

Atlantic Coast 01297 552 222; www.soft-shop.com

■ Find out what all the fuss is about at the Millennium Commission web site. All the news is here, as well as a comprehensive map of UK millennial projects. It also tells you how to get its quarterly newsletter and to whom you should write about that big baby.

www.millennium.gov.uk

Tomorrow's skills

■ Learning HTML might be a shrewd career move according to online help specialist, Digitext, which claims that demand for people with HTML skills will far outstrip supply in 1998. Digitext also claims that 79 percent of software developers plan to implement HTML-based help by the end of this year.

Digitext 01844 214 690; www.digitext.co.uk

Risk to corporate sites

■ Almost half of all UK corporate email sites use software with known security risks, according to security specialist NTA Monitor. Most of these sites use old versions of software which allow hackers to access and change file information.

www.nta-monitor.com

Web-it-yourself PC

■ Gateway's web site has been redesigned to focus on build-to-order sales and technical support. Customers can now configure and purchase their PC online and consult technical support forums.

www.gateway2000.co.uk

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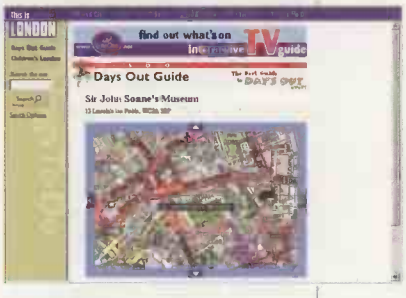
Internet shorts

Unique to Unix

■ Microsoft has released its first browser for UNIX users. IE4 for Sun Solaris 2.5 has unique features, including Explorer bars and Security Zones, and was designed specifically for the UNIX platform.
Microsoft 0345 002000;
www.microsoft.com/ie/ie40

Suzi cutey

■ The fun and fast Suzuki Wagon R+ web site lets you customise your own car with your choice of colours and extras and then take it on an interactive tour.
www.wagonr.co.uk



■ The *Evening Standard* is relying on internet mapping software from ESRI (UK) to produce hundreds of real-time maps on the comprehensive London guide at www.thisislondon.com. Although ESRI came up with GIS (Geographical Information Systems) software in the late sixties, the technology had few applications until the birth of the net. ESRI is at www.esriuk.com.

Eye on the market

■ Private investor specialist DataStream/ICV has added an interactive bulletin board, online shopping facility and UK broker services links to its Market-Eye Internet Service.
www.market-eye.co.uk

EC goes for more regulation on the net

ISPs should not be held accountable for their users' actions, according to a senior European Commission official. At Internet Service Provision '98, advisor Patrick Vittet-Phillipe said ISPs must be protected from people who break the law while using their networks: "Providing internet access is not the same as publishing," he said.

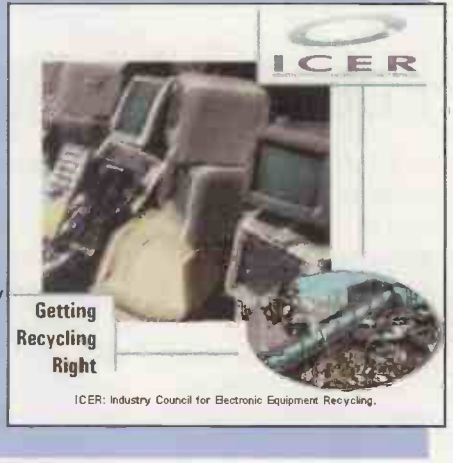
The EC has already announced plans to adopt voluntary codes of conduct for European ISPs and online publishers in an effort to restrict access to online pornography and hate sites. It will encourage ISPs to use content rating and filtering systems and will also set up hotlines where users can complain about offensive content.

The EC has also expressed its concern that Europe is being frozen out of proposals for changes to the internet. In a statement, it said that the US Government's January green paper ignored the need for international regulation and disregarded recommendations from the Geneva-based Council of Registrars. It has urged member countries to join its response and force the US to get more international views on its proposals.

Susan Pederson
(additional reporting by VNU Newswire)

A plug for recycling

■ **An office spring-clean invariably produces a huge pile of outdated, unloved, electrical equipment destined for the landfill. The Industry Council for Electronic Equipment Recycling has produced a free online guide to reducing the one million tonnes of equipment we throw away every year. It's called The ICER Directory of Electronics Recyclers and currently lists 30 UK recycling companies. It is available at www.icer.org.uk. Hard copies are available for £25 each, from ICER, 6 Bath Place, Rivington Street, London EC2A 3JE.**



ICX group is for secure Euro e-commerce

■ A user group dedicated to overcoming technical and psychological resistance to e-commerce says that the medium's progress is being hampered by the practical concerns of European organisations.

The International Commerce eXchange (ICX), the first user group for secure e-commerce in Europe, was launched in February with funding from the EC and endorsement from the DTI.

Chris Taper, ICX treasurer and ICL's principal consultant on electronic commerce and security, said, "We must work to overcome the security, technical, legal and regulatory blockages to business, enabling efficient and cost-effective secure electronic trading."

The group, which will provide advice to member organisations, will be the European authority on e-commerce issues.

If your organisation would like to become a member of ICX, you should contact John Crow on 01480 355035.
www.icx.org

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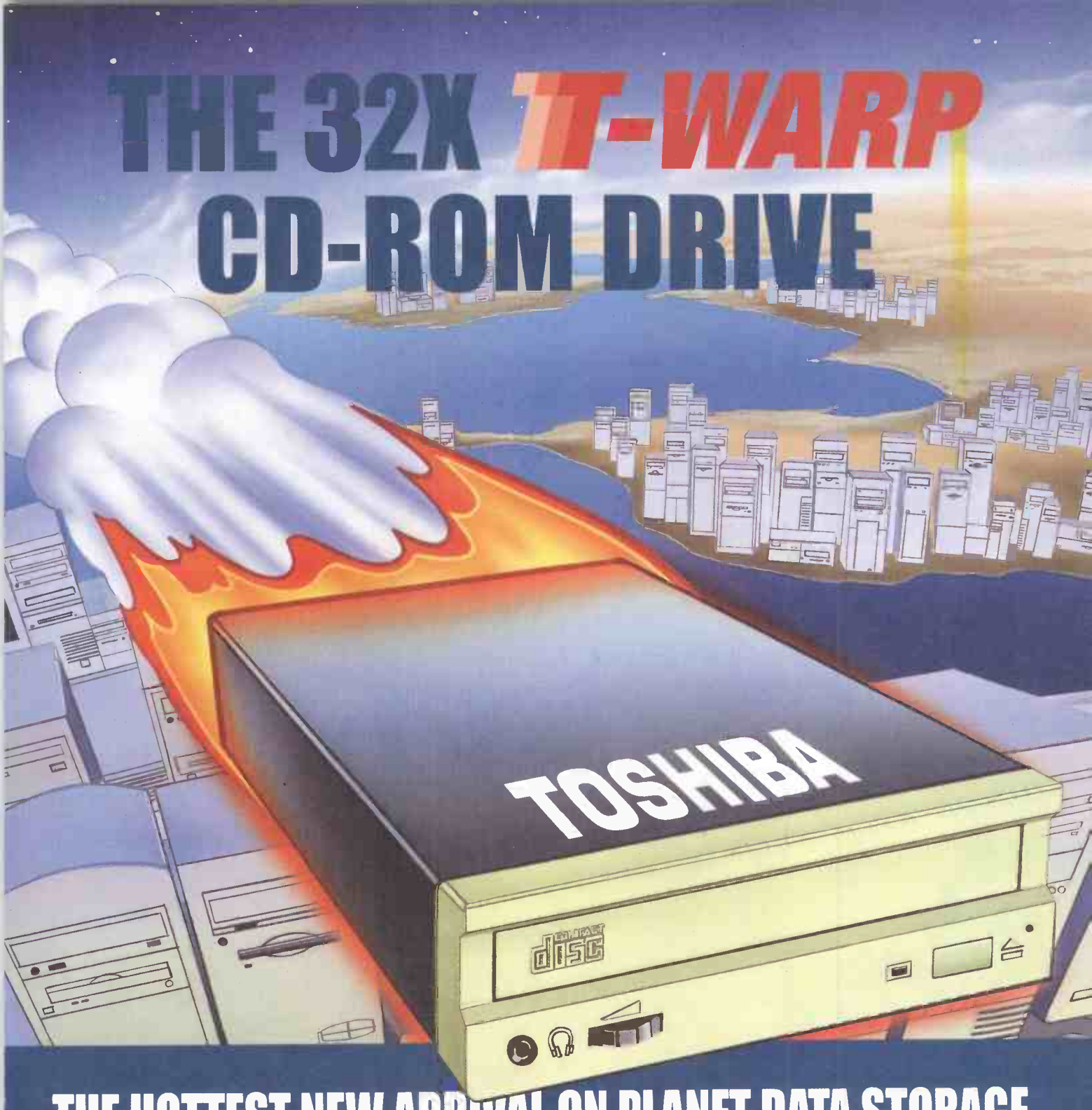
Tighter technology

■ **MIMEsweeper 3.2, a security tool for Microsoft Exchange users, has been launched by Integralis Technology. MIMEsweeper can block junk email and spot "spoofers" (senders masquerading as other users), as well as allowing organisations to block URLs to control web-surfing by their employees.**
0118 9306060; www.mimesweeper.com

THE 32X T-WARP CD-ROM DRIVE



THE HOTTEST NEW ARRIVAL ON PLANET DATA STORAGE

Prepare to be overwhelmed. Toshiba's CD-ROM mission control presents its mightiest built-in 5.25" half-height SCSI drive ever. The new XM-6201B T-Warp Drive offers numbingly fast 32x maximum rotational speed; blistering 90ms random access and 85ms random seek times; a 4,800KB/s sustained data transfer rate; plus a gargantuan 256KB buffer memory. The phenomenal T-Warp Drive supports CD-R, CD-RW and all industry standards, features tray-type electrical load-eject, and cruises the data cosmos with a cool 8.5W average power consumption and 100,000 power-on hours MTBF rating. Watch out for the awesome new XM-6201B T-Warp Drive, it's about to make a spectacular entry into the world of data storage!

In Touch with Tomorrow

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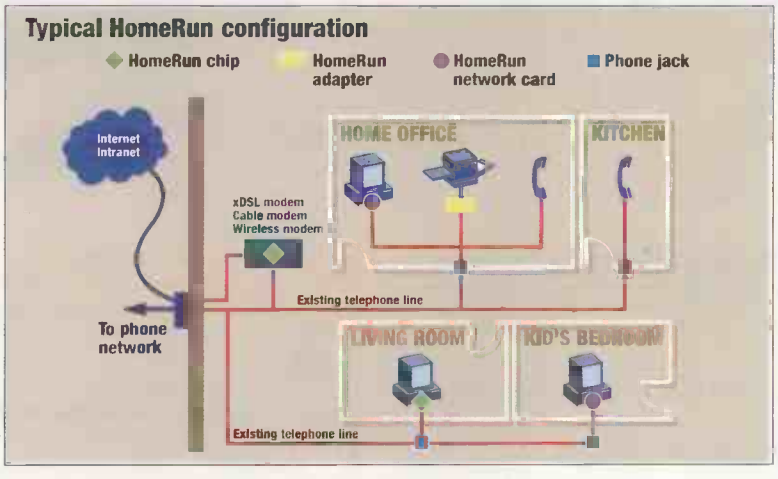
It's showtime

Tim Bajarin reports on some hot products and interesting developments to come out of Internet Showcase, including better uses for home wiring networks.

One of the more interesting US conferences is David Coursey's Internet Showcase. IT pundit Coursey, who runs a newsletter at Coursey .com, takes a sceptical view and people take notice when he sees something worth talking about.

Coursey uses Showcase to feature hot products he has reviewed during the year. Of this year's products, two struck me as important. Both were in the home-network category and had a similar goal: to allow people to use their existing wiring for either net access or appliance control.



As well as enabling net access from any room in the house, Home Run could also be used to connect digital appliances in the home

Home Run, from Tut Systems <www.tutsys.com>, delivers net access throughout the home by using existing phone wiring. Tut is betting that xDSL technology will take off soon, so Home Run modems and adapters will access the net from any room. These modems could also serve as the backbone for a home network that would connect any digital appliance over xDSL lines. DSL technology got quite a boost last week when Microsoft, Intel and Compaq decided to back a standard put forward by five of the "Baby Bell" major US telephone companies. A competing standard is being pushed by Lucent Technologies, but one version should hit the market early next year.

DSL provides speeds of up to 1.3Mbps over phone lines, even when they are being used for voice calls. A competing modem from Intelogis <www.intelogis.com> connects to any power plug to transmit an FM signal of data or instructions to other modems that might be connected to a printer, fax, or PC. It creates an inexpensive way for digital appliances to communicate.

A Silicon Valley company, called Digital Interiors, is installing high-speed ISDN or T1 network access in the homes of big spenders. But products like those from Tut Systems and Intelogis should give others high-speed access and home networking at a fraction of the cost.

Another showcased product was from EnCanto Networks <www.encanto.com>. The e.GO Merchant Server, a kind of an online shop in a box, sells for $1,295 and enables you to sell products online by following simple instructions. It has all the software needed to create and manage an online business and should be a hit at the price.

The Internet Research Assistant (IRA), from the Aeneid Corporation <www.aeneid.com>, has serious ramifications for people needing to search for information on the web. It provides a unique framework for collecting and analysing information, discovering insight and formatting conclusions. It initially targets the high technology and financial services industries. What sets it apart is that it organises and delivers data. Using tear sheets, IRA compiles topical groupings of available information (such as financial tables, product descriptions and business backgrounds) in the best example of narrow-cast searching I have seen. At the time of writing, the new search service was due to go online in March and should become a hot tool for all types of business use.

An interesting twist at this year's Showcase was the lack of push technology (last year's served as an important launch-pad for Marimba) . But it has become clear that in many cases, the technology was overrated; more important, many users have found it intrusive and have asked managers to send only information critical to their jobs. The problem has been exacerbated by spamming which has clogged postboxes with unwanted ads, causing bad feeling which has spilled on to push technologies. Now a concept called "intelligent push" is emerging to give users much more control over what they receive.

Speakers at the Showcase suggested that companies use everything from animated ads and incentives to get users to request information feeds. This is already working on sites like My Yahoo! and My Excite where users can set up what is sent to them, although they still have to endure banner ads, of course.

Indeed, one of the most important conclusions drawn from the Showcase sessions was that ads will continue to finance free sites. Some subscription services will continue but the web is being viewed as just another broadcast medium where advertising plays a major role. ■

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Personal Computer World Editors Choice

"Stunning"

"Head and shoulders above the others"

PCW April 98

"MESH has trumped all other contenders with this machine - a stunning configuration. The whole package screamed class right from the start. Good Points : too many to list here. Superb value for money".

Performance	★★★★★
Value for money	★★★★★
Overall rating	★★★★★

MMX intel inside pentium II

Personal Computer World Editors Choice

"Our Editor's Choice award goes to a machine that was head and shoulders above the others. Machines with specifications like this set standards for other manufacturers and ensure that you don't need to have won the lottery to get your hands on very desirable kit. MESH won by a mile."

PCW Editor's Choice April 98.

PC PRO

"Impressive performance and stunning value shows that MESH still knows how to put together a top notch system.

Performance	★★★★★
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This is absolutely stunning value, the MESH performed extremely well in our benchmark tests. This is a very fast PC at an astonishing price."

PC Pro April 98

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NO SURCHARGE ON CREDIT CARDS

Survey puts future of ActiveX in doubt

Microsoft's ActiveX has no future as a significant web development tool, according to three-quarters of webmasters.

A poll conducted by US online service C-Net found that 72 percent of respondents (including net end-users, web developers, webmasters and other specialists) believe that ActiveX has "no future as a web development tool".

The problems with ActiveX appear to be poor security, slowness and lack of openness, according to the survey. Many respondents believe that ActiveX was doomed by its dependence on Windows, which limits functionality for developers as well as cross-platform support.

Microsoft has since stated that "ActiveX has a role in our overall strategy for web development", but it is noticeable that all of its recent distributed computing announcements have centred on components and the Common Object Model (Com) rather than ActiveX.

Caroline Gabriel, VNU Newswire

New millenium means free BT email for all

■ British Telecom is giving everyone in the UK a free web-based email address to mark the new millennium.

Like Hotmail, users will be able to access their Mill-e-mail account from any web-accessible computer in the world. BT says the service will be paid for with "carefully controlled sponsorship and advertising". Rupert Gavin, md of BT's consumer division, said, "We believe that by 2000, this new service will make sending and receiving electronic mail [as much] a part of everyday life as posting a letter." Mill-e-mail, now being piloted, will be fully available later in the year.

www.bt.com

UK Top Ten web sites

Private Eye heads up the latest list of top new sites from Yell [redacted]. There's been no further word on the impact of the organ's "allegedly lucrative" sponsorship deal with MSN but animation and sound has made a mysteriously sudden appearance. It still looks better with Netscape, though.

1. Private Eye	http://privateeye.uk.msn.com
2. Maxim	www.maxim-magazine.co.uk
3. Dr.Martens	www.drmartens.com
4. The Site	www.thesite.org.uk
5. Vexed Generation Clothing	www.vexed.co.uk
6. The Tate Gallery	www.tate.org.uk
7. New Deal	www.newdeal.gov.uk
8. Dynamik Music	www.dynamik-music.com
9. Blue Note Records	www.bluenote.com
10. Double Decker	www.doubledecker.com/flash.htm

Internet shorts

■ Get in on the "cool Britannia" vibe and spend May's embarrassment of bank holiday riches in your own back yard. The British Tourist Authority has relaunched its web site, to public acclaim and industry accolades. In fact it's so comprehensive it does practically everything but drive you there itself.
www.visitbritain.com

Girls on top

■ Young men don't dominate the net, according to the Women's National Commission. It says that 40 percent of web users are women, and their average age is 35.
www.thewnc.org.uk

Better safe than sorry

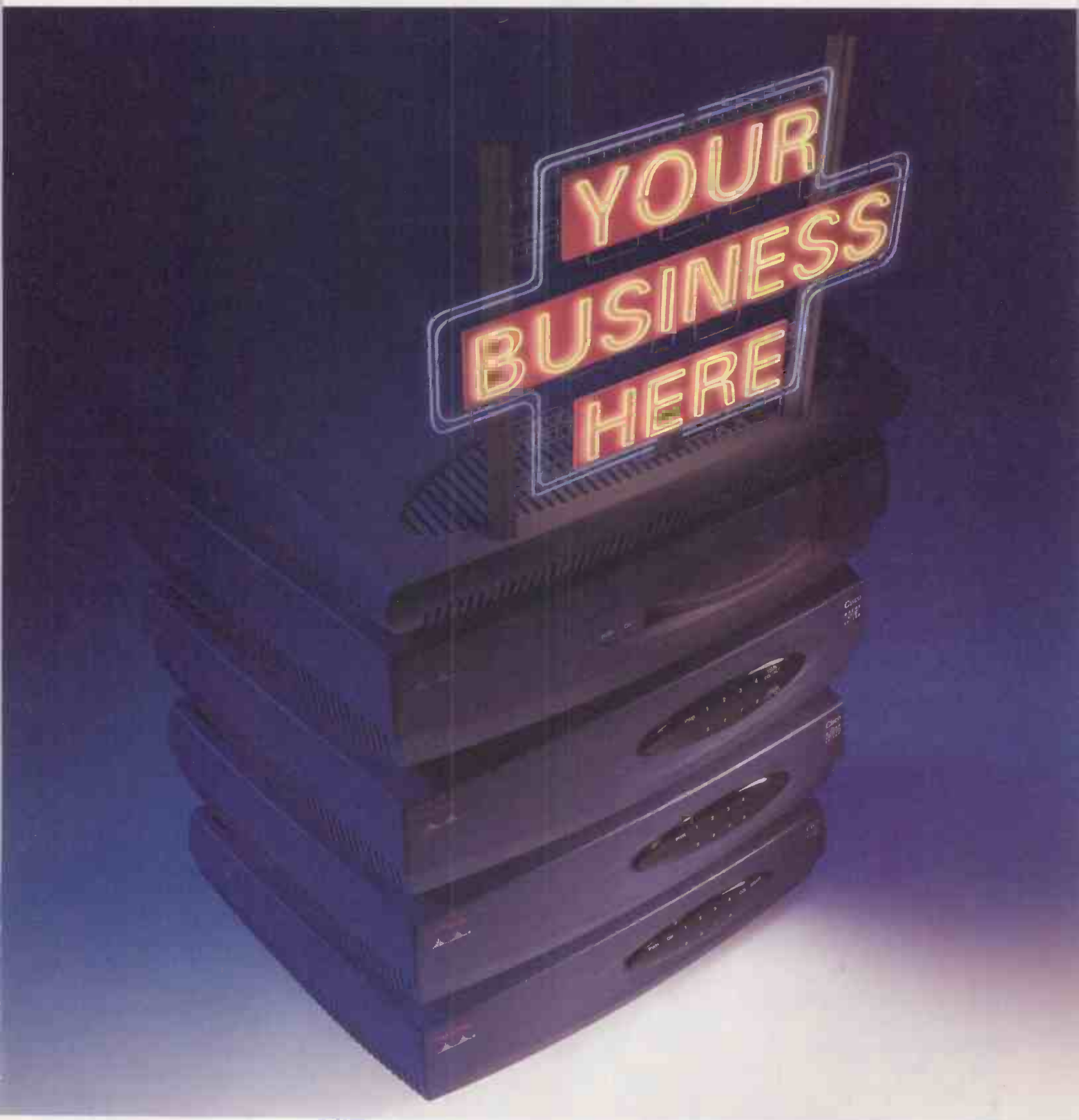
■ Adept Scientific says that the millennium bug will have little impact on its scientific and technical customers, but has nevertheless added a year 2000 area to its web page.
www.adeptscience.co.uk/as/year2000

Small shops on web

■ Small-to-medium enterprises can move their business onto the web for as little as £199 (ex VAT) with The Floyd Consultancy's *Shop@ssistant*. The off-the-shelf package gives users a "blank" site and extensive tutorial. A variety of cash and credit/debit card options are provided via a secure server connection to specialist merchant services provider NetBanx for a further £300.

The Floyd Consultancy
01256 880770;
www.floyd.co.uk

p50 ➢



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Don't rain on my domain

The case of the man who fought BP on a bogus web site, and won, highlights the importance of protecting company domain names. Ken Young comments.

British Petroleum (BP) has agreed to compensate a man form Exeter who claims his car was so damaged in a BP carwash that it was unroadworthy. Nothing unusual there perhaps, except that the man fought a nine-month long battle for compensation. BP finally paid up when he championed his cause on a bogus web site which used the address www.britishpetroleum.co.uk.

It's the real thing — BP's official web site

Many legal advisors believe that BP had a fair case against the man for slander and copyright infringement. The fact that BP settled out of court suggests that using the net to get your complaint across is, for the moment at least, an effective means of direct action.

The man in question, John Budd, a freelance computer engineer, said it was his only recourse after alleged damage to his car occurred, costing about £450. "It happened last summer. The manager of the service station didn't want to know and neither did BP. They referred it to the company's insurers Commercial Union which decided that BP was not liable."

Instead of leaving it at that, in September last year Budd informed BP that he was applying for the aforementioned domain name. He received no response and proceeded to create his protest web site by copying the home page from www.bp.com and providing his own links to pages detailing his view of events and even including numerous photographs of his damaged car.

BP was far from happy when the story of the bogus web site appeared with a photograph on the front page of *The Times* newspaper. It contacted the domain name authority Nominet which, in turn, contacted Budd's service provider, which put the domain name on hold, effectively banning the site. Budd was warned by BP that legal action against him may follow but instead BP offered Budd £1,000. Budd held out for more compensation, refusing to accept the offer.

After two weeks Budd heard that he was to get the use of the domain name back because BP had decided not to take legal action.

While he was planning for a relaunch which, he said, "would include lots of details about how BP is damaging the environment", BP made a renewed offer, closer to his original claim. Budd accepted, claiming victory in his online war against the company. "The internet gives us all a chance to speak up against such injustices. This is a great new opportunity," he said.

Companies like BP face tough choices in the face of such online protests. The only protection they can make in advance is to register all possible uses of their company name in a web address. Domain companies charge about £10,000 to do this but to register permutations of the name means that figure is multiplied by a factor of three or four. A careful company could spend £40,000 just to stop bogus sites from being created — cheaper than possible legal costs but unlikely to stop the more ingenious cyber protestor who will always be able to come up with a similar-sounding domain name to that of the company.

Although a recent legal case went in favour of companies who wanted to stop two individuals from collecting domain names similar to their own, the case has now gone to appeal. It is likely to be some time before companies can effectively protect themselves from such action.

■ *Ken Young edits an online newsletter at* www.newsnow.co.uk

Can small ISPs resist the charm of Microsoft?

Small Internet Service Providers will struggle to survive this year unless they diversify, according to research carried out by Microsoft. It found that of 2,000 companies which claim to sell access and site hosting, only 300 are the original source of such services.

Microsoft claimed that many electronic commerce services on offer were half-baked. "Nearly half our sample claimed to offer electronic commerce but we often found that they did not have the products to do so," said Andrew Pickup, Marketing Manager of Microsoft's Internet Customer Unit.

Not surprisingly, Microsoft believes it has the answer and is inviting small ISPs to join its support programme called the Internet Service Network.

Netscape agrees with the findings but not with the cure: "Small ISPs will struggle as the larger ISPs offer more 'value-add' but Microsoft products are not the answer; they are just not scaleable," said Dushan Rinic, Netscape's product marketing expert.

The wreckers roll out

Wreckin' Crew is the latest new game from Telstar. Due to be launched at the beginning of May, this game is a chaotic multi-player race through the streets of New York and Sydney.

It has comical weaponry, including chickens and pigs to throw at each other, a "vicious" rottweiller snapping from a car window, and "acid flask" attacks. Watch out for more details in next month's edition of *Screenplay*.

New mission

A new Hexen II Mission pack entitled Portal of Praevus is soon to be released. This latest add-on returns players to Blackmarsh to investigate the endless winter that has befallen the world. Gaming starts from inside Eidolon's Castle and players have to bludgeon their way through 15 new levels brimming with malicious monsters. Visit www.activision.com.

BMG Interactive

Amongst BMG Interactive games, due out soon, isTanktics. This is a 3D polygon landscape strategy game with quirky humour where the player has to construct tanks and use them to defend, attack and capture other players' flags.

Then there is Monkey Hero, a Japanese-type cartoon game where the player has to crack puzzles and defeat powerful enemies.

In Special Ops, the player becomes a member of the US Special Forces and must complete missions such as hostage rescues and counter-terrorist attacks.

State of Play

Games news by Etelka Clark

Kids online

Mega Mirror, the kids' games section from Saturday's *Daily Mirror*, is now online. Readers can post their own reviews on the net, take part in the Swap Shop and gain access to lists of tips and cheats for all the biggest computer games. Go to www.mirror.co.uk.

Flight sim fun

Amongst the recent launches of flight-simulation games, Nova Logic's F-22 Raptor is different; you don't have to go out and buy it. You can play a beta version on the net and engage in free combat with up to 100 players. Visit www.novalogic.com.

■ *Don't forget to take a look at* Screenplay *this month (p372). Our reviews include Douglas Adams' new game, Starship Titanic; Nightmare Creatures; TOCA Touring Championship; and Monty Python's Meaning Of Life.*

Telstar's new game, Wreckin' Crew, is due for release in May

Top ten PC Games		Publisher
1	Grand Theft Auto	BMG
2	FIFA: Road to the World Cup '98	EA
3	Championship Manager 2 97/98	Eidos
4	Tomb Raider 2	Eidos
5	Quake 2	GT Interactive
6	Virtual Springfield	EA
7	TOCA Touring Car Championship	Codemasters
8	Age Of Empires	Microsoft
9	Carmageddon	Scl
10	Duke Nukem: Kixx	Eidos

Top 10 Windows software

			Last month
1	MS Win95 U/G + IE 4	Microsoft	1
2	MS Office 97 C/V U/G MLP	Microsoft	-
3	Corporate only - MLP U/G	Edge	-
4	MS Office Pro 97 + Books U/G	Microsoft	3
5	MS Encarta Deluxe 98 CD	Microsoft	4
6	Paintshop Pro v4.14 95 CD Digwork	Digwork	9
7	Nuts + Bolts (3.1 + 95) Xatlantic	XAtantic	5
8	MS OfficePro 97 C/V MLP	Microsoft	-
9	MS Office 97 Stand V/comp	Microsoft	6
10	MS Frontpage 98 FP CD	Microsoft	2

Top 10 DOS software

			Last month
1	System Commander v3.0	POW	3
2	DOS 2 Win95 U/G with Internet	Microsoft	2
3	MS WFWG 3.11 Base	Microsoft	-
4	MS DOS v6.22 U/G	Microsoft	4
5	Corel WP 6.2 U/G	Corel	5
6	Procom for DOS	Datastorm	-
7	MS Mail PC Remote 3.2	Microsoft	-
8	Novell Personal Netware	Novell	-
9	Turbo Pascal v 7.0	Borland	6
10	Turbo C++ v3.0	Borland	9

Top 10 CD-ROMs

			Last month
1	Babylon 5: Ultimate Reference Guide	Cendant	1
2	Encyclopedia Britannica	Acclaim	2
3	Encarta 98 Deluxe	Microsoft	6
4	Music File 98	File Productions	4
5	Star Trek Encyclopedia	Zablac	7
6	Mavis Beacon Teaches Typing	Mindscape	8
7	Uninstaller 4.5	Cybermedia	-
8	Encarta 98 Standard	Microsoft	10
9	James Bond: Ultimate Dossier	Eidos	-
10	Autoroute Express Europe 98	Microsoft	-

Top 10 Peripherals

			Last month
1	Umax Astra 610p	Umax	1
2	USR Sportster Flash Ext	USR	2
3	HP ScanJet 5100C	Frontline	-
4	Umax Astra 610s	Umax	4
5	Umax Astra 1200S	Umax	-
6	USR Sportster Message +Ex	USR	-
7	MS Sidewinder Precision Pro	Microsoft	9
8	AWE64 Discovery 24x KIT	Creative	3
9	Evergreen 486/586 proc U/G	Evergreen	8
10	AWE 64 Gold	Creative	-

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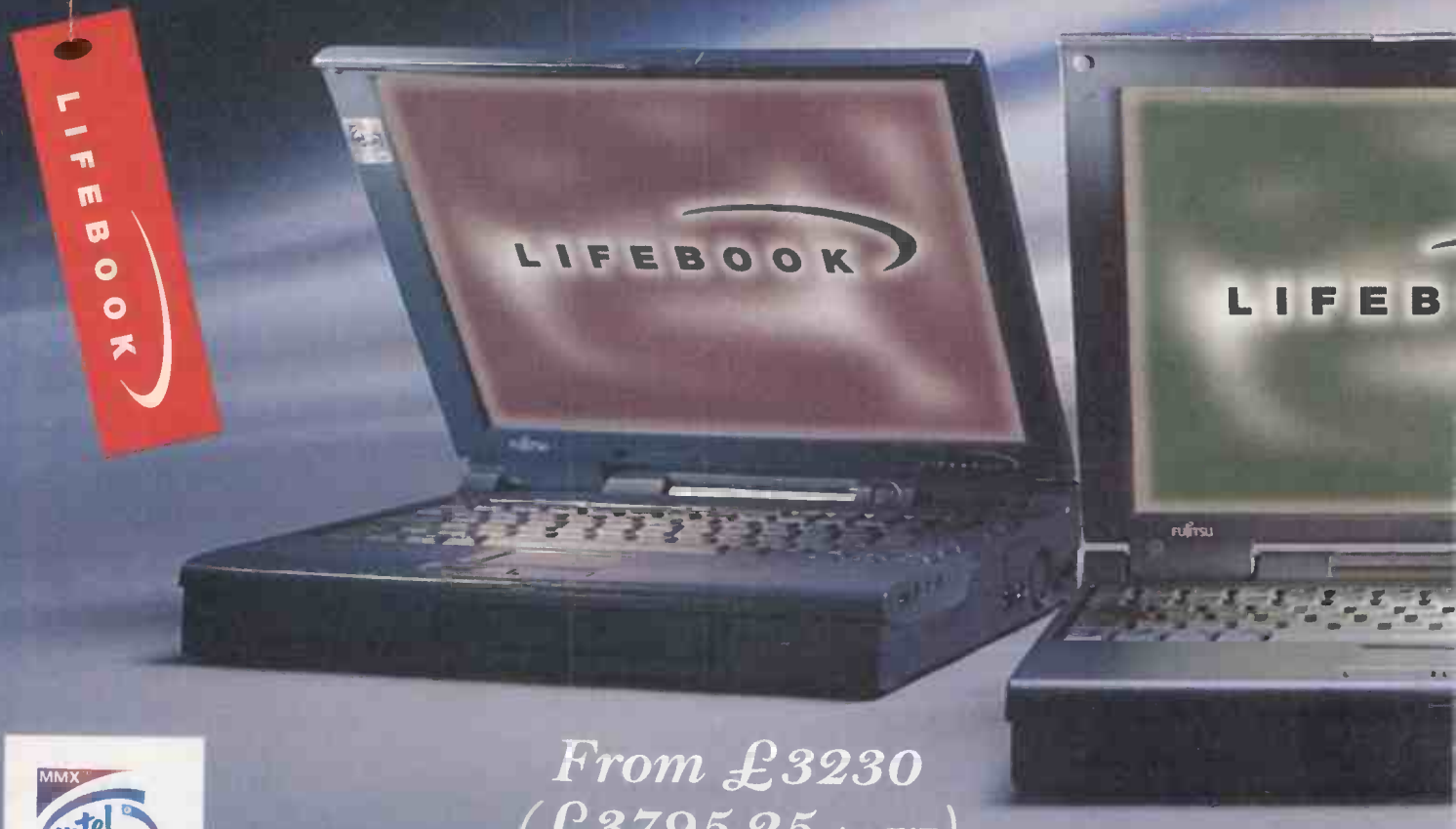

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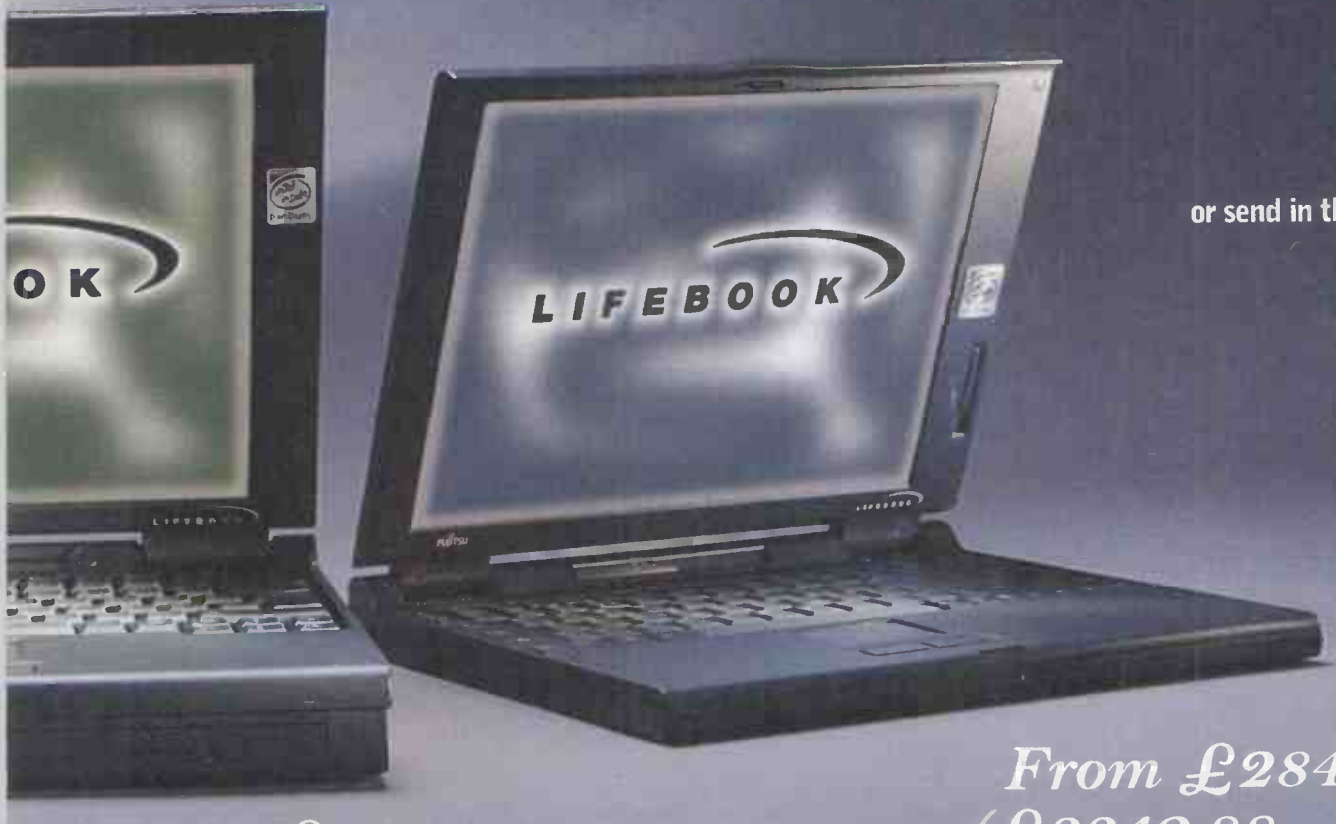

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PC Card slots	2 type II / 1 type III
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Display	12.1" XGA, TFT
Video memory	2Mb
Hard drive	3.2 Gb
Disk drive	3.5 " in LAN enhancement unit
CD-ROM drive	20X in LAN enhancement unit
Audio	16-bit stereo sound, speaker & microphone. Stereo speakers in LAN enhancement unit
Video	MPEG-1, zoomed video, 3D graphics
Infrared port	IrDA compatible, 4 Mbit/s1
PC Card slots	2 type II / 1 type III
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Sounding Off

Laptop man and mobile phone phreaks need their own eateries and train carriages. Michael Hewitt puts the case for technology-free public places.

Michael Hewitt

Diners at the plush Ivy restaurant, in West Street, London WC1, have one thing in common with those at a chimpanzees' tea party: most of them are there not so much to eat, as to be *seen* to eat.

Competition for the best, most visible tables is intense. Your worth as a human being is determined by how closely they seat you to the murals, to the right of the main entrance. Lesser beings are placed progressively further away until the lowliest end up in the Epicurean equivalent of the Seventh Circle of Hell, in the bar area at the back. But this is not necessarily eternal damnation. I'm told that with time, good behaviour and a better taste in ties, you can work your way out. So last week I was shocked to see a man recklessly condemn himself forever to the cheap seats.

He sat down, took out a laptop and, with no provocation whatsoever, started using it. I think my first reaction — one no doubt shared by other diners, too — was that I had somehow been violated. The Ivy is supposed to be an oasis of sophistication, an escape from the realities of workaday life. When you're eating chips (or *pommes allumettes*, as they like to call them there) that cost around 10p each, you don't want to be reminded that some sort of hard labour is going to be involved to pay for them.

But this guy was doing just that. What I should have done, of course, was simply order a waiter to go over and spill something on him. Too late, though. After a short while sitting there, staring, I began to suffer badly from the effects of passive word processing; my fingers twitching in time to his. Very soon, I was almost overcome by an urge to ftp something very large. If the shock of the arrival of my equally large bill hadn't taken my mind off it, I might well have gone into spasm.

I believe there's a case these days for designating certain places as technology-free zones, in much the same way as, say, mosques are designated Hush Puppy-free. If only because the point of modern technology — be it a mobile phone, a laptop computer, or one of those digital watches that beeps on the hour — seems to be to encroach on what used to be your "quality" time. Leastways, that's the case for those of us in the so-called white-collar professions. The blue-collar crowd wouldn't put up with it. Go down to a working man's pub, for instance, and you won't see a builder bringing his concrete mixer in, or a road-digger attempting pneumatic drilling while he waits for his pie and chips to arrive.

Great Western Railways made a step in this direction when it announced it is designating at least one carriage of its trains as a Mobile Phone Free Zone. Even if you take one in and attempt a furtive conversation, you won't be able to because the windows are lined with special shielding designed to block the best efforts of Messrs Cellnet and Vodaphone. The most you'll manage will be a loud crackle and the disapproval of fellow passengers.

Perhaps, though, this is approaching things from the wrong direction. If you are of my vintage you might recall that trains had a "Smoking Carriage" appended. It was so-called because it did and, once in, you could. There weren't any No Smoking carriages *per se*. It was accepted that, if you wanted a cigarette or a toke, you'd choose the carriage equipped for this sort of thing. It featured regularly-emptied ashtrays, matches and a rudimentary smoke extraction system. Maybe a similar approach should be taken, not just towards mobile phones, but technology of all descriptions.

When I'm on a train I like to read a book, sip a whisky and watch the world go by. Even if I did want to work, experience has taught me that I could not do so efficiently. Modern trains are not equipped to properly cope with laptops or mobile phones. The signal on the phones keeps cutting out (and, I'm told, can give you a medium-rare head with over-use), and the tables are neither big enough nor sufficiently vibration-free to allow me to type comfortably. But a Technology Carriage would have smooth suspension, power points for the laptops and a clean digital phone line, enabling both voice and internet communication. It would be a mobile office, where you could work yourself to a heart attack, and beyond.

Extend this idea to the West End of London. Currently, places like Rules or The Gay Hussar make useless offices. You keep getting sun-dried tomato or Bresaola in your laptop keyboard. But have, for instance, L'Escargot open up an internet café or Marco Pierre White take over the Cyberia franchise, so anyone who wants to pay upwards of £15 for a starter and show off his new laptop or beeper can do so, neither embarrassing himself nor irritating anyone else. There's obviously a pent-up demand for this sort of thing and, therefore, a fortune to be made. If I were not broke from that last session at The Ivy, I might well invest some money in this idea myself.

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Straight Talking

Why do installations try to take over your whole PC? Microsoft's IE is a prime culprit, and is also guilty of the current obsession with updating. Barry Fox reports.

Barry Fox

Microsoft gives Internet Explorer CDs away like bags of sweets. Putting the disc in a PC starts an automatic process with the safe choice of "standard installation". Then comes the Windows Desktop Update with "Yes" as the default option. There is no clear explanation of what this means, so most people will accept the default rather than risk defying it. From then on, installation just chugs away.

Once the process has finished, the unsuspecting PC owner finds that Internet Explorer has body-snatched the screen. It is black and dominated by coloured pictures which show the internet channels offered by the Microsoft Network. Understandably, some users panic or get angry. The explanation of how to put things back to where they were, is buried behind another command.

For anyone staring at a hijacked screen, the trick is to click on Start, then on Settings, then on Active Desktop and look for View as Web Page. The culprit is the tick against it. If you click on View as Web Page, the tick disappears. Wait a few seconds, and after some hectic hard-disk activity the screen should look normal again. Simple. But only when you know how.

Bill Gates sent the US Justice Department an open letter in response to the Government's complaint that IE4 is integrated with Windows 95. Having reassured them that "my goal has always been to create software that improves the quality of people's lives...[blah, blah]", Gates claims: "Removing the internet functions from Windows is not simple, as some might think. These features are integrated into the operating system and are used by applications, and directly by users. Removing them breaks the applications." This is just what Gates told a conference in Paris when the US Government was first chasing him. "We can't help it if our stuff works better with our stuff" was his justification for the tight links between Microsoft's applications and operating systems.

These "of necessity" excuses collapse when you look at the way Microsoft unnecessarily defaults IE4 to hijack a PC. And, it seems, Lotus plays a similar game. When I recently tried to load a speech synthesis program (Lernout & Hauspie's Madison*) the installation process threw up a string of stark choices. Madison had found read-only files and wanted to overwrite them. The only options were yes, no, or cancel, with no explanation of the risks.

Remember, when you overwrite a file it is gone forever. For a file to be marked "read-only" there has to be a good reason to protect it. So instead of crossing my fingers and hitting "yes" to overwrite, I played safe and clicked "no". Madison continued to install but when I came to run the program it refused, throwing up the error message that vital DLL files were missing. Lernout and Hauspie (L&H) admitted it had not spotted the problem until after the program discs had been released. A few Windows programs, particularly from Lotus, break Microsoft's guidance rules and mark files as "read only", and this makes software hard to uninstall. But it leaves other programs unable to overwrite shared files, particularly DLLs: I had ccMail, so fell victim to the competition between Lotus and Microsoft.

Even when I let Madison overwrite the Lotus files, it would not work. The error message read "No TTS engines" and advised that I "choose to install TTS engines" (whatever they are). A month after I had sent L&H screendumps of the errors, I've not heard back. So, stuff Madison.

Stuff Seagate, Adaptec and Philips, too. Philips bundles Seagate Backup and Adaptec control software with the CD-R recorder. Put the two programs together on a PC with compressed hard drive and you get a spectacular crash. None of the companies cares enough to come up with useful guidance. I see that Hewlett-Packard (HP) has dropped Seagate Backup from the bundle which comes with its badged version of the Philips recorder. From past experience of asking HP about anything more complicated than product price, I would not even bother to question HP's CD-R policy. The modern trend is for software to put the PC online and look for updates. The first batch will usually be free, while later ones are charged. Either way, we pay for phone time.

Internet Explorer and MSN software are champion updaters. No sooner have you loaded the latest disc, than the PC is online updating it. So here's some advice: be wary of internal modems. They can dial out without your knowing it. They may also fail to hang up and drop the line after an online session. With an external modem you can keep an eye out for telltale red lights and switch off the modem if the line stays open.

I once got a BT phone bill for five hours' long-distance connection to information service Tel-Me, when average access time was a few seconds. I only got BT's charge cancelled because I could declare diligence in always checking the modem LEDs after disconnection.

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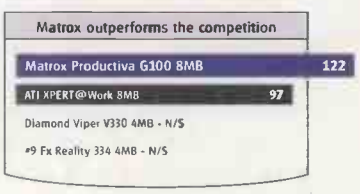

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Business Matters

The relationship between business and academia is often disastrous. If they were allied more closely, says Brian Clegg, then millions in EU cash could be saved.

Brian Clegg

Every now and then someone fairly important like the Prime Minister, or someone really important like Bill Gates, tells us what a wonderful thing it is for business and academia to work together: how the universities can benefit from exposure to the real world, and business can thrive on all that academic talent. It's a great concept, and there is a way to make it work, but often it's a disaster.

I have been involved in a number of European Union projects, intended to bring corporate business users, academics and IT companies together to do great things. Despite massive funding, pretty well all of them have faltered. I suppose the missing ingredient is pragmatism. The business people involved wanted to make compromises and get on with the application. The academics were determined to do everything their way. So, of course, the system had to run on a Unix box and be written in an obscure language. It didn't matter that all the potential users had Windows on the desktop; this was doing things properly. I have even seen proposals where the first stage was to build the computer, rather than accepting what was possible off-the-shelf.

A well-known example of this ability to put idealism in the way of practicality is the work of the computing division of Xerox. Everyone knows how the Palo Alto Research Center developed the GUI, only to have Apple and Microsoft make all the business running. I had some direct experience of this. In the mid-eighties I was running a special projects group in a large company. We had written some of the first UK Windows applications, despite the horrendous limitations of Windows 1.

We visited Xerox and were extremely impressed with its high-power graphical workstations. They looked at what we were doing and sniggered. "It's rubbish", they said. "Why don't you get rid of those toys and get real machines?" The answer was that we couldn't afford the Xerox solution and didn't want proprietary workstations. Those very clever Xerox people simply couldn't see that the world wasn't going to abandon PCs because Xerox workstations were technically better.

Let's face it, there is some truth in the "ivory towers" concept. Take a well-known academic featured in a TV documentary on psychic phenomena. He was the "voice of reason". After seeing various psychic superstars at work, he gave an argument as to why they were frauds. I paraphrase from memory, but the gist was that they must have been frauds and that if they had real psychic talents, they would have come forward for scientific study, rather than use their abilities in show business. Hmm... Let's look at that another way. You have amazing psychic abilities, so would you rather go into show business and earn millions of dollars, or become the subject of laboratory experiments and probably end up dissected by the US government? Difficult choice? Exactly which world does this person live in?

Let's take another example. I've just read *Darwin's Dangerous Idea*, by philosopher of science, Daniel Dennett. This is an excellent book on the implications of evolutionary theory. The author is painstakingly logical and step-by-step in his approach, yet half the fascination of the book is page after page of criticism of other academics (at times verging on the vitriolic) and the way that his logic goes out of the window when he hits a subject, like theology, that makes him uncomfortable.

Academics are human (easy to forget) yet, dare we say, a little removed from the real world. It is not surprising, then, that when business tries to go hand in glove with academia, it often fails. (Incidentally, "iron fist in a velvet glove" refers to two separate hands: the knight's in the armoured glove and the lady's in the velvet. It isn't at all the same as a wolf in sheep's clothing.)

It seems that the academic's need for rigour, even when criticising colleagues, is so strong that it makes pragmatism, the oil of business machinery, practically impossible. It's interesting that Dennett is a great proponent of artificial intelligence (AI) which has, with a few exceptions, proved almost useless in mainstream business computing. He is rightly excited at the prospects of AI, but does not mention that it cannot yet deliver.

All is not lost, though. The solution is not to try to turn academics into business people, or vice versa, but to set up a permeable pragmatism barrier. By all means fund academic research from business, but don't expect the academics to turn their ideas into real products.

Use the Xerox/Apple model. Give the academics plenty of cash and freedom, and in turn reap the good ideas but turn them into practical possibilities in the real world in a pragmatic, business-driven company. More of such symbiosis would benefit both sides and could prevent millions in EU cash from going down the drain.

BrianClegg@msn.com

Tim Nott

From the desktop

For a man who no longer sees the funny side of computer jokes, the spoof "Microshaft Winblows 98" brought forth a chuckle or two. Plus, pop stars, princes and Monimals.

Computer jokes are all very well, with the exception that few, if any, are ever funny to the vast majority of the human race. My ten most dread turn-offs are:

1. Anything comparing operating systems with cars, aeroplanes or other forms of transport.
2. Anything containing the words "light bulb".
3. Anything involving assigning numbers to letters and then adding them up, or manipulating ASCII codes to produce so-called cabalistic numbers.
4. Anything that starts "To be sung to the tune of Bohemian Rhapsody...".
5. Anything that is in spoof programming code.
6. Anything in a "ten most..." format, such as this list.
7. Anything (in season or, for that matter, out) that starts "'Twas the night before Christmas...".
8. Anything whose punchline depends on Ada and Linda sharing the surname, Lovelace.
9. Anything involving key industry figures being admitted, or not, into heaven.
10. Anything with the name "Microsoft" in the first line.

So, when a copy of Microshaft Winblows 98 (A Parody On CD-ROM) landed on my desk, it was with some trepidation that I slid the CD into my drive. First, you are greeted by your hosts, in video. Power-dressed Meg is an assistant to an assistant to The Man Himself, and despite being under-appreciated, overworked and constrained by the glass ceiling, she is not bitter. Angry and vengeful perhaps, but not bitter. Graham, currently employed by The Company as a janitor, is a wannabe programmer who worships the ground Bill floats above.

There are a few conventionally amusing diversions, such as Pinbill, a space-invaders-style Exploder and your very own pet Billagotchi. Feed him bags of money, clean up his "releases" and smack his bottom from time to time and... well, you get the drift. The best game is Win Bill's Money, a quiz game rather in the style of You Don't Know Jack, where your distinctly ungenial host, Steve Jobs, makes bitter cracks about his rival and caustic remarks on your performance ("I've always preferred the stick to the carrot"). In all the games, the lowest score rating is "Amoeba", rising through the ranks of "Jock" and "Manager" to the prestigious "Nerd".

Next comes a load more videos and animations — the Campus Cam shows life behind the scenes at Redmond, the MSTV shows the future of television, and the Reject Bin shows MS products that somehow never made it to release. Meg and Graham pop up from time to time, and MicroNewsFlashes enliven the desktop with company announcements. For instance: "2:15 — Attention! We are the victims of an attack by a terrorist organisation! Do not, repeat not, stop working"; "2:23 — The Company has now acquired the terrorist organisation and the situation is back to normal."

As you explore and play, you progress from Technical Support through Applications Programming and upwards. Each level has its own desktop theme and reveals more videos and animations. The satire is wickedly funny, there's an unrequited love-story sub-text and not a lightbulb joke to be seen. The only fly in the ointment is that at time of writing it isn't on sale in the UK, but you can get the feel of it from the Parroty Interactive web site (*see "PCW Contacts", opposite*).

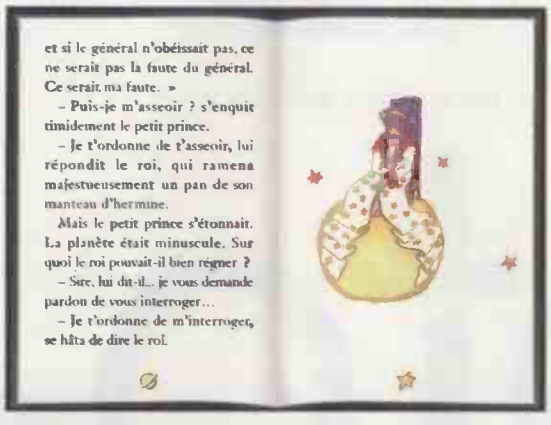
Prince — charming

And now for something completely different but also unavailable in the UK. Antoine de Saint-Exupéry's story of Le Petit Prince has been charming adults and children for over 50 years. It's the story of a pilot who makes a forced landing in the desert, where he is befriended by the little prince who recounts his tales of the strange worlds he has visited and their stranger-still grown-up denizens.

French publisher Gallimard has released a CD-ROM version. As with all adaptations, my perennial fear is that the adapters will have "improved" on the original to the point of ruining it. Not so here: the text is scrupulously preserved (and narrated by actor Sami Frey) while Saint-Exupéry's original watercolour illustrations have been transformed into a 2D and 3D animated world without losing their simplicity and delicacy.

You can read the story or have it read to you and the book is full of surprises. There's also a lot more outside the story. Visit the Asteroid B-612 and you will have to tend the rose, but also prevent the baobab tree from destroying the asteroid. Visit the earth and you will, in time, tame the fox. When you've tamed the fox, he'll escape from the CD-ROM and reward you with... well, I'll keep that as a surprise.

There's also an album containing photos, sketches, replicas of pages from Saint-Exupéry's diaries and biographical notes going from his childhood to his stay in New York, where the book was written. Although this is by no means a complete biography, it does put the allegorical tale of the little prince into the context of the author's life as a pilot and writer. Saint-Exupéry himself


et si le général n'obéissait pas, ce ne serait pas la faute du général. Ce serait ma faute. »

– Puis-je m'asseoir ? s'enquit timidement le petit prince.

– Je t'ordonne de t'asseoir, lui répondit le roi, qui ramena majestueusement un pan de son manteau d'hermine.

Mais le petit prince s'étonnait. La planète était minuscule. Sur quoi le roi pouvait-il bien régner ?

– Sire, lui dit-il... je vous demande pardon de vous interroger...

– Je t'ordonne de m'interroger, se hâta de dire le roi.

The story of Le Petit Prince is now on CD-ROM

was stranded in the desert after his plane broke down and was rescued by a Bedouin after three days walking without food and water, and his brother (who may or may not have been the model for the prince) died when the author was a child.

In all, this really is a superb production, but once again there is a tiny snagette: at the moment it's only available in French. Even so, the language is fairly simple and it's definitely worth grabbing a copy next time you fill your car boot with cross-channel duty-free booze.

Cultural karaoke

Regular readers may recall that in February's column I was singing along with Blur and INXS. This month we move culturally upmarket. Imagine a theatre, with yourself on stage. There is an orchestra and a choir at your disposal, and a microphone in font of you. The conductor awaits.

The Italian recording company G7 has, to put it bluntly, come up with Karaoke Opera. But not just any old opera, you understand: there are 140 airs from the best of Italian, German and French operas specially recorded by the Compagnia d'Opera Italiana under the baton of Antonello Gotta. Various hybrid CD-Audio/CD-ROMs exist in bass, baritone, tenor, mezzo and soprano flavours, with scores, notes and the facility to listen to the pros before you record your own attempts. Nessun Dorma is included so you'll be able to keep the neighbours awake, but this is aimed not just at Pavarotti wannabes but at serious students of music, performers and schools.

Again, unfortunately you'll have trouble finding this (G7 was still looking for a UK distributor at the time of writing), so don't hold your breath. But try the rather strangely linear (and as far as I can tell, totally silent) web site.

Boogie on down

Returning to the UK and availability, no less than six CD-ROMs came my way courtesy of the BBC this month. Unfortunately for me, all the best ones have already been reviewed in *PCW* recently, so I'm left with Noddy and Mastermind. Since I can't abide either, I'll pass, and move on to the next contestant.

From Attica, also a British publisher, comes "Wannabe a Pop Star — Smash Hits". Presented in cartoon style, you first have to get your band together by auditioning musicians in the traditional garage. I note here that Attica has done a sterling job in mixing a politically impeccable assortment of race, gender, body shape, regional accent and musical style.

Next, you're off to the church hall to rehearse. Here, for each of the five band members you can choose verses, choruses and bridges, mixing and matching until you get the sound you want. Astute (or at least, non tone deaf) readers will realise that this means every song will be composed of the same chords in the same order and time, but nevertheless, there's a lot of variation in style.

Wannabe a Pop Star? Beat them old recording contract blues and have fun engineering your own meteoric rise to virtual stardom

Next in this meteoric career comes the recording studio where you can refine your saved song by adjusting levels and adding extra sounds. Finally, it's off to the concert hall to "perform" live and see how far up the charts your single has climbed. You can save as many different bands and recordings as you want and compare their chart progress. Great fun at first, but the musical constraints of getting the various chunks in time and in tune don't offer lasting fascination, unless you can listen to G, B-flat, F, C for hours.

Furry fun

And finally, this month's award for technology in action. The Monimal, I kid you not, is a furry animal-head cover for your monitor. It comes in a variety of species including lion, moose and sheep. Mine was a cow, of the Holstein-Friesian persuasion, and came with a load of sticky Velcro and a disk containing some rather naff screensavers. Although the "dry-clean-only" cow is rather floppy of hom, it has brought a smile to the face of everyone who has seen it. Which is more than can be said for the Active Desktop. Monimals cost £14.99 from Dixons, Kaleidoscope,

Go to work on a moose

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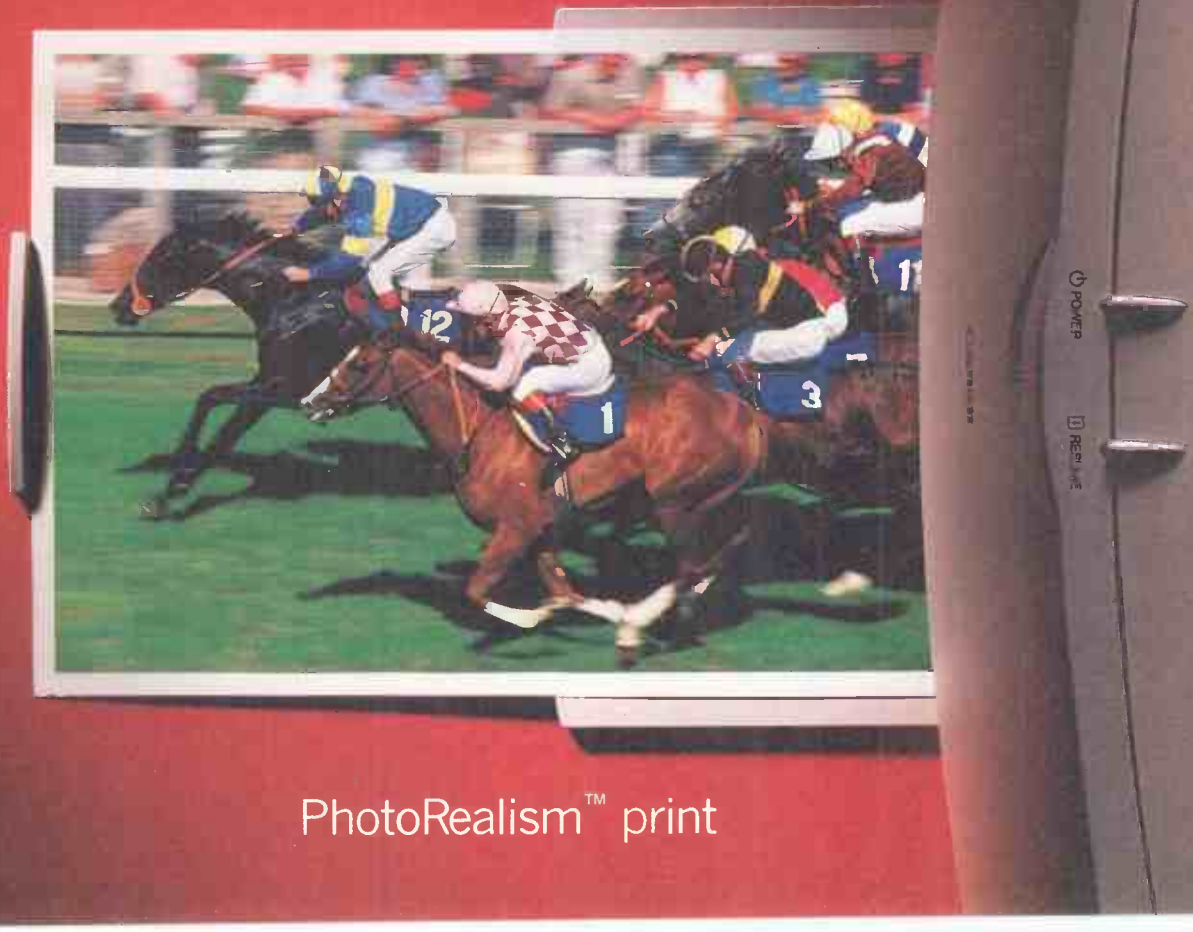

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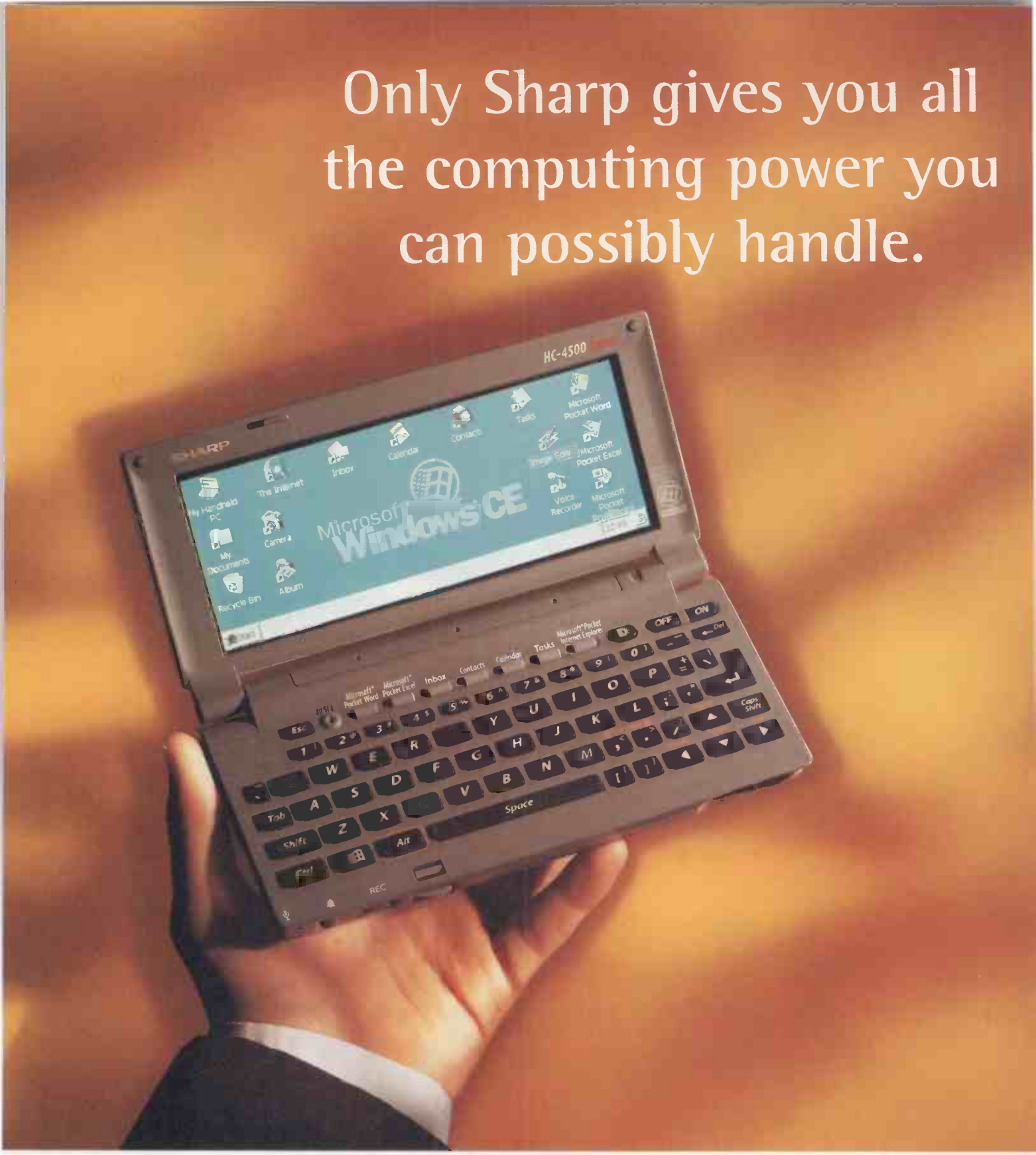

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Why not allow pupils to voice their opinions when it comes to IT in schools? (see *What about us kids?*)

What about us kids?

In your recent article Education and IT (*PCW*, March), Andrew Charlesworth writes: "This is important to anyone who has a child in a British school, teaches in one, or cares about education *per se*". I believe one important group has been left off this list; the children.

It may be that Mr Charlesworth doesn't believe children have any say in their own education. It may be that he thinks they know little about computers and education. Of course, it may be that the fact simply slipped his mind.

As a 15-year-old attending a comprehensive school in Surrey, I believe that I have a valid opinion concerning IT in my school, and indeed, my school does take into account the views of pupils on this matter. But I feel this may be an isolated case. Unfortunately, many schools (and the Government itself) do not recognise that in a situation where many pupils are more computer literate than the teachers, there is a need to take our opinion into account.

Chris Norris
chris@crazy.force9.co.uk

Andrew Charlesworth replies: I would have thought the wording "anyone who...cares about education per se" included children. The schools I've talked to seem to lack guidance on IT, beyond government ministers telling them that it's the key to raising educational standards, so they would do well to listen to their knowledgeable pupils, as yours obviously does. But the whole point of the article was to highlight the tension between training (preparing people to perform a specific task) and education (broadening their horizons). IT in schools often reflects the former rather than the latter.

Haimet heaven

I was fascinated to read the Michael Hewitt interview with Emma Solomon and Caroline Lambie (*PCW*, March). They have identified a large market.

I live on the Balearic island of Menorca where the vast majority of expatriates are over 50 years old. For the past four years I have been running courses in basic computer literacy and, more recently, the internet specifically for this age group. I identified this need simply because I am 62 years old and am looked upon as a complete oddity because I understand and enjoy my computers.

This older group of people are interested but apprehensive and, as pointed out by Emma in your article, the men particularly reject the idea of their ignorance being made public, whereas women don't worry so much about how they are perceived by others.

My success is largely due to my age; people don't feel so threatened being shown how to do something by a person of my age, who is less likely to treat them as boring old farts!

Good luck to the girls. Believe me, there is an enormous market out there. My age group has money, time and intelligence. We feel somewhat rejected as we were in the wrong place at the right time when it all happened.

Tony Deane
tonydeane@bbvnet.com

No cache bonus

A friend of mine recently upgraded his PC from 32Mb SDRAM to 96 Mb SDRAM. As he is new to PCs, I have been helping to set up his system.

He mentioned that when he had bought the 64Mb DIMM the shopkeeper had told him that this would disable his cache. I investigated this and, sure enough, the machine runs more slowly. I investigated further, and it turns out that the TX chipset only caches the first 64Mb of RAM: any more and the processor has to go directly

p67 ➢

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to main memory. It gets worse, as apparently Win95 loads into the top of the available memory, so the O/S is not running in cached memory!

He is currently doing some tests to see if the applications he uses are faster with 96 or 64Mb of RAM. He is most interested in photo manipulation and has a P200MMX-based system. For this type of work what would you recommend as his best course of action?

Tony Flaherty
tony.flaherty@virgin.net

PCW Replies: Intel 430 FX, VX and TX chipsets have a cacheable limit of 64Mb RAM, although the earlier 430HX has a ceiling of 512Mb. Intel suggests contacting the manufacturer of your friend's motherboard to verify its maximum cacheable RAM. The Pentium IIs current LX chipset can cache up to 512Mb RAM.

So if you have, say, a 430TX board with 128Mb RAM, only the first 64Mb will be cached. Windows 95 applications load from the top to the bottom, so in this instance won't be cached and will run slightly slower than a 64Mb system. However, this is a simplistic description. Windows 95 employs virtual memory to manage its memory requirements, using space on your hard disk when it runs out of RAM. Uncached RAM is still hugely faster than accessing a hard disk. Applications which operate with very large files, such as image or multimedia packages, will always greatly benefit from operating in as much as possible in RAM, cached or not, rather than resorting to virtual memory.

Generally, if you notice your hard disk light always flashing during current work, then it's hammering the virtual memory and will benefit from more RAM, cached or not. If you're just into general office applications and modest multimedia, your friend will be best off sticking with the maximum cacheable RAM supported by his board, which for many systems is 64Mb. Alternatively, you could move to a more serious OS such as NT which always uses cached RAM first.

Happy Birthday to us

On your hobby horse

1978 was a year that was to change my hobby and interests for the future. That was when I bought my first computer magazine: Volume 1, Number 1 of *Personal Computer World*!

For me, the prospect of being able to build and control my own microprocessor system was very attractive, especially as *PCW* featured full details of such a project in that issue. It was the 77-68, The Mighty Micromite, written by Tim Moore.

By the time I had built a power supply and constructed the mighty micromite, I reckoned it had cost me about £60 and for that I could enter the machine code instructions in binary on the eight switches fitted for this purpose, and at each address, which was also selected in binary on another set of switches.

With its 256 bytes of RAM and its 8 LEDs one could spend several days programming the CPU to flash LEDs like a Christmas tree, or by attaching an audio amplifier across one of the LED's and switching it on and off at an audible frequency, play several tunes which would appear

p68 >

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Happy Birthday to us (contd)

regularly in the 77-68 User Group Newsletter.

One day, after a power surge crashed my programming session for the fourth time that night, I succumbed to buying the latest black box which featured the same family of micro processor; the Dragon 32K.

Suddenly I became aware that I had no idea what made this box tick. If things went wrong I could no longer tweak the operating system. It was a move I could not reverse, but it was a dark day when I gave up my baby for a plastic box!

Fred Burnett
fred.burnett@btinternet.com

First bite of the apple

I was flying back from the US in September '77 when I read an advertisement for an Apple II, from a firm with the same name in California. When I got home I rang to order one, only to be told that it had just appointed its first distributor, Personal Computers in Bishopsgate and that a shipment was already on its way.

A week later, the shipment arrived and, £1,750 the poorer, I proudly took home one of the first Apple II's in the country. It was incredible, with 16K of memory and two paddles, although you had to provide your own tape recorder and TV! I learnt Basic, wrote a program to teach myself to touch type, bought a further 16K of memory the following year in New York for $250, searched everywhere for programs, and regarded it as a most fascinating toy.

One day, Visicalc arrived and changed my toy into a tool. It is difficult now to recall the impact of Visicalc: it was the first of all the killer apps. In due course, Wordstar and the database programmes arrived and then IBM made the PC respectable and ubiquitous.

All that was later, of course, but it was Visicalc that made us all realise that the PC was here to stay.

Lord Young of Graffham
young@youngassoc.com

Terminal shock

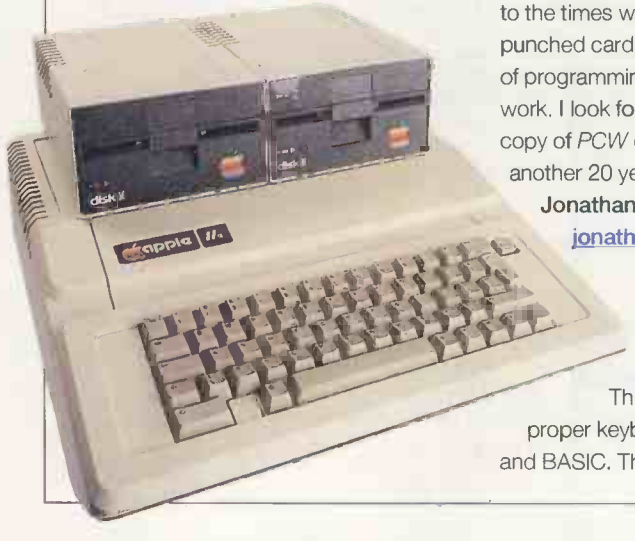
Congratulations! Twenty years have seen us all change but I'd like to stretch your imagination by adding another ten years and suggesting somewhat radically that the greatest development ever in the history of computing is something we all take for granted: the VDU!

In 1968, I found myself in the Oxford University Computing Centre with a KDF9 the size of a small house, using the now long forgotten ALGOL language and the now occasionally-used FORTRAN to run biochemistry experimental output. Producing an enzyme kinetics curve with the plotter was seen somehow as "cheating" by the supervisors who marked my work! The frustrations of submitting programs and data on punched tape or cards with a 24-hour turnaround time before you saw your results, were huge.

The first terminal I ever saw was a quantum leap in accessibility. To actually be able to run your program, see the results, correct the code and run it again in a few minutes was somehow magical and at the same time unbelievable!

I now have thousands of times the processing power in my own home and whenever I find myself swearing at a fatal program error I always try and think back to the times when I'd drop a stack of punched cards on the floor wasting hours of programming time! Keep up the good work. I look forward to receiving my first copy of *PCW* on digital paper before another 20 years are over!

Jonathan Bayly
jonathanbayly@compuserve.com



Lead us into temptation

That first issue of *PCW* was a revelation to me. There were systems with proper keyboards, TVs used as VDUs and BASIC. The caption on the front cover read: "This year, get your own computer." I took that instruction to heart and later that year I spent over £400 on a proper computer, in kit form, which I had to build, myself.

It helped to be handy with a soldering iron as a lot of gear came in kit form, and the magazine had plenty of circuit diagrams and instructions for building your own equipment. It saved a lot of money and you also knew exactly how all the stuff worked.

Looking back at that first issue it seems amazing now just how many different systems were available — and there's no mention of Microsoft. But the biggest change is surely that back then you only had 64 pages! Keep up the good work and I hope the next 20 years are just as exiting.

Michael Lister
mikelister@compuserve.com

LED by the hand

Two toggles, two switches and two LEDs. All supplied by the Open University. That was back in 1974. Early days for the OU and early days for computers.

It was great fun: you could add two and three, which was not bad when we were just moving away from adding machines with a big handle which you pulled when you set the numbers. And I could convert hex to binary in my head, at least up to 16!

Mike Heilbron
heilbron@cheerful.com

Lofty memories

Rummaging through the loft recently, I came across several boxes I had almost forgotten about. Inside were the various "parts" of my first computer; a Tandy TRS-80 Model 1.

What memories this brought back. I recollect spending £2,500 for this system (excluding software) back in the late seventies. Hardware modifications I made included an interface for lap counting and race control at a model electric car racing club. It also operated the start lights and finish siren and was used at our local model boating lake and at the model flying club. I would be pleased to receive correspondence from other readers who have used the TRS-80 Model 1.

Norman Dickinson
nmdick@mistral.co.uk

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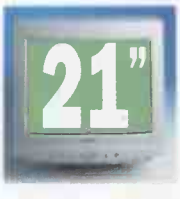

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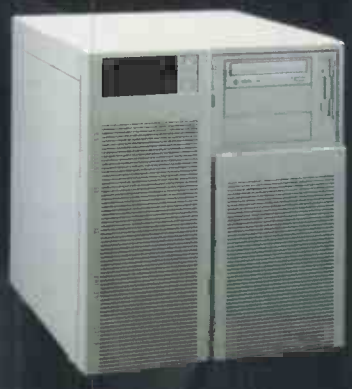

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20 years of *PCW*

Welcome to our 20th anniversary special, chronicling the most important and interesting events of the past 20 years, the evolution of key companies and products and, of course, a glimpse into what the future may hold. Fortunately we had the full 20 years' worth of *PCW* on hand for research, but trawling through 240 magazines was no small task. The entire team pored over every issue to find the stories you'll read over the following pages. I'm sure you'll find it as interesting to read as we did to produce!

For myself it was quite an emotional experience. I expected waves of nostalgia but hadn't anticipated how powerful they'd be. They say you never forget your first kiss, but a few years earlier I had an equally powerful experience: I know it sounds a bit sad, but I really will never forget my first computer. When I was all of ten years old, the Sinclair ZX80 changed my life, Yes, that's me in the corner in the photo below, not quite in the spotlight but nonetheless acquiring a new religion.

I was about to finish my formative years at Cherry Tree primary school in Romiley, Cheshire, when we learnt of a competition to win a computer (for your school, that is). A few well-placed "I would like a computer but would make do with something that resembled a large calculator" later and we actually won! I'm afraid to say my contribution wasn't the greatest and I was cropped out of the photo which later appeared in the *Manchester Evening News*.

Fame didn't matter to me, and neither did the fact that I had to share our prize with hundreds of other kids. I cherished it as if it were my own, and didn't care when the hard kids snapped the corner off the keyboard. Hey, who needs punctuation anyway? The bug had bitten, and I persuaded my parents to buy a Sinclair ZX81, then a ZX Spectrum, a Commodore 64 and, finally, an Atari ST. I'm still not sure today whether they understood why I needed the next big thing in home computing, but at least I can now say it helped get me get where I am today.

By the early nineties I was Mac'd and PC'd up and my interest in computers today is as all-consuming as it was then. I am delighted to be working on the best personal computer magazine, particularly on its 20th birthday. Enjoy the issue, and here's to the next 20 years.

Gordon Laing

Managing Editor

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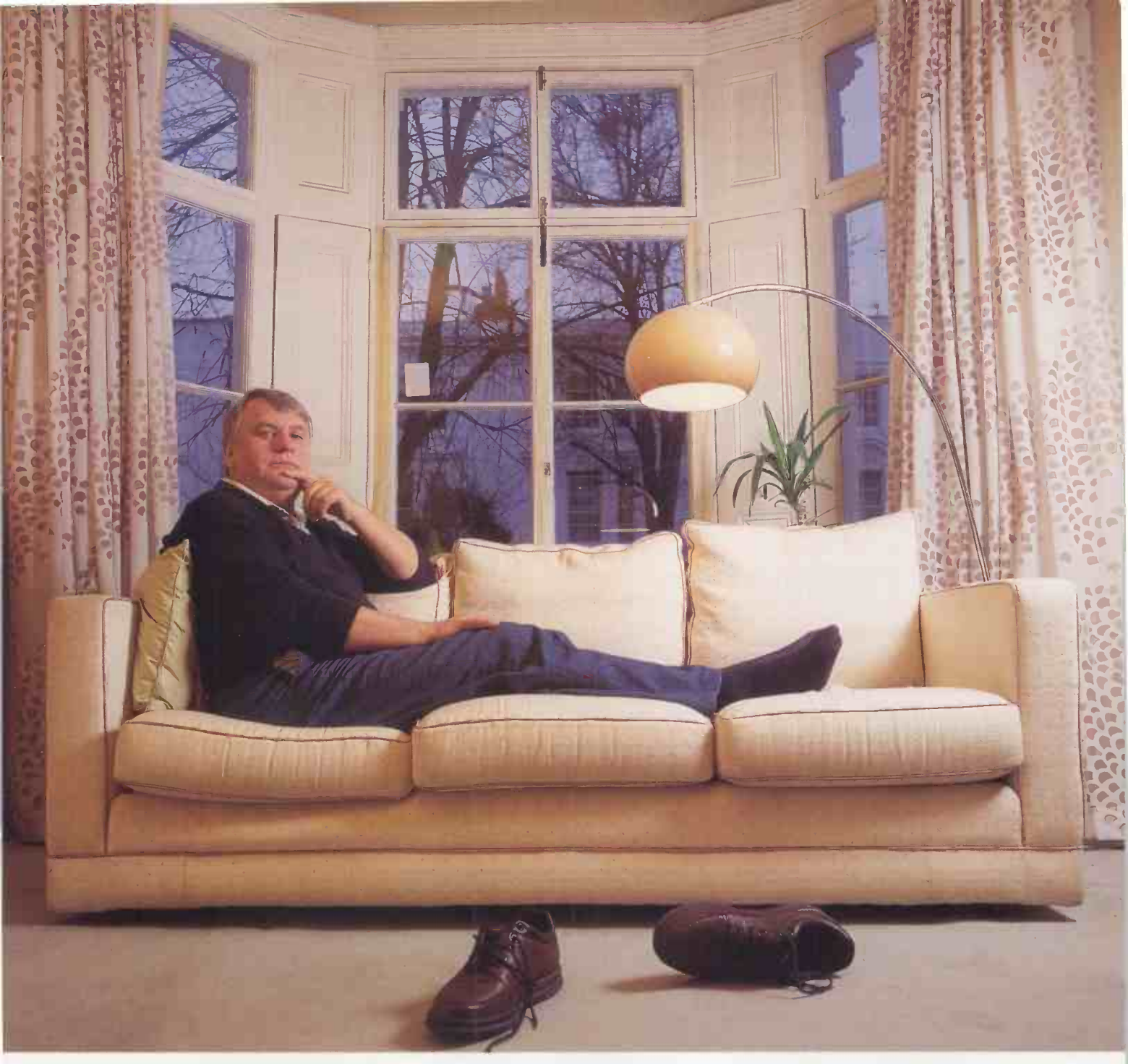

Creature comforts: With a frenetic but rewarding life in the publishing industry behind him, Zgorelec can afford to sit back and put his feet up

Founding father

PCW's founder, Angelo Zgorelec, came to England at the end of the sixties with an interest in technology. The rest, as they say, is history. Michael Hewitt met him.

"I hope you can understand my English with its heavy, Slavic accent," said Angelo Zgorelec as we made our introductions in the office of his Earl's Court home. The accent comes from his having been born in a little village called Koprivnica, 60 miles north of Zagreb, in what was then Yugoslavia, just over 57 years ago. Since then he's been variously a student journalist, fruit-picker, washer-up, hospital porter, newsagent, publisher, and the head of a small property company. And in between times he summoned up sufficient energy to found some techie magazine called *Personal Computer World*, which, by all accounts, is still going strong.

Angelo first discovered an interest in journalism when he was just 15 years old. He began by supplying sports stories to the national press. Then, in the mid-sixties when he went to Zagreb University to read history, he joined the student newspaper and soon became one of its editors. But not for long. One evening, a functionary visited him to ask why Angelo wasn't in the Communist

PHOTOGRAPHY by Nick Dawe

"They [The Computer Workshop] had a computer in their window. I forget exactly what it was, but every evening I used to go there just to stand outside and look at it. I thought it was absolutely amazing"

Party. In the Yugoslavia of the sixties, trying to be a journalist without carrying a Party card was a *faux pas* as massive as trying to be a chief constable without joining the Masons. So the aforementioned functionary gave him a choice: join — or else. "I didn't like being told to believe in something in which I didn't," said Angelo. "So I refused and was dismissed from the newspaper. I'd been getting increasingly fed up with all the restrictions on life in Yugoslavia, anyway, so this was the last straw for me. Then I suddenly found out that the university was offering students the chance to go abroad, fruit-picking in England — I jumped at it."

With just £4 in his pocket, Angelo arrived in the UK and set to picking plums. He soon graduated to washing dishes and then hospital portering. He also kept up the journalism, writing reports on "swinging London" as a freelance for the Croatian press. Then came his big break, businesswise, when he managed to convince a distribution company called The Seymour Press to allow him to sell *The International Herald Tribune* and assorted other US publications via street pitches and other small-scale retail outlets. With the money made here, and in other ducking-and-diving routines, he was soon able to afford to buy a small newsagent's shop.

At this point, a thought came to him: instead of simply selling someone else's publications, why not set up one of his own? After all, he now had enough money. But on what subject? He had always had an interest in technology of all sorts (solar power and satellite communications, for instance) so Angelo knew it was going to be technology related.

"Then one day I saw a front-page article in the *Wall Street Journal* describing how computers were about to revolutionise the world. I found it fascinating. So much so that I cut it out and kept it in my pocket. Round about the same time, the first computer shop in London, The Computer Workshop, opened on Ifield Road. They had a computer in their window. I forget exactly what it was, but every evening I used to go there just to stand outside and look at it. I thought it was absolutely amazing."

Between drools, it didn't take Angelo long to decide that his proposed magazine was going to be about computers. But would there be a market for it? Although *Practical Electronics* regularly devoted six pages to what passed for computers in those days, there was no computer magazine *per se* in the UK, unless you counted the US import, *Byte*. This was probably because computers were still largely a minority, hobbyists' area, like model aircraft. Most people put their own together from off-the-shelf components. If you were prepared to shell out upwards of £2,000 for, say, an Intel 8080 processor, 16Kb of memory, a keyboard, and a cassette tape recorder for storage, you could end up with something that was pretty good for playing a game of hangman. It therefore required something of a leap of faith to believe that one day these things would become standard items of consumer electronics equipment. But Angelo's faith leapt, nonetheless.

"I found out that *Byte* magazine was holding a computer show in New York and so I decided to fly over there and take a look — at the time, Laker Airways was starting to sell flights for £65. I reckoned that if computing looked likely to take off in America, then it could take off here, too. So I went to New York and turned up at the exhibition. There was a two-hour queue to get in. I essentially said to myself: 'I don't need to see anything else. If people are prepared to queue for two hours, this is going to be huge'."

Back in the UK, Seymour Press offered to distribute the magazine, although they tried to convince him to stick to some subject with more of a future, such as CB radio. But Angelo was adamant. He then asked one of his friends, a beat poet and "permanent student", Meyer Solomon, if he'd like to edit it. Meyer didn't have anything else on, so he agreed. And the next question was: what were they going to call the publication?

"It was always going to be ...something... 'World', but it was the first word that took a lot of thought. Eventually, there were two choices; Micro Computer World or Personal Computer World. In the end, I settled on the latter." But at the time, the idea of a "personal" computer was almost as woolly as that of a "personal" concrete mixer.

Angelo assembled the first edition of *Personal Computer World* in the Troubadour Café in London's Old Brompton Road which, co-incidentally, was where Bob Dylan made his UK début. Its appearance was timed to coincide with the launch of Britain's own Microcomputer, the Nascom 1, a colour picture of which appeared on the cover at the time. This must have helped. When *PCW* hit the streets in February 1978, it was an immediate sell-out. All of the 30,000 print run was snapped up, and the magazine soon recouped its £12,000 start-up costs. "It's much better than anyone expected it would be," said journalist, Guy Kewney, upon being presented with a copy — "Which is one of the nicest compliments I've ever received," said Angelo.

PCW went monthly from the second edition and hasn't really looked back. Angelo himself was publisher for 16 issues, and then went into partnership with Felix Dennis. Eventually, the title was sold to VNU Publications for £2.5 million. Angelo's share helped him pay for his house and much else, besides. So, does he still keep his hand in? "Although I use computers all the time, I'm not really up to speed on the development side of things any more. I'm astounded at the progress that's been made over the past 20 years, of course. I love the internet, for example, and the fact that every day I can discover something new. But in the future, I'll watch from the sidelines. Besides, at my age, it's time to slow down a little."

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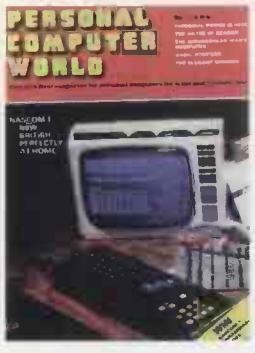
1978



Dawn of the revolution

Desktop computers were called micros (as in Microsoft) to distinguish them from larger minicomputers.

As the year began they were still far too expensive for most people in Britain, unless they could build one. There was no Microsoft operating system. Most computers used Digital Research's CP/M.

In **May,** the first edition of *Personal Computer World* featured the £240 Nascom 1, which you had to solder together yourself.

In **June** Intel launched the 16-bit 8086 processor, first of the dynasty that was to power the PC. Around the same time, Microsoft began an 8086 version of BASIC.

PCW reviewed the £700 6502-based Commodore Pet, which had a 9in monitor and between 8Kb and 32Kb RAM.

In **September** *PCW* looked at the TRS-80 which was £200 cheaper. It had 4Kb RAM and for storage you plugged in your tape.

In **December** Atari launched its 400 and 800 in the US. And Epson shipped its groundbreaking MX-80 dot-matrix, destined to be the buzz of numberless offices.

The biggest change of the year was in mindsets. No less than 30 thousand people bought *PCW*'s sell-out first edition: people were coming to realise that computers, long considered the realm of boffins and big business, were within reach of their pockets and brains. The IT revolution had begun.

Retrobytes

- The $360 4.7mHz 8086 processed 0.33 million instructions a second (MIPS).
- An Altair system with twin floppies, 64Kb of RAM and printer cost from £6,781.
- £1,500 (ex VAT) got you an Apple II and a Sony TV to show its colour display.
- Microsoft revenues first topped $1m at $1.36m.
- Intel made $44m on an income of £399m.
- IBM made $3 billion on revenues of $22.8 billion.

Home brew with a difference

Home brew was very much in when *PCW* first started. The first machine we benchmarked in the first issue was the Nascom 1, which you had to solder together yourself.

This was not everyone's idea of fun so the Nascom was not one of those machines to stand the test of time, unlike the PET 2001 reviewed in the second issue. We were bullish about its likely success: "It is a successful attempt at placing computing within the reach of thousands and there seems little doubt that thousands worldwide will buy it." As it happens, we were not far wrong.

Intel makes the 8086 state

In the very first issue of *PCW* we took a look at the new 8086 processor from Intel. Based on the 8080 which, in 1974, had powered the influential Altair 8800, the 8086 was created by two engineers in just three weeks. The major change from the 8080 was that the 8086 was the first of Intel's 16-bit processors. Work on the processor began when Intel realised the i432 project was in deep water.

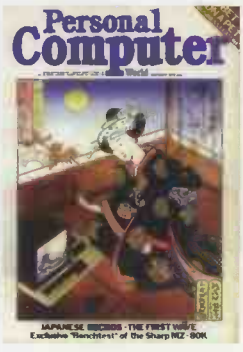
This processor's direct descendant, the 8088, released in 1979, was chosen by IBM to put into its first PC, which in turn shot Intel into the Fortune 500 where it has been firmly entrenched ever since.

Apple II brings colours to life

The Apple II was one of those landmark machines that changed the early days of computing. It was originally débuted at the first West Coast Computer Fair in San Francisco in 1977 and *PCW* reviewed it in its fourth issue. We cited the reasons to buy it as: "Its colour graphics, its extra high-resolution graphics package, its extreme portability and its high-quality construction." In retrospect, however, it was the colour graphics alone that won the day. It could show 16 colours at a resolution of 280 x 160 pixels, which at the time was remarkable for a machine in its price bracket. When we reviewed it in the August 78 issue it cost £1,250 (ex VAT) for the 16Kb version, although you would also need to buy a colour TV to get the most out of those graphics.

It was based around the MOS 6502 processor and had BASIC in ROM and just 4Kb of RAM. At the end of 1978 the Apple II got a boost in the form of a RAM jump to 48Kb, but the big advance was the introduction of a low-cost 5.25in floppy drive. Up to then the Apple II had used an audio cassette drive for storage, mainly because floppy drives, which had been around since 1971, were so expensive. However, the Apple II floppy drive was a low-cost alternative and most existing Apple II users went out and bought it. And a year later when the first version of VisiCalc was launched with the Apple II as its only platform, Apple's future was secure, at least for a short while.

1979



The Space Invaders games console arrived and kids across the country became hooked on Pacman.

Hayes, whose command set still runs modems, shipped its $380 Micro modem running at all of 300 baud.

In **May** Software Arts launched the VisiCalc spreadsheet, invented from scratch by Don Bricklin and Bob Frankston.

In **June** Intel launched the 8088 chip, similar internally to the 16-bit 8086 launched in 1978 but with an 8-bit external bus. It was to power the first IBM PC.

The Japanese invasion

In **July** MicroPro released WordStar, the model for all early word processors.

In **August** came the Vulcan database which Ashton Tate was to turn into the world-beating dBase II.

In **September** came the 16-bit 68000 from Motorola. It was to be to Macs what the x86 dynasty was to PCs.

Most computing still ran on 8-bits. As did the Sharp MZ80K, splashed in *PCW*'s **October** (below and left) as the first wave of Japanese micros. In the same month Atari shipped its 400 and 800 models.

In **December** Xerox took 1,000 Apple shares worth **$1** million in return for giving the company access to projects at its Palo Alto research centre.

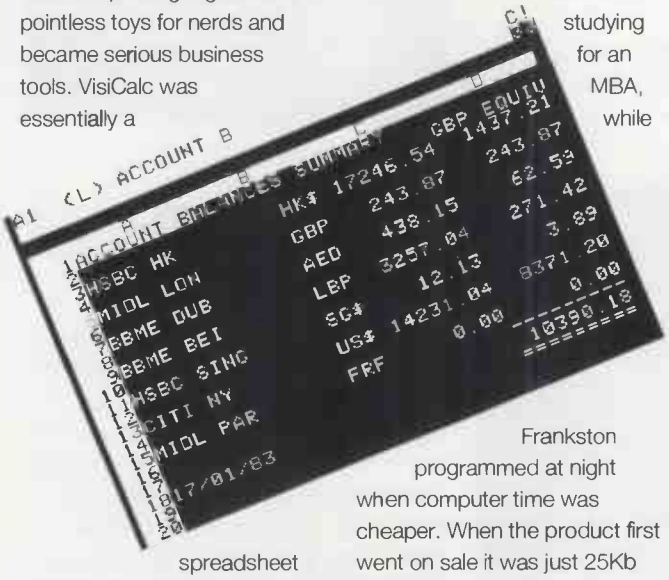
It has been kicking itself ever since. In effect, it had given away the mouse-driven graphical user interface which was to become synonymous with the Macs and the future of computing.

Retrobytes

- The $360 Intel 8088 processed 0.66MIPS at 5MHz or 0.75 MIPS at 8MHz.
- A 4MHz Z80-based Horizon PC with dual 380Kb floppies, 24Kb of RAM and 32cps printer cost £3,616.
- £1,500 got you 23 percent of a 10Mb hard disk.
- Microsoft had revenues of $2,390,145.
- Intel made $78 million on an income of £661million.
- IBM made $3.3 billion on revenues of $21 billion.

VisiCalc takes the PC from youth to maturity

VisiCalc was the first of the killer applications. From the time it first appeared, personal computers could stop being regarded as pointless toys for nerds and became serious business tools. VisiCalc was essentially a



spreadsheet package on which you could do your accounts. The revelation came when you altered one figure and saw straight away it could affect the rest of your budget. This let small companies make the kind of sophisticated financial projections previously available to only large companies with mainframe or mini-computers

It was developed in 1978 by Dan Bricklin and Bob Frankston, working on a computer on a timeshare basis. Bricklin developed the functional design and documentation, at the same time as studying for an MBA, while Frankston programmed at night when computer time was cheaper. When the product first went on sale it was just 25Kb long and cost $100.

VisiCalc proved not only the making of Bricklin and Frankston, but also made a significant impact on the success of Apple, as the first version of VisiCalc was produced for the Apple II. Versions for numerous other platforms were produced and it lasted well on into 1984, when a little application known as Lotus 1-2-3 stole its crown.

The word is out on WP

In our January 1979 issue *PCW* reported on a letter-editing system being developed by ICL Dataskil. The contents page urged everyone to read what was called "this important article". However, things were moving fast. Later that year MicroPro released WordStar and Apple released AppleWrite I for the Apple II. WordStar was not the first word processor, but it did exploit the market potential and held many users captive until the release of Word at the tail end of 1983. Also in that year there was much excitement about using word processors to create page layout for magazines and newspapers. In that year the *Times* had to close its doors due to action by journalists and the print unions, fearful of changes around the corner for the print industry.

The world turns Japanese

The Japanese invasion was upon us and *PCW* were quick to milk the imagery to the full (*see this year's cover, above*). However, not everyone was overly pleased by this turn of events: "Because of the Japanesee reputation in other fields, their arrival is being awaited with some anticipation — or trepidation, depending on your point of view."

Founded around the Z80 processor and with from 20Kb up to 48Kb of RAM, of which BASIC took up 14Kb, the MZ-80K was a solid workhorse, and Sharp was gunning after Commodore's PET which was the leading machine of the day. But Sharp made a big mistake in trying to corner the market by locking users into a proprietary technology: it eschewed ASCII for its own character codes.

p78 ➢

1980

This was the year computing became available to all but the very poor. The impetus was home grown, from a certain Clive Sinclair.

In **March**, SSI shipped WordPerfect 1.0 for Data General minicomputers.

April was a momentous month. *PCW* looked at the Acorn Atom, predecessor to the BBC Micro. But the sensation was Sinclair's ZX-80 (*below*) which cost just £79.95 in kit form. It had 1Kb of RAM and BASIC in 4Kb ROM, and it got kids across Britain programming.

Meanwhile, virtually unnoticed, Tom Patterson of Seattle Computer Products began writing a disc operating system (DOS) for an 8086-based machine.

In **May** Apple shipped the disastrous 2MHz Apple III, which boasted a 5.25in floppy drive and sold for between $4,500 and $8,000.

In **June** Seagate announced the first 5.25in Winchester hard drive. In **July**, in a legendary incident (*see PCW September 1996*) CP/M developer and DR founder Gary Kildall refused an IBM request to write the operating system for a new project called Chess. IBM turned instead to Microsoft.

In **October** Patterson sold Microsoft the rights to his DOS for $100,000.

In **November** Microsoft was contracted to provide software, including a rejig of this DOS, for the IBM project. It was, of course, the PC. It would sweep the world, and it would shake IBM to the core.

Power to the people

Retrobytes

- A 10MHz Intel 8086 processed 0.75MIPS.
- £1,500 bought you Pascal (£200), WordStar (£250) Pet Comaccounts, Compay and Comstock (£950) and a choice of utitlities.
- Support for the above software: £2,387 a year.
- Microsoft had revenues of $7.5 million
- Intel made $97 million on an income of £855 million.
- IBM made $3.5 billion on revenues of $26 billion.

Mission impossible

In 1980 Clive Sinclair did what everyone said was impossible. With the Sinclair ZX-80 he was the first man to make a computer that broke the psychological barrier of £100, finally making computing affordable for anyone who wanted to give it a go. If you were brave you could buy it in kit form for £79.95 and solder it together yourself, or you could save yourself £20 worth of heartache and get it ready-built for £99.95. It was based around an NEC Z80 processor running at 3.25MHz, had 1Kb RAM (expandable to 16Kb), 4Kb ROM and used a TV and cassette drive to display and store programs. You could expand the memory to 16Kb, but to buy the full amount would cost you £300.

It ran a form of BASIC that our first reviewer was a little scathing about: "The software of the ZX80 comprises the BASIC interpreter, the Editor and whatever else it is that does the rest of the work (Operating System seems too grand a title)", although he did go on to admit it was almost impossible to crash the system.

Third time unlucky

After the success of the Apple II, Jobs and Wozniak proudly marched ahead with the Apple III. Announced in the July issue, it had 128Kb of RAM, a 4Kb ROM, a built-in 5.25in disk drive and graphics on the motherboard. It could run most Apple II programs in emulation and came with a new operating system. It sold initially for between $4,340 and $7,800 but it was riddled with problems and bombed, nearly taking Apple with it. Some things never change. Apple crawled back into the running by bringing out a modified version later that year, with a better operating system and more RAM and ROM, and it was one of the first computers to have a 5Mb external hard drive.

Atari's born

Hailed in *PCW* as "the first of a new generation of home/personal computers", the Atari 400 and 800 set the mould for anything you would do with your home PC — play games, sort out your finances, run home education packages and maybe to run a small business. But it was as consoles that these machines made their mark. They were among the first to have player missile graphics and they had sound which could be played back through the TV's speakers. Its designer, Jay Miner, went on to bigger and better things, later designing the Commodore Amiga.

1981

This may appear now as the year of the IBM PC, but despite *PCW*'s splash (*left*), few saw it so at the time.

Other launches seemed just as exciting. In **January** Commodore launched the colour VIC 20, with a 6502 processor and 3.5Kb RAM for £190 (minus cassette). Sony announced the 3.5in 437.5Kb floppy disk.

In **March** Sinclair shipped his new, improved Z81 (see *below*). Around this time Quantum was formed to make 8in and 14in Winchester drives. We predicted that as production rose, a 6Mb drive may retail for as little as $1,500.

In **April** Adam Osbourne shipped a Z80-based desk machine with twin 100Kb floppies, 64Kb RAM and a modem for $1,785, bundling a software suite theoretically worth $1,500.

VisiCalc, running on Apple II and PET, topped the UK software sales list. Ex-*PCW* editor David Tebbutt said later, without hyperbole: "No-one, before or since, has created anything quite so revolutionary." (But see page 129).

The first true adventure game, Zork, moved from minis to be squeezed into 32Kb Apple IIs and TRS-80s. A typical command: "Attack Troll with Mace".

The IBM PC (see *below*) was launched in **November**.

In **December** Acorn shipped the much-better BBC Micro which, with an associated TV programme, helped make Britain one of the most computer-literate nations.

The birth of the IBM PC

Retrobytes

- A Superbrain QD CP/M machine with 700Kb of storage and an NEC Spinwriter printer set you back £3,745.
- £1,500 bought you half an Apple II, with 48Kb RAM and twin floppies.
- Microsoft had $16m revenue. Staff had grown from 25 to 128 in two years.
- Intel made $27 million on an income of £789 million.
- IBM made $3.3 billion on revenues of $29 billion

Sinclair's successor for the masses

Uncle Clive Sinclair cunningly reused the idea of naming his products after the year of release, and offered us the ZX81. It may have shared its predecessor's doorstop wedge styling, but costing £70 ready-built or £50 in kit form, you couldn't really argue; thousands of people didn't. It featured a 3.5MHz Z80A processor, 1Kb RAM and an "everything-proof" membrane keyboard. A thermal printer and unstable 16Kb RAM PAK (responsible for most hair-loss in terms of frustrated pullings-out) were optionally available.

Did The Last One have the last word?

February 1981 saw the arrival of what could have been "the last program you will ever need to buy". Named "The Last One" from Somerset-based David James and Scotty Bambury, it removed the need for pesky programmers and their complex languages. "We didn't know that we'd done anything clever until *PCW* told us," exclaimed Scotty. Unfortunately, in this instance, we wouldn't have known a clever thing if it had come along and hit us.

No strings attached: well, actually here there's a guitar attached to an Apple

The Jolly Giant makes everyone go green

November 1981 saw the "Jolly Giant deliver the goods". In a *PCW* world exclusive we flew to Florida and tested the very first IBM Personal Computer.

IBM listed the main system unit (Intel 8088 at 4.77MHz) with 16Kb RAM and keyboard for $1,265, a mono display at $345 and a matrix printer for the bargain price of $755; an additional 64Kb RAM came in at $540 and you had the choice of running CP/M or the unproven fledgling Microsoft DOS.

The last word goes to then editor David Tebbutt: "The only thing missing at the moment is a wide selection of packages, but I rather feel that the whole world and its grandmother will be frantically trying to fill that particular gap." Things would never be the same again.

BBC does world a service

The year ended with a rave review of the BBC Micro, a machine originally commissioned by "auntie beeb" to accompany a series of TV programmes aimed at increasing the public's awareness of computers.

The "Making the most of the micro" campaign helped make Britain one of the most computer-literate countries in the world. Indeed, at one time there were more computers per head in the UK than anywhere else in the world. To be fair, much of the UK penetration was due to Sinclair, a company widely predicted to get the BBC contract.

In the end, the deal went to Acorn, whose latest development, the Proton, needed little modification to meet the BBC's specification. £235 got you a 6502 processor, 16Kb RAM, a great keyboard and eight rather impressive graphics modes. Production delays didn't see the BBC Micro really take off until the following summer, when we blessed it with a further ten-page benchtest.

p80 ➢

1982

The PC came to rule not because it was better than its rivals (it wasn't) but because software houses could not write for multiple platforms.

The industry needed a focus and IBM, dominant like no IT company is now, was a natural candidate. The range of PC applications soon became unbeatable.

But rivals prospered for a while. **January** saw the launch of the bestselling $595 Commodore 64.

In **February** came the Sirius (*see below*) and the founding of both Compaq and Sun. Intel launched the 6MHz 80286 which could access 16Mb RAM (most of it invisible to DOS).

In Britain, more flurry was caused by the **April** launch of Sinclair's ZX Spectrum.

In **June** Columbia Data Products launched the first PC clone, seeding a new world industry. Epson shipped its 3lb HX-20 notebook.

In **August** Wales-based Dragon Data bravely launched the £199 Dragon 32.

In **November** six-month-old Lotus launched its 1-2-3 spreadsheet and Compaq introduced a portable PC after spending $1m developing a BIOS that did not breach IBM's copyright.

Apple was riding high, becoming the first personal computer company to top $1 billion in sales, and the Mac was yet to come.

Oh, and TCP/IP was named the protocol suite for the collection of linked nets, including Europe's new EUnet, that was coming to be known as the internet.

The first of the clones

Retrobytes

- A 6MHz Intel 8286 processed 0.9MIPs.
- A Sharp MZ80-A with an Epson MX80 printer and custom interface cost £787 (ex VAT).
- £1,500 bought a 6Kb Osborne "portable" and £100 worth of software.
- Microsoft had revenues of $24m and 220 staff.
- Intel made $30m on an income of £899m.
- IBM made $4.4 billion on revenues of $34 billion.

Some day in the not too distant future, your office — or even a corner of your living room — could look vaguely like this

Not too far from the truth? You decide. This was PCW's vision of an office of the future

Sirius business

Chuck Peddle, designer of the 6502 processor and the Commodore PET which first housed it, is widely regarded as the man who started the personal computer industry. Chuck ended up leaving Commodore to set up his own company, Sirius, which in early 1982 released its first product and, indeed, the first serious competitor to the IBM PC. He described his Sirius 1 as a third-generation computer, based around a 16-bit processor (the Intel 8088 running at 5MHz) and plenty of memory (128Kb RAM). It also

boasted a pair of 5.25in floppy disk drives, each capable of cramming an impressive 600Kb on one side of a disk. The basic system cost £2,395, or £3,890 with 512Kb RAM

Above all, Peddle says, they should be designed for the end-user rather than the programmer, and be regarded not so much as a computer but a piece of business equipment. The Sirius came with CP/M-86, the 8086 version of the CP/M operating system, Microsoft Basic-86 and an early WordStar; MS-DOS was available later that year.

Showing true colours

Colour, sound and high-resolution graphics for £125? It could only be the new Sinclair ZX Spectrum, a home computer so revolutionary that the expected name, ZX82, was simply not good enough.

The Spectrum measured 233 x 144 x 30mm, weighed 520g and, unlike its predecessors, actually boasted keys that pressed down — well, squidged down, anyway. It may resemble a desk calculator today, but at the time we described it as "extremely elegant", or at the least, truly rubbery.

The earlier ZX81 could be expanded to 16Kb RAM, but the £125 Spectrum came with it as standard. Another £50 got you the vast 48Kb model, but both at the time of release were mail order only. Unfortunately most of us had to go through two or three models before we got one that worked, but the British public couldn't get enough.

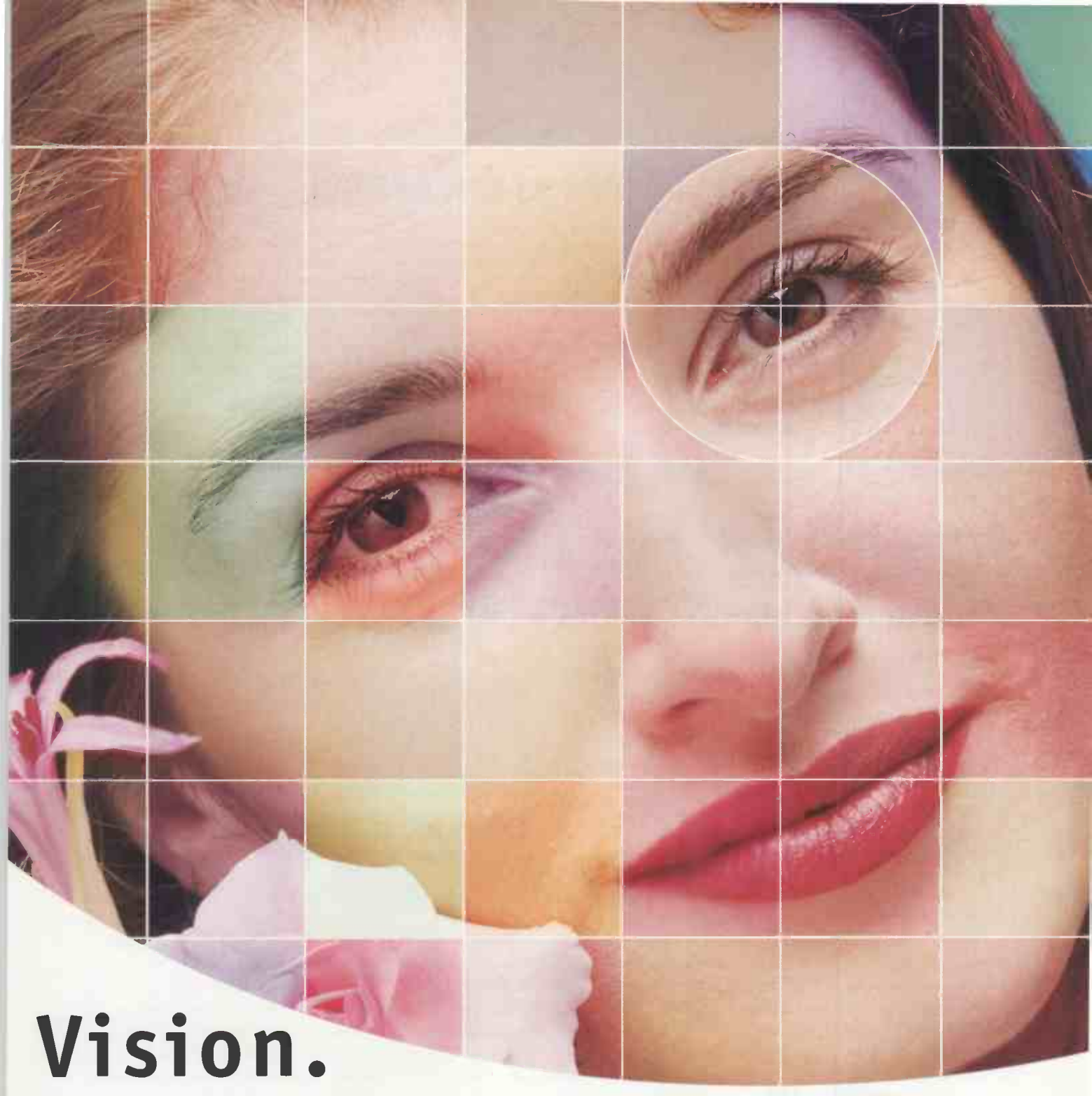
The graphics at 176 x 256 pixels were fairly high resolution at the time, but you could only assign colour to them in considerably lower resolution blocks of 24 x 32 characters. Sneaky. The sound facility was aptly named BEEP, as that was about all it did and also cunningly froze the processor while it was at it.

Most people remember the inspired keyboard-entry system (first seen on the ZX80 and ZX81) where a single press would pop up entire words: most keys had up to five such words or symbols.

Programming the 3.5MHz Z80A processor had never been so much fun. Programs were loaded by cassette, with the fabled MicroDrive tape system scheduled to arrive later at around £50 each and the same again for the interface. A thermal printer was also available.

The ZX Spectrum really took off as a games machine, spawning an enormous market which flourishes to this day. Most of its owners were closet programmers too, which helped place the UK as the highly computer-literate country it is today.

p82 ➢



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1983

Apple looked to be making all the running in **January** when it unveiled the 5MHz 68000-based Lisa, its first attempt at a mouse-driven graphical user interface. Lotus spent $1m launching 1-2-3, which needed an unprecedented 256Kb RAM.

In **March** IBM launched the $5,000 XT with 128Kb RAM, a 10Mb drive and a 360Kb floppy: a configuration the new MS-DOS 2.0 was designed to support.

In **April** Microsoft showed versions of Word and Windows. In **May** Fujitsu announced a new 256Kbit RAM chip and Sony showed a 3.5in double-side double-density floppy. Osborne filed for Chapter II bankruptcy protection and Novell launched Netware for PCs.

In **October** IBM introduced the $9,000 8088-based XT Model 370 with 768Kb RAM and a 10Mb drive. And in Britain, Apricot offered its 5MHz 8086-based ACT.

In **November** SSI shipped WordPerfect 3.0 and IBM launched its buggy PCjr, starting at $700.

Microsoft released Word 1.0 but failed to interest IBM with its yet-to-be-launched Windows. IBM was working on a DOS multitasker called TopView. In the event, Digital Research beat both to the market with GEM.

In truth, an effective GUI needed more power than was available, but it was clearly going to come. Philips and Sony backed their faith by beginning development of the CD-ROM.

PCs go soft and GUI

Retrobytes

- A 10MHz Intel 8286 processed 1.5MIPS.
- £1,500 got you 30 ZX81s.
- Compaq took a record $329 in its second year.
- An ACT Apricot with floppy drive, 256Kb RAM and Epson RX80 printer cost £1,800 (inc VAT).
- Microsoft had revenues of $50m and 476 staff.
- Intel made $116m on an income of £1.2 billion.
- IBM made $5,4 billion on revenues of $40 billion.

Commodore 64 hits shops and attracts worldwide acclaim

"Home computer or small business system?" was the question we asked of the Commodore 64 in May 1983. Originally costing £344.95, the 64 found itself pitted against the likes of the BBC Micro, leaving the ZX Spectrum catering for entry-level computing. With a decent keyboard occupying almost its entire surface, the 64 more than physically resembled Commodore's earlier VIC 20. Under the lid however beat the heart of a 6510A (a 6502 development) processor, accompanied by 64Kb RAM and a rather spectacular sound chip named SID. It may have had business aspirations, but with the SID chip driven by superb musicians such as Rob Hubbard, and sprite graphics capability, the 64 became the games computer to own. As its price dropped, the 64 ended up being one of the bestselling home computers in the world.

The tower of Lisa is leaning towards the success of the Mac

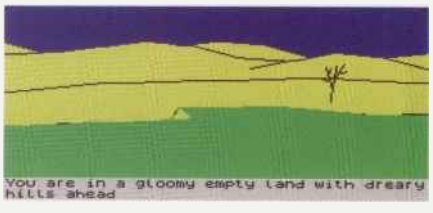
Most agree that Xerox's advanced research labs in the late seventies/ early eighties were responsible for the first GUI, but it never carried it through into a viable commercial product: a fully equipped Xerox Parc Star system came in at around $50,000. For more reasonably priced products you'd have to travel to January 1983, when *PCW* was invited to review two new products based on "the graphics mouse... the vehicle that (will) smoothly usher in the next generation of computer users — keyboard-phobic executives".

One product was VisiOn from VisiCorp (business partner of Dan Bricklin's Software Arts which developed the groundbreaking VisiCalc: see 1979). The other was the Apple Lisa, boasting a much-vaunted 300 man years of development. Compare that with the Apple II's two man years and the Apple III's 25 man years. Lisa stood for quite a mouthful (Locally Integrated Software Architecture) but the whole point was to produce a computer which was easier to use than ever before.

Looking back, the Lisa's operating system clearly shows early inspiration for the forthcoming Mac, with the menu bar at the top, nested folders with draggable contents in moveable windows, and of course the arrow-headed mouse-driven pointer. The Lisa featured a 720 x 364 pixel 12in mono display built into the main unit, a Motorola 68000 processor and 1Mb RAM, but regrettably this innovation would set you back around £7,000 including a printer. It's easy to say that Apple's Mac started the mass acceptance of the GUI in 1984, but technologically the Lisa was there a year earlier.

It's time to play the game — Tolkien brings Bilbo and Gandalf

1983 was a big year for computer games. May's *PCW* alone covered the superb action of Imagine's Arcadia and Melbourne House's Penetrator for the ZX Spectrum. The madness of Automata's Pimania written by Christian Penfold and Mel Croucher baffled UK gamesters searching for the hidden gold and diamond sundial prize allegedly worth £6,000. And those home computer users jealous of Zork on higher-end systems could revel in Melbourne House's The Hobbit, where Bilbo, Thorin and Gandalf explored Tolkien's world, getting frustrated by carefully timed floating barrels and Gollum's invisible-ring antics.



p84 ➢

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1984

In **January** the Apple Mac introduced itself, and a new phase of computing, with the words: "I'm glad to be out of that bag".

Also released was the souped-up Lisa 2, the Commodore 264, a $2,900 portable from IBM, and NEC's 8MHz V20 and V30, clones of the Intel 8088 and 8086.

In **March** *PCW* reviewed the SpectraVideo, first to be built to the MSX games-PC spec, backed by Microsoft and top Japanese companies. MSX went the way of many such moves, fragmenting into nothingness.

Future is where it's AT

Another approach came in **April** when *PCW* featured the Adam, which turned the ColecoVsion games module into a personal computer.

In **May** Amstrad made its début in the computer market with the CPC64.

In **June** Sinclair launched the multi-tasking 16/32-bit QL, with two microdrives. It was novel and well received but failed to take off.

But Britain was still at the leading edge. This was the year of the first hand-held Psion Organiser, with a single-line display.

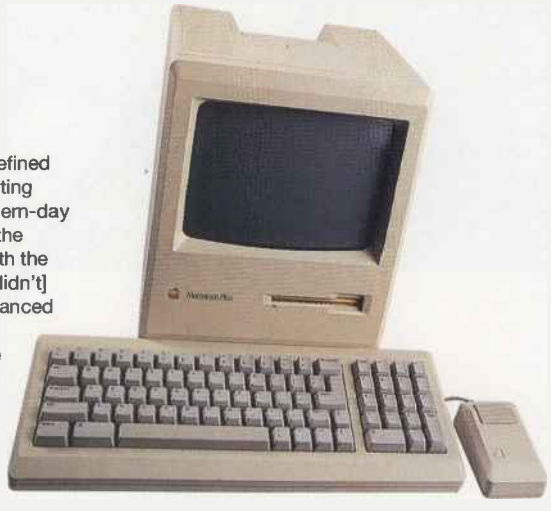
In **August** IBM launched the PC AT (*below*), true precursor of the modern PC, plus its TopView multitasker and the Enhanced Graphics Adapter card and monitor, supporting up to 640 x 350 resolution in 16 colours.

In **October** the internet clocked its 1,000th host. The race was already on for bandwidth: 2400 baud modems were the rage at Comdex in **December.**

Retrobytes

- £1,500 bought you three 2400 baud modems.
- A twin-floppy Apricot.with monitor and daisy-wheel printer cost £2,384.
- An 8088-based IBM PC XT with 768 RAM, 360Kb floppy and 10Mb drive cost $9,000 in the US.
- Microsoft had revenues of $97m and 608 staff.
- Intel made $198m on an income of £1.6 billion.
- IBM made $6.5 billion on revenues of $45.9 billion.

Orwell 'n good



If Apple's advertising campaign of 1984 was anything to go by, the Orwellian nightmare was the conformity of Big Blue's IBM PC. There was now an alternative. Many considered Apple's future to be on the brink after the Apple III and Lisa, but the Mac — a computer for the rest of us — turned the company around.

The original Mac, reviewed in March 1984, was described as using Lisa 32-bit technology. This referred to its relatively quick Motorola 68000 processor running at a fairly nifty 8MHz; this ran in 32-bit internally and 16-bit externally. Compare that to 1983's Lisa running its 32-bit 68000 at around 4MHz, and IBM's Personal Computer employing an Intel 8088 (16-bit internal/8-bit external) running at 4.77MHz.

The original Mac came in an upright 20lb box complete with a monochrome 9in 512 x 342 pixel display, 128Kb RAM and Sony's then revolutionary 3.5in 400Kb floppy drive which was incompatible with Lisa's 5.25in floppies. A basic machine started at $1,995, or around $3,500 fully kitted up, which was still considerably cheaper than the Lisa.

Lisa's Desktop Manager had been refined into the Mac's proprietary Finder Operating System that still forms the basis of modern-day Macs. The "biggest surprise [was] that the Macintosh [was] totally incompatible with the IBM Personal Computer. Moreover, it [didn't] even run stripped-down, revised or enhanced versions of Microsoft's MSDOS Operating System". According to Apple however, over 100 independent software developers were working on products for the Mac. The original system did nonetheless come with the MacWrite word processor and MacPaint, arguably one of the first bitmapped paint packages.

Despite Apple announcing Lisa 2, it also began to develop software to allow the Lisa to emulate the Mac. The fate of Mac's big sister was pretty much sealed, being discontinued a year later. Apple founder and head Steve Jobs described his Mac as: "The fastest and most powerful computer ever placed in the hands of a large number of people". We concluded: "Apple [was] one of the few companies that could take on the IBM/MS-DOS de-facto standard with any chance of winning, and the Mac [was] a terrific weapon with which to enter the battle." We did however argue that some of the graphical-interface features were a little trivial, asking: "How many times can you look at a whimsical icon before you tire of it?"

The Hubot shows that the whole point of having a household robot is to watch TV!

IBM is AT its best with home PC

In August 1984, IBM announced its PC AT system, first equipped with a 6MHz Intel 80286 processor (the first in a product line still supported today), 1.2Mb 5.25in floppy drive and 256Kb RAM: yours for around $4,000, but that didn't include a hard disk or monitor. A more complete system with 20Mb hard disk, colour graphics card and monitor weighed in at around $6,700. The AT did however signal the longterm future of PC hardware, the basics of which still exist for compatibility on even the latest systems.

In the same month, IBM announced the Enhanced Graphics Adapter (EGA), offering up to 640 x 350 pixels in 16 colours. You needed to add a 64Kb memory pack to the standard card however, bringing the total coast of this graphics card to over $700.

Microsoft released MS-DOS 3.0 for PCs, supporting 1.2Mb floppy drives and hard disks larger than 10Mb: ideal for the IBM AT computer.

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System update

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1985

The market was hardly wide open but Intel and Microsoft had yet to corner it. There were many other players.

In **January** Atari introduced the 520ST, with 512Kb RAM, 192Kb ROM, colour and MIDI. It became a favourite with musicians.

In **February** *PCW* gave a rave review to Digital Research's GEM GUI. Microsoft released Word 2.0 for DOS.

In **March** IBM abandoned the IBM PCjr and Apple dropped the Lisa. In **May** Apple sacked Steve Jobs, who went on to found NeXT.

In **July** Aldus released PageMaker for the Mac (see *below*), Quarterdeck shipped Desqview 1.0 for task switching within the PC's RAM, still hovering at 512Kb.

Unlikely IT catalyst Alan Sugar, at Amstrad, shipped the PCW "Joyce", first of two seminal launches. It ran CP/M on an old Z80 but was packaged as a word processor complete with printer, all for £399. It attracted many non-techie users.

In **August** Guy Kewney welcomed the Amiga 1000 as giving a "new price level to business computing".

In **October** IBM launched token ring and Intel introduced the 80386. Not to be outdone, Britain's Advanced Risc Machines shipped its first 32-bit Risc chip which débuted in an Acorn accelerator card.

In **November** Microsoft shipped Windows 1.0, two years after its announcement. It made little impact.

Nintendo introduced its games module.

A spoonful of Sugar

Retrobytes

- The new 16mHz 80386 was ten times faster than the first 8086 and at $299, 11 times cheaper per MIP.
- A mono Atari 520 ST and Epson LX-80 printer cost £1,054 (ex VAT).
- £1,500 got you half a Canon Laser-Beam printer.
- Microsoft had revenues of $140m and 910 staff.
- Intel made $1.5m (sic) on an income of £1.6 billion.
- IBM made $3.5 billion on revenues of $26 billion.

A TOS up for Jack's ST

Former founder and boss of Commodore, Jack Tramiel, left to head up Atari at the beginning of 1984. The fruits of his labours arrived in mid 1985 with the Atari ST, complete with Tramiel's catchy slogan "Power without the price". At £749 for a 68000-based machine with 512Kb RAM, 3.5in floppy drive, high-resolution graphics and the GEM graphical user interface, the ST was dubbed a Mac-beater, or the Jackintosh. Proud of his new toy, Jack shamelessly gave his name to the ST's Tramiel Operating System, resulting in a rather unfortunate acronym.

Nonetheless, the ST was a huge success, bought in droves as much by the Mac as the Amiga wannabes. It beat both in one respect beyond price, however: the inspired fitting of a pair of MIDI ports made the ST the music-studio computer of choice for many years, and pretty much launched sequencing outside of dedicated boxes. For most though, the ST was a much-loved games machine.

One month after our review of the Atari ST came the long-anticipated Commodore Amiga, one very excited Guy Kewney and a nine-page review: "It does multitasking. It has colour. It uses a mouse and icons. It's fast, has plenty of memory and uses cheap, large-capacity disks". He was "sure this really [was] the micro [he'd] been waiting two years for the world to produce".

Birth of DTP

Computers thrive on killer applications and the Mac needed only wait one year before its holy grail arrived: and its name was desktop publishing. The Mac's friendly graphical user interface, coupled with Aldus PageMaker and the first affordable PostScript laser printer, heralded the DTP revolution. Indeed, we can thank none other than president and founder of Aldus, Paul Brainerd, for coining the term "desktop publishing". The name Aldus, incidentally, comes from Aldus Manutius, the 15th century printing pioneer whose profile graced PageMaker's opening screen.

It was years before you could perform serious DTP on a Windows-based PC, by which time the Apple Mac dominated the business. Even today the majority of UK publishers, including those of *PCW*, are still putting their pages together on Macs.

Amiga's game on

At $1,500 the Amiga was at first considered to be more a business machine than one for the home. You got an 8MHz Motorola 68000 processor, 256Kb RAM and three fabulous custom hardware chips (called Paula, Daphne and Agnus) which raced through graphics and sound leaving the main CPU to better things. It featured a colour GUI two years before Apple and could multitask from day one, but with all those cool graphics and audio capabilities and a pair of joystick ports thrown in, what fate befell the Amiga? Yes, you guessed it: despite carving a slight niche in some aspects of video post production, the Amiga fast became the aspirational games machine. Its price never dropped as low as the Atari ST, but the two battled it out for supremacy in the entertainment market for years to come.

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1986

Here began the heyday of DOS PCs, which were finally getting the RAM and power for sophisticated, albeit text-based, software.

Memory-resident (TSR) utilities like Sidekick provided Windows-like pop-up services; must-haves were Norton Utilities (for its Undelete) and Traveling Software's LapLink for swapping files between PCs.

In **January** PC-cloner Compaq announced record $503.9m revenues and Apple launched the 8MHz Macintosh Plus and the LaserWriter Plus. IBM announced the short-lived IBM RT, one of the first 32-bit RISC computers.

Microsoft released DOS 3.2 with support for 3.5in 720Kb floppies. In **March** Microsoft sold its first shares at $21 per share.

In **August** Intel shipped the 32-bit 80386, ramping up the MIPS for the coming graphics revolution. Almost immediately, Compaq shipped 386 PCs (*below*).

In **October** *PCW* enthused over Amstrad's second seminal product, the PC 1512 (*below*), starting at £399 (ex VAT). It opened the UK home market to PCs but at the expense of innovative British companies like Acorn and Apricot.

This was the year Inmos UK pioneered parallel processing with the T800 transputer, NEC launched the multisnyc monitor, Gateway 2000 shipped its first PC, and the Small Computer System Interface (SCSI-1) standard was finalised.

The PC hits UK homes

Retrobytes

- £1,500 bought you 2.75Mb of RAM in the form of 256Kb chips.
- A colour Amstrad 1512 with 10Mb disk and Epson NLQ LX86 dot-matrix cost £1,236 (inc VAT).
- Microsoft had revenues of $197m and 1,153 staff.
- Intel *lost* $178m on a £1.26 billion income after demand slumped as expensive new fabs opened.
- IBM made $4.7 billion on revenues of $51billion.

Self-confessed rip-off

In October 1986, Guy Kewney described Amstrad's PC1512 as "probably the most important British micro to appear this year". The PC1512 was codenamed AIRO, an acronym invented by Amstrad boss Alan Sugar himself, meaning Amstrad IBM Rip-Off.

The 1512's big problem was an inability to use high-resolution EGA-enhanced graphics adapter cards. This may have been a problem for some, but most important was the price: £399 (ex VAT) meant that "many people who always wanted a PC [could] now afford a very nice one".

Your money got you an Intel 8086 processor running at 8MHz (switchable to 4.77MHz), 512Kb RAM and a 5.25in 360Kb floppy drive; MS-DOS 3.2 was included, as was a monitor and keyboard. Strangely, the monitor powered the system, and the keyboard used a non-standard plug. This limited expansion possibilities, but at £399 for a basic PC clone, we said: "What more could you want?"

Compaq on the desk

Towards the end of 1986, Intel officially announced its true 32-bit 80386 processor, and hot on its heels was Compaq's DeskPro 386: our first official 386 review written by Peter Jackson in November's issue. "As the leader in the IBM compatible market, it was obvious Compaq would build a 386 machine, but at the same time Compaq does not have the muscle to impose brand new standards on the business micro world." The problem was the "absence of any 32-bit product line or statement from IBM", forcing Compaq to "tread a narrow path".

"On the one hand, sticking to the old (IBM/Microsoft PC-DOS 1981) standard at the expense of performance would waste the potential of the chip. On the other, unleashing the full power of the 32-bit processor would mean a proprietary machine with no software available, and no guarantee that IBM would decide to become Compaq compatible when it launched its own range of 32-bit systems."

The design of the DeskPro 386 was the result of walking such a tightrope, and indeed ended up setting the standard for PCs for years to come. For example, the DeskPro's powerful 16MHz 32-bit 80386 processor acted like an 80286 when first started up.

"First the 80386 mimics the 80286 protected mode features, including the protection itself and the 16-bit instruction set. On top of that sit the specific 80386 features that give the chip its real power," such as direct addressing of 4Gb RAM, memory paging and the full 32-bit instruction set. "Most important for the future though is [what] the 80386 called virtual mode", allowing real mode programs written for the 80286 to be run in separated protected areas of memory. We eagerly awaited a "protected mode" operating system to arrive, exploiting the chip's potential — it was hoped that Microsoft's long-awaited MS-DOS 5 would do the trick.

The style of the DeskPro signalled the shape of things to come

Jackson summed up the DeskPro's architecture and in hindsight described many PCs to come: "The DeskPro 386 [was] split into two functionally separate parts. On one side of an invisible divide is the 16MHz processor and its 32-bit slotted RAM; on the other is an 8MHz AT clone." He concluded: "If it gets a real operating system and drops all this 640Kb RAM barrier, the DeskPro 386 should give any new IBM PC a run for its money." Sadly, we'd have to wait a few years yet.

Described as "aggressively priced", a standard DeskPro 386 with 16MHz 80386 processor, 1Mb RAM, one 1.2Mb floppy and a 40Mb "Winchester" hard disk cost £5,399 minus monitor. Just over £2,000 extra got you a 130Mb hard disk, while a 4Mb to 8Mb RAM expansion came in at £2,695. A relatively good buy at £695 got you an intelligent 40Mb tape streamer.

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1987

A vintage year for products, and one in which IBM found it had lost control of the PC.

In **March** US Robotics unveiled the 9.6Kbps Courier HST modem. And Sinclair's Cambridge Computing launched his final classic — the £200 Z88, a mobile which has yet to be bettered at the price.

In **April** (*left*) *PCW* tested the 68020 Mac II, the first with colour, a separate monitor and slots for PC-style add-on cards ... and plug-and-play, which Windows would not get until 95.

IBM launched the PS/2 range with two important innovations: VGA, giving 16 colours at 640 x 480; and Micro Channel Architecture, a sensible but doomed attempt to upgrade the PC.

Microsoft announced Windows 2.0 and IBM shipped TopView, only to drop it in weeks. Apple created Claris to sell some software.

In **August** came the second UK classic of the year: Acorn's Archimedes, driven by an ARM Risc chip and doomed like many non-PCs to be squeezed into a niche.

In **October** we reported the battle of the Sega Master, the Nintendo and Atari 65XE games consoles.

In **November** Borland shipped its Quattro spreadsheet, whose 1-2-3 emulation resulted in a nine-year legal battle with Lotus.

In **December**, the millionth copy of Windows was sold, despite a lack of applications. And Microsoft and IBM both shipped OS/2.

IBM loses its control

Retrobytes

- A 20MHz 80386 processed 7MIPS.
- £1,500 bought four 20Mb Winchester hard drives.
- Digitask sold 386-based systems from £2,600.
- Compaq posted $1.2 billion sales: the fastest growth ever from start-up.
- Microsoft had revenues of $346m and 1816 staff.
- Intel made $248m on an income of £1.9 billion.
- IBM made $5.2 billion on revenues of $54.2 billion.

DTP matures

1987 was a great year for DTP, with the first releases of Ventura and Quark XPress, and PageMaker becoming increasingly mature. The Atari ST joined in too, with a DTP bundle consisting of one of the first cheap laser printers driven by the new Mega ST models. Atari was also one of the first out with a CD drive, the CD-001 costing £399. The McEmulator, said to turn your ST into a Mac clone for £150, while being great fun didn't fare so well.

The return of the Mac

The original 1984 Mac was an undeniably impressive machine with an operating system which continues to influence developers to this day. The only trouble was that it wasn't taken seriously as a business computer, not like an IBM or compatible system.

Apple's Macintosh II, reviewed in April 1987's *PCW*, changed all that. It was the first Mac to break away from the all-in-one design, instead favouring the separate monitor and main system box of, how shall we say, more serious computers. This gave Apple a great opportunity for expansion, sensibly fitting six slots into the Mac II. While the IBM AT design was struggling with 8- and 16-bit slots, the Mac II boasted Apple's 32-bit NuBus architecture.

Power-wise, the Mac II featured a Motorola 68020 processor running at 15.6MHz, accompanied by a Motorola 68881 floating point co-processor. It was the first Mac to offer a built-in SCSI interface as standard, which did no harm when you wanted to easily fit additional drives, scanners and the like.

The Mac II was also the first colour Mac and Apple had already done its homework, offering a small but perfectly formed rebadged 13in Sony Trinitron monitor, driven at a considerably less flickery 66.7Hz than the average 60Hz of the competition. The Mac operating system at 640 x 480 pixels in 256 colours had never looked so good. 1Mb of RAM came standard, expandable to 8Mb, and you had the choice of a 20, 40 or 80Mb SCSI hard disk. The 40Mb version came in at around £5,500.

PCW said the Mac II "marks Apple's entry into the realm of serious computing", and concluded that "you can disagree with any number of individual design details on the Mac II, but you can't call it a toy".

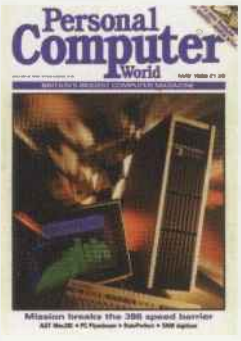
Archie colours up and speeds up

"Is this the world's fastest micro?" we asked of the new Acorn Archimedes in August 1987. Our reviewer, Dick Pountain, was smitten: "The A500 felt like the fastest computer [he'd] ever used by a considerable margin; just about everything you [did] happen[ed] instantaneously." This power came from Acorn's ARM (advanced RISC machines) technology which produced a 32-bit Reduced Instruction Set Computer (RISC) chip, resulting in four MIPS from a relatively modest 4MHz clock speed.

The Archimedes, or A series, came in two flavours: the A300 series were replacements for the BBC Micro and Master, indeed wearing the BBC badge, while the A400 series, badged by Acorn, was more upmarket, featuring hard disks, memory and greater expansion capabilities.

The basic A305 with 512Kb RAM cost £799, while an A440 with 4Mb RAM and 20Mb hard disk would set you back £2,299. A colour monitor cost £200. And you'd want colour, too, as the Archie raced through graphics and was demonstrated drawing swift mandelbrot sets or playing the excellent 3D Lander game.

1988



Four years after the Mac demonstrated the power of the GUI, PCs were still predominantly running under text-based DOS (to be fair, it was far easier for Apple to innovate within its narrower base of users and hardware).

In **March** it sued Microsoft and Hewlett-Packard, claiming their GUIs (HP had one called NewWave) infringed its copyright: cheeky, considering Apple copied the Mac's from Xerox.

The PC meanwhile was creeping up to the price-performance needed for a mass Windows market. In **June** Intel launched the SX, a 386 with a 16-bit data bus to fit cheaper motherboards.

In **September** IBM launched a new PS/2 using the AT (to become known as the ISA) bus rather than its new MCA bus, while 61 companies backed the rival Extended Industry Standard Architecture (EISA).

Compaq introduced its first VGA laptop, using a 12MHz 286 and a 10in greyscale display.

In October Ashton-Tate released dBase IV for DOS and Steve Jobs unveiled the sensation of year, the NeXT computer, a stylish black cube running the remarkable NeXTStep OS.

In **November** came the Ami word processor for Windows, and Aldus was reported to have scrapped a similar project after being given a preview of Microsoft Word for Windows.

Spectrum Holobyte sold Tetris — the first game to be imported from Russia.

Dossers still dominate

Retrobytes

- A 16MHz 386SX cost $40 less at $165 than the 386 but nearly twice as much in cost per MIP.
- £1,500 (ex VAT) got you a 286-based Brother BC-20 PC and an HP DeskJet.
- A 16MHz portable mono Mac cost £4,500.
- Microsoft had revenues of $591m and 2,783 staff.
- Intel made $453m on an income of £2.87 billion.
- IBM made $5.8 billion on revenues of $60 billion.

History of OS/2

IBM and Microsoft shipped OS/2 1.1 with the Presentation Manager GUI in November 1988. Bill Gates said: "During the next ten years, millions of programmers and users will utilise this system."

In January 1983 Microsoft began work on a multitasking DOS which led to OS/2. IBM had a project led by Ed Lacobucci who later developed the Citrix technology upon which Microsoft Windows Terminal Server (Hydra), due for release this summer, is based. In 1985 IBM and Microsoft pooled their efforts but it was a team in name only. Microsoft wanted the GUI to be Windows, IBM wanted the Presentation Manager from Hursley, UK. Nathan Mhyrvold, Microsoft's chief technology officer, originally joined Microsoft to resolve this battle.

OS/2 was announced in April 1987. It shipped late, in December 1987, without the GUI and with limited printer support. Relations between IBM and Microsoft didn't improve. Microsoft's involvement ceased in 1990 with OS/2 1.3, still the leanest, fastest NOS kernel today. MS spurned OS/2 for Windows NT in 1990 but the break wasn't concluded until 1992 after IBM shipped OS/2 2.0. Bill Gates said he would support OS/2 2.0 if it sold a million copies. It did. He didn't.

The NeXT best thing for Jobs

December 1988's *PCW*: "When Steve Jobs left Apple three years ago and announced he was going to build the NeXT thing in computers, he wasn't given much chance to succeed. But the (Unix-based) NeXT computer system is finally here. However, it took so long to arrive that several other companies, notably Sun and Apollo (the latter taken over by HP in mid 1989) got well ahead in the field."

The NeXT was a striking computer in every respect. On the outside, the one-foot magnesium cube housing the system, the 17in 1,120 x 832 pixel display, the keyboard, mouse and even optional 400dpi laser printer were all finished in a very stylish black.

The inside of the cube was equally impressive. At its heart beat three Motorola processors clocked at 25MHz: the main 68030 backed up by a 68882 numerical co-processor and an impressive 56001 digital signal processor (DSP). Much of the NeXT's blistering performance was due to a custom Integrated Channel Processor chip featuring no less than 12 Direct Memory Access (DMA) channels used to move data without interrupting the main 68030 processor. Compare that to five DMA channels on a nineties PC.

Another custom chip looked after a then-revolutionary 256Mb rewritable optical drive, a Canon device which used 5in disks fitted into cartridges; an optional 330Mb or 660Mb Winchester hard disk could be fitted. 8Mb RAM was standard, expandable to 16Mb.

The software was even more impressive than the hardware, based on the Mach operating system, a variety of Unix developed at the University of California, Berkeley. On top of the basic OS lay the NeXTStep system software. One impressive aspect of NeXTStep was its use of display PostScript, developed in conjunction with Adobe, and boasting a "lightening fast and very powerful graphical user interface". It also allowed the laser printer to be a very simple device.

The next step for Jobs after Apple was, in fact, NeXT

When we first looked at the NeXT, it could only be purchased by US academic institutions. Significant quantities didn't arrive until around six months after its first launch, and the poor old UK had to wait a further 12 months before we got a go. The NeXT's official UK launch came in February 1990, and a version of the OS for Intel processors came shortly afterwards. Steve Jobs returned to Apple in 1997 along with his NeXTStep operating system, which is likely to form the basis of Apple's forthcoming Rhapsody industrial-strength alternative to MacOS.

p94 ➢

1989

This was the year of the portable, **and** not only because **it saw the** start of the PC Memory Card International Association (PCMCIA) to develop what would become the PC Card notebook slot.

In **January** Microsoft released Quick Pascal, to vie with Borland's excellent Turbo Pascal. Apple launched its most powerful Macs yet, the SE range.

In **April** Intel launched the chip that was to be the making of Windows: the 486, essentially a 386 with a built-in maths co-processor.

In **June** Apricot scooped the world with the first 486 PC, costing $18,000. The next month *PCW* reviewed IBM's alleged portable, the P70, which weighed 20lb.

August saw the advent of one of the first useful palmtops, the DOS-based Dip (sold by Atari as the Portfolio). Apple showed its portable Mac in **October.**

In **November** Psion launched its MC range, a radical attempt at true mobiles (light and easy for both input and access of data). They lacked good screens and cost too much. Worse, they turned Psion against the format.

In **November** at Comdex Microsoft endorsed OS/2 and IBM backed Windows, a sure sign they were parting ways. WordPerfect was at the peak of its success at version 5.1. Microsoft shipped Word for Windows 1.0.

In **December** Lotus shipped Notes and *PCW* splashed Atari's new Stacy "portable". It weighed 9kg.

The PC gets portable

Retrobytes

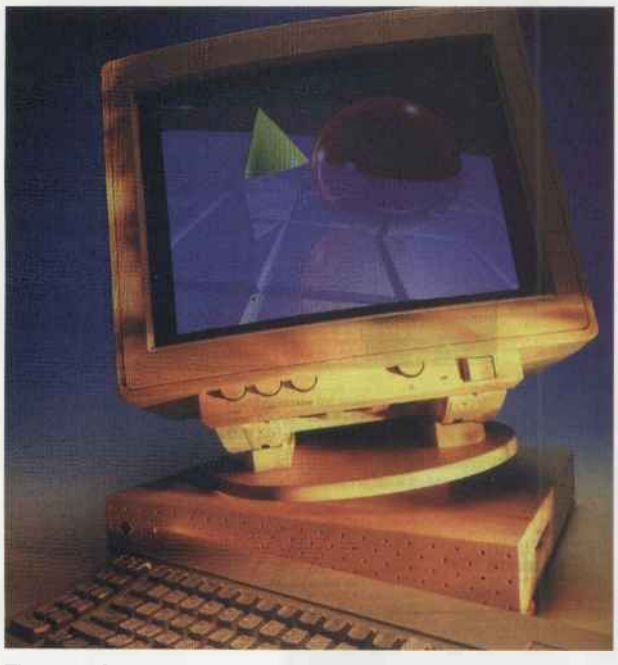
- A 25MHz 486 cost $950 at launch: five times as much as a 386, but about the same cost per MIP.
- £1,500 (ex VAT) got you three 2Mb RAM cards.
- An Amstrad PPC 640S portable PC with 2400 baud modem cost £524.
- Microsoft had revenues of $804m and 4,037 staff.
- Intel made $391m on an income of £3.1 billion.
- IBM made $3.76 billion on revenues of $63 billion.

SPARCs of inspiration start to fly

In June 1989 we commented that "as the high-end PC world tends more and more to have the flavour of workstations, so workstation manufacturers are styling their "low-end" machines to tempt the top of the PC and Mac markets". One such workstation manufacturer was Sun, which promised a "welcome to the new world" in the publicity for the launch of its SPARCstation 1.

The SPARCstation departed from traditional workstation design, instead borrowing much from PCs at the time in terms of slimline case styling and mass-production manufacture. The whole point was to produce true workstation performance at prices competitive with high-end PCs and Macs. The SPARCstation was designed to run Unix with a graphical interface. While this was incompatible with MS-DOS, we argued that the jump to Unix (in order to gain higher performance, multitasking and better hardware support) was no bigger a jump than that to OS/2, itself then lacking significant market penetration.

The SPARCstation 1 was built around an LSI-built SPARC RISC processor running at 20MHz, accompanied by a customised Weitek 3167 co-processor, 8Mb RAM (then expandable to 16Mb), a single 3.5in 1.44Mb floppy drive and the choice of one or two 104Mb SCSI-II hard drives. The display ran at 1,152 x 900 pixels in 256 colours or shades of grey, with the option of 16, 17 or 19in monitors. Ethernet, SCSI-II and audio were standard.



The SPARCstation was a new start in workstation design

A hard-diskless system with 17in greyscale monitor cost £7,400, while one with 104Mb hard drive, a 16in colour display and GX graphics accelerator weighed in at £16,400. The SPARCstation 1 and other workstations never took over the mass market but, like Silicon Graphics machines, made friends in scientific and post-production special-effects facilities.

PCW says 486 is 'evolution in action'

IBM was the first manufacturer to produce a machine fired by Intel's brand-new 80486 processor, which Peter Jackson took apart in September 1989's *PCW*.

"The 80486 [comprised] more than one million transistors, linked together to form on-chip functional equivalents for three previously discrete chips: the 80386 basic processor, the 80387 match co-processor, and the 82385 cache controller with 8Kb of mixed data and instruction cache memory.

"In other words, add some main memory and some input and output hardware, and the 80486 on its own can form the heart of a system with all the features of today's top 80386-based PCs." We concluded: "The 80486 [was] not revolutionary. It [was] simply evolution in action; the 80386 has had its day and is on its way down, while a superior version that can do more has just arrived and can only become cheaper and more prevalent. The old chip is dead but just doesn't know it yet." The 386 would know it soon enough however, with its exit to be hastened by the power-hungry Windows 3.0 just around the corner.

In the meantime, IBM's Model 70-A21 Power Platform with the first 25MHz 80486, 8Mb RAM, 120Mb ESDI hard disk, VGA graphics and monitor, and ill-fated MCA expansion slots, cost around £3,000.

p96 ➢

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Happy birthday 2U
Happy birthday P C W
Happy birthday...

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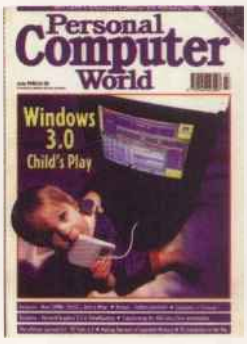
1990



PCs get the picture

The PC was at last ready for a graphical interface, with entry-level systems (just about) able to run one.

Rising PC power had hit the lucrative mainframe business, forcing mighty IBM to retrench with many layoffs. Unix vendors pushed vainly downmarket.

In a Cerne particle-physics lab, a British coder called Tim Berners-Lee drew up the first spec for the World Wide Web.

In **January** we pitted the new EISA bus against IBM's MCA (*see 1987*). But the real contest was one of market strength between IBM and the cloners. IBM lost.

In **April** *PCW* splashed IBM's RS/6000 mid-range box. Its success did not stop the march of the PC.

In **May**, as Intel introduced the 33MHz 486, Microsoft launched a new era with Windows 3.0. And Xerox lost its suit over Apple's use of its windowing GUI.

CP/M pioneer Digital Research, soon to be bought by Novell, valiantly launched DR-DOS 5.0, its rival to MS-DOS. And federal anti-trust officials began an investigating Microsoft.

In **September** IBM and Microsoft finally agreed to part ways: IBM to go the way of OS/2, Microsoft to rule desktops with Windows.

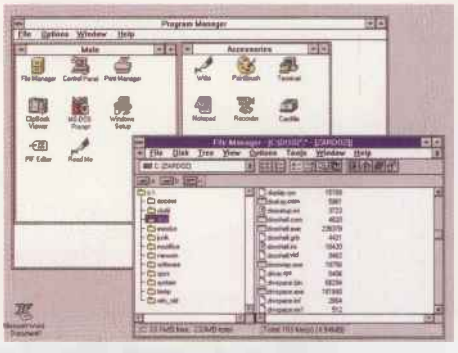
In **November** a10MHz 286 processor, 2Mb RAM and a 30Mb drive were specified as minimum for a multimedia PC. Back in the real world, Microsoft shipped the first Object Linking and Embedding (OLE) library.

Retrobytes

- A 1.44Mb floppy drive cost £97.
- £1,500 got you a 20MHz 386 Bravo PC with a 20Mb disk and 14in colour display.
- An HP LaserJet IID printer cost £1,835.
- Microsoft had $1.18 billion revenue and 5,635 staff. It spent $3m on the Windows launch.
- Intel made $650m on £3.9 billion revenue.
- IBM made $6.2 billion on revenues of $67 billion.

When I'm using Windows

In July's issue, then-editor Guy Swarbrick checked out Windows 3.0. "Apple may have been the first company to successfully produce a GUI as a commercial product, but it wasn't long before the PC-based imitations began to appear. Microsoft's Windows was a different type of program altogether. Using the term GUI [was] stretching things more than a little. Windows was a text-based file manager that just happened to run in graphics mode and use a mouse. Until recently Windows [had] suffered, not only from being awkward to use, but from having few applications available for it that were capable of luring users away from DOS. Windows 3.0 should answer both these criticisms as well as providing a useful increase in speed and the ability to multitask both Windows and DOS apps."



The familiar face of Windows 3.1 tweaked the styling of Windows 3.0's icons

The Program Manager allowed you to sort your applications into customisable groups. The File Manager had been radically upgraded, no longer requiring keyboard intervention to copy, move or delete files. "Perhaps the most important feature of Windows 3.0 [was] its ability to multitask existing DOS apps on a 386 and to do so in a window."

Swarbrick concluded that Windows 3.0 did "everything GEM does and for the most part, it does it better. Windows 3.0 may even be the program to make OS/2 a success at last. Once hooked on Windows 3.0, I suspect the reliance on traditional DOS programs will gradually fade, and when everything is done under Windows anyway, the transition to OS/2 should be relatively painless.

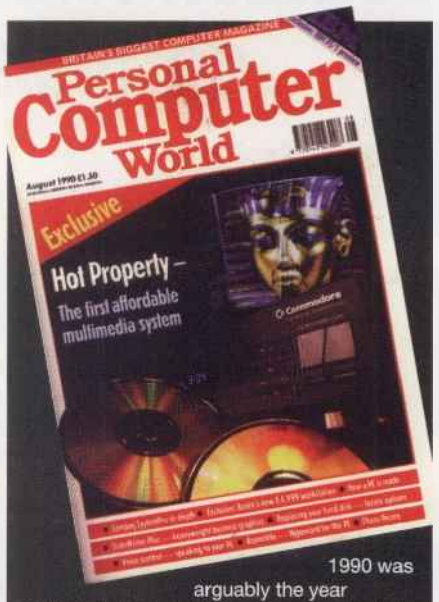
"Windows' success depends largely on Microsoft's marketing. If the company can forget the pretence that DOS 4 is a friendly OS and sell Windows 3.0 to OEMs as the standard OS for 286, 386 and 486 PCs, it may yet fend off the Unix challenge." Microsoft clearly did its marketing right, and with the release of Windows 3.1 two years later, its OS became the dominant force it is today.

On the buses

You wait ages for a bus to come along, then two arrive at once. Well, almost. In January 1990, Peter Jackson continued to report on the impending high-speed bus war between IBM's MCA and the "gang-of nine" clone-makers who produced the Extended Industry Standard Architecture, EISA.

We managed to get a peek at the first EISA machine, but they were certainly in the minority. Jackson concluded: "With 3.5 million MCA machines already in use and no EISA machines yet shipped, IBM need not panic yet. It must do more talking, and more convincing talking, to gather more MCA believers before the EISA evangelists do any more damage."

No amount of evangelising could halt the power of Intel which came along a few years later with its PCI bus, banishing EISA, MCA and VESA's VL local bus to the depot in the sky.



1990 was arguably the year multimedia begun with a vengeance. We take it for granted on today's PCs but back then the arrival of CD-ROM drives and sound facilities was monumental. There were a few ill-fated crossbreeds such as Commodore's CDTV and Philips CDi, but multimedia was definitely here to stay.

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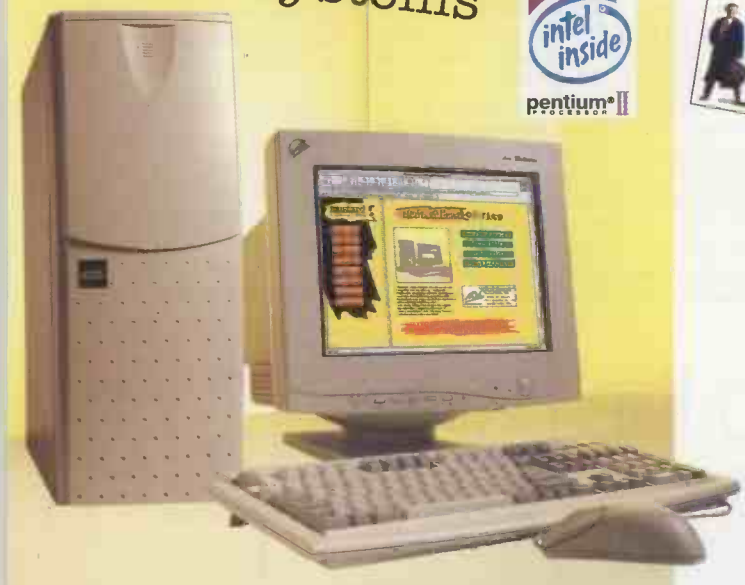

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1991

Applications began to catch up with the GUI boom, with Windows versions of Word, Excel, PageMaker and CorelDraw. AMD put pressure on Intel with cheap 20MHz and 40MHz 386 clones.

In **April** Intel introduced the 20MHz 486SX and Apple released its System 7.0 operating system. This was no threat to Windows 3.0, which by **May** (when Microsoft announced Visual Basic) had sold three million copies.

In **June** Microsoft shipped MS-DOS 5.0, finally replacing its ludicrous Edlin editor and adding an overdue Undelete. It also (prematurely) announced NT.

In **July** Borland bought dBase owner Ashton-Tate, starting a fatally long haul to develop a Windows version.

August saw a lifting of a ban on business use of the internet. **September** saw the first Psion 3 palmtop.

Motorola, Apple and IBM formed an alliance to build a flexible platform around the PowerPC chip.

In **October** Apple unveiled a range of PowerBooks and Quadras. In **December** we previewed Win 3.1 with praise but it was essentially a streamlined bug-fix.

Prices were falling. Early in the year we splashed two "cheap" 486 PCs (*left*). Each cost around £4,000. In December you could get a 486 for less than £2,000.

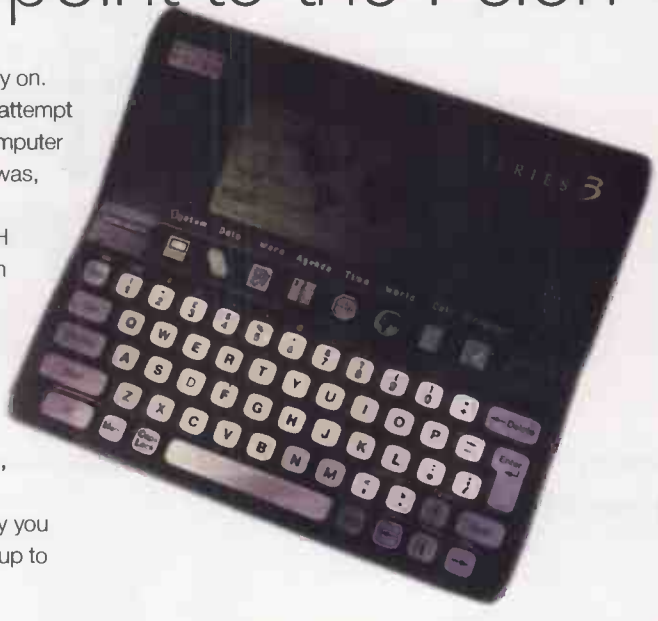
Sound cards were improving: Ad Lib announced its Gold series and Creative Labs introduced the first PC stereo model, the SoundBlaster Pro Deluxe.

The first of the clones

Retrobytes

- A 50MHz 486 cost $644. 100 times faster than an 8086, it was 36 times cheaper per MIP.
- ZDS's MasterSport 386 SX notebook cost £3,695.
- £1,500 got you a 33MHz 386 PC with a 44Mb disk and 2Mb RAM.
- Microsoft had $1.8 billion revenue and 8,226 staff.
- Intel made $818m on an income of £4.8 billion.
- IBM *lost* $2.8 billion on revenues of $65 billion.

All the signs point to the Psion



PCW saw the potential of the Psion early on. As we said: "The Series 3 is the latest attempt to create a mass-market handheld computer and it should be the most successful." And it was, at least until the Psion 3a came out two years later. The original Psion 3 ran on an NEC V30H processor running at 3.84MHz, which put it on a par with desktop machines 15 years before.

The Psion 5, by the way, runs at a comparatively mighty 18MHz. The Psion 3 had all the software you would expect to find on a palmtop: word processor, spreadsheet, calendar, database, alarms and, of course, a calculator.

The price depended on how much memory you wanted. The 128Kb version was £170, going up to £212.72 for the 256Kb version.

All at odds with DOS 5 and System 7

Microsoft had messed up with the release of MS-DOS 4 and was not about to repeat the failure. It put out 7,000 beta copies for full testing and sat on the launch until content it was stable.

DOS 5 was optimised to run Windows 3.0 and Windows 3.1 faster, although Windows 3.1 was still two years off delivery. It was also meant to be more memory efficient, running from high memory and allowing you to load drivers in high memory. It came with a full-screen editor, undelete and unformat utilties, and task swapping. GW-Basic was replaced by Qbasic, based on Microsoft's QuickBASIC.

Microsoft was bullish about the future of DOS. Vice president Brad Silverberg boasted of DOS that it would be "...with us forever. We've learned how passionate people are about DOS." That's a very short forever, no doubt.

In the same year Apple released System 7, which at the time knocked Windows 3.0 into a cocked hat. *PCW* gave it a rave review, concluding: "As it comes out of the box, System 7 is a great acheivement.

"It delivers major user interface, font presentation, file management and networking functions without losing compatibility with old applications."

Apple continued a good year with the release of QuickTime in December.

Creative use of sound

The trend toward convergence of your home entertainment appliances with your PC can be traced back to 1991. Creative Labs was the first company to bring out a stereo PC sound card, the SoundBlaster Pro Deluxe, and has since continued to set the standard by which all other sound cards would be judged. Not that sound on a PC was a new thing. Steve Wozniak decided in 1977, when first designing the Apple II, that his machines had to have sound, but up to this point the sound on games was limited to the odd pip and you would not have listened to CDs on your PC. The 16-bit version came in 1993 and with proper OS support, multimedia slowly started to take off.

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1992

Psion was not the only company thinking small. In January Apple chairman John Sculley, the Newton still a gleam in his eye, coined the term Personal Digital Assistant.

In February AMD, after a five-year court battle with Intel, was granted full rights to produce 386 clones.

IBM, despite huge revenues, reported a year-end loss of $564m and was running scared of Windows. In March it formed Taligent with Apple to develop a platform-independent operating system; and amid Microsoft-scale hype, it launched OS/2 2.0. Also failing to stem the Windows tide was Quarterdeck with a new DESQview X.

Intel showed the 25MHz 486DX2, running a clock-doubled 50MHz internally.

In April Cyrix offered a cheap 25MHz 486 and Microsoft shipped Win 3.1, selling a million in 50 days.

In June Intel released the Peripheral Component Interconnect (PCI) local bus for PC systems — a month before the VESA VL-Bus standard. These rival buses were to confuse buyers for a couple of years.

In October Microsoft shipped Windows for Workgroups 3.1, dipping its toe into networking. And *PCW* featured its first group test of video accelerator cards.

In November Microsoft shipped its Access database for Windows, Digital unveiled its 64-bit 150MHz Alpha, and Intel shipped the 486SL for notebooks.

IBM is on the run

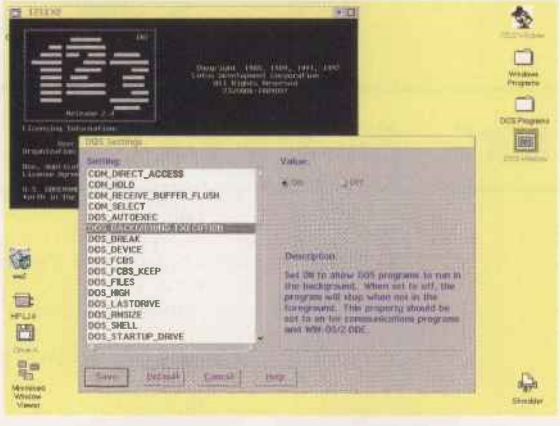
Retrobytes

- A $600 66MHz 486DX2 was 50 times cheaper per MIP than the first 8086.
- £1,500 got you a 50MHz 486 with 4Mb of RAM and a 210Mb hard disk...
- ...add £105 to complete your system with a Star dot-matrix printer.
- Microsoft had $2.7bn income and 11,542 staff.
- Intel made $1.1bn on an income of £5.8bn.
- IBM *lost* $4.96bn on revenues of $64.5bn.

A confusion of OSes

In 1992 a plethora of operating systems arrived to confuse the poor user.

First off, in March, IBM released the first GUI version of OS/2 in version 2. Microsoft hit back in April with Windows 3.1 and followed it in October with Windows for Workgroups 3.1 with networking functionality. And we had a sneak preview of Windows NT 3.1 beta, renamed by Microsoft from OS/2 version 3.



An object-orientated operating system was a jolt to the system for Windows and DOS users, but that is precisely what they got with OS/2 version 2.

Some things about it were not in doubt. *PCW* declared: "That OS/2 is technically superior to DOS and Windows, is beyond question; the battle is to demonstrate that OS/2 also makes a sound business case." In other words, it lived or died on how applications ran on it.

The results were not particularly impressive. In our 1993 *PCW* Awards it received the dubious distinction of "Turkey of the Year".

Windows 3.1, meanwhile, was a considerable improvement over Windows 3.0. It had drag-and-drop and multimedia capabilities built in, and supported OLE. Most of all it looked very pretty, with icons splattered across the desktop.

Funnily enough, if you tried to migrate from Windows 3.1 to OS/2 version 2, the operation was not entirely successful.

However, it was the second version of Windows for Workgroups, 3.11, released in 1993, with its 32-bit file access, which probably stole the crown as "most useful operating system" because it proved to be a significant improvement for business users.

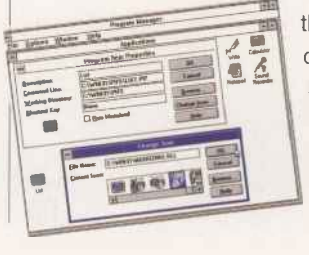
Alpha better

Since its release in February, the Alpha has always been significantly faster than any chip produced by the opposition: the latest Alpha runs at a blistering 700MHz. The first incarnation, the 21064, clocked on at 200MHz. The fastest Intel chip at the time, the 80386SL, sauntered along at a leisurely 25MHz, while MIPS had a 64-bit 100MHz R4000. The Alpha used an open 64-bit architecture, was designed to support multiple operating systems and to have a 25-year life span. Intel decided early on not to license the Alpha technology, although six years later with a confusing array of deals between Intel, Compaq, Samsung and Digital itself, Intel will now be manufacturing the Alpha under a cross-licensing agreement with Digital.

CD-i slipper didn't fit

Having announced CD-i as a standard the previous year, 1992 witnessed the first actual hardware and Philips was vaunting it as the product of the decade.

CD-ROM had been a Sleeping Beauty waiting to be awakened by the kiss of low prices while the ability to store movies and multimedia content on it made CD-i appear at first glance like the DVD of its day. But Philips managed to bicker about standards for so long with so many other manufacturers, that CD-i ended up as welcome at the ball as one of the ugly sisters making a pass at Prince Charming.



p104 ➢

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1993

IBM, after years of milking the mainframe market, posted a $4.96 billion loss in January — the biggest in US history. Stac sued Microsoft over disk-doubler compression in DOS 6.0.

In February NeXT dropped its hardware and Apple launched a completely revamped range.

In March *Newsprint* reported that a 32-bit version of Windows, codenamed Chicago, would ship in 18 to 24 months. And Amstrad beat Apple to market with a PDA, the PenPad.

The Pentium crawls in

In April Motorola shipped the first PowerPC 601. But most eyes were looking to the launch of the long-awaited next-generation Intel chip, although when the Pentium shipped in June it was an anti-climax.

A July group test revealed that the first 60MHz and 66MHz Pentiums were slower on some counts than fast 486 chips. (Speeds quickly rose as system boards and software were optimised.) Meanwhile, Microsoft shipped Windows NT. In August Apple lost its court fight against Windows.

In September *PCW* reviewed the Apple Newton.

Momentous events were happening online. A group of US students was working on a graphical browser called Mosaic. As each version was posted at their National Centre for Supercomputing Applications site, it was downloaded by the thousand. The web explosion had begun.

Retrobytes

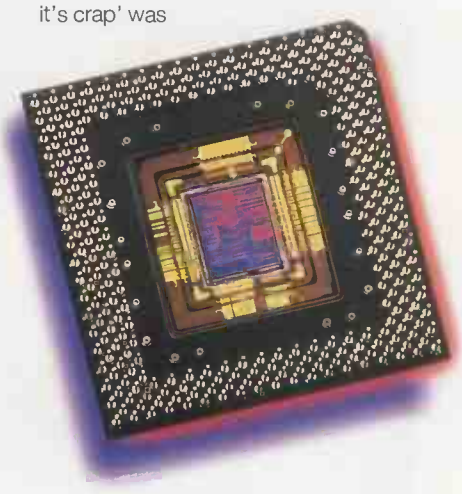
- The 66MHz Pentium cost 66 times less per MIP than the 8086 and was nearly 200 times faster.
- £1,500 bought you a 33MHz 486 PC with 8Mb of RAM and a 340Mb disk.
- A US Robotics 1.4Kbps fax-modem cost £252.
- Microsoft had $3.75bn revenue and 14,430 staff.
- Intel made $2.3bn on an income of £8.8bn.
- IBM made $8.1bn on $62.7bn income.

Pouring cold water on Pentiums

Few chips have caused such a stir as the Pentium, and not always for the right reasons. First there was the great legal battle over the name "586". When US courts ruled, Intel did not have sole rights to the tag, leaving rivals like NexGen free to release the Nx586. So, the moniker "Intel Pentium Processor" was born.

Then the original 60 and 66MHz Pentiums were well and truly late. They were announced in March 1993, but even when Intel had launched them they were still largely vapourware and getting hold of one to buy was not easy.

On top of this, there was a heat problem which led to crashes and the inevitable resulting data losses. As *PCW* commented: "In the kind of mission-critical data server applications for which Pentium is targeted, this is a problem." And we went on to rub salt in Intel's wounds on our *ChipChat* page: "And finally, it's a moot point whether or not Intel's new Pentium processor really is as 'hot' as Intel claims. 'It overheats and it's crap' was one *PCW* staff member's interpretation."



Finally, a certain Dr Thomas R Nicely of Lynchburg College, Tennessee, came across a little floating-point bug which bugged the hell out of Intel.

However, Intel, whose profits had passed the billion dollar mark earlier in the year, was quick to recover any lost ground. In October it released the P75 which overcame many of the criticisms levelled at the first Pentiums, helped along by the faster bus speeds of PCI which first appeared in May.

Meanwhile, Intel had started to produce more motherboards. Up until then, the company had regarded this as something of a sideline, but stepped up production to go with the Pentiums, taking a large wedge of the market.

After this, PCs started to look far more like the clones they are supposed to be. In the first Pentium round-up, the *PCW* reviewer complained: "The first three all looked the same, with their clothes off".

Microsoft Access

Microsoft had dabbled with databases for some time. It had licenced R:base and in 1992 bought Foxbase which originally produced FoxPro, and had developed other projects in-house which were shelved before release. The original version of Access came with sBasic prior to moving to the now standard Visual Basic, but it was also compatible with xBase, Paradox, SQL and Btreive data. *PCW* had a few grouches about its structure but the final verdict was that it was a "very solid, very slick and very powerful product".

Encarta, encore!

Microsoft was not the first company to produce a multimedia encyclopaedia and it will not be the last.

From its first version Encarta was a ground-breaking product. As *PCW* said: "Encarta is an exciting and fascinating experience and it's a jolt to realise that this is how reference works will be from now on."

Encarta has since gone on to set the standard for multimedia reference works, and with its Research Organizer, Encarta 98 can even rival Britannica in its usefulness.

1994

PC users began to take processing power for granted. RAM (or rather, RAM prices) and sub-systems such as graphics were major constraints on performance.

The internet, growing exponentially, generated a new fixation: bandwidth.

In January Apple showed its first PowerPC product, a Mac upgrade board.

In February Windows 3.11 shipped as what was the last big 16-bit upgrade.

In March Intel shipped its first clock-tripled 486 chips, perversely called the DX4, clocking 25MHz externally and 75MHz internally. And Apple shipped its first PowerPC-based Macs.

The following month, *PCW* featured the PC600 from Acorn, which had been way ahead of Apple in using Risc chips.

Newsprint reported on a Hayes modem that would run at 28.8Kbps when a standard had been agreed.

In July CP/M pioneer Gary Kildall was killed. And Microsoft agreed to change some of its licensing deals to satisfy anti-trust lawyers.

In August Marc Andreessen, who led the Mosaic team, joined what was to become Netscape. *PCW* showed a picture of the top-secret P6, successor to the Pentium.

In September Kodak showed a digital camera based around a Nikon P90. It cost £8,195.

In December *Newsprint* declared: "New free Mosaic wows the web". It was called Netscape Navigator.

Power hits desktops

Retrobytes

- The 100MHz Pentium was 276 times faster than the first 8086.
- £1,500 bought you a 66MHz 486DX2 multimedia PC with 8Mb of RAM and a 540Mb disk...
- ...add £500 to get a 90 MHz Pentium equivalent.
- Microsoft had $4.6bn revenue and 17,801 staff.
- Intel made $2.28bn on $11.5bn revenue.
- IBM made $3.2bn on revenues of $64bn.

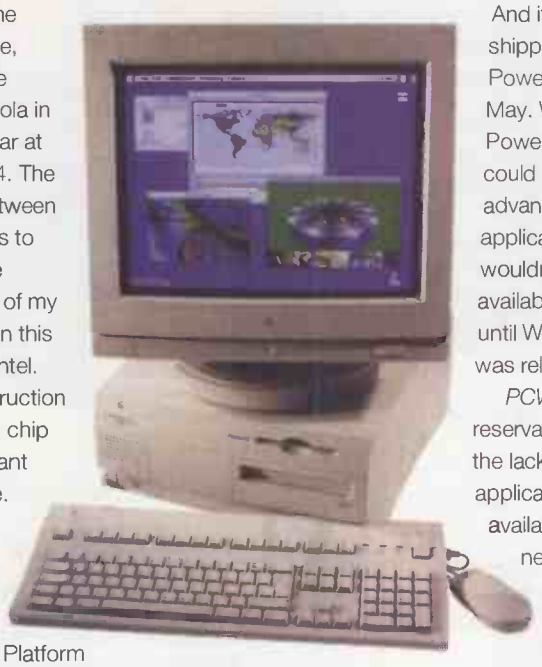
Power PC and Acorn alliance — a safe RISC

The first fruits of the PowerPC Alliance, formed by IBM, Apple Computer and Motorola in 1991, began to appear at the beginning of 1994. The unlikely allegiance between Apple and IBM seems to have arisen out of the principle "The enemy of my enemy is my friend"; in this case, Microsoft and Intel.

The Reduced Instruction Set Computer (RISC) chip was the most important project of the alliance. As part of the RISC project, the group also planned the Common Hardware Reference Platform (CHRP). This was a standard that would allow the CHRP machine to run a number of different operating systems. The three companies hoped not only to challenge Intel's dominance in the processor market but to take on the up-and-coming Microsoft as well.

With the market for Intel's Complex Instruction Set (CISC) chips reaching saturation point, RISC seemed like a good bet. Not only was the PowerPC chip cheaper than Intel's, in many cases it was faster, too. Manufacturers and users alike waxed rhapsodic over the possibility of a computer with this combination of flexibility and compatibility.

In January Apple released its first PowerPC product, a Mac upgrade board.



And it started shipping its PowerMacs in May. With the PowerMac users could take advantage of 32-bit applications, which wouldn't be available for the PC until Windows 95 was released.

PCW had reservations about the lack of native applications available, but was nevertheless optimistic about the PowerMac's chances: "Once the software is available to take full advantage of the power of the processor, Apple's Macs are primed to take the lead over PCs, not just in ease of use and built-in features but, for the first time, in price and performance, too," it said. It even went so far as to predict that Intel would have to struggle to keep up with PowerMac in the future.

Unfortunately for the alliance, however, Intel was not to be pushed out so easily. Not only did it ramp up its development cycles, it also cut its prices. In 1996 IBM pulled OS/2 out of CHRP and, in '97, Microsoft did the same for NT. IBM admitted that NT implementation had cost the partners US$150m. Netware never even surfaced. With the exception of a couple of IBM network computers and high-end workstations (which run on a version of UNIX), Apple has virtually taken over the PowerPC standard.

With Apple's decision to stop licensing clones (even to Motorola) and the purchase of its biggest competitor, Power Computing, the number of RISC customers is dwindling. At the 1997 MacWorld, a prototype demonstration gave hope that there would be 500MHz PowerMacs by last summer. But Apple didn't order the fast chip and the chip manufacturer went out of business. Motorola and IBM say they still plan to produce PowerPC chips, but some analysts are predicting that Apple will switch to Intel processors by the end of this year.

Acorn ARMs Apple

Cambridge-based Acorn challenged the PowerMac in June '94 with the desktop RISC PC 600, but response was lukewarm. One of the very first companies to use RISC processing, Acorn launched its ARM (Acorn RISC Machine) family way back in 1987. The Archimedes won fierce loyalty from its fans but, due to its price, never became widespread. Acorn is currently an equal partner with Apple in ARM, which now stands for Advanced RISC Machines.

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1995

"Nicely does it" observed *Newsprint* of the general *schadenfreude* as Intel fumbled its response to a furore over a bug in the Pentium, discovered by the improbable Prof Tom Nicely of Lynchburg. It cost Intel $400m.

In April *PCW* looked at some of the latest quad-speed CD drives. *Newsprint* reported the early stages of what was to be a running battle for a DVD standard.

In May Escom took over 231 high-street stores from Rumbelows. *Newsprint* reported Iomega's new 100Mb Zip superfloppy. In June IBM bought Lotus and Sun launched Java.

In July Compaq said it would bring out the 120Mb LS120 superfloppy which also read 1.44Mb floppies. The launch of NT 3.51 was overshadowed by the saga of whether Win95 would be delayed by legal action over the bundling of a sign-up for Microsoft's new online service, MSN. Win95 did ship in August — to more publicity than any software is likely to get again (*see below*).

MSN, as launched, was perhaps Bill Gates' biggest public mistake. It was not ready, and worse, it was not on the internet.

In November *Newsprint* warned of the new macro viruses, Intel released the Pentium Pro and Oracle's Larry Ellison raved about the NC. In December we looked at five PC/TVs, reflecting a growing convergence with other technologies.

Win95 raises the stakes

Retrobytes

- A 166MHz Pentium Pro was roughly 600 times faster than an 8086.
- £1500 got you a 75MHz Pentium multimedia PC, 8Mb RAM and a 540Mb hard disk...
- ...add £595 for an HP LaserJet 5P.
- Microsoft had $5.9 billion revenue, 17801 staff.
- Intel made $3.6 billion on an income of £16.2 billion.
- IBM made $5.4 *billion* on revenues of $76 billion.

Windows 95 clearly a kludge

Microsoft spent $200m hyping Windows 95, but no money could have bought the amount of publicity it got. The media, for no very good reason, decided it was a huge story and the launch was splashed everywhere.

This for what was basically a kludge: an operating system designed to run both old 16-bit applications and new 32-bit ones.

Microsoft boasted of a new easy-to-use interface yet it had not resolved a fundamental weakness of Windows 3.x, which offered two frequently conflicting views in the form of Program Manager and File Manager. Windows 95 also had two: Explorer (the equivalent of File Manager) and My Computer which led to a more Mac-like view. Each had its own little ways, where a single, coherent way of working would have been more elegant.

Win95 looked like something designed by a committee, as indeed it had been. Millions were spent on usability labs, focus groups and user surveys to produce an interface on which you pressed the Start button to exit.

Microsoft had been telling journalists for months that Windows 95 needed only 4Mb of RAM. This, it quickly became clear, was less than candid. Win95 needed at least 12Mb, preferably 16Mb, to run faster than Win 3.x, especially with 16-bit applications. So most people needed to upgrade their hardware after installing Windows 95, which caused much resentment.

For all that, Win95 was a major advance and an operating system in itself. It provided better memory management, crash protection, better multitasking and many little usability boosts that are now taken for granted. It introduced plug-and-play, which allowed the operating system to interrogate an add-on device to decide configuration automatically. Remember, Win95 had to be able to talk to just about every device going — unlike the Mac OS which introduced this feature earlier.

Plug-and-play, which relies on device compliance, does not always work but it was clearly the way of the future. If you get irritated with Win95, find a Win 3.x machine and just try installing a new device for it.

"Certainly we want to talk to people who design aeroplanes"

Tim Keating, Intel's European marketing manager, at the height of the Pentium bug furore (*see above*)

Zipping ahead

Win95 also brought home the fact that multimedia and graphical software would require far more storage than that in most PCs of the day, which had 250Mb hard disks.

Disk capacities began to rise rapidly and the cost per megabyte dropped almost in step, but there was a need for an easy way to add random access storage (as opposed to sequential storage such as tape) to existing PCs.

Also, digital pictures and richly-formatted electronic documents became too big for the standard 1.44Mb floppy disk, creating a need for a more capacious transfer medium — what *Newsprint* called the superfloppy.

Iomega's Zip drive was the first low-cost device to answer both these needs. It cost £149, with 100Mb disks costing £13, and it was a sensation. So much so that it knocked Iomega's market-leading arch-rival, Syquest, sideways, even though Syquest quickly brought out the faster EZFlyer.

The Zip still sells well but cannot read or write 1.44Mb disks and so is unlikely to replace the floppy drive. The 120Mb LS-120 drive, which arrived many months after its announcement (*see our timeline, above*) is now made by several companies and is backwards compatible, as is a 200Mb drive Sony displayed at Comdex last year.

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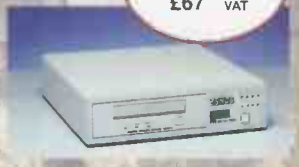

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1996

Bill Gates saw the Internet light late in 1995 and "turned on a sixpence", as a Microsoftie put it. Massive resources were diverted to net-enable Microsoft products. In January he announced his new strategy: MSN was to get netted and he would give away a browser called Internet Explorer.

Meanwhile, chip cloners AMD and NexGen merged and IBM launched OS/2 for the PowerPC.

In March Microsoft sold the 30 millionth copy of Win95, and AMD shipped its $75 5K86 processor.

In April, ailing Apple appointed Gil Amelio as CEO and licensed the MacOS to Motorola. Netscape shipped Navigator 2.02 in May; Microsoft quickly countered with Explorer 2.0.

In June Intel shipped the first 200MHz Pentium, Cyrix shipped the P200+ 686 and AMD launched the K5. Nintendo shipped its 64-bit games module.

In July, months after having bought into UK high streets, Escom AG went bankrupt.

In August, Microsoft released Explorer 3.0 — the third upgrade in a year.

In September Motorola launched its StarMax Mac clones and USR announced its x2 modems with a claimed data rate of 56Kbps.

The first Windows CE handhelds appear at Comdex in November. And Steve Jobs returned to Apple, which bought his NeXT Software for $424m.

Retrobytes

- Intel stopped using MIPs to measure processor speed.
- £1,500 got a 200MHz Pentium multimedia PC, 1.6Gb drive,16Mb RAM and a 15in monitor...
- ...add £313 for a Canon BJC-610 colour printer
- Microsoft had $8.67bn revenue and 20,511 staff.
- Intel made $5.1bn on an income of £20.8bn.
- IBM made $5.42bn on $75.9bn revenue.

NC vessels and the Java jive

Two related 1995 events had a growing impact in 1996: Sun's launch of Java, and Oracle chief Larry Ellison's promotion of the diskless network computer, running software downloaded as needed from a server.

The network computer (NC) was not new idea. It was virtually identical to what IBM called a thin client and a bare update of the antique "dumb terminal", millions of which were due for replacement.

But Ellison touched some raw nerves. The network computer offered a perfect fit with Java (*see below*) and both were promoted openly as an attack on Microsoft.

The network computer did offer advantages, albeit of a kind more likely to excite the boardroom than the user. IT managers could maintain software centrally on a server, cutting maintenance costs, saving work, increasing security and keeping bolshie users in their place (the PC had caused a shift of political as well as processing power, from the IT department to the desktop).

All of these aspects, lumped under the heading "cost of ownership", had been skimped by Microsoft and Intel in the rush for PC development and have been addressed to the point of tedium by all major suppliers ever since.

In a way, the furore was nonsense. Cut-down PCs could match the advantages of network computers. There was also the equally viable Windows terminal, which exchanged only keypresses and screen draws with an application running on a server.

PC, NC, NetPC or Winterm — which you chose was a matter of horses for courses. But there was a wider significance, hardly touched upon by Ellison. The NC offered a model for web appliances such as smart phones and set-top boxes, and focused minds on the fact that the internet had almost by accident achieved the Holy Grail of computing: an environment independent of hardware and operating system. Any machine could hang off the net so long as it talked TCP/IP.

So, computing no longer needed Microsoft or Intel — it had cut the umbilical. Like IBM, the two companies might get bigger and richer, but they would never again hold the grand sway of their glory days.

Sun's Scott McNealy (above, top) and Oracle's Larry Ellison (above) both saw Java and the NC as a way of getting at Microsoft

Java — percolating

Java overturned the idea that software had to be tailored to its host hardware; instead, a platform is enabled to run Java. This is done by software or firmware called a Java Virtual Machine (JVM), which interprets the code. All browsers now include a JVM.

Java is thus ideal for any network linking dissimilar machines, because it allows the same program to run on any of them. Clearly, too, it is ideal for the NC (*see above*).

The Java language is similar to C++ but is "sandbagged" from activities carrying a security risk, like the ability to wipe a hard disk.

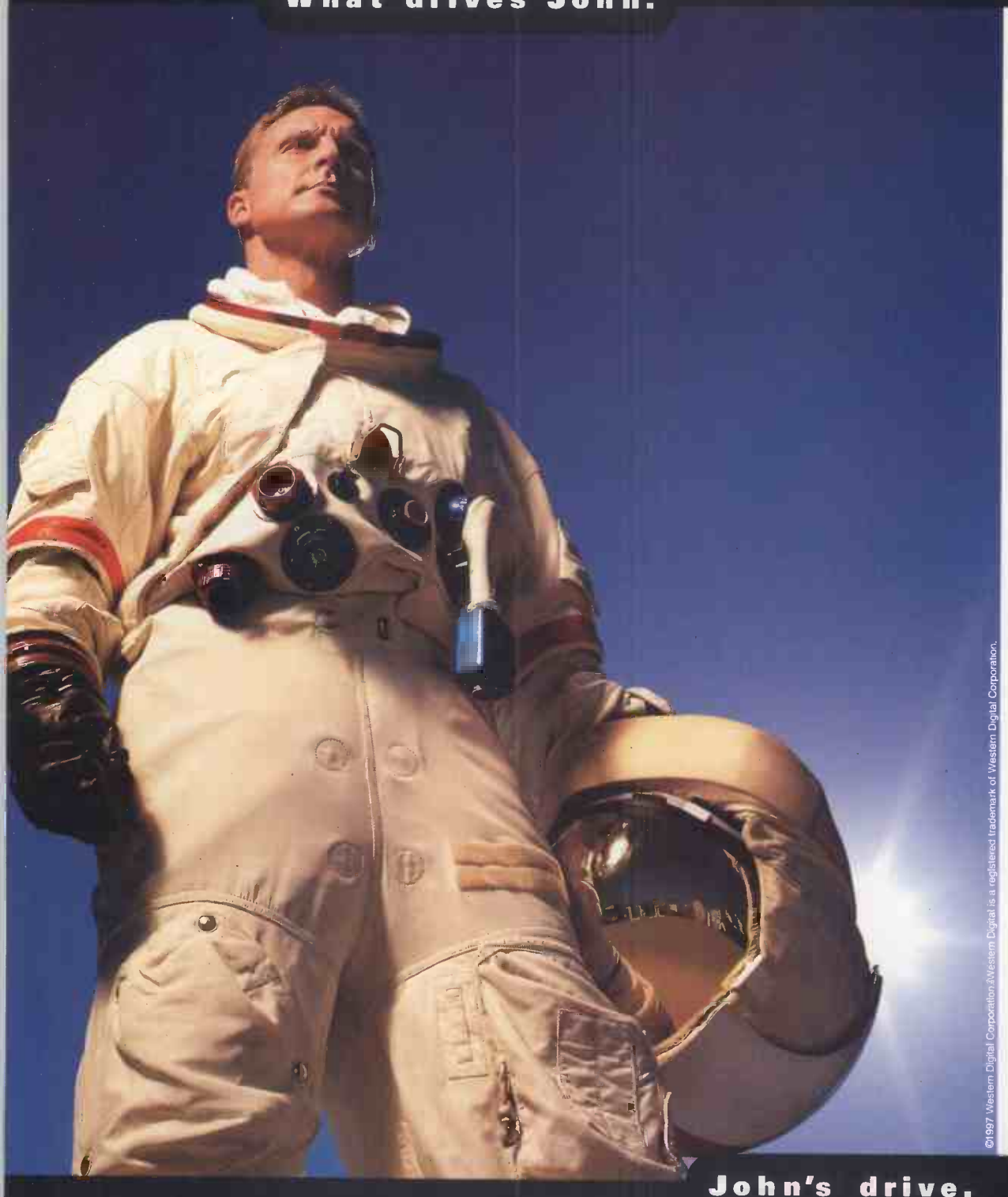
Sun has offered the Java spec as an "open" standard but insists on retaining control of updates. This is opposed by rivals.

Microsoft tried to kill Java with kindness. It claims the best Java development environment and the fastest compiler, yet insists on including Windows-specific extensions which destroy Java's universality.

There are delicate lines to tread in taking Java forward: between power and security, and (in Microsoft's eyes) between what an applet does and what an operating system does.

p113 >

What drives John.



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Personal Computer World

Western Digital

1997

Intel launched the Pentium MMX using 57 new instructions. It had a mixed reception, because it rendered out of date all PCs bought in the Christmas rush.

In February the first 56K modems appeared. There were four rival specs, none of which gave anything like a 56Kbps throughput.

In March Intel previewed its forthcoming Pentium II chip and a German hacker highlighted the danger of Microsoft's downloadable ActiveX controls. And in May, AMD's new K6 chip beat the equivalent 200MHz Pentium MMX in tests. Explorer 4.0 was reported to have been delayed by security fears.

In June Intel launched the Pentium II at an unprecedented low entry price. And Microsoft posted an early beta of Win98. Promised features include support for the new USB serial port, scheduled to replace the PC's serial and parallel ports. In August Psion launched the Series 5 palmtop to compete with CE models. Apple CEO Gil Amelio quit after the firm lost $1.5bn in 18 months.

The main attraction at Comdex in November was a new class of mini-notebook. But there were signs of change, including devices using USB and the faster 1394 ports.

In December, cheaper ISDN came a step closer with British Telecom trials of a hybrid Home Highway system.

Racing to cyberspace

Retrobytes

- Pentium II speeds rose rapidly beyond 266MHz.
- £1,500 bought you a 200MHz Pentium MMX multimedia PC, 4.3Gb hard drive, 32Mb RAM and a 17in monitor...
- ...add £82 for a 56K faxmodem card....
- ...add £150 for an HP 670C colour deskjet.
- Microsoft had revenues of $11.35bn.
- *(Intel and IBM results have yet to be announced.)*

Pentium, MMX and the Santa Claus shocker

The year began with much wailing and gnashing of teeth. Thousands of distraught consumers had bought Pentium PCs before Christmas 1996, only for Intel to launch its new MMX chips in January '97. *PCW* noted that "Cannier buyers, who knew the 166MHz and 200MHz MMX Pentium chips were coming, were waiting for old Pentium prices to drop in the hope of picking up bargains." The MMX processors offered around a ten percent speed increase over standard Pentiums, running non-MMX optimised code. Our first MMX PC group test said: "Every single PC in this group test, including the 166MHz Dell, beats the living pants off the fastest machine in last month's top-end 200MHz test [of standard Pentiums]."

Not content with one radical new chip, Intel also launched the Pentium II processor (*pictured, above right*) which moved away from a socket design to Slot One. This new design was not without its problems: "According to our source, the Pentium II processor has been ready for market for months. The only thing holding back its release was the actual mechanical design of the slot...One industry source said that the chips have been known to fall out of the slot in tower models."

Three other chip makers also launched new products in 1997. Cyrix came up with the M2, and little-known Integrated Device Technology introduced the IDT-C6 for the cheap-desktop market. AMD entered the fray with the K6 in 166MHz, 200MHz and 233MHz speeds. We said: "*PCW* tests confirmed AMD claims that the K6 is faster than the latest Pentium MMX...endorsed by Microsoft as fully Windows compatible. It is also cheaper than Intel chips." However, "the K6 is not the PII killer many have said it would be... But the K6 shows its strength for mixed 16- and 32-bit Win95 operating systems, which is where the PII is weak."

Do you want your handheld?

The first Microsoft Windows CE palmtops, announced at Comdex, Las Vegas in late 1996, started to arrive in the UK. The Hewlett-Packard 320LX and the Philips Velo 1 were two of the early contenders, but the small dribble of products on to the UK market failed to make much of a dent. The earth moved for a lot of people when Psion launched the Series 5 in August. Complete with touch-screen and a notebook-like keyboard, the 5 was Psion's attempt to reinforce its status as the big cheese of the PDA world. Another manufacturer, Geofox, announced a handheld based on Psion's EPOC 32 operating system later in the year.

Also at Comdex was the first Zaurus handheld from Sharp, available only in Japan. It had "a 5in, 65,000-colour screen and one model, the Mi-10DC, [came with] a PC card-based digital camera". Various Zauri should finally be on sale in the UK by the time you read this, some 16 months after the Las Vegas launch. It is only now, approaching mid '98, that we are seeing a respectable number of palmtops available on the UK market.

p115 >

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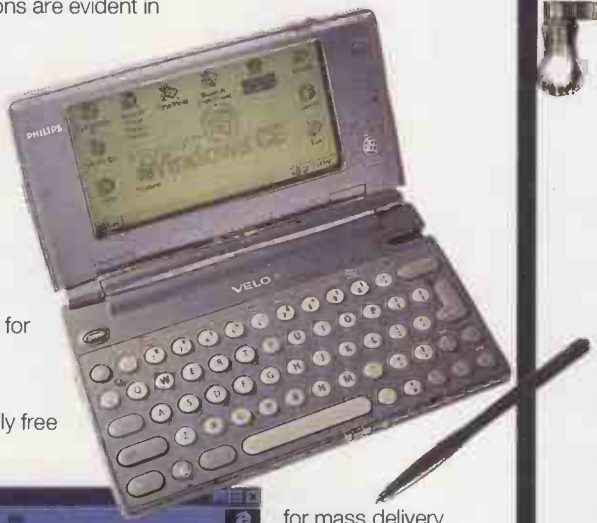
And so to 1998 and beyond...

Computing in 1998 is beginning a transformation at least as big, but not as clear-cut, as that of a decade ago when it moved from text-based to graphical software.

Major transitions are evident in two imminent Microsoft launches: Windows 98 and NT 5.0. The first prepares PCs for the coming digital broadcasting revolution which, for the first time, will provide unlimited bandwidth virtually free



for mass delivery.

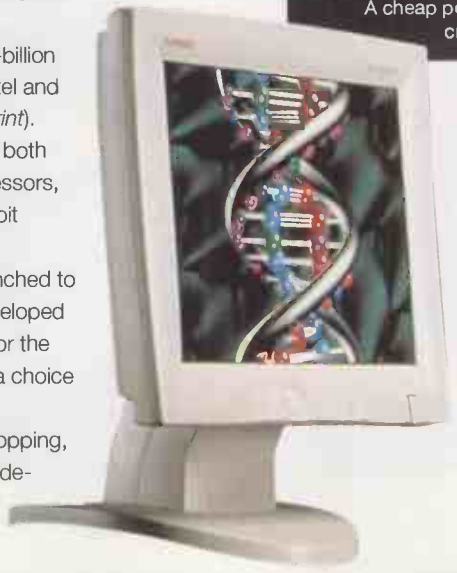
The effects will be huge and unpredictable. Sooner or later there will be a big explosion of "pushed" digital content. Interactivity initially will be by slow modem, but satellite competition will force cable and phone companies into implementing high-speed technologies like cable modems and xDSL.

NT 5.0 is another kind of watershed. Win98, like Win95, straddles old and new technologies. NT 5.0 looks only to thefuture, and it will make a break for the first time from the x86 Intel dynasty that has powered the PC since birth.

Exactly what was behind recent multi-billion dollar deals involving Compaq, Digital, Intel and Microsoft is anyone's guess (see *Newsprint*). But NT 5.0 will be compiled at launch for both 32-bit Intel and 64-bit Digital Alpha processors, and only the latter will be able to use 64-bit addressing.

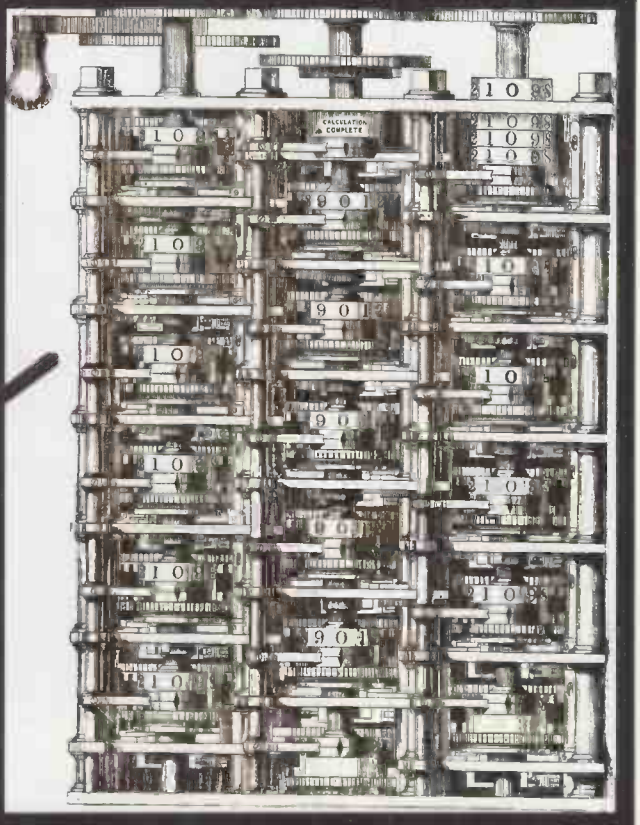
Next year, a fully 64-bit NT will be launched to coincide with the 64-bit Merced chip developed by Intel and HP. It will also be compiled for the Alpha. So, the PC of the future will have a choice of at least two processor ranges.

The price of colour LCD screens is dropping, so they are beginning to chase the cathode-ray tube from desks. Fast USB and 1394 links will shortly do away with the traditional PC serial and parallel ports; they also link the device bays which Intel expects to replace today's expansion slots, to produce a sealed, modular PC.



Above all, the web has spawned a global interface which welcomes any computer that talks its language (*see p111*). Handhelds in particular have introduced a host of new processors and explored new input methods and form factors. The PC is no longer the be-all and end-all of personal computing.

Pause to wave the flag



The computing industry over the past 20 years has been dominated by the US and the Far East, yet the *PCW* archives show how Britain has more than kept its end up, technologically.

Of course, Britain's Charles Babbage (1791-1871) and Alan Turing (1912-1954) have as good a claim as any to have invented the computer. Manchester University put together the first modern computer in 1948 (see *the Michael Hewitt Interview, p186*).

We lacked the gung-ho grassroots entrepreneur culture that was the making of California's Silicon Valley. Yet from the earliest days there were small UK firms putting computers together. Acorn, Psion, Sinclair and even box-shifter Alan Sugar all produced designs of global influence. And there were UK contributions to a host of underlying technologies, from virtual-reality through RISC to ATM.

A cheap point, perhaps, but one worth pondering amid the cramping insecurities of post-Imperial Britain.

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Talking heads

Susan Pederson gets the views of key industry figures on the past 20 years of IT growth.

Lou Gerstner, IBM chairman and CEO

"IT is like electric light, the printing press and manned flight. It's one of those technologies that comes along every century or so and changes things forever.

"Consider that Americans spend more on PCs than TVs. The Ford Taurus [car] contains more computing power than the first lunar landing module. And the chips inside today's Sega video games are more powerful than the supercomputers of 1976.

"Of course, we're now riding the next great technology wave: the rise of powerful global networks like the internet. Something very important is happening here. Networks are collapsing the physical barriers between nations, markets, cultures and people. This connectivity will change everything: the way we access entertainment, replace a lost driver's license, book a seat on an airplane, bank, and interact with one another."

From a speech at Wake Forest University Commencement, 19th May '97

Chris Bakolas, technical director, Dan Technology

"I've been involved in the IT industry since 1978, starting out in a research and freelance capacity working on Apples and mainframes, not PCs. In those days, if I'd been told that in ten years you could have a PC on your desk which could do everything that one of the big Digital DPIIs could do, I wouldn't have believed it. What drew me to the PC side was the Apple II. It cost more than a Pentium II computer costs today, but it made me love the PC and got me to stay in the industry.

"It was the IBM PC, or rather, its clones which really accelerated the industry. A lot of entrepreneurs saw that they could get the components, put them in a box, and sell it as a PC. Dan started in 1988, bringing in components from Taiwan. After two years, the company decided it could make more money selling a computer than it could selling a video card. The margins were much better, but at that time the PCs were basic: a monitor, motherboard and floppy drive. Now we concentrate more on the quality of our service and support to stand out from the crowd."

Richard Austin, managing director, Evesham Micros

"PCW is only slightly longer in the tooth than Evesham Micros — when I started selling Spectrums in 1983, there were very few generalist computer magazines around. There weren't quite so many computer sellers either! But we've both grown by giving our customers what they want. I wish *PCW* all the best for the next 20 years — I'll be here to cheer you on from my bath chair!"

Andy Grove, CEO, Intel

"Twenty years is too long a time period to make a meaningful prediction in an industry whose history in its present form only goes back ten to 15 years. It is clear to me that computer technology is spreading sideways. What I mean by that is, it is penetrating walks of life where it hadn't been before. And areas in the world where it did not exist before. I think this penetration, this sideways penetration, will continue as far as the eye can see."

From WebChat Broadcasting System, 7th October '97

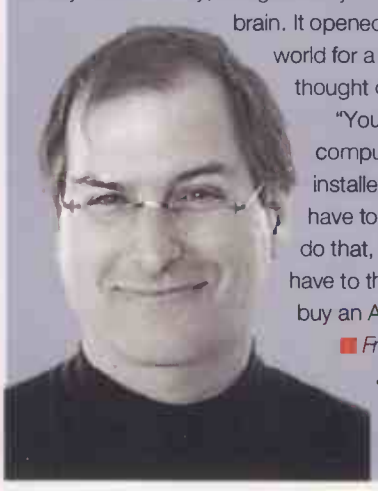
Peter Cochrane, head of applied research and technologies, BT Laboratories

"I was programming in machine code in 1978. Then I was asked to go into architectures for future computers and I thought, we'll be growing them in jam jars in 20 years' time. Well, I overestimated how fast we'd come. But things I never anticipated were the low cost of memory and the switch from coveting memory to simply wasting it. I anticipated their smallness but I don't think I anticipated the cheapness. Even 12 years ago, I could never have foreseen that I would be able to buy a Nintendo for $150 which is more powerful than the old Kray computers. I didn't think the average user would stay with code. I was early into Macs, so the graphical interface was obvious to me. I was struggling with operating systems, but when I got a Mac I was away."

Steve Jobs, interim CEO and co-founder, Apple

"When we shipped the Apple II, you had to think differently about computers. Computers were these things you saw in movies. They weren't these things you have on your desktop. You had to think differently because there wasn't any software at the beginning. You had think differently when a first computer arrived at a school, where there had never been one before. It was an Apple II.

"It was a totally different computer working in a totally different way, using a totally different part of your brain. It opened up the computer world for a lot of people who thought differently.



"You were buying a computer with an installed base of one. You have to think differently to do that, and I think you still have to think differently to buy an Apple computer."

From MacWorld key address, Boston, Mass., 6th August 1997

Tom Willett, director, Morgan Computers

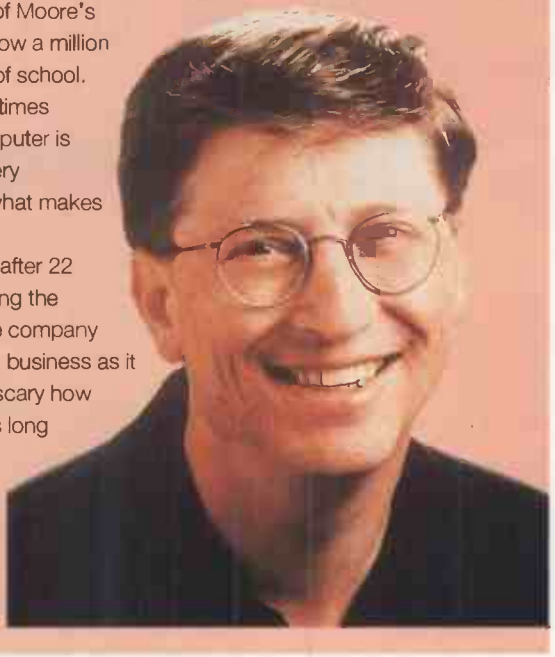
"Morgan's started 25 years ago, making it five years older than *PCW*. However, it took some time for the company to cotton on to the fact that PCs were going to be the next big thing. To start with, Morgan's sold second-hand cameras and equipment. The company didn't get into the PC market until the mid-eighties, when it started selling second-hand PCs.

"The customer has changed. When we started out, most of them were enthusiasts and of course there's always going to be people out there that don't need an all singing, all dancing computer.

"Now, our customer base has broadened out and we deal with a lot of schools and other education facilities, which are looking for budget machines to train students on.

"The most dramatic thing that has struck me about the way the industry has changed over the years has been the prices. That we were able to sell a 386SX 16 for under £2,000 actually warranted a four-page article in *PCW* in about 1988."

Bill Gates, chairman, Microsoft



"Due to the wonderful benefits of Moore's Law, the microprocessor is now a million times faster than when I dropped out of school. In the next 20 years, it will be a million times faster again. The image of what a computer is ten years from now is certainly very, very different than what it is today. That's what makes this a very fun field.

"It's amazing to be able to say that after 22 years working in the same field, pursuing the same basic idea that we had when the company was started, this is still as fascinating a business as it was at the very beginning. It's almost scary how much impact it's going to have. But as long as this is happening, being at the centre of it is a great place to be and that's why I think I have the best job in the world."

■ *From a speech at Cambridge University, UK, 7th October 1997*

Alan Sugar, founder of Amstrad, non-executive director of Viglen

"Until 1984, Amstrad was a consumer electronics company working in the hi-fi, video and TV sectors. In April '84 we launched our first computer, the games-based CPC 464. From that moment, the Amstrad computer revolution accelerated across Europe, punctuated by the introduction of a series of hugely successful computers, starting with the first mass-market word processor, followed [by] the first 'people's computer', the PC1512. Amstrad achieved a 35 percent share of the European PC market within a few short years.

"However, the market was turning the PC into a commodity and by the late eighties the rest of the world had caught up with Amstrad. The PC industry became...the most competitive of market sectors, with major players happily losing money to capture market share. Today it is a nightmare for PC manufacturers, with everyone making a headlong dash for the latest technology, set against a fierce battle for margins."

Sir Clive Sinclair, British computing pioneer

"When I started out, I was just interested in getting people interested in computers. It was very exciting then. There was a lot of innovation. There's no technical change now — it's all just Wintel stuff. It's just all got bogged down. The designs are very clumsy nowadays. They're not taking risks at all, they're just making the same sort of machines. The only breath of fresh air is Psion. They're terrific and they go their own way. Windows CE is a hope, as well.

"I thought computers today would be used for the same kind of things they were used for then. I could see them becoming ubiquitous. But what has disappointed me greatly has been how little change there really has been. Take parallel computing — it's ridiculous, it should have happened by now. Computers should be hundreds of times more powerful than they are now. They're also absurdly expensive for what they do. Very little of the price is from processing power.

"I don't use the internet at the moment. I get frustrated by the speed. If they would sort that out, then I would use it. But I think it's a most marvellous thing, it's amazing what can be done with it. I just don't want to use it while it's so slow."

As time goes by

The march of IBM

The personal computer world changed forever on Tuesday 11th August 1981, when the largest computer maker in the world, IBM, announced the IBM Personal Computer. It wasn't the first PC in the world — other manufacturers such as Sirius, Apple, Altair and Tandy had already released their own "microcomputers" (now there's a word we don't hear too often these days). However, the arrival of a PC bearing the IBM badge effectively legitimised this class of computing, and where it led, others rapidly followed. It was developed in conditions of strict secrecy in a little over a year at IBM's plant at Boca Raton in Florida by the late Don Estridge, whom many regard as being the father of the PC.

Prompted to enter the PC market by the runaway success of the very cheap Apple I and II micros, IBM had originally considered rebadging Matsushita or Atari games machines. Luckily for IBM, its Corporate Management Committee rejected such heresy and asked for the new PC to be developed in-house by the new Entry Systems Division. All IBM kit has traditionally sported a four-figure model number and this new baby was no different — it was a Model 5150.

The new PC broke with IBM tradition, as it was an open design based on third-party components. Most significant of all, IBM decided to buy-in an operating system. Digital Research was approached for CP/M but, by a stroke of phenomenal luck for Bill Gates, IBM turned to the software house that was providing BASIC for its new PC — a little-company called Microsoft. Microsoft didn't have an operating system but quickly bought a company, SCP, that had produced a knock-off of CP/M, called Q-DOS. This became MS-DOS and Microsoft became hugely successful.

The specification of the IBM PC makes for interesting reading these days. Powered by an Intel 8088, a hybrid 16-/8-bit microprocessor, running at a leisurely 4.77MHz, the IBM PC was offered with a choice of either one or two 5.25in floppy drives for storage, although there was a DIN socket at the rear for a cassette. If you didn't boot from a system floppy, the ROM-based BASIC would automatically load. Single-sided 160Kb Tandon floppies were originally shipped but were quickly superseded by 360Kb, double-sided versions. The motherboard typically came with 256Kb of soldered DRAM, had five 8-bit ISA expansion slots and a socket for an 8087 maths co-processor. You had a choice of graphics: the text-only Monochrome Display Adapter "green screen" or the CGA Colour Graphics Adapter, which offered 16 colours at 320 x 200.

Hard disks didn't turn up until the launch of the PC XT (Extended) version in March 1983 — the first time a hard disk was a standard item in a PC. Outwardly identical to the original PC, the XT had a 10Mb (or later a 20Mb) MFM hard disk and was available with 256Kb or 640Kb of RAM and eight ISA slots, one of which was stolen by the hard-disk controller card. Half-height floppy drives were standard, allowing you to fit two drives in the other drive bay. Late models could also be fitted with a 720Kb 3.5in floppy drive. In 1985 an XT model was released without a hard disk, effectively making the other PC model obsolete. Other special versions of the IBM PC were also released, including the 3270 PC which was designed to mimic a 3270 terminal, and the XT 370 which emulated a System 370 mainframe.

True 16-bit technology arrived with the Advanced Technology PC, the PC AT (below), in August '84. Powered by a 6MHz Intel 80286 processor, the new PC offered three to five times the performance of the original IBM PC. New to the AT was the use of a battery-backed real-time clock and configuration details held in CMOS memory (the PC used DIP switches). Other innovations included 1.2Mb 5.25in floppy drives, 20 or 30Mb hard disk and the ability to address 16Mb of RAM. There were six 16-bit and a pair of 8-bit ISA slots, all housed in a large system case, which forms the basis for most clone system cases to this very day — this was the first system case to provide spare drive bays for peripherals.

Many users spotted that the AT's 6MHz clock crystal was socketed and so could be swapped for a faster crystal to make the 80286 run quicker. IBM promptly stomped on this practice with the release of a new AT with a BIOS that fixed the clock speed at 6MHz. In April 1986, an 8MHz model was finally released. This version supported 1.44Mb floppy drives for the first time. In an odd move, September 1986 saw IBM launch the XT Model 286, which was essentially a slightly faster AT motherboard in an XT case. This was fine but for one small point: the AT case was taller than the XT's and 16-bit AT cards wouldn't fit in the XT case! Well, not without the aid of a can opener.

In an attempt to rid itself of those pesky cloners, IBM launched the Personal System/2 range of PCs in April '87. These were advanced PCs, largely made from plastic snap-fit parts that permitted automated assembly and rapid disassembly. Internal cabling was conspicuous by its near absence. The PS/2 range which spanned 8088, 80286 and 80386 processors featured a raft of innovations, including a new proprietary Micro Channel Architecture expansion slot and enhanced graphics in the form of EGA and VGA graphics adapters. The PS/2 Model 30 was the PC replacement, with an 8MHz 8086 CPU, the PS/2 Model 50 had a 10MHz 80286 plus up to 60Mb of hard disk, while the Model 70 used the new 80386 processor running at either 16, 20 or 25MHz. The Model 80 was essentially a floor-standing version of the Model 70.

So far, IBM had succeeded brilliantly in the new personal computer market, selling millions of PCs. But by 1987 it was clear that its market dominance was coming to an end: the new start-up, Compaq, had beaten it to the technology post with the launch of the Deskpro 386/25 — the first PC to feature the 80386. Ten years down the road, Compaq is now the dominant PC supplier.

Roger Gann

The ripening of Apple

It was a classic story of American business success. Two young entrepreneurs turned a little technical knowledge into a business idea, took a calculated risk and formed what would eventually become one of the most innovative companies in the world. The entrepreneurs in this case were Steve Wozniak, 26-year-old programmer for Hewlett-Packard, and Steve Jobs, a 21-year-old computer hobbyist. The company they formed on 1st April 1976 was Apple Computer.

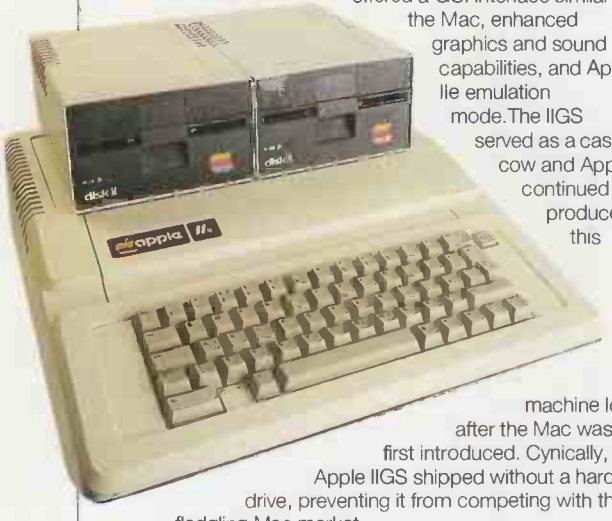
At a series of bi-weekly meetings of the Homebrew Computer Club in Palo Alto, California in 1976, Wozniak displayed enhancements to his home-built computer based on the MOS Technology 6502 chip. Steve had selected the 6502 (£16) in preference to the more expensive Intel 8080 (£110) or the Motorola 6800 (£108). Jobs and Wozniak pooled their resources, constructed the first Apple computers in Jobs' garage, and sold them to a local dealer.

The underpowered Apple I was quickly replaced by a more functional, more consumer-orientated Apple II, that in many ways dictated the personal computer paradigm that still lingers today.

The Apple II series

The Apple II (below) featured upgradeable RAM, an 8-slot expansion bus, separate monitor and keyboard, sound and colour. The ability to add hardware on the motherboard or via the expansion slots was crucial to the success of the Apple II series and was emulated by the IBM PC, the clones and most future generations of PCs.

The Apple IIGS, the final model in the Apple II series, offered a GUI interface similar to the Mac, enhanced graphics and sound capabilities, and Apple IIe emulation mode. The IIGS served as a cash cow and Apple continued to produce this machine long after the Mac was first introduced. Cynically, the Apple IIGS shipped without a hard drive, preventing it from competing with the fledgling Mac market.



The Lisa

Jobs and a group of Apple engineers were impressed by a visit to Xerox PARC's research facility where they viewed prototype systems employing a graphical user interface and a pointing device. Apple attempted to incorporate many of these ideas into the Apple Lisa (above, right), named after Jobs' daughter. Like many subsequent Apple products, the Lisa was priced high enough to ensure its failure.

The compact Macintosh

The Macintosh was an evolutionary attempt to provide Lisa technologies with a small system footprint at affordable prices. Although the Macintosh 128 (right), Apple's first "Mac", was vastly underpowered, the inevitability of the graphical user interface was obvious to anyone who took the time to use it. The "compact" Mac family evolved to include systems with internal hard drives, an expansion slot, more RAM and ROM, a Small Computer System Interface (SCSI) and, eventually, even colour. Released in January 1986, the Mac Plus was the star of those early years, with enough power to justify the growth of niche software industries like desktop publishing, presentation graphics and idea processing.

The Macintosh IIFX

Apple eventually broke out of the "compact" mode and rejoined the Apple II "box" paradigm in March 1990 with the introduction of the Mac II series. The Mac IIFX came in a more conventional case, was considered to be "wickedly fast", and featured six Nubus expansion slots.

The Macintosh LC

Released in October 1990, the Macintosh LC was the most affordable Mac of all time. Retailing for about a quarter of the price of the Mac IIFX, the LC offered colour, limited expansion and Apple IIe emulation.

The Quadra, Peforma and Centris Macintosh

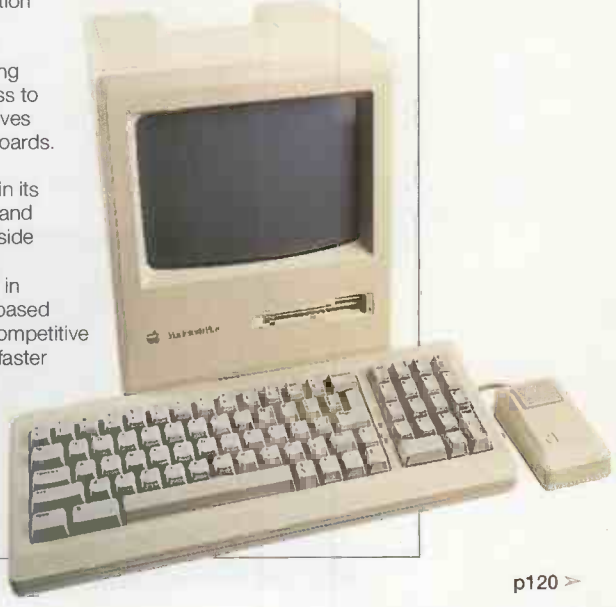
There is no doubt that each of these Macs had something unique to offer some segment of the public. You had to be very lucky to discover which model suited your needs, and Apple had to be even luckier to determine production levels. It was a sort of reverse Swiss Army Knife approach to marketing, where instead of selling one model that does everything, you try to sell unique models to cater to certain needs. This strategy almost killed the company.

The PowerPC

Apple released Macs based on the PowerPC RISC processor and provided an amazing degree of compatibility for older programs through system emulation software. This seamless migration from one processor family to another was unprecedented in the history of computing and contrasted sharply with the myriad problems faced in the WINTEL world simply upgrading from Windows 3.1 to 95 and NT.

Later-generation PowerPCs also included an IDE system bus, giving Mac users access to cheaper hard drives and peripheral boards. The PowerPC processor, now in its third generation and featuring a backside cache, offered a significant boost in speed. The G3-based Macs are now competitive in price and are faster and significantly easier to use. It may, however, now be a case of too much, too late.

Mick O'Neill



p120 >

The rise of the home computer

Although computers have changed significantly over the past 20 years, the reasons to bring one into your home have remained pretty much the same: word processing, accounts and a little innocent hobbyist activity. Kids have and always will play their parents on the educational angle to get their hands on the hottest games machine, although ironically many will become closet programmers in secret and grow up to build respectable IT careers.

As far as I'm concerned, home computing in Britain began in the early eighties, a time when dedicated games consoles such as the Atari VCS (below), Mattel IntelliVision, CBS ColecoVision (with its later Adam computer add-on) and MB's (Mac-inspiring-case) Vectrex, ruled the roost. Until this time computers were hefty, terribly serious and prohibitively expensive machines, limited to big business or scientific research. No-one complained because why would you want such a beast in your home?

Sure, there were so-called "affordable" Apple IIs, PETs and TRS-80s, but for the rest of us Clive Sinclair, then *sans* knighthood, changed our whole outlook in 1980 when his Cambridge-based company released the ZX80 for under £100. It was about the size of a desktop calculator, had about

as much power as a modern digital watch and looked absurd when dwarfed by the huge TV sets to which it was commonly connected. But for all its faults, it sparked an enthusiasm and excitement about computers in the UK which, in turn, resulted in this country being one of the most IT literate in the world.

These were the golden years, with British and American companies releasing home micros like there was no tomorrow: Acorn and Sinclair flew the UK flag while Commodore and Atari represented the US. Almost all had one thing in common: a complete proprietary incompatibility with any other system which would seem intolerable today. Apart from countless games, serious software was often in short supply, limited mostly to programming languages so you could write your custom applications.

The ZX80 was joined in the same year by Atari's rather excellent 400 and 800 and the venerable Acorn Atom. 1981 was another winning year, with Sinclair's ZX81, again costing less than £100,

Commodore's VIC-20 and the first BBC Micro, developed by Acorn.

1982 saw Sinclair's finest mass-volume hour with the release of the ZX Spectrum (bottom of page), complete with colour, sound and 16Kb of memory for £125: another £50 got you an extensive 48Kb of RAM to play with. Rather less successful that year were the NewBrain and the Welsh Dragon 32 (later to be replaced by the Dragon 64). Looking back, I recall being amused by the wealth of curious British home computers, but today it really is remarkable to think that we were producing all these machines like they were going out of fashion.

Sadly, they did go out of fashion, but not before 1984 saw the Acorn Electron, the Jupiter ACE and the Oric-1, whose only real saving grace was an excellent built-in loudspeaker. 1983 witnessed the superb Commodore 64, again launched as a semi-serious business machine but ending up as a "must-have" games platform.

Amstrad entered the home computer fray in 1984 with its CPC-464, followed by several enhanced versions. Sinclair launched its innovative QL with a 68000 processor, split 16- and 32-bit personality and 128Kb RAM, but it never was as successful as its predecessors. The Japanese invasion began with the MSX concept, an attempt at a home computer standard between several major companies such as Sony and Yamaha. Unfortunately for them, each tweaked theirs for their specialist areas (such as Yamaha for music) and the standard was lost.

1985 saw the last of the home computers as we knew them, with the release of the Atari ST and the Commodore Amiga, again both touted as excellent business machines but both playing rather good video games. To be fair, the ST made a big name for itself in DTP and sequencing, while the Amiga often found itself in video post production.

The powerful Acorn Archimedes turned up in 1987, but this phase of home computing was already drawing to a close as the calendar approached the nineties. Many of us were still deriving pleasure from the Atari ST and Commodore Amiga but the excitement just wasn't the same. Most home computer users knew of the mighty IBM PCs and their clones and were envious of their power, compatibility and following.

As prices dropped in the early nineties, IBM clones and even some Apple Macs became affordable options for the home. Budget games players turned to the latest crop of dedicated consoles, which were making a comeback from as early as 1987 with the 8-bit Nintendo Entertainment System and the Sega Master System.

Buy a home computer today and someone will sell you a powerful IBM PC compatible packed to the brim with multimedia. You'd use it to do your home accounts, write letters, perhaps do a little photo retouching, music production or newsletter layout and, of course, top it all off with some games and compulsory internet access. If you've got kids, you'll still justify all of these as education.

The price you pay for compatibility is boring hardware, essentially unchanged since the first IBM AT apart from getting cheaper and faster. The excitement today comes from the software, the really fun or genuinely useful applications.

Today's thrilling hardware, for me anyway, are PDAs, which curiously seem to be repeating the innovative but often incompatible ways of the home computers of the eighties but in a handheld form.

Serious PC hardware may now have taken over the home, but it could never have done it without the home computers of the eighties fighting the front line of IT acceptance. Don't get me wrong, I love today's computers; but yesterday's were so much fun. I really do miss those guys.

Gordon Laing

If you want to reminisce about how great, or awful, the games were in the early eighties, check out the archive section on this month's PCW cover CD-ROM.

Windows of opportunity

Windows was born 15 years ago. The project had been particularly daunting and it will come as no surprise to seasoned Windows users that its shipping date slipped badly. In fact, it didn't surface until two years later, in November 1985. It wasn't a great product: it was visually inferior to Digital Research's GEM GUI interface and windows could only be tiled, not overlapped. Screen resolution was low and you used a DOS window to perform your file management tasks. It was hardware hungry too, and needed 640Kb and a hard disk, plus the assistance of the new Expanded Memory standard. Applications support was poor: in two years, the only significant Windows application to surface was PageMaker.

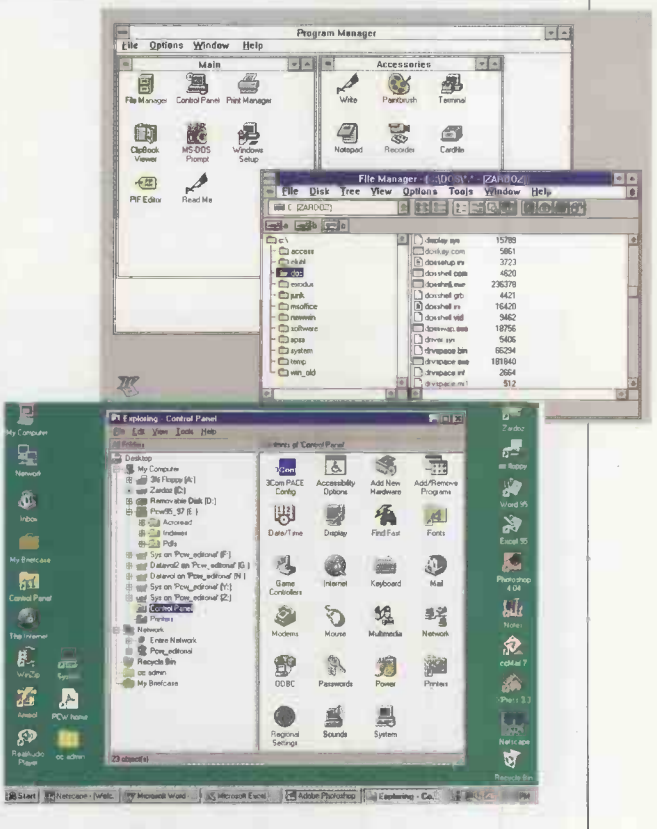
Windows version 2.0 became two products: Windows/386 (for 80386 speed demons) and Windows 2.0 for those with lesser kit. A watershed was reached with the release of Windows 3.0, in May 1990. Not only did it feature a much-enhanced icon-based interface with support for higher-resolution displays, but its support for networking was revamped and extended, too. Memory management was improved and three modes of operation — real, standard and 386 enhanced — were now possible. Addressable memory was increased from 640Kb to 16Mb on an 80286 and, theoretically, 4Gb on a 386. New features included a proper file manager, a macro utility, Windows Recorder, colour palettes based on the video hardware and a colour paint program based on Paintbrush, plus a simple terminal program.

Windows 3.0 was the most popular version yet: it sold by the boatload. But most users remember it mainly for UAEs (Unrecoverable Application Errors). This problem was largely solved with the release of Windows 3.1 (right, top) just over two years later in May 1992 (UAEs became GPFs, or general protection faults!). Cosmetically identical, the new version offered many improvements and new features. Its internal code was overhauled (some of it 32-bit), a new print engine fitted and better, faster disk cacheing added. Object Linking and Embedding (OLE) replaced DDE (dynamic data exchange). DOS sessions were smoother, and TrueType, a new screen and printer font rendering system, was introduced. Multimedia features now came as standard. Overall this was a far more stable product. Free System Resource (FSR) limitations were also relaxed slightly in this release.

By the end of 1992 Microsoft had released a proper networking version of Windows, Windows for Workgroups 3.1, which as well as the usual array of network clients also included basic peer-to-peer networking as standard. Both File Manager and Print Manager became network aware, while the new ClipBook Viewer permitted the sharing of objects across the network via DDE. Other network utilities were included for the first time, including Mail and Schedule. Its most significant drawback was its support of DOS-based workstations as clients only. This, and its poor security, didn't endear it to network administrators.

At the beginning of 1994 Microsoft released Windows for Workgroups 3.11, which addressed some of these shortcomings. Like its predecessor, Windows for Workgroups 3.11 integrated drive sharing (including CD-ROM drives), printer sharing, email, and group calendaring and scheduling into Windows. It was also the first manifestation of Microsoft At Work, an architecture designed to integrate telephones, printers and fax machines with Windows PCs. The network functions included notification of completed print jobs, connections to shared resources through Print Manager and File Manager, and an extensive security system. Its 32-bit Disk and File Access also made it the fastest Windows yet — if you had a 4Mb 486, that is.

August 1995 saw the release of Windows 95 (above), the fourth major iteration. It was at least 18 months late and required even more hardware resources than its predecessor. It was a radical departure from all its predecessors. Far more object-orientated than previous versions, the Windows 95 interface was more closely aligned with the Mac, featuring a desktop metaphor. By now, Windows was a 32-bit operating system (with some 16-bit elements) though it still ran on top of a version of DOS. True pre-emptive multitasking made its début, and games and multimedia support was good. Hardware support and conflict resolution was also much improved. This was the first operating system to support plug-and-play. As a result, installation was much simpler but much longer. Networking support continued to improve and internet support manifested itself for the first time, thanks to the Dial-Up Networking feature. Windows 98 is expected this summer.



Windows NT

Shortly after the launch of Windows 3.0, Microsoft began developing a more powerful operating system. For some years it had been working co-operatively with IBM and was developing the next major revision of OS/2, version 3.0, which had been a character-based operating system like DOS — until it fell out with IBM big time in 1991, that is.

The result of this parting of the ways was Windows New Technology, or NT. As with all other versions of Windows, the initial release, v3.1, was released some 18 months later than originally promised, in the summer of 1993. Using the Windows 3.1x interface, this operating system ran on MIPS R4000 and Alpha as well as Intel x86 CPUs. Windows NT was a true 32-bit "mission critical" operating system and so was much more robust than Windows, which even today remains a bit flaky. It was available in Server and Workstation versions.

Version 3.5 was released in September 1994 and improved on the original release's rather weak networking support. A "point" upgrade, v3.51, followed in May 1995. Support for the PowerPC CPU was included but this didn't last long. Eventually, only the Alpha and Intel CPU platforms would be supported by Windows NT.

NT didn't get the full benefit of the Windows 95 object-based interface until August 1996, with the release of Windows NT 4.0 which, for the first time, shared common features with its sibling. Windows NT 5.0 is much delayed and we'll be unlikely to see it this year, given the uncertainty raised by the US Department of Justice investigation of the inclusion of IE4.0, an integral part of Windows NT 5.0.

Roger Gann

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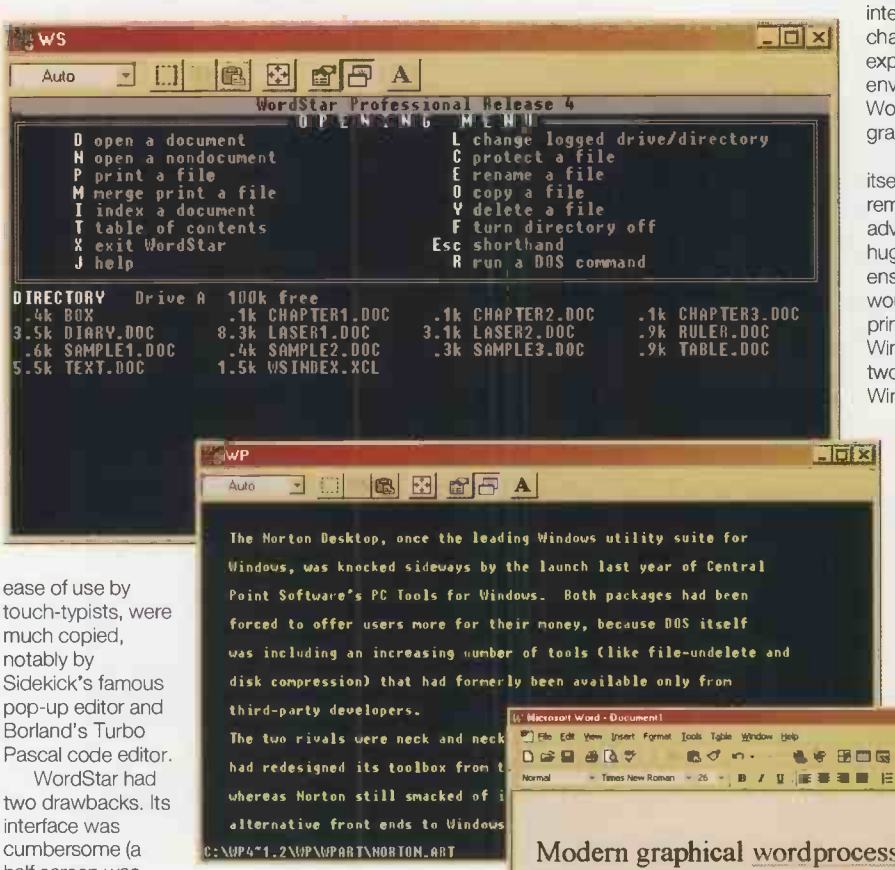
From the word processor to the office suite

Our 1979 timeline page (p77) shows how novel and exciting the idea of a word processor was at the dawn of the desktop computer. Early micros quickly sprouted editors which, within five years, became sophisticated even by today's standards, with features like spell-checks, macros, outliners and mail-merging.

There was an early need for a single, friendly package on which companies could train staff. WordStar, launched in 1978 on machines running the pre-DOS CP/M operating system, became a *de-facto* standard even before it was ported to the PC. Its control-key combinations, chosen for ease of use by touch-typists, were much copied, notably by Sidekick's famous pop-up editor and Borland's Turbo Pascal code editor.



WordStar had two drawbacks. Its interface was cumbersome (a half screen was taken up by details that today would be contained in drop-down menus) and formatting codes were displayed with text, which was confusing and alarming for new users.

WordStar (shown, top) was superseded as market leader by WordPerfect (centre) which appeared first on Data General minicomputers in 1980. By contrast, it presented an almost completely blank screen. It required the learning of a new set of control keys but there was instant help at the touch of a hotkey. Formatting commands were normally hidden but could be revealed and edited when required. This is an advantage WordPerfect retains over modern Word, in which some formatting can be tricky to undo.

WordPerfect evolved into a very good program indeed. My favourite version was 4.2 (launched October 1986): the speed and do-it-now simplicity of its macro facility has not been surpassed. By 1987, WordPerfect was offered as part of an integrated suite called first WordPerfect Library, and later WordPerfect Suite.

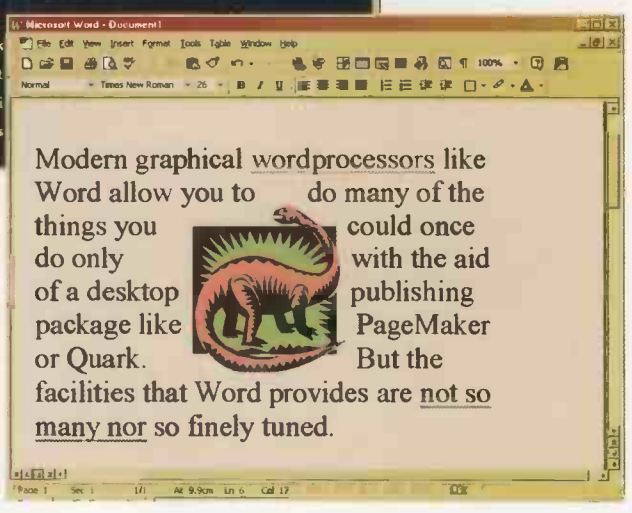
This was a time when the PC world was still shackled by a 640Kb limit on RAM. Remarkably, WP Library offered within that limit the ability to run a spreadsheet, a contact database with auto-dial, a macro editor, a program editor and a word processor back to back (albeit not all at once) and to switch easily between them. This was not multitasking, because the PC was doing only one thing at a time, but it was a fair imitation. Moreover, you could swap information between programs via a clipboard, and the modules could interact: the database, for instance, feeding data for a mail-merge. The package had a fatal drawback, though: it lacked WYSWYG. Apple had shown with the first Mac that this was possible on a desktop computer and the PC world clearly had to follow.

But WordPerfect, in a pattern common in IT evolution, had become constrained by its own success. Its millions of users would object to major interface changes, yet major change was needed to fully exploit a graphical environment. When WordPerfect tried to go graphical, it lost its way.

Windows, which took to itself the task of printing, removed at one stroke a big advantage of WordPerfect: its huge library of drivers, which ensured that the program would work with virtually any printer. WordPerfect for Windows did not emerge for two years after the launch of Windows 3.0 and was slow and flaky when it came. It got better, but by that time Microsoft Word (below) was making the running.

Word, coming from the same company that wrote Windows, naturally made the most of the environment. (There were claims, then as now, that Microsoft kept some Windows calls secret to give its own applications an edge.) Microsoft followed Word with the Excel spreadsheet, the Access database and other office applications, all built from scratch for Windows and learning from DOS-based rivals. Then Microsoft applied the logic of integration to Windows, where it could be taken further than ever before. The result, Microsoft Office, now has 86 percent of the market. Ironically, WordPerfect provided, in the rich integration of its early suite, a template for its own downfall.

Clive Akass



p124 ➢

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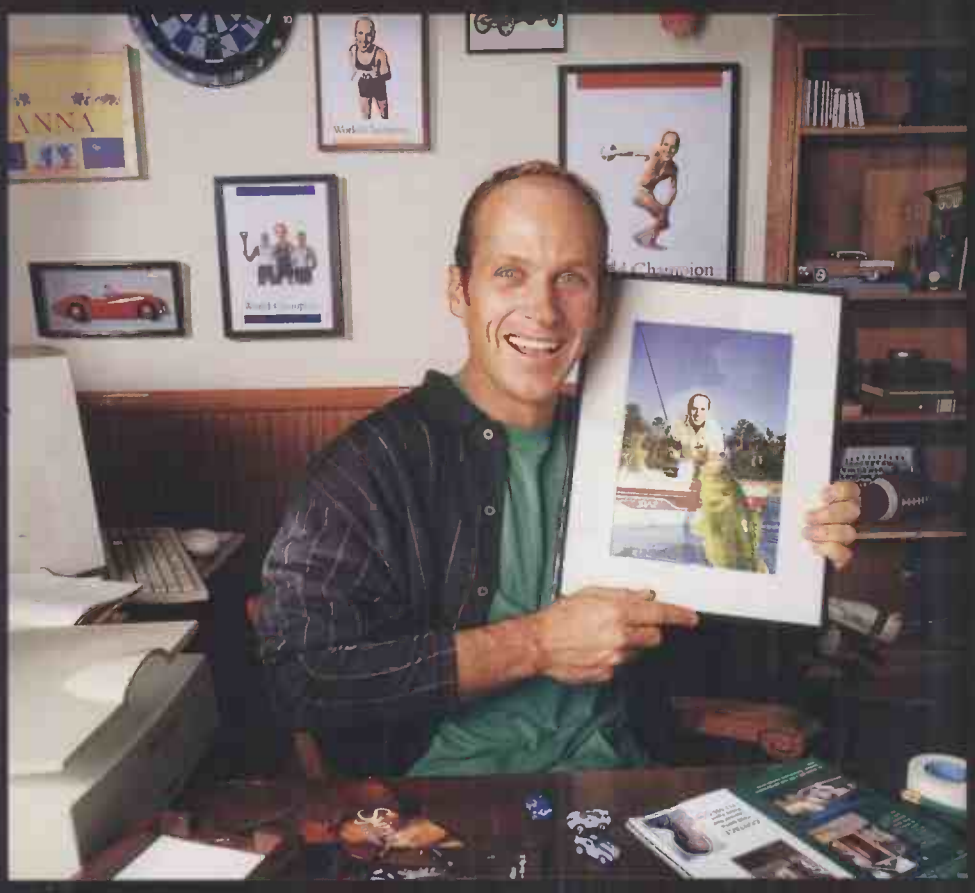

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The progression of spreadsheets and databases

1977 was the year of the Tandy TRS 80, the Commodore PET and the Apple II. The Apple had to be plugged into a TV, but the PET had an integral monitor and really looked like a business computer. It had a MOS Technology 6502 chip, BASIC in ROM and 16Kb of memory. BASIC was dead slow, but you could achieve a remarkable turn of speed by poking assembly language directly into its memory. Then, as now, fantastic technology was useless without the software to go with it and, as everyone knows, the only software a business needs is a word processor, a database and a spreadsheet.

A1 (L) ACCOUNT B C!

	A	B	C	D
1	ACCOUNT BALANCES SUMMARY			
2				GBP EQUIV
3	HSBC HK	HK$	17246.54	1437.21
4	MIDL LON	GBP	243.87	243.87
5	BBME DUB	AED	438.15	62.59
6	BBME BEI	LBP	3257.04	271.42
7	HSBC SING	SG$	12.13	3.89
8	CITI NY	US$	14231.04	8371.20
9	MIDL PAR	FRF	0.00	0.00
10				10390.18
11	17/01/83			

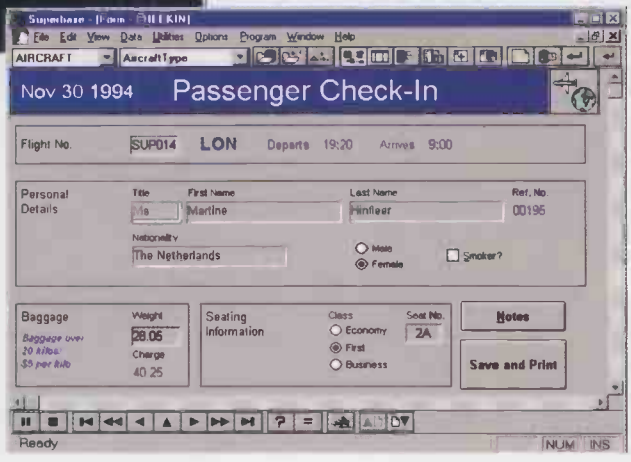
Database management was already second nature to a computer, although doing it on a personal computer was a bizarre idea. But a spreadsheet? Where did that idea come from? The answer is, from Dan Bricklin at Harvard business school. He came up with the idea of electronic graph paper, so you could have a column of related figures, change the number in one and have the change ripple through the others without further ado. For businesspeople eager to work out how much more money they could make by upping the price a penny or two, it was black magic, a must-have for every smart young suit. The idea became commercial reality when VisiCalc (above, top) appeared from Software Arts in October 1979, not for the PET but for the Apple II. Before long, though, it appeared on all the popular computers, and my PET copy was really good.

VisiCalc was copied, and Lotus 1-2-3 was one such, released in early 1983 exclusively for the IBM PC. The 1-2-3 idea was that it integrated spreadsheet, graphics and database features, although using a spreadsheet for storing data was as bad an idea then as it is now. Oddly, another company who borrowed the VisiCalc idea was Bill Gates' Microsoft, whose inferior Multiplan had already appeared, first on the Apple II and then on the PC. Multiplan never caught 1-2-3, but a few years later the real threat appeared.

It was called Excel, it was graphical, it was for the Mac, and it made its début in 1985. Two years later, the Windows 2.0 version appeared. Lotus took years to come up with a Windows 1-2-3. Initially this was bad news for Windows, but Lotus was the loser in the end. The funny thing is, all the spreadsheets I've used have been decent products, from VisiCalc through to Excel, 1-2-3, Quattro, and including quirky things like Lotus Improv. Spreadsheets have an uncanny synergy with the personal computer. Even a shareware product, called Opus, on the Atari ST was superb.

Database managers are another thing completely. Like spreadsheets, databases boil down to rows and columns but somehow have a snarling antipathy to both computers and users. On the PET, I had a thing from CompSoft that ground my smart dual-floppy disk drives to pulp and never worked properly. While the spreadsheet folk polished their user interfaces, the bewilderingly popular dBase had no user interface at all and its makers inflicted permanent confusion on an unsuspecting world by calling a table a database. Of course, I exaggerate. But dBase II, the 1981 first version, was not really an application, more a programming language. This meant trouble for novices who bought the shrinkwrap, but developers who knew the spells could brew up a no-nonsense, menu-driven business application which provided a meal ticket for life.

On the PC, dBase dominated absolutely, despite the massive handicap of being marketed by Ashton-Tate, a company which comprehensively lost the plot after the release of dBase II Plus, the first network version, in 1985. Its main competitors were clone products like FoxBase, marketed on the simple but effective basis of being fully compatible but faster and better. So it was, and even more so when FoxPro arrived. Other canny developers used Borland's Paradox, a product which actually understood what data management was about but was, if anything, even harder to learn and use.



When Windows 3.0 turned up in 1990, Microsoft was content to have Cardfile as its only database product; developers shrugged and went on using xBase. The reason is that database managers have a far smaller market than spreadsheets and databases, especially as nobody had figured out how to make them usable by novices. Databases contain important information, and nobody wanted to trust it to a flaky environment like Windows. It was an opportunity there for the taking.

Over in the flatlands of Cambridge, somebody took it. Precision Software's Superbase (above) started out as a CP/M product and achieved real success on the Atari ST and the Commodore Amiga. It was programmable, but also had a proper user interface and cheerfully stored pictures as well as text and numbers. Quickly ported to Windows 3.0, it was the only sensible choice, selling strongly at a nice, expensive price. That was until the big boys woke up. Superbase suffered a one-two-three punch from Microsoft Access, Microsoft FoxPro and Borland Paradox for Windows. They were good, they were big brands and they were cheap. In truth, it was the beginning of the end for xBase as well as Superbase. FoxPro, in my view, peaked at version 2.0 for DOS, and dBase simply did not appear until far too late.

It is 1998. Access is the best database, Excel the best spreadsheet. Is there any hope for those who tire of the Microsoft logo? Actually, yes. The world is changing again, and both the web and the concept of client and server, however you wish to construe that expression, are changing the landscape in the same way that Windows did. Yes, and spreadsheets are better than ever but database managers remain as thorny as thorns. Some things never change.

Tim Anderson

p127 ➢

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The growth of computer games

When it comes to computer games, just about everyone can come up with their own list of "classic" products. Adventures, platform games, shoot-em-ups and simulators: we all have our favourite titles. Looking at releases over the past 20 years brings back a lot of memories — mostly from a time when there wasn't that much memory around.

1978 saw the release of the first popular text adventure for the "new wave" of home micros. Scott Adams' Adventureland was a fun-packed tale of foul-smelling mud and arrived three years before Infocom's legendary Zork on the Apple II. Two years after Zork, Melbourne House introduced us to The Hobbit, bringing Tolkien's fictional world to life with text and graphics. Sierra's Kings Quest took this idea further on the PC in 1984 with a character who wandered around a completely graphical world.

Possibly the last great adventure, in the traditional sense, was The Pawn, Magnetic Scrolls' 1985 sword-and-sorcery extravaganza. It sold a lot of Atari STs before being converted for PC audiences.

While early adventurers battled dragons into the small hours, action fans enjoyed playing with their Willy. 1983 saw the arrival of Miner Willy in the Spectrum classic Manic Miner, swiftly followed by the sequel Jet Set Willy. Such was Manic Miner's popularity that I can still remember how to get infinite lives... Poke 35135,0. Pass the anorak!

Platform games continued to be a hit on the PC, with Broderbund's Prince of Persia leaping into the spotlight. Sadly, the sequel was nothing to write home about and we haven't really seen a classic since.

Simulator fans may sing the praises of Microsoft but its Flight Simulator didn't land until 1983. Psion took to the skies a year earlier with its ZX81 Flight Simulation and then brought it to the Spectrum in colour. Acornsoft took us to the stars in 1984 with Elite (below), a groundbreaking space trading/combat sim with silky-smooth 3D vector graphics, and later drove us to distraction with Revs.

Psion also introduced the UK masses to the shoot-em-up in 1982 with its ZX81 and Spectrum clone of Space Invaders, called Space Raiders. These were followed by Imagine's Arcadia and JetPac (below) from the legendary Ultimate Play The Game. Later, Graftgold's Uridium on the C64 set the standards by which others were judged.

Fisticuffs went digital with the release of Karateka for the Apple II in 1984, and the genre received a huge kick a year later from Way of the Exploding Fist on the Commodore 64. More recent hits include the gory Mortal Kombat, but most gamers agree that modern combat is best left to consoles.

Isometric action arrived early, with 3D Monster Maze (right) for ZX81 and the hit Spectrum with Sandy White's Ant Attack.

Ultimate amazed all with Knightlore (above, top) in 1984, which spawned a number of popular clones, including Batman from Ocean. Apogee's Wolfenstein 3D got the PC market going, but it was the legendary Doom (above) that finally led us all down the 3D path in 1993.

Finally, what nostalgic trip would be complete without Tetris, possibly the best puzzler ever produced? Written by s Russian, Alexey Pajitnov, in 1985, it arrived long before *perestroika* and did much more to raise the awareness of programming skills in the Eastern Bloc.

All this, and we still haven't touched on the arcade cabinet classics like Pac Man, Donkey, Asteroids and Battlezone. Oh yes, I remember them well...

Chris Cain

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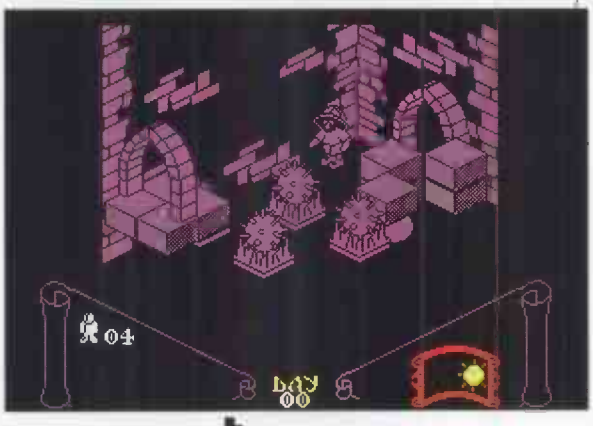

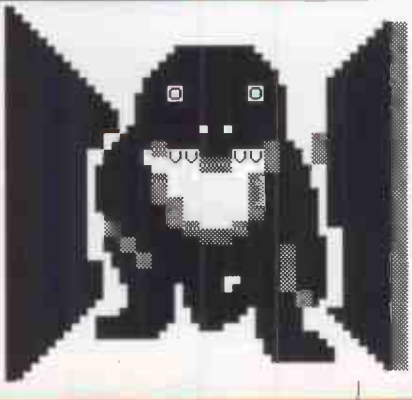

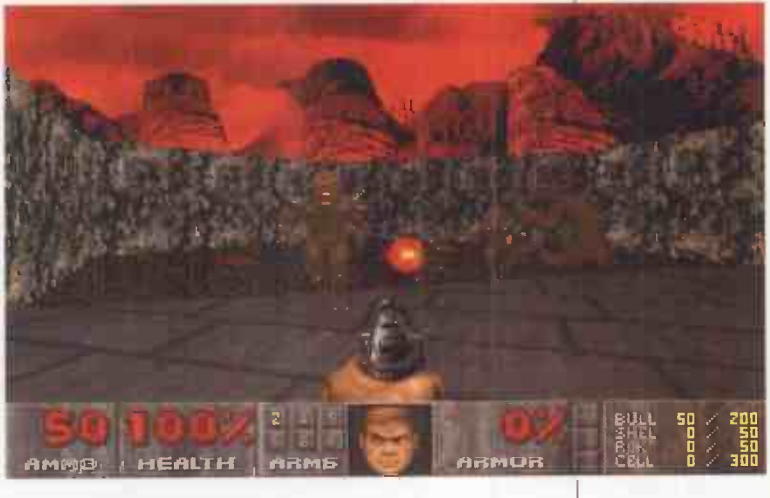

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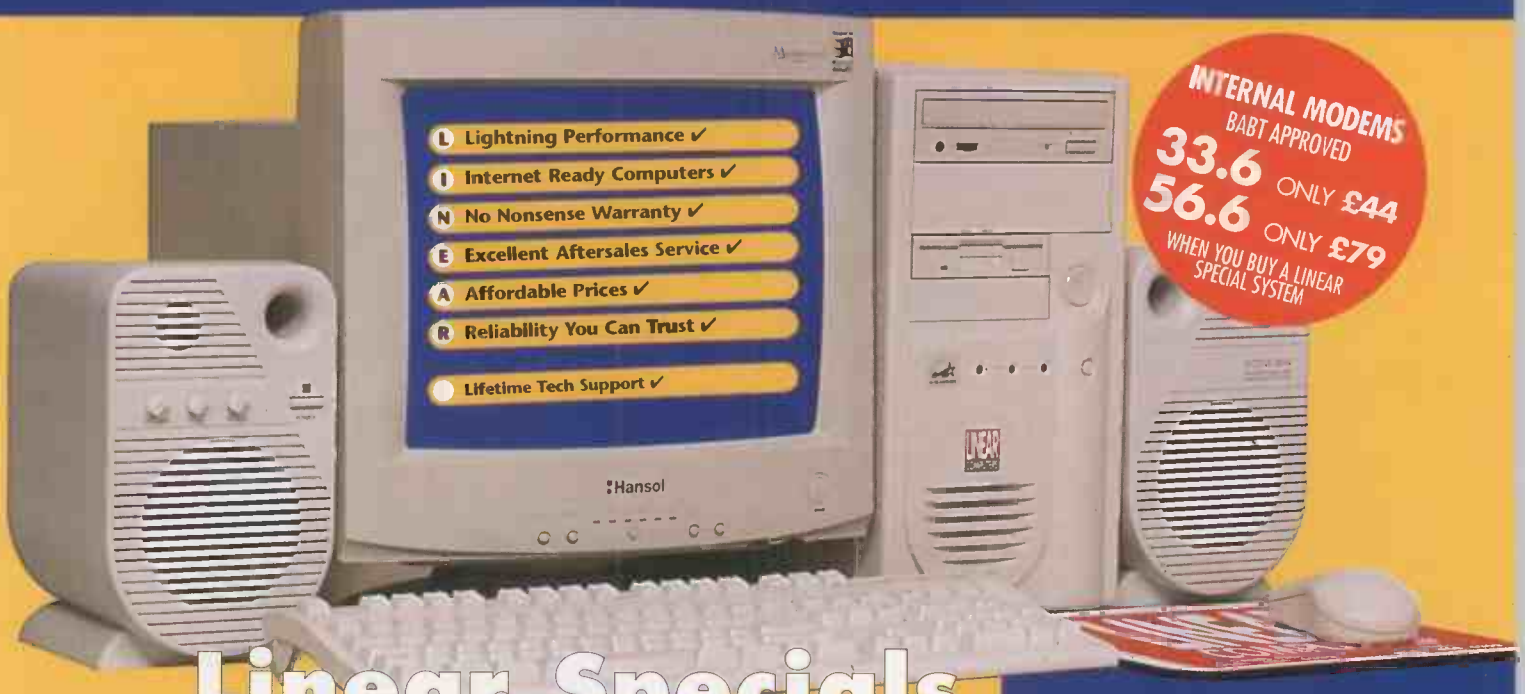

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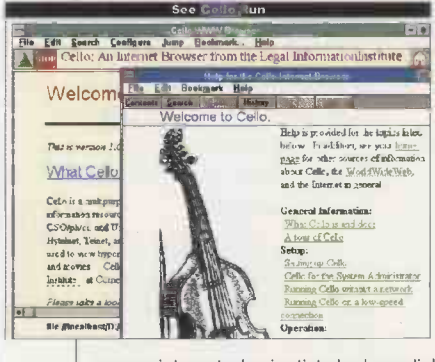
Evolution of browsers and the net

A shiver went down my spine the first time I tried Mosaic, the earliest widely successful graphical browser. Five years later, with browsers taken for granted, it is harder to see why they caused so much excitement. The internet had been gestating since the fifties; a bomb-proof military communications system that spread out into academia. Private use began to build up in the eighties but home and small-business users generally went online via closed networks like CompuServe in the US, or CiX and Prestel/Microlink in England. There was a scattering of communities around online bulletin boards set up by enthusiasts (*PCW* provided lists of BBSs).

These networks were mostly text based and communication between them was difficult or impossible, so global email did not exist. They also depended on a direct dial-up: if you called a bulletin board in the US you were charged for an international call. The internet, by contrast, was open and infinitely extensible and the servers around which it was based were permanently hooked into the phone network on private or leased lines, some of which crossed oceans. In effect, the net abolished distance: you could contact a server on the other side of the world with the same ease, virtually the same speed, and at the same negligible cost, as you could call one next door. But you needed a lot of capital for a line, so widespread use became possible only when independent service providers put up the money and sold access to dial-up subscribers.

The hippy generation that had protested against the Vietnam war saw this creation of the demon Pentagon as a focus for their idealism. Here was a new medium that would bring people all over the world together, in freedom. The net, they reasoned wildly, was owned by no-one and existed everywhere and was therefore beyond restraint. Net-aware students leaving university contributed the enthusiasm of a new generation. The breakthrough in Britain came in 1992 when Demon Internet offered dial-up connections for just £10 a month. There was a snag, though: you needed perseverance and savvy to get online. Once there, you were knee-deep in Unix, protocols and addresses that were impossible to type.



The worldwide web, almost synonymous with the internet, was already a year old. It was invented by Englishman Tim Berners-Lee at the Cerne particle-physics lab, as a way of distributing information among interested scientists by hyperlinking ideas in documents to related information on the net. The links consisted of an address and a handshake, but they were powerful. Not only was the web infinitely extensible, it extended itself *ad-hoc* as people added links. It was realised that links could be triggered by pictures as easily as by words and could call up video or sound or any other codeable material. There were several attempts to draw these ideas together, including a browser called Cello (above) from Cornell Law School.

Mosaic came from a group of students, led by Marc Andreessen, at the University of Illinois. By adding a graphical interface to the text-based WWW, they created something that was more than the sum of its parts. Mosaic insulated people from the structure of the net, allowing anyone to travel its ways. It was phenomenally successful: something like two million copies were downloaded within a few weeks in late 1993, at a time when it was still flaky shareware.

Silicon Graphics founder, Jim Clarke, persuaded Andreessen to join him in a new company called Netscape. Microsoft was slow off the mark until Bill Gates' famous U-turn, embracing the web in 1996. Netscape Navigator and Microsoft Explorer are both conceptually identical to Mosaic. Newspapers caught on and the net became The Latest Thing. Computer freaks, who for years had been pilloried as socially challenged nerds, found themselves briefly fashionable.

It could not last. The infrastructure of the net has hardly begun to match its promise. The browser is being absorbed into the anonymity of the operating system. But for all the hype, Mosaic was the start of something big. There are wonders yet to come.

Clive Akass

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Mystic mag

Four *PCW* writers predict the role computers will have in our homes and lives 20 years from now.

Gordon Laing, Managing Editor

When people discuss what it's going to be like in the future, there are always common predictions. Who can forget TV shows in the seventies which promised endless leisure time thanks to technology? Well, I don't know about you, but my life at home and the office is full of new technology and yet finding a spare minute has never been harder. TV sets that hang on the wall like a painting were said to be just around the corner in, er, 1974: even now, my lounge is dominated by a huge glass tube which, for a few years yet, looks unlikely to be replaced by a thin gas-plasma set. But I have a vision, and it's definitely of the remote-controlled home.

As the world begins to speak more loudly about convergence, the big computer people are looking to entice the mass-volume home products with their wares. You may think they work fine today, but be under no illusions that Intel wants its chips, and Microsoft its operating system, built into your kettle as standard.

Computers have a reputation for tedium and for being rather uninspiring, but they are remarkably good at talking to each other, and home consumer electronics are great fun. Get them together and imagine what could happen. How about all your electronic and electrical devices connected through a high-speed home network? I reckon IEEE-1394, more charmingly referred to by Apple as "FireWire", will provide the backbone. Sony has already fitted it to its digital camcorders.

How about providing each device with an IP address so that, much like modern network printers, they may be configured, monitored and operated from afar? Stick an IP address in your VCR and you'll never again have to worry about forgetting to set it. What about one in your cooker, so it's heating your food in time for your arrival? Maybe one in your security system to check out who's hanging around your house. You could also be warned when resources are running low so you'll no longer find you've run out of washing powder or food in the refrigerator.

You'll need a web browser to operate these goods, but forget hefty desk-bound computers. As mobile phones and PDAs converge, we'll have pocket-sized or even wrist-worn devices capable of remotely controlling your home. Like the web, you'll be able to access your home from any browser, anywhere in the world. And speaking of which, you will have a cheap mobile-phone system that works all over the world using an array of satellites.

I tell you what though — my home of the future will have a very strict set of rules about electrical doorknobs, heaters and impersonating the owner: I'm not having it turn against me *à la* Demon Seed. I wonder if Bill Gates has considered that possibility in his high-tech pad?

Clive Akass, Associate Editor

Today's desktops will look as qualnt as sit-up-and-beg typewriters do to us, now. Screens, perhaps based on now-embryonic light-emitting polymer technology, will be thin and flexible and used face up, like paper.

Keyboards will be a minority sport. Most computers will be driven by a combination of voice, pen and perhaps eye movement. Computers will never be better at comprehending speech and standard writing than we are; which is to say that they will make mistakes. Advanced users will learn a gesture language, designed for unambiguous reading by a computer; it will resemble nothing so much as shorthand.

Learning to communicate with cyberspace will be as fundamental to education as the "three Rs". Children may do some teaching of their own as, unencumbered by our preconceptions, they develop a new multimedia grammar with its own conventions. (We may not even be able to understand their narratives: researchers 30 years ago found that remote villagers in India could not follow birth-control films because they did not understand cuts and flashbacks.)

The personal computer will evolve more from the palmtop than the desktop. It will be pocketable, with basic standalone functions, and will serve to interface with the network and/or to drive a big-screen workstation. It will also function as an active book, reading disks or solid-state cards capacious enough to use interactive multimedia, including video and spoken text, to an extent that will make today's CD-ROMs seem comically primitive.

Alternatively, SmartCards, incidentally acting as an electronic-cash wallet, will be able to call up a personal computing environment at any interface. Bandwidth costs will have plummeted, enabling many new forms of online commercial activity. Online infrastructure, recognised as a vital communal resource like the roads, will become a political issue. The road analogy will go further as we discover that high capacity does not equate to high speed, nor to a quieter, more comfortable world. Capacity will increase demand and bottlenecks will appear in head-end systems struggling to meet the demand for data streams and in the unimaginably fast switching needed to deliver them.

Paper will be used, but not as it is today. Some advertising will shift from printed to electronic media, making paper publication less viable; much printing will be done on home machines, from data broadcast at night. All will not be for the better, but the technology could help us live intimately at a remove from each other, enabling healthier patterns of living and perhaps new forms of human relationship.

Adele Dyer, Reviews Editor

Microsoft Office 2018 has been unveiled. It takes up 20Gb of hard-disk space, needs a couple of gig of RAM to run, has 1,001 useless features, was two years late in arriving and still GPFs when saving to the network. Not that Bill Gates is worried. He has been given a key job in the Department of Justice by President Andy Grove (Intel Party) and is said to be quite content buying up every other rival business in his sector.

However, Office 2018 finally has thought recognition. Just put a couple of electrodes on your temples, concentrate hard and your thoughts appear on the screen. But be careful to prevent your mind from straying — you never know what may appear in full view.

On your way home from work you can catch up with a little light surfing on your internet specs. They may look as cool as a pair of Oakleys but you can use them to get well nerdy on the net, read the online newspapers or tinker with your credit-card PC which is sitting in your wallet. This PC slips into the same slot in your home terminal/controller as your SmartCard, so it is easy to synchronise data between the two, keeping track of your finances and your movements during the course of the day.

Alternatively, you can log on to your home network, get the household robot to put the dinner in the oven, switch the heating on and turn the taps on in the bathroom, so your bath is run by the time you get home.

In the house you can now settle back to watch your selection of 2,000 TV channels, all of them showing repeats of old programmes, on an 8ft wide, half-inch-thick flatscreen TV. You don't even have to worry about losing the remote; you can just talk to the screen and it will change channel for you. Surround-sound speakers can be built into picture frames.

As the TV is wired into the household network, you can check on the housework robot hard at work in the kitchen and buzz him to bring you a beer from the fridge.

Adam Evans, Technical Editor

Think back 20 years and remember what life was like. No computer games, no internet, no mobile phones, no cool graphics on TV, terrible special effects in the cinema and no desktop publishing (meaning far fewer magazines on the news-stands). These are a few of the countless innovations a mere two decades have brought us. Looking into the future is a tricky business, but with the aid of my crystal ball, here are some predictions for the next 20 years.

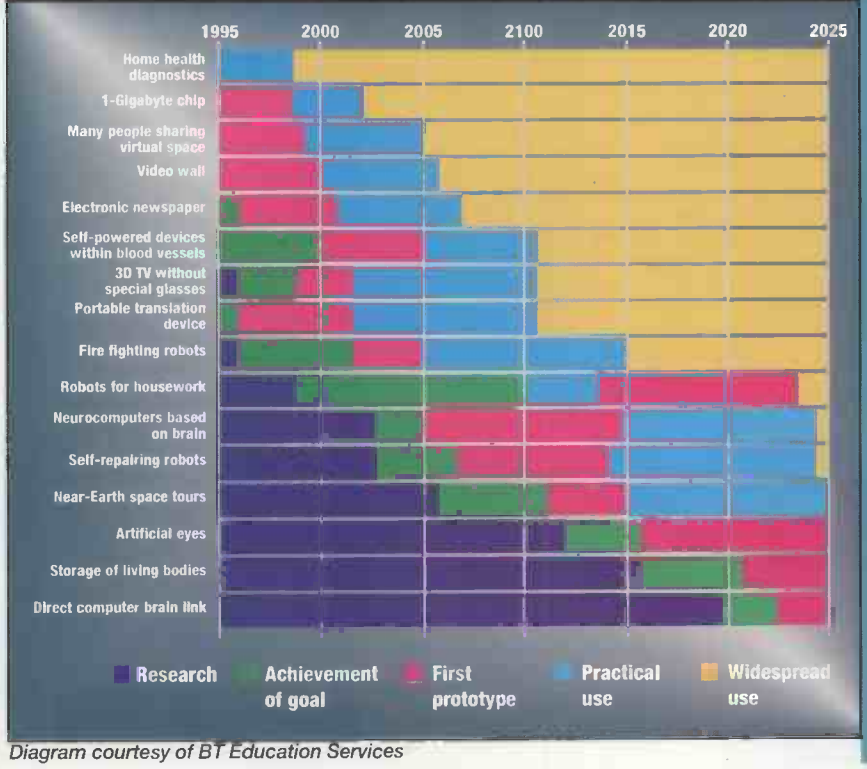
The electronic Lego, due to be released this autumn, will have a subtle and long-lasting effect on society. A generation of children building and training these kit robots will ease the acceptance of autonomous thinking machines in the home, like independent roaming vacuum cleaners (already at prototype stage, today).

Advances in internet and digital television technology will mean that it is content, not the means of delivery, which is the most important factor. You will download films over the net and view web pages on your TV. Wireless communications will link everything together, from your car to your fridge. Early adopters will fondly remember the Great Melting Ice Cream Hack of 2012 which caused a river of dairy produce to run down Glasgow's main street. Money will be revolutionised, with a few anachronistic die-hards using cash instead of the secure, convenient, reliable SmartCard. "Save our Euro," patriotic British protestors will cry. "A Euro-American currency is just another way of handing control of Europe to Washington."

A combination of SmartCard technology and intelligent buses and trains will render tickets obsolete, as funds are deducted automatically from your account. Electronic newspapers will be a reality, with wireless communications beaming continually updated personalised information to your electronic paper. Light Emitting Polymer display technology allowing thin, flexible, bright screens of any size, will let you unroll a big screen that you keep in your wallet. But these screens will seem prehistoric compared to the latest 3D TV sets controlled by speech recognition.

Whether all or none of these predictions come true, the next 20 years will provide surprises for all. But one thing is sure: no matter what advances are made, machines will still break down and software will still be buggy. Levels of expectation from technology will be higher but, like it or lump it, the complaints and moans about things going wrong or being just too slow will be the same.

A glimpse into the possible future, from BT Education Services



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• SoundBlaster AWE 64 Value sound card	£50
• SoundBlaster AWE 64 Gold sound card	£100
• Upgrade from 2.1GB to 3.2GB	£25
• Upgrade from 3.2GB to 4.3GB	£20
• Upgrade from 4.3GB to 6.4GB	£40

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• 17-inch 1280 x 1024 colour monitor	£115
• 17-inch multimedia SVGA 1280 x 1024 monitor	£190
• 17-inch Elonex DiamondTron colour monitor	£315
• 21-inch 1600 x 1200 colour monitor	£995

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- Microsoft BackOffice Small Business Server (10 CALs) pre-loaded

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£3,401.63	Total cash price (with 12 months deferred)
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£3,061.00	Balance before Charges
£2,615.11	Add Charges
£5,676.01	Balance Payable
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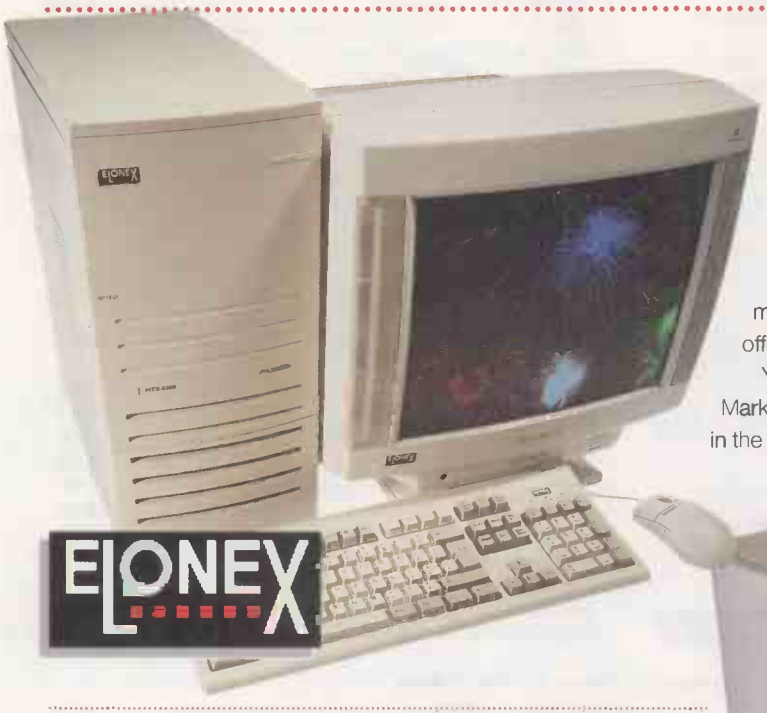
ELONEX

Personal Computer World

PCW 20th anniversary competition

To mark our 20th birthday we have invited a selection of prominent companies in the IT industry to donate prizes for this month's celebration competition. So come on and join in this bumper giveaway of fabulous prizes worth a total of more than £8,700!



Elonex

This competition is one that you won't want to miss! The renowned PC manufacturer, Elonex, would like to give *PCW* readers the chance to win one of its **MTX-6300** systems.

The Elonex MTX-6300, worth £2,345, was the Editor's Choice in our recent 300MHz PII PCs group test (*February 98 issue*) and is arguably every computer lover's dream machine.

The Elonex MTX-6300 comes with an Iiyama Vision Master multimedia monitor and was the only system in our group test to offer hot-swappable drive bays.

You simply *must* try your luck at winning this super setup. Mark your postcard "May-Elonex Comp." and send it to the address in the panel opposite (*p135*).

Psion

• *See our PDA group test, p242*

Psion, the creator of the Organiser, is giving away one of its super-duper **Series 5** palmtops, worth £499. Combining innovative design and new technology, the Series 5 incorporates a full VGA-width backlit screen, a pen for navigation and a patented touch-type keyboard. It also features a Windows-style interface, office software applications and Microsoft Explorer, providing total integration and compatibility with office and home computer systems. The Series 5 is about the size of a chequebook, weighs just 354g and runs for up to 35 hours on two AA batteries.To enter this competition, mark your postcard "May-Psion Comp." and send it to the address in the panel opposite (*p135*).

Labtec

Labtec has just launched a new three-piece subwoofer/satellite system, the **LCS-2420**, and would like to give away a set to each of four lucky winners.

This £59.99 three-piece speaker system, reviewed in *Gadgets* last month, features a space-saving Clear Desk mounting system to optimise desk space, 3in Max-Z high-excursion satellite drivers and a 5.25in Max-X high-excursion subwoofer. There's dynamic bass bandwidth equalisation and single-sided controls featuring power on/off, variable bass and volume control. With the LCS-2420 you can bring exceptional computer audio sound to life without paying the extra.

To enter this competition, mark your postcard "May-Labtec Comp." and send it to the address in the panel opposite (*p135*).

Visioneer

Visioneer has two **PaperPort Strobes** worth £175 each to offer as prizes to lucky readers. The PaperPort Strobe, reviewed in our December 97 issue and rated four stars out of five, is simple to use — perfect for those who are unfamiliar with document scanners.

It connects to the PC via the parallel port and the driver software is highly integrated with your PC's existing software, offering links to compatible applications. You can scan spreadsheets, letters and photos, and just drag-and-drop them into applications like Paint Shop Pro or Adobe Photoshop. The Strobe can produce 300dpi images of scanned photos in just over a minute. To enter this competition, mark your postcard "May-Visioneer Comp" and send it to the address in the panel below.

Orchid

Orchid, the graphics card and motherboard maker, is giving away seven **Orchid motherboards** worth £100 each, and seven **Orchid Righteous 3D Accelerators**, each worth around £200.

The Righteous 3D is a dedicated 3D accelerator that delivers true arcade-quality graphics in real-time and has a full-motion frame-rate performance with all 3D features simultaneously accelerated. It operates transparently, with 2D adapters for maximum graphics performance, and has a 4Mb EDO DRAM configuration with dual 64-bit memory architecture. It also features Windows 95 Direct3D support.

To enter this competition, mark your postcard "May-Orchid Comp." and send it to the address in the panel below.

Filemaker

Claris, which has recently changed its name to Filemaker, would like to celebrate *PCW*'s anniversary by giving away five copies of its award-winning database, **Filemaker Pro 4.0**.

Filemaker Pro 4.0, worth £199, allows users to instantly publish dynamic Filemaker Pro databases to the web/intranet and serve related Filemaker Pro data files over sophisticated web sites without having to employ additional CGIs (common gateway interface) and web server software.

Filemaker Pro 4.0 boasts several additional web-enabling capabilities, adding greater convenience for accessing information on the net, including the ability to store GIF or JPEG images. To enter this competition, mark your postcard "May-Filemaker Comp." and send it to the address in the panel below.

CH Products

To round off this month's enormous competition, CH Products is giving away two of its best joysticks — the **Virtual Pilot Pro** worth £105, and the **Force FX** worth £150 — to make sure you get the max out of playing your favourite games.

The Virtual Pilot Pro is the perfect companion to your flight simulation and auto racing games, with the advantage of added professional features. It includes dual four-way switches and six fire buttons as well as elevator and aileron trim controls and throttle. The Force FX is guaranteed to knock your socks off, with six built-in effects that can be experienced through the stick. It, too, features two four-way switches and has five fire buttons and trigger and trim controls for total power.

To enter this competition, mark your postcard "May-Joystick Comp." and send it to the address in the panel, here.

Rules of entry

These competitions are open to readers of *Personal Computer World*, except for employees (and their families) of VNU Business Publications, Elonex, Psion, Labtec, Visioneer, Claris, Orchid and CH Products.

The Editor of *Personal Computer World* is the sole judge of the competition and his decision is final. No cash alternative is available in lieu of prizes.

How to enter the competitions

1. Via our web site at www.pcw.co.uk, or
2. Write your name, address and daytime telephone number on a postcard, or on the back of a sealed envelope. Mark your card with the name of the competition and send it to: P.O. Box 191, Woking, Surrey GU21 1FT.

Entries must arrive by 29th May 1998

• *Please state clearly on your entry if you do not wish to receive promotional material from other companies.*

Agenda

The Business with Desktop

The Agenda delivers all the power and capability of a Desktop PC without being confined to a desk.

Top of the Agenda's exciting attributes is the massive 14.1" XGA TFT screen, the largest you will find on any notebook PC.

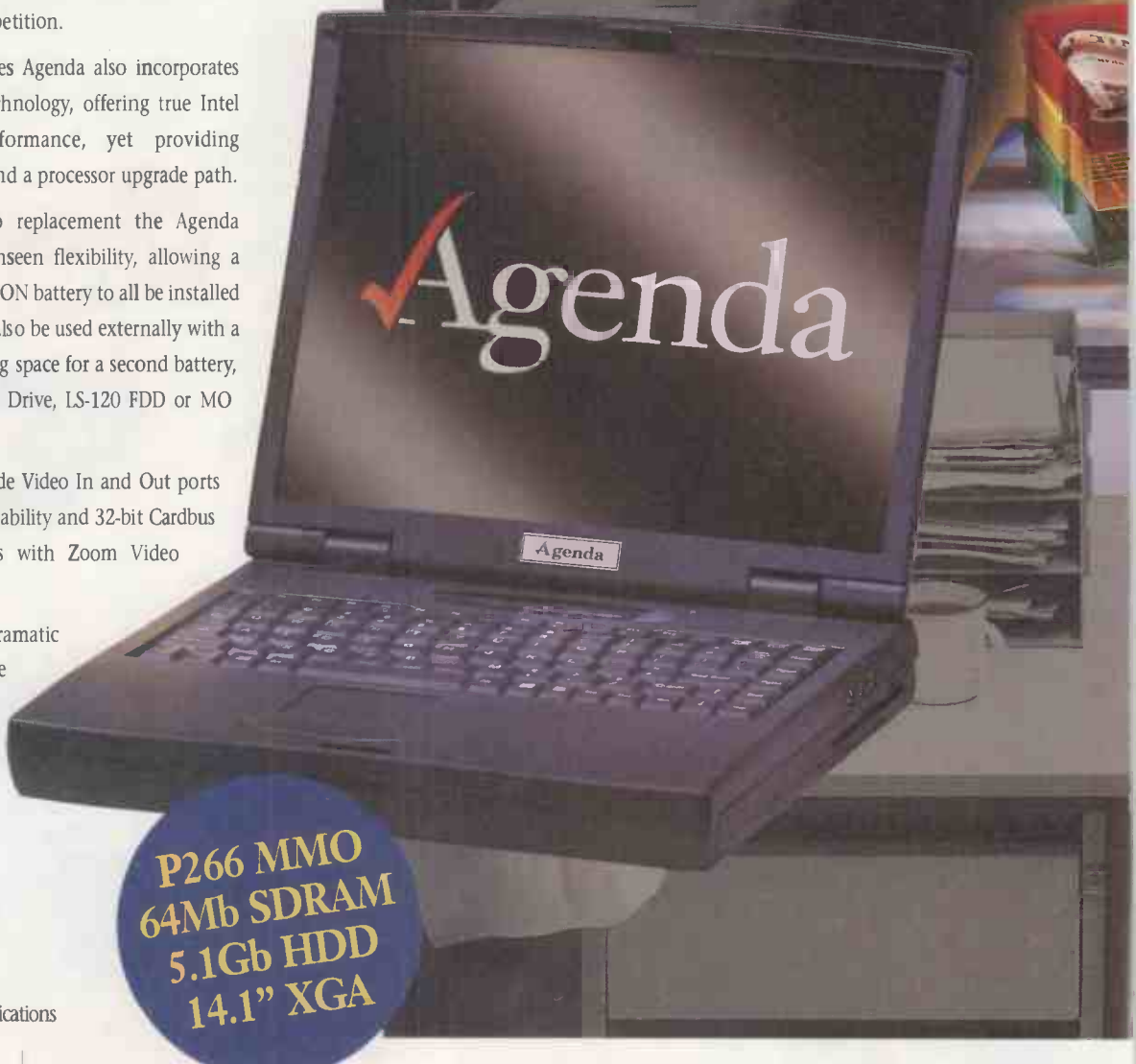
Built to withstand future developments, the Agenda can support up to the fastest 300MHz CPU, has 2 USB ports and uses the latest high performance Synchronous DRAM (SDRAM) to provide you with a maximum of 192Mb* memory capacity. With the addition of a high speed 4Mb video subsystem, the Agenda ensures you always stay ahead of the competition.

The New 900 series Agenda also incorporates Intel's latest MMO technology, offering true Intel Pentium MMX performance, yet providing extended battery life and a processor upgrade path.

Being a true desktop replacement the Agenda provides previously unseen flexibility, allowing a CD-ROM, FDD and Li-ION battery to all be installed at once. The FDD can also be used externally with a supplied cable, allowing space for a second battery, second hard drive, ZIP Drive, LS-120 FDD or MO CD-ROM in its place.

Connections include Video In and Out ports to aid presentation capability and 32-bit Cardbus enabled PCMCIA slots with Zoom Video support.

To guarantee a dramatic impression, make the Agenda top of your Agenda.



P266 MMO
64Mb SDRAM
5.1Gb HDD
14.1" XGA

Agenda Standard Specifications

- Intel Pentium MMX or MMO CPU
- 64Mb SDRAM
- 512k Pipeline Burst Cache RAM
- 4Mb C&T 65555 Video Accelerator
- 13.3" or 14.1" XGA TFT screen
- 20xCD-ROM & Internal 3.5" FDD
- Removable 2Gb, 3Gb or 5Gb HDD
- Li-ION battery
- Video Capture & MPEG Playback
- Card Bus PC Card slots with Zoom Video
- Carry Case & Windows 95

* 128Mb on 700 & 800 series

Agenda 730	Agenda 820	Agenda 830	Agenda 920
• P233MMX CPU	• P200MMX CPU	• P233MMX CPU	• P200 MMO
• 64Mb SDRAM	• 64Mb SDRAM	• 64Mb SDRAM	• 64Mb SDRAM
• 13.3" XGA TFT	• 14.1" XGA TFT	• 14.1" XGA TFT	• 13.3" XGA TFT
• 3.2Gb HDD	• 3.2Gb HDD	• 5.1Gb HDD	• 3.2Gb HDD
• 20xCD-ROM	• 20xCD-ROM	• 20xCD-ROM	• 20xCD-ROM
• Li-ION battery	• Li-ION battery	• Li-ION battery	• Li-ION battery
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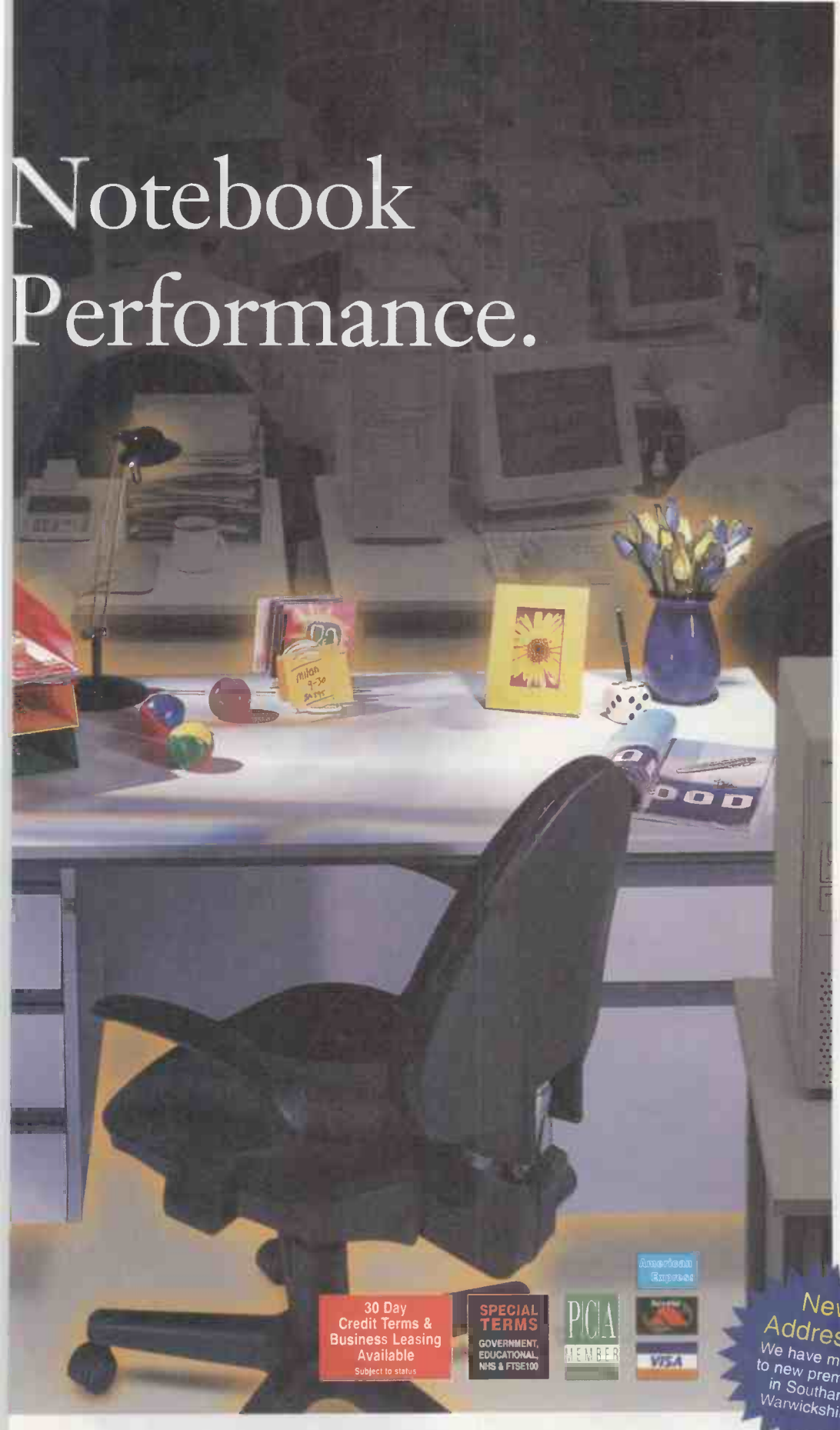
£2231.33	£2348.83	£2701.33	£2348.83

Notebook Performance.



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Mentor. Options: (prices exc. VAT)

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- Li-ION upgrade £50.00

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As Emerald but 2 years cover.

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- 5.1Gb HDD
- 20xCD-ROM
- Li-ION battery

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£2936.33

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Gadgets

Compiled by Adam Evans. Photography by David Whyte.

Your little friend

PDAs may be tiny compared to notebook computers, but if you only use one to keep your contacts and diary info then why not go for something smaller still? The Rex PC Companion stores up to 3,000 items in something the size of a credit card and runs for six months on two lithium ion batteries. It's also a standard Type-II PC Card, which means you can slot it straight in your notebook (or PC using the docking station) and download contacts and schedules. The software is compatible with Sidekick 98, Schedule+ 7, Outlook 97 and Organiser 97, or you can enter the data yourself manually. Truly shirt-pocketable-tastic.

Price With docking station £169.95; £129.95 without.
Contact Franklin UK 01932 891000 www.franklin.com/rex

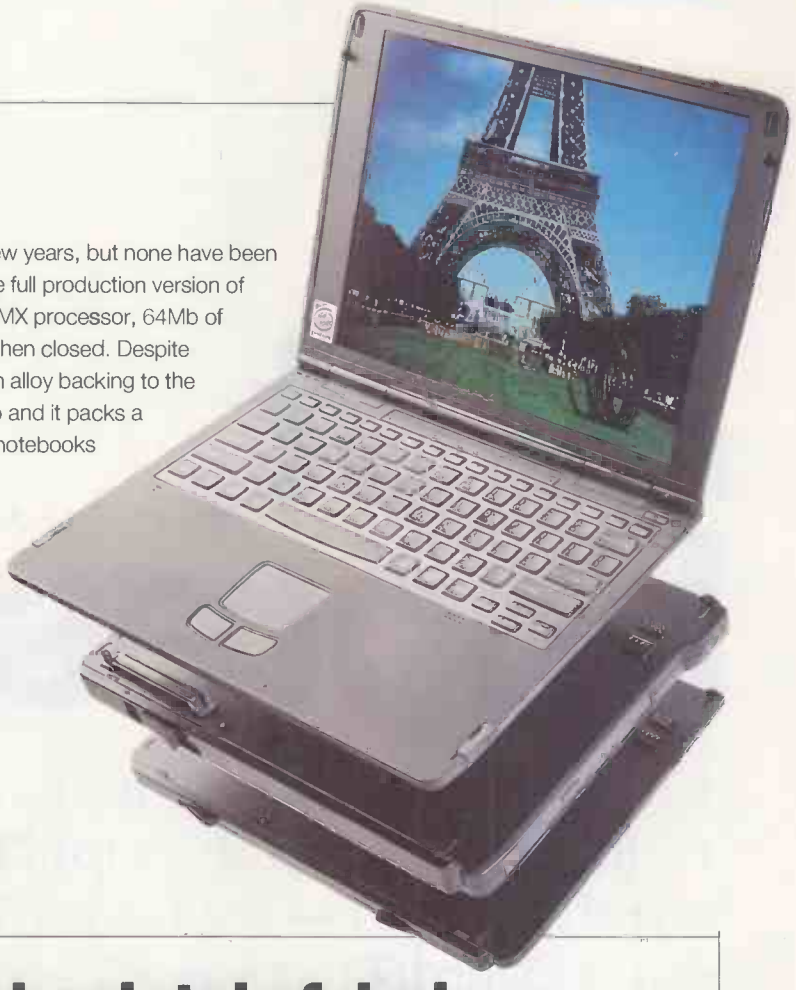
Typing in transit

To operate your PC from your armchair or while strolling around your room, you need an infra-red keyboard such as Opti's Freedom. Attractively designed, it feels like a good notebook keyboard and features a rubbery joystick-style mouse pointer in the top-right corner. If you're holding the keyboard in both hands, the pointer falls conveniently under your thumb, leaving your right index finger to operate the left "drag" button. A whole raft of function keys along the top row can be configured to control specific apps. It requires four AA batteries and communicates to a sensor up to seven metres away, which connects to your PC's keyboard and mouse ports. A bargain at £46.52. **Contact** Opti International 0181 591 2000 www.opti.co.uk

Messages on the move

Mobile data is great fun: sending emails, faxes or browsing the web while on the move. The only trouble is not only remembering your mobile phone, but also the PC Card adapter and of course any connecting cables. Worry no longer, for Nokia has effectively built a data-ready mobile phone into a standard Type-II PC Card. Slot this baby into your laptop or PDA and you're ready for cellular communications at 9,600bps. The antenna is built into the end of the card which protrudes a couple of centimetres out of the slot. Yours for around £99 with connection. (Third-party drivers for Windows CE expected soon.)
Contact Nokia 0990 003110 www.nokia.com

Worth the weight



We have seen a few thin and light notebooks over the last few years, but none have been as skinny as the HP OmniBook Sojourn. Believe it or not, the full production version of this notebook with have a 12.1in SVGA TFT screen, P233MMX processor, 64Mb of RAM and a 2.1Gb hard drive, but still only be 1.8cm deep when closed. Despite appearances it is a fairly robust little thing, with a magnesium alloy backing to the screen and reinforced rubber around it elsewhere. Start it up and it packs a powerful punch, being faster than many more conventional notebooks of the same spec. *Full review, First Impressions, p142.*

Price TBA

Contact HP 0990 474747 www.hp.com

Absolutely fabulous

Iomega's Zip drive is often sold as the portable data solution, and while there's loads of people carrying the entire unit and power supply with them, there's got to be a better way. Enter Absolute's zip2GO, a rather cunning rechargeable battery which clips onto any external Zip drive, typically powering it for between two and three hours. Its 1100mAh NiMH battery takes around ten to twelve hours to fully charge, and is compatible with all Zip mains power supplies from around the world. Although you can top it up while using your Zip normally, it's best to fully discharge any non-lithium ion rechargeable batteries before recharging.

Price £49.99

Contact Absolute 01394 284455

Picture this

If you've got a digital camera, one of the biggest hassles can be hooking it up to your PC and sorting out your printer. As long as you've got a Casio camera, such worries could be a thing of the past. The DP-8000 connects to Casio QV-series digital cameras with one wire and out come your pictures on little (6x4in) sheets of photo paper. If you really want, you can get sticky-backed paper too, and connect the DP-8000 to your PC to print other pics.

Price £399.99

Contact Casio 0181 893 2592 www.casio.co.uk

First Impressions

It's getting easier to take it with you: a *very* thin, light notebook from HP **(p142)** or a very small Opti **(p143)**. If you want cheap storage — and who doesn't? — see the SparQ **(p153)**. Sidekick might be the perfect PIM **(p156)** but PageMill is peachy on the web **(p158)**.

Hardware

NEC Direction SP-266L

A powerful NEC Professional series machine for SMEs. It's ready-to-run and you buy it direct.

Packard-Bell NEC has taken a new direction. It has set up a new arm of the company to sell NEC PCs and notebooks through the direct channel.

The new division, NEC Direct, is pitched against companies like Dell and Gateway which have already proved that the direct-sell approach can reap financial rewards. NEC will continue to sell PCs through its Value Added Resellers (VARs) but is using this division as another way of getting NEC PCs out to potential buyers. It is not as if NEC is a direct-sell novice; last year it ventured successfully into the American and French markets with similar direct-sell operations.

NEC Direct is specifically targeting the SME (Small to Medium Enterprises) market with its Direction brand of PCs. NEC Direct hopes to appeal to companies with simple needs and no need for specially customised, complex machines: that is, those which are hoping to buy no-frills, powerful office computers at competitive prices. So its entry-level range, the Evolution, starts from £649 (ex VAT) for a P200MMX with 16Mb RAM, a 2.1Gb hard disk and a 15in monitor. The other two ranges, the Multimedia and the Professional, are more powerful still. The top-of-the-range Professional SM-333L is a PII 333, 8.4Gb and 64Mb RAM for £1,499 (ex VAT). The Direction brand will not affect NEC's existing high-end corporate Powermate range, which the company sees as catering for clients with a need for more demanding, complex systems.

NEC Direct is setting great store by the quality of post-sale service it believes it can offer, and hopes that SMEs will be attracted to the lower prices of these machines and the efficiency of their build-to-order system. Once demand has been measured and NEC has gauged the success of its new direct-sell approach, the company has plans to start selling build-to-order machines over the internet.

The NEC Direction SP-266L PC we received was part of the Professional series, aimed at those companies which want a machine ready to run. Both the Professional and the Multimedia series come with software bundles: the former with MS Office 97 SBE; the latter with MS Works, Money, Golf and AutoRoute.

The slots on the Intel AL440LX motherboard were mostly free: one of two ISA slots was filled with a Yamaha 3D wavetable sound card but all four PCI slots were empty. The single AGP slot was filled with ATi's Xpert@Play card. The PCI version of this card so impressed the reviewers in our December 1997 graphics card group test, it was awarded our Editor's Choice.

There are three DIMM slots, with two taken up with the 64Mb of SDRAM that comes as standard on the 266L, and access to the slots is uncluttered. The 4.3Gb Ultra ATA hard drive is slung vertically alongside the floppy drive, and NEC's own 32x CD-ROM drive sits horizontally alongside the floppy and hard drive. While it doesn't look particularly roomy underneath, we were quite surprised to find expansion bays for another forward-facing 5.25in drive as well as two more 3.5in drives in this desktop case.

There are a few optional extras available and all clearly target the business user, ranging from NT 4.0 Workstation to Ethernet cards for the PCs, and port replicators or Psion Global Gold modems for the notebooks. Some of the models

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153 Hercules Thriller 3D
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163 Asymetrix ToolBook II Instructor 6.0
164 Borland C++ Builder 3 (Beta)
166 Mathematica 3.0.1
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VNU European Labs

VNU Labs tests all kinds of hardware and software, from PCs to modems to databases. All our tests simulate real-world use and for the most part are based around industry-standard applications such as Word, Excel, PageMaker and Paradox. Our current PC tests for both Windows 95 and NT are the Sysmark tests from BAPCo. In all our performance graphs, larger bars mean better scores.

Ratings

★★★★★	Buy while stocks last
★★★★☆	Great buy
★★★☆☆	Good buy
★★☆☆☆	Shop around
★☆☆☆☆	Not recommended

in the series include speakers in the original package; the SP-266L did not, although the 266L does have a sound card so you can always listen through headphones.

The 17in NEC A700 Multisync monitor that is supplied with the PC presented an excellent picture. At a resolution of 1,024 x 768 and a refresh rate of 85Hz the 15.6ins of viewable screen was sharp, with no detectable loss of focus in the corners of the screen. At 1,152 x 864 its refresh rate was a healthy 75Hz and the picture was still as sharp as at the lower resolution. The OSD was thorough and user-friendly, with little need to refer to the manual.

Bearing in mind that NEC is making much of its desire to supply quality, affordable machines to SMEs we checked out its main rivals' prices. In the April issue of *PCW*, both the Dell XPS D266 and the Gateway G6-266 (comparable models with similar configurations) were both around £100 cheaper than the NEC Direct price in the same month.

Nevertheless, the NEC Direct remains competitive.

The SP-266L is a powerful performer, with top-quality peripherals, and is as well-built as we expected. With NEC's reputation as a class act, and the service support the company plans to offer, NEC Direct should do well.

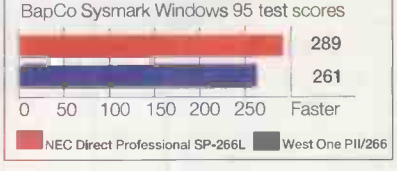
Paul Trueman

PCW Details

Price £1,485.20 (£1,264 ex VAT)
Contact NEC Direct 01706 362812 www.necdirect-europe.com
System Reviewed PII266, 4.3Gb HD, 64Mb RAM, 17in monitor.
Good Points Powerful performance. Excellent monitor.
Bad Points More expensive than the competition.
Conclusion A good package that is just about competitive.
★★★☆☆

Performance results

BapCo Sysmark Windows 95 test scores



p142 ➢

Hardware

HP OmniBook Sojourn

This beautifully-styled, extra-thin, very light notebook scored a huge hit in the *PCW* office.

There is a tendency for journalists to be *blasé* about new technology, so it takes something extraordinary to raise much excitement. And then you get hold of a product like the HP OmniBook. Suddenly, everyone from the publisher down is popping in to see it: the head of systems wants to play with it, and every other journalist on every other magazine in the building is trying to run away with it.

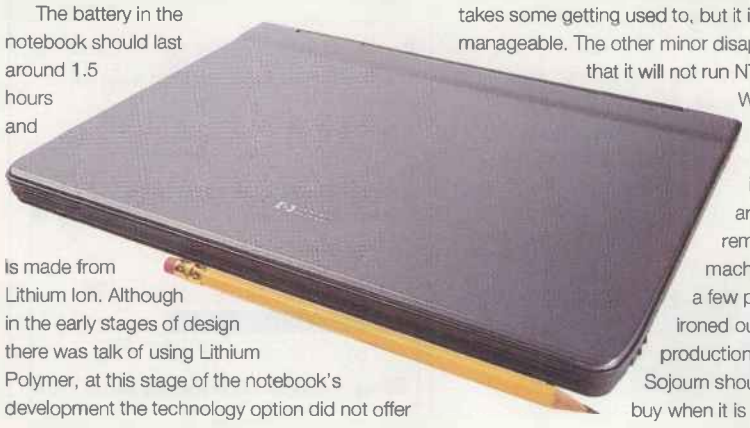
The reason for the excitement is simple — it is half as thick and half the weight of a conventional notebook. At just 1.8cm deep when closed and weighing in at an anorexic 2.6kg, this is the closest yet to being a truly portable notebook. But it still has a 12.1in SVGA TFT screen, P233MMX processor, 64Mb of RAM and a 2.1Gb hard drive.

There are two CardBus-enabled Type II PC Card slots (although these are side by side so you cannot squeeze in a Type III card), one USB port and a 4Mbits/sec IrDA port. There is even sound on the notebook, although it's only a 16-bit SoundBlaster-compatible chip. However, together with the microphone and headphone sockets you will still be able to use the notebook with a voice dictation package.

In short, it has everything you need from a notebook in day-to-day use, except for disk drives. Yet this, too, has been covered: the floppy and CD are in a separate slice, itself only 2.1cm thick, together with all the ports you need — VGA, serial, parallel, USB and two PS/2 ports. The idea is that you can use this layer as a docking solution for when you are in the office and only need to take the notebook itself with you on your travels. However, if you do carry both around at once, the combination is still only the weight and thickness of a conventional notebook.

If you need the notebook for presentations there are a couple of tiny speakers which pop out either side of this slice. The sound from these on the prototype we saw was tinny, but this is a small sacrifice for such portability. Although there are no plans to put DVD in this slice, HP will consider it if demand dictates.

The battery in the notebook should last around 1.5 hours and is made from Lithium Ion. Although in the early stages of design there was talk of using Lithium Polymer, at this stage of the notebook's development the technology option did not offer any longer life and so HP has stuck with what is tried and tested, which at least offers a price advantage. To complement the battery in the notebook there is also a 1cm thick battery slice which has a life of 4.5 hours, pushing up the combined battery life to around six hours altogether. The battery slice can be attached directly to the notebook or it can be bolted on beneath the multimedia slice.



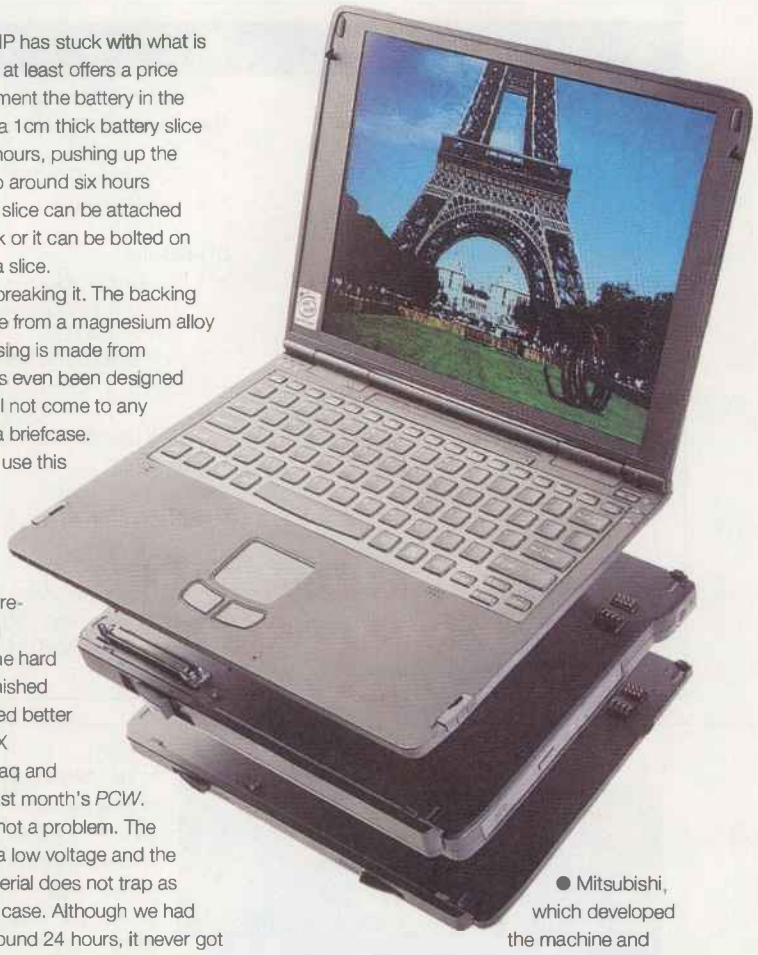
Don't worry about breaking it. The backing over the screen is made from a magnesium alloy while the rest of the casing is made from reinforced rubber. It has even been designed to bend slightly so it will not come to any harm when packed in a briefcase.

When you come to use this notebook, the sheer brilliance of its design comes home to you. Although the model we saw was a pre-production engineering sample with only half the hard disk and RAM of the finished product, it still performed better than the two P266MMX notebooks from Compaq and Gateway reviewed in last month's *PCW*.

Heat dissipation is not a problem. The Tillamook chip runs at a low voltage and the notebook's casing material does not trap as much heat as a plastic case. Although we had the notebook on for around 24 hours, it never got more than faintly warm to the touch.

The only thing potential buyers may be uncomfortable with is the keyboard. As the notebook is so thin, the keys have to be more like PDA keys; extremely shallow and touch-sensitive, using a technology known as thin-hinge. But the keyboard is not meant for touch-typists, primarily because the top executives HP hopes are going to buy it will have secretaries to do all their typing for them. We found it made typing slower than on a conventional keyboard and the touch-sensitivity takes some getting used to, but it is nevertheless manageable. The other minor disappointment is that it will not run NT 4, only Win95.

However, our first impressions are of a truly remarkable machine. There are a few problems to be ironed out in pre-production, but the Sojourn should be a great buy when it is released.



● Mitsubishi, which developed the machine and licensed it to HP, has a similar version which will not be available until later this year.

Adele Dyer

PCW Details

Price TBA. (Battery slice is an optional extra.)

Contact Hewlett-Packard 0990 474747
www.hp.com

Good Points Very slim, very light, very cute.

Bad Points Who cares? Just look at the size of it!

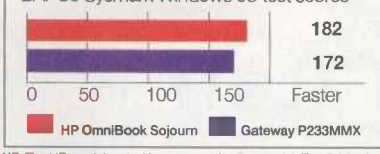
Conclusion Everyone who has seen one, wants one, which speaks for itself.

★★★★☆

Performance results

VNU LABS

BAPCo Sysmark Windows 95 test scores



NB *The HP model tested is a pre-production model. The finished product will have more RAM and a larger hard disk.*

Hardware

Opti Talisman

A little bit of magic, certainly. But you should consider its overall design carefully before buying.

Sub-notebooks have a particular place in the pecking order of full desktop replacement notebooks down to PDAs. They are light; easily portable, and they run a full version of Windows 95, so you will not have to lose any of the applications you use on your desktop. However, you do have to pay quite steeply for this and sub-notebooks often cost at least three times as much as a PDA.

Extremely small sub-notebooks are nothing new and there are now quite a few on the market (*see our PDA group test, p242*). Nevertheless, few come as small as the Opti Talisman.

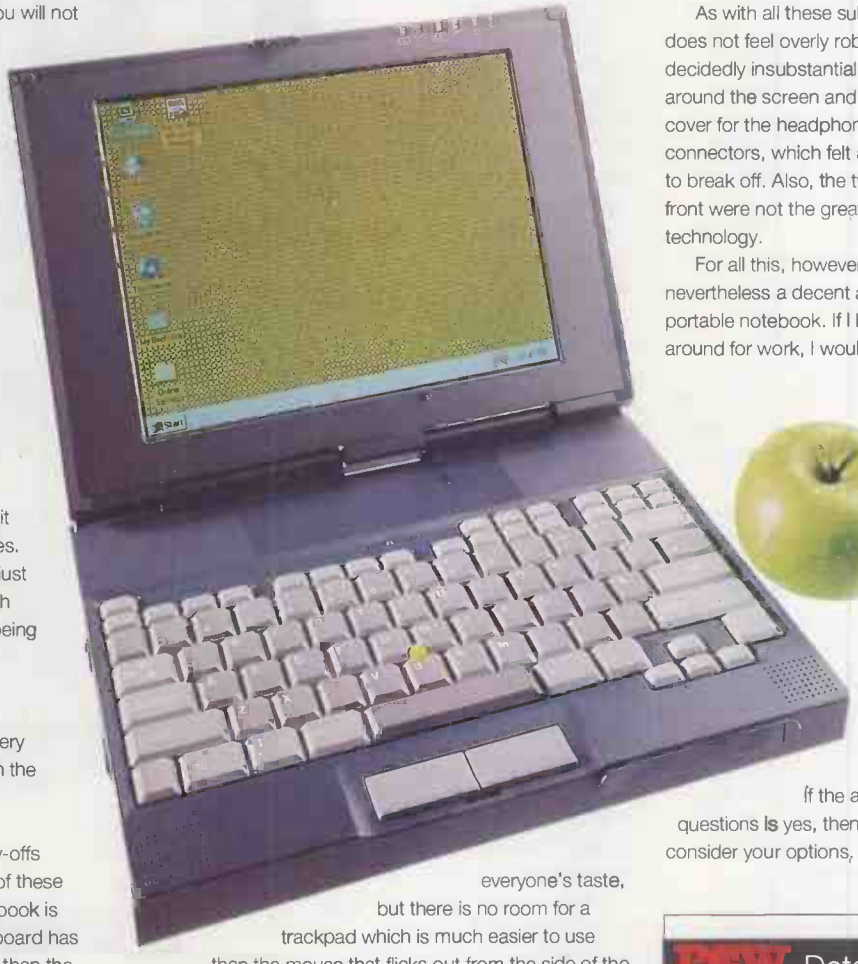
Opti has imported the Talisman from Japan, where it is made by PCPI Technologies. It certainly is tiny, measuring just 23.4 x 17.2 x 3.2cm, although the screen is a decent size, being 8.4in across, which makes it considerably larger than the Libretto's 6.1in screen. And without the AC adapter it is very light, weighing just 1.2kg with the batteries.

However, as with any miniaturisation, there are pay-offs involved. The most obvious of these is the keyboard. As the notebook is just 23.4cm across, the keyboard has been shrunk to fit. It is larger than the keyboard on the Psion Series 5, for instance, but then, the notebook is going to be used in a slightly different way.

If you have a full version of Windows and all the applications that you would normally use, such as Word, you do need to be able to type properly on it. For a touch typist though, the keyboard does take some getting used to because the keys are so close together, you cannot let your fingers hover over the keys without them falling beyond the letter keys. But if you keep your hands higher than normal and dive for the keys as necessary, you can overcome this problem.

The keyboard itself is shallow and quite soft to the touch, but given that you have to adopt a new typing style this is not too much of a worry. You would not want to use this keyboard for long, but it is quite adequate for email, memos and the odd letter. If you need to type a lot you can always attach a full keyboard via the PS/2 port.

The mouse is a touchpoint which lurks in the middle of the keyboard. These little sticks are not to everyone's taste, but there is no room for a trackpad which is much easier to use than the mouse that flicks out from the side of the OmniBook 800.



Connectivity should not be too much of a problem. There are three Type II PC Card slots (or one Type II and one Type III slot) so you can fit an external CD-ROM drive to load software, VGA, serial, parallel and PS/2 ports, and also a proprietary slot which takes the external floppy drive. There is also an IrDA port and headphone and microphone jacks. But there is no way of connecting this to a docking station, which would have made the Talisman far more appealing for general use.

The general specifications are about the same as many of the other very small notebooks (particularly the Libretto). It has a P120 with 24Mb of RAM and an 810Mb hard disk, so compared to many notebooks it is a little slow. But then, for this type of machine where you are extremely unlikely to use it for presentations, that does not matter particularly.

The unit is powered by two small 1200mAh Lithium Ion batteries which should last around two hours, yet they are still light enough to keep the weight down. An AC adapter is also provided.

As with all these sub-notebooks, the Talisman does not feel overly robust. In fact, it feels decidedly insubstantial, especially in the casing around the screen and in the delicate rubber cover for the headphone, microphone and floppy connectors, which felt as though it would be easy to break off. Also, the two tiny speakers at the front were not the greatest thing in audio technology.

For all this, however, the Talisman is nevertheless a decent attempt at an ultra-portable notebook. If I had to carry a notebook around for work, I would probably want this one rather than something huge and heavy.

Before you buy, you need to consider a few things: whether you need a full version of Windows 95 or whether a CE 2 machine would do instead; will you need to type a lot; and do you need it for presentations?

If the answer to any of these questions is yes, then you should carefully consider your options.

Adele Dyer

PCW Details

Price £1,526.33 (£1,299 ex VAT)

Contact Opti 0181 507 1818

System Reviewed P120, 24Mb RAM, 800Mb HD, 8.4in screen.

Good Points Extremely small and light.

Bad Points Keyboard and screen are too small for comfort.

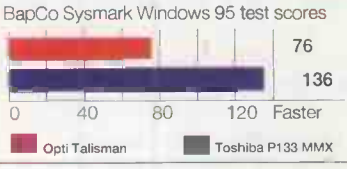
Conclusion Cute, but needs refinement.

★★★☆☆

Performance results

VNU LABS

BapCo Sysmark Windows 95 test scores



p144 ➢

Hardware

Choice Ultralite Rodéo 5000

Horsepower heaven... The fastest mobile PC chip going gives this notebook a real kick.

Last month, in *First Impressions*, we reviewed the first of the new crop of 266MMX notebooks, with models from Compaq and Gateway. This Choice model is another of the same ilk, a desktop replacement notebook with the fastest mobile PC chip going.

The 266 processor is the faster version of Intel's Tillamook chip which it released last autumn. It uses the 0.25 micron process now being used to manufacture all of Intel's new processors and runs at 1.8V, a lower voltage than previous processors, which should help to make your battery last longer.

In this instance, the processor is mounted on a card known as a mobile module which contains the L2 cache and part of the chipset. The idea of putting the chip on a card is to allow easier upgrading, although just how easy it is to get these modules in and out varies from notebook to notebook. This gives your machine a much longer lifespan because you can upgrade the processor, RAM and hard disk, to keep you up to date with continually-enlarging applications.

The Ultralite Rodéo can actually be upgraded to take the new PII mobile chips that Intel will be releasing in April. These new processors are being manufactured to sit on a mobile module and should be significantly faster than the P266MMX chips. However, there are still worries about the heat they will generate and the power they will consume. Intel is stating figures of around 8W on the Mobile PII, compared to around 4W on the Tillamook.

The Ultralite Rodéo has a fairly meaty spec: P266MMX with 512Kb of L2 cache, 64Mb of RAM and a 4Gb hard drive as standard. It also has a 14.1in XGA TFT screen which is, theoretically, the largest screen you can fit in a notebook and, as the equivalent of a 15in monitor, should be quite enough for your own use and for giving presentations. It also holds a CD-ROM and a floppy drive simultaneously in two bays either side of the notebook, so you do not have to spend your life swapping them. Both drives are removable and you can change the 20x CD-ROM drive for a DVD drive when available.

Otherwise, however, the limited modularity does have its drawbacks. For example, on the model we saw, none of the bays will take a second battery so you cannot boost the amount of time you can work without changing the batteries, which some users may find limiting. However, there is the option to be able to fit a second battery if you want one.

As far as connectivity is concerned, the Ultralite Rodéo has just about everything you could want. In addition to the usual serial, parallel, PS/2, IrDA and PC Card slots supporting CardBus, there is one USB port (as on an increasing number of notebooks).

The modem is an Internal 56K model which is flash-upgradable so you can adjust it to take account of new standards as they are introduced.

Other ports make this notebook ideal for presentations. There is a TV-out port so you can show your presentation on a television set, which is often more convenient when presenting to large numbers of people. Likewise, the Trident Cyber 9397 3D graphics can draw on the power of 4Mb of SGRAM so you can plug the notebook into a monitor and drive it at 1,280 x 1,024 in millions of colours — again, a good solution when presenting to a group. The notebook screen can display a maximum resolution of 1,024 x 768 in thousands of colours.

The sound isn't bad compared with that of many notebooks. The bass isn't wonderful, as you might guess, but the treble held up tolerably well and the sound created by the two large speakers on the front was loud enough for most purposes. There are also headphone, microphone and line-out jacks for connecting external speakers.

However, by far the most impressive thing about this notebook was its speed. The nearest comparable spec we have seen in another notebook was that of the Gateway Solo 9100 reviewed in last month's *PCW*. This also had a P266MMX with 64Mb of RAM, yet only managed a rather measly score of 171 compared with this Ultralite's 214.

The Rodéo 5000 is slightly more expensive than some of the Gateways, but if speed is your prime consideration then the Choice notebook must still be recommended. In other respects, too, it is sufficiently well-featured and well-specified to satisfy most users.

Adele Dyer

PCW Details

Price £3,876.33 (£3,299 ex VAT)

Contact Choice Systems 0181 993 9003

System Reviewed P266MMX, 64Mb RAM, 4Gb HD, 14.1in screen.

Good Points Excellent performance.

Bad Points Slightly more expensive than other machines of the same spec.

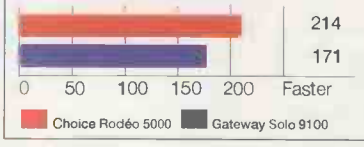
Conclusion A good buy.

★★★★☆

Performance results

VNU LABS

BAPCo Sysmark Windows 95 test scores



p146 ➢

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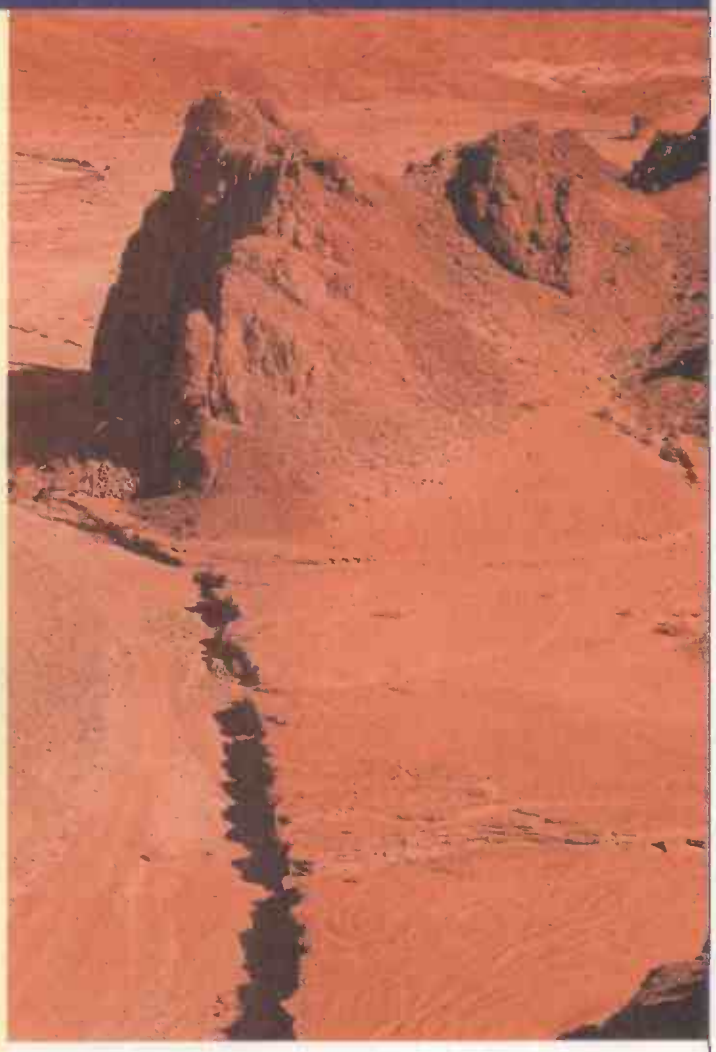

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Hardware

ADI MicroScan 5GT

This Trinitron monitor gives bright, vibrant colours but is not the most robust piece of kit.

Sony invented Trinitron in the sixties. It has been licensing the technology to Mitsubishi, which uses it under the Diamondtron name in its own monitors and in the tubes it makes for others. However, Sony is now making tubes for other people and so a Trinitron tube has turned up in the MicroScan 5GT.

The difference between Triniton and FST, which is used in the vast majority of monitors, is in the grille which holds the phosphors in place. FST tubes use a "slotted mask" technique which arranges the grille in blocks, rather like bricks in a wall. Trinitron has long, narrow slits running from top to bottom of the screen which lets far more light through, making for a brighter and more vibrant screen.

But the grille is less stable than an FST monitor's, so two tiny wires run right across the screen to hold it all in place. These wires are just visible, especially on a white background, and some users may find it irritating.

The other downside is that a Trinitron is a rather delicate creature, reacting badly to knocks,

with the display shaking alarmingly. It is also affected by electrical interference so you cannot put speakers on the sides of this monitor, or even near it, without it getting the jitters.

The model we saw wasn't bad as Trinitrons go. Used with an ATI 3D Rage Pro graphics card with 4Mb of VRAM it was able to display a top resolution of 1,600 x 1,200 in 256 colours at 70Hz, although this resolution makes everything too small to read on a 17in monitor. Reduced to 1,280 x 1,024 it could display 24-bit colour at 85Hz and at 1,024 x 768 it ran 32-bit colour at 92Hz. It has dual input, to let you use both D-Sub and BNC connections for connecting two machines at a time. The viewable area is 16in. The colours were excellent but moiré occurred at higher resolutions. The controls were too limited for our liking and there was some distortion at 1,024 x 768 on the left edge of the screen.

Adele Dyer

PCW Details

Price £410.08 (£349 ex VAT)
Contact ADI 0181 236 0801 www.adi.com.tw
Good Points Bright and vibrant colours.
Bad Points Some distortion at one edge.
Conclusion One of the cheapest Trinitron monitors available. A real bargain.
★★★★☆

Viewsonic ViewPanel

Let's twist again, for portrait or landscape display. A bright idea, but clocking seems to be a bit off.

Whenever a new technology comes along, every manufacturer has their own version to offer. Not that they expect to sell a great number; just that they now *have* to offer it to complete their range. Viewsonic concentrates on the budget end of the market and sells most of its monitors to systems integrators, so it's surprising to see it selling a flat-panel. Viewsonic does not make panels itself, so this one is made by Sharp. It has a diagonal viewable area of 15in, making it one of the larger screens available, and runs at 1,024 x 768 in 16-bit colour.

When setting up the monitor we had a few problems with the clocking. Flatpanel displays often have problems syncing-in to the signal from the video card and displaying it clearly at the right refresh rate. Mis-clocking on the screen appears as bands of darker colour which make strips of characters or icons appear darker and less clear than they should. As a result, the ViewSonic, like most flatpanels, has a tuning control to correct the problem, but we had trouble getting the tuning right. The manual suggests that the monitor should be run at a refresh rate of 60Hz, as is normal for panel

displays, but at this rate adjusting the tuning only seemed to exacerbate the problem. We had to increase the refresh rate to 75Hz and retune before it disappeared completely. But once this problem was ironed out, the monitor was quite reasonable although it still suffered from some drop-off of luminosity in the top right-hand corner.

A nice touch is that the panel is one of only two we know of that swivels to display the screen in portrait mode. The panel comes with a CD of software which lets it do this. Unfortunately the software only works with up to 16 different graphics cards and as we did not have a machine available with the correct graphics card, we could not test this functionality.

Adele Dyer

PCW Details

Price £1,526.33 (£1,299 ex VAT)
Contact Viewsonic 0800 833648 www.viewsonic.com
Good Points Swivel to portrait.
Bad Points Clocking and luminosity problems.
Conclusion Not a bad monitor for the price, but there are better panels available.
★★★☆☆

p151 ➢

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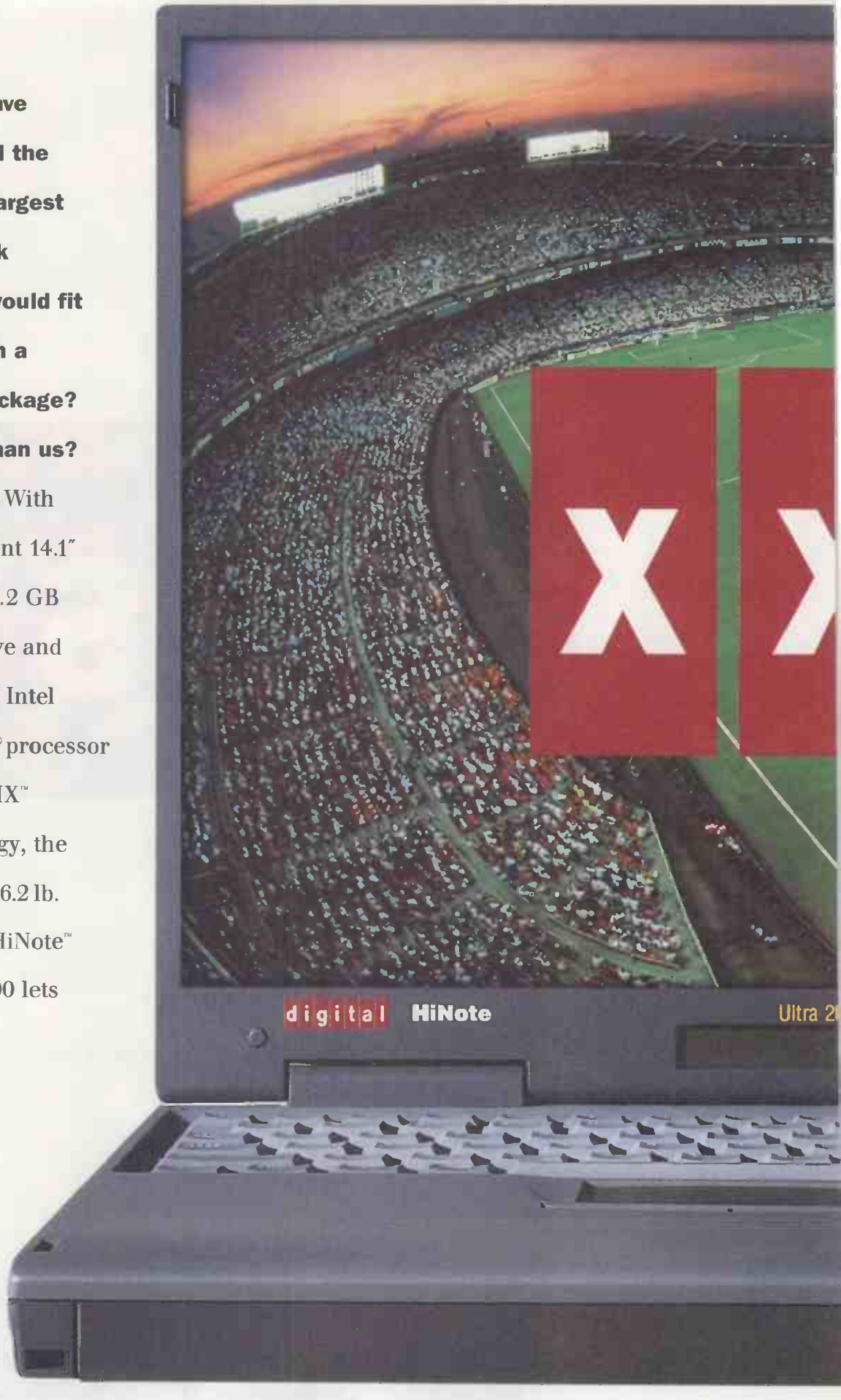

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Hardware

Lexmark Colour Jetprinters 5000 & 5700

Home office or SME, take your choice from these two new colour inkjets.

Lexmark has added two new colour inkjets to its range. The CJ5000 is aimed at home office users, has a maximum resolution of 1,200 x 600dpi and, without an output tray, delivered its output directly to our desktop. The CJ5700, with its top resolution of 1,200 x 1,200dpi, is geared more towards the SME (small to medium enterprise) environment.

Windows 95 installation of the printers was easy and the operating system detected each on startup. Both printers are similar-looking, the only noticeable difference being in the paper output trays. The only control on either machine is a single paper advance button; all other operations are initiated from the PC. The two ordinary cartridges (CYM and black) and the photo ink cartridge (light cyan, light magenta and black fitted instead of the black cartridge) fit into either printer and are colour coded. Unused cartridges are stored in a small container bundled with each printer.

Neither machine performed particularly well printing business graphics. On ordinary paper the colours were washed out and bled through rather than sitting on top of the sheet. There was evidence of white in our solid blocks of colour. Horizontal banding was evident and particularly obvious in areas of black printed by the 5000. The 5700 was unimpressive when rendering pink, orange and brown Pantone squares.

Increasing the quality to "high" and using Lexmark's coated paper improved matters. Black areas were solid and unstreaked and we lost all evidence of horizontal banding. Although there was still evidence of stepping, in our graduated fades the CMY and RGB colour blocks were clean and pure. The only slight disappointment was with the blue rectangle, in which both printers were laying down slightly too much magenta: as a result, the colour was veering towards a rather attractive purple. At this "high" resolution, the printers' primary downfall was with their handling of areas of 50 percent black: using both process black and CMY composite to produce this tone we got a chocolatey-brown, not at all the grey we had hoped for. Both printers coped well with the inverse hairline on the office and coated papers at both 600 and 1200dpi, which indicated accurate ink placement.

Both handled full-page A4 photography well, although the colours were richer on the 5000 with its slightly lower resolution of 1,200 x 600dpi. Light-to-dark transitions in sky colour were smooth and the variance in the foliage of a forest scene demonstrated a wide range of greens. As in all cases of printing at a resolution higher than 600dpi "quick print", the high-resolution 1,200dpi print on Lexmark's photo paper using the photo cartridge took 4mins 45secs longer to appear on the 5700 than the 5000. We were disappointed that the black border on the image produced by the 5000 looked cracked and, rather than being a solid block, was characterised by thin white lines where the paper showed through.

The CJ 5000

While both printers produced excellent deep black text with clearly defined edges and minimum feathering on photocopy paper at a rate of five word-processed pages, there were slight variations in the quality of their "quick" and "high" quality settings. On normal office paper, taking 1min 44secs to complete five pages in "quick" mode, the 5000 produced output of a decidedly lower quality than that presented by the 5700 in just over a minute. We were surprised to find that both produced lower-quality output at their best setting with a horizontal resolution of 1,200dpi, than they did at their default 600dpi setting.

The CJ5700

Although darker than that produced in "quick" mode, the ink laid down was not as dense as that produced at the "normal" 600dpi resolution. Both printers managed to print text as small as 4pt with great clarity in all settings, and we were again surprised to find that at this size, the "quick" setting was the easiest to read.

Neither printer had difficulty in reducing our large Excel worksheet to fit onto a single A4 page. Both produced fairly feint characters at the "quick" setting but in neither case could we see the difference between "normal" and "high" resolutions, so we felt that using the better-quality setting would not be worth the extra time it would take.

Nik Rawlinson

PCW Details

Lexmark Colour Jetprinter CJ5000
Price £179 (£152.34 ex VAT)
Contact Lexmark 01628 481500
www.lexmark.co.uk
Good Points Great-looking photo output.
Bad Points Normal-quality print better than high-quality setting. Business graphics.
Conclusion Competitively priced and worth a try.
★★★★☆

Lexmark Colour Jetprinter CJ5700
Price £229 (£194.89 ex VAT)
Contact As above
Good Points Affordable 1,200 x 1,200dpi printing.
Bad Points As above
Conclusion Slightly disappointing when compared to the cheaper CJ5000.
★★★☆☆

p153 >

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PCreview

3D Blaster Voodoo²

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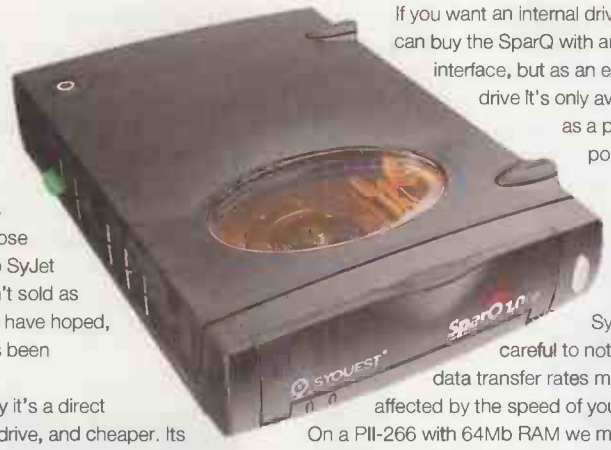
Hardware

SyQuest SparQ

This SparQy little unit is competitively priced but the parallel-port version lacks some drive.

It is SyQuest's proud boast that it virtually invented the removable storage market, so the recent success of Iomega with both the Zip and Jaz drives has really put SyQuest's nose out of joint. The 1.5Gb SyJet was delayed and hasn't sold as well as SyQuest might have hoped, so now the SparQ has been launched.



In terms of capacity it's a direct competitor to the Jaz drive, and cheaper. Its removable cartridges, virtually identical externally to those used in the SyJet, hold just over 950Mb — SyQuest claims 1Gb but counts 1Mb as one million bytes. With this space available you'd expect to be able to use it as an extension to your hard disk and SyQuest is marketing the drive on its extra storage capacity, so you can save large and little-used files or applications on a SparQ drive rather than on your own hard drive.

If you want an internal drive you can buy the SparQ with an EIDE interface, but as an external drive it's only available as a parallel-port device. We tested the parallel version. SyQuest is careful to note that data transfer rates may be affected by the speed of your PC. On a PII-266 with 64Mb RAM we managed to transfer files to the drive at speeds of around 0.6Mb/sec: this is certainly fast enough for a backup device but a bit below SyQuest's claimed 1Mb/sec. Opening a 10Mb TIFF from the drive took around a third longer than from our hard disk. While in this instance it's only a ten-second difference, it would be more noticeable if you were opening multiple files or working with larger images.

Copying data to and from the SparQ really seems to put a strain on the PC. Even mouse movements were jerky as we copied large files, and our word processor became unusably slow until the transfer was finished. If you are merely using it as a backup or archiving device this is not too much of a problem, but not if you want to run applications from the disk. Software is included to allow you to perform unattended backup as well as to download web sites for off-line browsing.

John Sabine

PCW Details

Price £169.20 (£144 ex VAT). Cartridges £35.25 (£30 ex VAT) each or £84.60 (£72 ex VAT) for a pack of three.

Contact SyQuest 01189 880207 www.syquest.com

Good Points Price: extremely competitive.

Bad Points Performance: transferring 1Gb really stretches the parallel interface.

Conclusion If you want to work with large files frequently, you'll need a SCSI device.

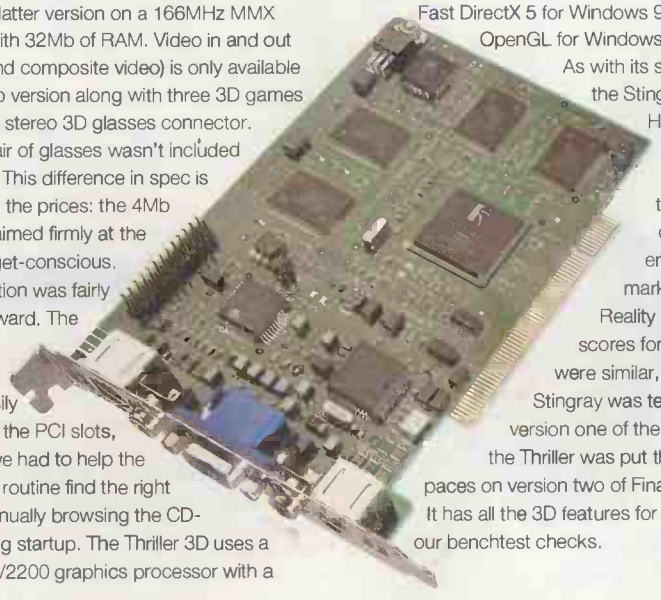
★★☆☆☆

Hercules Thriller 3D

A good 3D graphics card that will fit into a PCI slot — but don't expect too many fast thrills.

This dedicated 3D card sits in its own PCI slot next to your 2D graphics card and is connected to it internally. The Thriller 3D comes with either 4Mb or 8Mb of SGRAM. We tested the latter version on a 166MHz MMX machine with 32Mb of RAM. Video in and out (S-video and composite video) is only available on the 8Mb version along with three 3D games titles and a stereo 3D glasses connector. Sadly, a pair of glasses wasn't included in the box. This difference in spec is reflected in the prices: the 4Mb version is aimed firmly at the more budget-conscious.

Installation was fairly straightforward. The half-sized card slotted easily into one of the PCI slots, although we had to help the installation routine find the right files by manually browsing the CD-ROM during startup. The Thriller 3D uses a Rendition V2200 graphics processor with a 230MHz RAMDAC and has software MPEG. It is capable of supporting a maximum resolution of 1,600 x 1,200 at a refresh rate of 85Hz. Hercules is heavily promoting the card's ability to support Fast DirectX 5 for Windows 95 and OpenGL for Windows NT.



As with its stablemate, the Stingray 128/3D, Hercules is aiming this card at the high end of the home entertainments market. Final Reality benchtest scores for both cards were similar, except the Stingray was tested on version one of the test while the Thriller was put through its paces on version two of Final Reality. It has all the 3D features for which our benchtest checks.

Lynley Oram

PCW Details

Price 4Mb £116.33 (£99 ex VAT); 8Mb £210.33 (£175 ex VAT)

Contact Imago Micro 01635 294300 www.hercules.com

Good Points Supports DirectX 5 and OpenGL. Smooth textures. Good colours. All 3D features.

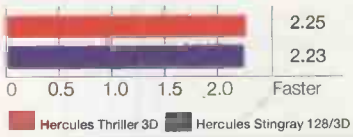
Bad Points Performance not as fast as was expected — it's not really suited to machines of a lower specification.

Conclusion A good all-rounder.

★★★★☆

Performance results

Final Reality benchmarks



p154 ➢

Hardware

HP ScanJet 6100C

Scan to your heart's content, from large sheets down to something the size of a pinhead.

Aimed firmly at the business end of the scanning market, this scanner does its job at speed. It reviews black-and-white line art in just 12 seconds and scans with a single pass at 600dpi in no more than 13 seconds almost silently, which makes it ideal for offices and copy bureaux where a rapid turnaround is vital. Even dealing with colour photographs increases the scanning time to just 17 seconds. An optional 50-sheet automatic document feeder increases throughput still further.

As expected, this device is fully TWAIN compliant so using it directly from many common graphics packages is easy, but the excellent DeskScan II software means that it can also be used as a standalone device. Scanning resolution is selected from two drop-down menus by choosing the type of input (anything from line art to a photo) and how it will ultimately be displayed. Options range from "screen" to a number of common printers. The intuitive software then calculates the most appropriate resolution. These settings can be customised to increase the maximum optical resolution of 600dpi to 2,400dpi interpolated. Using a standard Agfa scanning target to conduct our tests, a histogram analysis demonstrated recognition of 20 out of a possible 22 shades of grey and only a 4 percent loss of colour recognition, leading to a definition loss in regions of shadow but complete acknowledgement of areas of highlight.

Placing a document in the scanner and clicking "acquire" in a graphics package launches the TWAIN application and causes the software to automatically select only the relevant part of the scan. Connected via a bundled SCSI interface card this scanner also handles 35mm slides. A zoom function enables it to scan from a maximum document size of 8.5ins x 14ins to an area almost too small to be seen by the naked eye. Acrobat 3.0 and Corel Web.Graphics suite are bundled.

Nik Rawlinson

PCW Details

Price £703.83 (£599 ex VAT)

Contact Hewlett-Packard 0990 474747 www.hp.com

Good Points Quick. Easy to use. Outstanding value for money.

Bad Points Large footprint.

Conclusion Everything a scanner should be.

★★★★☆

Microtek 6400XL

At last! An A3 scanner that won't cost you an arm and a leg, and it's got a nice footprint, too.

The cost of an A3 scanner used to be sky high, but this 6400XL is well within the reach of many small-business users. The advantage of being able to scan open magazines or tabloid publications is supplemented by the ability to batch-scan up to ten 3.5in x 5in photographs. With a generous selection of bundled software including OmniPage Lite for OCR, Painter 5 and the SilverFast colour management package, all types of text, images and line art can be scanned for immediate incorporation into leading software packages.

The results produced in our tests showed that the 6400XL managed to detect 20 shades of grey in a scale of 22, ranging from pure black to 100 percent white. Using an Agfa IT-8 test target it was able to detect around 90 percent of the tones on a 256-colour card. This indicated that although there was no clipping, there was a slight loss of definition in the shadows and highlights. Even though there was an expected minor quality deterioration when scanning text as small as 6pt at the maximum optical resolution of 400 x 800dpi, the interpolation capabilities of the software smoothed every character to produce a well-defined set of clean, clear edges, even at high magnification. The resulting interpolated resolution of 6,400 x 6,400dpi produced characters of comparable quality to the original source.

The drivers installed easily and although it involved checking our IRQ settings and possibly moving a jumper, the excellent manual easily guided us through seating and configuring the SCSI card. Operation was a quiet but lengthy process. In our tests a 400dpi A4 scan, which previewed in just 17secs took 2mins 15secs to complete. Using it to its full capacity, by scanning an A3 document, increased the preview time to 26secs and the final scan took 5mins 40secs.

Nik Rawlinson

PCW Details

Price £1,408.83 (£1,199 ex VAT)

Contact Computers Unlimited 0181 200 8282 www.microtek.nl

Good Points Value for money. Compact for an A3 scanner.

Bad Points Disappointing colour registration.

Conclusion Puts A3-size scanning within the reach of all.

★★★★☆

Hardware

Connectix QuickCam VC

Talk face to face with your friends on the phone. At this price, you can put the VC on your PC.

Cameras that attach to your PC (tethered cameras) are quickly making the transition from business tool to must-have accessory for the home PC. Connectix produced the first digital camera in October 1994 and since then has released a variety of QuickCams. It is pitching its latest camera, the QuickCam VC, direct to the home market and the blurb on the box leaves you in no doubt: "Use your PC to make video calls to friends and family".

VC stands for video conferencing but the camera can take still photos, too, and send video emails. It ships with Connectix VideoPhone 3.0 for video conferencing which conforms to the H.324 standard for modem-to-modem connections over a standard phone line, and with Microsoft's NetMeeting for video conferencing over the internet.

This is one of the most inexpensive cameras we've seen. We reviewed the parallel-port version which installed easily enough but doesn't have a pass-through connector. This could be irritating if your printer does use the parallel port. There is a USB version for the same price.

We were impressed with picture quality, which was sharp and not at all blocky. The picture lagged very slightly behind real-world events, an effect only noticeable when talking.

The camera conforms to the CIF (common interchange format) standard for international video-conferencing which sets the resolution at 352 x 288 pixels, and at this size you will get typical frame rates of 15fps. Resolutions of up to 640 x 480 are available but not for video conferencing. You can of course record your video emails at this resolution, which will give you a frame rate of around 12fps.

Sound quality was exceptionally good, with no apparent robotic "twang" and very little background noise picked up.

However, we did have a couple of gripes. Without compression the files take forever to upload, and it's not clear from either the software interface or the documentation that compression is required or even what format should be used. Annoyingly, sound can only be added after the video has been recorded so you can only really send a sort of commentary.

Lynley Oram

PCW Details

Price £111.63 (£95 ex VAT)

Contact Ingram Micro 01908 260422
www.connectix.com

Good Points Price, picture and sound quality.

Bad Points Sound can only be added to video emails after recording the picture.

Conclusion Suitable for home use.

★★★★☆

Amacom Flip Disk

Looks a bit like a scorpion but you can hold it in your hand. The sting in the tail is its price.

"Get a Flip Disk, not a slipped disk" says Amacom and when you see their smart blue Flip Disk you can see why. Weighing just 188g and fitting easily into your hand, the Flip Disk is extremely portable. With its complementary padded carrying case it should slip into any bag, while at the same time offering the added bonus of data protection. If you store files and applications on the Flip Disk and remove the drive when your laptop is in transit, theft of the PC will not result in the all-too-common disaster of lost files.

A major advantage of an external hard drive is that it allows you to carry large portions of your data about with you. You can transfer files from a laptop to a desktop PC without using a floppy or Zip disk or LapLinking both machines together. Instead, with the Flip Disk you can simply connect to the PC Card slot of a notebook, using its parallel interface to connect to the desktop.

In our tests the drive attained a maximum data transfer rate of 1.7Mb/sec utilising the PC Card interface and 533Kb/sec when connected to our desktop's parallel port.

You do not need batteries for the drive as it draws all its power from the notebook or from a lead attached to the desktop machine's keyboard or mouse port, and a bundled pass-through parallel cable will let you continue using your printer while the drive is still in use.

Backed by a 12-month RTB warranty and free lifetime technical support, installation of the Flip Disk was simply a matter of plugging it in and installing the appropriate DOS, Windows or OS/2 drivers.

We were disappointed to find that the stated maximum capacity of the Flip Disk was only theoretical. Using it as a backup device in much the same way as a tape streamer and compressing the data, we would have achieved the high capacities advertised. However, by using it as a conventional hard drive we could expect to store around 50 percent less, which makes this a pricey storage option.

Nik Rawlinson

PCW Details

Price From £411.75 (£350 ex VAT) for 2.8Gb (1.4Gb compressed), to £705 (£600 ex VAT) 8Gb (4Gb compressed).

Contact Amacom 0181 993 7373
www.amacom-tech.com

Good Points Small. Light. Easy to use.

Bad Points Expensive for its capacity.

Conclusion You could buy cheaper but probably not smaller.

★★★☆☆

p156 ➢

Software

Starfish Sidekick 98

Personal Computer World Recommended

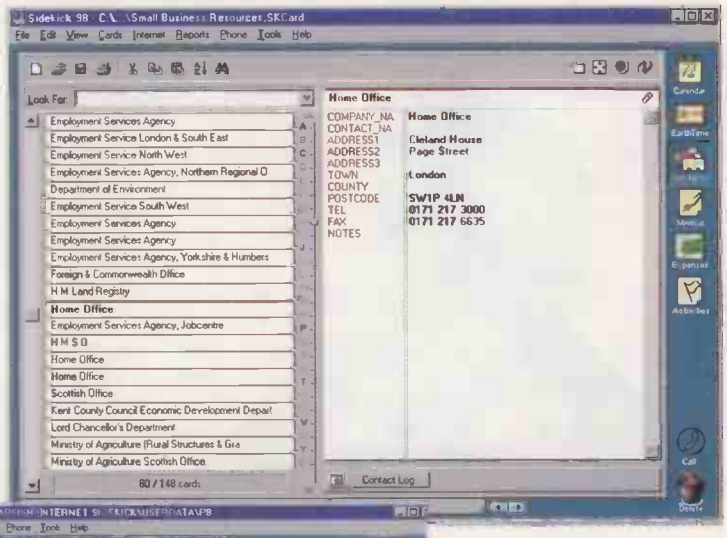
The best a PIM can get... This upgrade goes for subtlety rather than impact in its new features.

A PIM (personal information manager) is a combination of address book, diary, appointment calendar, scrap of paper, old beer mat or the back of your hand where you have scrawled things to do. PIMs do some, all, or more than these tasks. They handle tasks in various ways, with different degrees of efficiency. Whichever PIM you settle on depends on your requirements. Sidekick is probably the best you can get and is especially valuable for users of the internet or corporate intranets.

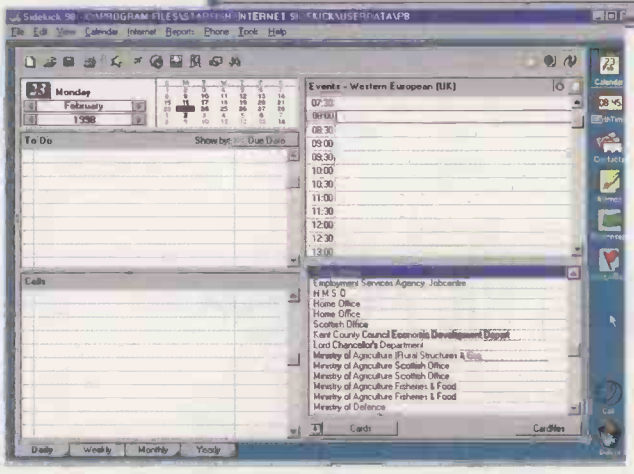
What makes Sidekick so good is its customisability. The trouble with some PIMs is that you are required to enter information in form-like fields, which often places a restriction on the information you can enter. For instance, you may be provided with only one field for an email address, whereas your contact might have accounts with more than one service provider; one at work and another at home, say.

You can view all your activities in a list, whether they are calls to make, appointments, to-do or scheduled internet events. There is one module for keeping track of your expenses and another to show the time in various parts of the world.

Sidekick does what it is supposed to do fairly comprehensively so one rather expects new features and enhancements to be in the category of bells and whistles rather than anything likely to get your pulse racing. And this is the case with Sidekick 98. Among the improvements is a new-look interface, but don't worry, nothing has dramatically changed — just new graphics and a new toolbar. The Earthtime module now has an option to display analogue or digital formats on its clocks. There is a more colourful map with enhanced topographical graphics and the world holidays on the Calendar have been updated.



With Sidekick you can incorporate all types of contact information. Indeed, it will handle *any* information, from a price list to wine-tasting notes



Sidekick has a calendar which can be used to display appointments, to-do's and other tasks in daily, weekly, monthly and yearly views

Perhaps the most significant enhancement is to importing and exporting. Sidekick 98's Import Wizard lets you import data from Microsoft Outlook 97, Schedule+ 7.0 and Lotus Organizer 97. You can import and export files in various formats: dBase, Spreadsheet Data (DIF), ASCII, comma-delimited and tab-delimited text. You can open your Windows Address Book cardfile in Sidekick 98. This new feature also supports Microsoft Outlook 97, Outlook Express and Internet Mail, although you must have Microsoft Internet Mail 3.02 or Outlook Express to use this feature. Similarly, you can now import calendar files from Microsoft Outlook 97, Schedule+ 7.0 and Lotus Organizer 97.

This flexibility extends to getting up-and-running: Sidekick 98 automatically links to Eudora, Netscape and Microsoft Exchange, Outlook and Windows address books; while export/import capabilities to ACT 3.0, Lotus Organizer 97, Microsoft Outlook 97 and Schedule + 7.0 have been significantly expanded.

If you have ever wanted to share calendars and cardfiles on the net or across an intranet, you will welcome the Web Publisher feature which lets you create fully formatted and linked HTML files to do just that. You can automatically publish professional-quality and consistent calendars and contacts to the web or the company intranet.

Another enhanced feature is TrueSync. If you use a 3Com PalmPilot 1000 or 5000 PDA you will embrace Sidekick 98, because with the new TrueSync feature you will be able to automatically synchronise data between it and your PC. Currently, Sidekick 98 will synchronise with the Rolodex REX card and the PalmPilot, and will support Microsoft Windows CE 2.0 on its release.

Nothing much else is new in terms of general enhancements except support for vCard and vCalendar which will enable users to drag and drop vCard and vCalendar objects into Sidekick's Contacts and Daily Calendar views, or to drag and drop URLs from Sidekick into their web browser.

These enhancements to Sidekick will be welcomed by existing users, for whom they are intended. The improved importing and the TrueSync technology may be welcomed by those considering the switch to another PIM or by those who want easy transfer of data from their PIM to the PalmPilot or Windows CE PDA. Otherwise, this upgrade is not wildly exciting.

Paul Begg

PCW Details

Price £39.99 (£34.03 ex VAT). Upgrade from Sidekick Internet and Sidekick 2.0, £24.99 (£21.27 ex VAT) on 01494 455561

Contact Starfish Software 0181 875 4455 (01494 455561 for upgrade) www.rmg.co.uk

System Requirements Windows 95, Windows 98, Windows NT 4.0 and higher.

Good Points Sidekick's customisability is still its greatest strength.

Bad Points Nothing bad, but it occupies a lot of disk space for what is ultimately a minor utility.

Conclusion Still the best PIM.

★★★★★

p158 ➢

the new QMS DeskLaser 2000 black and white laser printer

20ppm A4

printers that mean business

£999 plus vat

600dpi

The new DeskLaser 2000 is fast – up to 20 pages per minute – with super crisp 600dpi text and graphics, and optional double-sided printing.

The new DeskLaser 2000 has the flexibility of A3 printing for spreadsheets, graphics, presentations, booklets and supports A4 printing for your everyday needs.

The new DeskLaser 2000 even has built in Ethernet for Windows 95 or NT networks, as well as a Plug & Play parallel port.

The new DeskLaser 2000 has a list of features longer than your local Odeon, the performance of a heavy duty workgroup printer and yet costs just £999 (exc. VAT). Give us a call.

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Position _____

Company _____

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Postcode _____

Telephone _____

Fax _____

PCW 05/98

call QMS on 01784 442255

or fill in your details and fax back to 01784 461641 or post to:
QMS (UK) Ltd, FREEPOST TK2076, Old Bridge House, The Hythe, Staines, Middlesex TW18 3JF

www.qms.nl

QMS
Printers for Professionals

Software

PageMill 3.0

BETA

Abobe's easy-to-use web authoring package now comes with site management and Java.

PageMill 2.0 is among the most successful web authoring products that emphasises ease-of-use over features. Version 3.0 aims to be a more complete tool, with integrated site management and Java support along with a generous bundle of web-ready graphical content.

The heart of PageMill is a visual page editor with a clean interface. A toolbar gives access to text formatting and basic HTML elements including tables and forms.

There is a tabbed inspector window which enables you to edit the properties of the current element. You can change the background image and default text size from the Page tab in the Inspector. A strong feature is the pasteboard window which acts as a temporary store for any kind of page element, like a block of text or an image.

Elements are moved to and from the pasteboard by drag-and-drop. Setting up hyperlinks is easily done by selecting some text or an object and entering the web address into a "Link to" box. The editor is an MDI (multiple document interface) application and, if you open several pages at once, you can also create links by dragging and dropping between pages.

Creating frame-based pages is easy, too. A menu option lets you split a page into frames, horizontally or vertically. You can also add, remove and resize frames by dragging the mouse. Behind the scenes, PageMill automatically updates the frameset container document.

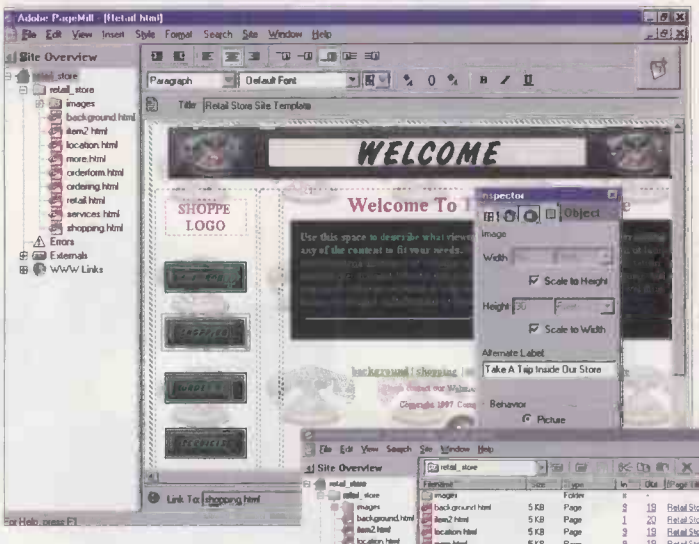
The PageMill editor has three modes. Edit mode is the default view, for visual editing. Source view shows the raw HTML code in a basic editor and Preview mode displays the page as it should appear in a web browser, complete with active hyperlinks, Java applets and ActiveX controls, although it cannot run JavaScript. Java capability is thanks to Sun's JRE (Java Runtime Environment) which is installed with PageMill. Java applets optionally load and run even when a page is open in edit mode, although in the beta we found this caused performance problems.

A great feature is that you can display the Java console, which lets you view a log of any Java activity or errors. PageMill's property inspector is ideal for a Java applet, showing its parameters in a grid. You can add and amend these parameters without needing to open the HTML source and then click a reload button to refresh the applet to see the effect of your changes. Another option is to use Internet Explorer (IE) as the built-in preview browser. Both IE and Netscape appear on the menu in any case, for quick testing of the current loaded document, and you can add other browsers.

Site management is a new and welcome feature. There is a site menu with an option to create or load a site. Unlike Microsoft's FrontPage, which requires a local web server to be installed, PageMill works directly from files, and a PageMill site is essentially a folder on your hard disk. The site contents are displayed in two ways. First, a tree-view listing appears in an overview window. Double-clicking a page in the overview opens it in the editor. There is also an error page, created by PageMill, which identifies problems such as broken links. Second, there is a site details window with two panes. The upper pane shows a list of all the files in the site, the lower, a graphical link view. Again, there are dynamic links so any element can instantly be opened for editing. When you are happy with the site, there is a menu option to upload it, with settings to exclude files or upload only changed pages. A nice feature is that you can check the estimated download times for any page or object to ensure your site remains responsive.

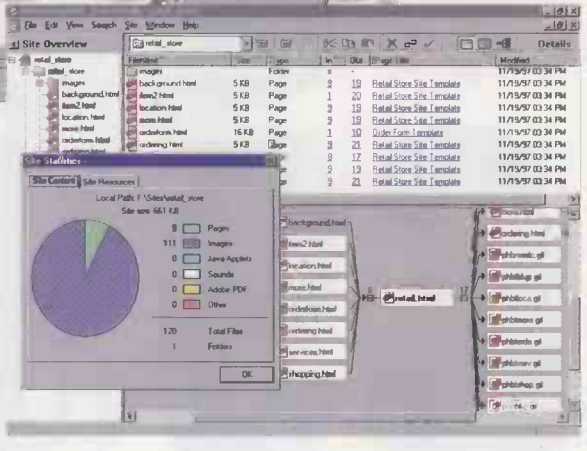
PageMill 3.0 has no wizards for instant page creation but comes with around 30 sample web sites you can customise as needed. On the installation CD is a cut-down Adobe Photoshop, which is an excellent graphics editor, an array of graphics, animations, scripts and Java applets and the O'Reilly web server. You can also obtain a set of fonts optimised for use on the web as a separate product, Adobe WebType, although the snag with these is that they are unlikely to be available on the user's system.

PageMill allows for third-party plug-in components to be installed into the design environment, making this an extensible system, but the value of this depends on how many components actually become available.



Left PageMill makes good use of an object inspector for visual page editing

Below Site Management the PageMill way, complete with pie chart showing the make-up of your web content



As a well-designed package for straightforward web authoring, PageMill is ideal: easy to learn and use, and the new site management features are a simple solution to the problem of organising and uploading pages to the web. For the more ambitious site designer wanting to make use of JavaScript, live database access, or new HTML features like cascading style sheets or Dynamic HTML, PageMill is a disappointment. Java applets and ActiveX controls, on the other hand, are well catered for.

Tim Anderson

PCW Details

Price £92.83(£79 ex VAT)

Contact Adobe 0181 606 4001
www.adobe.co.uk

System Requirements Windows 95 or NT.

Good Points Intuitive graphical editor. Java support. Easy site management.

Bad Points No scripting support. No Dynamic HTML. Not suitable for large or complex sites.

Conclusion Better than ever, but it is still not the cutting edge of web development.

★★★★☆

p161 >

MICROTEK SCANMAKER 6400XL & 9600XL

Think Big

Professional A3 scanners

Microtek introduces the powerful new ScanMaker 6400XL and the ScanMaker 9600XL, the first models in the Microtek family designed for scanning large A3 originals such as newspapers, tabloid magazines and X-rays for medical imaging. The large scan bed also allows for batch scanning of up to ten 3.5" x 5" photos at one time! The ScanMaker 6400XL and 9600XL are perfectly suited for professionals in the graphic industry, ideal for production departments, advertising agencies, service bureaus and almost any application which requires scanning of large artwork.

With a 36 bit colour depth and resolution of 400 x 800 dpi and 600 x 1200 dpi respectively, both models deliver fast, accurate and cost effective scanning into the A3 market place.

THE SPECS
ScanMaker 9600XL
True optical resolution:
600x1200 dpi
(interpolated 9600 dpi)
Media:
reflective originals
Colour depth:
36 bit

Scanning area:
304mm x 430mm
12" x 17" (A3 size)
Interface SCSI port
(MacIntosh)
ASPI compliant, SCSI card
(PC)
Software bundle:
ScanWizard (PC/Mac)
PhotoImpact Full (PC)
ImagePals2Go! (W3.x-PC)
ColorIt! (Mac)
Painter 5.0 (PC/Mac)
OmniPage LE (PC/Mac)
Colour Separation Software
(e.g. SilverFast or
ScanPrepPro)
Option:
Transparency adaptor
(TMA)

TOTAL CARE TECHNICAL SUPPORT MICROTEK

NOW BUNDLED WITH
SILVERFAST,
AWARD WINNING
SOFTWARE

PCWorld EDITOR'S CHOICE ★★★★ STAR Rating 8.0

THE SUPERB
COMBINATION OF
SCANMAKER 6400XL
& 9600XL
AND SILVERFAST
PRODUCE AMAZING
QUALITY HIGH-END
SCANS

THE SPECS
ScanMaker 6400XL
True optical resolution:
400x800 dpi
(interpolated 6400 dpi)
Media:
reflective originals
Colour depth:
36 bit

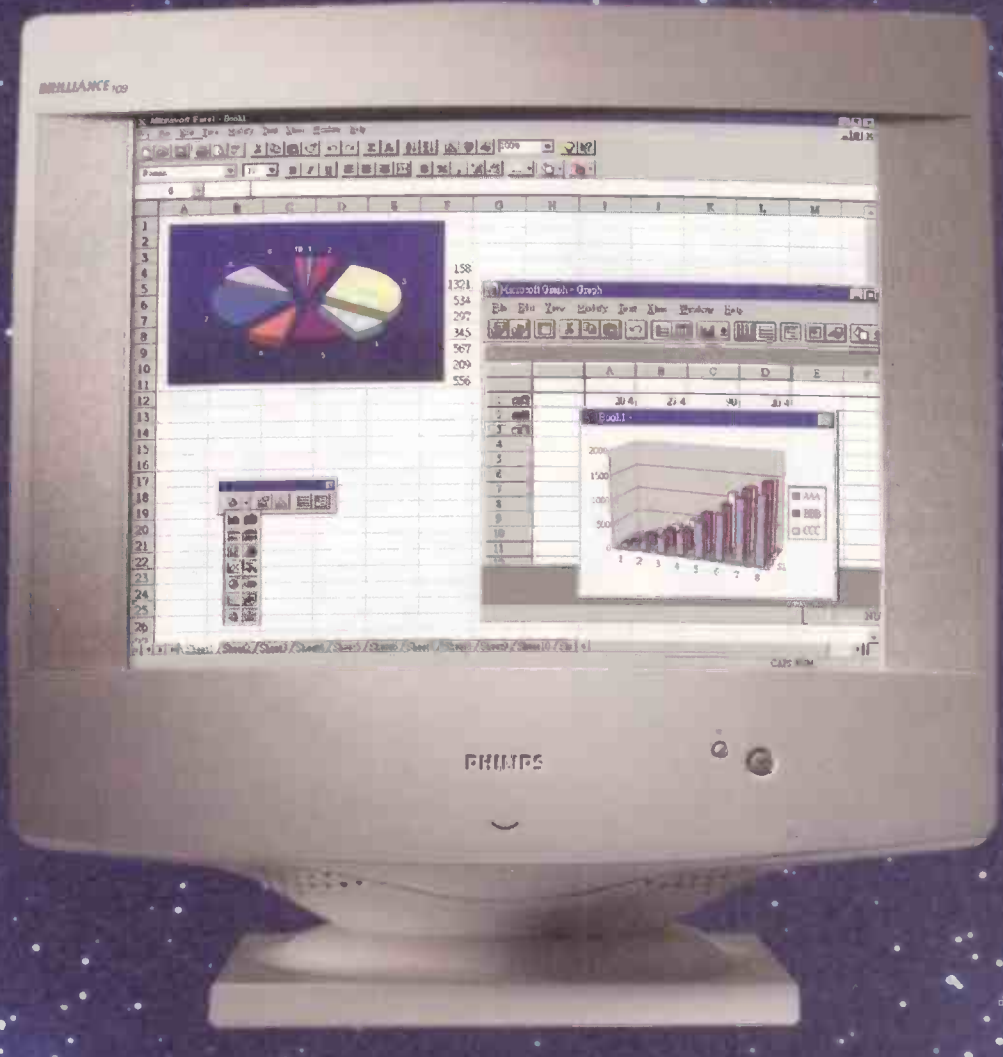
Scanning area:
304mm x 430mm
12" x 17" (A3 size)
Interface SCSI port
(MacIntosh)
ASPI compliant, SCSI card
(PC)
Software bundle:
ScanWizard (PC/Mac)
PhotoImpact Full (PC)
ImagePals2Go! (W3.x-PC)
ColorIt! (Mac)
Painter 5.0 (PC/Mac)
OmniPage LE (PC/Mac)
Colour Separation Software
(e.g. SilverFast or
ScanPrepPro)
Option:
Transparency adaptor
(TMA)

MICROTEK

it's a **colourful** *world*

Further information can be obtained from dealers, or directly from Microtek Europe B.V., Max Euwelaan 68, 3062 MA Rotterdam, Netherlands, phone ++31/10/2425688, fax ++31/10/2425699.

Light years ahead



New 19" Brilliance from Philips

Once in a while a sparkling new development really challenges the traditional mindset of systems technology – and usually it is Philips that do it. The new Philips Brilliance 109 is a dazzling new addition to the renowned Brilliance range of high performance monitors, and it really is totally innovative, both in screen size and appearance.

More to see – in less space

If you are looking for a larger, more effective working area for spreadsheets, databases, and multimedia applications the design of the new 19" delivers a virtually equivalent 20" screen area at an extraordinarily high specification.

Sets new standards

At the heart of the new Philips Brilliance 109 is the unique Philips **CrystalClear® technology.** Contrast is greater, colours are more vivid and black is a deeper, more intense black, whilst delivering a seemingly flicker free display. This, plus front speakers, built-in microphone and a plug-in USB option, make the 19" ideal for all applications.

Delivers a cost effective workplace benefit

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Software

Professor Franklin's Instant Photo Effects

Fool your friends into thinking you've got family snaps from the last century, or just tweak for fun.

Professor Franklin's Instant Photo Effects is a home digital darkroom aimed at the home snapper whose knowledge of photography extends to how to put the film in and how to get it out again. It is designed for getting results quickly at the touch of a button.

There are effects categories which appear as 35mm film canisters at the bottom of the editing window. Clicking on these pulls up a length of film on which the options for that category appear. There are six categories: artistic, edges, frames, darkroom, accents and photography. If you want to improve the look of your photos before printing them, Darkroom is the place to start. You'll find tools to improve the brightness and contrast, remove colour casts and make blurred pictures sharper.

This sepia photograph effect gives your picture the "found at the bottom of a Victorian biscuit tin" look

All the tools operate in much the same way. Having selected your category you select one of the options on the film-roll menu and a list of further options is displayed in a window beneath the image area. If you select the colour correction button, the options that appear are more red, less red, more green etc. Clicking one of the options previews the results, full size, in the image window and you then select and apply changes from the menu bar. Some options let you carry out a bit of fine tuning by means of the details button which throws up a dialog box giving you access to additional tweaks.

There's plenty of scope for mucking about. The artistic category includes options for impressionism, painting, drawing, lithographic etching and embossing, and each of these options has around six different effects. The drawing effects include charcoal, colour and black-and-white chalk, pen and ink, pencil sketch and marker. You get a choice of five impressionists, including one I've never heard of (Vuillard), which almost certainly says more about my knowledge of the impressionists than the scope of Professor Franklin's technique.

Some thought has gone into the features and there's much more than the usual collection of emboss filters and greeting-card templates. The Edges category enables you to produce photos with scrappy edges (as if they've been scribbled onto the page). You can make vignettes (oval masks with a faded edge) and Object edges provide variously-shaped masks you can use to crop the image — heart, jigsaw, leaf and stamp.

Accents is a collection of transforming filters including page curl (giving corners the heated roller treatment), lighting effects, drop shadows and pattern textures. My favourite is the antique option from the Photography category. Faded, sepia-toned, covered in scratches and with edges that look like the dog got to them, you'll have no difficulty convincing friends you've been taking pictures since before the war. Photography includes stylise and duotone filters, which are useful, and colour quad and digitise filters, which are not: why would you want to divide pictures into four quadrants and make each one a different colour?

A short toolbar to the left of the image window provides tools for magnifying, selecting, rotating and text. Aside from adding text with nifty drop shadows, Prof Franklin is light on tools for those who favour the freestyle approach in preference to handheld button pushing.

There's a selection of bolt-on picture frames, from an ornate gold-leaf job that wouldn't look out of place in the National Gallery, to plastic alphabet letters that wouldn't look out of place on your fridge

There's a "touchup tool" which provides a dual-function dialog for red-eye, dust and scratch removal, the first of which is a feeble effort: using a brush, you paint over the offending pupils in a chosen colour. There's little point in choosing anything other than black, unless you want to create pictures of freaks with coloured pupils (it's the iris, the bit surrounding the pupil, that's coloured!). There's also no way to modify the selection of the red pixels you want to replace, with the result that many of them are still there when you've finished. And the scratch removal filter? Not as good at taking them out as the antique one is at putting them in.

Franklin won't disappoint those who want to have some creative fun with their photos or produce some imaginative visuals for a newsletter or web site. The simple interface and number of effects filters makes for quick and effective results with very little effort. Total novices might prefer the step-by-step approach of PhotoDeluxe which provides more flexibility if you want to go it alone.

Ken McMahon

PCW Details

Price £29.95 (£25.49 ex VAT), £6 carriage

Contact Guildsoft 01752 895100
www.guildsoft.co.uk

System Requirements Windows 95

Good Points Multitude of "one-touch" filters and effects. Nicely-designed interface.

Bad Points Not much scope for doing your own thing. Red-eye removal is rubbish.

Conclusion A good bet if you know little or nothing but want good results, pronto.

★★★☆☆

p163 ➢

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Software

Asymetrix ToolBook II Instructor 6.0

Personal Computer World Recommended

This could be top of the class when it comes to making your own interactive training material.

ToolBook Instructor helps you create interactive computer-based training material for delivery on internal networks, CDs or over the net. If you are a training provider or otherwise involved in education, this product should interest you.

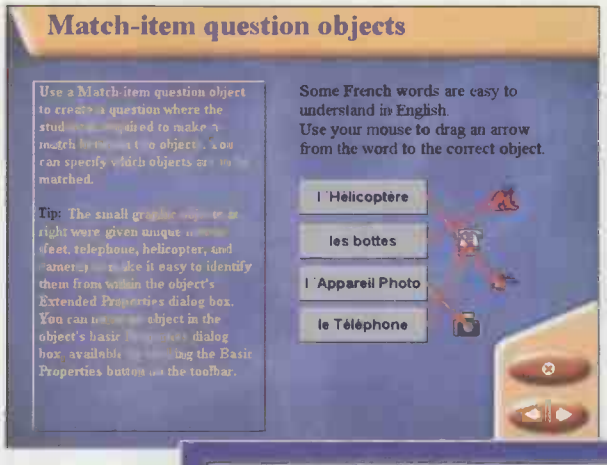
If you are a multimedia developer you can hardly fail to have heard of ToolBook. For almost a decade it has been one of the two most successful multimedia authoring packages (the other being Macromedia Director). Multimedia ToolBook as it was called (back in version 4) was renamed to Publisher in version 5, and the special CBT Edition became Instructor.

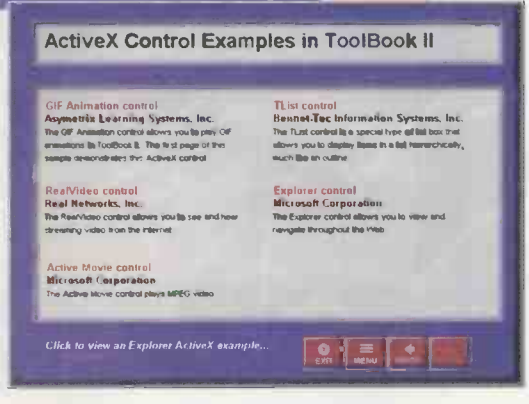
Last year Asymetrix bought one of its largest competitors, Aimtech, producer of IconAuthor and CBT Express, and decided to concentrate on developing authoring tools for online learning as opposed to general multimedia development. This is the first update since that move and it is also the first one with substantial features for developing online learning material.

ToolBook is based on the book metaphor: your applications are books which contain pages (screens). Each page has objects which can be navigation buttons, pictures, drawings or stages on which you can play videos, animations and so on. ToolBook has a powerful programming language called OpenScript (a bit like Visual Basic) which you need to use for large-scale applications. It is not difficult to learn and there is an autoscript facility, a collection of pre-written scripts to perform most common tasks. The language allows access to Windows functions and hardware resources and you can use Visual Basic VBX and OCX controls, too.

Available in the previous version but enhanced in this one, is the ability to save/convert books into HTML pages with Java output. And the new version also supports ActiveX controls which, for example, means that you can launch a web browser and control students' access, and play streaming media (i.e. video and audio).

There are many other improvements to aid productivity. The Page Browser displays thumbnails of pages for re-ordering, adding and deleting, and the Object Browser displays object properties in outline form for rapid amendments.





Top Set up match-item question screens by specifying matching pairs of objects
Above A library of ready-made ActiveX controls and software to support instructional and application design

You have access to more than 1,000 objects for navigation, teaching and assessment tools, including setting student time deadlines, and ways of setting questions and logging student answers beyond the standard multiple choice and boxes to be filled in.

You can use the objects in the catalogues without modification or you can edit them to your requirements. You can also share them for group-work and build catalogues of objects for distribution to other authors.

This new catalogue feature has a profound effect on the way Instructor can be used. Indeed, it makes it a great deal easier, while allowing you to do more than you could with previous versions. It also brings authoring even closer to those who are less into programming and more into education and instruction. It is not programmers and computer developers who will be using this product, but educators and trainers.

Instructor 6.0 is bundled with a number of applications to enable you to prepare material. There is a version of Asymetrix Digital Video Producer (a video editing tool), RealNetworks' RealSystem (for enabling streaming media from an intranet server), Asymetrix Web3D (for stunning 3D graphics) and Interleaf's Jamba Java animation tools. On top of that you get a series of other utilities. One such is Impulse for the ToolBook Plug-in Neuron which provides web-optimised delivery of ToolBook applications, loading only the information relevant to the page displayed, thus improving performance. Another is a new AutoPackager based on technology from InstallShield which makes packaging your media and creating setup programs easy. There are tools for editing bitmap images, colour palettes, icons and cursors, audio files and more.

Although Instructor 6 is now 32-bit and supports Windows 95 and NT, support for 16-bit Windows 3.11 is still available. And for 32-bit environments there is specific support for long filenames, MMX multimedia and the Windows Registry.

Instructor is only one of a number of Asymetrix products in a range of authoring and associated tools. A significant one is Librarian, for managing online courses and distance students. The idea is to deliver learning to anyone, anywhere in the world, with learning applications that can be spread over a number of computers.

This seems to be the way the world of education and training is moving, and Instructor, which of course interfaces perfectly with Librarian, is helping point the way.

Panicos Georghiades and Gabriel Jacobs

PCW Details

Price £2,291.25 (£1,950 ex VAT); educational price £1,145.63 (£975 ex VAT)
Contact Asymetrix 0171 345 1500 www.asymetrix.com
System Requirements Windows 3.1, 95 and NT.
Good Points Very powerful.
Bad Points Learning time. High price.
Conclusion If you make money from selling knowledge/learning and want to survive in a world-wide learning market, you can't ignore this product.
★★★★☆

p164 >

Software

Borland C++ Builder 3 BETA

Borland's RAD C++ tool catches up with Delphi — but for how long? We check out the beta.

Delphi is the most productive of Windows development tools, but not everybody likes coding in Pascal, Delphi's language. Borland therefore wrapped Delphi's VCL (Visual Component Library) with C++ header files to create C++ Builder. The result is genuine RAD (Rapid Application Development) for C++: you can build a full-featured graphical interface by drag-and-drop. The BDE (Borland Database Engine) provides integrated database access to both desktop and client-server data.

C++ Builder has an impressive feature list that will tempt more into giving it a try. The VCL is numbered 3.5 and, as that implies, this is more than just Delphi 3.0 for C++. Some features do come straight from Delphi 3.0. Packages are runtime DLLs that let you share code between applications. You can now put VCL code into one or more packages, so only code specific to your application is compiled into the final executable.

Another strong feature is ActiveX support. There is a wizard to convert a C++ Builder component or form into an ActiveX control, for use in other environments such as Visual Basic or Internet Explorer. For deployment, there is support for the CAB compressed file format along with code-signing to reliably identify the control. You can also create automation servers to expose an application's functions via COM.

The C++ Builder interface is little changed but does have useful enhancements. The editor now supports multibyte characters. It also has Code Insight, which provides templates to speed the typing of common statements like try...catch blocks, and tool-tip expression evaluation to show the value of variables or properties when debugging. The debugger has an option to debug DLLs by specifying an executable that uses the DLL. You can see different modules, such as an executable and a DLL, within a single debugging session. Data-watch breakpoints activate when a specific memory address is written to; for example, when a variable changes value. Building an executable is faster, thanks to improvements in the incremental linker, and working with C++ Builder is now closer to Delphi in this respect. The compiler can handle the MFC (Microsoft Foundation Classes) and the Object Windows Library (OWL) as well as the VCL, and there are examples of how to use VCL forms with MFC or OWL code.

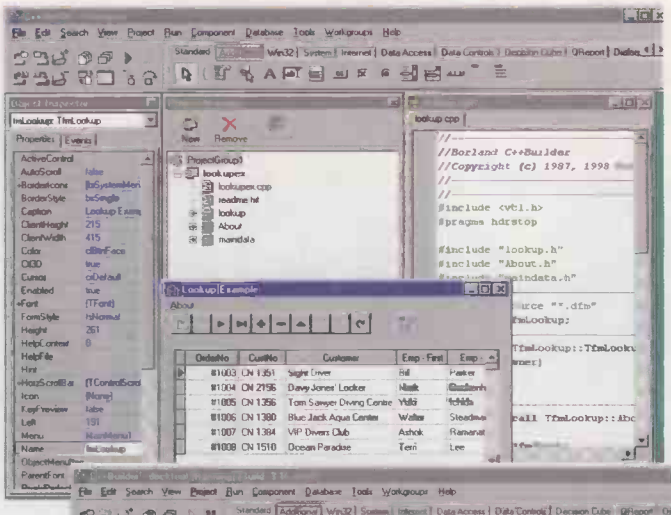
C++ Builder has a new version of the BDE with support for Microsoft Access, provided it is already installed on the system, FoxPro .CDX indexes and ODBC 3.0 drivers. Borland recognises that not everyone wants to use the BDE and fewer database components are hard-wired into it. The new TClientDataSet is BDE-independent and is useful both for simple standalone applications and for applications where the user works with a local, disconnected copy of data retrieved from a server. It is also easier for third parties to replace the BDE with an alternative database engine while still supporting the data-aware interface components.

New VCL components include an animation control, a date/time picker, a splitter component and a data-aware rich text component. There is a new group of chart components. TToolbar and TCoolbar offer an Office 97/Internet Explorer look-and-feel. TThreadList is a non-visual component for thread-sage list manipulation.

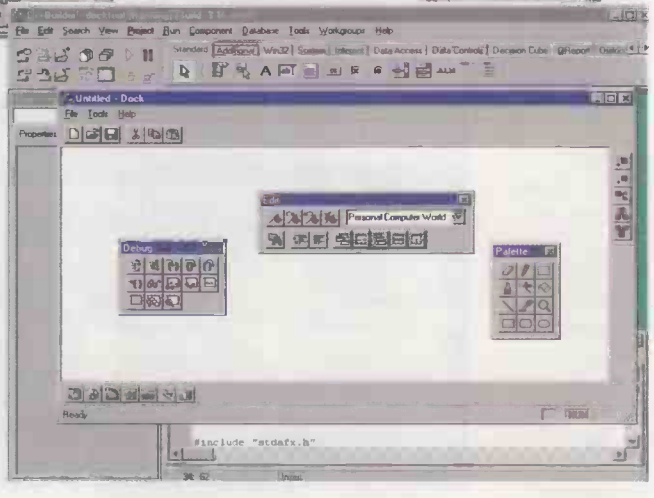
C++ Builder is now Borland's core C++ product. Borland C++ 5.0, a more conventional C++ product, will not be developed further and neither will the OWL class library. Both are bundled with C++ Builder to assist code migration, and for support of DOS and Windows 3.1 applications.

This is an outstanding package but there are irritations. One is the lack of a class browser. JBuilder has an excellent class browser, and so does Visual C++, a key rival to C++ Builder. Delphi has a poorly-integrated object browser, but C++ Builders have to purchase this as an add-on if required or write their own based on example code supplied. Next, the hybrid Pascal/C++ nature of C++ Builder is a compromise, made worse because it is not synchronised with releases of Delphi. Third, the product range is bewildering and it is a shame that the great decision cube component, a VCL component similar to Excel's pivot table, is only available in the expensive client/server edition. Finally, although C++ Builder is way ahead of Visual C++ as a RAD tool, it is a less productive environment for pure C++ coding.

Tim Anderson



Left C++ Builder looks just like Delphi until you open the editor and see C++ code



Below C++ Builder happily compiled this MFC project, which demonstrates dockable toolbars although warning of dreadful things deep within the MFC code

PCW Details

Price Standard £99 (£84.26 ex VAT); Professional £468.83 (£399 ex VAT); Client/Server £1,878.83 (£1,599 ex VAT); Enterprise prices tba.

Contact Borland 01189 320022
www.borland.com

System Requirements Windows 95 and NT.

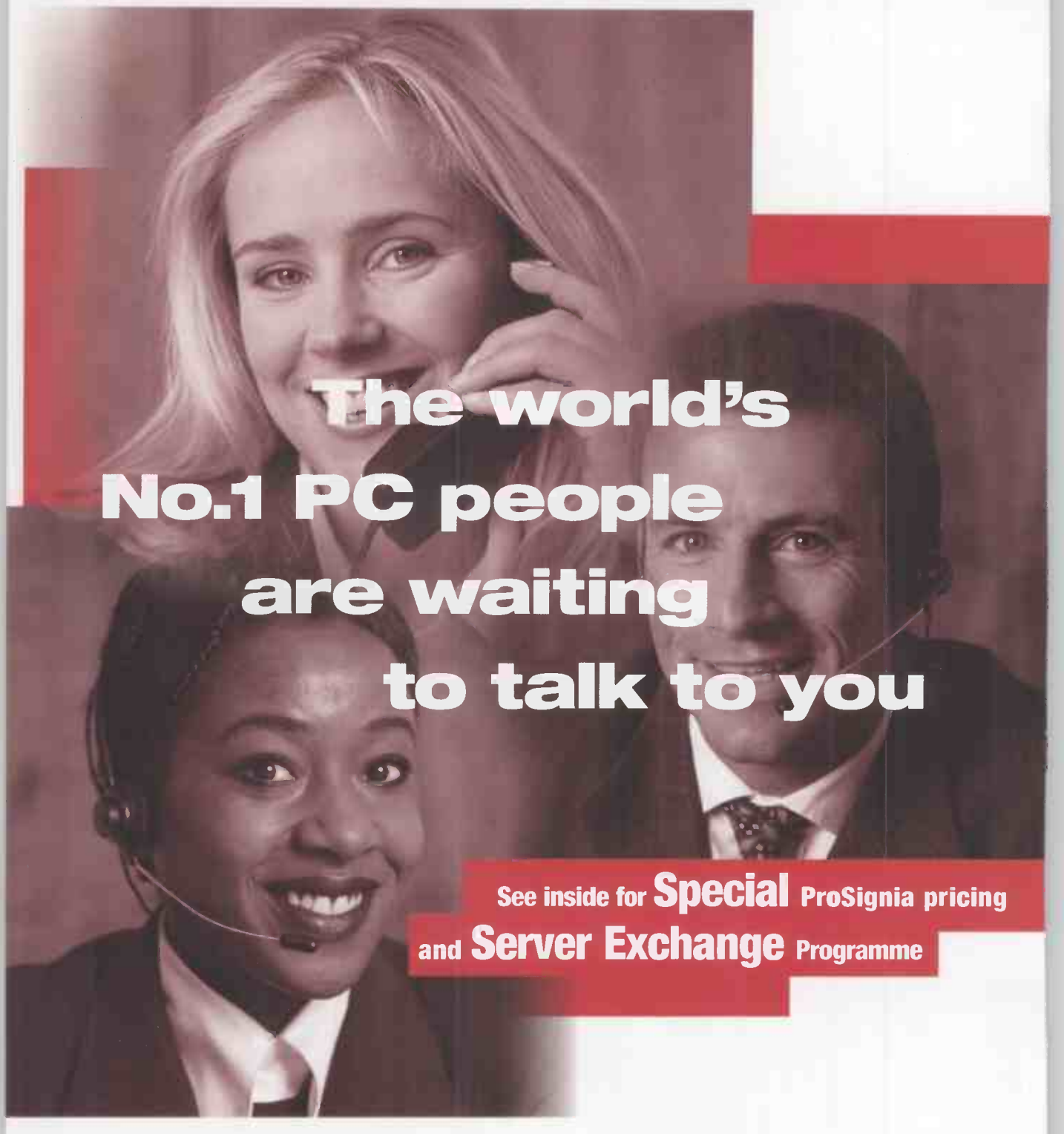
Good Points The most productive C++ environment. Rich range of components. Supports VCL, MFC and OWL.

Bad Points Pascal underneath. No class browser. Lags behind Delphi in features.

Conclusion The best C++ for rapid development, but Delphi users have no reason to switch. Visual C++ still has advantages.

★★★★☆

p166 >



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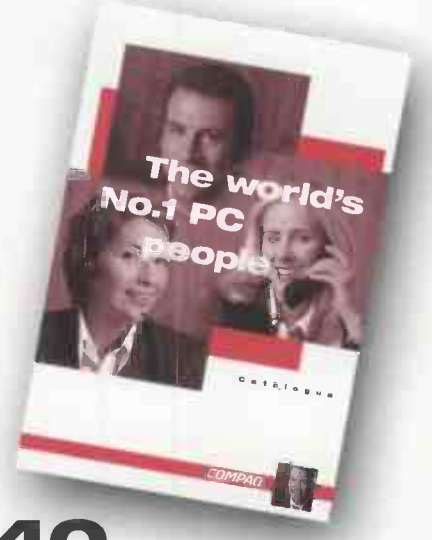

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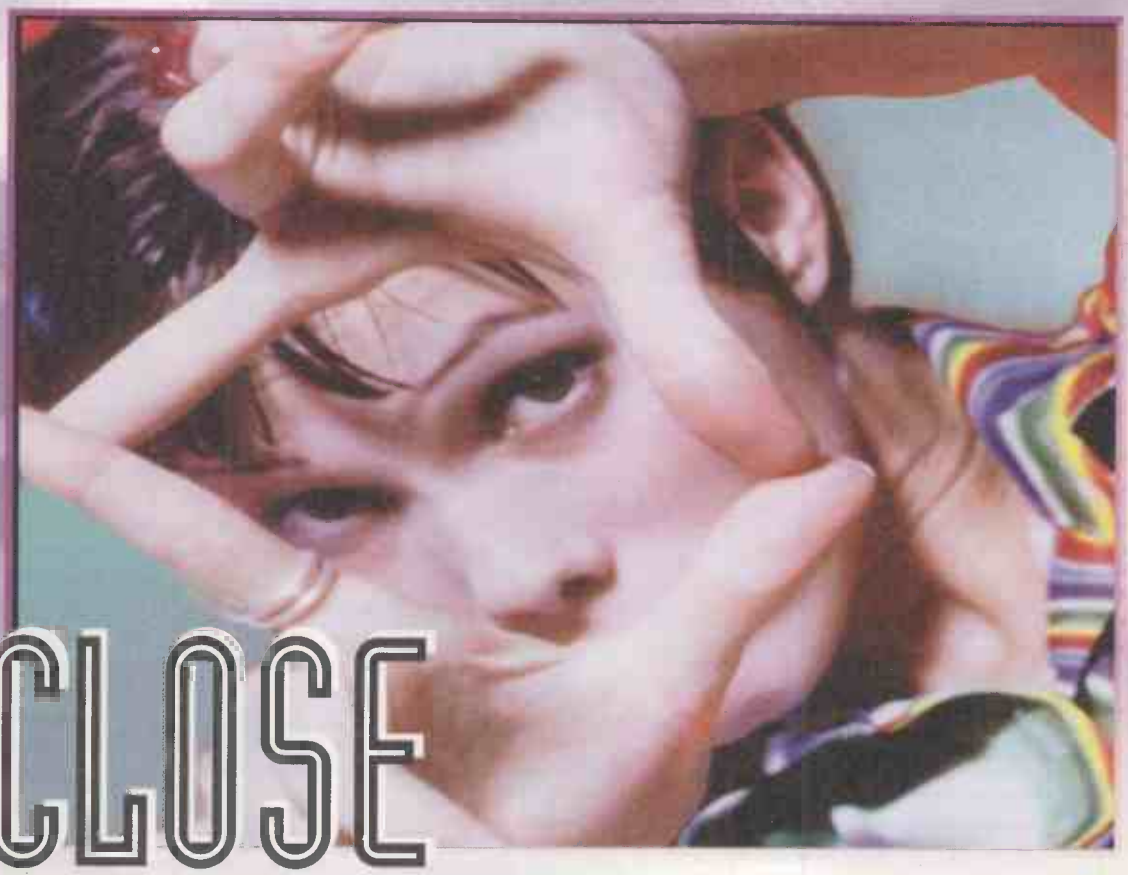

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165

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Software

Mathematica 3.0.1

Personal Computer World Recommended

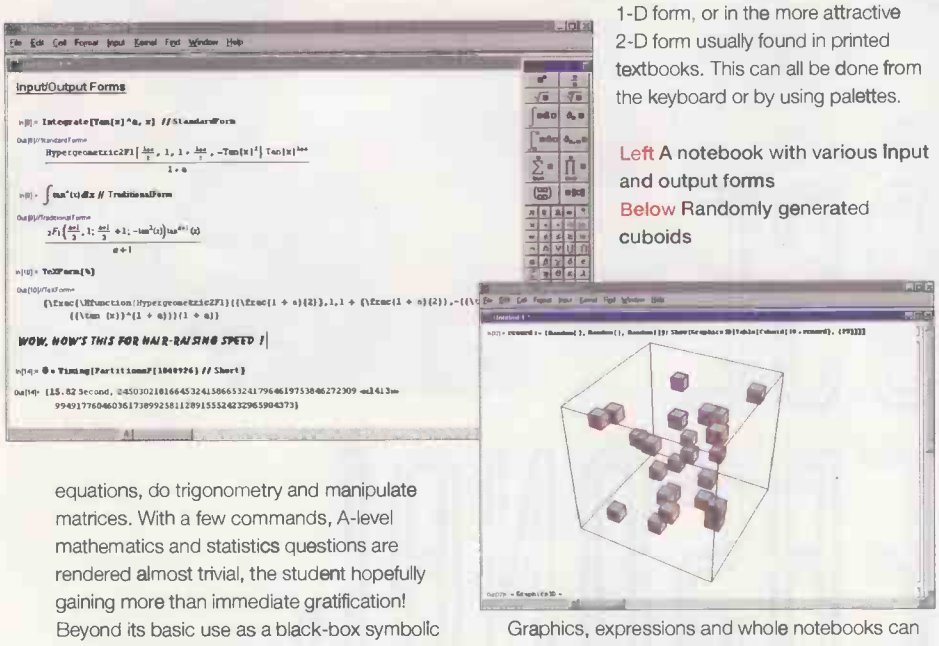
Out with that abacus, incarcerate that calculator. Let Mathematica work out your algebra.

Mathematica was the first commercially successful Computer Algebra System (CAS): a package that combines exact symbolic manipulation, graphical representation and approximate numerical calculation.

At the lowest interactive level a CAS allows you to do arbitrary precision arithmetic, factorise polynomials, solve algebraic and differential equations, do trigonometry and manipulate matrices. With a few commands, A-level mathematics and statistics questions are rendered almost trivial, the student hopefully gaining more than immediate gratification! Beyond its basic use as a black-box symbolic calculator, an up-to-date CAS must be programmable, capable of producing publication-quality output and interacting with other software.

Mathematica 3.0.1 is one of the big three CASs, the others being Maple v5 and Macsyma 2.3. Although CASs were designed and used for research in the mathematical sciences, there are probably now more users in other fields. Mathematica in particular is used in engineering for development and design work. It plays a big role in sophisticated financial and economic modelling and in simulations of complex physical and biological systems. Mathematica and Maple, and the much smaller CAS, Derive, are used extensively as a medium for the teaching of mathematics and its applications.

The advanced notebook environment of Mathematica 3 provides not just the means of invoking the algebraic calculator but also the production of anything from student worksheets to electronic books with hyperlinks. There are enough special characters and fonts to keep most typesetting freaks happy. Input and output of mathematical expressions can be in standard 1-D form, or in the more attractive 2-D form usually found in printed textbooks. This can all be done from the keyboard or by using palettes.



Left A notebook with various input and output forms
Below Randomly generated cuboids

Graphics, expressions and whole notebooks can be converted to alternative formats including PostScript, GIF, HTML and TeX, the lingua franca of scientific publication.

Apart from the addition of over 250 new mathematical functions, Mathematica 3 is now able to solve certain types of partial differential equations. The latter is important for applications but is new and tricky to implement in CASs.

Attention to numerics has always been an important consideration in Mathematica, particularly the tracking of precision during computations. The numerical linear algebra routines are now nippy: the numerical inversion of a 400 x 400 random matrix took 35 seconds on my Pentium 133. The specialised linear algebra package, MatLab, took nine seconds.

For advanced work the Mathlink interface provides a protocol for two-way communication between external programs and the Mathematica kernel. This is not for the faint-hearted. Despite the small increment in version number from 3.0.0 to 3.0.1, the latter is a considerable upgrade in terms of speed increases and bug fixes; in particular, problems I experienced with the printing of graphics have now gone away.

Support for Mathematica is extensive. There are well over 100 Mathematica-based books: the newsgroup comp.softsys.math.mathematica is very active. At 1,403 pages the excellent manual, once on the desktop, stays there. Although webbies soon home in on the MathSource, an archive of Mathematica notebooks covering numerous applications, it seems rather mean that the £30 MathSource CD is not bundled with the software.

Compared with other packages Mathematica has always excelled in the quality of its graphical output and in its list-manipulation tools. Most CASs, Mathematica included, have weaknesses in symbolic integration. A curious one is Mathematica's failure to find the indefinite integral of Abs[x]. Less surprising, because most CASs make a pig's ear of it, the wrong answer is given for the indefinite integral of Sqrt[1-Cos[x]]. As in a game of leapfrog, nothing stands still for long. On balance, a snapshot puts Mathematica just ahead. You get an awful lot for an awful lot of money.

Nigel Backhouse

PCW Details

Price £1,175 (£1,095 ex VAT)

Contact Wolfram Research 01993 883400 www.wolfram.co.uk

System Requirements Win95, NT 3.51 or higher.

Good Points Brilliant notebook interface and graphics quality.

Bad Points Expensive.

Conclusion Mathematica encapsulates 2.5 millennia of mathematical know-how.

★★★★★

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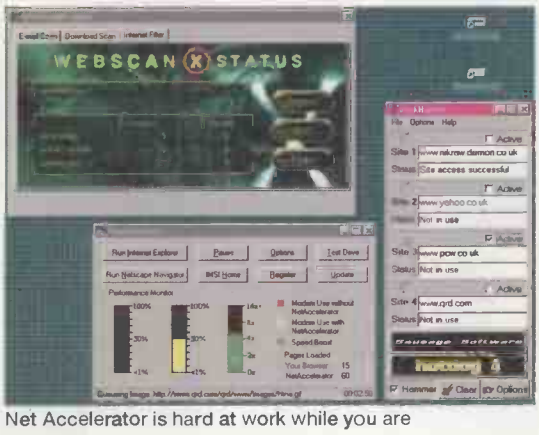
Software

IMSI Net Accelerator Deluxe

Don't stand for sluggish browsing on the net — wind it up on the web with this new package.

Net Accelerator Deluxe promises to speed up your web browsing, while the six accompanying applications will revolutionise the way in which you use the net. The idea is simple: while you read a page on the net, your modem is idle. Net Accelerator uses this time to download the content of the pages linked to your current document, so when you click on a link it is ready and waiting in the cache for instant access.



Net Accelerator is hard at work while you are

Used in conjunction with NetJumper, one of the six utilities, a single click will list the addresses of every link on a page, saving users from shuttling between a main menu and its sub-pages when searching a site. The links are stored in a menu and VCR-like controls let you click forwards or backwards to URLs in the list rather than the next or last URL visited, as is more often the case.

When we experienced difficulty accessing a few of our chosen sites, we turned to JackHammer, an application which automatically and constantly tried on our behalf to enter busy web pages or ftp sites which had exceeded their maximum number of users. While it ran in the background, we continued browsing.

Also in the bundle, WebSleuth Lite is a fast search facility which not only hunts through the common search engines and presents a list of returned hits, but also generates an abstract of each match based on the first few paragraphs of text. Perhaps the most impressive utility of the bundle is Gravity Lite, an easy-to-use newsgroup tool. Selecting one of the many publicly accessible news servers indexed on the net, we were reading regular newsgroups in minutes and following up article threads with ease.

Underlying these applications is an award-winning virus scanner that keeps watch on all downloads, emails, Active X and Java applets. WinPack provided idiot-proof file compression and decompression with speed and ease.

Nik Rawlinson

PCW Details

Price £34.99 (£29.78 ex VAT)
Contact IMSI 0181 581 2000 www.imsiuk.co.uk
System Requirements Win95, 98, NT4.0 and up.
Good Points Extensive applications. Easy to use.
Bad Points Some applications require a higher spec than is advertised on the box.
Conclusion It's what we never knew we couldn't live without.
★★★★☆

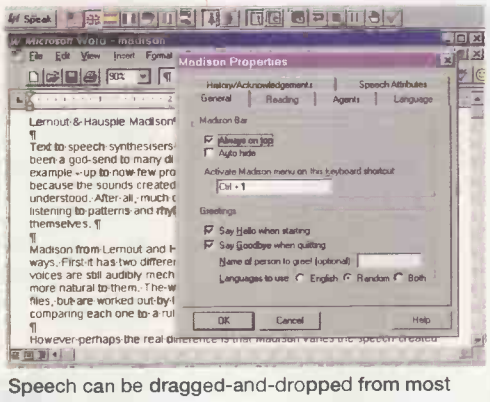
Lernout & Hauspie Madison

Listen to your PC talk text with a more natural voice, male or female, in any of six languages.

Although text-to-speech synthesisers have been a godsend to many disabled people, few products have existed for the average PC user — the sounds created are too harsh and robotic to be comfortably understood. Much of the way we understand language is derived from listening to patterns and rhythms of speech as much as from the words themselves.

Madison, from Lernout and Hauspie (L&H), which will be released in the next three months, tries to circumvent these problems. First, it has both female and male voices. Although these are audibly mechanical, different users can choose whichever sounds more natural to them. The words spoken are not stored individually as audio files but are worked out by looking at the syllables in the words and then comparing each one to a rule base and a dictionary of exceptions.

Perhaps the real difference is that Madison varies the speech created according to the way in which the sentence is structured. So, it will pause slightly after commas and for longer at full stops and it will drop its tone before commas and full stops, just like human speakers. It does nothing as sophisticated as breaking down the sentence grammatically, but works out the boundaries of the sentence using its linguistic engine.



Speech can be dragged-and-dropped from most Windows applications

The application supports British and American English, French, German, Dutch, Spanish and Italian. None of these take up much room; three languages took up 1.3Mb. You can use Madison with any Windows applications which contain text. I got it to work directly with Word and ccMail, but not with Netscape (it needs Outlook to work with net applications). You can copy text into the clipboard and either tell the system to read it from there, or set it to read any text as soon as it is put into the clipboard.

Why would you want it? To listen to emails while you are looking at other things and/or as a proof-reading tool. But until we are all using dictation, it may seem a bit of an odd tool.

Adele Dyer

PCW Details

Price £299 (£254.47 ex VAT)
Contact L&H 00353 1209 1799 www.landh.com
System Requirements Windows 95 and NT.
Good Points More natural speech synthesis than before.
Bad Points Voices are still robotic.
Conclusion Of limited use, as yet.
★★★☆☆

p168 >

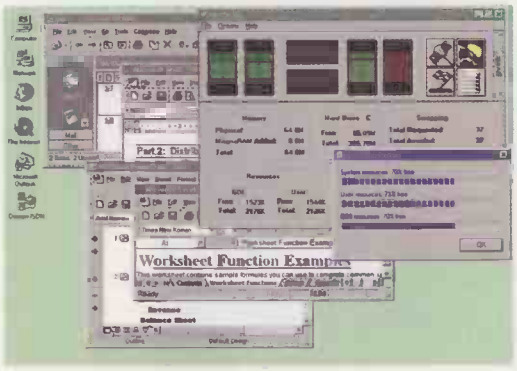
Software

Quarterdeck Qemm 97

Fine for optimising memory, particularly in DOS and Windows 3.1. Not so good for Windows 95.

Qemm 97 promises to save memory and speed up Windows 95. It still works in DOS and Windows 3.1 the way it always did, but now it has a new graphical interface and Turbo Load II which claims to accelerate the loading of Win95 applications. It also includes MagnaRAM memory compression technology which reduces paging to disk for Win3.1 and 95. If you are still struggling with Win3.1 memory or resource shortages or even with DOS games under Win95 there may be some justification in buying Qemm 97, but I can't see the point, with memory now costing from around £1 per megabyte.

Provided you don't fit more than 64Mb to your motherboard, adding memory to Win95 is cheaper and more effective. The reason you wouldn't want to add more than 64Mb is because most motherboards only cache 64Mb RAM. Since Win95 loads applications from the top of memory, more than 64Mb will result in reduced performance.



System resources monitored with Qemm

Prior to installing Qemm 97 on a Win95 system with 64Mb RAM and Office 97, I loaded Outlook, Excel, Word and PowerPoint. This pushed the swapfile to 36Mb and reduced free memory to 300Kb. System, User and GDI resources were around 70 percent. Qemm 97 installs easily with graphical screens and automated reboots while it checks the system to see where it can save DOS memory. Post-install, I re-loaded the Office programs: System, User and GDI resources stayed at 70 percent, the swapfile went up to 55Mb and there was 375Kb free memory at idle. Net benefit? A bigger swapfile, accessed less frequently.

You must start your applications a couple of times to gain the benefit of Turbo Load. If they loaded any faster it was by a few seconds; but surely the point of Win95 is that you don't keep having to re-load applications? Qemm 97 has a pretty interface but as far as Win95 is concerned, spend your money on RAM.

Terence Green

PCW Details

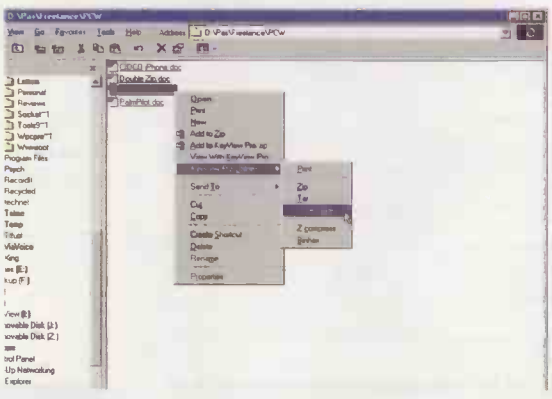
Price £74.99 (£63.82 ex VAT)
Contact Quarterdeck 00800 7212 7212
www.quarterdeck.com
System Requirements DOS, Win3.1, Win95.
Good Points Good for DOS and Windows 3.1 memory problems.
Bad Points Not very useful for Win95 unless you have memory problems with DOS games.
Conclusion Buy RAM instead.
★★★☆☆

KeyView Pro

KeyView claims to view up to 200 formats, including obscure ones. It's the key to email success.

If nothing else, the net is responsible for people throwing files around the planet at each other in mad abandon. But how many times have you sent a file to someone, only for it to return with a hassled addendum along the lines of: "I can't read this file".

There are solutions to this problem, including one that comes bundled with Windows 95, called QuickView. File viewers have existed for a long time, only leapfrogging each other in the number of formats they cover. And KeyView Pro is another in that field, with the distinction of letting you actually do useful things with those files, such as printing and searching.



Successful takeover bid: KeyView dethrones QuickView's position on the context-sensitive menu

KeyView Pro claims to view nearly 200 file formats, including some fairly obscure ones such as Applix Asterix and Targon Word. Not all of these are included in the standard install. Strangely, though, the installation gives you no control over which filters to install: it's either a group of them, or all. And is this a slight aimed at Lotus? Ami Pro is part of the standard install, but to get the Word Pro filter you need to do the full installation!

Installation adds a second menu that leads to a set of compression and printing options. You can compress to Zip, Tar, UUEncode, BinHex and Z. But choose to view a file and the KeyView Pro window appears, letting you view a page, select and copy text, and convert by saving to a few formats restricted to HTML, RTF for documents and spreadsheets, and some image formats.

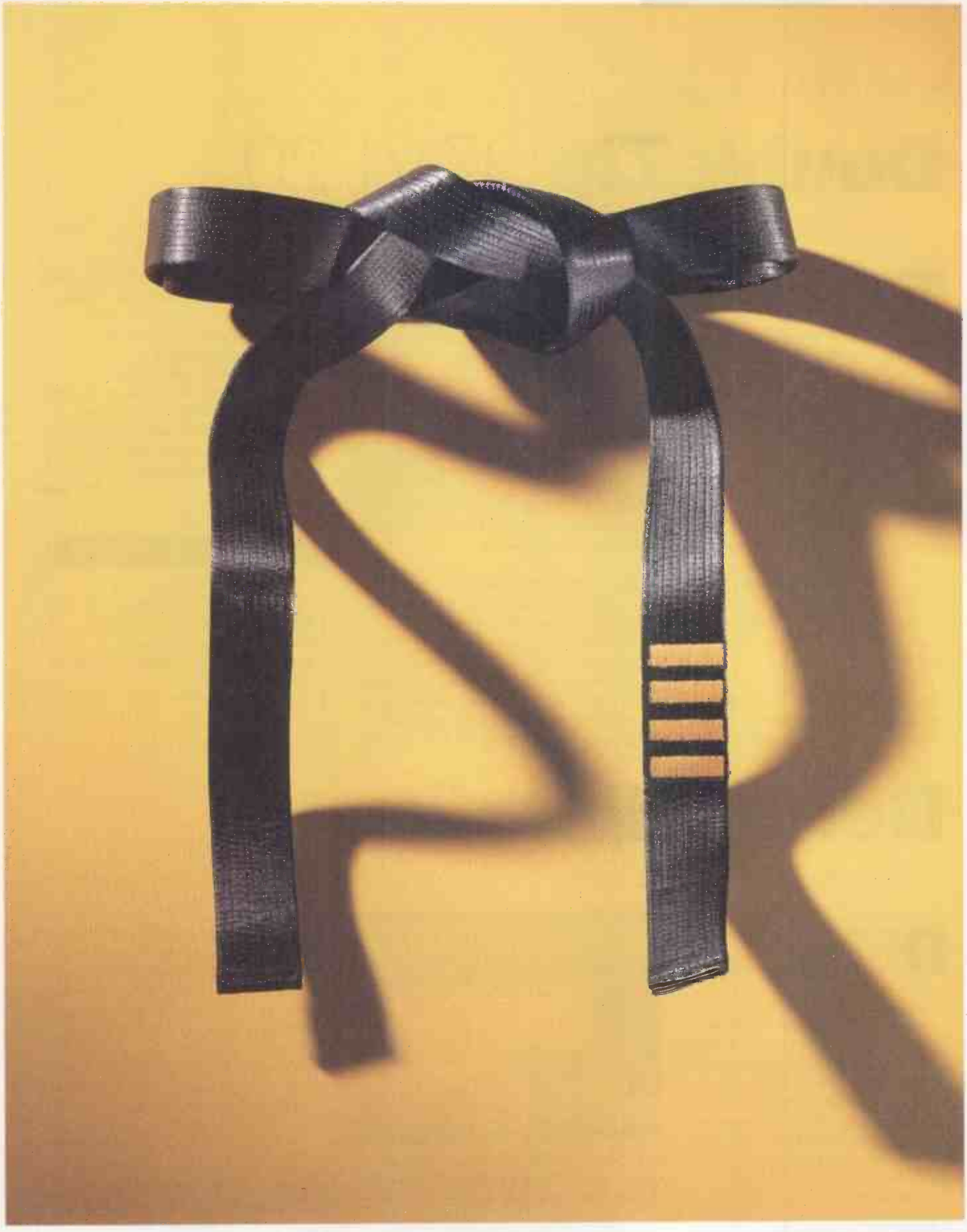
KeyView Pro integrates well into IE3 and Navigator 3 and later, acting as a plug-in for a number of formats such as multimedia. It adds a few features to the standard viewer programs. If QuickView doesn't do enough, consider KeyView an upgrade.

Paul Smith

PCW Details

Price £39.99 (£34.03 ex VAT)
Contact Cross Atlantic Software 0171 228 6992
System Requirements Win3.1, Win95.
Good Points Context-sensitive menu. Two hundred file formats.
Bad Points You cannot pick and choose formats to install.
Conclusion Improves on QuickView.
★★★★☆

p170 ➢



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Software

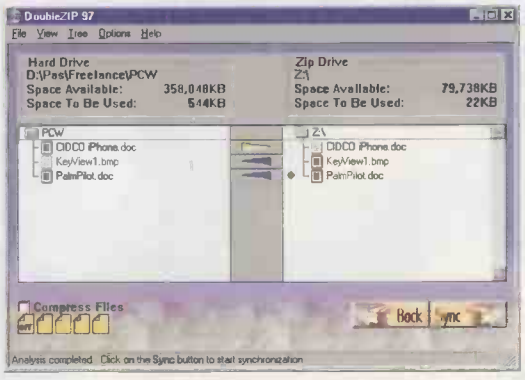
DoubleZip 97 v1.20

Zip-a-dee-doo-dah! DoubleZip is a backup and synchronisation program that does a good job.

There are two types of utility. The first consists of those programs that allow you to do things you cannot already do. The second type doesn't. DoubleZip, a backup and synchronisation program, sits in the second camp which is not necessarily a bad thing. I *could* edit registry settings using RegEdit. I *could* send email using cc:Mail. But there are alternatives that make these processes a lot easier.

Similarly, Windows 95 comes with the ability to compress (DriveSpace), back up (Backup) and synchronise files (the Briefcase). There are also brilliant shareware alternatives to these free programs: PKZip or WinZip are examples. And Iomega Zip users, at which DoubleZip is primarily but not exclusively aimed, get a very easy-to-use backup program.

So, DoubleZip lives or dies on its success in improving on these programs, or in the way you use them, sufficiently to justify its price. And it does so only in some ways: it's an aggregator, so you have control over these features all in one place.



Compression uses the PKZip algorithm so you can share backed-up files with almost anyone

DoubleZip will synchronise files between two directories on two drives and back up files to drives (only if they're removable) — and it will optionally compress them in the process. The distinction between synchronising and backing up is important: synching won't deal with system and hidden files, which is no use if you want to restore a disk. So, you can't back up to a hard drive. DoubleZip has no facility for uncompressing any file individually; you have to uncompress whole directories at once. But even then, DoubleZip doesn't do it — you need to use the separate Compress utility.

DoubleZip's most useful function is synchronising. This is handled in a bizarre fashion by Microsoft's Briefcase, so if you use two machines and share files between them, this might be justification enough to purchase it. Otherwise, stick to other utilities.

Paul Smith

PCW Details

Price £39.99 (£34.03 ex VAT)
Contact Cross Atlantic Software 0171 228 6992
System Requirements Win3.1, Win95.
Good Points Synchronising function.
Bad Points No facility for uncompressing any file individually.
Conclusion Stick to other utilities.
★★☆☆☆

Debabelizer Pro 4.5

A hot tool for web designers, with palette optimisation and batch processing. Go on, debabel it!

Debabelizer is a hot tool among web designers, due to its palette optimisation and batch-processing facilities. This latest version extends those capabilities and adds several new features.

Version 4.5 lets you create composite images by placing one on top of another. You can compare images to identify different pixels and replace them with pixels of a specified colour, so you can replace the red background in all the frames of a banner ad with another colour, or copy the pixels to an alpha channel to create a mask. The Batch Automation Composite and Compare operations allow you to walk through the process for one file and generate a script which can be edited and applied to remaining frames of an animation or other batchlist.

Batch processing has been muscled up. You can now run scripts within scripts by inserting a series of execute script operations into a master script. Improved error handling reduces the chance of it hanging up five minutes after you've walked out the door. You can disable the display during automated processing to give a performance boost. Batchlists are now more flexible: you can sort and reorder them by any criteria you like, and drag files into the batchlist at any position you want.

The pixel shift feature does the same thing as an offset filter: shifting the entire image by a given number of pixels in any direction with either a wraparound or background colour replace option — good for scrolling animations. The pixel locator, which flashes image pixels of a selected colour, provides a useful way of assessing the impact of colour palette modifications. Animators will appreciate the improved multi-framed image handling and processing. You can now bring in AVI files as if they were any other multi-framed image and reverse the process, saving multi-framed files as .AVI files. An improved interface with greater use of drag-and-drop, and support for new file formats including PNG, EPSF and Kodak Flash Pix, complete the picture.

Setting up automated processing couldn't be easier. The script in the top window is applied to all the images in the batch list in the lower window

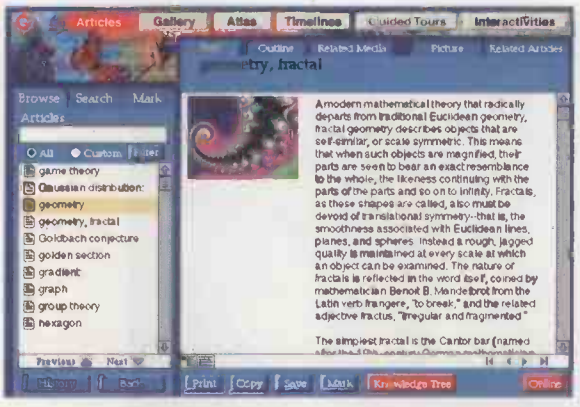
Ken McMahon

PCW Details

Price £468.83 (£399 ex VAT)
Contact Computers Unlimited 0181 200 8282
www.equilibrium.com
System Requirements Windows 95 and NT,
Good Points Good colour optimisation. Automation features are now even better.
Bad Points It costs too much.
Conclusion If you do this stuff, you gotta have it!
★★★★☆

Grolier Encyclopedia 1998

Why has Grolier put so little thought into content and linked sites? Could do better, definitely.



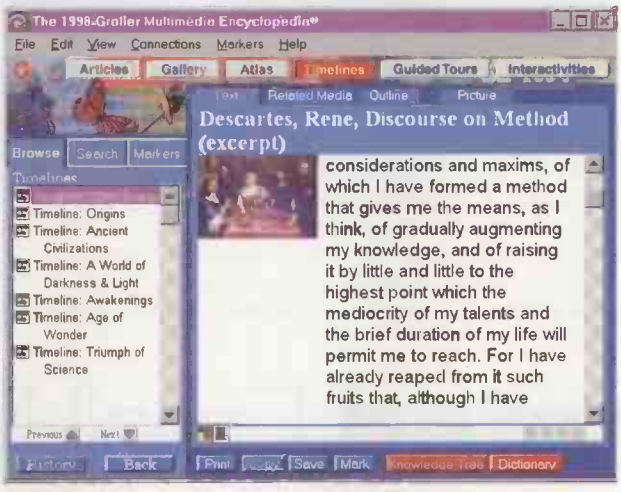
Left Pretty pictures — but not more than one per page

Middle You get the odd extract from great works, but the articles are patchy

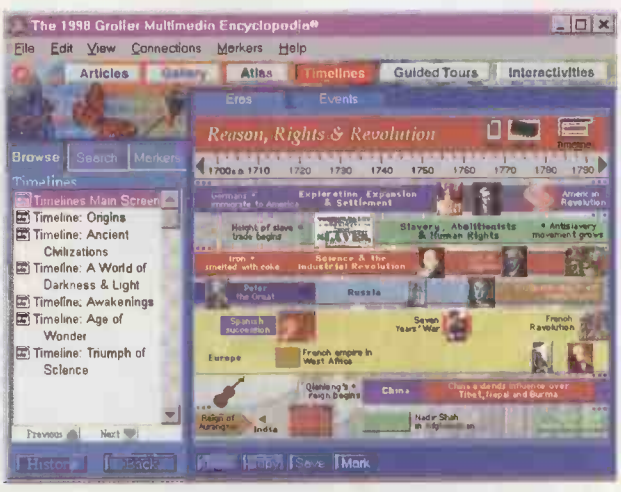
Below Colourful timelines that do not necessarily follow a theme

Not so long ago there were only two multimedia encyclopaedias of any importance: MS Encarta and the Grolier Encyclopedia. Since then, many more have appeared, but Microsoft has invested heavily in Encarta, drawing on its own rights to various sources of information and media and setting up localisation teams who not only adapt the US content to their own specifications but also carry out their own research and commission their own articles. Meanwhile, Grolier seems to have rested on its laurels, making a half-hearted attempt to catch up but not investing the requisite cash.

You only have to look at the cover of the box to see that the Grolier 1998 Multimedia Encyclopedia is US-centric. It features the Statue of Liberty, Neil Armstrong and a little composite picture representing the American Civil War. Load the CD, start a search and it becomes obvious that US spelling has been used throughout. Search for "colour blindness" and you will be met with a blank stare, but knock out the "u" and you will get to what you are looking for: as Grolier seems to be pitching its product at schools and school-age children, this might prove to be its undoing in Britain.



The interface is neatly broken down into sections: articles, gallery, timelines, atlas, guided tours and interactivities. Starting with articles, you cannot help but compare them to Encarta and they do not come out well. Although most are attributed to experts in particular fields and are followed by a bibliography, these authorities seem either to have been given a limited brief or not to have had the necessary guidance to create good entries. Some tend to wander off the point, while others assume too much reader knowledge. In Encarta the entries are more complete but they are also better ordered, broken down into sections with the longer entries having a little index down the left-hand side. Grolier's articles meander and require you to scroll down before you find what you are looking for — provided it is there in the first place.



If you compare the articles on France, in Encarta and Grolier, in the former you will find better maps, more sounds, a fact box containing the most important facts pulled out so they are easy to find, an index to the article and just about everything you could possibly need to know covered in the detailed article itself. Skip over to the Grolier and you get a tiny map and a tinny rendition of the Marseillaise anthem on an old "joanna" and trumpet, followed by a lolloping great article on France with no index and far less detail than you find in Encarta. There is a fact box, but compared to Encarta's it is badly laid out and badly thought out. The piece on France's history, in the general section about the country, is woefully inadequate and although it has a more comprehensive article of its own, there is no obvious link to this. There are numerous pictures but these are on a separate links list and do not change as you scroll down the page, as in Encarta.

The other sections seem to have suffered from the same lack of thought. The timelines are grouped according to definite sections, such as Reason, Rights and Revolution for the 18th Century, and The Machine Age to cover the industrial revolution, but once you are into these, apart from a short multimedia presentation covering the subject in quite a vague, all-encompassing manner, there is not enough in the timeline to warrant the subject heading. In the one on the 18th century, for example, we could not find any mention of the Enlightenment, which the title "Reason" seems to suggest should be present.

As in Encarta, the encyclopedia comes on two CDs and there is a study guide of sorts. But unlike Encarta's version it is not a means of collecting and ordering the information you have found, but is rather like a quiz book for 11-year-olds and not much use to older students. There are web links to more information but, unlike Encarta, there is no rolling list of linked sites.

Grolier has let itself down with this encyclopaedia. The articles are badly commissioned, the content is patchy, the whole thing is poorly organised and the links are atrocious. You should do yourself a favour and either get Encarta or, for younger users, go for the Europress Family Encyclopedia we reviewed in last month's issue.

Adele Dyer

POW Details

Price £39.99 (single disc), £49.99 (double disc)
Contact 01865 264800 www.grolier.com
System Requirements Windows 3.x or 95
★★☆☆☆

James Bond Dossier

Personal Computer World Recommended

"You are a clever and resourceful man, Mr Bond..." but this CD will prove to be your equal.

Now pay attention, double-oh-seven, this is important. "The Ultimate Dossier: James Bond 007" is a new CD from Eidos and it contains everything you could possibly want to know about your missions, up to and including GoldenEye.

Over 70 minutes of video and more than 240 WAV files will let you relive some of your greatest stunts while the hyperlinked text should contain plenty of facts that even you don't know. Villains, girls, gadgets and cars are pictured and indexed by mission, type and alphabetical order.

There's no excuse for forgetting a face, either, with the biographies of 186 cast and crew members. Clicking on a link from the opening menu will connect you with an associated web site. With 1,800 images to browse and more than 800 articles (totalling 300,000 words) to be read, though, I hardly think you'll have time for that.

A spectacular full-screen video montage introduces the dossier but you'll soon realise that this is merely a hint at the lavish graphical interface to come. Continuous original background music, all of it drawn from your 17 adventures, and countless facts and figures come together to make up this first class multimedia experience. Each mission is chronicled in finite detail and launches with a skilfully-crafted AVI movie outlining some of the key features of the plot. I hope that looking through the Q branch files at the countless gadgets and vehicles you have managed to destroy on your many missions will teach you to be more careful in future.

Exclusive behind-the-scenes photos will let you in on the secret world of those who record the adventures of a double-oh agent. When you think you're up on everything in this extensive resource, try Her Majesty's Secret Service Trivia Challenge and increase your security clearance by answering questions correctly.

Don't worry about using this in the field, Bond. It has been designed to work on a 486/66 with merely a double-speed CD-ROM, 8-bit sound and 15Mb hard-drive space.

Nik "Q" Rawlinson

PCW Details

Price £29.99
Contact Eidos 0181 636 3000
www.mgmua.com/bond/interactive.html
★★★★★

Animated Email Magic

Personal Computer World Recommended

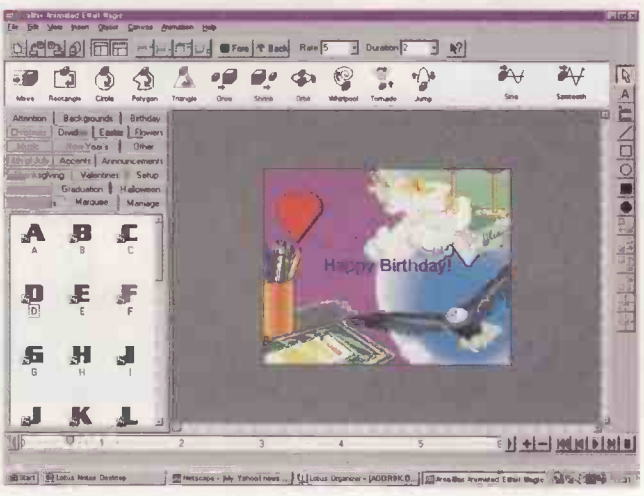
Tart up those emails with images, sound and animation. It may be kitsch but it's great fun.

Released last year in the US, Animated Email Magic proved something of a hit in the land of the free local phone call. Win95 users can combine all manner of animated characters, backdrops, tunes and logos and send them as email attachments in the form of a self-extracting executable which can be viewed by Windows 3.1 and 95 users, regardless of whether or not they have Email Magic installed.

The first thing you notice about this application is how simple it is. First off, you can use the supplied library of images and sound: just click on the images you want and drag-and-drop them onto your electronic canvas. You can pick the movement you want your image to describe or define your own, arrange as required, sprinkle in some relevant text and you are ready to start pestering all your online chums, worldwide.

Sending your moving art is as simple as constructing it: emails may be sent from your own mail server or via a third-party MAPI-compliant email server. Email Magic claims to be able to run on any email software; you just type in the relevant addresses and domain names.

If you were able only to use the images and sounds supplied with the software you might soon grow bored, but as you can import them from your PC, the possibilities are endless. You can grab artwork and sounds from the internet, for instance, and include them on your email. And this adaptability is just as well, because some of the images and tunes supplied are the worst kind of Uncle Sam kitsch. Apart from the birthday- and wedding-type image folders there are others full of exclusively American celebrations such as Fourth of July and Thanksgiving, with images like the Stars and Stripes and the Liberty Bell. This doesn't stop this software being great fun, though, because you can still enjoy sending cheesy, kitsch email to those who love anything naff. Or, you could import your own artwork and use both your imagination and the user-friendly tools provided to produce something pretty impressive.



Paul Trueman

PCW Details

Price £24.99
Contact Jellyfish Software 0161 477 4235
System Requirements Windows 95
★★★★☆

Software

The Day The World Broke

Saving the earth, with a difference. In this, the environment goes pear-shaped, but so might you.

Do you know how the world works? Apparently it's all done with mirrors, or so The Day the World Broke would have you believe. The story is that the two crotchety engineers deep below the earth's surface, at World Works HQ, have lost control of the global "tune-up" they were conducting and now there are all manner of volcanoes, earthquakes, floods in the desert and flying cows unleashed on the surface.

You must journey much deeper into the earth's core and somehow fix whatever environmental control has gone AWOL. Along the way there are a number of tasks to perform that will have you trying to make and mould ingots, sculpt glass and of course save the world.

The Day the World Broke is an artfully surreal take on the earth's geology and environment, with its bizarre mix of point-and-click science, storytelling and plain mumbo-jumbo. Artist David Wiesner has drawn all of the lavishly-illustrated backdrops to the game, against which the mixture of 3D-rendered and motion-captured characters interact with your own character.

This is a game aimed principally at those aged nine and upwards, although half an hour into it the truth tragically dawned on me that had I tried this game at the age of nine, I would have been completely stumped.

Not wishing to cast aspersions on the mental abilities of today's pre-pubescent population, but The Day the World Broke seems a touch tricky for anyone lacking Mensa credentials. There is no set plot and the story develops differently depending on which locations and characters you visit. This is all fine, but the game's lack of direction may bore some younger minds. Or maybe I'm just grouchy because I was flummoxed after half an hour. This kind of mental adventure playground is the perfect present for anyone who finishes jigsaw puzzles and crosswords too quickly.

Paul Trueman

PCW Details

Price £29.99
Contact FastTrak 01923 495496
www.fasttrak.co.uk
System Requirements Windows 3.1/95
★★★★☆

Kids' Art

A pirate with a taste for masterpieces, a cultural journey... It will help your kids appreciate art.

If your child fancies itself as a bit of an artist, Kids' Art is definitely the CD which will teach them all they need to know about the world of art. It is recommended for children aged between seven and twelve years old and can be used at home or at school.

It is an informative adventure game and provides a cultural understanding of art, teaches a child how to recognise characters, such as a saint, in a painting, and provides a background to painters such as da Vinci and Van Gogh.

The game is based on a journey. On this journey you meet different characters who are looking for works of art and who want to talk about them. The first character is a pirate who is after some famous paintings for his ship. You have to distinguish famous paintings from a child's doodles. As you are doing this you can get information about the work of art, such as when it was produced and the artist's name. Other activities include matching the correct background with the correct painting and how to paint a subject in proportion.

It's not all paintings, though. Sculptures, too, appear in this CD. You can learn about famous statues and even have a go at restoring some, in a game where you have to match the head to the statue.

There is even a section dedicated to architecture. Find out the history behind the Arc de Triomphe — its significance and how it was built. And why did Pope Clement XII want the famous Trevi fountain to be built in Rome? All your questions will be answered.

The only annoying feature in this CD is the narrator. He talks exactly like Homer Simpson, in a very slow and brainless fashion, is very repetitive and eventually does your head in. The thing is, he pops up quite often, as there is no written help with this CD. The help is context sensitive, which means that each time there is a problem, the narrator will explain what to do.

Etelka Clark

PCW Details

Price £24.99
Contact Emme Interactive 0171 431 9017
www.emme.com
System Requirements Windows 3.1/95
★★★☆☆

Software

5 YEAR TEST

CorelDraw 3

This graphics package may be an OAP, but it can still hold its own against the whippersnappers.

Version 3 of CorelDraw consists of three applications: Draw, a vector-drawing program; Photopaint, for bitmap image editing; and, perhaps a little out of place, Chart, a graphing/presentation program. Also included are modules for converting bitmap images into vector formats, a screen-capture utility, an image-gallery viewer, and tons of clipart and fonts.

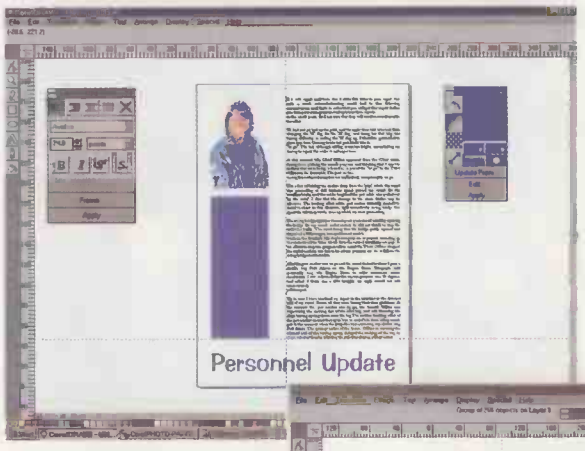
Many of these facilities are now available in cheaper programs, but back then, CorelDraw had little competition. Even today, it's unusual to find all these functions together. Sadly, that's not to say the applications are particularly well integrated; they simply came in the same box.

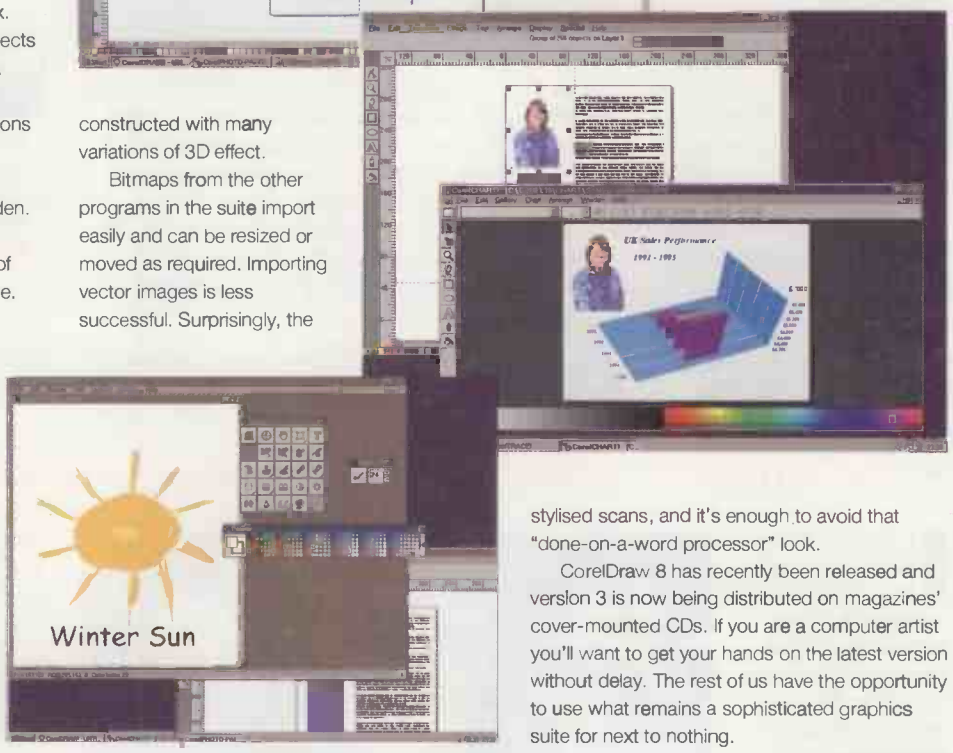
The main program, Draw, works with objects (text, graphics or bitmap images) providing a multitude of effects which can be applied to objects individually or as groups. Most functions are reached by a combination of basic tool buttons locked to the left of the display and floating drop-down boxes which can be hidden.

On the page, an object can be resized, stretched or skewed to give the impression of depth, or extruded to give a solid appearance. Text can be aligned to other objects. The placement of objects can be as precise or as flexible as you like; they can be moved around freely or set to snap to guides or a grid. Application of colour to objects is versatile, with the fill and outline properties of objects being infinitely variable. Colours can be defined by an industry-standard coding system or picked from CYMK, HSB or RGB palettes to suit the final use of the artwork.

By today's standards Photopaint, the bitmap editor, is limited if you want to create photorealistic masterpieces. However, it provides all you need to retouch an image before importing it into, say, Draw. Adjustments to brightness and contrast are made from the floating toolboxes, although defining the degree of effect applied is achieved through a rather unintuitive palette box.

Chart seems to be an odd companion to the graphics programs but is a capable presentation generator seemingly aimed at business professionals. Although office suites offer similar applications today, when CorelDraw 3 was released the only competition came from top-of-the-range dedicated programs. Yet again there's a slightly different interface with which to contend, but Chart still holds its own against today's products, letting the usual bar and pie charts be constructed with many variations of 3D effect.





Bitmaps from the other programs in the suite import easily and can be resized or moved as required. Importing vector images is less successful. Surprisingly, the native CorelDraw format (.CDR) is not even an available option. It is easier to export vector images from Draw as bitmaps before importing them to Chart, but you will lose many of the benefits offered by vector formats.

"Trace" converts bitmap images into vector format and, although offering limited options to vary the accuracy of the scan, it can produce quite artistic effects. The program saves files in .EPS format only, strangely not taking advantage of the native file format of the main program.

The differences in the user interface and the lack of support for the .CDR file format are a legacy of Corel buying-in large parts of the various packages.

CorelDraw has a steep learning curve but it does come with an excellent multimedia tour which gives you enough familiarity with the principles to play with the various applications. CorelDraw enables me to produce simple designs, forms or newsletters and drop-in logos, pictures or stylised scans, and it's enough to avoid that "done-on-a-word processor" look.

CorelDraw 8 has recently been released and version 3 is now being distributed on magazines' cover-mounted CDs. If you are a computer artist you'll want to get your hands on the latest version without delay. The rest of us have the opportunity to use what remains a sophisticated graphics suite for next to nothing.

Gary Beaton

PCW Details

Price Then about £250. Now available bundled free with magazines, or £30 retail.

Contact Corel 0800 581028 www.corel.com

Good Points Versatile. Lots of facilities.

Bad Points Inconsistent user interface.

Conclusion Although the enhancements of current versions are missing, it has all the basic functionality most people need.

★★★☆☆

We welcome readers' contributions to our *Long Term Tests* section and pay for those we publish. If you've used a piece of hardware or software for some time, write a 300-word piece for hardware or 650 words for software (plus GIF-format screenshot for the latter) and send it on disk in MS Word or ASCII format to Lynley Oram at the usual *PCW* address, marking your envelope "Long Term Test". Or email it to lynley_oram@vnu.co.uk

p176 ➢

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Hardware

3 YEAR TEST

Canon BJ-200

Prints charming? Yes, this printer comes from good stock and produces the goods every time.

Three years ago I bought a BJ-200 from my local computer superstore at an excellent price. An indication of how the market has moved in the years since is that you can buy Canon's present equivalent for about £130 less than I paid.

Getting started with the BJ-200 took all of ten minutes, and involved setting the DIP switches to the correct emulation mode and popping the supplied BC-02 cartridge into the printer.

The BJ-200 has an elegant design with a small footprint that would not look out of place on your desk today. Print quality is superb and offers three modes: High Speed, High Quality and Super High Quality. The difference between the three modes is the amount of ink deposited on the paper. I have found that for most letters the High Speed mode is more than adequate and has the added advantage of making your ink cartridge last a lot longer. High Speed also allows you to use cheap photocopier paper with no discernible ink smudging or blotting, and of course it saves you time as documents get printed much faster than on the High Quality modes. One criticism would have to be the cost of the BC-02 cartridge, which is more expensive than other inkjet cartridges.

The printer copes well with graphics but for best results you really need to use the High Quality or Super High Quality modes with expensive coated paper. Its small size makes it reasonably portable and the built-in 80-sheet feeder makes printing multi-page documents easy, whether you're at home or on the move. The BJ-200 also comes with a printhead self-cleaning facility which I have never had reason to use, except out of curiosity.

Although an impulse buy, I have never had cause to regret buying the BJ-200 which I have found to be very reliable with excellent print quality. It is an ideal printer for home use and could probably hold its own against many of the latest inkjet printers on sale today.

Nasar A Nawab

PCW Details

Price Closest equivalent BJ-250 around £123 (£105 ex VAT)

Contact Canon (UK) 0181 773 6000

www.europe.canon.com/

Good Points Small footprint. Print quality. Styling.

Bad Points Expensive ink cartridge.

Conclusion Ideal secondhand buy for home use.

★★★★☆

SoundBlaster AWE 32

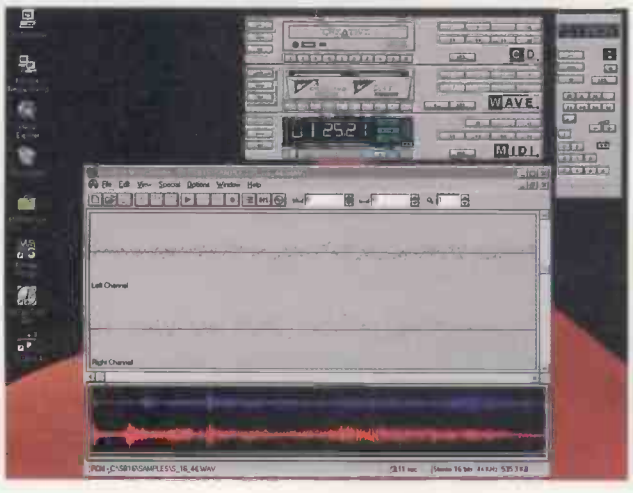
3 YEAR TEST

Great sound. Expandable memory with 2 x 16Mb SIMMs but you gain 28Mb and lose four. Eh?...

I bought the Creative Labs SoundBlaster AWE 32 when it first came out just over three years ago. It is based on the popular SoundBlaster 16 but has many extra features like the 128-instrument, six drum-kit, programmable effects synthesiser.

If you have ever tried using a SoundBlaster 16 setup in a game and then changed to an AWE 32 setup, you'll know how much difference there is between the sound quality of the two cards.

When I took it out of the box I was surprised by the size of the card, which is a "full-size" 16-bit card measuring 33cm. This may be a problem in some machines, especially when you're trying to stretch the cables to the CD-ROM drive. Luckily, by moving some of the other cards I could just fit it in. Unlike today's sound cards, with IDE interfaces, it has three CD-ROM interfaces: Sony CDU-31A/CDU-33A, Mitsumi LU005/FX001 and Creative CR-523 / 563.



The AWE 32 has a 4Mb on-board memory, which can be expanded to 28Mb via its two 32-pin SIMM sockets. The weird thing is, to do this you have to use two 16Mb SIMMs, which means somewhere you lose 4Mb. The AWE-32 also comes with eight floppies loaded with software for DOS and Windows. I have since changed operating systems, which has left this software badly out of date.

Only a month or two after its release some games had already hit the market which supported the AWE 32. One of the things that most impressed me about the card was the way it played the file of music known for the moon landings (Strauss' "Also Sprach Zarathustra"): the kettle drums seem so realistic. With some new software drivers, it should last me some time yet.

Glenn Turner

PCW Details

Price Was £238.53 (£220 ex VAT).

Contact Creative Labs 01189 344322

www.cle.creaf.com

Good Points Great sound quality and performance.

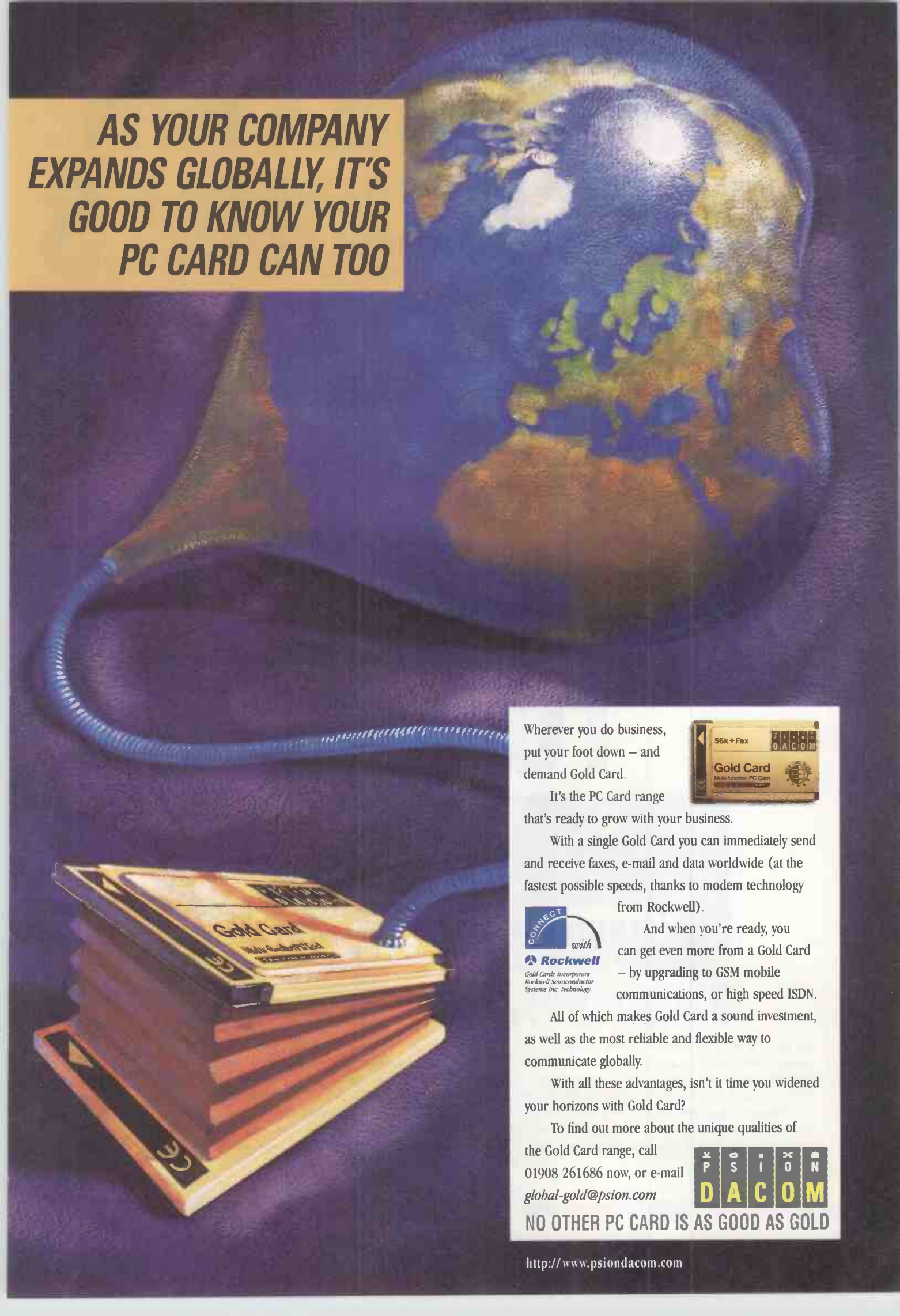
Bad Points Strange 4Mb memory loss. Size.

Conclusion Not a bad buy, but now needs a software update.

★★★☆☆

p179 >

AS YOUR COMPANY EXPANDS GLOBALLY, IT'S GOOD TO KNOW YOUR PC CARD CAN TOO



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Hardware

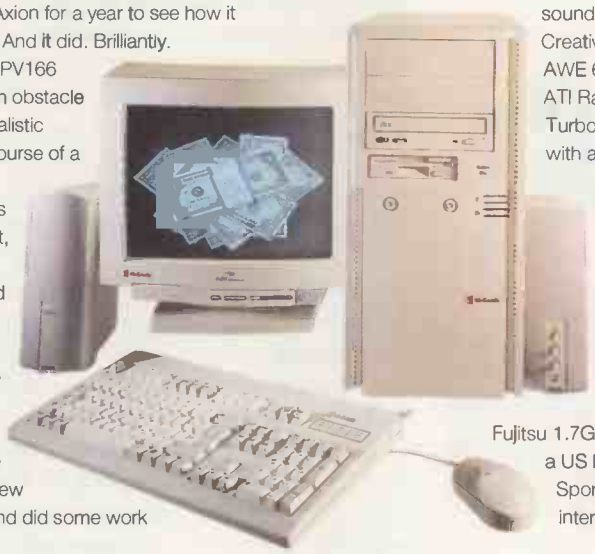
1 YEAR TEST

Hi-Grade Axion PV166

There's no tougher test — this PC got put through the mill of the *PCW* office. It performed well.

Last year, *PCW* had the Axion PV166 in for a PC group test. It's hard to believe, but at that time a P166 MMX-based PC was at the cutting edge. Back then, the Hi-Grade won our Editor's Choice award. As they say, the proof of the pudding is in the eating, so we asked if we could test the Axion for a year to see how it would hold up. And it did. Brilliantly.

We put the PV166 through a tough obstacle course of journalistic abuse. In the course of a year we cycled tens of graphics cards through it, added and subtracted hard drives, partitioned and reformatted the original hard drive often, tested software on it, played a few games... oh, and did some work on it, too. It held up beautifully and only threw up one or two hardware conflicts which were easily solved after a little investigation.



So what was in this magic box? A simple configuration, especially by today's mammoth specifications. Hi-Grade included the newest sound card from Creative Labs, the AWE 64, as well as the ATI Rage 3D Pro Turbo graphics card with a hefty 4Mb of SGRAM. Added to this was a Toshiba XM 5702B 12-speed CD-ROM drive (*passé* by today's standards), a Fujitsu 1.7Gb hard drive and a US Robotics Sportster 28.8 internal modem. Also present was 512Kb of pipeline burst cache and four SIMM slots (two occupied), allowing a memory upgrade to 256Mb of RAM.

The software was a bit pedestrian — MS Works 4.0, a multimedia games pack and an ATI 3D games bundle). But on the performance side the Hi-Grade never let us down and we were sad to see it leave. The only slight weakness was the 15in ADI Microscan 4V monitor, with its fuzzy image.

Dylan Armbrust

PCW Details

Price £1,697.88 (£1,445 ex VAT)

Contact Hi-Grade 0181 532 6111

www.higrade.com

Good Points Great internal components. Consistently good performance.

Bad Points Monitor was a bit fuzzy.

Conclusion It took a beating but kept on ticking. No complaints.

★★★★★

Software

6 MONTH TEST

Hauppauge WinTV-Radio

"I'm working on the PC, darling..." (*...not — I'm watching TV and listening to the radio! Tee-hee!*).

There are those who think we spend too much time in front of our PC monitors, my partner included, so she was not pleased when I bought the Hauppauge WinTV-Radio card because now I don't have to tear myself away from the PC to watch TV!

The WinTV-Radio card takes a single PCI slot. Once in place, it is recognised by Windows 95. Pictures are passed from the card, via the PCI bus, to the graphics card which must be DirectDraw compatible. Audio is passed through a jack lead (supplied) to the sound card. The software provided allows TV to be watched on the desktop, either in a resizable window or full-screen at up to 800 x 600 resolution. The radio can be played (FM only) or you can view teletext data.

Most of the software I needed was supplied on CD-ROM, except for the teletext software. Disappointingly, software had to be downloaded from Hauppauge's web site. This is a black mark against the company, especially as not everyone has an internet connection and there was no information available about acquiring the software by other means.

The card performs excellently provided it is supplied with a good, strong signal. Tuning is straightforward, and once a station is captured it can be given a text label for easy identification. Capable of accepting up to 122 channels, the card outputs stereo sound for the TV as well as the radio, and a strobe feature allows up to 16 channels to be viewed at once.

If you work from home you'll need to be sure of your self-control. Certainly, it hasn't helped my productivity. But then, I have found that it's a great way to keep an eye on the football at the same time as finishing a lengthy report.

Stacey Helton

PCW Details

Price £104.58 (£89 ex VAT)

Contact Hauppauge 0171 378 7309

www.hauppauge.com/index.htm

Good Points Stereo sound. Resizable TV window. Easy to install.

Bad Points Needs a strong signal. Teletext software required an internet download. DirectDraw graphics card required.

Conclusion Great for keeping an eye on your favourite TV programmes while working.

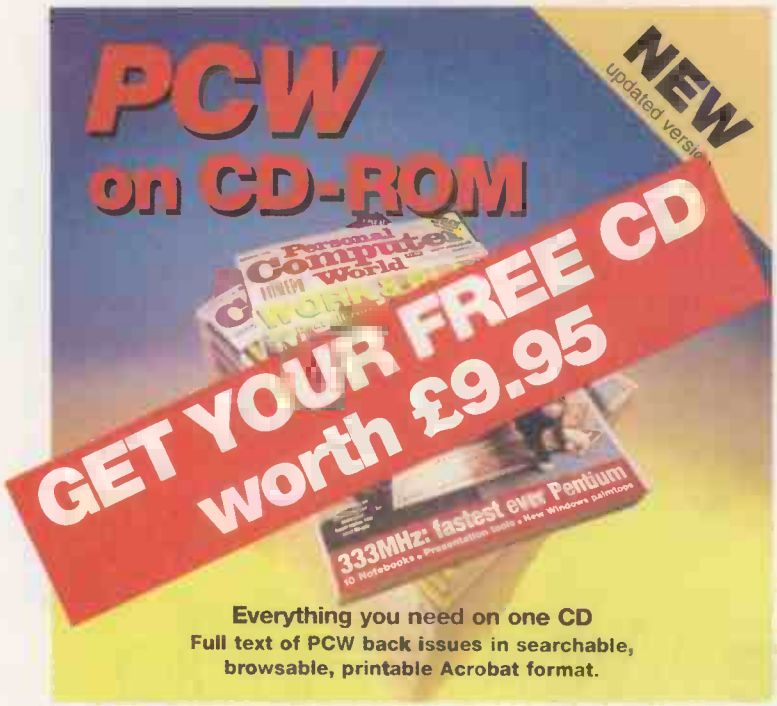
★★★☆☆

Reliability survey

Service and Reliability Survey 1998

PCW is conducting a study of how well your PCs and printers function in the real world. We know what the manufacturers say. We know what our lab tests reveal. But how do the various models perform in the trenches? And how satisfied are you with the hardware, and the shops and manufacturers which sold them to you? How does the after-sales service live up to your expectations?

PCW has joined forces with Maritz Research, leader in the field of Customer Satisfaction testing, in an effort to compile and deliver the ultimate performance guide to computer equipment. Please fill in the questionnaire which follows. Share your experience with us, in confidence, and we will produce a comprehensive report on computer reliability and customer service. The results will appear in our November 1998 issue, so look out for them. Fill in the questionnaire and return it to the address on page 183, by Friday 15th May, and the first 1,000 respondents will receive a free CD-ROM containing the 24 most recent issues of *PCW* (CD features April 96 - March 98 inclusive).



How to fill in your questionnaire

There are a number of questions which ask you to indicate your satisfaction using a five-point rating scale, where 5 is very satisfied and 1 is very dissatisfied. Please feel free to use any number between 1 and 5.

To return your completed questionnaire, cut out the pages or photocopy them, and use the freepost address given at the end of the questionnaire or contact the VNU web site for online completion (www.vnunet.com). Many thanks for your participation.

Maritz Research is an independent agency conducting research on behalf of VNU into finding out how reliable you think your PC products are. Your opinion would be appreciated In order to highlight the strongest and weakest areas of reliability. Maritz Research is bound by the Market Research Code of Conduct, guaranteeing respondent confidentiality.

ABOUT YOUR DESKTOP OR LAPTOP

	PC 1	PC 2
What make is your PC? (See panel below)	1 Desktop 2 Laptop 3 Other	1 Desktop 2 Laptop 3 Other
Model and processor spec.	.....	.....
Year purchased	.....	.....
Place of purchase	1 Mail order/direct from vendor 2 Superstore/high street retailer 3 Dealer/value added reseller 9 DK	1 Mail order/direct from vendor 2 Superstore/high street retailer 3 Dealer/value added reseller 9 DK
Is this PC located at...?	1 Home 2 Work 3 Both 9 Other	1 Home 2 Work 3 Both 9 Other
What is it mainly used for?	1 Business & personal use 2 Personal use only 3 Business use only 4 Home-based business	1 Business & personal use 2 Personal use only 3 Business use only 4 Home-based business

Satisfation — delivery and installation

How satisfied are you with the...?

	PC 1 Very dissatisfied				Very satisfied	PC 2 Very dissatisfied				Very satisfied
Availability of the product for delivery when desired	1	2	3	4	5	1	2	3	4	5
Delivery date was met	1	2	3	4	5	1	2	3	4	5
Condition when received	1	2	3	4	5	1	2	3	4	5

PCs 1 Compaq; 2 IBM; 3 Packard Bell; 4 Dell; 5 Gateway; 6 Hewlett-Packard (HP); 7 Toshiba; 8 Dan Technology; 9 Mesh; 10 Fujitsu; 11 Elonex; 12 Apricot Mitsubishi; 13 Digital; 14 OT Technology; 15 Viglen; 16 Evesham; 17 Atlantic Systems; 18 Northwood; 19 Simply; 20 Quantex.
Printers 1 HP; 2 Canon; 3 Lexmark; 4 Epson; 5 NEC; 6 QMS; 7 Oki; 8 Brother; 9 Fujitsu; 10 Panasonic.

PC1

Delivery completeness	1	2	3	4	5
Ease of installation	1	2	3	4	5
Compatibility with other hardware	1	2	3	4	5

Satisfaction — usage

How satisfied are you with the...?

	Very dissatisfied				Very satisfied
Quality of the machine	1	2	3	4	5
Standard of features	1	2	3	4	5
Standard of software	1	2	3	4	5
Ease of use	1	2	3	4	5
Performance/speed	1	2	3	4	5
Ability to upgrade	1	2	3	4	5
Price/performance value	1	2	3	4	5
Manuals	1	2	3	4	5
Warranty	1	2	3	4	5

Reliability

How many problems have you had with your PC in the last 6 months which limited your use of it? (If more than 10 please write amount)

1 None
2 1-5
3 6-10
4 10+
5 .....

Using the following comments please classify the type of problems you experienced (circle all that apply)

1 Dead on arrival
2 Failure due to hard drive component
3 Failure due to sound card component
4 Failure due to video card component
5 No display at all
6 Failure due to virus
7 Failure due to RAM
8 Problems with insufficient memory
9 PC would not boot up
10 PC freezes or hangs for a long time
11 Problems caused by the software
Please give details of problems below:
.....
.....

How were the main problems rectified? (circle all that apply)

Provided by place of purchase
1 Telephone/helpline support
2 Electronic (email/web) support
3 Fax support
4 PC repaired on-site
5 PC returned and repaired
6 PC replaced
Other: .....
Provided by manufacturer
7 Telephone/helpline support
8 Electronic (email/web) support
9 Fax support
10 PC repaired on-site
11 PC returned and repaired
12 PC replaced
Other: .....

Repair service

If you had a repair performed on your PC, how satisfied are you with the...?

	Very dissatisfied				Very satisfied
Repair service	1	2	3	4	5
Time taken for the repairs	1	2	3	4	5
Quality of the repairs	1	2	3	4	5
Cost of repairs	1	2	3	4	5

General aspects

How satisfied are you with the overall reliability of your PC?

Very dissatisfied				Very satisfied
1	2	3	4	5

What is the likelihood of you repurchasing the same brand in the future?

Definitely not				Yes definitely
1	2	3	4	5

What is the likelihood of you recommending this brand to your colleagues/friends?

Definitely not				Yes definitely
1	2	3	4	5

If you rated 1 or 2 to any of the last 3 questions, what are your main reasons for low satisfaction, not repurchasing and/or not recommending?
.....

PC2

	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5

	Very dissatisfied				Very satisfied
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5

1 None
2 1-5
3 6-10
4 10+
5 .....

1 Dead on arrival
2 Failure due to hard drive component
3 Failure due to sound card component
4 Failure due to video card component
5 No display at all
6 Failure due to virus
7 Failure due to RAM
8 Problems with insufficient memory
9 PC would not boot up
10 PC freezes or hangs for a long time
11 Problems caused by the software
Please give details of problems below:
.....
.....

Provided by place of purchase
1 Telephone/helpline support
2 Electronic (email/web) support
3 Fax support
4 PC repaired on-site
5 PC returned and repaired
6 PC replaced
Other: .....
Provided by manufacturer
7 Telephone/helpline support
8 Electronic (email/web) support
9 Fax support
10 PC repaired on-site
11 PC returned and repaired
12 PC replaced
Other: .....

	Very dissatisfied				Very satisfied
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5
	1	2	3	4	5

Very dissatisfied				Very satisfied
1	2	3	4	5

Definitely not				Yes definitely
1	2	3	4	5

Definitely not				Yes definitely
1	2	3	4	5

If you rated 1 or 2 to any of the last 3 questions, what are your main reasons for low satisfaction, not repurchasing and/or not recommending?
.....

p182 ➢

ABOUT YOUR PRINTER

Brand
1 HP 4 Apple
2 Canon 5 Lexmark
3 Epson 6 Panasonic
Other: .....

Model specification .....
Year purchased .....

Type of technology
1 Laser/LED
2 Inkjet
3 Dot matrix
4 Dye sublimation
5 Thermal
6 Other: .....
9 Don't know

Colour or mono
1 Colour
2 Mono
3 Colour capable
9 Don't know

Satisfaction — delivery and installation

How satisfied are you with the...?

	Very dissatisfied				Very satisfied
Availability of the printer	1	2	3	4	5
Delivery date was met	1	2	3	4	5
Condition of printer	1	2	3	4	5
Ease of installation	1	2	3	4	5
Compatibility with hardware	1	2	3	4	5

Satisfaction — usage

How satisfied are you with the...?

	Very dissatisfied				Very satisfied
Quality of the machine	1	2	3	4	5
Standard of features	1	2	3	4	5
Standard of software	1	2	3	4	5
Ease of use	1	2	3	4	5
Performance/speed	1	2	3	4	5
Print quality	1	2	3	4	5
Paper-handling capabilities (e.g. paper types, paper jams)	1	2	3	4	5
Price/performance value	1	2	3	4	5
Ability to upgrade	1	2	3	4	5
Manuals	1	2	3	4	5
Warranty	1	2	3	4	5

Reliability

How many problems have you had with your printer in the last 6 months
1 None 3 6-10
2 1-5 4 10+
5 ..... (If more than 10 please write amount)

Using the comments below please classify the type of problems you experienced (circle all that apply)
1 Dead on arrival
2 Failure due to printer driver
3 Failure due to memory problems
4 Would not print
5 Unavailability of support/helpline
6 Ribbons/cartridges fitted incorrectly
7 Continual jamming of paper
8 Significant variation in shades produced when printing in colour
Please give details of the problems in the space provided.
.....
.....

How were the main problems rectified? (circle all that apply)
Provided by place of purchase
1 Telephone/helpline support
2 Electronic (email/web) support
3 Fax support
4 Printer replaced
5 Telephone/helpline support
6 Electronic (email/web) support
7 Fax support
8 Printer repaired on-site
9 Printer returned and repaired
10 Printer replaced
Other: .....

If you had a repair performed on your printer, how satisfied are you with the...?

	Very dissatisfied				Very satisfied
Overall repair service	1	2	3	4	5
Time taken for the repairs	1	2	3	4	5

Quality of the repairs	1	2	3	4	5
Cost of repairs	1	2	3	4	5

Cost

How satisfied are you with the running costs of your printer?

	Very dissatisfied				Very satisfied
Overall cost of ownership	1	2	3	4	5
Cartridges/toner/ribbons	1	2	3	4	5
Paper and other medias	1	2	3	4	5
Powersave features	1	2	3	4	5

What are your average monthly consumable costs?

1 Less than £20
2 £20-£40
3 £40-£60
4 £60-£80
5 £100+
9 Don't know

General aspects

How satisfied are you with the overall reliability of your printer?

Very dissatisfied				Very satisfied
1	2	3	4	5

What is the likelihood of you repurchasing the same brand in the future?

Definitely not				Yes definitely
1	2	3	4	5

What is the likelihood of you recommending this brand to your colleagues/friends?

1 2 3 4 5

If you rated 1 or 2 to any of these questions, what are your main reasons for low satisfaction, not repurchasing and/or not recommending?

INTERNET SERVICE PROVIDER

Name of provider .....

What is it mainly used for?

1 Web access
2 Email
3 Both
4 Other

Satisfaction — delivery and installation

How satisfied are you with the...?

	Very dissatisfied				Very satisfied
Ability to connect when desired	1	2	3	4	5
Speed to access provider	1	2	3	4	5
Ease of setup	1	2	3	4	5
Proximity of 'local' access tel lines	1	2	3	4	5

Reliability

How satisfied are you with the...?

	Very dissatisfied				Very satisfied
Overall reliability of provider	1	2	3	4	5
Ease of installation	1	2	3	4	5
Value for money	1	2	3	4	5
Quality of service provided	1	2	3	4	5
Connection speed	1	2	3	4	5
Response to problems	1	2	3	4	5

General aspects

How satisfied are you with the...?

	Very dissatisfied				Very satisfied
Technical support offered	1	2	3	4	5
Quality of online content	1	2	3	4	5
Availability of search engines	1	2	3	4	5

What is the likelihood of repurchasing from this ISP in the future?

Definitely not				Yes definitely
1	2	3	4	5

What is the likelihood of you recommending this ISP to your colleagues?

Definitely not				Yes definitely
1	2	3	4	5

If you rated 1 or 2 to any of the last 3 questions, what are your main reasons for low satisfaction, not repurchasing and/or not recommending?

.....

Please complete the following details and return the questionnaire to:
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Name: .....
Address: .....
.....
..... **Postcode:** .....
Email address: ..... **Tel no:** .....

How often do you purchase PCW and/or What PC?

1 I am a subscriber to PCW ☐
2 I am a subscriber to What PC? ☐
3 Not a subscriber ☐

How would you best describe your professional role?

1 General Manager/MD ☐
2 IT Manager/Director ☐
3 Technical Support Manager/Executive ☐
4 Purchasing Manager/Executive ☐
5 Other non-IT position ☐
6 Home use ☐

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Computer Buyer July 97

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- 512K Pipeline Burst Cache Memory
- 4MB ATI 3D Charger Graphics card
- 15" Optiquest N/I L/R Monitor (3YW)
- 24x Speed EIDE CD-ROM
- 16Bit Sound Card
- HI-FI 80W Speakers
- Expansion Slots 2xISA, 3xPCI & 1 Shared
- 1 Parallel & 2 Fast Serial Ports
- Fast EIDE PCI HDD Controller
- 1.44MB Floppy Disk Drive
- Desktop or Mini Tower Case
- Windows 95 UK Keyboard
- Windows 95 on CD
- Lotus Smartsuite 97
- Microsoft Mouse • MS Family CD Pack

CPU	EX VAT	INC VAT	FLEXIPAY
P200MMX	£695	£816.63	N/A
P233MMX	£725	£851.88	N/A
K6 233MMX	£710	£834.25	N/A

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- 15" Optiquest N/I L/R Monitor (3YW)
- 24x Speed EIDE CD-ROM
- Creative Labs SoundBlaster AWE64
- HI-FI 80W Speakers
- Expansion Slots 2xISA, 3xPCI & 1 Shared
- 1 Parallel & 2 Fast Serial Ports
- Fast EIDE PCI HDD Controller
- 1.44MB Floppy Disk Drive
- Desktop or Mini Tower Case
- Windows 95 UK Keyboard • Microsoft Mouse
- Joystick & Microphone • Windows 95 on CD
- MS Family CD Pack • Lotus SmartSuite 97

CPU	EX VAT	INC VAT	FLEXIPAY
P200MMX	£795	£934.13	£34.09
P233MMX	£825	£969.38	£35.38
K6 233MMX	£815	£957.63	£34.95

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- 32MB SDRAM
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- 24x Speed EIDE CD-ROM
- 16Bit Sound Controller • HI-FI 80W Speakers
- Expansion Slots 1xISA, 3xPCI & 1 Shared
- 1 Parallel & 2 Fast Serial Ports
- Fast EIDE PCI HDD Controller
- 1.44MB Floppy Disk Drive
- ATX Midi Tower Case w/200W PSU
- Windows 95 UK Keyboard
- Microsoft Mouse
- Microphone • Windows 95 on CD
- Lotus SmartSuite 97 • MS Family CD Pack

CPU	EX VAT	INC VAT	FLEXIPAY
PII 233Mhz	£899	£1056.33	£38.55
PII 266Mhz	£969	£1138.58	£41.56
PII 300Mhz	£1069	£1256.08	£45.84
PII 333Mhz	£1119	£1314.83	£47.99

MBC POWER II TURBO PLUS

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- Processor with 512K Cache Memory
- AL440LX Intel M/Board with AGP Slot
- 8MB ATI XPERT@PLAY AGP Graphics Card
- 17" Optiquest N/I L/R Monitor (V773)
- 56.6KBPS Voice Fax/Modem
- 24x Speed EIDE CD-ROM
- SoundBlaster AWE64 sound card
- Iomega (100MB) Internal Zip Drive
- 3D 500W SubWoofer & HI-FI Speakers
- Expansion Slots 1xISA, 3xPCI & 1 Shared
- 1 Parallel & 2 Fast Serial Ports
- Fast EIDE PCI HDD Controller
- 1.44MB Floppy Disk Drive
- ATX Midi Tower Case w/200W PSU
- Windows 95 UK Keyboard • Microphone
- Microsoft Mouse • Windows 95 on CD
- Lotus SmartSuite 97 • MS Family CD Pack

CPU	EX VAT	INC VAT	FLEXIPAY
PII 233Mhz	£1375	£1615.63	£58.97
PII 266Mhz	£1445	£1697.88	£61.97
PII 300Mhz	£1545	£1815.38	£66.26
PII 333Mhz	£1595	£1874.13	£68.40

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Supplied complete with: • Leatherette carry bag • Hardware documentation • System drivers supplied with CD • AC charging/power adaptor • Weight 3.4 Kg

PROTEUS 12.1" Dual Scan

Processor	Ex Vat	Inc Vat	Flexipay
P200 MMX	£1045	£1227.88	£44.81
P233 MMX	£1075	£1263.13	£46.10

PROTEUS 11.3" TFT

Processor	Ex Vat	Inc Vat	Flexipay
P200 MMX	£1125	£1321.88	£48.25
P233 MMX	£1155	£1357.13	£49.53

PROTEUS 12.1" TFT

Processor	Ex Vat	Inc Vat	Flexipay
P200 MMX	£1265	£1468.38	£54.25
P233 MMX	£1295	£1521.63	£55.54

Above prices based on Intel Processor, 32MB EDO RAM, 2.1GB HDD, 20x CD & Multimedia features, Smart Li-ion Battery.

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Supplied complete with: • System drivers supplied with CD • Hardware documentation • AC charging/power adaptor • Weight 4.1Kg • WINDOWS 95 and LOTUS SMARTSUITE 97 with CDs.

PRONOTE 13.3" TFT

Processor	Ex Vat	Inc Vat	Flexipay
P200 MMX	£1495	£1756.63	£64.11
P233 MMX	£1525	£1791.88	£65.40

PRONOTE 14.1" TFT

Processor	Ex Vat	Inc Vat	Flexipay
P200 MMX	£1595	£1874.13	£68.40
P233 MMX	£1625	£1909.38	£69.69

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- ✓ 512KB Pipeline Burst Cache
- ✓ 20X CD-ROM
- ✓ 4MB 2D/3D Graphics Card
- ✓ MPEG & ZV Port ready
- ✓ 3D Wave Table Full Duplex soundcard
- ✓ SMART Lithium-Ion Battery *(Beware of cheap imitations!)*

• Intel Pentium 200.233MHz MMX & MMO options • 512KB secondary cache pipeline burst synchronous RAM • 4MB EDO Video RAM • 32MB EDO RAM expandable to 128MB • Removable 2.1GB Hard Disk (higher options available) • Accelerated 64-bit PCI bus • 15.1" XGA display • 1024 x 768 resolution on LCD • Up to true colour 24-bit • 1280x1024 on external CRT • Fast 20X speed CD ROM Drive • Removable 1.44MB 3.5" Floppy Disk Drive, swappable with optional 2nd battery, MO Drive & Zip drive • Both CD and Floppy are simultaneously installed • 3D 16-bit full duplex stereo soundcard with 1MB of Wave Rom Synthesis (SoundBlaster and General Midi Compliant) • Integral stereo speakers and microphone • Infra red wireless communications port (IRDA 1.1 and FIR compliant) • Central chassis touch pad mouse pointing device • Windows 95 keyboard (includes numeric keypad) • Smart Lithium-Ion Battery • LCD system status indicator • PCMCIA 2 X II and 1 X III ports • 2 USB ports • TV output port • External SVGA monitor port • Docking station port • UART16550C serial port • Parallel port (EPP/ECP comp) • PS2/External keyboard port
Supplied complete with: • Leatherette carry bag • System drivers supplied with CD • Hardware documentation • AC charging/power adaptor • Weight 4.4Kg • WINDOWS 95 and LOTUS SMARTSUITE 97 with CDs.

PROSTAR MMX 15.1" TFT

Processor	Ex Vat	Inc Vat	Flexipay
P200	£1865	£2191.38	£79.98
P233	£1895	£2226.63	£81.27

PROSTAR MMX MMO (IMM) 15.1" TFT

Processor	Ex Vat	Inc Vat	Flexipay
P200	£2085	£2449.88	£89.41
P233	£2185	£2567.38	£93.70

Above prices based on Intel Processor, 32Mb EDO RAM, 2.1GB HDD, 20x CD & Multimedia features, Smart Li-ion Battery. Microsoft Windows 95 CD and Lotus SmartSuite 97 CD

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The Michael Hewitt Interview

Tom Kilburn

Baby boom

Tom Kilburn built the Baby, the first digital, stored-program computer. Not the size of your average baby, this sixteen feet long by seven feet high mass of wires is being reconstructed in Manchester. Michael Hewitt meets the proud father.

Tom Kilburn, born in 1921, would like everyone to know that he was educated at Dewsbury Grammar School, Yorkshire, and is "proud of it". More so, indeed, than having read mathematics at Cambridge. However, like a good number of people who come from Yorkshire and are proud of it, he upped and left some time ago. Which is perhaps just as well. If he'd helped develop the world's first digital, stored-program computer in somewhere like Barnsley or Pontefract, the world might have taken it a lot less seriously. Fortunately, he did the deed at my old *alma mater*, the University of Manchester, in 1948.

The beast, which is being reconstructed by the British Computer Conservation Society and ICL, resides in the university's Computer Building on Oxford Road. Sixteen feet long, seven feet high and featuring a ton of diodes, valves, metal racks and lethally bare wires, it looks like something you might end up with if you hired Mr Bean to do your electrics. But if *PCW* had been going in the late forties, this would have been its Editor's Choice. The Small Scale Experimental Machine (SSEM), or "Baby" as it became known, set the standard that others followed.

"It was its ability to store and run programs put in by a user that set the Baby apart from earlier, special-purpose machines like the Colossus or ENIAC," explained Kilburn. "These required mechanical intervention to run programs. For example, you had to change wire connections in the much the same way that operators used to transfer calls on old-fashioned telephone exchanges."

Computers weren't exactly in his blood. Kilburn's first love was in fact pure mathematics, which he studied at Cambridge to MA level. Indeed, but for the intervention of the second world war, the two of them might have consummated the relationship. Instead, however, Kilburn was drafted as a science officer and propelled to the Telecommunications Research Establishment, then based in Malvern, to work on some flash-in-the-pan project called RADAR. It was here, in 1942, that he met his future mentor, Freddie Williams, who was then heading a group of circuit designers.

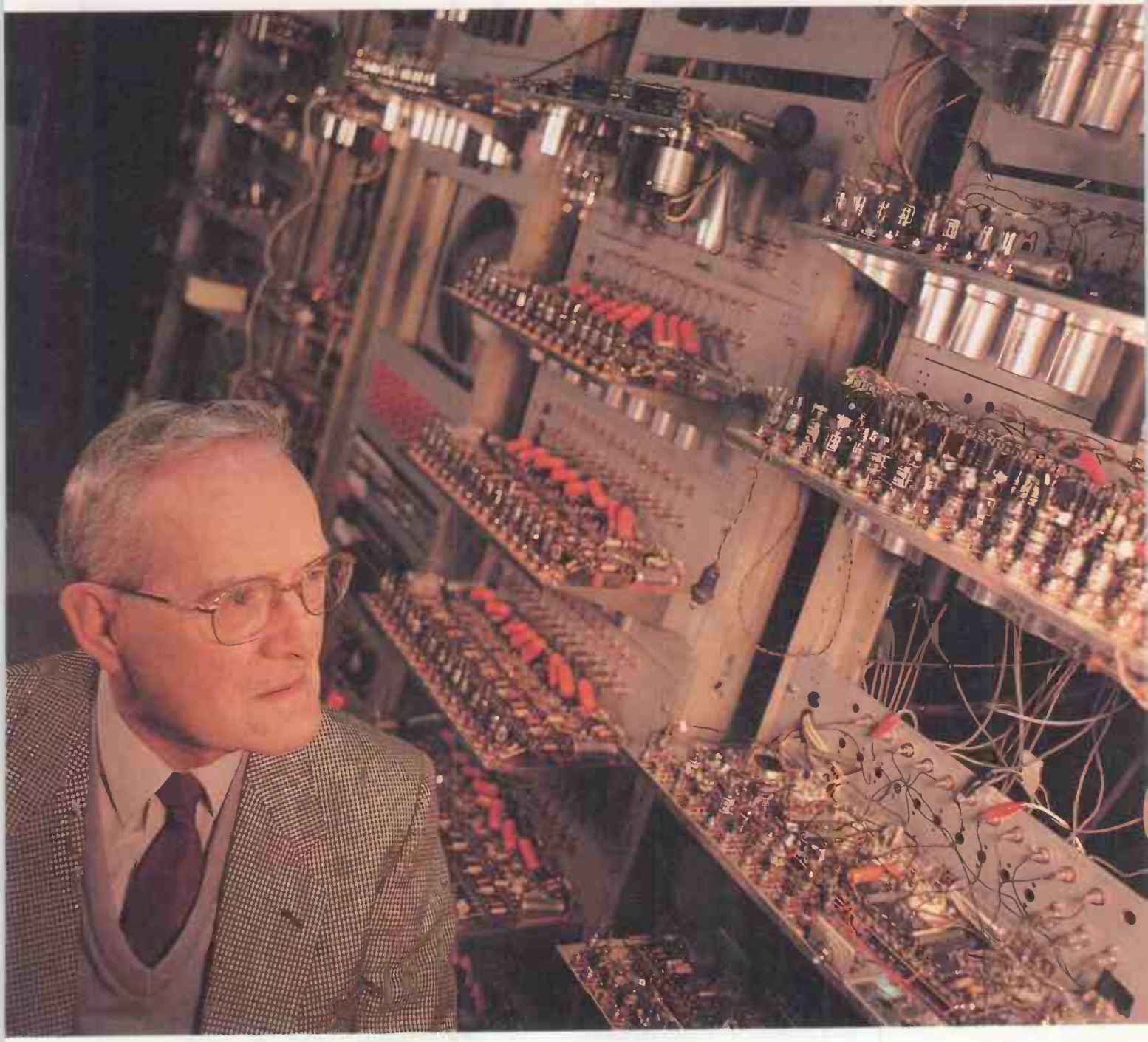
"I was something of a disappointment to him at first. He was expecting a well-qualified electrical engineer, but I was just a mathematician. I didn't know anything. But because our group was so small and because there were so many technical problems to overcome, I was thrown in at the deep end. It didn't take me long to become a reasonable circuit designer, though. I found I actually preferred this hands-on work to the theoretical mathematics I'd been doing before. And, of course, because RADAR was essential to the war effort, you had the feeling you were doing something really useful."

Exit Mussolini, Hitler and Hirohito stage left. Now fast-forward four years to 1946. Thanks partly to his work at Malvern, Freddie Williams had become the best-known electronics circuit engineer in the world and was appointed professor at Manchester University. As such, he was invited to do regular turns at international electronics circuit engineer bashes. At one of these, in the USA, he came across an experiment aimed at storing analogue data using a cathode ray tube. Williams reckoned it was interesting enough to duplicate back at Malvern. He did so, but advanced the experiment somewhat to the stage where he was able to store a single digit, not in analogue but in binary form, as a charged area on the CRT's screen.

Although it worked, no-one understood quite how. More research was therefore required. It was this stage, round about Christmas of 1946, that the whole project was transferred to Williams' department at Manchester University. Tom Kilburn went with it. Still nominally a serving science officer, he was given the authority to requisition as much kit as he liked and kick as many butts as necessary to get everything up and running.

But to get *what* up and running, exactly? The thing they'd created thus far, while it looked moderately impressive and merited write-ups in technical journals, was still basically just a storage device. It was one project among many that were currently ongoing. Then various lightbulbs started illuminating above various heads: what would happen, these heads asked themselves, if you married this new-fangled CRT storage technology with that of an existing valve-based computing machine? Might you not end up with a machine that could be programmed much, much faster than, say, a Colossus or an ENIAC, and which would therefore be far more practical for multiple computing applications?

PHOTOGRAPH by Mark Rayner



"The only way to find out was to try," said Kilburn.

It was far from a one-horse race. Several groups, both in the UK and the USA, were also trying to build a digital computer. They included researchers at Cambridge University, Welwyn Garden City, and, perhaps the best-known name, Alan Turing at the National Physical Laboratories. Kilburn went to one of the NPL's lectures where Turing described how he was getting along. He left unimpressed. "What Turing was saying wasn't of very great interest to me. This wasn't arrogance on my part. It's just that his work wasn't relevant to what we at Manchester were doing. Turing's group was attempting to use mercury delay lines arranged in series as their storage technology. It could take up to 500 milliseconds just to get a single digit out of a mercury delay line, compared to just five microseconds from a cathode ray tube. So, because it had to be built around a somewhat less efficient storage device, his proposed design of computing machine was totally different to ours."

Over a period of six months, Freddie Williams' CRT storage device was augmented with supplementary store, control and arithmetical units. A high-voltage power supply was laid in. Valves and diodes were ordered by the skip-load. Joints were soldered, screws screwed, and plugs plugged in. Then, finally, before an expectant audience, the machine was turned on. It was not quite the unqualified success they'd all hoped for — at first, anyway. To quote the late Freddie Williams: "A program was laboriously inserted and the start switch pressed. Immediately, the spots on the display tube

p188 ➢

Tom Kilburn among the myriad valves and switches that went to make his Baby. Now retired, his interest in computers has not extended to the rampant web-mania of today

"Bear in mind that existing mechanical calculating machines could process, at a maximum, maybe one instruction every two seconds. Ours could process a thousand a second"

entered a mad dance. In early trials it was a dance of death leading to no useful result and, even worse, without yielding any clue as to what was wrong."

One problem was that "noise" from all the valves was causing interference in the CRT storage device. As was some idiot on an unsupressed motorcycle who insisted on riding up the road at the back whenever the machine was turned on. In the good old days back at Malvern, Kilburn could probably have ordered an NCO to go outside and take him out with a high-powered rifle. But in the late forties, with a new people-friendly Labour government in power, this might have been frowned upon. Instead, Kilburn and his team had to put heavy metal shields round the CRT units to protect them. This, together with a certain amount of taking things apart and putting them back together again, eventually did the trick.

On 21st June, 1948: "I'd drawn up a 17-instruction program on a sheet of paper that was intended to find a number's highest factor. It all fitted into a 32 x 32 array, which was the capacity of the CRT. Then I entered this program into the machine via the keyboard. It was a fairly lengthy procedure that took about ten minutes. When I'd finished, I flicked a switch and waited. Suddenly, there on the screen, was the correct answer. It had worked. We all cheered like mad."

But the machine, although it had worked to spec, was "horribly unreliable". If you got an hour's work out of it without a valve blowing or a lab assistant electrocuting himself, it was a good day. But this was history in the making. "There was great excitement," said Kilburn. "Bear in mind that existing mechanical calculating machines could process, at a maximum, maybe one instruction every two seconds. Ours could process a thousand a second. So it was a thousand times more powerful than anything else around at the time."

By today's standards, the Baby is slow and bulky. To give you a for-instance: it's 15 million times less powerful than the latest ICL Trimetra computer, which is itself a distant grandchild of the Baby. Something of similar processing power and memory of the Baby would now fit on to a silicon chip the size of a pinhead. That said, in 50 years' time, our own super-fast Pentiums will doubtless provide a similar source of mirth. Such is progress.

Competition: write a program for the SSEM

To celebrate the 50th anniversary of the Baby, ICL and the British Computer Conservation Society are running a competition where programmers, both experts and novices, are invited to write a software program for the SSEM. Entries must be in by 31st March 1998. A panel chaired by Tom Kilburn will judge the entries. The winner will be invited to run his or her program on the SSEM when it goes live on 21st June. Information on how to program the SSEM, the competition rules, and a simulator written by the University of Manchester, can be downloaded to a Windows-equipped PC from www.cs.man.ac.uk/prog98/

Anyhow, news of the Baby's success travelled fast. American engineers, familiar with much of Williams' work, immediately christened the Williams and Kilburn CRT store the "Williams Tube". This terminology soon became the generic term for the invention. In 1951, Ferranti rebuilt the Baby as the Ferranti Mark I commercial computer. In the States, the CRT store formed the basis of the first IBM computers, the 701 and 702, in 1953. Indeed, the technology was still going strong into the early sixties, before eventually being superseded by the invention of magnetic core storage and, of course, transistors.

"I count transistors as being one of the most significant developments during my time with computers. But of much more lasting importance than that was the invention of the index register, just two weeks after the Baby first performed to order. This allowed you to have subroutines in programs. And from this stemmed the concept of virtual memory, a term which first came to use, again in Manchester, with the creation of a machine called the Atlas. I believe virtual memory will exist as long as computers exist."

In 1948, Kilburn was awarded a PhD for his work on the CRT store. In 1953, Manchester University awarded him a Doctor of Science degree. He stayed on as lecturer in the Electrical Engineering Department, before going on to found the Computer Science Department, of which he became the first professor. This department went on to design many machine architectures which have had their own impact on the development of computing. Tom Kilburn retired in 1981, but he still pops in to see how things are going and to keep his hand in. But perhaps curiously, he isn't particularly interested in modern computer offshoots such as the internet. How come?

"My interest in technology has always been in looking at ways to make it more efficient. When we finished the Mark 1, for example, I could, I suppose, have just spent the next few years writing programs for it. However, I saw that there was a lot of scope for improvement. So I set about building a machine called the Mercury, which was 30 times more powerful than the Mark 1. And having built the Mercury, I could then see how I could build a machine 80 times more powerful even than that. All my life, I've concentrated on thinking about how things could be improved. The present stopping point is the internet. If I were young again, I wouldn't be wasting my time netsurfing. I'd be trying to imagine what was coming after the internet, and planning for it."

After his work in RADAR, his associations with Freddie Williams and his contribution to computing milestones, when Kilburn sees these pimply youths playing Tomb Raider and downloading naughty gifs, does he wonder why he bothered? He smiled and shook his head. "It's a different world," he said. "Every man to his own.. every man to his own." ■

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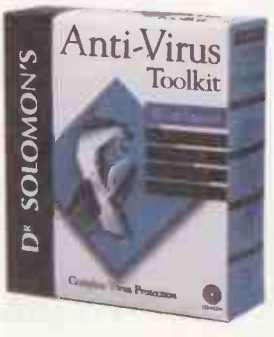

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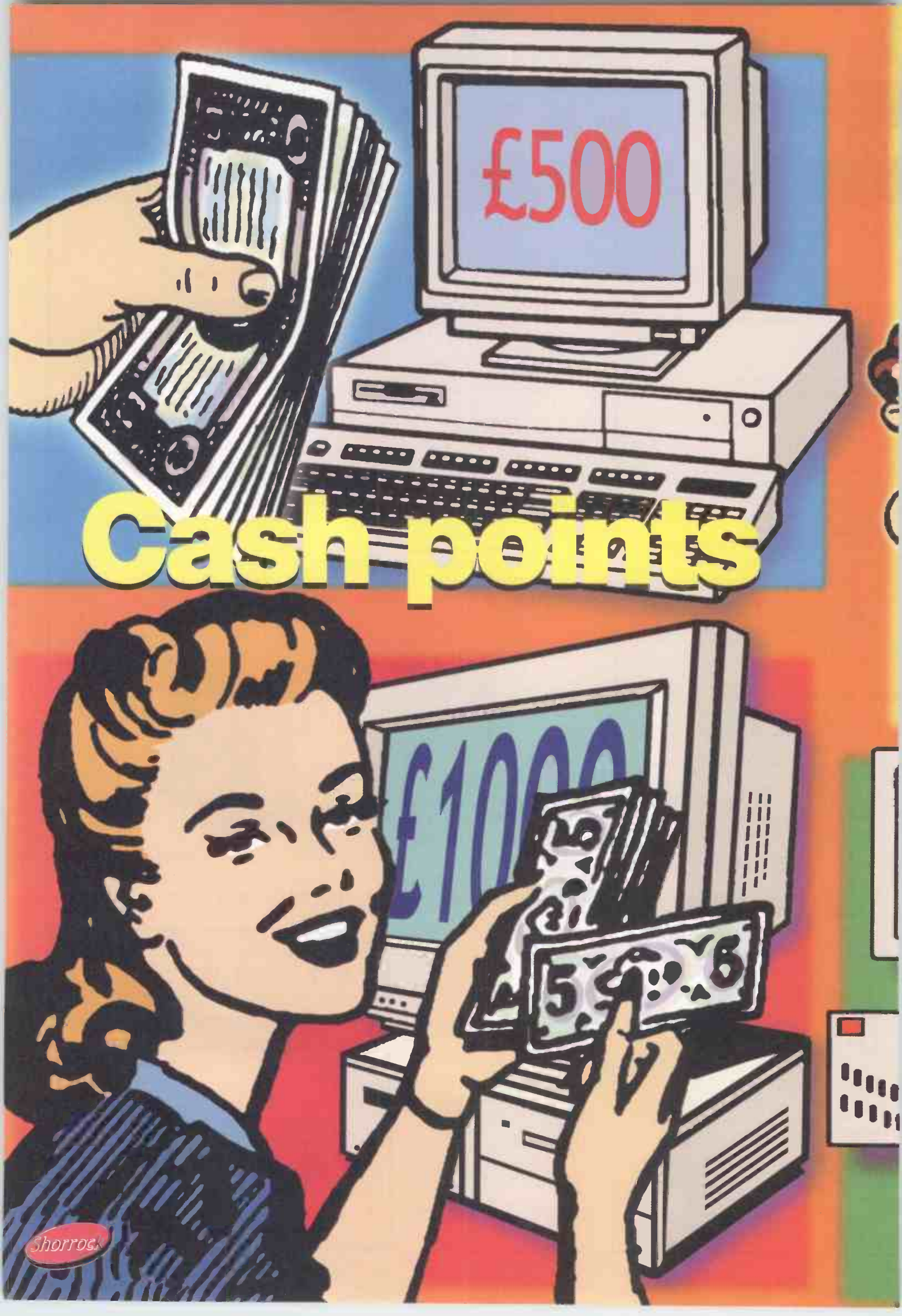
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To celebrate our twentieth anniversary we've rounded up twenty PCs at four price points to see just what you'd get for your money.

Flicking through the pages of *PCW* reveals wide variations in the prices of PCs. Within the space of a dozen pages you can spend anything from £340 to sums well over the £3,000 mark in buying yourself your budget PC/office workhorse /dream machine (delete as appropriate).

So what difference does the extra money make, and more to the point, do you really need that difference? Do your applications actually require the extra memory, faster speed and Intel architecture that you might not get if you opt for a minimum spend, or would they work just as happily on a much more conservatively specified machine?

To celebrate our twentieth anniversary *PCW* decided to answer these questions in style. Taking twenty PCs — five each from the £500, £1,000, £1,500 and £2,000 price bands — and subjecting them all to the same rigorous business application tests, we compared what each price point could achieve and who could do us the best deal. Once the PCs had completed this first round of testing they were then subjected to VNU Labs' rigorous Final Reality benchmark to tax their 3D rendering skills, before being taken apart for a close-up inspection.

The results are detailed in the following pages and they provide some surprising answers. We were glad to see that all were Millennium compliant so, apart from the cost of entry to the Greenwich Dome, the year 2000 should provide no nasty surprises. Many users buying a PC predominantly for games might think they could go for the cheapest on the market; but do the Final Reality scores confirm this? Business users may be under the impression that powerful applications will only run on expensive hardware. What do the BapCo results have to say about that?

Whatever your budget — whether you're a first-time buyer, a home user looking to supplement an existing machine, or a college, business or organisation after new PC hardware — this month's *PCW* group test tells you everything you need to know.

Compiled by Nik Rawlinson, Paul Trueman and Lynley Oram

Ratings

★★★★★	Buy while stocks last
★★★★	Great buy
★★★	Good buy
★★	Shop around
★	Not recommended

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PC Photography by David Whyte. Illustration by Paul Shorrock

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£500

Some of the cheapest desktop PCs ever reviewed in *PCW* have made it into this month's group test. Specifying nothing other than a price point — £500 excluding VAT or as near as they could make it — we asked five suppliers to surprise us and show us what they could do on a tight budget*. In most cases we were impressed by the results. High-performance sound cards and quality speakers, large hard drives and generous memory installations and, in most cases, a well laid-out interior proved that it was not necessary to spend vast amounts of money to get your hands on a perfectly serviceable machine.

So who would buy a PC in this price bracket? The obvious answer is home users looking for either their first PC or a machine to supplement one already in the household, or students on a budget who need a simple but effective means of presenting their work. First-time buyers often spend far more than they need in buying a machine that far exceeds their requirements. These machines prove that for less than £600 all-in some users can buy a computer that will do everything they need and more.

A second major market for a PC of this price is the hobbyist, somebody who does not mind tinkering with their purchase, increasing the amount of memory or the size of the hard drive as they go along. For them, a £500 PC will form the basis of what will ultimately be a machine built by themselves to suit their exact requirements. The freedom to open a cheap PC and restructure its insides without the worry of damaging something that cost thousands to purchase, is a liberating experience.

The third and perhaps most important market for this type of PC is that in which companies or organisations need to purchase a considerable number of machines at a good price. Schools and colleges frequently have to update their equipment within tight budgetary constraints, so a cheap PC that will do most things something four times the price will achieve, will be immediately attractive. Further, they often do not need the extra graphics-card memory or super-fast processor that the extra expenditure would buy them and so would be happy to settle for something slightly less "cutting edge". So sit back, check your bank balance, and be pleasantly surprised at what you didn't know you could afford.

** Price includes delivery.*

Extreme Computers Ultimate Pro

The processor at the heart of the Extreme PC was a Cyrix chip with 512Kb pipeline burst cache and it was extremely quiet in use. A nice Windows 95 keyboard compensated for the rather plain mini tower case and disappointing mouse which was connected with a 9-pin serial plug, using one of the two COM ports and leaving only the 25-pin connector free.

One free external 3.5in bay, one internal bay of the same size and a further free 5.25in external bay gave plenty of opportunity for expansion, but although most cabling was fairly neat it had been folded into the internal bay, effectively putting it out of use. It also obstructed the two free 72-pin and three free 168-pin memory slots, making it awkward to improve on the 16Mb supplied, but on the positive side they were kept clear of the three free PCI, one free ISA and one free shared expansion slots. The memory had been supplied in the form of two 8Mb SIMMs and the hard disk was sized at a decent 2Gb.

The sound card was very basic with no line-out option, and while the unbranded speakers were capable of high volume, the quality of the output was tinny and at times made them rattle. There was no bundled software, which was not really expected at this price, but we were disappointed that it also lacked a user manual and, although we received the Windows 95 CD, there was no startup disk. The only documentation received comprised the standard Windows 95 manuals.

The unbranded 14in Hansol monitor was disappointing, flickering noticeably even at resolutions as low as 800 x 600. Driven by a GraphicsBlaster card with 2Mb onboard it utilised no on-screen controls but instead indicated what was being altered using a series of bulbs on the fascia. Separate rotary brightness and contrast controls complement the fast access to degauss and factory reset buttons.

PCW Details

Price £601.58 (£499 ex VAT)
Contact Extreme Computers 01709 701200 www.extreme-computer.co.uk
Good Points Nice keyboard. Fairly good performance.
Bad Points No manuals. Poor monitor.
Conclusion A sturdy machine that performed well.

Build Quality	★★★★★
Performance	★★★★★
Value for Money	★★★★★
Overall Rating	★★★★½

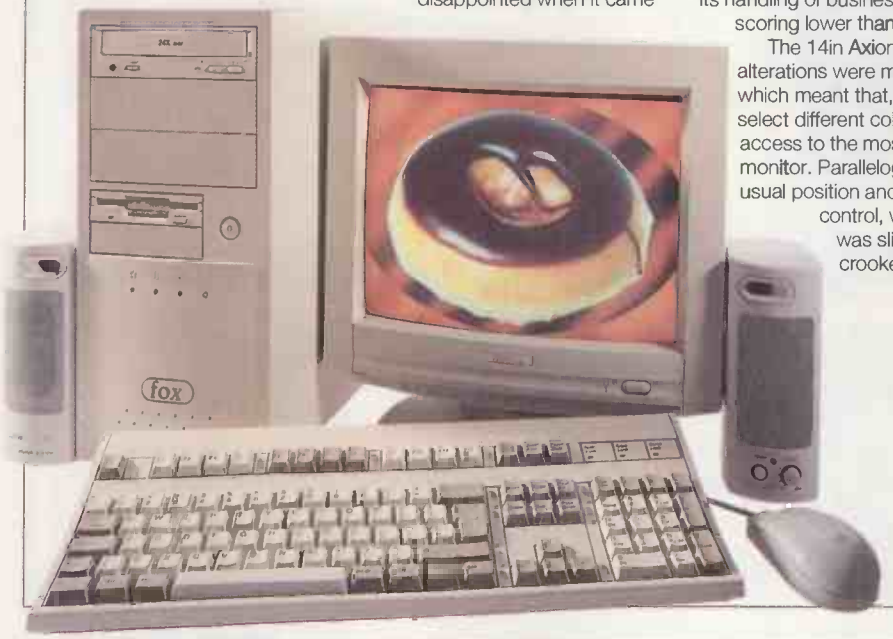
Fox Computers Family 200MX Extra

The messy interior of this Intel 200 MMX-based PC was dominated by a bundle of cable obstructing easy access to the 16Mb memory which was in turn supplied on two SIMMs, leaving two SIMM and two DIMM slots free. Two free PCI, a free ISA and a free shared slot catered for future expansion, while two free external 5.25in and one each of an internal and an external 3.5in bay would allow us to add more drives to the attractive case at a later date.

The keyboard was a good-looking, slimline, low-profile model that was pleasant enough to use throughout our tests. We were disappointed when it came to the Ice Mouse, which was not a nice mouse: a small three-button affair on which the right-click would not work. Even installing the drivers from the accompanying disk made no difference, and as it was a serial mouse it left the PS/2 socket, supplied with the parallel port, unused.

The unbranded speakers had a maximum output of 50W but we were almost instantly put off by the poor sound quality they produced in our tests. AudioRack software was supplied on several disks to cater for a variety of Windows versions. Although this PC performed adequately in our Final Reality tests and did well when running Quake, its handling of business applications was disappointing, with Fox scoring lower than any other manufacturer in this category.

The 14in Axion monitor had a very curved screen. All alterations were made using the front-mounted rotary controls which meant that, although we lost the ability to degauss or select different colour temperatures, we were afforded instant access to the most common functions you would expect from a monitor. Parallelogram and pincushion options supplemented the usual position and size controls but there was no "rotation" control, which was a shame as the picture on our monitor was slightly crooked.



PCW Details

Price £645.85 (£549.66 ex VAT)
Contact Fox Computers 0990 744500
www.fox-computers.com
Good Points Good-looking machine.
Bad Points Messy interior. Poor mouse and speakers.
Conclusion A disappointing, slow PC.
Build Quality ★★★★☆
Performance ★★☆☆☆
Value for Money ★★★☆☆
Overall Rating ★★★☆☆

Linear Computers Linear Excel

Personal Computer World Highly Commended

The squat case of this IBM 200 MMX-based PC could almost be described as beautiful, certainly in comparison to many others on the market. The unfortunate pay-off for its convenient size was the limited number of free drive bays: merely one 3.5in and a 5.25in, both of which were external. The tidy interior gave easy access to the processor and free memory slots, but a slight lack of thought meant that the CD audio cable was stretched tightly across the two free PCI, one free ISA and single free shared expansion slots. We were glad to see that 32Mb memory was installed on a single DIMM, leaving a further DIMM slot free for increasing the already generous allocation at some time in the future.

The ports on the rear of the machine were unlabelled and one of the pins on the larger of the two serial ports was bent. We were also disappointed that as in the case of other machines in this test, a PS/2 port had been supplied but left vacant through the use of a serial mouse. Provision had not been made in the boot-up sequence for DOS-based CD-ROM use and so without changing our boot-up files we were confined to using the 24-speed drive through Windows only.

F-PROT Professional 95 was pre-installed to stand guard over possible virus invasion, and the keyboard, although not particularly responsive, was quiet and certainly more comfortable to use than some of the models supplied with more expensive machines. The unbranded speakers, capable of a maximum output of 160W, performed admirably and did not distort at high volume, as well as looking impressive and incorporating fascia controls for volume, treble and bass adjustments.

The 14in Hansol Mazellan 400A monitor had no OSD but instead used a series of icons and LEDs on the bezel to indicate what we were changing. Dedicated buttons gave instant access to degauss and factory reset while separate rotary controls allowed us to adjust contrast and brightness. The flicker-free image was pleasant to view, leaving Windows icons and small text well defined.

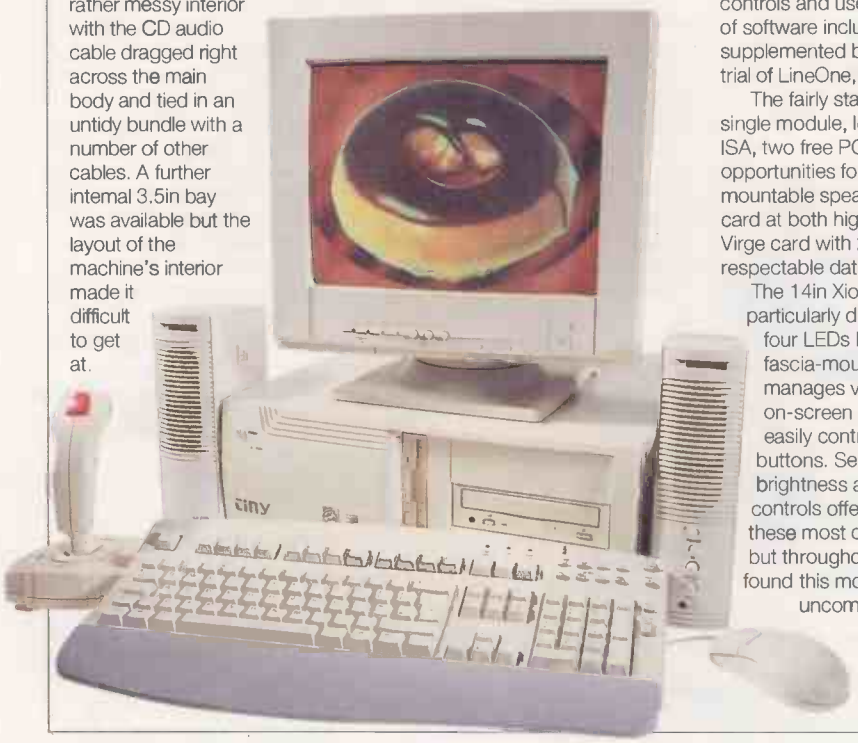
PCW Details

Price £603.95 (£499 ex VAT)
Contact Linear 0800 622094 (no URL)
Good Points Case. Memory configuration. Speakers.
Bad Points Slightly limited free bays.
Conclusion An impressive performer that looks good.
Build Quality ★★★★½
Performance ★★★★★
Value for Money ★★★★★
Overall Rating ★★★★½

p196 >

Tiny Home Value System

For those with limited space, the attractive desktop case of this Intel 233MMX machine would tuck away nicely under any monitor and still leave room to house external 3.5in and 5.25in bays. Gaining access was a simple, single-screw operation but it revealed a rather messy interior with the CD audio cable dragged right across the main body and tied in an untidy bundle with a number of other cables. A further internal 3.5in bay was available but the layout of the machine's interior made it difficult to get at.



An excellent set of manuals was supplemented by a series of quick-reference sheets giving guidance on many common tasks. They also led us through using the additional multimedia buttons on the outstanding keyboard that offered direct access to volume, CD controls and user-definable software shortcuts. A generous selection of software including Encarta 98 and Money 98 was pre-installed and supplemented by the original CD-ROMs, as was the software for a free trial of LineOne, somewhat redundant without a modem.

The fairly standard 16Mb memory was supplied in the form of a single module, leaving a slot free for a further 168-pin DIMM. Two free ISA, two free PCI and a further free shared slot offer plenty of opportunities for expansion and the unbranded 180W monitor-mountable speakers provided undistorted output from the ESS sound card at both high and low volumes. Graphics arrived courtesy of an S3 Virge card with 2Mb RAM while the 3Gb hard drive attained a highly respectable data transfer rate of 7455Kb/sec.

The 14in Xiod monitor, which was set to 640 x 480 on arrival, was particularly disappointing, with a grainy image at all resolutions. With four LEDs beneath a set of fascia-mounted icons it manages very well without on-screen controls and is easily controlled by just three buttons. Separate rotary brightness and contrast controls offer direct access to these most common functions but throughout our tests we found this monitor to be uncomfortable to look at.

PCW Details

Price £844.83 (£719 ex VAT)
Contact Tiny Computers 0800 821333 www.tinycomp.co.uk
Good Points Space saving. Documentation. Software.
Bad Points Disappointing monitor. Messy interior.
Conclusion Priced well above the competition.

Build Quality	★★★★☆
Performance	★★★★☆
Value for Money	★☆☆☆☆
Overall Rating	★★☆☆☆

Watford Electronics Aries Multimedia Pro

Personal Computer World Editor's Choice

One of the more attractive cases in the group of entry-level machines tested, the Watford mini tower covered a particularly tidy interior in which all cables, including the CD audio cable which is often strewn across the expansion slots, were neatly tied into place. The comfortable Windows 95 keyboard, incorporating a wrist-rest and an ergonomic mouse, completed a well thought-out design.

The parallel and PS/2 ports, as with many of the machines in this group, were supplied on a blanking plate and we were disappointed that the PS/2 port was left unused, with the serial mouse taking up one of the two COM ports. The Cyrix M2 P200 MX processor is complemented by 32Mb RAM, wisely provided in the form of a single 168-pin SDRAM, leaving the other SDRAM slot free for future upgrades. Two free PCI, one free ISA and one free shared slots offered plenty of scope for future expansion, as did the two free external 5.25in, two free internal and one free external 3.5in bays. The 2Gb hard drive attained a data transfer rate of just over 1Mb per second in our tests.

A generous bundle of five CD-ROMs including Lotus SmartSuite 97 and Comptons Interactive Encyclopedia were a pleasant, although unexpected, addition. The sound card drove a pair of chunky unbranded speakers to impressively high volumes with minimal loss of sound quality. Meanwhile, the ATI 3D Xpression graphics card with its more than adequate 4Mb onboard RAM allowed us to play full-screen MPEG video at high resolution and with no discernible frame loss.

The 14in AOC monitor gave an impressively sharp, flicker-free image that was comfortable to look at throughout our tests. Doing away with an on-screen display it instead had a series of icons and LEDs on the fascia that indicated the feature being altered. There were no separate controls for contrast and brightness and it provided no option to degauss.

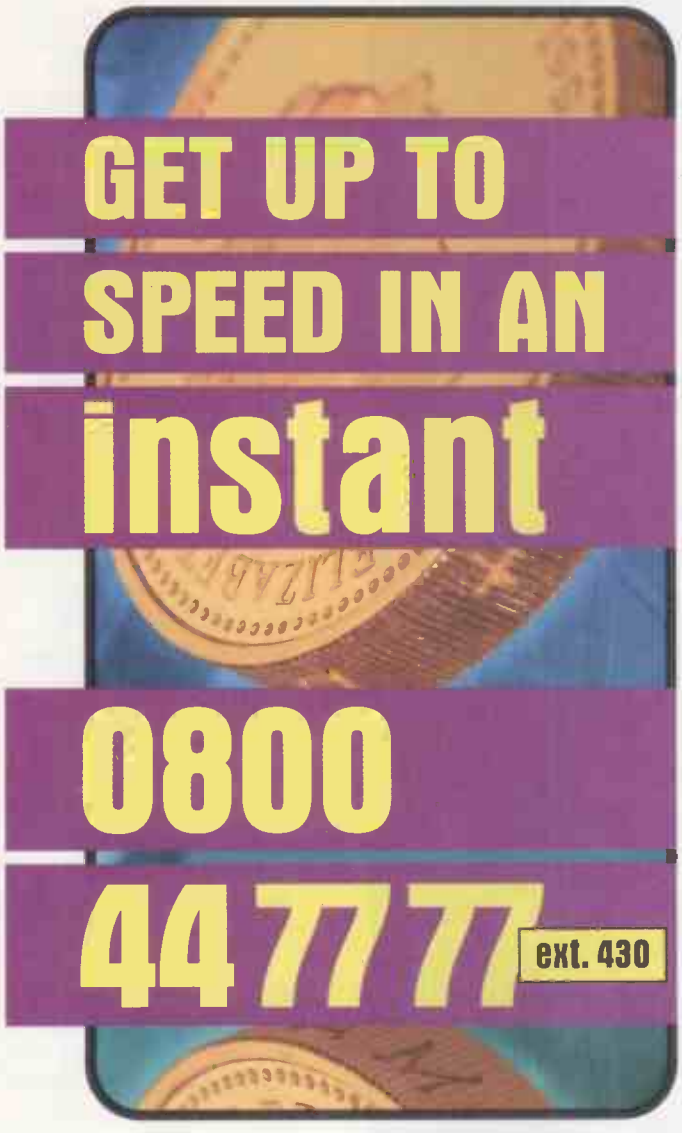
PCW Details

Price £703.82 (£599 ex VAT)
Contact Watford Electronics 01582 745555 www.watford.co.uk
Good Points Bundled software. Monitor. Performance.
Bad Points PS/2 port unused by serial mouse.
Conclusion A great PC all round.

Build Quality	★★★★★
Performance	★★★★★
Value for Money	★★★★★
Overall Rating	★★★★★

p199 ➢

CASHFLOW kept in check?



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Editor's Choice

Personal Computer World Editor's Choice

After testing these five PCs we have to ask ourselves why anybody should pay more than £500 (ex VAT) for a computer when spending just that would probably suffice. The performance-test results of many of these machines, in particular those submitted by Watford and Linear, were impressively high. Although they did less well than some of the more expensive machines when it comes to playing games such as Quake, nobody can argue with their scores when running standard business applications such as Word, PowerPoint and Excel, as indicated by the BapCo score.

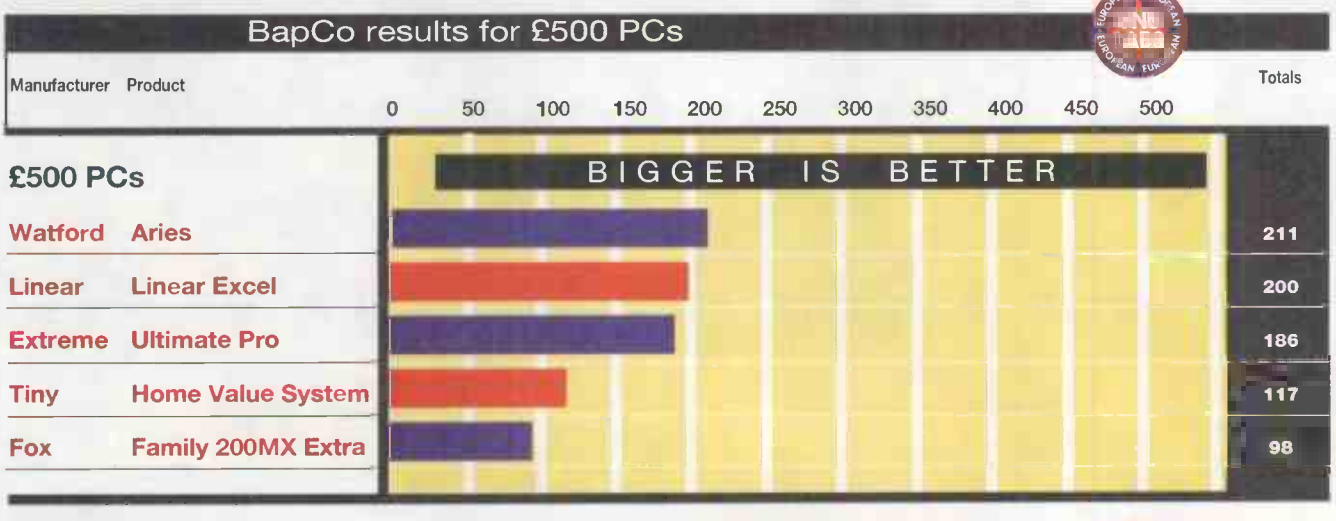
The standard of monitors varied but the AOC Spectrum supplied by Watford was particularly impressive. The sharp, flicker-free image was steady in use and easily controlled using the instant access buttons. The 4Mb graphics card, meanwhile, was more than enough to drive full-screen CD-based video. With 32Mb of memory, the Linear and Watford machines should both last most users a year or two without the need for much in the way of upgrades. More expensive machines include this as the standard memory quota. Tiny impressed us with the generous software included in its system. Encarta 98, Money 98 and Works 4.5 should get business users up and running right away, while by including the likes of 3D Movie Maker, Space Station Simulator and Flight Simulator 98 Tiny has acknowledged that many purchases are likely to be geared towards home use.

We award a **Highly Commended** to **Linear** for its **Excel**. Its business-software results were the second fastest and this PC felt sturdy and well built. Due to a last-minute cancellation Linear had only two days' notice yet it managed to supply this machine on time with no evidence of a rushed job. It performed well in the VNU Labs Final Reality Benchmark that examined its 3D graphics-handling capabilities, attaining a score of 1.42 Reality Marks which places it again in second place.

Watford Electronics impressed us with its attractive, feature-packed, well-built, entry-level **Aries Multimedia Pro** and earns an **Editor's Choice** award. An excellent pack of software including Lotus SmartSuite 97 meant we were able to use full versions of powerful business applications as soon as the PC was unpacked. Again, it benefitted from a full 32Mb RAM which probably accounts for its excellent BapCo and Final Reality performance where, although it slightly underachieved with Quake, it came first in both categories. Overall, every supplier in this group deserves an honourable mention when you consider that they have put together systems for less than what some suppliers charge for monitors.

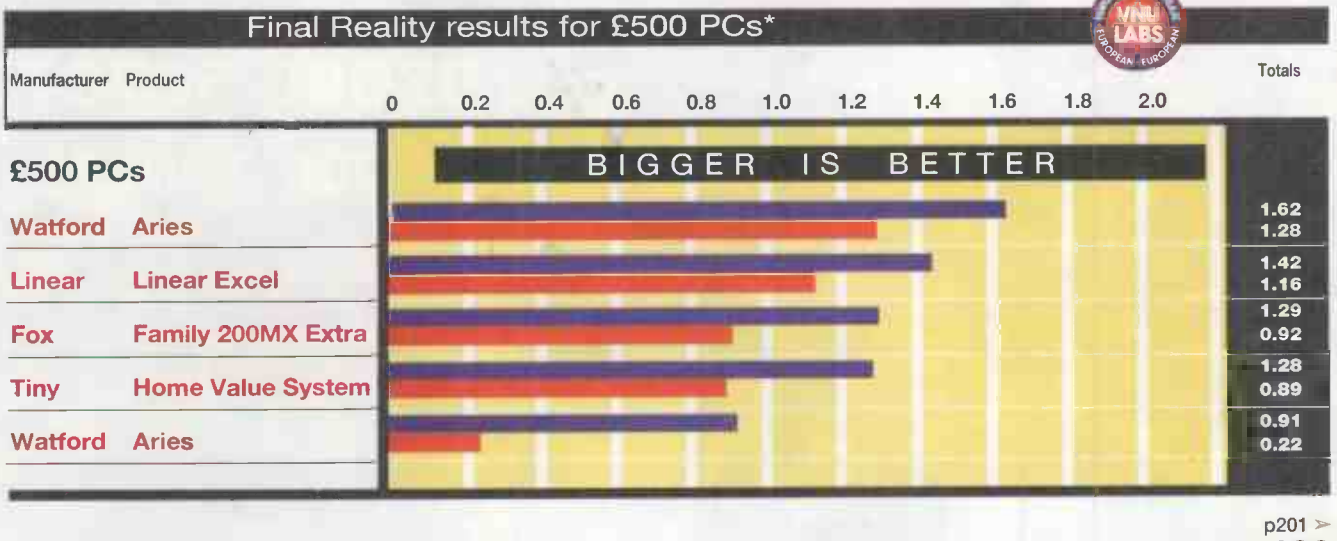
BapCo results for £500 PCs

VNU Labs



Final Reality results for £500 PCs*

VNU Labs



p201 >

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Nick Cobb

Expert Advice - still the best price

Lightware

VP800 (800 x 600) £1795
MVP800 (800x600) metal halide lamp £2399

The Lightware VP800 is the most compact, lightweight, reliable, ultra portable SVGA LCD Data Projector. Projecting true SVGA (800 x 600) images from PC or Mac source in brilliant full colour and packed full of easy to use features, the VP800 offers large screen audience viewing, even with the lights on.

- Weighs just 4.4 Kg (9lbs)
- True SVGA resolution
- Complete with carry case and cables
- 16.7 million true, bright colours
- Compact and ultra portable

Viewsonic

PJ800 (800x600) 550 ANSI lumens £2499

The Viewsonic PJ800 is a very competitively priced, high bright (550 ANSI lumens) fully featured true SVGA (800 x 600) multimedia projector. Polysilicon technology provides superb quality images on data and video and useful power zoom and built-in mouse control features allow the presenter total control.

- True SVGA (800 x 600) and XGA (1024 x 768) on compression
- Full feature remote control with built-in mouse
- Unique image shift with auto keystone correction
- 2 x Data (PC or Mac) inputs and Video
- 260W Metal Halide Extended Life (3000 hours) lamp

Viewsonic

PJL802 Viewbook (800x600) 5Kgs £2999

Brand new from ViewSonic is the tiny Viewbook, weighing just 5 Kg. Utilising Polysilicon technology, with 400 ANSI lumens high light output and with a built-in PC card slot for computer free presentations, the PJL802 offers outstanding value for money for every presentation.

- Weighs only 5 Kg (9lbs)
- True SVGA (800 x 600) XGA (1024 x 768) on compression
- Polysilicon with bright 400 ANSI lumens output
- Ultra portable, ultra compact
- Built-in PC card slot for computer free presentations

Sanyo

PLC 5605 (800x600) 700 ANSI lumens £3850

PLC 8805 (1024x768) 450 ANSI lumens £4999

Super bright, brilliant picture quality and lightweight. Sanyo offer two full feature multimedia projectors. The 5605 provides a stunning 700 ANSI lumens light output with motor driven zoom lens, the 8805 gives true top quality XGA (1024 x 768) images.

- Both Projectors weigh under 6 kg
- Complete with remote mouse and soft carry case
- Motor driven power zoom/focus
- (16.7 million colours)
- Stereo speakers

Sony

VPL - X600 (1024 x 768) 600 ANSI lumens 5.8kg £4495

VPL - S600 (800 x 600) 600 ANSI lumens 5.8kg £3495

Sony introduce two superb, innovative super bright, ultra portable multimedia projectors. With a choice of XGA (1024 x 768) or SVGA (800 x 600) models both 600 ANSI lumens rated.

- True XGA (1024 x 768) or SVGA (800 x 600)
- Magnesium diecast body - lightweight (5.8kg, 12lbs), rugged, compact design
- APA (Auto Pixel Alignment) - automated set-up for optimum image quality
- UHP Lamp - 95% bright even at end of 2000 hour lamp life
- Easy lamp change, laser pointer and remote mouse control
- Optional, easy to interchange, lenses

Apollo

Apollo Explorer XGA (1024 x 768) £2495

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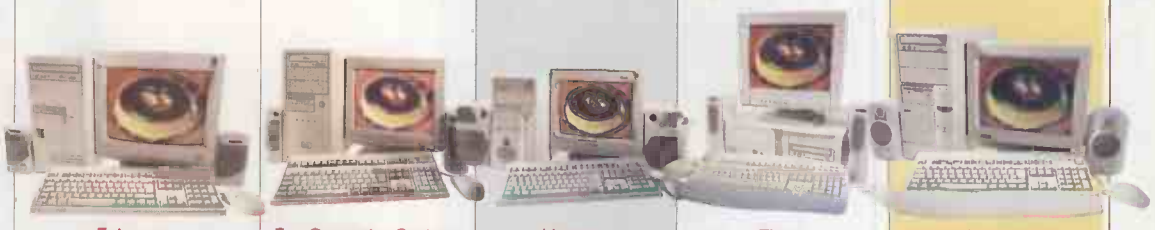
Table of Features

Personal Computer World Highly Commended

Personal Computer World Editor's Choice



Manufacturer	Extreme	Fox Computer System	Linear	Tiny	Watford Electronics
Model	**Ultimate Pro**	**Family 200MX Extra**	**Linear Excel**	**Home Value System**	**Aries Multimedia Pro**
Price with delivery (inc. VAT)	£601.58	£645.85	£603.95	£844.83	£703.82
Price with delivery (ex. VAT)	£511.99	£549.66	£514.00	£719.00	£599.00
Telephone	01709 701200	0990 744500	0800 622094	0800 821333	01582 745555
Fax	01709 700093	0990 502207	0181 641 8862	01293 822514	01582 488588
URL	www.extreme-computer.co.uk	www.fox-computers.com	N/A	www.tinycomp.co.uk	www.watford.co.uk
Sales hours	10-7 M-Th(6-F)(5 Sat) 12-2 Sun	9-7 M-F 10-5 Sat 10-4 Sun	9am - 7pm	9-5:30 M-Sat 10-4 Sun	9-7 M-F 9-6 Sat
Technical support hours	11-7 M-F 12-2 Sat	9-5 M-F	9am - 7pm	9-5:30 M-Sat	9-5 M-F 10-4 Sat
Standard warranty	1 yr RTB (Monitor 3y OSM)	5yr 1yr=RTB 4yr=RTB Lab	1yr OSM + 2yr coll + rtn	1yr collect & return pts/lab	1yr OSM 5yr RTB Labour
Warranty options	£19.99 for 1yr OSM	N/A	N/A	On-site up to 3yrs	N/A
Hardware Spec					
Processor	Cyrix 200MX	Intel Pentium 200MMX	IBM 200MX	Intel Pentium 233MMX	Cyrix 200 MX
RAM	16Mb	16Mb	32Mb	16Mb	32Mb
RAM type/pins	EDO/72	EDO/72	SDRAM/168	EDO/168	SDRAM/168
Hard disk	Fujitsu	Seagate	Samsung	Fujitsu	Quantum
Size(Gb)/acc time(ms)/int	2.1Gb/10ms/UDMA	1.7Gb/11ms/UDMA3	2.5Gb/9ms/UDMA	3.2Gb/10ms/EIDE	2.1Gb/10ms/EIDE
Motherboard Components					
Motherboard manufacturer	Pine	Gigabyte	Gigabyte	Tiny	DFI
Motherboard model	ACER TX Mainboard	430TX	GAJ86	TX5	586 ITBD
Chipset	430TX	430TX	430TX	430TX	430TX
L2 cache	512K	512K	512K	512K	512K
Expansion and I/O					
Spare bays 3.5in/5.25in	1x3.5in/1x5.25in	2x3.5in/2x5.25in	1x3.5in/1x5.25in	1x3.5in/1x5.25in	1x3.5in/2x5.25in
PCI slots/ISA slots/sh slots	4PCI/3ISA/1shared	3PCI/2ISA/1shared	2PCI/1ISA/1shared	4PCI/4ISA/1shared	3PCI/2ISA/1shared
USB/serial/parallel/PS2	2USB/2S/1P/PS2 optional	0USB/2S/1P/1PS2	0USB/2S/1P/1PS2	2USB/2S/1P/2PS2	2USB/2S/1P/1PS2
Multimedia					
CD-ROM manufacturer	Hitachi	Goldstar (LG)	Unbranded	Panasonic	Goldstar (LG)
CD-ROM speed/interface	16x/IDE	24x/IDE	24x/IDE	24x/IDE	24x/IDE
Sound card manufacturer	Pine	BTC	Flagpoint	ESS	Aries
Sound card model	1868 ESS	16 P&P inc 3D	ESS 1868	1869	Yamaha 16bit
Speakers	30W Standard	50W Active	125W	Juster 180W PMPO	25W Amplified
Graphics & Monitor					
Graphics card	Cirrus Logic 5446	S3 Verge PCI	S3 Virge	S3 Virge DX	ATI Expression
Graphics card RAM	2Mb	2Mb	4Mb	2Mb	4Mb
Monitor model	Hansol	Axion	Hansol 400A	Samsung	Aries Energy Pro 14
Monitor size (inches)	14in	14in	14in	14in	14in
Max rfsh rate @ 800 x 600 (NI)	75Hz	75Hz	75Hz	75Hz	80Hz
Other Information					
Modem make	N/A	N/A	N/A	N/A	N/A
Modem speed (Kbps)	N/A	N/A	N/A	N/A	N/A
Other extras	N/A	N/A	N/A	N/A	N/A
Software	Windows 95	Windows 95	Windows 95	MMX Bundle	Lotus SmartSuite 97
				Microsoft Family 98	Comptons Encyclopedia
				Intel Antivirus	Windows 95
Year 2000 compliant?	●	●	●	●	●

● Yes ○ No

p204 ➢

Pentium® II upgradable, latest technology, affordable

The ultimate Notebook

Editors' Choice PC Magazine, March 1998

PC Magazine's recent review of 'ultimate notebooks', the most powerful Pentium 233 MMX mobiles available, selected the Hi-Grade Notino AS600-233 for its prestigious 'Editors' Choice' Award.

Not only is it the ultimate now but with simple plug-in upgrades of future processors, such as Pentium II, VGA and storage drives means that your machine will continue to be the ultimate notebook.

PC MAGAZINE EDITORS' CHOICE
March 1998
Hi-Grade Notino AS6000-
Hi-Grade Computers

NOTINO AS6233	NOTINO AS6266
233MHz low voltage Pentium® processor with MMX™ technology Optional upgrade to 266MHz extra £85 + VAT	266MHz low voltage Pentium® processor with MMX™ technology Optional upgrade to Pentium® II 266MHz extra £250 + VAT
Intel mobile module specification	Intel mobile module specification
512K pipeline burst cache	512K pipeline burst cache
32Mb EDO RAM exp. 144Mb	80Mb EDO RAM exp. 144Mb
3Gb removable hard disk	4Gb UDMA removable hard disk
2Mb 64-bit SVGA	2Mb 64-bit SVGA
13.3" TFT XGA colour LCD	13.3" TFT XGA colour LCD
20x speed removable CD-ROM drive	20x speed removable CD-ROM drive Optional upgrade to DVD-ROM drive with decoder PC-Card extra £250 + VAT
Li-ion 60W smart battery (4hrs)	Li-ion 60W smart battery (4hrs)
33,600bps data/fax modem	33,600bps data/fax modem

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PC MAGAZINE EDITORS' CHOICE
November 1997
Hi-Grade Axion PVX 200
January 1998
Hi-Grade Axion PVII 233
Hi-Grade Computers

AXION PVII 233	AXION PVII 300
233MHz upgradable to 333MHz Intel Pentium® II processor Optional upgrade to 266MHz extra £80 + VAT	300MHz Intel Pentium® II processor Optional upgrade to 333MHz extra £120 + VAT
512K pipeline burst cache	512K pipeline burst cache
Intel 82440LX PCIset	Intel 82440LX PCIset
32Mb SDRAM, exp. to 384Mb	64Mb SDRAM, exp. to 384Mb
3.2Gb EIDE Ultra DMA/33 Hard Disk Drive Optional 5Gb extra £40 + VAT	5Gb EIDE Ultra DMA/33 Hard Disk Drive
24x speed IDE CD-ROM drive	24x speed IDE CD-ROM drive
16-Bit 3D Sound card	16-Bit 3D Sound card
120Mb 3.5" Super Floppy Disk drive (supports 1.44Mb)	120Mb 3.5" Super Floppy Disk drive (supports 1.44Mb)
VGA ATI 3D Expert@Work AGP (133MHz, 4x PCI speed) 64-bit graphics card with 4Mb SGRAM upgradable to 8Mb	VGA ATI 3D Expert@Work AGP (133MHz, 4x PCI speed) 64-bit graphics card with 4Mb SGRAM upgradable to 8Mb
15" Colour SVGA monitor (MAX RES. 1280X1024 @ 60MHz) Optional 17" extra £100 + VAT	15" Colour SVGA monitor (MAX RES. 1280X1024 @ 60MHz) Optional 17" extra £100 + VAT
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This section of the group test looks at PCs priced at around £1,000 excluding VAT*. This relatively low price point perhaps suggests a lack of speed and power that the performance of some of these PCs belies. If you are looking to get your hands on a powerful PC for use in the office or home, given the recent price drops in memory and Intel's PII processors, it is worth considering PCs around this price. The machines we received were all of a relatively similar technical specification and were as capable of running 2D office applications as they were of calculating images for the latest 3D games.

If you want a PC for business use that can connect up to other networked PCs, on which you can run office applications, spreadsheets and database or check on your company's web site, then a PC priced at £1,000 could be what just what you're looking for. Obviously, if it is processing-intensive tasks you need a PC for, to do CAD work for example, you will need to look elsewhere, bulging wallet at the ready. If it is the more common office tasks that you intend to use your PC for, then all of the machines in this group test are fitted with 64Mb SDRAM as well as PII processors and as such there isn't going to be much tangible improvement in performance running most office software, even if you were to spend closer to two thousand pounds on a more powerful machine. On the other hand, we also examine PCs that aim to cater for the whole family. For the same price tag of £1,000 (ex VAT) you can take possession of a powerful PC with impressive AGP graphics and bundled goodies such as games joysticks and software that will turn your PC into the perfect tool for family learning, finance and a fair dose of fun. Happily for the consumer, these bundles are not produced by skimping on the standard or size of hardware such as memory and hard drive.

So whether you are looking to update the machines in your office, buy a single PC for your own SME (small to medium enterprise) or you want a computer that will please every member of your family, check these machines out. You may well find yourself pleasantly surprised.

** Prices do not include delivery.*

Carrera Power Pro II

The Power Pro II arrived with a similar set of technical specifications to the other systems in this price range: 64Mb of SDRAM, a PII 233 processor and the seemingly omnipresent ATI Xpert@Work AGP card. Like all the machines we saw in this price range, the Carrera was commendably orderly and neat inside. Access to the three DIMM slots was very easy, with none of the awkward wires and IDE connections that can sometimes cause frustration when you're upgrading processor, memory and add-in cards.

In terms of performance, the Pro II did well in two of the three tests we put it through. It was second only to the more powerful PII 266 Mesh PC in the BapCo test, and with a score of 257 it outperformed the other three PII 233 machines. The Pro II also scored well in 3D performance in the Final Reality test, but did less well in the Quake test.

This PC came with a wealth of information and drivers, which isn't always as common an occurrence as you might think: it is surprising how often we are sent PCs that don't include drivers for all of the fitted components. This isn't a problem, of course, as long as you don't plan on reinstalling Windows. Frustratingly, the boot disk that Carrera included was yet another disk that lacked MSCDEX drivers for the CD drive, making it impossible to load up the Windows 95 operating system from the CD.

The LG Studioworks 57i monitor was fairly impressive, with its 13.8in of viewable screen from a 15in monitor and excellent on-screen controls. It was capable of a refresh rate of 85Hz at 1,024 x 768 resolution, and unlike many other 15in screens the picture did not suffer from blooming.

PCW Details

Price £1,173 (£999 ex VAT)
Contact Carrera 0171 830 0486
www.carrera.co.uk
Good Points A powerful machine that performed well with both 2D and 3D applications.
Bad Points No surprises or "extras" in terms of hardware or software.
Conclusion A good machine for the price.

Build Quality	★★★★☆
Performance	★★★★★
Value for Money	★★★★☆
Overall Rating	★★★★☆

Dabs Navigator II

The PC Dabs submitted for this group test was slightly disappointing on initial impressions. On first setting up the PC we were surprised to find that of the standard two power cables Dabs had sent us, one was designed for a foreign socket fitting, rendering it useless in the UK. When that had been sorted out we tried to switch everything on, only to find that there was no response from the monitor at all. Not a promising start. It turned out that the AGP graphics card had come loose, possibly in transit, and normal service was resumed after we reseated the card. We began to believe in jinxes when we discovered that the keyboard's lead didn't fit into the PS2 socket on the back of the PC. We happen to have a supply of adapter leads at *PCW* — which is lucky, because Dabs hadn't included one.

Once up and running the Navigator II performed powerfully in the BapCo tests but, while it scored respectably in the Quake graphics test, the 3D scores in Final Reality were somewhat less impressive. The overall technical configuration was similar to the other machines in this price bracket, with an Intel Pentium II 233 processor and 64Mb SDRAM, but they provided a 33Kbps modem and a 3.2Gb hard drive compared to some manufacturers' 56Kbps modems and 6.4Gb hard drives. The software bundle comprised Lotus SmartSuite 97 and Corel's CorelDraw 4 bundle.

With three spare 5.25in expansion bays, two forward-facing and another three free 3.5in bays, there was plenty of room inside the huge ATX midi tower case for anyone looking to add Zip drives or additional hard drives perhaps. This sense of space was extended to the Abit motherboard, with one of three ISA slots free, all four PCI slots empty and all 64Mb of the SDRAM on the one slot, leaving the other three DIMM slots free.

The Belinea 15in monitor was capable of a healthy 85Hz at 1,024 x 768 resolution, although this meant loss of focus and halos on some icons. There was also noticeable blurring around the top corners of the screen, even at 800 x 600.

PCW Details

Price £1,173 (£999 ex VAT)
Contact Dabs Direct 01942 794000 www.dabs.com
Good Points Plenty of room for anyone wishing to expand.
Bad Points There were numerous hassles in setting up this PC.
Conclusion It would have had to be an incredible machine to make up for its poor start. It wasn't.

Build Quality	★★★★☆
Performance	★★★★☆
Value for Money	★★★★☆
Overall Rating	★★★★☆

Mesh Elite 266XM

Personal Computer World **Highly Commended**

The Mesh PC came with a technical specification so hefty it could have worn a hat and a cape and been called "Big Daddy". For starters there was an Intel Pentium II 266 processor and 64Mb of fast SDRAM memory. There was also a whopping 6.4Gb hard disk and a 56K US Robotics X2 modem. The graphics were provided by an onboard 4Mb ATI Xpert@Work AGP chip. We don't get sent many desktop PCs for our group tests but it's interesting to see a slightly different machine, and anyway, it all comes down to personal choice in the end. We liked the look of this machine.

Inside, the Elite was neat and orderly with all four PCI slots free, along with the two ISA slots that were taken up with a SoundBlaster AWE 64 sound card and the modem.

Our one criticism of the ASUS P2L97A motherboard was that there was no AGP slot fitted and so upgrading the AGP graphics is not an option. However, the 4Mb currently on the Xpert@Work is pefectly adequate.

Mesh presented an impressive package with all hardware information and drivers bundled in a branded plastic pack, and a large poster as a guide to setting up the PC to reassure the technologically wary. As well as the impressive hardware Mesh has included Lotus SmartSuite 97 and IBM's Simply Speaking voice-recognition software, along with a microphone.

The Elite scored impressively in both our BapCo and Final Reality tests, and there is plenty of space on the 6.4Gb hard drive for all those memory-hungry 3D-rich applications that we keep hearing so much about.

The 15in Taxan Ergovision 550 monitor had wonderfully user-friendly controls and managed a rock-solid refresh rate of 85Hz at 1,024 x 768 resolution. The picture itself was impressively sharp with crisp, bright colours.

PCW Details

Price £1,173 (£999 ex VAT)
Contact Mesh 0181 452 1111 www.meshplc.co.uk
Good Points A tremendous set of specifications for the price.
Bad Points No AGP slot.
Conclusion A powerful machine that will perform as well as a business or games PC.

Build Quality	★★★★☆
Performance	★★★★☆
Value for Money	★★★★☆
Overall Rating	★★★★☆

p206 >

Roldec Predator 233

Roldec's Predator 233 was kitted out with an Intel Pentium II processor, 32Mb SDRAM and a 3.2Gb hard disk. This is a little skimpy compared with the other machines reviewed: all had 64Mb SDRAM and a couple had 6.4Gb hard drives. Also included was the rightly revered SoundBlaster AWE 64 sound card from Creative Labs, a 32-speed TEAC CD-ROM drive, a 56K Rockwell modem and the superb STB Velocity 128 AGP card with TV support.

The Predator scored very impressively in our Quake test and nosed into fourth in the BapCo test. Having complained about the lack of memory, it actually bears out our buying advice when it comes to Windows 95 machines: more than 32Mb of memory does not necessarily mean greatly increased performance. (Windows NT certainly benefits from extra memory, as will, in all likelihood, Windows 98.)

There was plenty of room for expansion with all four PCI slots free, as well as free 3.5in and 5.25in forward-facing bays. The graphics are provided by an AGP card rather than being soldered on to the motherboard, so it is possible to upgrade the AGP card if and when necessary.

The Predator arrived as part of a well-presented package complete with branded packs full of drivers and information. A flaw in Roldec's support pack became apparent when we tried to reload Windows 95: we discovered that Roldec's start-up disk didn't include drivers for the CD-ROM drive, meaning that we could not access the Windows 95 disk until replacement drivers were found.

The software Roldec included indicated that the intended market for this PC is the office user. Along with Lotus SmartSuite 97, Intel's LANdesk management software and the graphics package, MGI Videowave SE, were present.

The ADI 15in ProVista E40 could support a 1,024 x 768 resolution at a refresh rate of 85Hz, although there was a slight loss of focus.

PCW Details

Price £1,173 (£999 ex VAT)
Contact Roldec 01902 456464
www.roldec.com
Good Points A decent performer.
Bad Points A shame that the less powerful specification wasn't compensated for by bonus peripherals and software.
Conclusion Worth considering.

Build Quality	★★★★☆
Performance	★★★★☆
Value for Money	★★★★☆
Overall Rating	★★★★☆

Time 233-2 Professional PC 15"

Personal Computer World Editor's Choice

Time Computer Systems, along with Colossus and MJN, is one of three companies owned by holding company Granville Technology, and each company targets a different market. Time sells primarily to the home user and has numerous packages with fixed price points. Acknowledging this, we accepted the system Time sent, price £1,068 (ex VAT), despite it exceeding our requirement. While it was marginally more expensive than the other PCs in this category, Time had undoubtedly provided a very impressive configuration: an Intel Pentium II 233 processor, a huge 6.4Gb hard drive and the excellent ATI Xpert@Play AGP graphics card.

As soon as we started to unpack the machine we became aware of the high bang-per-buck ratio Time had provided for the home user: a Quickshot joystick, a video guide to using a PC, a Softpack CD compilation of ten edutainment titles and a bundle of five bestselling PC games from the last couple of years, including Command and Conquer and Theme Hospital. Pre-installed software comprised Lotus SmartSuite 97 and IBM Voicetype, along with graphic art, DTP and home organisation software. The only drawback is that you have to make your own backups of these titles (several dozen floppies required) or pay Time £99 for a CD.

In a nice touch for gamers, Time's engineers have tweaked the Windows 95 boot menu so that, when starting up, the PC will ask you if you want to go straight to Windows or play games. If you choose to play games it will give you a list of ways for the memory to be configured to get the maximum performance from the machine. Should you wish to tinker with the Time's innards there is support on hand via the excellent accompanying Application of Technology pack, with information on both software and hardware.

The CTX 1569 SE 15in monitor provided one of the best pictures of the 15in screens we saw in this group. It was capable of a pin-sharp resolution of 1,024 x 768 at 85Hz refresh rate, with none of the lack of focus that we saw on other screens.

PCW Details

Price £1,254 (£1,068 ex VAT)
Contact Time 0800 771107 (no web site)
Good Points Excellent features for family users.
Bad Points Bear in mind that it is slightly more expensive than the other machines.
Conclusion An excellent combination of software and hardware.

Build Quality	★★★★☆
Performance	★★★★☆
Value for Money	★★★★★
Overall Rating	★★★★☆

p210 >

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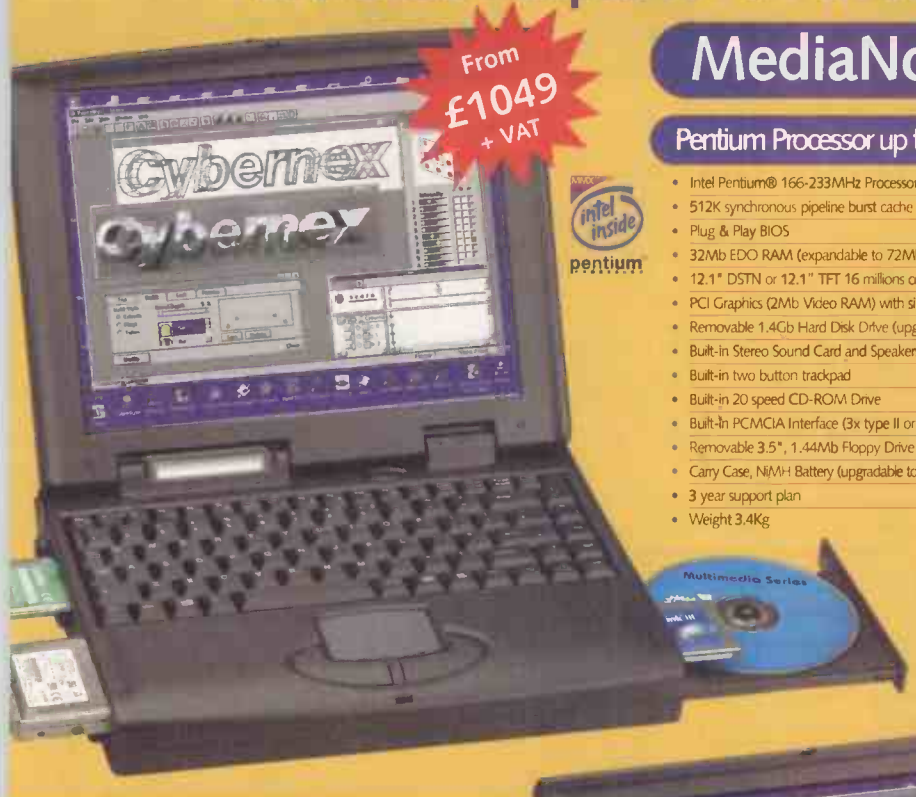

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INTELLIMOUSE + 3.5" DISKETTE DRIVE

DELL DIMENSION XPS D266 MT
- Intel Pentium II Processor 266MHz
- Intel 440LX AGPset
- 64MB High Performance SDRAM
- 512KB Internal Cache
- 4.3GB ATA-33 Hard Drive
- STB Velocity nVidia AGP Video Card with 4MB SGRAM Video Memory
- **17" Colour SVGA Monitor (0.28 dot pitch, 15.9" Viewable Area)**
- 3 PCI, 1 ISA, 1 PCI/ISA Shared and 1 AGP Expansion Slots
- 14/32X CD-ROM Drive
- Yamaha XG Software Wavetable Sound and Altec Lansing ACS90 speakers
- Mini Tower Chassis
- Microsoft Office 97 Small Business Edition
- **US Robotics 56Kb/s Modem**

DELL FINANCE 3 YEAR RENTAL: £9.70 PER SYSTEM, PER WEEK, EXCLUDING DELIVERY AND VAT.

DELL DIMENSION XPS D266 MT

£1,179 (£1,420.58 INCLUDING DELIVERY & VAT **)**

Add colour printer–HP Deskjet 690c colour printer plus cable £169 (incl Del. Excl VAT)

BUSINESS EDITION

DELL DIMENSION XPS D233
- Intel Pentium II Processor 233MHz
- Intel 440LX AGPset
- **64MB High Performance SDRAM**
- 512KB Internal Cache
- 4.3GB ATA-33 Hard Drive
- STB Velocity nVidia AGP Video Card with 4MB SGRAM Video Memory
- 15" Colour SVGA Monitor (0.28 dot pitch, 13.75" Viewable Area)
- 3 PCI, 1 ISA, 1 PCI/ISA Shared and 1 AGP Expansion Slots
- 14/32X CD-ROM Drive
- Yamaha XG Software Wavetable Sound (speakers optional)
- Mid-sized Desktop Chassis
- Microsoft Office 97 Small Business Edition

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- MS Works 4.5
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that the software they are running is also year 2000 compliant.

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- 12/24X SCSI CD-ROM Drive
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- Sound Blaster 16-bit compatible Audio Controller
- Integrated 3COM fast Etherlink™ XL
- Microsoft Windows NT 4.0
- High Performance TCO 17" Colour SVGA Monitor (0.26 dot pitch, Trintron® CRT, 15.65" Viewable Area)
- Adaptec 2940 UW SCSI Controller
- 3 PCI plus 2 ISA Expansion Slots
- 2 serial, 1 parallel, 1 keyboard mouse and 2 USB ports
- 1 Year On-Site Service plus 2 years RTB

"BEST BUY AWARD"
CAD USER MAGAZINE SEPT. 1997

DELL WORKSTATION 400M

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DELL WORKSTATION 400M
- **Dual** Intel Pentium II Processor 333MHz
- 128MB ECC EDO RAM
- 512KB Internal Cache
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- Matrox Millenium II 8MB WRAM PCI video card
- 12/24X SCSI CD-ROM Drive
- 3.5" Floppy Drive
- Sound Blaster 16-bit compatible Audio Controller
- Integrated 3COM fast Etherlink™ XL
- Microsoft Windows NT 4.0
- High Performance TCO 17" Colour SVGA Monitor (0.26 dot pitch, Trintron® CRT, 15.65" Viewable Area)
- Adaptec 2940 UW SCSI Controller
- 3 PCI plus 2 ISA Expansion Slots
- 2 serial, 1 parallel, 1 keyboard mouse and 2 USB ports
- 1 Year On-Site Service plus 2 years RTB

DELL WORKSTATION 400M

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Editor's Choice

Personal Computer World Editor's Choice

The five PCs in this group test shared similarities in technical specification that made it tricky at times to tell them apart. We had set certain minimum specifications as guidelines, but it was interesting that all the machines apart from one had 64Mb of SDRAM, all five had PII processors with four running at 233MHz, all but one had ATI AGP graphics and three of the five had Creative Labs' AWE64 card.

Roldec sent its Predator 233 for review, and on paper its 32Mb of SDRAM didn't look promising next to the other four machines with double that. In fact, it performed pretty well in the BapCo tests and gained the best score on the Quake frame-rate test. The PC that did best in both tests was the **Mesh Elite 266XM PC**, which gets a well deserved **Highly Commended** award. It was the only PC fitted with a PII 266 rather than the 233 and contained 64Mb SDRAM, a SoundBlaster AWE64 sound card and a US Robotics 56K X2 modem, as well as being one of only two machines to be fitted with a massive 6.4Gb IBM hard drive. As an extra incentive, the accompanying monitor was the excellent 15in Taxan Ergovision.

Our Editor's Choice is never given solely on an impressive set of specifications, however. We take into consideration the package as a whole — which is why **Time Computer Systems** has been awarded the **Editor's Choice** for its **233-2 Professional PC 15"**. We liked the general sense of care that Time seemed to have taken, reflected in the customising of the Windows 95 boot system. There was the VHS "trainer" video too, and the excellent support pack which held all the drivers and manuals together in the relevant sections rather than loose in a box. This machine is more expensive than the price we specified (£82 inc VAT, in fact) and as such we were not surprised to find something extra for the money. Time produced a PC as powerful as the others submitted and the bundled software was impressive: pre-loaded Pressworks and other software, as well as a pack of five games and a ten-CD edutainment pack.

BapCo test results for £1,000 PCs

VNU LABS

Manufacturer	Product	Totals
£1,000 PCs		
Time	233-2 Professional	283
Roldec	Predator 233	257
Dabs	Navigator II	254
Carrera	Power Pro II	245
Mesh	Elite 266M	244

0 50 100 150 200 250 300 350 400 450 500

BIGGER IS BETTER

Final Reality scores for £1,000 PCs*

VNU LABS

Manufacturer	Product	Totals
£1,000 PCs		
Dabs	Navigator II	2.42 2.52
Time	233-2 Professional	2.86 3.04
Carrera	Power Pro II	2.85 3.13
Mesh	Elite 266M	3.14 3.36
Roldec	Predator 233	3.46 2.82

0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

BIGGER IS BETTER

3D Performance

*Overall Performance

p212 ➢

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Table of Features

Personal Computer World Highly Commended

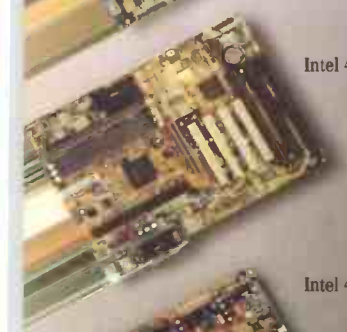
Personal Computer World Editor's Choice

Manufacturer	Carrera	Dabs Direct	Mesh	Roldec	Time Computer Systems
Model	**Carrera Power Pro II**	**Navigator II**	**Elite 266XM**	**Predator 233**	**233-2 Professional PC 15"**
Price (inc VAT)	£1,173	£1,173	£1,173	£1,173	£1,255
Price (ex VAT)	£999	£999	£999	£999	£1,068
Telephone	0171 830 0486	01942 794000	0181 452 1111	01902 456464	0800 771107
Fax	0171 299 6600	01942 790790	0181 208 4933	01902 452592	01282 770701
URL	www.carrera.co.uk	www.dabs.com	www.meshplc.co.uk	www.rodec.com	n/a
Standard warranty	1 yr RTB, 2 yrs lab	1 yr on-site, 4 yrs lab	2 yrs RTB	1 yr RTB, 4 yrs lab	1 yr RTB
Warranty options	Upgrade to 3 yrs on-site	Upgrade to 5 yrs on-site	Upgrade to on-site	1-3 yr s on-site	3 yr/5 yr upgrade
Technical support tel. no.	Not available	01942 794230	0181 208 2028	01902 451551	01282 770033
Hardware spec					
Processor	Intel PII 233 MMX	Intel PII 233 MMX	Intel PII 266 MMX	Intel PII 233 MMX	Intel PII 233 MMX
RAM	64Mb	64Mb	64Mb	32Mb	64Mb
RAM type	SDRAM	SDRAM	SDRAM	SDRAM	SDRAM
Hard disk	Quantum Fireball	Quantum Fireball	IBM	Quantum Fireball Stratus	Seagate
Size(Gb)/interface	3.2Gb/UDMA	3.2Gb/UDMA	6.4Gb/UDMA	3.2Gb/UDMA	6.4Gb/UDMA
Motherboard components					
Motherboard manufacturer	Intel	Abit	Asus	Intel	Intel
Motherboard model	440LX	440LX	P2L97A	AL 440LX	AL440LX
Chipset	Intel 440LX	Intel 440LX	Intel 440LX	Intel 440LX	Intel 440LX
L2 cache	512Kb	512Kb	512Kb	512Kb	512Kb
Expansion and I/O					
Spare bays 3.5in/5.25in	2/2	4/5	1/1	2/1	2/2
PCI slots/ISA slots/shared	4/2/0	4/3/0	4/2/0	4/2/2	2/4/0
USB/serial/parallel/PS2	2/2/1/2	2/2/1/2	2/2/1/2	2/2/1/2	2/2/1/2
Multimedia					
CD-ROM manufacturer	Mitsumi	Mitsumi	Teac	Teac	LG
CD-ROM speed/interface	24x/IDE	24x/IDE	32x/IDE	32x/IDE	24x/IDE
Sound card manufacturer	Carrera	Creative Labs	Creative Labs	Creative Labs	Creative Labs
Sound card model	S3 Vibes 3D	SoundBlaster AWE64	SoundBlaster AWE64	SoundBlaster AWE64	SoundBlaster 16 Vibra (onboard)
Speakers	Altec Lansing ACS90	Typhoon 120W	Contec 50W	Roldec 240W	Quickshot Sound Force 600
Graphics & monitor					
Graphics card	Ati 3D Xpert@Work	Ati Xpert@Work	Ati Xpert@Work (on-board)	STB Velocity AGP	Ati Xpert@Play
Graphics card RAM/Max RAM	4Mb/8Mb/SGRAM	4Mb/8Mb/SGRAM	4Mb/4Mb/SGRAM	4Mb/4Mb/SGRAM	4Mb/4Mb EDO
Monitor model	Goldstar 57i	Belinea 15 80 35	Taxan Ergovision	Adi Provista E40	CTX 1569SE
Monitor size	15in	15in	15in	15in	15in
Max rfsh rate @ 1,024x768(NI)	85Hz	85Hz	85Hz	85Hz	85Hz
Other information					
Modem make	Rockwell	Typhoon	US Robotics	Roldec	Time
Modem speed (Kbps)	56	33.6	56	56	56
Other extras			Microphone		90-minute VHS training video, Quickshot joystick, Softpak 10-CD package, Top 5 game pack, Headset
Software	Lotus SmartSuite97 PC Check Diagnostic	Lotus SmartSuite97 CorelDraw 4.0	Lotus SmartSuite97 IBM Voicetype	Lotus SmartSuite 97 PC Check System	Lotus SmartSuite97 IBM Voicetype Quicken 5.0 Designworks Pressworks Homewise
Year 2000 compliant?	●	●	●	●	●

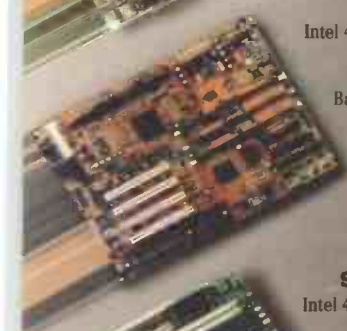
● yes ○ no

p214 >

SY-6KD
Intel 440 LX Chipset
Dual Pentium II Slot
AGP Slot
Ultra DMA 33
I2O
ATX Format



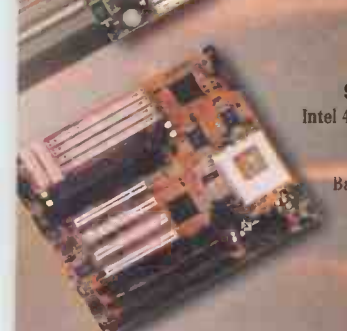
SY-6KB
Intel 440 LX Chipset
AGP Slot
Ultra DMA 33
ATX Format
Lm 78



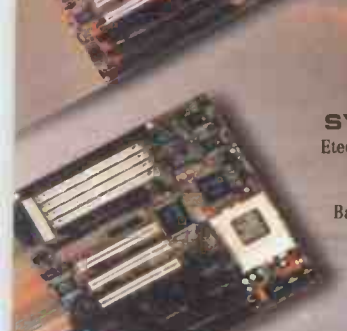
SY-6KF
Intel 440 LX Chipset
AGP Slot
Ultra DMA 33
Baby AT Format
Lm 78

SY-5XA5
Intel 430 TX Chipset
512 KB Cache
Ultra DMA 33
ATX Format
Lm 78

SY-5XB5
Intel 430 TX Chipset
512 KB Cache
Ultra DMA 33
Baby AT Format
Lm 78



SY-5BT5
Intel 430 TX Chipset
512 KB Cache
Ultra Dma 33
Baby AT Format



SY-5EA5S
Eteq 6618 Chipset
512 KB Cache
Ultra Dma 33
Baby AT Format
Lm 78

SY-5ED5/M
Eteq 82C662X Chipset
512 KB/1MB Cache
Socket 7 AGP
DDR-SDRAM-Support
(SD RAM 2)
PC 97, ACPI
Ultra DMA/33
MMX Support
Supports AMD K6 Write
Allocate & Cyrix Linear Burst
ATX Format

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£1500

With £1,500 to play with you can expect to be able to buy yourself a fairly impressive PC*. More memory, bigger hard disks and larger, higher-resolution monitor are now well within your reach. PCs in this price bracket are typically built around an Intel Pentium II processor and as such will usually incorporate an AGP graphics card to take advantage of this faster graphics-handling technology.

£1,500 is often used as a benchmark price in the *PCW* office. You will notice throughout our anniversary section [p71] that we have looked at what it was possible to buy for that amount throughout the twenty years of *PCW*'s existence, and comparing what you could buy just 12 months ago with the five machines reviewed in this group is a good demonstration of just how quickly the price of new technology is falling.

A £1,500 PC is ideal for demanding office environments. The 17in monitors specified in our requirements make these machines ideal for Windows users. In such GUI environments, multiple applications, as well as small icons and text, need to be displayed simultaneously, and so a viewable diagonal of at least 15.5in makes the display comfortable on the eye. The generous hard drives and memory installations of these machines mean that they should last, with little or no additions, for a good few years to come. The bundled software is often a good indication of what the manufacturers themselves see their machines being used for, and we were pleased to see that many of them had included a wide selection of educational, reference and business applications (mainly drawn from the Microsoft range). Such inclusions make the PC suitable for home and small office use and although the software is not usually top-of-the-range, it should act as a stopgap measure to save customers from having to make further purchases immediately should they not feel the need.

For those who have the money, £1,500 is a sensible price point on which to base a purchase and the five machines reviewed here give an accurate representation of what a good cross-section of the marketplace is likely to supply for that sort of money. It is no longer necessary to break the £2,000 barrier to have a speedy, up-to-date computer on your desktop.

** Price includes delivery.*

Evesham Micros Vale Platinum PII

Personal Computer World **Highly Commended**

The Vale Platinum PII is based around the Intel Pentium II 266 processor with 64Mb SDRAM. The attractive bevelled case had two free front-facing 5.25in bays, but removing the blanking plates to put them in use would leave you with an ugly fascia. Using a key as well as the usual screw arrangement gave this unit a degree of security while inside were hidden a further two free 3.5in bays and a fairly tidy arrangement of cabling that flexed sufficiently to allow easy access to the single remaining free memory slot. The processor was tucked away behind the PSU which would have to be removed to make it accessible.

Two PS/2, two 9-pin COM, two USB and one parallel port were well labelled on the rear of the machine, while inside three PCI and a shared slot were left free for future expansion. A rather cheap-feeling and unresponsive joystick was the only disappointing peripheral, as the Microsoft Intellimouse and Vale-branded KeyTronic keyboard were both a joy to use. The stylish Zydec Zy-Fi speakers with a maximum output of 120W provided excellent sound from the SoundBlaster AWE 64 and looked good enough to sit proudly on any desk.

A wide selection of bundled Microsoft software included Works, Encarta 98 and Money 97 as well as some of the more fun titles along the lines of Cinemania 97 and Golf. SuperVoice software was thrown in to support the 56K internal voice modem. The ATI Rage Pro graphics card held 8Mb onboard RAM to display smooth full-screen video, but we would have liked Evesham to have installed the MSCDEX drivers so that we could use the CD-ROM drive under DOS.

The Taxan ErgoVision 760 monitor offered a clear, sharp display. Extensive on-screen controls allowed for a wide range of adjustments to be made, including simultaneous horizontal and vertical size alterations with its zoom function. The simple push-and-twist-control was intuitive and easy to use. A 15.5in viewable diagonal with .27mm dot pitch makes it particularly suitable for Windows applications where many icons or programs need to be displayed simultaneously.

PCW Details

Price £1,702.58 (£1,449 ex VAT)
Contact Evesham Micros 0800 6345999
www.evesham.co.uk
Good Points Speakers. Monitor. Case.
Bad Points Joystick.
Conclusion A well-built machine that was a joy to use.

Build Quality	★★★★½
Performance	★★★★★
Value for Money	★★★★½
Overall Rating	★★★★½

p218 ➢

Profesional 2'720 Optical Resolution 30-bit - Slide/ Neg Scanner

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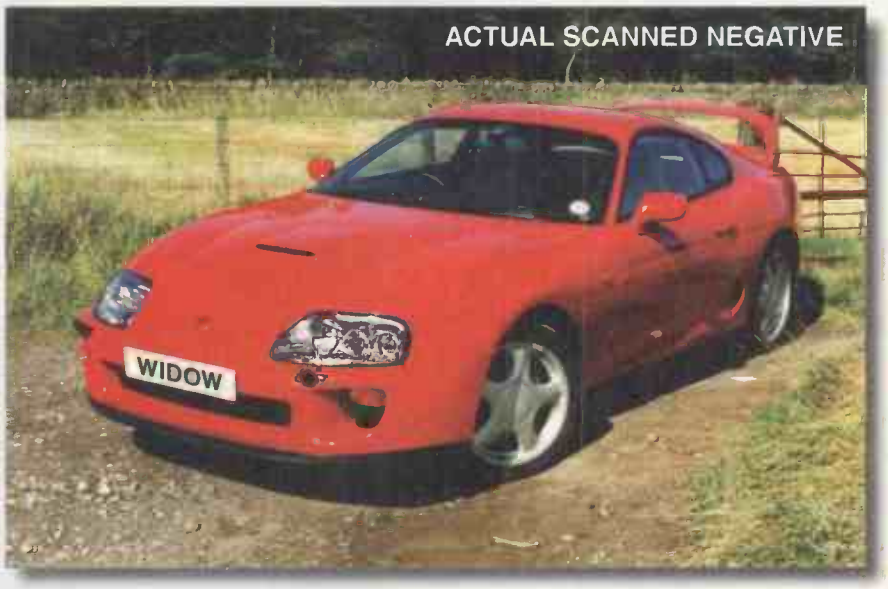
Optical resolution of 2720dpi and 30-bit color, and a fully functional professional standard TWAIN user interface just leaves other similar products in the dark.



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- FREE Adaptec SCSI card
- FREE film strip holder
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Film format compatibility lets you enjoy the benefits of Advanced Photo System film.

In addition to handling standard 35mm positive and negative film, the CanoScan 2700F is one of the few scanners presently available that's also equipped to handle the new Advanced Photo System format.

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Nov. 1997 issue of PC Format

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PC Guide
March 1997 issue of PC Guide

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Scanmaker E6 from Microtek
Scanjet 4P from Hewlett Packard
GT-5000 from Epson
ScanTak 2C from Spot Technology

GOLD AWARD
March 1997 issue of PC Format

Computer Buyers Highest Award !
TOP 50 BEST BUY
Overall Winner Comparison Review against: Umax, Epson, Mustek, & Trust.
February 1997 issue of Computer Buyer

PC Home's Highest Award !
PC HOME GOLD
May 1997 issue of PC Home

Overall Best Buy out of 15 x Scanner group test !
November 1996 issue 105

Scanner of the Year 1996 In What PC
SCANNER OF THE YEAR 96 WHAT PC?

Actual Scanned Photos

2 YEAR WARRANTY FREE

36 New 30-bit MODEL AVAILABLE

UNIQUE 3-D SCAN-HEAD

Info !

Before you decide which new scanner to buy it is important that the performance comes up to your expectations. Check out the sample scanned photo's above. These were scanned at our maximum optical resolution, imported into Corel DRAW 7 then output to film for this advert. As you can see the quality of output, the BW 4830PP is just unsurpassed by any other low cost scanner.

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What makes the difference between good quality scans and great scans ? It's obvious, there's nothing more important than high optical resolution and a vast number of colours. These are the two most important factors which make all the difference. There is only one problem, scanners offering this level of specification are expensive. Well not now ! You can now buy a Black Widow 600 x 1200 dpi SCSI II scanner for the same price or even less than some 300 x 600 models. Imagine having 8 x the enlargement capability, maintaining even the very finest detail, and producing the type of scans you would only normally find on a Photo-CD. In fact on many occasions you can even improve on your original photo.

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Our new range use a FAST-SCSI II interface and come complete with fast 32-bit drivers. So, when it comes to performance, few other scanners come close (This means its much quicker than low cost Parallel products and probably a lot easier to install). Add to this the award winning build quality and performance that we have all come to expect from the best selling off the page flatbed range in UK and you can just forget the competition. Once again Black-Widow have set the standard for all others to try and follow. When it comes to offering professional quality at an affordable price Black Widow have to come first on your shopping list and a Picture Speaks a 1000 words just look at the quality of the sample print outs ?

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- Multiple Pre-Set Gamma with save & load.
- Special Factory Gamma Pre-set diskette.
- Reprographic calculator for optimum & correct resolution selection, essential for output to RIP.
- 400 x more colours than a normal 24-bit scanner.

(Other features the same as Black Widow-9630 S)

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Some Black Widow Awards below.

14 x Scanner Review. Editors Choice 1st, 2nd, & 3rd place with 3 different Black Widow Scanners a first in UK.

GOLD AWARD

Nov. 1997 Issue of PC Format

PC Direct HITS AWARDS '97

Finalist and potential winner of this years platinum awards.

The only Scanner Recommended In the Best Peripheral Awards of 1996

PC Advisor RECOMMENDED

December 1996 Issue of PC Advisor

PC Guide

March 1997 Issue of PC Guide

Overall Winner of Scanner Round-up other scanners inc:

Paragon II SP from Mustek
Scanmaker E6 from Microtek
Scanjet 4P from Hewlett Packard
GT-5000 from Epson
ScanTax 2C from Spot Technology

GOLD AWARD

March 1997 Issue of PC Format

Computer Buyers Highest Award !

TOP 50 BEST BUY

Overall Winner Comparison Review against: Umax, Epson, Mustek, & Trust.

February 1997 Issue of Computer Buyer

PC Home's Highest Award !

PC HOME

May 1997 Issue of PC Home

Overall Best Buy out of 15 x Scanner group test !

November 1996 Issue 105

Scanner of the Year 1996 in What PC

96 WHAT PC?

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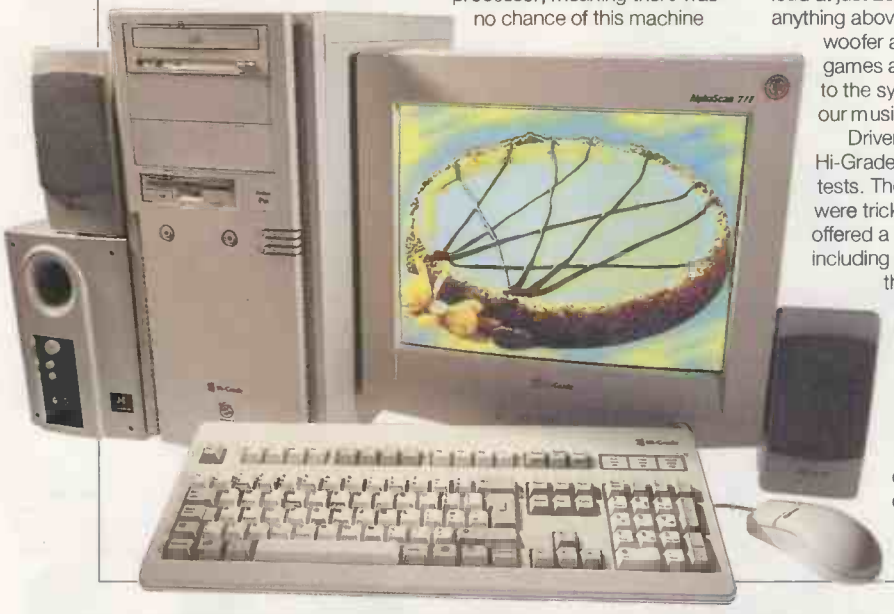
Black Widow® Scanners Black Widow® Scanners Black Widow® Scanners

Hi-Grade Axion Pv2-266

As with the other machines in this price bracket, the Axion is based around an Intel Pentium II 266 processor and 64Mb SDRAM. We were impressed by the immaculate interior of this PC. All spare power cabling and drive-bay supports had been cable-tied to the base of the case, ensuring that while out of the way they were always to hand: a nice touch. Access to the processor and two free 168-pin memory slots was easy and unobstructed, with the full 64Mb being supplied on a single module. Three free PCI and a shared ISA slot offered reasonable opportunity for expansion and a lot of ventilation. There were three fans in total, including the one on the processor, meaning there was no chance of this machine overheating. One free unoccupied external 3.5in bay and two 5.25in bays would allow us to increase our drive allocation, but with a 120Mb SuperDisk drive and complementary disk thrown in we felt this PC was already looking towards the future. A faulty cable rendered the supplied Cherry keyboard inoperative.

The 56K Pace modem was supplemented by trial software for both BT's LineOne and Hi-Net. Lotus SmartSuite97 was pre-installed and accompanied by World Book and IBM ViaVoice but with no microphone supplied we were unable to test this latter package. The 200W 3D speakers from Jazz Hipster Corporation were satisfyingly loud at just 25 percent of their potential maximum volume, but at anything above that level they started to distort. Comprising a large woofer and two smaller satellite speakers they were suitable for games and entertainment use, but with no CD audio cable fitted to the system — a surprising omission — we were unable to play our music through them.



Driven by an ASUS AGP V-3000 card with 4Mb RAM, the Hi-Grade AlphaScan 711 offered a clear image throughout our tests. The on-screen controls were tricky to use but they offered a range of functions including degauss and, rather than implementing them through separate rotary controls, contrast and brightness. Picture rotation adjustments were available but no colour temperatures controls were present.

PCW Details

Price £1,756.62 (£1,495 ex VAT)
Contact Hi-Grade 0181 532 6110
www.higrade.com
Good Points Monitor. SuperDisk.
Bad Points Faulty keyboard. Poor speakers.
Conclusion A well-built, impressive performer.

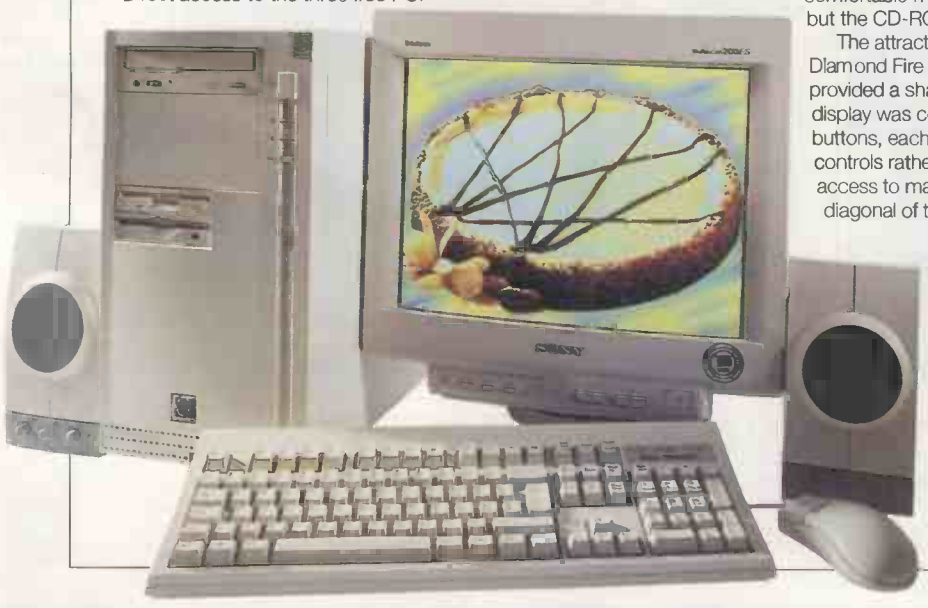
Build Quality	★★★★½
Performance	★★★★★
Value for Money	★★★★★
Overall Rating	★★★★½

KT Computers Vision PII266 AGP

Personal Computer World Editor's Choice

The Vision PII 266 AGP, as the name suggests, uses the Intel Pentium II 266 processor. Upon opening this wide case it at first seemed that we would have difficulty accessing the processor and memory due to a further set of partial walls and the fact that the processor was positioned behind the PSU. Closer inspection revealed that the back of the case slid out, taking the motherboard, memory and processor with it, but the cables linking it to the sound card, drives and fascia LEDs would have to be detached before it would move far enough to be of any use: not to be recommended unless you know what you are doing. There were two external 5.25in bays free.

Direct access to the three free PCI and one free shared slots was fine, and although the 64Mb RAM was installed in the form of two 32Mb modules we still had one slot free to upgrade in the future. Lotus SmartSuite97 was bundled, as was a BT Internet CD and SuperVoice to accompany the modem. Sound arrived courtesy of the excellent SoundBlaster AWE 64 card and a pair of anonymous speakers capable of a maximum output of 120W. At 6.4Gb the Quantum Fireball hard drive was big enough and fast enough to cope with whatever the next generation of software users might want to throw at it. The keyboard and mouse were both comfortable models from KeyTronic and Microsoft respectively but the CD-ROM drive had not been set up to work from DOS.



The attractive Sony MultiScan 200ES monitor, driven by a Diamond Fire GL1000 Pro graphics card with 8Mb RAM, provided a sharp and steady picture throughout our tests. The display was comfortable to look at and the front-mounted buttons, each of which initiated its own mini-set of on-screen controls rather than drawing from a main menu, offered fast access to many commonly used functions. The 16in viewable diagonal of this Trinitron screen had a maximum flicker-free 1,024 x 768 refresh rate of 85Hz with steady colour purity and brightness levels and a constant screen-wide focus.

PCW Details

Price £1,620.33 (£1,379 ex VAT)
Contact KT Computers 0181 961 8897
www.ktcomputers.co.uk
Good Points Monitor. Speed.
Bad Points Tricky to get at the insides.
Conclusion Well built and well worth considering.

Build Quality	★★★★½
Performance	★★★★★
Value for Money	★★★★★
Overall Rating	★★★★½

Simply Computers Multimedia 7570

The first thing that struck us about this PC was the unconventional bulging case that housed a Zip drive and the usual selection of drives while leaving a further 5.25in external bay free. The only free 3.5in bay was internal, and expansion opportunities comprised two free ISA and one free PCI slots. The back of the machine was well labelled and sported two USB sockets.

Unlike the other manufacturers' offerings, upon arrival some of the 7570's Windows parameters had not been completely set up and we were required to enter our regional settings and OEM number and to install a printer. The keyboard was supplied by Mitsumi with Microsoft providing the mouse. The selection of software was suited to a wide range of users, incorporating, among others, business titles along the lines of WordPerfect Suite 7 and CorelDraw 4 and a selection of games including Descent 2 and Shattered Street.

Sound arrived courtesy of a set of Yamaha 10W-per-channel speakers driven by the excellent SoundBlaster Awe 64 card, while an ASUS graphics card with 4Mb onboard memory took care of video. The interior of the machine was fairly tidy with the CD audio cable neatly tied back to the case, and although there were a number of cables directly in front of the two free SDRAM memory slots they were flexible enough not to impede access. An external 56Kbps Sportster MessagePlus modem and a 32X CD-ROM drive completed the package which was, all in all, an impressive submission from Simply.

The Iiyama VisionMaster Pro 17 monitor supplied the fine, sharp image we have come to expect from this model. The on-screen controls were easy to navigate using just three control buttons, while the 16in viewable diagonal made it particularly suitable for the Windows environment. A sturdy, excellent performer.

PCW Details

Price £1,761.33 (£1,499 ex VAT)
Contact Simply Computers 0181 498 2140 www.simply.co.uk
Good Points Great monitor and software bundle.
Bad Points None to speak of.
Conclusion Hard to beat and well thought out.

Build Quality	★★★★★
Performance	★★★★★
Value for Money	★★★★½
Overall Rating	★★★★★

Viglen Ultimate PC266W

Personal Computer World **Highly Commended**

An attractive, spacious tower housed a particularly tidy PC strung together with impressively well-organised cabling: the CD audio cable even passed behind the motherboard. The 4.1Gb hard drive complemented 64Mb of memory that took up just one of the memory slots, leaving a further two free for future expansion, both of which, like the processor, were unobstructed for easy access. Four PCI slots offered excellent potential for expansion, in part because the 8Mb ATI Xpert@work graphics card, like all the others in this test, used the AGP interface, but this did mean there were no spare ISA slots. An external drive bay of each size and an internal 3.5in bay allowed us to add further drives at a later date should we need to increase our storage capacity.

Bundled with an impressive array of software including Works, Encarta 97, educational packages and a variety of games, the Ultimate also included the superb Microsoft SideWinder 3D Pro joystick that kept the child in us happy. A microphone and very extensive documentation made us feel that a lot of thought had gone into the packaging of this PC and the mouse was a top-of-the-range Microsoft Intellipoint model. Both connected using PS/2 adapters, leaving the two 9-pin serial ports free, as well as a pair of USB sockets. All ports were clearly labelled making the Viglen Ultimate a doddle to set up. The monitor's speakers were supplemented by a splendid set of Yamaha powered speakers comprising a 15W subwoofer and two attractive 5W satellites on angled stands. The modem, built around 56K technology, was bang up to date as was the 24-speed Sony CD-ROM drive.

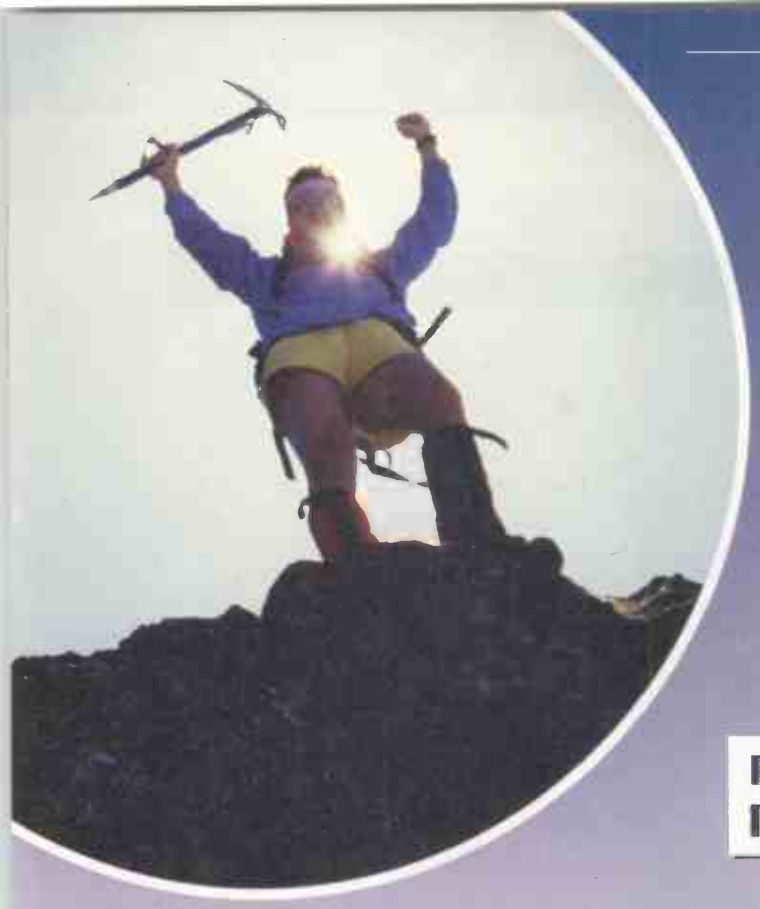
The Viglen-branded monitor incorporated integral speakers that were made redundant by the excellent three-piece Yamaha speaker system. Fascia-mounted controls offered direct access to degauss, volume control, contrast and brightness, whilst the on-screen controls, which included three pre-set colour temperatures, allowed for value adjustments to be made using a rotary wheel.

PCW Details

Price £1,673.20 (£1,424 ex VAT)
Contact Viglen 0990 944 944 www.viglen.co.uk
Good Points Documentation, performance, monitor.
Bad Points Only the monitor speakers, which you would not use anyway.
Conclusion A great performance from a well-built machine.

Build Quality	★★★★★
Performance	★★★★★
Value for Money	★★★★½
Overall Rating	★★★★½

p221 >



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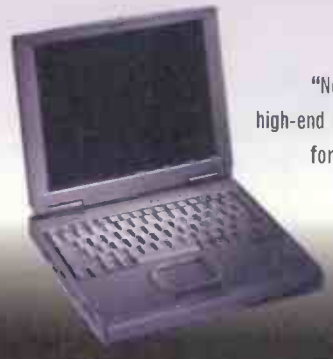

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PC Pro April 1998

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KT computers

Editor's Choice

Personal Computer World Editor's Choice

With such a range of similar machines at this price point, choosing who should be awarded Editor's Choice was never going to be an easy task. All scored well in terms of build quality, all packed their cases so tightly that they turned out to be good value for money, and all received a very high overall score.

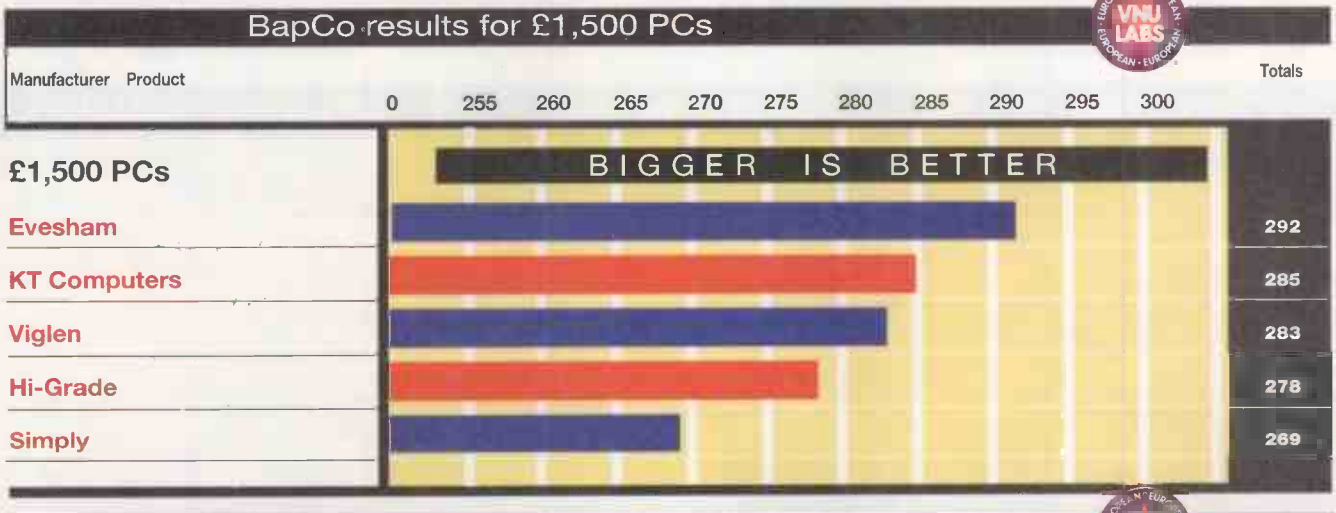
Even the VNU Labs Final Reality Benchmark had difficulty in telling these machines apart. Equipped with powerful graphics cards, they all coped admirably with the 3D rendering necessary to compete in this unforgiving gaming arena.

When spending this type of money you come to expect an impressive monitor and we were certainly pleased to see all the manufacturers coming up with the goods. We particularly liked the Iiyama Vision Master Pro 17 supplied with the Simply Computers system, which offered a clear, sharp, bright image. That same PC also incorporated both a 32-speed CD-ROM and a 56K modem. Current technology means neither of these might ever attain their maximum potential speed, but they will add to the overall speed of the machine by not holding other components back.

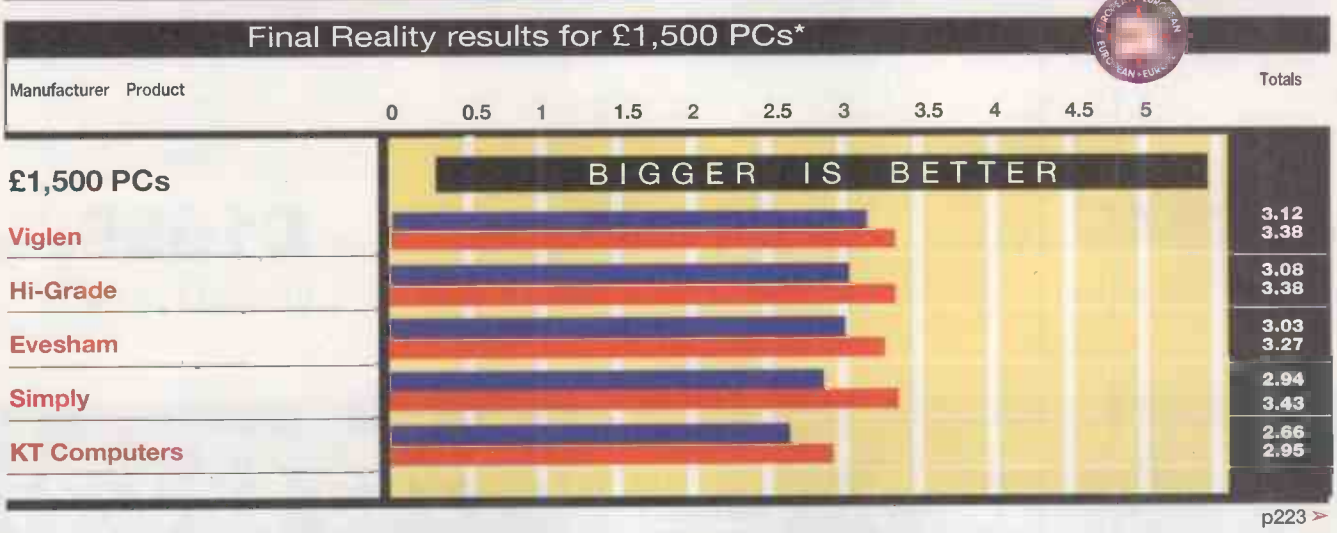
The KT PC performed admirably. Its BapCo score was second only to Evesham, which nosed ahead by seven points in front of its rivals. KT's PC had a sturdy feel and we were impressed by the monitor, keyboard and mouse, all of which lent an air of quality. Also, by undercutting all of its competitors by up to £120 it represented excellent value for money, while the five-year warranty proved that this eleven-year-old company is committed to its products. Although coming last in the Final Reality tests there was hardly anything between KT and the leader, with Simply winning by just tenths of a frame per second. It is for these reasons that **KT Computers' Vision PII266 AGP** is awarded our **Editor's Choice**.

The **Viglen Ultimate PC266W** and the **Evesham Micros Vale Platinum PII** both take well deserved **Highly Commended** awards. Built with quality components throughout, they each attained a top score in one of our benchmarks — BapCo for the Evesham and Final Reality for the Viglen, in which the higher the score, the better the 3D-rendering capabilities of the machine in question.

BapCo results for £1,500 PCs



Final Reality results for £1,500 PCs*



p223 >

"Power by name and powerful by nature"

" If cost is the key, then it is difficult to beat the Powercom Powernote...

...Power by name and powerful by nature, it offers great performance at a price just a whisker away from being the lowest in this group test...Although the Powercom and the Toshiba are very different we recommend them both.."

Powernote MMO - What PC? Recommended February 1998

" The Dell, Viglen & Powercom models all posted high results,

however, the Powercom's extra 16Mb of memory helped it come top in the Business Winstone 97 test. At £2399 the Powercom also undercuts the other two by a substantial margin and when you consider that it comes with a spare battery, a massive hard disk and MS Office 97 Small Business Edition, it looks like an attractive package."

Powernote MMO - Expert Buyer Review PC Direct January 1998

Powercom Notebook features:

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Powernote

"Excellent value for money...
It deserves a Performance award as the fastest 133MHz notebook we've yet tested..."
PC Plus Review - September 97

- 11.3" SVGA (800 x 600) DSTN colour display
- **Intel mobile Pentium Processor with MMX technology 133 - 166MHz**
- Intel Mobile Triton 82430MX chipset • PCI Bus
- 24Mb EDO standard expandable to 72Mb
- 256Kb Level 2 cache
- Neomagic 2090ZV 128bit graphics accelerator
- Removable10X CD-ROM & 1.44 floppy drive
- Toshiba 810Mb E-IDE HDD 4200RPM,128K cache,7.14ms
- 16 ESS 688 stereo sound with stereo speakers & microphone
- 2 x Smart NiMH batteries
- 85 key keyboard with MS Windows 95 keys
- 2 PCMCIA type II or type III slots
- Zoomed video port • Cardbus ready
- Integrated Synaptic touchpad
- Parallel (EPP/ECP), Serial (16650) & Infra red (IRDA 1), VGA, Docking connector & PS2 Port • Built in Microphone
- Weight 2.9Kg • A/C adaptor • Dims: 299 x 226 x 51mm
- Executive carry case • System utility disks • Manuals
- Microsoft Windows 95

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Powernote MMX

PC Direct " This screen is a good one... For raw portable power, the Digital leads the way followed closely by the Powercom and Gateway notebooks... If long battery life at a low price is a priority then Powercom's Powernote is well worth considering."

PC Direct Review - June 97

- 12.1" SVGA (800 x 600) DSTN or TFT colour display
- **Intel mobile Pentium Processor with MMX technology 166MHz**
- Intel Mobile Triton 82430MX chipset • PCI Bus
- 256Kb Level 2 cache
- 32Mb EDO standard expandable to 80Mb
- Neomagic 2093ZV 128bit graphics accelerator
- Combo 12X CD-ROM and 1.44 floppy drive
- Toshiba 2.1 Gb E-IDE HDD 4200RPM,128K cache,7.14ms
- 16 ESS 1878 wavetable stereo sound with stereo speakers & MIDI
- Lithium ion 45W battery
- 85 key keyboard with MS Windows 95 keys
- 2 PCMCIA type II or type III slots
- Zoomed video port • Cardbus ready
- Synaptic Integrated touchpad
- Parallel (EPP/ECP), Serial (16650) & Infra red (IRDA 1), VGA, Docking connector & PS2 Port
- Built in Microphone • Weight 2.9Kg • Dims: 299 x 226 x 51mm
- International adaptor • Executive carry case
- Microsoft Windows 95

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Powernote MMO

" This is the first 266MHz notebook to be available in the UK, just beating Dell & Gateways offerings. The processor is the latest in Intel tilamook range of low power consumption chips, designed specifically for notebook PC's ."

**** What PC? Review March 98

- 12.1 SVGA (800x600) or 13.3 XGA (1024x768) TFT display
- **Intel 200 / 233Mhz / 266Mhz Low Voltage** Mobile Processor with MMX Technology
- Intel Mobile Module (MMO)
- Intel Mobile Triton 82430TX Chipset
- 48Mb SDRAM Standard, Exp to 144Mb
- 512Kb Level 2 Cache • PCI Bus
- Neomagic 2160 3D 128bit Super Fast Graphics Accelerator
- 20X CD-ROM and 1.44 Floppy Drive
- Toshiba 2.1 Gb UDMA HDD
- PC97 Ready • Lithium Ion 45W battery
- Intel PIIX4 EIDE Ultra DMA Controller (33Mb per sec)
- 16bit Wavetable Audio Chip with SRS 3D Stereo Sound with Stereo Speakers & MIDI
- Intel Dynamic Power Management Architecture (DPMA) & SMBUS
- 86/87 Key Keyboard with MS Windows 95 keys
- 2 PCMCIA type II or type III slots • Zoomed Video Port
- Cardbus Ready • Integrated Synaptic touchpad
- Parallel (EPP/ECP), Serial (16650) and Infra red (IRDA 1), VGA, Docking Connector & PS2 Port • USB Port
- Built in Microphone • Weight 2.8Kg • Executive carry case
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Table of Features

	Evesham Micros	Hi-Grade	KT Computers	Simply Computers	Viglen
	Personal Computer World Highly Commended		Personal Computer World Editor's Choice		Personal Computer World Highly Commended
Manufacturer	**Evesham Micros**	**Hi-Grade**	**KT Computers**	**Simply Computers**	**Viglen**
Model	**Vale Platinum PII**	**Axion Pv2-266**	**Vision PII 266 AGP**	**Multimedia 7570**	**Ultimate PC 266W**
Price with delivery (inc VAT)	£1,702.58	£1,756.62	£1,620.33	£1,761.33	£1,673.20
Price with delivery (ex VAT)	£1,449	£1,495	£1,379	£1,499	£1,424
Telephone	0800 6345999	0181 532 6110	0181 961 8897	0181 498 2140	0990 944944
Fax	01386 765354	0181 532 6111	0181 961 7498	0181 523 4002	0181 758 7080
URL	www.evesham.co.uk	www.higrade.com	www.ktcomputers.co.uk	www.simply.co.uk	www.viglen.co.uk
Sales hours	9-7 M-F 9-5:30 Sat	9-5:30 M-F	9-6 M-F 10-5 Sat	8-8 M-F 9-5 Sat	9-6 M-F 9-5 Sat 10-2 Sun
Technical support hours	9-5:30 M-F 9-3 Sat	9-7 M-F	As above	8-8 M-F 9-5 Sat	9-5:30 M-F 9-1 Sat
Standard warranty	2 yr OSM	1 yr OSM, 2 yr RTB	1 yr RTB P&L 4 yr Labour	5 yr RTB (2 yr parts & lab)	12 months collect and return
Warranty options	3 yr OSM	N/A	£42 OSM 1st yr	N/A	OSM
Hardware Spec					
Processor	Intel PII 266	Intel PII 266	Intel PII 266	Intel PII 266	Intel PII 266
RAM	64Mb	64Mb	64Mb	64Mb	64Mb
RAM type/pins	SDRAM/168	SDRAM/168	SDRAM/168	SDRAM/168	SDRAM/168
Hard disk	Quantum Fireball SE	Maxtor DiamondMax	Quantum Fireball	IBM Deskstar 5	IBM DHEA 34330
Size(Gb)/acc time(ms)/Int	6.4Gb/9.5ms/UDMA	8Gb/9ms/UDMA	6.4Gb/9.5ms/UDMA	4.3Gb/8.5ms/EIDE	4.3Gb/9.5ms/UDMA
Motherboard components					
Motherboard manufacturer	Chaintech	Asus	Soltek	ABIT	Viglen
Motherboard model	6LTM	P2L-97	66A-C	LX6	VIG6T
Chipset	440LX	440LX	440LX	440LX	440LX
L2 cache	512Kb	512Kb	512Kb	512Kb	512K
Expansion and I/O					
Spare bays 3.5in/5.25in	2x3.5in / 2x5.25in	1x3.5in / 2x5.25in	0x3.5in / 2x5.25in	0x3.5in / 1x5.25in	2x3.5in / 1x5.25in
PCI slots/ISA slots/shrd slots	4PCI / 3ISA / 1shared	4PCI / 1ISA / 1shared	4PCI / 3ISA / 1shared	4PCI / 3ISA / 1shared	4PCI / 1ISA/1shared
USB/serial/parallel/PS2	2USB / 2S / 1P / 2PS2	2USB / 2S / 1P / 2PS2	2USB / 2S / 1P / 2PS2	2USB / 2S / 1P / 2PS2	2USB / 2S / 1P / 2PS2
Multimedia					
CD-ROM manufacturer	Panasonic	Teac	Hitachi	Simply Computers	Sony
CD-ROM speed/interface	24x / IDE	32x / IDE	32x / IDE	32x / IDE	32x / IDE
Sound card manufacturer	Creative Labs	Asus	Creative Labs	Creative Labs	Viglen
Sound card model	AWE 64 Value	PCI-AXP201	AWE64	AWE 64	VIG32 PnP Wave Table
Speakers	ZY-FI Pro	Jazz J-908ST	120W unbranded	Yamaha YST-M20	Yamaha M25
Graphics & Monitor					
Graphics card	Ati 3D RagePro AGP	Asus AGP-V3000	Diamond Fire GL1000	ASUS Riva Chipset AGP	ATI Xpert@work AGP
Graphics card RAM	8Mb	4Mb	8Mb	4Mb	8Mb
Monitor model	Taxan	Sampo/HiGrade KM-711	Sony 200SE Trinitron	Iiyama VisionMaster Pro	17DS
Monitor size (inches)	17in	17in	17in	17in	17in
Max rfsh rate @ 1,024 x 768 (NI)	86Hz	90Hz	85Hz	107Hz	85Hz
Other Information					
Modem make	Vale	Pace Microlin	Modular Technology	3Com Sportster Message+	Viglen CIS
Modem speed (Kbps)	56K	56K	56K	56K	56K
Other extras	Joystick	LS-120 Drive	Iomega Zip	Iomega Zip	Microsoft Intellimouse Joystick
Software	Windows 95 Media 98	Windows 95 Lotus SmartSuite 97 IBM Worldbook CD IBM ViaVoice	Windows 95 Lotus SmartSuite 97 SuperVoice BT Internet Software	Windows 95 Rescue Me Norton Antivirus WordPerfect Suite 7	Windows 95 Works 95 MS CD Titles MMX Enhanced CDs
Year 2000 compliant?	●	●	●	●	●

● yes ○ no

p227 ➢

ESTABLISHED SINCE 1986

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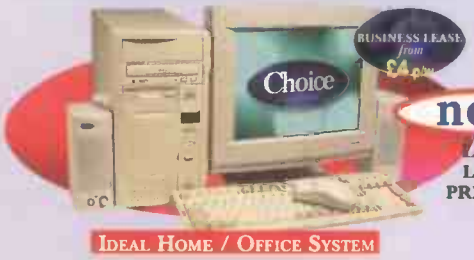

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- 33.6K PCMCIA Modem add £75 + VAT
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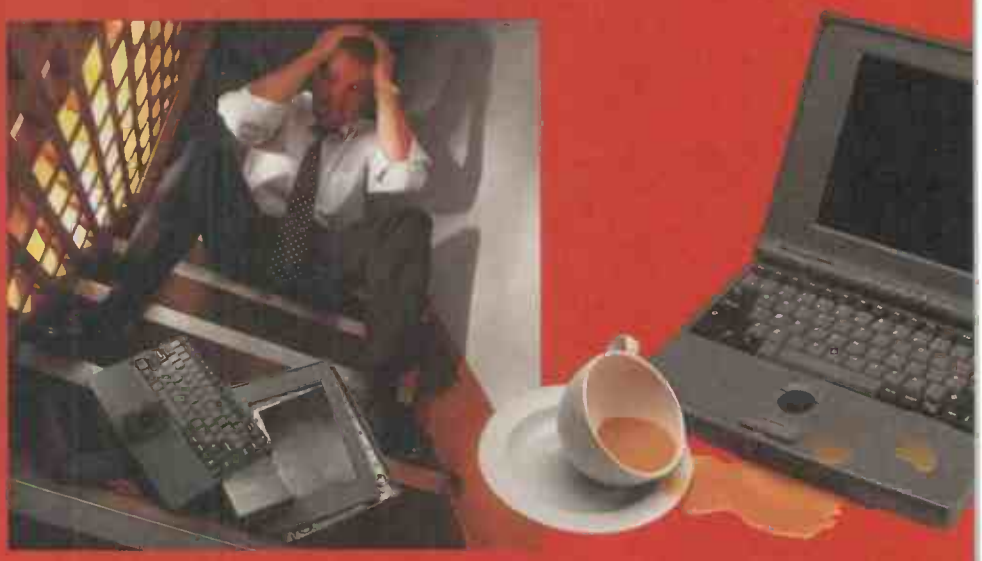

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Who needs the power these PCs offer? The serious gamer, for one, who may also want something decent on which to run the kids' education CD-ROMs and work out the home accounts on. A seriously fast CPU will be required. Then there's the business manager, wanting something that will just whizz through all those spreadsheets and graphs.

And don't forget other professionals, like graphics animators and 3D modellers who need the raw speed that these top-rated computers offer. Their time is valuable, and the last thing their companies need is for them to be sitting around while a low-powered PC plods through calculations. So, if you need the sort of machine that doesn't keep you hanging around, there should be something that suit your needs.

Oddly, a number of the PCs we received were priced at under £2,000. The extra money could be used to upgrade the odd component or two. Gateway 2000 submitted a machine that was more than £500 under the specified price. It is worth bearing in mind that for the extra money you could get Gateway to upgrade the hard drive to 8Gb and the monitor to a 19in model, and include a Zip drive, joystick, games bundle, and an extra Microsoft software bundle.

** Prices do not include delivery.*

● *Please note that the figures printed on the BapCo graph, page 235, are wrong. A new graph appears in ChipChat, page 746. Please also note that on the Final Reality graph, page 235, the blue bar refers to overall performance and the red bar refers to 3D performance.*

Dan Ultimate+ 2DG

Personal Computer World Editor's Choice

The Ultimate+ 2DG differed from the rest of the pack in that it came with a DVD-ROM drive. Dan has teamed this up with a MPEG card and a Win TV PCI card, so you can impress your friends by hooking the PC up to a TV and watching DVD movies.

All these extra cards crowd the interior of this machine. Getting inside is easy: a couple of screws and the side panel just slides off. To use the only free PCI slot you have to move the modem back, as it uses the shared blanking plate. We were pleasantly surprised to find the excellent AWE 64 Gold sound card installed. As a nice touch, the CD-ROM cable is threaded under the motherboard so it doesn't obstruct access to anything.

The user manual is worth mentioning, as Dan had gone to a lot of effort here. It includes everything you're likely to need to know, such as MS-DOS and troubleshooting Windows 95.

The Ultimate+ featured bundled software including Microsoft Works, Quicken 6 and a number of games including Wing Commander IV DVD. Dan also packed in some extra hardware: there's a Zip drive and a PC camera (terrific for video-conferencing with the relatives in Australia). And, to really give you that game-playing edge, a Sidewinder joystick is included. This is definitely a machine that would be happier in a game-player's living room than sitting sedately in an office.

The monitor was an excellent 19in ADI Microscan 6P, with a viewable area of 18in and a USB hub at the rear. It has a TCO 95 rating and is VESA compliant. Focus was crisp, and colours were rich and vibrant. While it suffered a little from moiré, the on-screen controls include an adjustment for this.

PCW Details

Price £2,350 (£2,000 ex VAT)
Contact Dan 0181 830 1100
www.dan.co.uk
Good Points Monitor. Build quality. DVD-ROM. Win TV card. Sound card. Extra hardware.
Bad Points None to mention.
Conclusion An excellent powerhouse PC.

Build Quality	★★★★½
Performance	★★★★★
Value for Money	★★★★★
Overall Rating	★★★★★

p228 ➢

Dell Dimension XPS D300

Personal Computer World Highly Commended

The Dimension XPS D300 looked professional, with its 19in monitor and its tall, skinny casing cut with industrial-strength vents. The only splash of colour on the front of the system is the baby-blue Dell badge.

For storage purposes there's a Zip drive, and Dell has included three additional Zip cartridges in the box. Installation is aided by an excellently laid out A3-sized setup guide. Lifting the lid revealed a spacious interior with slightly messy cabling, but as long as the cables aren't too loose or obstructing access to anything, this is not a big problem. The innards are dominated by the huge gold heatsink on the Pentium II processor. Two of the three DIMM slots are occupied by 64Mb of SDRAM.

The Matrox Millennium II AGP card comes with 8Mb of WRAM and should prove more than adequate for most business purposes. This left all four of the PCI slots empty. Both of the ISA slots are occupied, by the AWE 64 sound card and the 33.6 modem.

The hard drive is tucked neatly down the side of the case, towards the front in a vertical position. Further expansion is catered for by one internal 3.5in bay, an external 3.5in bay and an external 5.25in bay.

The Dell was one of two machines to come with Internet Explorer 4.0 preloaded (the other being the Gateway). The rest of the bundle included Microsoft Office Small Business Edition and McAfee Virus Scan. We liked the Program Diskettes application that loads on the initial start-up and works as a handy reminder to back your system up.

We were impressed by the Dell D1226H 19in monitor. It has 17.9in viewable area and is VESA DDC1/2B and TCO 95 compliant. There's room for a USB hub to be installed at the rear but no ports had been fitted. Initially it suffered badly from moiré, but the on-screen controls included a moiré adjustment as well as colour

PCW Details

Price £2,172.58 (£1,849 ex VAT)
Contact Dell 01344 724699
www.dell.co.uk
Good Points Monitor. Zip drive.
Bad Points Not the best performer of the bunch.
Conclusion A solid, business-like PC.

Build Quality	★★★★½
Performance	★★★½☆
Value for Money	★★★★½
Overall Rating	★★★★½

Elonex PTX-6300/I

The PTX-6300/I comes in a standard case design that is rather stiff and difficult to remove. But perseverance pays, as the interior of this machine is worth making the effort for, being especially neat and tidy. Thoughtfully, Elonex has clipped power cables to the sides of the empty bays so that they're ready to plug in to any additional devices you might want to fit at a later date.

Indeed, you may want to add a secondary storage device in there, as this PC doesn't come with one. This will initially only be necessary for backup purposes, as it will take a while to fill up the 9Gb Seagate hard drive. There are two vacant forward-facing 5.25in bays, with external access. One of the two 3.5in bays has external access.

Overall, this computer seems far more suited to the needs of a small business, perhaps one that is looking for a PC to run its spreadsheets and so forth at speed, and won't become outdated terribly quickly. The bundled software includes Microsoft Office Small Business edition and there was a microphone with headset in the box.

Initially the video card wasn't sending anything to the monitor, but it may have come loose in transit as a little jiggling about soon put matters right. Even the most well-built PC can come unstuck with a bit of rough handling.

Sound is onboard, provided by a Yamaha OPL3-SA chipset, leaving one of the two ISA slots empty. The other ISA slot is occupied by the K56flex modem. All four of the PCI slots are vacant, with the excellent ATI Xpert@Work 3D graphics card fitted into the AGP slot. The graphics board has the full 8Mb of SGRAM fitted.

An Elonex MN044 17in monitor with 15.9in viewable area was supplied. It has a TCO 95 rating and is VESA DDC1/2B compliant. The on-screen controls include the usual size, positioning and geometric controls, as well as degaus and adjustments for colour temperature. Focus is crisp, and the picture appeared moiré-free.

PCW Details

Price £2,167.88 (£1,845 ex VAT)
Contact Elonex 0181 452 4444
www.elonex.co.uk
Good Points Tidy insides. Power cables plugged and ready for additional devices. Graphics card.
Bad Points No additional storage device.
Conclusion Most suitable for small-business use.

Build Quality	★★★★½
Performance	★★★★½
Value for Money	★★★½☆
Overall Rating	★★★★½

p230 >

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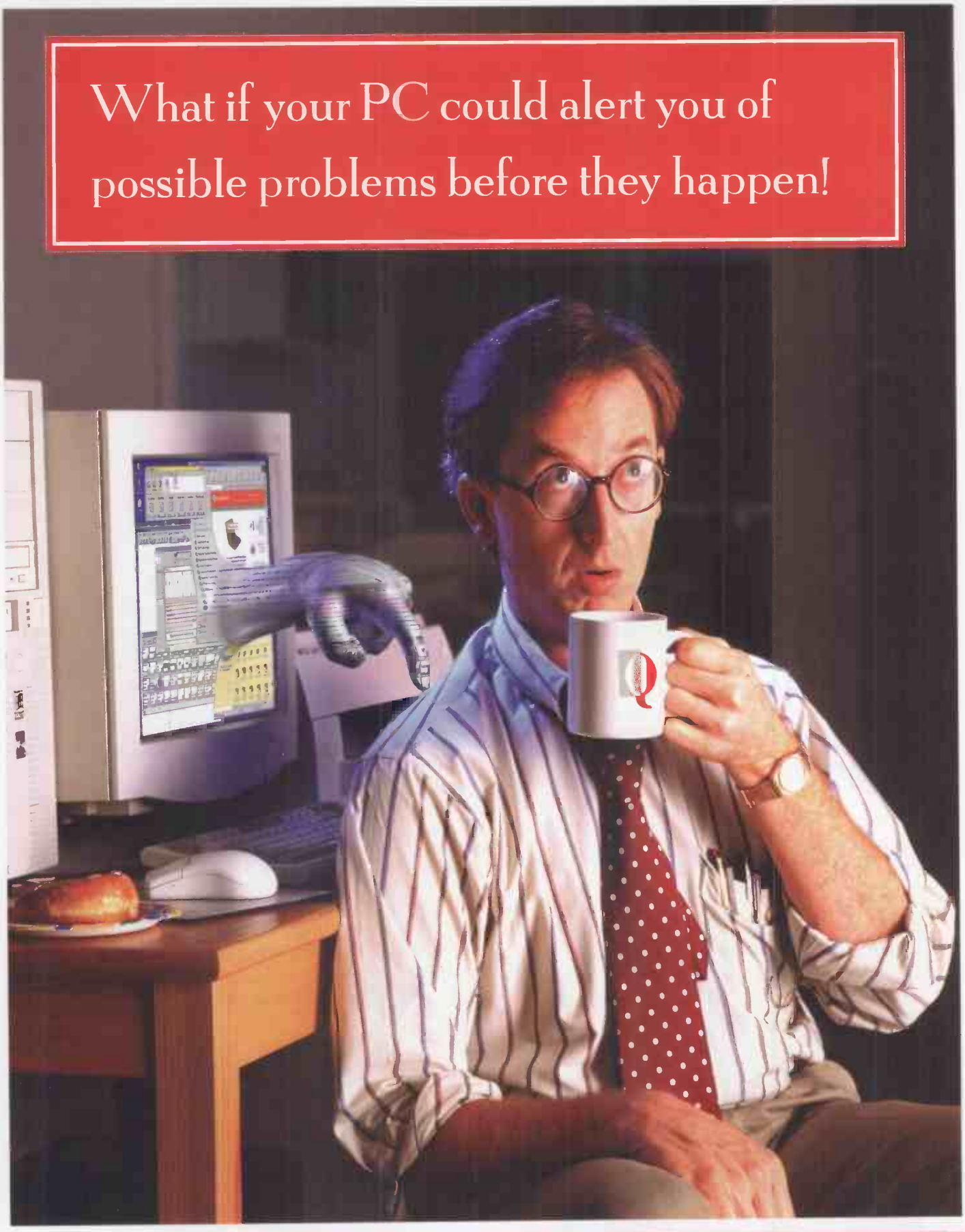

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PC Magazine, 12/97

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PC Advisor, 01/98

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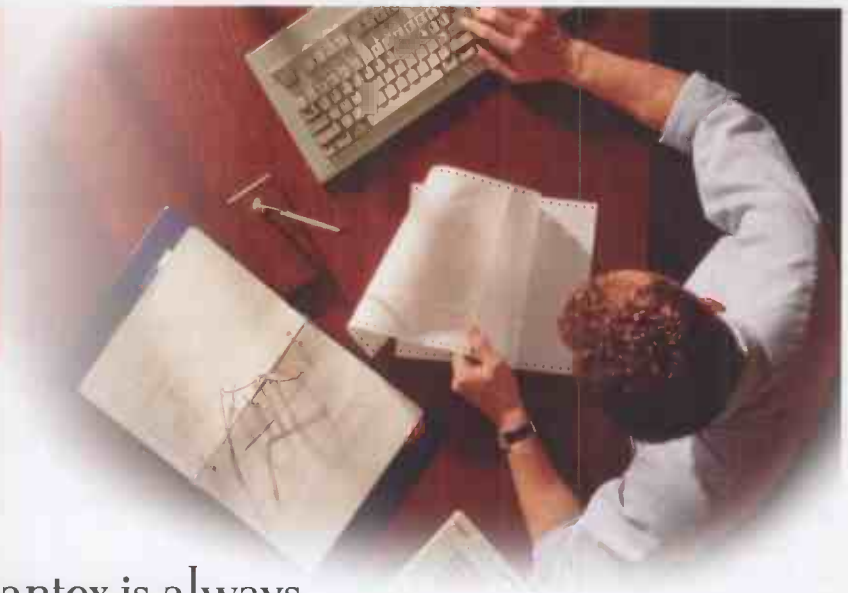

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Awards

Winning constant praise

Time and time again, our PCs come out on top. Just look at all of the awards we've received for product excellence. They include numerous **"Best Buy"**, **"5 Star Excellence"**, **"A-List"**, **"Excellent Overall Ranking"**, **"WinList"**, **"Win 100"** and **"Buy It"** recommendations from some of the industry's most respected trade publications. In fact, in the past two months alone, *PC Advisor* awarded Quantex with their highly acclaimed **"Recommended"** award, and *PC Magazine* (12/97) bestowed an **"Editor's Choice"** on our QP5/233 M-3. There's no doubt about it - professionals who really know PCs just can't help giving Quantex their seals of approval.

EDITOR'S CHOICE
QP5/233 M-3
PC Magazine 12/97

Support

Backing you 100% of the time

Quantex is proud to offer one of the most comprehensive service and support packages in the industry. From pre-sale consulting to post-sale assistance, we're behind you every step of the way. It all begins when our sales consultants work with you to evaluate system needs and help you make an informed purchasing decision. And as expected, we fully back all products with a complete warranty and service program created specifically for your needs. Such thorough dedication on our part is clearly recognised by our customers. In a recent technical support survey, we scored a rating of **"Excellent"** for our ability to handle technical problems quickly and inexpensively.

PC HOME - AWARD
"It's not very often that a PC storms straight into the high slots in the chart.. Quantex did"
PC HOME, 04/98

Unbelievable! A 266MHz Pentium® II Processor

QP6/333 M-4x

(featuring the Pentium® II processor)

£1599 +VAT **£1878.83** Inc. VAT

- 333MHz Pentium® II Processor
- Intel 440LX PCI Chipset, 2 Universal Serial Bus (USB) Ports
- 128MB SDRAM Memory /512KB Secondary Cache
- 8.4GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- 3D Labs Permedia 2 AGP Graphics Card with 8MB
- 19" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive, Ensoniq 32-Bit Wavetable Sound Card
- 56Kbps Fax/Modem w/Voice Mail and Speakerphone
- Altec Lansing ACS-45 Speakers with subwoofer
- ATX Tower Case, 105-Key Keyboard With MS PS/2 Mouse
- Fully PC '97 Compliant
- MS Windows '95 With MS Plus, Value Multimedia Software Bundle
- 1-year warranty, 24-hr./day, 7-day/week Technical Support

QP6/233 M-4x (featuring Pentium® II Processor)
£1399 +VAT £1643.83 Inc. VAT

QP6/266 M-4x (featuring Pentium® II Processor)
£1429 +VAT £1679.08 Inc. VAT

QP6/300 M-4x (featuring Pentium® II Processor)
£1519 +VAT £1784.83 Inc. VAT

QP6/M-4x SE

Includes all features of M-4, plus:

- Replace 32X CD-ROM with 2nd Generation DVD-ROM Drive
- Add DVD-Decoder Board
- Replace 3D Labs Permedia Graphics Card with STB Velocity 128

QP6/233 M-4x SE (featuring Pentium® II Processor) **£1439**+VAT £1690.83 Inc. VAT
QP6/266 M-4x SE (featuring Pentium® II Processor) **£1469**+VAT £1726.08 Inc. VAT
QP6/300 M-4x SE (featuring Pentium® II Processor) **£1559**+VAT £1831.83 Inc. VAT
QP6/333 M-4x SE (featuring Pentium® II Processor) **£1639**+VAT £1925.83 Inc. VAT

But it's true. Our award-winning QP6/266 M-1 multi-media system for just £799 (£938.83 Inc. VAT). Quantex has done it again. We've brought you the best value, feature packed system available.

With our DVD systems Quantex redefines the meaning of Value... QP6/300 M-4x SE for only £1559 + VAT. Feature packed and powered by the 300MHz Pentium® II processor, this system includes a 19" monitor which delivers a crisp dot pitch of .26, a maximum resolution of 1600 x 1200 and TCO 95 compliance for extra peace of mind. The QP6/300 M-4x SE also boasts a huge 8.4GB hard drive, 128MB of system RAM, and a host of top quality, brand name components.

DVD Enhancements. And if all that wasn't enough, we've included DVD technology, the latest in digital computing and entertainment. Take advantage of true multi-channel Dolby Digital audio and up to 135 minutes of crystal clear MPEG-2 video with this machine. Enjoy digital-quality audio and flicker-free graphics when you play your favorite movies and multimedia games on this PC.

Value Multimedia Series

Standard Features *All M* series systems come with the following unless stated otherwise:*
■ 2 Universal Serial Bus (USB) Ports ■ 56Kbps Fax/Modem w/Voice Mail and Speakerphone ■ Ensoniq 32-Bit Wavetable Sound Card ■ Quantex Tower Case ■ 105-Key Keyboard With MS PS/2 Mouse ■ MS Windows '95 With MS Plus ■ Value Multimedia Software Bundle ■ *M1 Modem extra

QP5/266 M-1

(with MMX™ Technology)

£799 +VAT **£938.83** Inc. VAT

- 266MHz Pentium® II Processor
- 32MB SDRAM Memory / 512KB Pipelined Burst Cache
- 4.3GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- 64-Bit 3D AGP Graphics Card with 4MB SGRAM
- 15" Digital Monitor (.28dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive, Altec Lansing ACS-90 Speakers
- 1-year warranty, 24-hr./day 7-day/week Technical Support
- Modem extra

QP5/200 M-1 (with MMX™ Technology)
£699+VAT £821.33 Inc. VAT

QP5/233 M-1 (with MMX™ Technology)
£749+VAT £880.08 Inc. VAT

QP6/233 M-2

(Featuring the Pentium® II Processor)

£999 +VAT **£1173.83** Inc. VAT

- 233MHz Pentium® II Processor
- 32MB EDO Memory / 512KB Pipelined Burst Cache
- 4.3GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- 64-Bit 3D AGP Graphics Card with 4MB SGRAM
- 17" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive
- Altec Lansing ACS-45 with subwoofer
- 1-year warranty, 24-hr./day 7-day/week Technical Support

QP6/266 M-2x (Featuring the Pentium® II Processor)
£1029+VAT £1209.08 Inc. VAT

QP6/300 M-2x (Featuring the Pentium® II Processor)
£1119+VAT £1314.83 Inc. VAT

QP6/333 M-2x (Featuring the Pentium® II Processor)
£1199+VAT £1408.83 Inc. VAT

QP6/333 M-3x

(Featuring the Pentium® II Processor)

£1599 +VAT **£1878.83** Inc. VAT

- 333MHz Pentium® II Processor
- 64MB SDRAM Memory / 512KB Secondary Cache
- 6.4GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- 64-Bit 3D AGP Graphics Card with 4MB SGRAM
- 17" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive
- Altec Lansing ACS-45 with subwoofer
- 1-year warranty, 24-hr./day 7-day/week Technical Support

QP6/233 M-3x (Featuring the Pentium® II Processor)
£1099+VAT £1291.33 Inc. VAT

QP6/266 M-3x (Featuring the Pentium® II Processor)
£1129+VAT £1326.58 Inc. VAT

QP6/300 M-3x (Featuring the Pentium® II Processor)
£1199+VAT £1408.83 Inc. VAT

based system for under £800 ex VAT.

- **300MHz Pentium® II processor**
- **Intel 440LX PCI Chipset**
- **Toshiba 2nd-Generation DVD-ROM Drive**
- **24-hour/day 7-day/week Live Technical Support**
- **Quantex PC Health Monitoring & Support based on LDCM**

2nd-Generation DVD is backwards compatible with all CD formats, including CD-Recordable. This is a truly innovative feature not available with previous DVD versions.

To make sure you get the most out of DVD and all that this system has to offer, we've loaded it with multimedia enhancements like the new 128-bit 3D AGP Video Card with 4MB of SGRAM. A complete sound system featuring Altec Lansing ACS-45 speakers (with subwoofer) and the ground-breaking PCI Ensoniq 32-Bit wavetable sound card makes everything sound great. Add a comprehensive software bundle, and the QP6/300 M-4x SE is well-equipped to handle just about everything you have in mind.

No doubt, Quantex packs real punch with this powerhouse of technology and performance brought to you at an unbelievable price.

QP6/333M-Best Buy

(Featuring the Pentium® II Processor)

£1299 +VAT £1526.33 Inc. VAT

- 333MHz Pentium® II Processor
- 64MB SDRAM Memory / 512KB Secondary Cache
- 4.3GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- 128-Bit RIVA 128 3D AGP Graphics w/4MB SGRAM
- 17" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive
- Altec Lansing ACS-90 Speakers with ACS-250 subwoofer
- 100MB 2nd Generation ZIP Drive
- 1-year warranty, 24-hr./day 7-day/week Technical Support

Call your sales consultant for more information regarding custom upgrades, business leasing, personal financing, extended warranty options and installation. All major credit cards accepted.

UPGRADES (available with system purchase)

	+VAT	(Inc. VAT)
■ Panasonic PD/CD-Rom Drive w/ one 650MB PD cartridge	£ 189	(£220.08)
■ Panasonic PD Cartridge	£ 25	(£29.38)
■ Panasonic ZIP Drive	£ 59	(£69.32)
■ Microsoft® Sidewinder™ 3D Joystick	£ 39	(£45.83)

(All upgrades covered by manufacturer's warranty. Call our Sales Desk for information regarding other upgrade options.)

SOFTWARE BUNDLE FOR VALUE MULTIMEDIA

■ Corel Office Suite ■ MS Money '97 ■ Compton's Interactive Encyclopedia ■ Compton's Interactive World Atlas ■ Key Master Maps ■ Body Works 6.0 ■ American Heritage Talking Dictionary ■ Amazon Trail II ■ Internet the City ■ Compton's Reference Collection ■ Dr. Solomons Anti-Virus ■ Windows 95 with MS Plus ■ One-month trial membership to PIPEX Dial

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01438.22.44.44

www.qtx.co.uk

01438.22.42.24 fax

Quantex delivers industry leading Performance,

QP6/333 SM-4x

(featuring the Pentium® II processor)

£1749 +VAT £2055.08 Inc. VAT

- 333MHz Pentium® II Processor
- Intel 440LX PCI Chipset, 2 Universal Serial Bus (USB) Ports
- 128MB SDRAM Memory /512KB Secondary Cache
- 8.4GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- 3D Labs Permedia 2 AGP Graphics Card with 8MB
- 19" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive, Ensoniq 32-Bit Wavetable Sound Card
- 56Kbps Fax Modem with Voicemail and Speakerphone
- Altec Lansing ACS-90 Speakers with subwoofer
- ATX Tower Case, 105-Key Keyboard With MS PS/2 Mouse
- 100MB 2nd Generation ZIP Drive
- Fully PC '97 Compliant
- MS Windows '95 With MS Plus, Value Multimedia Software Bundle
- 1-year warranty, 24-hr./day, 7-day/week Technical Support

QP6/233 SM-4x (featuring Pentium® II Processor)
£1549 +VAT £1820.08 Inc. VAT

QP6/266 SM-4x (featuring Pentium® II Processor)
£1579 +VAT £1855.33 Inc. VAT

QP6/300 SM-4x (featuring Pentium® II Processor)
£1669 +VAT £1961.08 Inc. VAT

QP6/SM-4x SE

Includes all features of SM-4, plus:

- Replace 32X CD-ROM with 2nd Generation DVD-ROM Drive
- ZIP Drive replaced with ACS 490 speaker system
- Add DVD-Decoder Board
- Replace 3D Labs Permedia Graphics Card with STB Velocity 128

QP6/266 SM-4x SE (featuring Pentium® II Processor) **£1599**+VAT £1878.83 Inc. VAT
QP6/300 SM-4x SE (featuring Pentium® II Processor) **£1689**+VAT £1984.58 Inc. VAT
QP6/333 SM-4x SE (featuring Pentium® II Processor) **£1769**+VAT £2078.58 Inc. VAT

Believe it! No one but QUANTEX can give you the most powerful and best value multimedia system. We redefine the meaning of Productivity.

Our QP6/333 SM-4x-- with the biggest picture, the fastest CPU, the largest hard drive, and the quickest support service in the business--for less then you'd ever believe possible!

Picture Power Plus. To begin with, the QP6/333 SM-4x system in our Power Multimedia Series really gives you the BIG picture: a 19" digital monitor (.26 dot pitch, 1600x1200 maximum resolution, complying to the latest TCO 95 radiation standards). Not the typical 15" monitor you would expect. Enjoy extraordinary screen performance, not to mention a truly unique viewing experience.

Horsepower Plus. In addition, you also get Intel's most powerful CPU available-- the 333 MHz Pentium® II processor-- capable of running any application fast, fast, fast--everything from simple graphics to intensive software games.

Power Multimedia Series

Standard Features

All SM series systems come with the following unless stated otherwise:
■ 2 Universal Serial Bus (USB) Ports ■ 56Kbps Fax/Modem w/Voice Mail and Speakerphone ■ Ensoniq 32-Bit Wavetable Sound Card ■ Quantex Tower Case ■ 105-Key Keyboard With MS IntelliMouse ■ MS Windows '95 With MS Plus ■ Power Multimedia Software Bundle *(Including MS Office '97 SBE)*

QP6/233 SM-1

(Featuring the Pentium® II Processor)

£949 +VAT £1115.08 Inc. VAT

- 233MHz Pentium® II Processor
- 32MB SDRAM Memory / 512KB Pipelined Burst Cache
- 4.3GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- STB Nitro 3D with 4MB SGRAM
- 15" Digital Monitor (.28dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive
- Altec Lansing ACS-90 Speakers
- 1-year warranty, 24-hr./day 7-day/week Technical Support

QP6/266 SM-1x (featuring the Pentium II processor)
£979+VAT £1150.33 Inc. VAT

QP6/300 SM-1x (featuring the Pentium II processor)
£1069+VAT £1256.08 Inc. VAT

QP6/266 SM-2x

(Featuring the Pentium® II Processor)

£1129 +VAT £1326.58 Inc. VAT

- 266MHz Pentium® II Processor
- 32MB SDRAM Memory / 512KB Secondary Cache
- 4.3GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- 128-Bit Riva 128 3D AGP Graphics Card with 4MB SGRAM
- 17" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive
- Altec Lansing ACS-45 Speakers with subwoofer
- 1-year warranty, 24-hr./day 7-day/week Technical Support

QP6/233 SM-2x (featuring the Pentium® II processor)
£1099+VAT £1291.33 Inc. VAT

QP6/300 SM-2x (featuring the Pentium® II processor)
£1219+VAT £1432.33 Inc. VAT

QP6/333 SM-2x (featuring the Pentium® II processor)
£1299+VAT £1526.33 Inc. VAT

QP6/300 SM-3x

(Featuring the Pentium® II Processor)

£1299 +VAT £1526.33 Inc. VAT

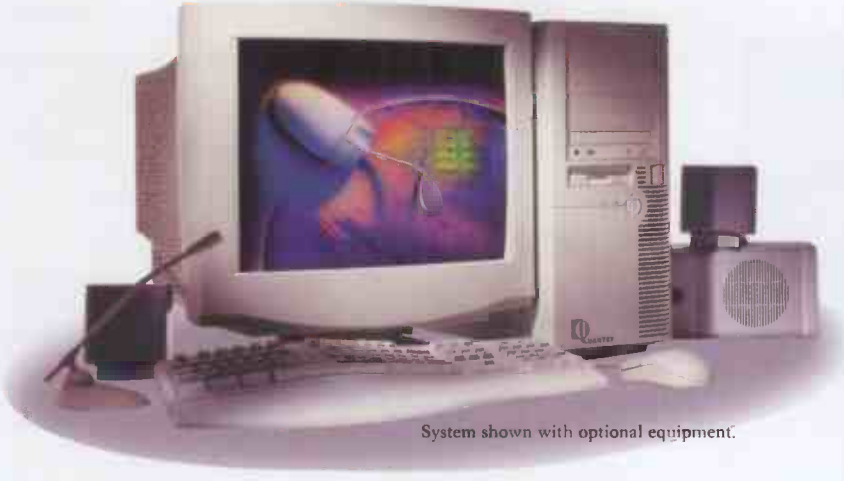
- 300MHz Pentium® II Processor
- 64MB SDRAM Memory / 512KB Secondary Cache
- 6.4GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- 128-Bit Riva 128 3D AGP Graphics Card with 4MB SGRAM
- 17" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive, Altec Lansing ACS-45 Speakers
- 1-year warranty, 24-hr./day 7-day/week Technical Support

QP6/233 SM-3x (featuring the Pentium® II processor)
£1179+VAT £1385.33 Inc VAT

QP6/266 SM-3x (featuring the Pentium® II processor)
£1209+VAT £1420.56 Inc. VAT

QP6/333 SM-3x (featuring the Pentium® II processor)
£1379+VAT £1620.33 Inc. VAT

Reliability, Service and Quality.



System shown with optional equipment.

UPGRADES (available with system purchase)

	+VAT	(Inc. VAT)
■ Panasonic PD/CD-Rom Drive w/ one 650MB PD cartridge	£ 189	(£220.08)
■ Panasonic PD Cartridge	£ 25	(£29.38)
■ Panasonic ZIP Drive	£ 59	(£69.32)
■ Microsoft® Sidewinder™ 3D Joystick	£ 39	(£45.83)

(All upgrades covered by manufacturer's warranty. Call our Sales Desk for information regarding other upgrade options.)

SOFTWARE BUNDLE FOR POWER MULTIMEDIA

■ MS Office '97 SBE ■ MS Money '97 ■ Office Mate ■ Day Planner Pro ■ Power Business Plans ■ Form Designer Pro ■ Project Manager Pro ■ Labels Unlimited ■ Compton's Reference Collection ■ Dr. Solomons Anti-Virus ■ Windows 95 with MS Plus ■ One-month trial membership to PIPEX Dial

Technology Power Plus. We've also included the first ever 8.4GB EIDE hard drive for tons of space. But there's more -- many more super quality components that the competition doesn't offer. Like the new 3D Labs Permedia 2 AGP graphics accelerator with 8MB SGRAM, or the 32X Max CD-ROM Drive. How about the 32-bit wavetable sound card, or the Altec Lansing ACS-90 speakers with ACS-250 subwoofer? In short, the best-of-the-best brand name components that extend the life of your PC and safeguard your hard-earned investment.

Award-Winning Systems. Quantex's Power Multimedia systems were recently recognised with some of the industry's highest honors by *PC World Magazine*. In the past two months alone, 4 Quantex PCs were awarded a "**Best Buy**". In fact the QP6/300 SM-3 was determined to have, "most affordable PII-300 (300MHz Pentium® II processor) performance, AGP graphics, and excellent support policies". (PC World 12/97). We take great pride in such coveted recognitions as we continue to make our systems stand out from the crowd.

QP6/300 SM-Executive

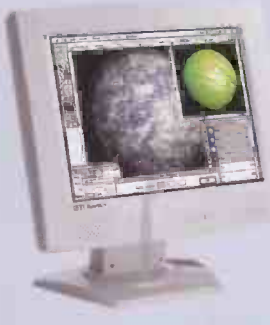
(Featuring the Pentium® II Processor)

£2199 +VAT £2583.83 Inc. VAT

- 300MHz Pentium® II Processor
- 128MB SDRAM Memory / 256KB Internal L2 Cache
- 8.4GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- 128-Bit Riva 128 3D AGP Graphics Card with 4MB SGRAM
- LCD TFT Flat Screen Display 14.5" (17.5 million colours, 1024x768, Internal Amplifier)
- 32X Max EIDE CD-ROM Drive
- Built-in Speakers
- MS Windows '95/MS Plus!/Microsoft Office SBE '97
- 1-year warranty, 24-hr./day 7-day/week Technical Support

QP6/333 SM-4 Executive (featuring the Pentium® II processor)

£2299 +VAT £2701.33 Inc. VAT



In place of Flat Screen Display, deduct:
£749+VAT for 17" (.26dp) monitor
£569+VAT for 19" (.26dp) monitor

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We're really getting down to business

At Quantex, we take great measures to ensure that our systems meet all the high performance, reliability and security standards that you demand. We build our systems on a virtually "crashproof" NT platform, and include technology advanced enough to handle everything you can throw at them. Bundled with tools to maximise efficiency, the QP6/333 SB-4 is guaranteed to take productivity to new heights. Create your very own web pages, evaluate your financial performance, and even generate exciting, professional-looking marketing materials - now, you're really in business.

QP6/333 SB-4

(featuring Pentium® II processor)

£1499 +VAT **£1761.33** Inc. VAT

- 333MHz Pentium® II Processor
- Intel 440LX PCI Chipset / DMI 2.0
- 2 Universal Serial Bus (USB) Ports
- 128MB SDRAM Memory / 512KB Secondary Cache
- 8.4GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- 3D Labs Permedia 2 AGP Graphics Card with 8MB
- 17" Digital Monitor (.26dp, TCO 95 compliant)
- 32X Max EIDE CD-ROM Drive
- ATX Tower Case, 105-Key Keyboard with MS IntelliMouse
- Panasonic 2nd Generation ZIP Drive
- Fully PC'97 Compliant
- MS Windows NT Workstation 4.0, MS Office '97 Small Business Edition
- 1-year warranty, 24-hr./day, 7-day/week Technical Support
- *Upgrade to 3COM PCI 10/100 Fast Etherlink XL with RJ-45.....£49 (£57.58)*

QP6/233 SB-4 (featuring Pentium® II Processor) **£1299** +VAT £1526.33 Inc. VAT

QP6/266 SB-4 (featuring Pentium® II Processor) **£1329** +VAT £1561.58 Inc. VAT

QP6/300 SB-4 (featuring Pentium® II Processor) **£1419** +VAT £1667.33 Inc. VAT

Windows NT, Microsoft's recommended operating system for companies of all sizes, brings increased scalability and multitasking capabilities to our line of Business Desktops. It also enables you to run every 32-bit application up to 24% faster than Windows 95. Combine this with the ultra-fast performance of the Pentium® II processor, and these machines give you the power to move you and your company into the future. In addition, we back all of our systems with the Quantex premier service package that includes a comprehensive warranty program, around the clock technical support, advanced PC Health Monitoring, On-Site service, and business consulting. In other words, we take our relationship with you very seriously, so you'll never be left out in the cold.

Business Desktops

Standard Features ■ 2 Universal Serial BUS (USB) Ports / DMI 2.0 ■ 105-Key Keyboard with MS Mouse ■ 1-Yr. warranty ■ 24 hr/day, 7 day/wk. Tech Support ■ Q-Sentry Technology (Including Intel LANDesk® Client Manager V.3.1, Win '95 Only)

Call your sales consultant for more information regarding custom upgrades, business leasing, personal financing, extended warranty options and installation. All major credit cards accepted.

QP5/200 SB-1

(with MMX™ Technology)

£679 +VAT **£797.83** Inc. VAT

- 200MHz Pentium® Processor with MMX™ Technology
- 32MB EDO Memory / 512KB Pipeline Burst Cache
- 2.1GB EIDE Mode 4 HD / 3.5" 1.44MB Floppy Drive
- Intel Pro 100 PCI Ethernet Adaptor with RJ-45
- 32X Max EIDE CD-ROM Drive
- STB Nitro 3D with 2MB SGRAM
- 15" Digital Monitor (.28 dp, TCO 95 compliant)
- Quantex Tower Case, Fully PC'97 Compliant
- MS Windows 95 with MS Plus!
- Panasonic 2nd Generation ZIP Drive

QP5/233 SB-1 (with MMX™ Technology)

£719 +VAT £844.83 Inc. VAT

QP6/300 SB-3

(featuring Pentium II processor)

£1219 +VAT **£1432.33** Inc. VAT

- 300MHz Pentium® II Processor
- 32MB SDRAM Memory / 512KB Secondary Cache
- 4.3GB Ultra ATA HD / 3.5" 1.44MB Floppy Drive
- 3COM PCI 10/100 Fast Etherlink XL with RJ-45
- 32X Max EIDE CD-ROM Drive
- 128-Bit Riva 128 3D Graphics Card with 4MB SGRAM
- 17" Digital Monitor (.26dp, TCO 95 compliant)
- ATX Case, Fully PC'97 Compliant
- Panasonic 2nd Generation ZIP Drive
- Microsoft Windows NT Workstation 4.0, MS Office '97 SBE

QP6/266 SB-3 (featuring Pentium II processor)

£1129 +VAT £1326.58 Inc. VAT

QP6/333 SB-3 (featuring Pentium II processor)

£1299 +VAT £1526.33 Inc. VAT

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YAMAHA
CRW4001 & 4260
CD-ReWritables
The only 4X recording CD-ReWritables in the world
The new Yamaha CRW4001 and CRW4260 are the only CD-ReWritables capable of 4x speed recording.
So when it comes to speed, other CD-ReWritables just don't cut the mustard.
The CRW4001 plugs straight into your PC's E-IDE controller while the CRW4260 offers the flexibility of a built-in SCSI interface.
Industry standard packet writing and pre-mastering software is right there in our Value Kit box, giving you everything you need to make your own CD ROM and CD-ReWritable discs directly from your desk top.
And, being made by Yamaha, you can be sure that this new breed of CD recorder is designed and engineered for serious professional use.
So call Yamaha today for further details of the CRW 4001 and CRW4260, the CD-ReWritables that set the pace.
2X also available
All of Yamaha's CD-RW engineering precision and reliability is also available in a budget priced 2X/2X/6X Re-Writable, the CRW2260
TEL
01908 369259
01908 371275
FAX
Adaptec
DirectCD Compatible
3 DRIVES IN ONE
PacketCD
OSTA
WEB SITE: http://www.yamaha.co.uk
EMAIL: media_tech@infomta.post.yamaha.co.jp
CRW4001 writes at 4X speed to CD-R and at 2X speed to CD-RW. All trademarks acknowledged
YAMAHA

Gateway G6-300

Gateway has a reputation for building solid, reliable computers and the G6-300 is no exception. In common with Gateway practice, this one came in an ivory, smoothly-contoured case.

While other machines in this group managed to include a few extra devices, Gateway opted instead to stick with the basic specification we asked for, such as the minimum 4Gb hard drive. This is also reflected in the price, which was £550 less than the maximum of £2,000 allowed. However, a microphone with stand was included in the box.

Installation was simple: Gateway colour-codes all the connections on its machines so it is hard to go wrong. A guide to maintaining and troubleshooting your PC is included, which should ease the worries of most users. The software bundle had a few nice surprises, including MS Office Small Business Edition, Internet Explorer 4 and McAfee Virus Scan — a bundle that would be at home in any small office.

Getting inside is fairly easy and reveals a mass of messy cabling that does not, in fact, obstruct access to anything. Of the three DIMM slots, only one is occupied by the 64Mb of SDRAM, leaving two for upgrading the memory. The hard drive is tucked down the side of the case, to the front, with enough room in the bracket for another 3.5in drive to be fitted internally. Further expansion space is afforded by the two vacant forward-facing 5.25in bays with external access.

An Ensoniq sound card is fitted into one of the four PCI slots, leaving the other three free. A US Robotics modem occupies one of the two ISA slots available.

Gateway supplied its own EV700 17in monitor, with 15.9in viewable area, which unfortunately was not the best in the group. It is both MPR II and EPA EnergyStar compliant. The on-screen controls are easy to use and include a degaussing function. Focus is crisp in the centre as well as at the corners of the screen, but even at a refresh rate of 75Hz the screen still appeared a little flickery.

PCW Details

Price £1,702.58 (£1,449 ex VAT)
Contact Gateway 2000; 0800 552000
www.gateway2000.co.uk
Good Points Price. Software.
Bad Points Performance. Monitor. Lacks any additional devices.
Conclusion Spend the extra £500 on a few upgrades, or shop around.

Build Quality	★★★★☆
Performance	★★★★☆
Value for Money	★★★★☆
Overall Rating	★★★★☆

Panrix Lightning II300

Panrix has hidden away all those unsightly power and reset buttons, as well as the two 5.25in bays and the Zip drive, behind a door on the front of its Lightning II300. This left only the floppy and CD-ROM drives exposed.

Getting inside is very easy. You don't even need a screwdriver — just a couple of twists of the knob at the rear of the case does it. It's very spacious in there, and although the cabling could be neater, it doesn't obstruct access to anything.

After having been switched on for some time, the case did feel a little bit hotter than we'd have liked. As there's a bracket already fitted for an additional fan at the front of the case, it might be a good idea to have one installed.

Both of the ISA slots on the Asus motherboard are occupied, with an AWE 64 sound card and a K56flex modem. In common with most PCs based around a Pentium II, all four of the PCI slots are vacant, with the Diamond Fire GL graphics card fitted into the AGP slot. As the graphics drivers limited us to running the Quake test at a setting of 320 x 200, it was difficult to judge the speed of the graphics accelerator.

The 64Mb of SDRAM has been fitted onto a single module, leaving two of the three DIMM slots vacant for future upgrades. There's also some room for fitting additional devices, with one internal 3.5in bay and two forward-facing 5.25in bays, with external access, vacant. The software bundle includes Lotus SmartSuite.

An excellent 17in Iiyama Vision Master Pro Diamondtron monitor was supplied, with 16in viewable area. As well as the PC-standard D-Sub connector, there are BNC connectors at the rear. It has VESA DDC1/2B and TCO 95 ratings. All the usual size, positioning and geometric controls are available on-screen, along with colour temperature, moiré and degauss.

PCW Details

Price £2,109.13 (£1,795 ex VAT))
Contact Panrix 01132 444 958
www.panrix.com
Good Points Case design. Monitor.
Bad Points The inside of the case got a little hotter than we would have liked.
Conclusion A good machine.

Build Quality	★★★★☆
Performance	★★★★★
Value for Money	★★★★☆
Overall Rating	★★★★★

p235 ➢

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Editor's Choice

Personal Computer World Editor's Choice

We weren't certain, when we drew up the specifications for this group test, whether we'd get a batch of PCs suited to an office or a collection of awesome gaming machines. What we actually got was a bit of a mixed bag. Most of the PCs we saw would be more at home in an office, coming as they did with software like Microsoft Office 97 Small Business Edition and little to entice customers looking for the ultimate games machine.

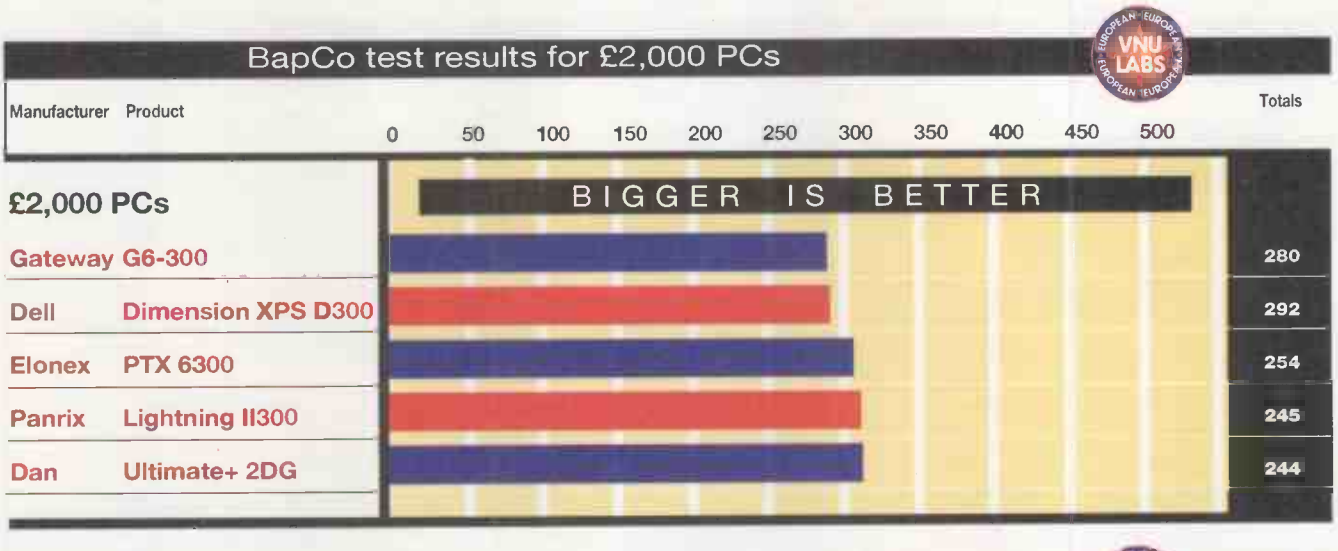
Gateway's warranty included an extra two years return-to-base tacked on to the standard one-year on-site offered by everyone else. This was a bright light in an otherwise dull field — we're sure that most people, and many small companies, would feel more confident with a longer standard warranty. However, there were some lengthy extensions available, the best of which being the five-year warranty option offered by Elonex.

The size of the hard drives installed in these machines was staggering, with 8.4Gb to be found in three machines, and a stonking 9Gb installed in the Elonex. When it came to graphics support, four of the PCs had 8Mb of memory on the graphics card. Only Gateway had the lesser amount of 4Mb on its card, although it did use a respectable STB Velocity 128. Having given a minimum specification and a £2,000 price point, it was rather strange that Gateway opted to send us its £1,500 PC. Four of the machines came with a 56K modem, with only Dell opting for a 33.6Kbps.

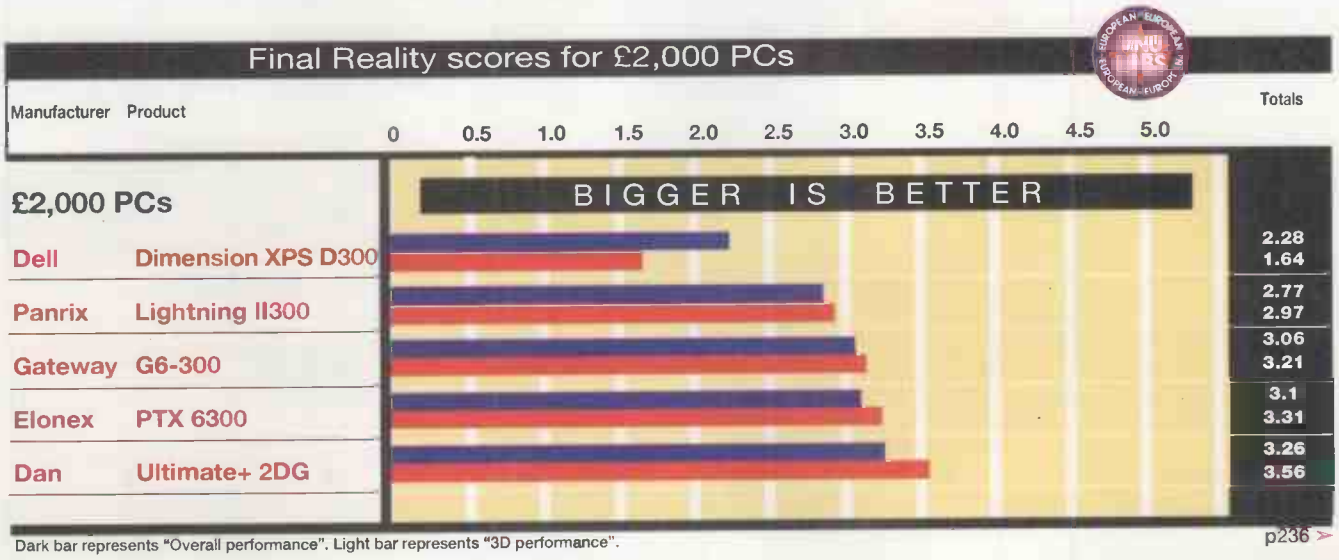
We had a tough time picking a Highly Commended. Although the Panrix Lightning II300 lived up to its name, turning in the second-fastest benchmark, in the end the Dell Dimension XPS D300 had the edge — but only slightly. Both are superbly specified office machines. Where the Dell machine fell down in the performance stakes, it made up for with a gorgeous 19in monitor and a solid, office-orientated software package. Ease of use and installation also counted in its favour.

When it came to picking an Editor's Choice, however, there was no competition. Dan's Ultimate+ 2DG was streets ahead of the rest of the pack. It came in smack on the price-point of £2,000 plus VAT and it was stuffed full of goodies. Best suited to home use, any user looking for a high-performance solution would appreciate this beastie.

BapCo test results for £2,000 PCs



Final Reality scores for £2,000 PCs



Dark bar represents "Overall performance". Light bar represents "3D performance".

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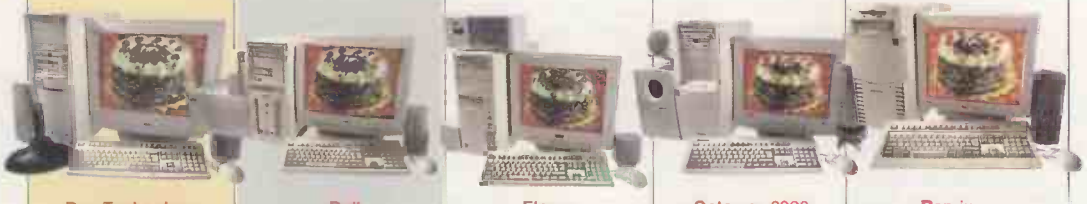
Table of Features

	Dan Technology (Personal Computer World Editor's Choice)	Dell (Personal Computer World Highly Commended)	Elonex	Gateway 2000	Panrix
					
Manufacturer	Dan Technology	Dell	Elonex	Gateway 2000	Panrix
Model Name	**Dan Ultimate+ 2DG**	**Dell XPS D300**	**PTX-6300**	**G6-300 M**	**Lightning II300**
Price (ex VAT)	£2,000	£1,849	£1,845	£1,449	£1,795
Price (inc VAT)	£2,350	£2,172.58	£2,167.88	£1,702.58	£2,109.13
Telephone	0181 830 1100	01344 724699	0181 452 4444	0800 55 2000	01132 444958
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Web address	www.dan.co.uk	www.dell.com	www.elonex.co.uk	www.gateway2000 .co.uk	www.panrix.com
Standard warranty	1 yr RTB	1 yr RTB	1 yr on-site	1 yr on-site, 2 yrs RTB	1 yr on-site
Warranty options	On-site	3 yrs on-site	Up to 5 yrs	3 yr on-site	3 yrs on-site
Technical support	M-F 9.30-6	Mon-Fri 8-8	M-F 8-8; Sat 9-1	M-Sat 8-10	M-F 9.30-6; Sat 10-5
Hardware Spec					
Processor	Pentium II - 300MHz	Pentium II - 300MHz	Pentium II - 300MHz	Pentium II - 300MHz	Pentium II - 300MHz
RAM/RAM type	64Mb SDRAM	64Mb SDRAM	64Mb SDRAM	64Mb SDRAM	64Mb SDRAM
Hard disk	IBM	Maxtor DiamondMax	Seagate Medalist Pro	Quantum Fireball ST	IBM DHEA
Size(Gb)/access	8.4GB/11ms	8.4Gb/9.8 ms	9GB/10ms	4.3GB/10ms	8.4GB/10ms
Interface	EIDE EDMA	EIDE UDMA	EIDE UDMA	EIDE UDMA	EIDE UDMA
Motherboard Components					
Motherboard manufacturer	SuperMicro	Intel	Intel	Intel	Asus
Chipset	Intel 440LX	Intel 440LX	Intel 440LX	Intel 440LX	Intel 440LX
L2 cache	512Kb	512Kb	512Kb	512Kb	512Kb
Expansion and I/O					
Spare bays 3.5in /5.25in	1 3.5in/2 5.25in	2 3.5in/1 5.25in	2 3.5in/2 5.25in	1 3.5in/2 5.25in	1 3.5in/2 5.25in
PCI slots/ISA slots/shared slots	4 PCI/3 ISA/1 shared	4 PCI/2 ISA/1 shared	4PCI/2 ISA/1 shared	4PCI/2 ISA/1 shared	4PCI/2 ISA/ 1 shared
USB/serial/parallel/PS2	2USB/2S/1P/2PS/2	2USB/2S/1P/2PS/2	2USB/2S/1P/2PS/2	2USB/2S/1P/2PS/2	2USB/2S/1P/2PS/2
Multimedia					
DVD/CD-ROM manufacturer	Creative Encore DVD	NEC CDR-1900	Acer	Mitsumi FX320s	Toshiba/6202B
CD-ROM speed/Interface	20x EIDE	32x EIDE	32x EIDE	32x EIDE	32x EIDE
Sound Card manufacturer	Creative Labs	Creative Labs	Elonex	Ensoniq	Creative Labs
Sound Card model	AWE 64 Gold	AWE 64	OPL3-SAX	Audio PCI	AWE 64
Speakers	Yamaha MIS+ Sub	Altec Lansing ACS 495	Altec Lansing	Boston Acoustics	Yamaha M20
Graphics & Monitor					
Graphics Card/memory	Matrox Millenium II/8Mb	Matrox Millenium II /8Mb	ATI Xpert@Work/8MB	STB Velocity 128/4Mb	Diamond FireGL/8Mb
Bus Type - AGP or PCI	AGP	AGP	AGP	AGP	AGP
Monitor model	ADI 6P	Dell D1226	Elonex MNO44	Gateway EV700	Iiyama MT 9017
Monitor size	19in	19in	17in	17in	17in
Max refresh rate @ 1024x768 (NI)	85Hz	85Hz	75Hz	85Hz	85Hz
Other Information					
Modem speed (Kbps)	K56Flex	33.6	K56Flex	56K x2	K56Flex
Other extras	Iomega Zip	Iomega Zip			Iomega Zip Drive
	Win TV card				
	Joystick, PC camera				
Office suite	Quicken 6.0	Microsoft Office 97 SBE	MS Office SBE	MS Office 97 SBE	Lotus SmartSuite
Other software	Microsoft Works	McAfee Virus		McAffee Virus	
	Page Plus	Microsoft Works		I.E. 4.0	
	Two DVD games				
Year 2000 compliant?	●	●	●	●	●

● yes ○ no

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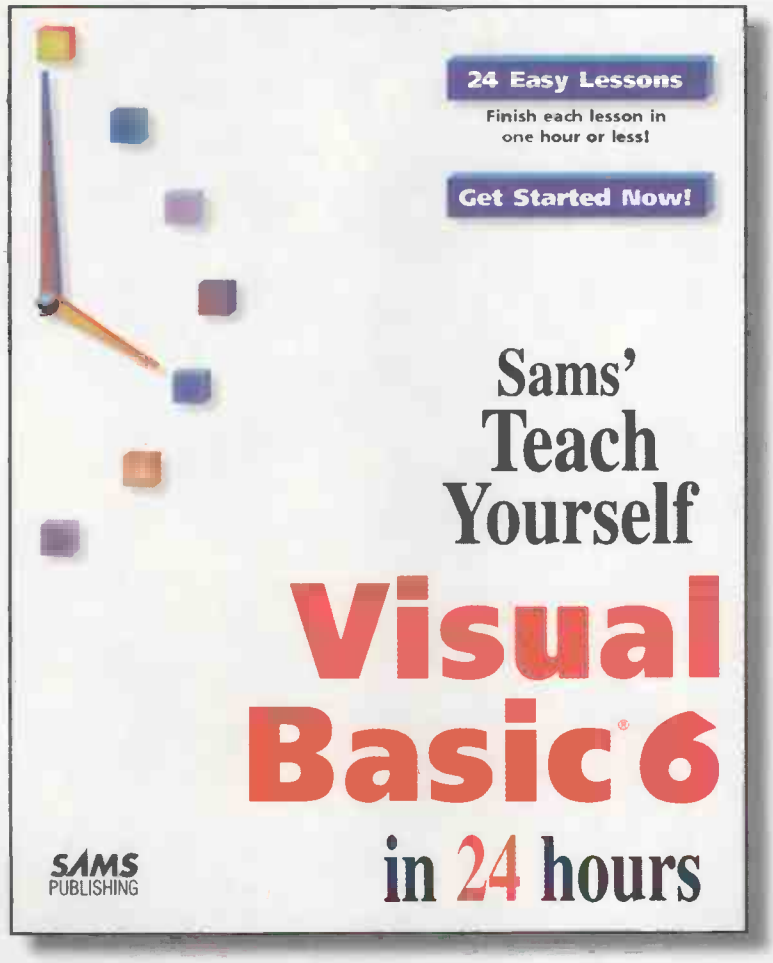

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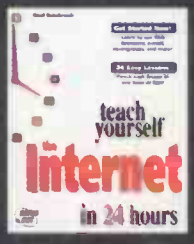

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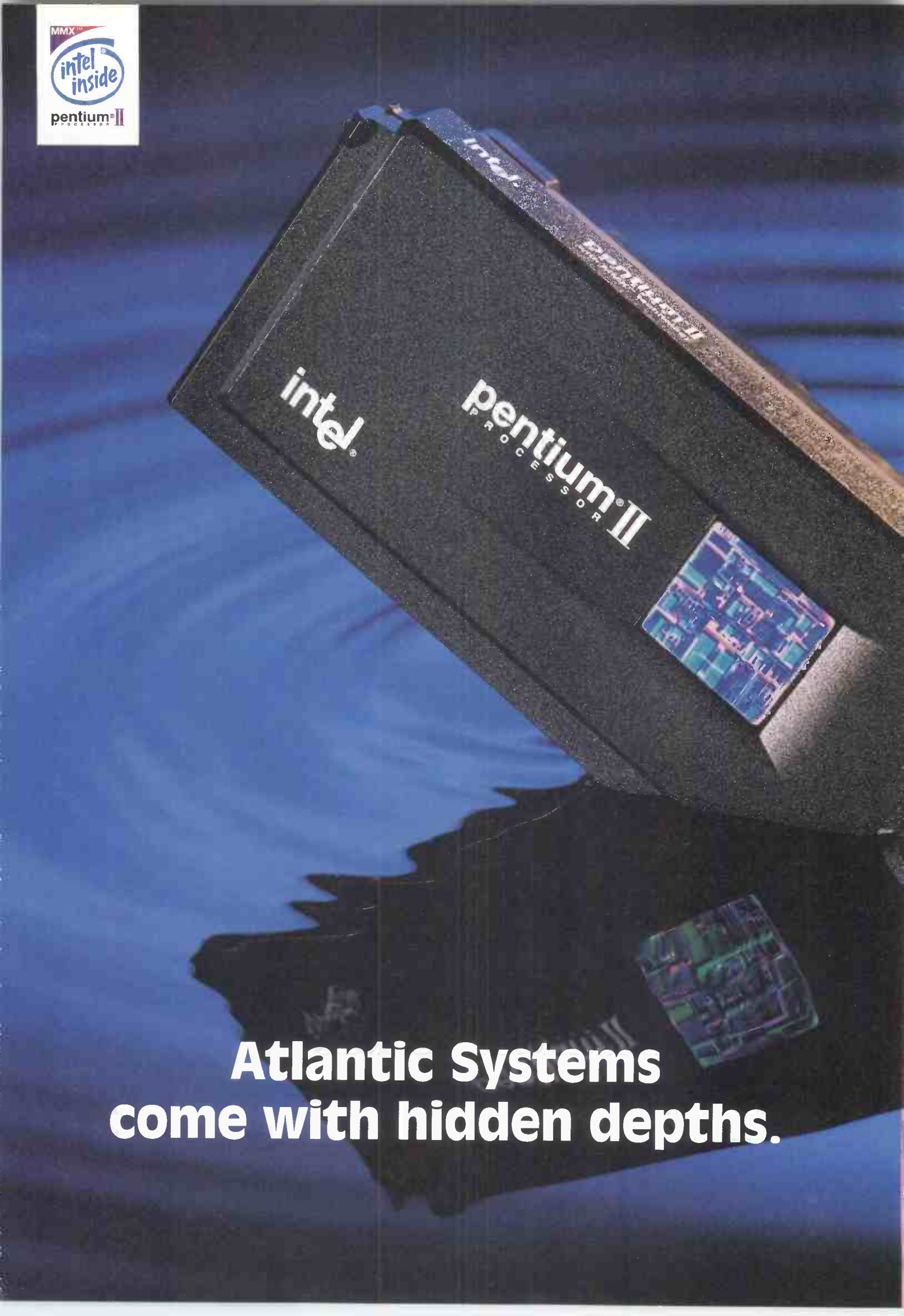
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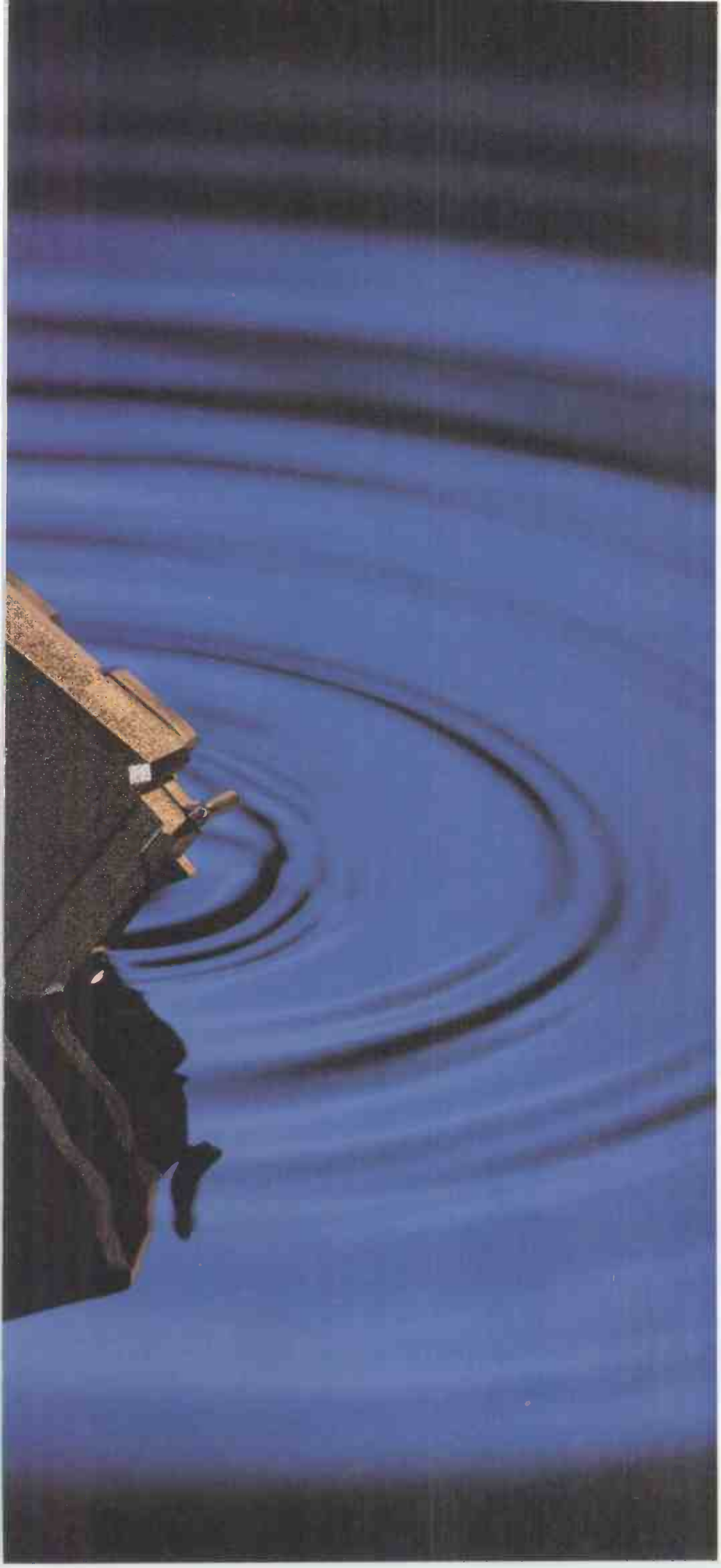

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LS 120Mb 3.5" Disk Drive
£79 / £92.83 Inc VAT

PCI Network Card
£29 / £34.08 Inc VAT

Lexmark 1000
Colour printer, superb value
£89 / £104.58 Inc VAT

HP-690c+
Windows inkjet printer, 300dpi resolution - Excellent quality.
£149 / £175.08 Inc VAT

HP-6L
Windows & DOS laser printer from the market leader.
£239 / £280.83 Inc VAT

HP-870cxi
Windows inkjet printer, 600 x 300dpi resolution - Award Winning Quality.
£199 / £233.83 Inc VAT

Compact PC Digital Camera
£125 / £146.88 Inc VAT

Monitor Upgrades

- 19" FST monitor (18" vis)
- 1280x1024 &1600x1200 flicker free 0.26mm fine dot pitch & on screen display
- Integral microphone & stereo speaker option
- Integral USB hub facility
- TCO 95 approval & 3yr warranty

15" -19" upgrade
£399 / £468.83 Inc VAT

14" - 15" upgrade
£69 / £81.08 Inc VAT

14" - 17" upgrade
£249 / £292.58 Inc VAT

15" - 17" upgrade
£179 / £210.33 Inc VAT

MS Office Pro 97 Upgrade: Word 97, Excel 97, Powerpoint 97, Outlook 97, Works, Access 97
£249 / £292.58 Inc VAT

NOTEBOOK UPGRADES

Mini Docking Station

Port replicator and network connectivity in a portable format
£129 / £151.58 Inc VAT

Mobile Modem Upgrades

Integrated high speed communications 33.6K PCMCIA fax modem,
£79 /£92.83 Inc VAT

K56 Flex PCMCIA fax modem
£99 /£116.33 Inc VAT

Worldwide Warranty

Atlantic Panacom notebooks are covered by a worldwide collect & return warranty. If your mobile breaks down anywhere in the world, we'll collect, repair & return it to you within 72 hours.

AXIS

233MHz £649

The Axis is a good starting point for the PC buyer who wants performance without the price. The Axis system makes top quality multimedia PC performance affordable. The CD audio and MPEG video playback, 33.6K fax modem with high speed internet connectivity all combine with a comprehensive range of software making the Atlantic Axis PC perfect for all home and business users.

- Intel Pentium® II Processor or Intel Pentium® Processor with MMX™ technology
- 512k pipeline burst cache with Intel 440LX AGP set on Pentium® II processor based systems.
- 32Mb RAM, expandable to 128Mb
- 2.5Gb fast E-IDE hard drive
- ATI® 3D Rage II+ 2Mb graphics card
- 14" 0.28 SVGA colour monitor
- 24Max CD-ROM drive
- Plug'n'play GM wavetable sound
- 50 Watt (PMPO) stereo speakers
- 33.6K internal fax & data modem
- 3.5" 1.44Mb disk drive
- 105 Key Windows® 95 keyboard & mouse
- Mini tower or desktop case
- 3 PCI & 2 ISA slots
- SOFTWARE
  Microsoft Windows® 95,

  Lotus Smartsuite 97 including:
  WordPro 97,
  Organiser 97,
  1-2-3 97,
  Approach 97,
  Freelance Graphics 97.

  Corel Draw Suite 4 including:
  Draw,
  Photopaint,
  Chart,
  Show.

  IBM Worldbook Encyclopedia 97,

  Pipex dial 4 - one month free internet access account. No credit card required.
  (Software supplied on CD-ROM with on-line documentation where appropriate).

- 5 year warranty - 1st year on-site
- Lifetime technical support
- Buy now pay 1999

Intel Pentium® Processors with MMX™ technology

	Ex VAT	Inc VAT	*Per Month
200MHz	£599	£721.45	£31.53
233MHz	£649	£780.20	£34.09

Intel Pentium® II Processors

	Ex VAT	Inc VAT	*Per Month
233MHz	£799	£956.45	£41.80
266MHz	£869	£1038.70	£45.39
300MHz	£969	£1156.20	£50.53
333MHz	£1029	£1226.70	£53.61

*All monthly payments over 36 months 26.9% APR. No deposit required. Option to pay advertised cash price Jan 98 0% interest free

PRO 98

266MHz £999

The Atlantic Pro 98 system delivers high performance multimedia with MMX™ technology as standard. The Pro 98 utilises a K56Flex modem with internet technology and voice fax facilities, perfect for high-end home and business use. Ultra ATA DMA-33 hard disk transfer, super fast system SDRAM and 3D graphics deliver an excellent all round performance system.

- Intel Pentium® II Processor or Intel Pentium® Processor with MMX™ technology
- Intel® 430TX or 440LX AGP set with 512k pipeline burst cache
- 32Mb SDRAM, expandable to 128Mb
- 4.3Gb Ultra ATA DMA-33 hard drive
- ATI® 3D Rage 4Mb AGP graphics card (PCI graphics in Pentium Processor based systems)
- 15" 0.28 SVGA colour monitor
- 32Max CD-ROM drive
- Plug'n'play GM wavetable sound
- 80 Watt (PMPO) stereo speakers
- K56 Flex internal fax & data modem
- 3.5" 1.44Mb disk drive
- 105 Key Windows® 95 keyboard & mouse
- ATX mini tower or desktop case
- 4 PCI & 2 ISA slots
- 2 USB ports
- Headset and Microphone
- SOFTWARE
  Microsoft Windows® 95,

  Lotus Smartsuite 97 including:
  WordPro 97,
  Organiser 97,
  1-2-3 97,
  Approach 97,
  Freelance Graphics 97.

  Corel Draw Suite 4 including:
  Draw,
  Photopaint,
  Chart,
  Show.

  IBM Worldbook Encyclopedia 97,

  Pipex dial 4 - one month free internet access account. No credit card required.
  IBM Simply speaking voice dictation software
  (Software supplied on CD-ROM with on-line documentation where appropriate).

- 5 year warranty - 1st year on-site
- Lifetime technical support
- Buy now pay 1999

Intel Pentium® Processors with MMX™ technology

	Ex VAT	Inc VAT	*Per Month
200MHz	£799	£956.45	£41.80
233MHz	£849	£1015.20	£44.36

Intel Pentium® II Processors

	Ex VAT	Inc VAT	*Per Month
233MHz	£939	£1120.95	£48.99
266MHz	£999	£1191.45	£52.07
300MHz	£1099	£1308.95	£57.20
333MHz	£1159	£1379.45	£60.28

*All monthly payments over 36 months 26.9% APR. No deposit required. Option to pay advertised cash price Jan 98 0% interest free

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PANACOM

266Mhz £1999

Atlantic Panacom notebook computers are cutting edge multimedia PC's in a portable and ergonomic format. Sharp screens and exceptional build quality combined with our buy now pay January 1999 make these multimedia PC's hard to resist. All Atlantic notebooks contain specially designed mobile Pentium Processors from Intel®, ensuring enhanced battery performance and MMX™ technology as standard.

- 13.3" XGA TFT colour display
- 233MHz Intel® mobile Pentium® Processor with MMX™ technology-Intel MMO module
- 3.2Gb Ultra ATA DMA-33 hard drive
- 32Mb SDRAM expandable to 80Mb
- 512K level 2 cache
- Neomagic 128bit 2Mb graphics accelerator
- 20 speed CD-ROM & 3.5" 1.44Mb disk drive
- 3D Stereo wavetable sound with stereo speakers, wavetable with MIDI
- SMART lithium 45W battery
- 85 key keyboard with MS Windows 95 keys
- 2 PCMCIA type II or type III slots
- Zoomed video port • 1 USB port
- Cardbus ready • Synaptics® touchpad™
- Infrared IrDA 1.1 communication port
- Built in microphone
- Weight 2.9Kg • Dimensions: 299 x 226 x 51
- Carry case , A/C adapter, manuals
- Microsoft® Windows 95
- SOFTWARE
  IBM Simply speaking voice dictation software.
  Lotus Smartsuite 97
- 1Yr parts & labour warranty, two years RTB
- Lifetime technical support

	Ex VAT	Inc VAT	*Per Month
233MHz	£1899	£2248.95	£98.28
266MHz	£1999	£2366.45	£103.41

*All monthly payments over 36 months 26.9% APR. No deposit required. Option to pay advertised cash price Oct 98 0% interest free

166Mhz £1249

- 12.1" SVGA SVGA DSTN display (TFT option)
- 133MHz or 166MHz Intel mobile Pentium® Processor with MMX™ technology
- 2.1Gb Ultra ATA DMA-33 hard drive
- 32Mb EDO RAM expandable to 72Mb
- 256K level 2 cache
- Neomagic 128bit 2Mb graphics accelerator
- Removable 12 speed CD-ROM
- 3.5" 1.44Mb disk drive
- 16bit stereo sound with stereo speakers & microphone
- 2 x smart NiMH batteries
- 85 key keyboard with MS Windows 95 keys
- 2 PCMCIA type II or type III slots
- Synaptics® touchpad™
- Infrared IrDA 1.1 communication port
- Built in microphone
- Weight 2.9Kg • Dimensions:299 x 226 x 51
- Carry case , A/C adapter, manuals
- Microsoft® Windows95
- SOFTWARE
  IBM Simply speaking voice dictation software.
  Lotus Smartsuite 97
- 1Yr parts & labour warranty,two years RTB
- Lifetime technical support

	Ex VAT	Inc VAT	*Per Month
166MHz	£1249	£1485.20	£64.90

*All monthly payments over 36 months 26.9% APR. No deposit required. Option to pay advertised cash price Jan 98 0% interest free

NEXUS

300MHz £1329

Atlantic Nexus systems come equipped with the ATI® XPERT@Play performance 3D graphics card and stunning wavetable synthesis and MIDI features from Creative's AWE-64 Digital audio card, making our Nexus PC the intelligent choice for musicians and serious game players. Nexus systems feature super fast K56 Flex voice, fax & data modems & include trial access to the Internet via PIPEX.

- Intel Pentium® II Processor
- Intel® 440LX AGP set
- 512k internal cache
- 64Mb SDRAM, expandable to 256Mb
- 6.4Gb Ultra ATA DMA-33 hard drive
- ATi® 3D XPERT@Play 4Mb AGP graphics with TV output
- 15" 0.28 SVGA colour monitor
- 32Max CD-ROM drive
- Creative AWE-64 wavetable soundcard
- 300 Watt (PMPO) stereo speakers
- K56 Flex internal fax & data modem
- 3.5" 1.44Mb disk drive
- 105 Key Windows® 95 keyboard & mouse
- ATX mini tower or desktop case
- 4 PCI & 2 ISA slots 1 AGP
- 2 USB ports
- Headset Microphone
- SOFTWARE
  Microsoft® Windows 95

  Exclusive AGP games software:
  Red Line Racer, G-Police, Tonic Trouble, O-Zone, Overseer, Beyond the Third Dimension, F22 Air Dominance Fighter.

  Lotus Smartsuite 97 including:
  WordPro 97, Organiser 97, 1-2-3 97, Approach 97, Freelance Graphics 97

  Corel Draw suite 4 including:
  Draw,
  Photopaint,
  Chart,
  Show.

  IBM Worldbook Encyclopedia 97
  IBM Simply speaking voice dictation software

  The Family Doctor™
  Design It! 3D™
  Kitchen Gourmet™
  The Oregon Trail™
  Key Home Gardener™
  Typing Teacher™

  Pipex Dial 4 - one month free internet access account. No credit card required. (Software supplied on CD-ROM with on-line documentation where appropriate).

- 5 year warranty - 1st year on-site
- Lifetime technical support
- Buy now pay 1999

Intel Pentium® II Processors

	Ex VAT	Inc VAT	*Per Month
233MHz	£1149	£1367.70	£59.77
266MHz	£1229	£1461.70	£63.88
300MHz	£1329	£1579.20	£69.01
333MHz	£1389	£1649.70	£72.09

*All monthly payments over 36 months 26.9% APR. No deposit required. Option to pay advertised cash price Jan 98 0% interest free

PROTEUS

333MHz £1659

The ATX based Proteus systems feature Pentium II Processors, 64Mb fast SDRAM, 17" screens and Microsoft Office97 SBE edition on all models for outstanding 'Future Proofing'. Atlantic PC's are even easier to own right now, with no deposit and nothing more to pay until January 1999 when you have the option to pay the total amount interest free, or you can take advantage of our economical 36 monthly repayments scheme.

- Intel Pentium® II Processor
- Intel® 440LX AGP set
- 512k internal cache
- 64Mb SDRAM, expandable to 256Mb
- 8.4Gb Ultra ATA DMA-33 hard drive
- Iomega® 100Mb internal Zip™ drive
- ATI® 3D XPERT@Work 8Mb AGP graphics
- 17" 0.28 SVGA colour monitor
- 32Max CD-ROM drive
- Creative AWE-64 wavetable soundcard
- 300 Watt (PMPO) stereo speakers
- K56 Flex internal fax & data modem
- 3.5" 1.44Mb disk drive
- 105 Key Windows® 95 keyboard & mouse
- ATX mini tower or desktop case
- 4 PCI & 2 ISA slots 1 AGP
- 2 USB ports
- Headset & Microphone
- SOFTWARE:
  Microsoft® Windows 95

  Microsoft® Office 97 SBE including:
  Word 97,
  Excel 97,
  Publisher 97,
  Small Business Financial Manager 97,
  Autoroute Express GB,
  Outlook 97.

  Corel Draw Suite 4 including:
  Draw,
  Photopaint,
  Chart,
  Show.

  IBM Worldbook Encyclopedia 97
  IBM Simply speaking voice dictation software

  Pipex Dial 4 - one month free internet access account. No credit card required. (Software supplied on CD-ROM with on-line documentation where appropriate).

- 5 year warranty - 1st year on-site
- Lifetime technical support
- Buy now pay 1999

Intel Pentium® II Processors

	Ex VAT	Inc VAT	*Per Month
233MHz	£1429	£1696.70	£74.15
266MHz	£1499	£1778.95	£77.74
300MHz	£1599	£1896.45	£82.87
333MHz	£1659	£1966.95	£85.96

*All monthly payments over 36 months 26.9% APR. No deposit required. Option to pay advertised cash price Jan 98 0% interest free

WARRANTY

Atlantic PC systems come with a five year warranty as standard, with the first year on-site parts and labour, with four years return to base covering all labour on your system. Business hours telephone technical support is also provided during the lifetime of the PC. Now home users can upgrade to our special 7 day extended telephone helpline for the first year for only £29 + VAT.

3 YEAR WARRANTY

EXTENDED 3 YEAR ON-SITE WARRANTY £159+V.A.T

What the papers say

Personal Computer World
Good Points: Software bundle, large hard disk, excellent graphics card.
Bad Points: None
Conclusion: Great specifications and good selection of software make this an attractive choice.
(ATX Proteus PCW Feb '97)

Computer Shopper
"The presentation of this system is good and it boasts high quality components."
(ATX Pro 97 Best Budget Buy Computer Shopper May '97)

PC Advisor
"...this Atlantic machine performed confidently throughout our rigorous testing procedures. The Atlantic gives good performance for an excellent price."
(Pro 97 Recommended PC Advisor Sept '97)

PC Home
"A damn fine machine. The Atlantic PC was head and shoulders above the others."
(Pro 98 PC Home Jan '98)

Buy now pay 1999.

Typical example: Total cash price £1191.45 No deposit. Repayments: Either 1 repayment in Jan 1999 of £1191.45 0% interest free (price paid = normal cash price) or commencing Oct 98, 36 monthly payments of £52.07 Total amount payable £1874.52 APR 26.9%

Millennium

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Atlantic™
Technology you can rely on

PDAs

You've got to hand it to 'em: the PDAs and palmtops we've got our fingers on here are a useful, highly desirable bunch of little technological marvels.

This group test is the gadget lover's idea of heaven. We have over 20 of the coolest products ever to grace the pages of *PCW*, including tiny touch-screen devices like the Palm Pilot, the latest technicolour Windows CE machines and all-in-one marvels like the Nokia 9000i.

There are many reasons for buying a Personal Digital Assistant (PDA). Are you still carrying around that big lump of a filofax in your bag? The slimmer PDAs weigh in at a fraction of the weight of a big filofax. They offer just as much storage space and the ability to get at your information in a matter of seconds.

Are you still jotting down contact information from your PC's database onto a scrap of paper and then losing it? You can synchronise most PDAs with your diary and list of contacts on the PC, and update both automatically with the press of a button.

Do you carry around a heavy laptop just so you can use a word processor and a spreadsheet on the move? A PDA can relieve the load on your back and on your wallet, and still provide the functionality you need.

Whether you want something to replace your filofax, do word processing away from the office or collect your email on the move, we have solutions to fit everybody's pocket.

We rated each product on the following six categories:

Screen: How big is it? Is it clear and sharp? Does it reflect a lot of light? How good is the backlight?

Keyboard/Input: Are the keys easy to find without looking? Does the keyboard feel cramped? Does the handwriting recognition really work?

Linking with a PC: How easy is it to exchange information with your PC? Can you synchronise data, keeping your diary, contacts, etc. up to date automatically?

Features: Is there a good range of applications? How much memory is there? Can you connect other devices to it? Can you take audio recordings?

Comms: How easy is it to connect to the internet? Is email a doddle or too hard to handle?

Overall: The overall score, taking into account the above ratings and anything else not covered by those five categories.

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- *Case Studies are featured throughout these pages.*

Geofox One Professional

Rather than develop its own operating system, Cambridge-based start-up Geofox licensed EPOC32 — also seen in the Psion Series 5 — from Psion Software and built a new PDA around that. With this aiding its development, the One went on sale in November last year and is the largest, though also about the thinnest, PDA around. It's definitely baggable rather than pocketable and is aimed at those who don't want the weight of a notebook but still need to do a good bit of typing.

To justify the size there's a massive screen: with a 6.8in diagonal and 640 x 320 resolution it's almost in sub-notebook territory. The size means you can see plenty of your page, and it's nice and clear although the backlight is a little dull. The Geofox One isn't pen-based so doesn't have a touch-screen: the lack of a membrane makes a huge difference to both clarity and reflectivity.

Instead of a pen there's a glidepad, fostering the impression of the One as a shrunken notebook. This sits above the keyboard, reducing the vertical space available for the alphanumeric keys. Given the room in that big case we were expecting Geofox to have made a better job of the keyboard. It feels cramped, although the horizontal key spacing is certainly adequate. Worse, it has rubber calculator-style keys which feel spongy and don't always register key-presses, although this problem was more pronounced on the pre-production models we saw first. We didn't like the long space bar and the numeric keypad at top right is far too small for adult fingers.

The keyboard actually contributes to a general feeling that the Geofox is a bit difficult to use. The hieroglyphics by the application keys are obscure – a shame, because the applications themselves are pretty good.

EPOC 32 is a well-integrated operating system with all the essential functions like a word processor, diary and spreadsheet working tidily together. For general use the integrated software is fine, apart from the absence of a Sort function in Sheet. There are other limitations — no month view or multiple alarms for the same event in Agenda, no outliner in Word and an undocumented 25-field limit in the database — but you can live with these.

Just to make it easier to live with, in fact, the Geofox comes with 8Mb of ROM and 4Mb or 16Mb of RAM. A PC connection cable is in the box together with a copy of PsiWin 2.0, although this has been branded EPOC Connect for the OEM market. As with the Series 5 this supports drag-and-drop conversion between the Geofox and PC applications, though we have found problems like spurious lines being inserted in Word.

Unlike the Psion Series 5 though, EnRoute route-planning software is built in along with the web browser and email client. If you buy the Professional model then you also get a multi-voltage travel mains adaptor together with a modem to fit the single PC Card slot. We had no problems whatsoever setting up the Geofox to use a dial-up account: email is fine, browsing possible but a little slow, and frames aren't supported.

Other software? Well, it will run just about anything written for the Psion Series 5. For a comprehensive list, look at Psion's web site, but there are a huge number of third-party developers. One of the best-known, Palmtop, can be found at www.palmtop.nl where you'll find freeware delights like a Spectrum emulator and a Doom engine. We've tried both and wouldn't be without them.

John Sabine

PCW Details

Contact Geofox 0845 844 0109
www.geofox.co.uk
Price Geofox One 4Mb, £385 (£327.66 ex VAT); Geofox One 16Mb, £449 (£382.12 ex VAT); Geofox One Professional 4Mb, £535 (£455.32 ex VAT); Geofox One Professional 16Mb, £599 (£509.79 ex VAT)

Good Points Big, clear screen. Great value.
Bad Points The keyboard, for its combination of spongy feel and poor use of space. PsiWin — sorry, EPOC Connect — is still buggy.
Conclusion A good first effort but a missed opportunity overall. We can't wait to see the Geofox Two…

Screen	★★★★☆
Keyboard	★★☆☆☆
Linking to PC	★★★☆☆
Features	★★★★★
Comms	★★★★☆
Overall	★★★☆☆

p244 ➢

Nokia 9000i Communicator

The Nokia 9000i Communicator is the latest version of the popular 9000 model, which now includes enhanced applications, a much improved calendar system, and internet services based on Smart Messaging. The real advantage of this device is that all your internet, PDA and GSM phone facilities are catered for by a single device — no more trailing wires between PDA or laptop and your cellular phone. The result is what appears to be a slightly oversized GSM phone which opens up to reveal a full QWERTY keypad and a very clear 640 x 200 greyscale LCD screen. The phone can even be used in "hands free speakerphone" mode when the case is open. The 9000i has an Intel 386 processor with 8Mb of memory — 4Mb for the Geos 3.0 operating system and 2Mb for program execution, leaving 2Mb for user data storage. This might not sound like much but it is quite Tardis-like, in that you can fit far more in there than you would think.

The contacts database has an excellent search facility and is tightly integrated with the remaining applications and with cellular phone. Unfortunately, links to the PC are restricted to backup operations out of the box (and even then you have the purchase the serial lead separately). More advanced synchronisation with PC applications is via third-party Intellisync software.

The Communicator includes SMS capabilities but Nokia has extended these to allow "Smart Messages" (which can even configure a Communicator remotely) and long messages (up to 2280 characters).

The Calendar is the product's weakest application but it is adequate, and even allows you to send and receive requests for meetings to other 9000i users via SMS. The Notepad, too, is fairly basic but once your documents are complete, a couple of keypresses are all that is required to send them via SMS, fax or email, or they can be printed out via an infra-red link or transferred to your PC via the serial interface (or infra-red). Faxing using the Communicator is a cinch, and once a fax has been received it can be viewed, zoomed, rotated, printed out or forwarded to another fax machine.

Finally, the internet application provides email, WWW browser, Telnet and Terminal functions. You can have any number of Internet Service Providers and configuration is very straightforward. Both web browser and email facilities are easy to use, the former doing a creditable job of viewing web pages on such a tiny screen, the latter offering full support for both IMAP and POP3.

All in all, the Nokia 9000i is a "go anywhere" piece of kit that does just about everything I could want in a compact and convenient one-piece package. Yes, there are a couple of shortcomings: the keyboard is not brilliant if you have lots of writing to do, the Calendar application is a little too basic for me, and there is no backlight. But all of these can be forgiven given the size of the package, the battery life and the wonderful "all-in-one" approach.

Bob Walder

Case Studies

Gordon Laing, Journalist: Nokia 9000 Communicator

Our very own Gordon Laing, while quite literally gadget-mad, has managed to resist the temptation of most PDAs. His paper-based WH Smith 88-page narrow ruled notebooks, complete with home-made diary, things-to-do lists and crude drawings have become legendary in the business — "A bargain at only 79p!" he enthused. "I can make notes using my pen and pad. A PDA needs to offer built-in comms to get me interested," which is why he used a Nokia 9000 for the best part of a year. "There's no messing around with cables or adapters. If you want to send an email or fax you can just do it." He did, too, from a variety of locations, and also regularly logged onto Cix. He wasn't so impressed with the basic web browser though, albeit limited mostly by GSM's bandwidth of 9600bps. He stopped using the 9000, however, because it was too big and heavy. "Squeeze mobile comms into a Psion, PalmPilot or CE and you've got my money!"

Simon Rockman, Publisher: Nokia 9000i

Although he found the software bundled with his Nokia 9000i slightly lacking at first, Simon loves its faxing capabilities. "You can fire off an angry note while you're on the tube, then send it as you're walking from the station to the office," he says. It could do with a spreadsheet and the to-do lists don't stack, but its telephony functions are second to none, retaining complete logs of everyone you've called and the people who have called you as well as bringing up relevant caller details each time the phone rings. The screen and keyboard are both a little small and the zoom function makes reading incoming faxes a little difficult, but the alternative is to do without as there is nothing else on the market doing the same job. At 1kg it is a little heavy for a mobile phone — many models are a tenth of that. But then, they don't have so many functions.

PCW Details

Contact Nokia 0990 003110

Price £299 (inc VAT & connection)

Good Points Internet, PDA and GSM facilities on one device.

Bad Points Keyboard. No backlight.

Conclusion Excellent "all-in-one" PDA.

Screen	★★★★☆
Keyboard	★★★☆☆
Features	★★★★★
Linking with PC	★☆☆☆☆
Comms	★★★★★
Overall	★★★★★

Psion 3c

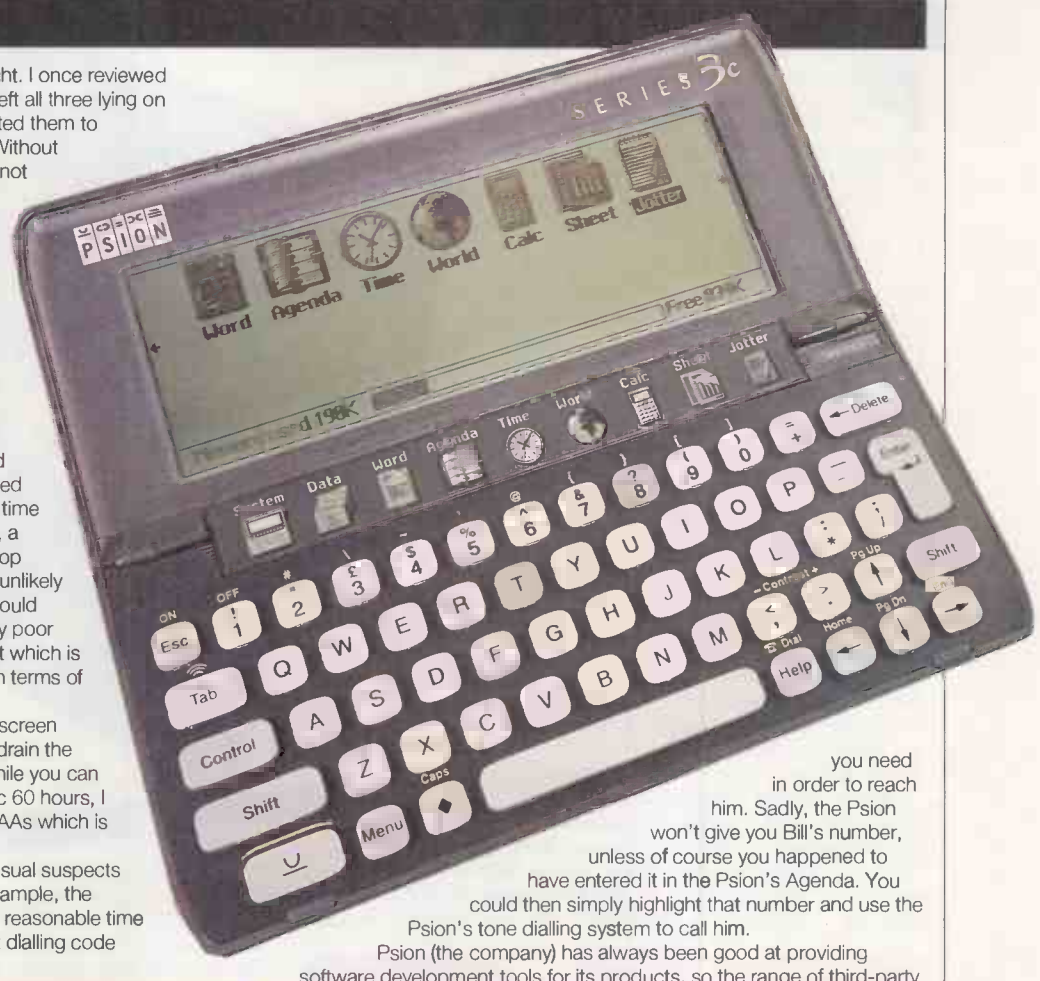
The Psion Series 3c is a tactile delight. I once reviewed three very different palmtops and left all three lying on my desk. As people came in, I invited them to examine the machines while we talked. Without exception, all of them ended up holding (not to say fondling) the Psion. In itself this is unimportant, except to give an indication of the care which has gone into the machine's design.

Take the keyboard: it is of course far too small, but it *has* to be: after all, the Psion will fit into your pocket. Nevertheless I have typed, quite literally, tens of thousands of words on that keyboard without undue strain, so it is obviously just large enough for me.

Then there is the screen. The size and resolution were poor on the 3 but improved dramatically for the later versions. By the time the 3c arrived the screen was, and still is, a delight; indeed, it remains the best palmtop screen I have ever used. It is readable at unlikely viewing angles and low light levels that would defeat many other machines. Under really poor conditions you can resort to the backlight which is powerful, restful and impressively even, in terms of light intensity, across the screen.

A cynic might expect this paragon of screen technology, particularly the backlight, to drain the batteries at a depressing rate; but no. While you can forget the manufacturer's wildly optimistic 60 hours, I regularly get over 30 hours from a set of AAs which is extraordinarily good.

The built-in software includes all the usual suspects and some highly usable surprises. For example, the World Time will tell you not only what is a reasonable time to ring Bill Gates in Seattle, but also what dialling code you need in order to reach him. Sadly, the Psion won't give you Bill's number, unless of course you happened to have entered it in the Psion's Agenda. You could then simply highlight that number and use the Psion's tone dialling system to call him.



Psion (the company) has always been good at providing software development tools for its products, so the range of third-party software (freeware, shareware and purchaseware) has become enormous. It ranges from pre-built worksheets for the spreadsheet, through utilities such as file managers, to complete packages such as Steve Litchfield's Mapper, a complete roadmap of the UK that also includes data sets for France and other countries. Steve has also added support for GPS (Global Positioning Systems) so you can tie a GPS unit to the Psion and have a moving cursor on the map which shows your current position. (Steve's web site is ourworld.compuserve.com/homepages/slitchfield/).

In many ways this application exemplifies what distinguishes the Psion from many other palmtops. It is not just an address-list holder; it is a real computer and as such can become whatever the software tells it to be.

Add-on hardware is also available, from PC connection cables through modems to fax machines. Given just the cable you can connect to a PC, transferring files and indeed backing up the entire Psion to the PC's hard disk. Given a modem and the right software you can surf the web and read your email, all from a machine that fits in your pocket.

Mark Whitehorn

PCW Details

Contact Psion 0990 143050 www.psion.com

Price £299.95 (inc VAT)

Good Points Attractive, well designed and packed full of useful software. As it is a "real" computer, the range of extras is massive.

Bad Points No touch-sensitive screen or handwriting recognition.

Conclusion I must sound like a total convert to the Psion Series 3c, and that's because I am. I will change my views when, as is inevitable, something better comes along. But it hasn't yet.

Screen	★★★★☆
Keyboard/Input	★★★★★
Features	★★★★★
Linking with PC	★★★☆☆
Comms	★★★★☆
Overall	★★★★★

Case Studies

Chris Cain, Editor: Psion 3c

Chris admits to having something of a Psion 3c dependency: "I'd be lost without the Psion's agenda function." He bought it initially for contacts, calculator and diary use, and now also uses the word processor and spreadsheet. Gripping the unit in both hands and using his thumbs to press the keys, he can make reams of notes on trains and buses. Chris has only one criticism of the Psion 3c: every now and again, the backup battery falsely reports that it has failed; but this is more of a nuisance than a real concern. The only improvements he would make to the design are a Psion 5 keyboard and a larger screen.

On a trip to the United States he programmed the spreadsheet to work out currency conversions from sterling, taking into account the different sales-tax rates in different states. "I also planned a diet using it, but that didn't work so well."

Jim Haryott, Editorial Assistant: Psion 3c

The Psion 3c is Jim's first Personal Digital Assistant. "I basically wanted something to replace my filofax," he said, and indeed, having had it for six months, this is what he does use it for. He has yet to exhaust his first set of batteries.

Although he has an early model without backlight, Jim still rates the screen as "adequate" for his needs. However, he is not so happy with the keyboard: bigger keys would be an improvement though he is fond of the application keys. He adds that, given the funds, he would rather go for a Psion 5 with its famous keyboard.

Jim is more than happy with the simplicity and ease of use of the supplied software. So far, he has not used any third-party applications but he does plan to load a Spectrum emulator in the near future.

p246

Psion Series 5

Psion has been producing pocket computers for nearly as long as IBM has been making desktop PCs. Its latest is the Series 5, launched last autumn at around the same time as Windows CE palmtops first appeared in the United States. The Series 5 is slightly smaller than the first crop of CE machines and only marginally bigger than the 3 Series it replaces.

Closed, the Series 5 looks pretty much like any other pocket computer apart from three audio recording buttons along the front edge. Open the lid, though, and its notebook-style keyboard slides forward, out of the case, and the screen springs back to rest in a very stable position. This is just about the only palmtop that doesn't fall over backwards the first time you poke the screen — important for a pen-based machine. If the keyboard looks great, it's even better to type on: similar in scale and feel to that on Toshiba's Libretto and vastly superior to the calculator-style efforts on other palmtops.

Switch it on and the first great disappointment becomes apparent — the screen. The Series 5 has a 640 x 240 (VGA-width) display with up to 16 shades of grey. The contrast is so poor that unless the ambient light is just right it's very difficult to read. The backlighting doesn't help much unless you're in almost total darkness. In fairness, the screen is actually slightly better than many of the CE palmtops currently available. But take a look at the great (if power-hungry) colour displays starting to appear on CE machines and you'll realise that Psion needs to address this issue with urgency.

Built-in software includes the standard suite of palmtop applications— word processor, spreadsheet, diary, database. Psion's are better than most; closer, certainly, to full desktop versions than the cut-down Word and Excel that ship with Windows CE. Look-and-feel is similar enough to Windows applications, too, and standard Windows shortcuts are used for most menu commands. Compatibility is no more of an issue than with Windows CE. Nice features include four levels of zoom throughout, good use of the limited screen real estate, and Psion's version of object embedding which allows you to insert graphs, spreadsheets, sketches or even sound clips into your documents.

Email and the web? For anything beyond text-based stuff (a simple VT100 comms program is included in ROM) you will have to download Messaging Suite which is freely available from Psion's web site. This package includes fax (sending and receiving), email and web browser. The fax side of things works in a similar way to Winfax on the PC, through a print-to-fax driver. You can send a fax from any application that supports printing, and this includes text and any embedded graphics in, for example, Psion's word processor. Received email and faxes are stored in a single "universal" in-box. Messaging Suite supports TCP/IP and POP3 protocols. The web browser supports standard features such as graphics and tables but, sadly, not frames. You can save pages or bookmark them.

Psion has just announced InSync, a program which allows Series 5 users to synchronise with Lotus Notes and, before the end of the year, a full Notes client.

Despite some problems — the display being the most serious — the Series 5 manages to hold its own against stiff competition – notably from Hewlett-Packard and from Windows CE itself. But unless the rumoured upgrade, which will fix a few bugs and add some major features, materialises soon and Psion finds a better source of display panels, Windows CE will start to look more and more attractive. Having said that, this machine is worth buying for its keyboard alone.

Mick Andon

PCW Details

Contact Psion 0990 143050 www.psion.com

Price £429.95 (8Mb), £399.95 (4Mb); inc VAT

Good Points Keyboard. Ingenious case design. Built-in software. Integration with Windows.

Bad Points Poor screen contrast and backlighting.

Conclusion The basic concept and design are spot on, but the Series 5 is badly let down by its poor screen, especially when compared to Hewlett-Packard's latest offering.

Screen	★★☆☆☆
Keyboard	★★★★★
Features	★★★★☆
Linking with PC	★★★★☆
Comms	★★★★☆
Overall	★★★★☆

Case Studies

John Sabine, Staff Writer: Psion 5

John admits he was not convinced of the usefulness of PDAs before buying his Series 5. But now, having used it for six months, he is a self-confessed convert. "I don't know what I'd do without it now. All my contacts are in there and, although the screen reflects a lot of light, the keyboard is excellent." He admits the keys are a little stiff, but as he is a two-fingered typist, the fact they need a firm tap does not affect him. He is also a fan of the audio recording function, something that he only uses now and again but "it's nice to know it's there if I need it".

Surfing the web does not form a big part of his Psion activities but he has experimented with getting online and found the experience reassuringly straightforward. John has also garnered, via the internet, a Spectrum Emulator and a version of Doom for the Series 5.

Mark Whitehorn, journalist and writer: Psion 5

Mark is a self-confessed gadget addict, having used every single Psion from the Series 3 onwards. He does everything on his palmtop: keeping his contacts up to date, using it to write while travelling, and using the World Time feature far more than he thought he would.

He is a fan of the Psion 5 but admits to preferring the Series 3c: "The screen is clearer, with a better backlight... and I never use the touch screen because I am used to the keyboard shortcuts." The battery life is another concern: he manages only three and a half hours on a set of fresh batteries, compared with 30 for the 3c. "The problem is that I need the backlight on the Series 5 and this puts a heavy drain on the batteries."

Despite his own preference for the Series 3c, Mark would still recommend the Series 5 to anyone who wants a PDA with a touch screen.

p248 ➤

Inspiration

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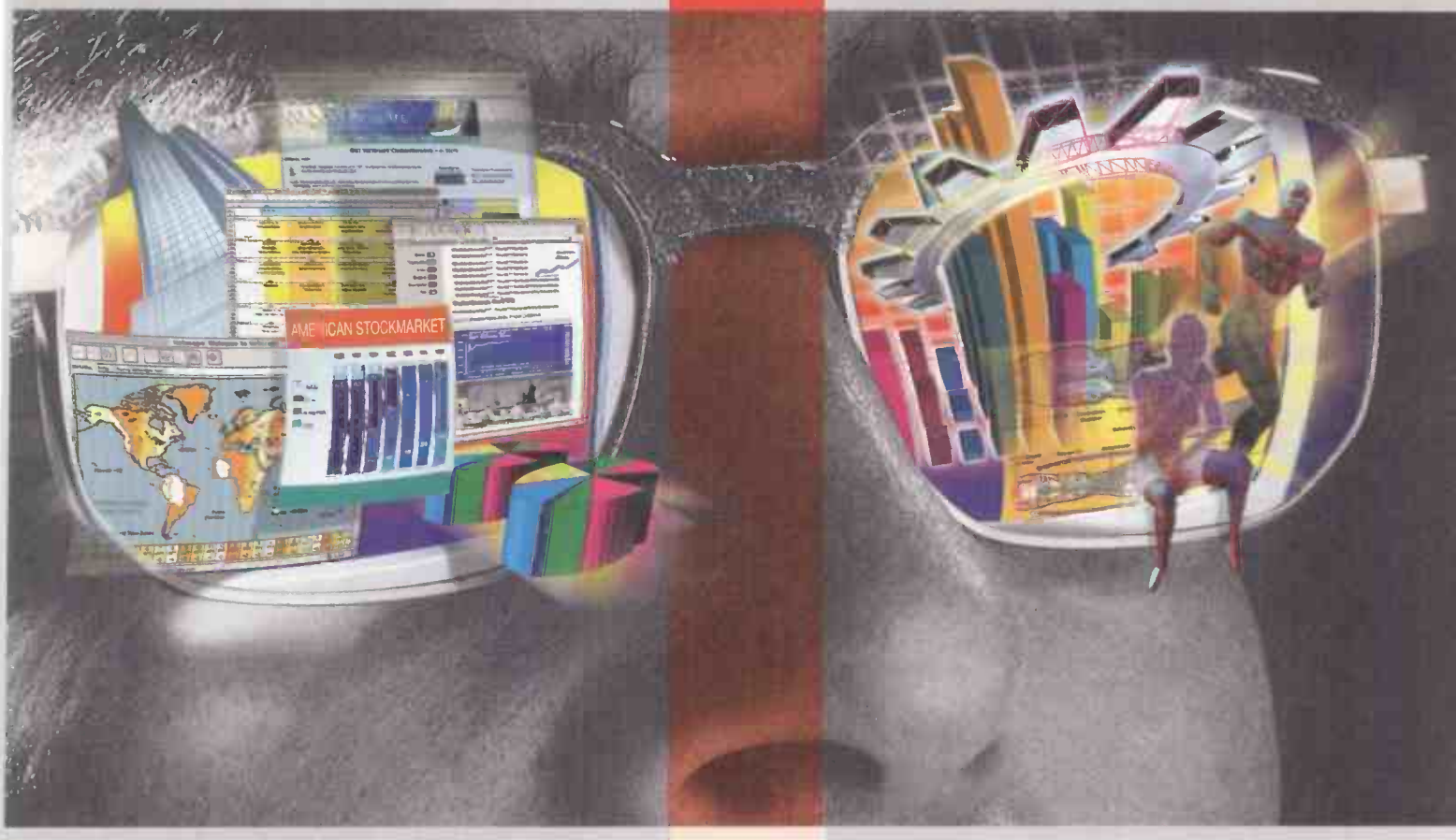

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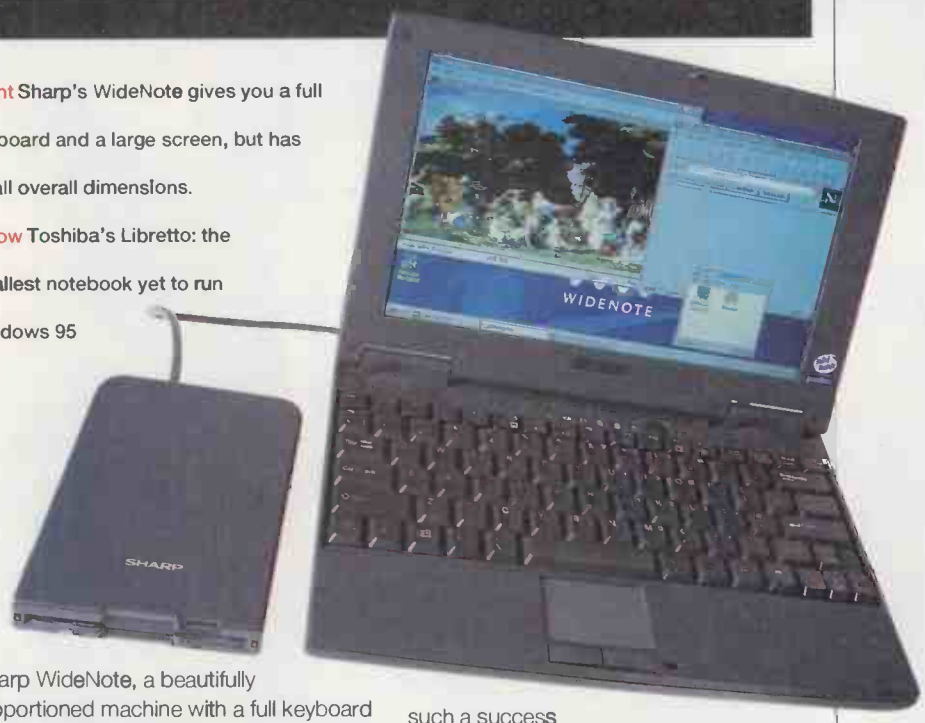
Sub-notebooks

The Japanese mania for miniaturisation has produced some weird and wonderful inventions, but perhaps among the most useful products are machines that blur the distinctions between PDAs and notebooks. The common conception is that notebooks are desktops in a smaller box, but they will not weigh much less than 6lbs. PDAs, meanwhile, are small and light enough to fit in your pocket but they use a completely different set of applications to the one on your desktop, you cannot type comfortably on them, and in an unkind light they can be regarded as vastly expensive filofaxes. Sub-notebooks cross the divide. While not small enough to fit in your pocket, they are typically half the size and weight of an ordinary notebook, they run a full version of Windows 95 on an Intel processor and have enough RAM to run the same applications you would use on your desktop.

When sub-notebooks initially hit the market they were more like small notebooks than PDAs. The first of these was HP's OmniBook 800, a marvel at just 3.9lbs but with a P166MMX, 16Mb of RAM and a 10.4in screen. However, several other models started to crowd the market, making the OmniBook look positively dowdy. First there was the



Right Sharp's WideNote gives you a full keyboard and a large screen, but has small overall dimensions.

Below Toshiba's Libretto: the smallest notebook yet to run Windows 95

Sharp WideNote, a beautifully proportioned machine with a full keyboard and a thinner, wider screen of 5.5in high and 9.6in wide. This gives you a viewable area of 11.2in and a resolution of 1024 x 600 but on a notebook which is small in every other dimension. Toshiba pitched in with the Portegé 300CT, which again has a wide-aspect screen, not surprisingly made by Sharp.

However, there are some even smaller notebooks about. These mini-notebooks were originally designed for the Japanese market and most pundits said they would never sell in the UK, but due to popular demand they are now available here. The most well known is Toshiba's Libretto, a revelation for most people when they first see it. At a minute 8.3in x 4.5in x 1.4in it is by far the smallest notebook ever seen, but at the same time it still packs a powerful punch: the latest version has a P120MMX (yes, Toshiba has enough clout to get Intel to make chips especially for them), a 1.5Gb hard disk, 16Mb of RAM and a 6.1in TFT screen.

Since Toshiba has made such a success of the Libretto, other manufacturers have begun to follow suit. Go to the electronic district in Tokyo and you will find any number of tiny notebooks, all running Windows 95. And there were more than a few of these little cuties shown at Comdex in Las Vegas last year. Sharp has several models and NEC is another of the main protagonists with the mobio NX, although as yet these are only available in Japan.

Hitachi demonstrated the VisionBook Traveler at Comdex, which looks remarkably similar to the Opti we have reviewed in this issue (*First Impressions, p143*) and Mitsubishi showed the Amity which is a little lighter than the VisionBook Traveler, along with the ultra-light and ultra-thin Pedion. Hopefully a large percentage of these will get to Britain eventually, although we may be in for a long wait.

There has to be a downside to all this, and apart from the tiny keyboards which are a bit of a pain to type on, and the little screens, the main disadvantage is of course the price. You have to be in serious funds even to contemplate moving to a sub-notebook from a PDA. While one of our advertisers is offering a Libretto 50CT for a mere £839 ex VAT, which is only around £200 more than the HP 620LX, most of the models we have talked about are more like normal notebooks in price, ranging from £1,200 to around £2,400.

Adele Dyer

p252 >

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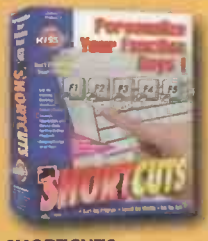

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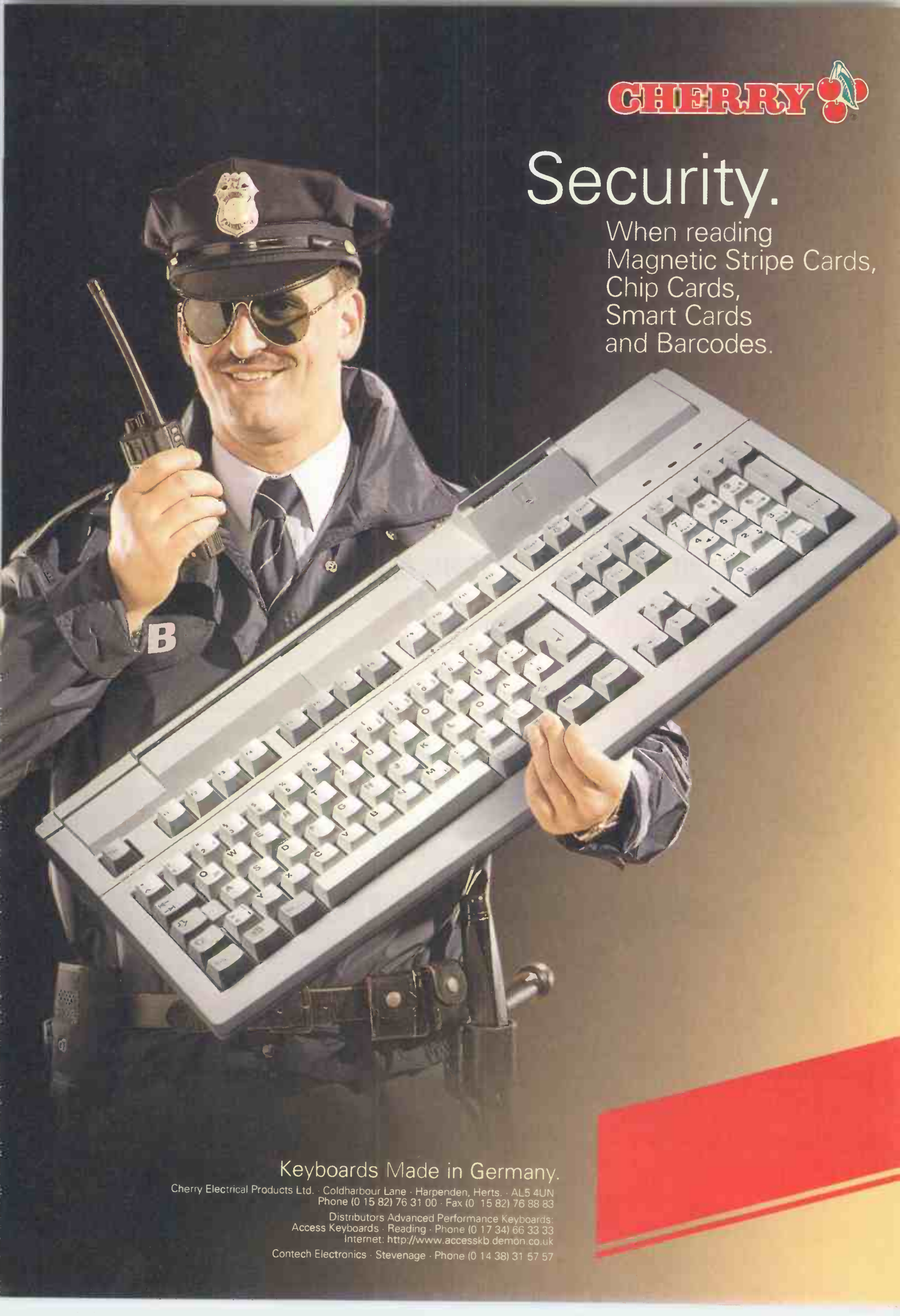
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* Assuming that suitable software is available.

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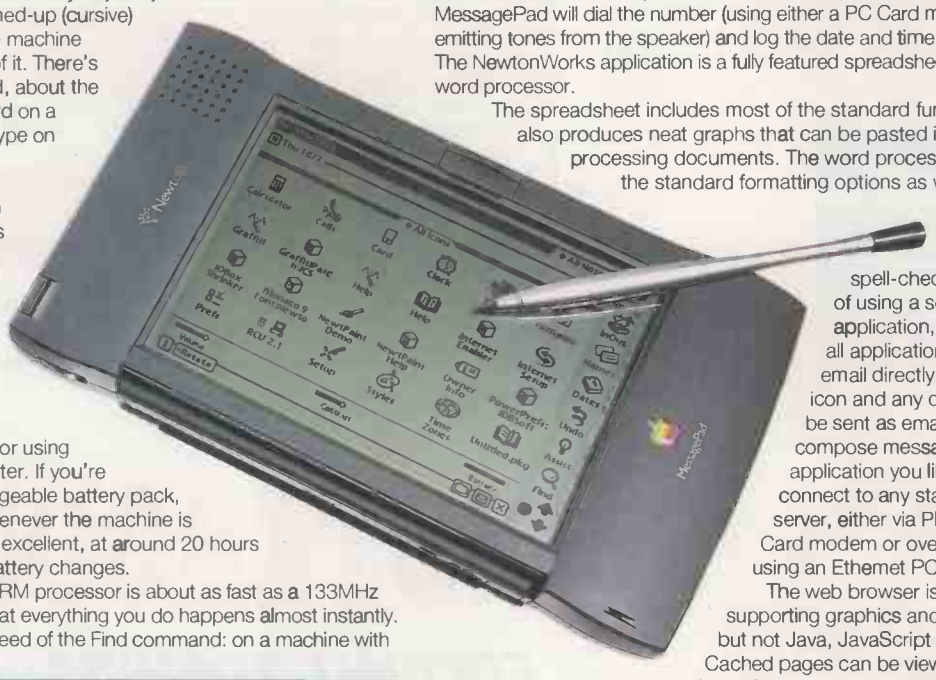
Apple MessagePad 2100

The MessagePad 2100 is the latest in the line of Apple Personal Digital Assistants and proves how far the company has come since its early models. It's targeted at mobile professionals, the kind of person who regularly takes a laptop computer on the road but needs something that's a little lighter and easier to carry.

Physically the MP2100 is about the size of a reporter's notebook, with no built-in keyboard. Open the cover and you'll see why: most of the front is devoted to a big screen, measuring 83mm x 129 mm. This screen is one of the 2100's strong points, as it's extremely readable in all lighting conditions thanks to the backlighting and anti-reflective coating. The screen image can also be rotated, allowing you to work in either portrait or landscape modes as appropriate.

The screen is also your main input device. The Newton Operating System allows you to write on the screen and have your handwriting converted into text. The handwriting recognition isn't perfect, although it's much improved since the early days. If you write each letter separately rather than joined-up (cursive) writing, you'll find that the machine makes an adequate job of it. There's also an optional keyboard, about the same size as the keyboard on a laptop, which is a joy to type on when compared to other handhelds.



The 2100 comes with two Type II PC Card slots and the Newton InterConnect port, a multi-function port that can be used for connecting the keyboard or linking to a desktop PC. There's also a small speaker and microphone, and a port for using the supplied power adapter. If you're using the optional rechargeable battery pack, this will be recharged whenever the machine is plugged in. Battery life is excellent, at around 20 hours constant use between battery changes.

The 162MHz StrongARM processor is about as fast as a 133MHz Pentium, which means that everything you do happens almost instantly. Most impressive is the speed of the Find command: on a machine with 1000 contacts, 600Kb of notes and about 4Mb of other data, finding 150 instances of the word "Apple" took about three seconds. The standard bundled software bundled includes a notepad, datebook, address book, internet email, web browser, and the NewtonWorks application that includes both spreadsheet and word processor. The notepad is a simple application for jotting notes and drawings but has the advantage of an extensible architecture that means you can add different stationery types: included are a lined note, checklist and outline, and a sound note for capturing sound using the built-in microphone.

The Dates application is perhaps the weakest of the built-in programs. You can have one To Do list, so you can't separate personal tasks from work ones and you can't link events to contacts in the address book. However, the Names application is very good, allowing you to store names, addresses, and multiple phone numbers and email addresses. Tap on the icon next to a phone number and the MessagePad will dial the number (using either a PC Card modem or emitting tones from the speaker) and log the date and time of the call. The NewtonWorks application is a fully featured spreadsheet and word processor.

The spreadsheet includes most of the standard functions and also produces neat graphs that can be pasted into word-processing documents. The word processor includes the standard formatting options as well as a spell-checker. Instead of using a separate application, all applications support email directly. Tap on an icon and any document can be sent as email, so you can compose messages in any application you like. Email can connect to any standard POP3 server, either via PPP using a PC Card modem or over Ethernet using an Ethernet PC Card.

The web browser is simple, supporting graphics and forms but not Java, JavaScript or frames. Cached pages can be viewed offline, although the cache can eat up memory if you try and keep too many pages.

Third-party software is plentiful. Just about every category is catered for, from simple add-ons for the Notepad through to personal finance applications and NNTP newsreaders. Connectivity with desktop PCs, though, is disappointing. The bundled connection software, Newton Connection Utilities, allows you to transfer documents to and from all the built-in applications, but synchronisation can be a hit-and-miss affair.

The MP 2100 is a very capable PDA, with good built-in features and a lot of raw processing power and flexibility. If you're after something that can replace a laptop on trips, then this is the first machine you should look at.

Ian Betteridge

PCW Details

Contact Apple 0800 600 6010

Price £734.38 (RRP, inc VAT)

Good Points The built-in applications are good, especially the word processor and the spreadsheet, and the internet connectivity is very good.

Bad Points The handwriting recognition, despite many improvements, still takes too long to adapt to. Synchronisation is poor. And why isn't the excellent keyboard included as standard?

Conclusion A machine that can replace a diary, address book, notepad and your laptop — as long as you can live with the handwriting recognition.

Screen	★★★★☆
Keyboard/Input	★★★☆☆
Features	★★★★☆
Linking with PC	★★★☆☆
Comms	★★★★★
Overall	★★★★☆

Case Studies

Michael Eagleton, Management Consultant: MessagePad

Michael Eagleton bought one of the first MessagePads on the strength of brand loyalty to Apple and the fact that at the time, other PDAs seemed like pretenders. The handwriting recognition was important, and he found that it worked fine so long as you didn't mind putting in some time teaching the system. Michael also found the ability to draw diagrams and have the MessagePad straighten up the lines very useful. A direct connection to his StyleWriter printer proved useful, as did the third-party PocketCall software, offering terminal emulation and fax capabilities. Michael accepted the MessagePad's limitations, but sold his model after 18 months. He now happily uses paper and pen.

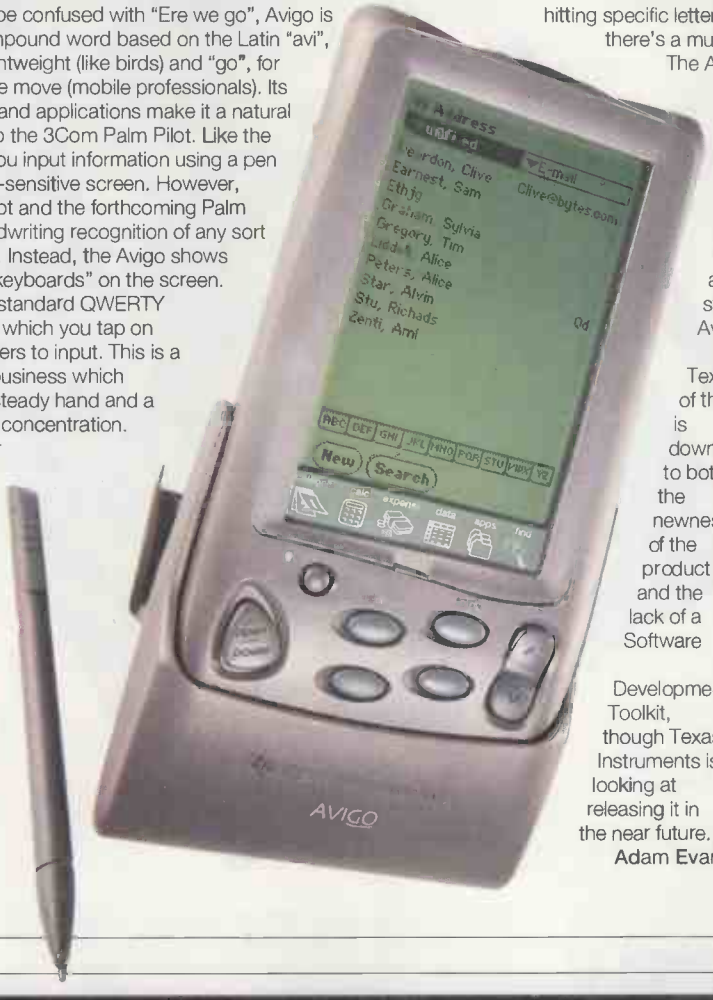
Keith Martin, journalist: MessagePad 2100

Keith says that the best thing about the MP2100 is that "It's easy! It's nice to be able to scribble on it and have it as a picture or convert it to recognised text." He is playing with some infra-red emulation software with which he hopes to train his MessagePad to control the TV, video and stereo. Keith picks up and sends email over AOL, and once emailed his office-bound collegues from a tent in the middle of a festival field "just for the hell of it". The ability to rotate the display to landscape, together with the add-on keyboard, makes word processing and other such tasks a pleasure. A set of batteries generally last him a couple of months, with half an hour's use every day playing games on the train.

Texas Instruments Avigo 10

Not to be confused with "Ere we go", Avigo is a compound word based on the Latin "avi", for lightweight (like birds) and "go", for people on the move (mobile professionals). Its appearance and applications make it a natural competitor to the 3Com Palm Pilot. Like the Palm Pilot, you input information using a pen on the touch-sensitive screen. However, unlike the Pilot and the forthcoming Palm PCs, no handwriting recognition of any sort is supported. Instead, the Avigo shows one of two "keyboards" on the screen. The first is a standard QWERTY keyboard on which you tap on individual letters to input. This is a slow, fiddly business which demands a steady hand and a great deal of concentration.

The other keyboard, titled the Intelligent T9 keyboard, is an attempt at an entirely different method of input. The keys are grouped together in threes: ABC, DEF, GHI (you get the picture) and instead of hitting specific letters, you go for the group. The advantage is that there's a much bigger area to hit on the screen for each letter. The Avigo guesses the word you mean and, surprisingly, is actually quite good at it with words of four letters or more.



The screen itself is clear, with a well-defined display, and some of the applications are able to flip it 90 degrees, making full use of the width of the screen. There is a flip-over cover for it which, by dint of cunning design, lies flat against the back of the unit when uncovered. The docking cradle is another example of good design: it lies flat for storage but springs up to form a solid base for the Avigo when you want to connect it to your PC.

Extra software is in the form of four games on the Texas Instruments web site and a few dribs and drabs of third-party software. The lack of third-party software is down to both the newness of the product and the lack of a Software Development Toolkit, though Texas Instruments is looking at releasing it in the near future.

Adam Evans

PCW Details

Contact Texas Instruments 0181 230 3184 www.ti.com

Price £229 (£194.90 ex VAT)

Good Points Flip-over cover. Cool design.

Bad Points On-screen keyboard is fiddly.

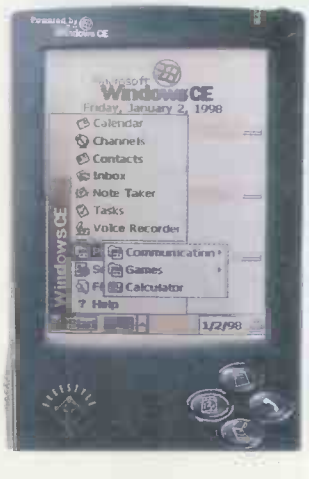
Conclusion Not bad, but not as good as the PalmPilot.

Screen	★★★☆☆
Keyboard/Input	★☆☆☆☆
Linking with PC	★★★★☆
Features	★★★☆☆
Comms	☆☆☆☆☆
Overall	★★☆☆☆

The Palm PC

Not content solely with developing the Handheld PC, Microsoft recently announced the Palm PC standard. Not to be confused with the Palm Pilot product from 3Com, Palm PC is a set of specifications which manufacturers can use to create their own machines. As with the Handheld PC standard, Microsoft Windows CE is at the heart of this new venture.

The basic concept behind the Palm PC is that it should be palm-sized, supporting one-handed operation, easy input, wireless communication and simple synchronisation with a desktop PC. Voice recording and natural, single-character handwriting recognition are also included in the baseline definition. The minimum technical specifications, as laid down by Microsoft for making this possible are: 32-bit processor, 2Mb RAM, 6Mb ROM, 240 x 320 resolution touch screen, infra-red port, stylus, speaker, microphone, application-switching buttons and a Compact Flash slot. In addition to natural handwriting recognition, Palm PCs will support a "soft" keyboard, where an image of a normal keyboard is displayed on the screen and users choose letters by tapping the touch screen.



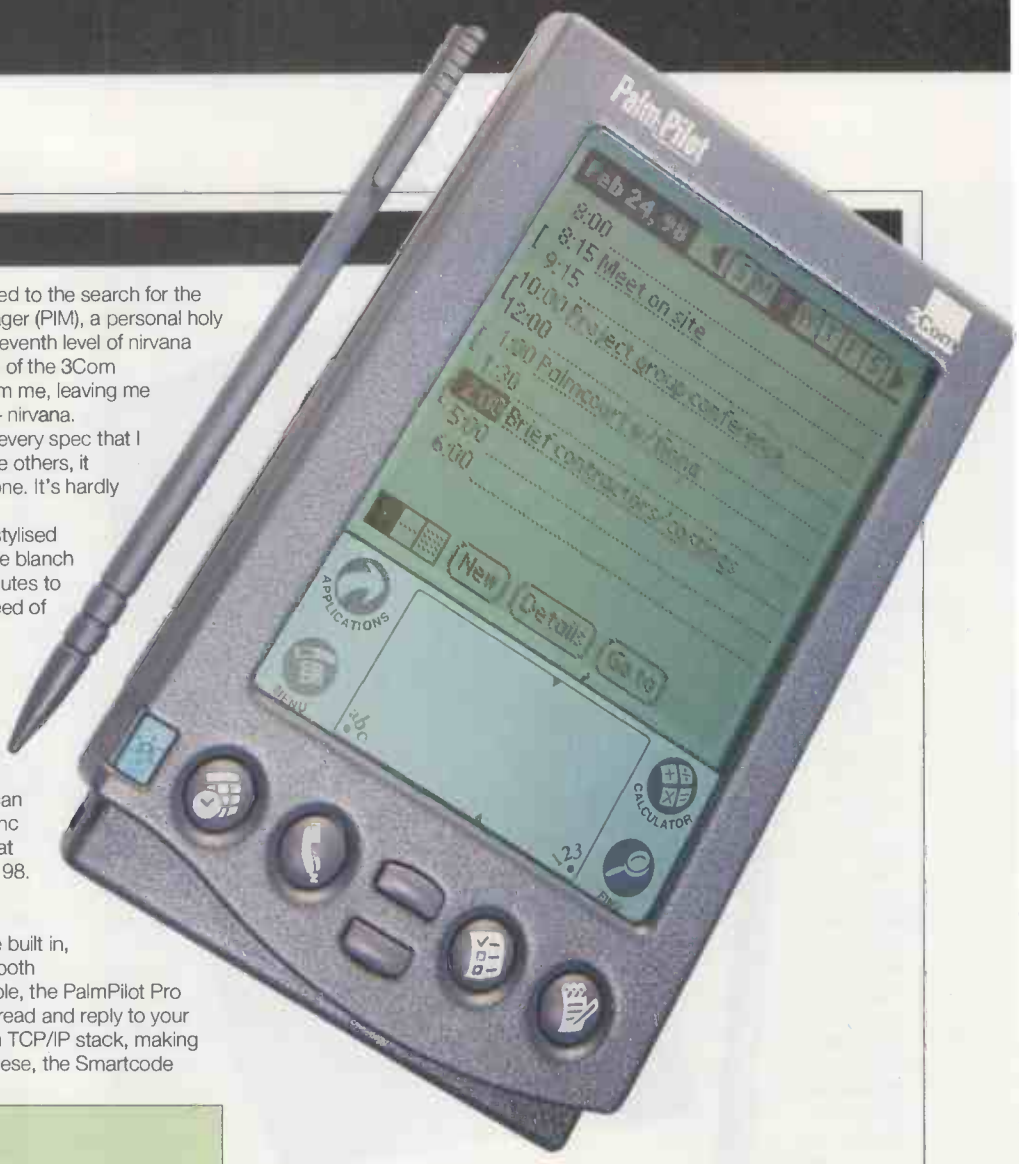
The standard applications in Windows CE for the PPC are Pocket Outlook, Voice Recorder, Note Taker, Solitaire, Calculator, World Clock and Mobile Channels. The latter is essentially an off-line web browser using files downloaded automatically from a PC. The addition of wireless communication technology could make Mobile Channels an easy way for a company to push updated information to its workforce. Microsoft also says that 69 other applications have been announced from third-party vendors.

At a recent press event, a Microsoft spokesman ambitiously predicted that in fifteen years, everyone in the room would have a Palm PC-type device. So far, seven manufacturers are promising PPC products, including Casio, Samsung and Philips. The first UK shipments are promised for the second quarter of 1998.

Adam Evans

p254 >

PalmPilot 500



My life, such as it is, has been devoted to the search for the perfect Personal Information Manager (PIM), a personal holy grail, on completion of which the seventh level of nirvana would surely be mine. And since the launch of the 3Com PalmPilot, my purpose has been ripped from me, leaving me alone in my — admittedly well-organised — nirvana.

You see, the PalmPilot fills pretty much every spec that I need. It is the most portable of PDAs. Unlike others, it wouldn't ruin the cut of a nice suit, if I had one. It's hardly bigger than a pack of cards.

The main input method is pen, using a stylised writing technique called Graffiti. Most people blanch at this, but no-one takes more than ten minutes to become capable at it. I soon reached a speed of about 20 words a minute.

The other main input method is synchronisation, the PalmPilot's *raison d'être*. It was built with easy synching in mind and it works: drop it in the cradle, push one button and two-way synching is done. Better still, there are now "conduits" available for most PIMs so you can use your fave, from companies like IntelliSync and Dataviz. Personally, and for reasons that you'll have to trust are viable, I use Outlook 98. But the point is, it just works.

The PalmPilot comes with basic diary, contacts, note-taking and task-list software built in, but more and more is becoming available, both commercially and as shareware. For example, the PalmPilot Pro has an email synchroniser in it, so you can read and reply to your email on the bus home. It also has a built-in TCP/IP stack, making various internet applications available. Of these, the Smartcode (www.smartcode.fr) HandStamp for email, HandWeb for browsing and HandFax for, er, faxing are the ones that I use.

There are also some superb accessories now available. USR makes a smart clip-on modem, and Option International (www.option.com) makes a GSM version. The slip-in case that it comes with is adequate but I recommend either a USR case or, if you want the coolest in cases, consider the Rhinoskin (www.rhinoskin.com) Rhino Pak, a little rucksack for your PalmPilot. You can also get pens — the supplied pen is too small and light — such as the PDA Panache (www.pdapanache.com), Duo pen (twist one way for a biro, the other for a Pilot stylus) or the Beacon, which has a little LED in it to light up your screen.

You can even increase your memory from the standard 1Mb to 3Mb with the easily installed TRG SuperPilot memory board.

For software, there's tons of shareware — utilities, games, email packages, outliners — and some top-quality commercial software such as CES's QuickSheet spreadsheet with Lotus 1-2-3 and Excel synchronisation.

All in all, the PalmPilot is my favourite bit of kit — at least until the PalmPC, with its higher-definition screen and built-in sound, comes along. Then, my search, and my life, might resume...

Paul Smith

PCW Details

Contact 3Com 0800 225252

Price Pro £229, Personal £169 (both inc VAT)

Good Points Small enough to fit in any pocket, powerful enough to do the job. Great synchronisation.

Bad Points It's not a fully-fledged computer and it isn't fun writing long articles on it.

Conclusion The best PDA I've used.

Screen	★★★★☆
Keyboard/Input	★★★★☆
Features	★★★★☆
Linking with PC	★★★★★
Comms	★★★★☆
Overall	★★★★☆

Case Studies

Stuart Thomas, Radio News Reader: PalmPilot

Stuart Thomas knew someone who raved about their PalmPilot to such an extent that he had to see for himself what all the fuss was about. He ended up using it for his contacts and dairy but found it surprisingly usable for note-taking. After initial suspicion of the Grafitti handwriting, he'd learnt the basics after only one day and mastered it by the end of the week. He wasn't too impressed with the built-in applications, but quickly discovered that whatever it was you wanted your PalmPilot to do, somebody had already written it and popped a copy on the web for downloading. Before long he'd settled on a couple of web browsers, PalmScape for great text and TG Wingman specialising in images, which come in handy for picking up the latest news headlines. TG Postman allowed him to pick up emails while he was away, and an image viewer proved very useful for displaying scans of maps. Stuart can't wait to try out a cellular modem.

Neil Mossey, BBC Comedy Development: PalmPilot

Neil Mossey's first brush with a PDA came from a cheap Casio, but its lack of PC connectivity left him worried about potentially lost or crossed information. After spotting tons of opportunities to use a PDA and a firm recommendation from a friend, he plumped for a PalmPilot with modem. He lives his busy life around Schedule + at work, but found the PalmPilot's built-in software inadequate for synchronising with his strict user preferences. He ended up buying Desktop-to-go from Puma which syncs to his PC with zero effort. He's downloaded and tried out various email and fax packages but only uses them in emergency situations; he also tried PalmScape and TG Wingman but personally found PalmPilot web browsing no more than a novelty. He also discovered switching the alarm sound off doubled his battery life. Neil particularly likes the PalmPilot's size and looks, and that he can handhold it, whereas Psion-owning colleagues have to rest theirs on a desk.

p256 >

1785XE,
MacFormat, Jan 97

1785S,
PC Guide, Sept 96

1785XA,
PC Magazine, Dec 96

1765D,
The Mac, Jan 97

1569MS,
PC World, July 96

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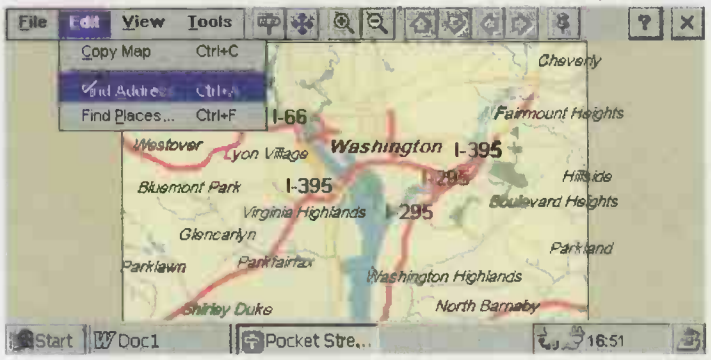
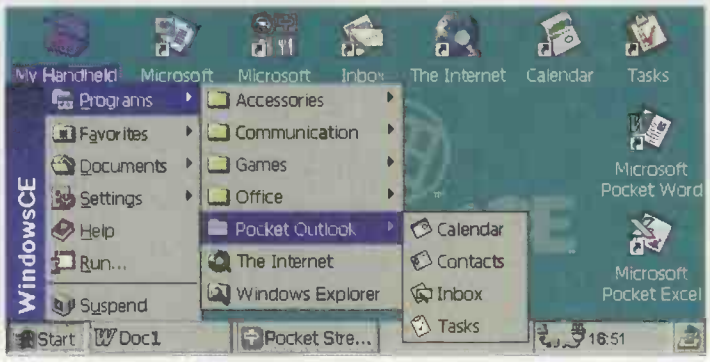
Microsoft Windows CE

Everybody has a pet theory about the real meaning of CE. Leaving aside the various cheeky definitions, the most likely one is Consumer Electronics. It is an important point, because it demonstrates Microsoft's real goal in producing Windows CE. It is not just for Handheld PCs; everything from vending machines to video recorders could eventually have CE as their operating system.

Along with the Handheld PC and Palm PC (*p253*), Microsoft has recently launched another ambitious standard using Windows CE: the Auto PC. The company is hoping that computers using this standard will feature in the cars of the future, providing route directions, email and entertainment functions. The Auto PC will be entirely voice controlled and will even be able to read your emails to you as you drive along.

The Handheld PC is actually a standard set of specifications which manufacturers have to abide by if they want to use CE as their operating system. The basic HPC standard includes sound, a touch-sensitive screen and infra-red capability. Version 1.0 of CE arrived in late 1996 but never really made an impact in the UK. CE 2.0 is a much more exciting prospect, with many more manufacturers promising UK products. Unfortunately, it now appears that we will not see the majority of them until summer at the earliest.





Windows CE 2.0 is designed to look and feel just like Windows 95, to make users feel immediately at home when switching from their desktop PCs. It is important to realise that the operating system is not a cut-down version of Windows 95 or NT 4. Applications written for these PC platforms will not run on palmtops, but programmers can write applications that look and feel much the same as the PC versions. A host of third-party software has already been announced, including the first voice recognition application for CE.

File formats, for Pocket Word, Pocket Excel and so on, are different and have to be converted when transferring files between a palmtop and a PC. This is one of the functions of the CE software that sits on your PC. It also allows you to access all the directories on your palmtop from the PC (but not launch applications or view files), synchronise files that are held on both machines, and transfer individual files from one computer to another.

In version 2.0 of Windows CE you can use the standard Windows 95 explorer to browse the palmtop, and the file synchronisation tool, ActiveSync, offers continuous background synchronisation and can synchronise files and mail messages as well as appointments, contacts and tasks.

Pocket Internet Explorer has been integrated into the Windows CE 2.0 file and folder browser, so can browse the internet from the same window you use to browse local files and folders (as with Internet Explorer 4 for Windows 95).

Pocket Word and Pocket Excel have a new zoom feature, and new document and spreadsheet templates are included to help you quickly structure and format your files. Pocket Excel has a particularly handy expense-report template and new split pane and freeze pane features which allow you to keep column headings at the top of your spreadsheet as you scroll down and compare different parts of a spreadsheet on screen simultaneously. Pocket Word now has a spell-checker, but the major glaring omission from CE 1.0, the word-count facility, has still not been implemented.

The applications that comprise Pocket Outlook — Calendar, Contacts, Tasks, Inbox — now work more closely together to give features similar to Outlook on your desktop PC. Meetings can be scheduled using Calendar, then meeting notices can be sent through Inbox using email addresses entered in Contacts. Notes can be attached to appointments, contacts and tasks. A new application, Pocket PowerPoint, allows you to show presentations created in PowerPoint on a PC. No editing is possible, but you can annotate slides by drawing on the touch screen.

Adam Evans

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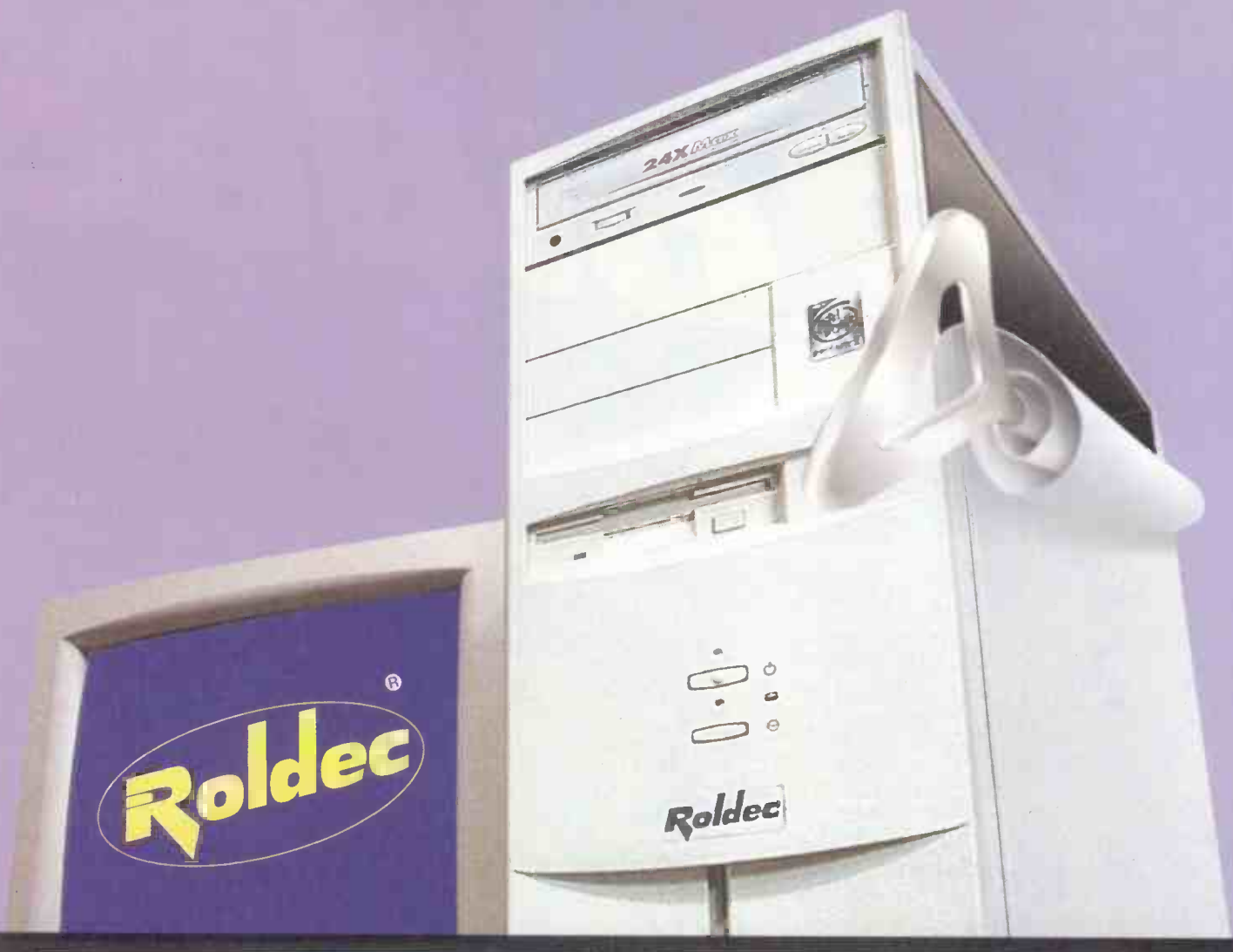

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Casio Cassiopeia

At first glance the Cassiopeia looks like a rather ungainly palmtop, a boxy affair compared to the sleek Philips Velo, for instance. There's a nicely-hinged display and a curiously industrial-looking keyboard. We approached it with some trepidation and a few experimental presses soon reveal a "spongy calculator" feel. But when it comes to typing information at speed, the this keyboard is actually one of the best we have used. The secret is the extraordinarily light action of the keys: you just have to rest your finger on one for it to register. It is imperative that you keep the audible click on, however, as there is no real physical feedback from the keys. The screen produces a healthy 640 x 240 resolution with four shades of greyscale and a decent backlight. The only drawback is the usual touchscreen problem: increased glare and reflectivity from the touch-sensitive coating.

The Cassiopeia has one unique feature: a dedicated socket for linking to a digital camera. (At present this only works with a couple of Casio cameras.) While this is undoubtedly a "good thing", it's a shame that more progress is not being made in the area of wireless infra-red comms.

Adam Evans

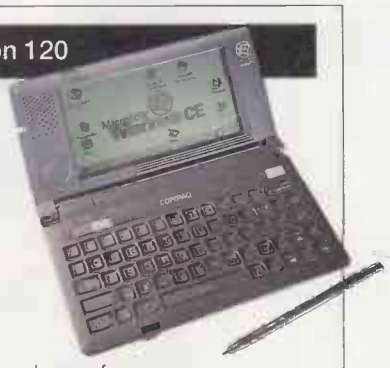
PCW Details

Contact Casio 0181 450 9131 www.casio.com
Price £499.99 (£425.53 ex VAT)

Good Points Digital camera link. You can type fairly quickly on the keyboard...
Bad Points ...but it still feels cramped.
Conclusion One of the better CE offerings.

Screen	★★★☆☆
Keyboard/Input	★★★☆☆
Linking with PC	★★★★☆
Features	★★★★☆
Comms	★★★★☆
Overall	★★★☆☆

Compaq PC Companion 120



The PC Companion 120 is not officially available in the UK but some machines have been brought over here by importers. The design is reminiscent of the Cassiopeia, although, if anything, it is even more of an industrial-looking product. Its small screen is very similar to that on the Velo 1 but it lacks that model's sleek styling. There is a handy dial for controlling the contrast on the side of the screen.

The PC Companion comes with CE 1.0 and 2Mb of memory. It is possible to upgrade these but, as the machines are imported, you should check out their availability before you buy. A mains power adapter; that will cost you an extra £29.38 (VAT included). We were not impressed with the keyboard. Though similar to the Cassiopeia's, the keys are more fiddly and it is even more difficult to tell that a key press has been registered because the keys are only just raised above the level of their surroundings.

Compaq claims that two AA batteries will give you up to 20 hours of use, and there is one PC Card slot.

Adam Evans

PCW Details

Contacts Compaq www.compaq.com; Computer Bargains 0161 798 5588
Price £233.83 (£199 exc. VAT)
Good Points One of the cheapest CE machines around
Bad Points Small screen, poor keyboard, CE 1.0, mains power supply is extra
Conclusion Consider it only if you are very short on money

Screen	★★☆☆☆
Keyboard/Input	★☆☆☆☆
Linking with PC	★★★★☆
Features	★★★☆☆
Comms	★★★★☆
Overall	★★☆☆☆

Hewlett-Packard 360LX

The 360LX's big display has a 640 x 240 resolution and is capable of 16 greyscale shades, yielding better gradation and definition than those with just four. But the best part of the screen is the backlighting. The 360LX makes use of "natural white" backlighting which, if you are used to the displays in every other non-colour palmtop around, will bowl you over with its clarity and sharpness. However, it is so good that you become reluctant to use it without the backlighting. This puts a heavy drain on the batteries, which last for around ten hours if you do not use backlighting or a PC card. If you use two rechargeable AA batteries the 360LX will automatically recharge them when it is plugged into mains power.

The keyboard is composed of small, hard, rubber keys which are angled to provide a more positive response. Although cramped and a little fiddly, it is possible to type at a semi-reasonable speed with a bit of practice, although, in Word, the 360LX struggles to keep up if you go too quickly. The 360LX also features a PC Card slot and a Compact Flash slot, and comes with a well-designed docking cradle.

Adam Evans

PCW Details

Contact Hewlett-Packard 0990 474747 www.hp.com
Price £599 (£509.79 ex VAT)
Good Points Excellent backlighting. Runs CE 2.0.
Bad Points Not the fastest machine we've seen.
Conclusion The screen makes it one of the best palmtops around.

Screen	★★★★☆
Keyboard/Input	★★★☆☆
Linking with PC	★★★★☆
Features	★★★★☆
Comms	★★★★☆
Overall	★★★★☆

Philips Velo 1

The Velo 1 is without doubt the coolest-looking palmtop around — it's a very desirable consumer object. The design of the case leads you to expect great things of this PDA but the keyboard, although similarly stylish, is not a lot of fun to type on. The keys are small, requiring accurate finger work, and need quite a push to register a keystroke. However, the layout is clear and there are shortcut keys to the standard Windows CE and Velo 1 applications.

The Velo 1 is based on Philips' own 32-bit RISC processor which certainly speeds along at a rate of knots. It is noticeably faster at opening applications and documents than many of the other palmtops in this group test. The screen is a little small, at a resolution of 480 x 240, but it is reasonably clear in most lighting conditions.

The Velo 1 runs Windows CE 1.0 (with a free upgrade to version 2.0) and comes with 8Mb RAM, running for a claimed 15 hours on two AA batteries. It has a 19.2Kbps software modem and kit for connecting to a standard land telephone line. Additional cables for connection to some GSM phones are also available.

Adam Evans

PCW Details

Contact Philips 0181 689 4444 www.velo1.com
Price £349.99 (£297.84 ex VAT)
Good Points Great looks. Fast.
Bad Points Poor keyboard. Small screen.
Conclusion Great buy, if you can live with the keyboard.

Screen	★★☆☆☆
Keyboard/Input	★☆☆☆☆
Linking with PC	★★★★☆
Features	★★★★★
Comms	★★★★★
Overall	★★★★☆

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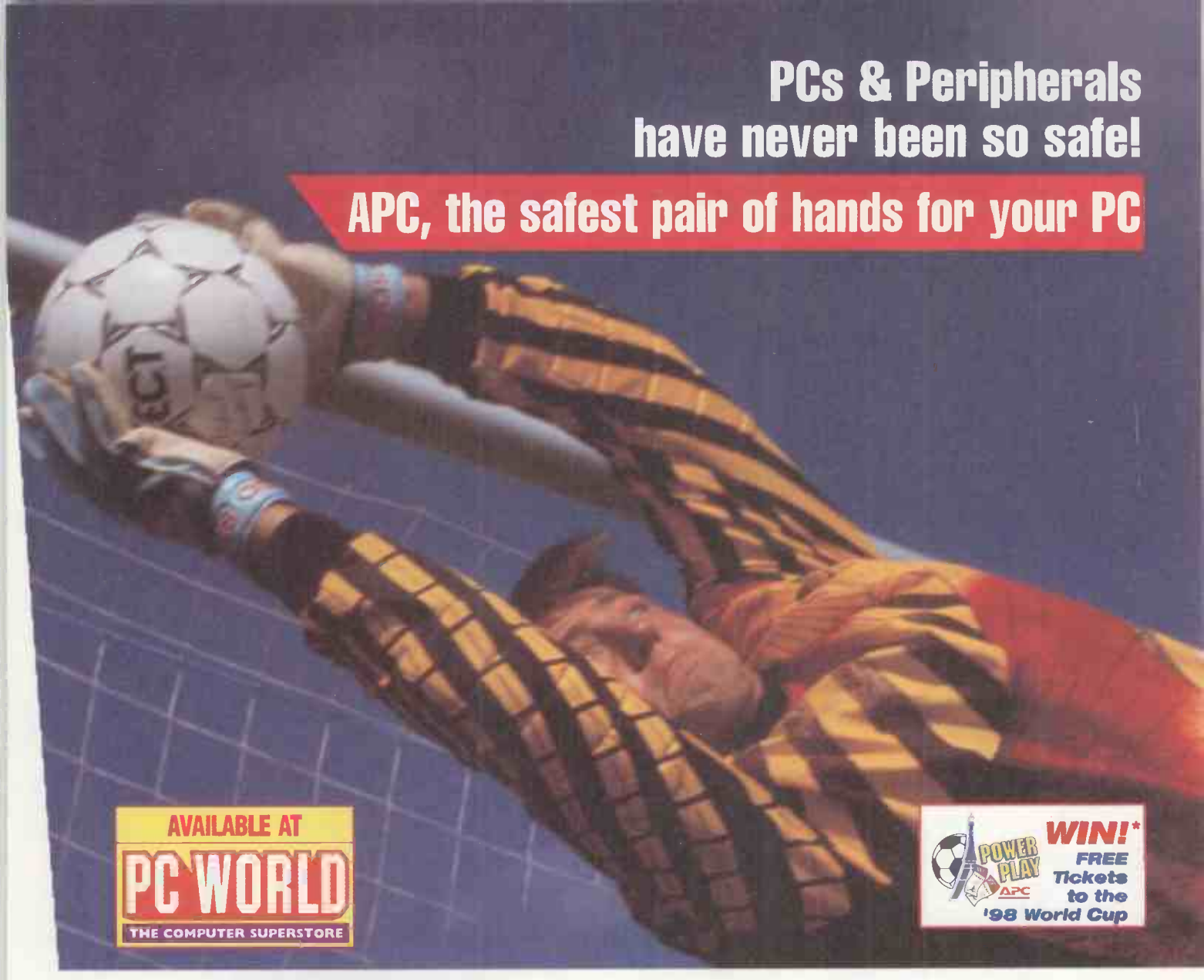

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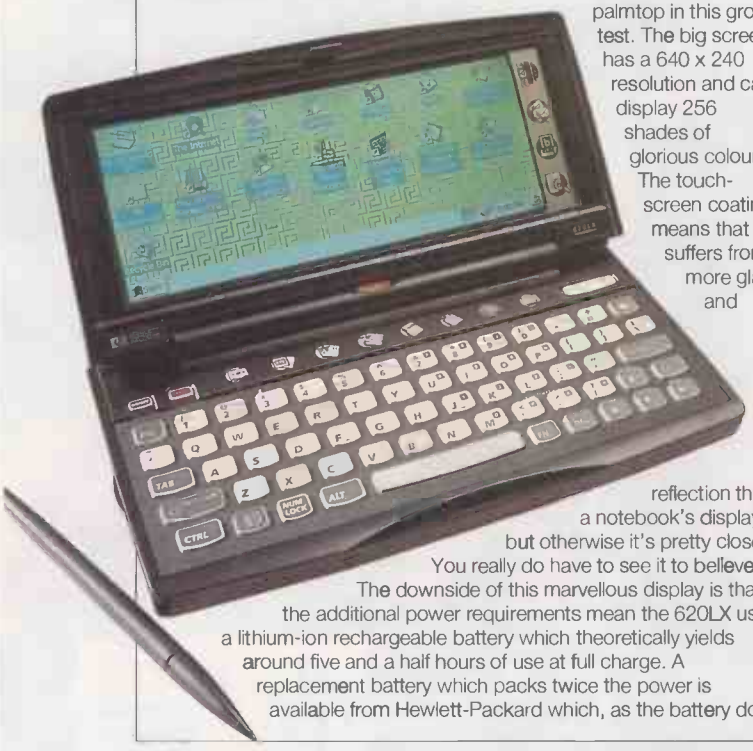
**Suggested list price excluding VAT - * No purchase necessary. See promotional leaflets in participating Superstores for full terms and conditions. Free prize draw open to all UK residents aged 18 or over. Closing date for receipt of completed leaflets: 30 April 1998. Promoter: APC UK, see above.

Hewlett-Packard 620LX

Hewlett-Packard is targeting the 620LX at on-the-go professionals who want an alternative to heavy notebooks. The reason the company might be successful in this venture is that the 620LX is the only colour palmtop in this group test. The big screen has a 640 x 240 resolution and can display 256 shades of glorious colour. The touch-screen coating means that it suffers from more glare and reflection than a notebook's display, but otherwise it's pretty close. You really do have to see it to believe it.



The downside of this marvellous display is that the additional power requirements mean the 620LX uses a lithium-ion rechargeable battery which theoretically yields around five and a half hours of use at full charge. A replacement battery which packs twice the power is available from Hewlett-Packard which, as the battery does not account for all that much of the weight, might be well worth the investment.

The keyboard is similar to the HP 360LX with the hard rubber keys but because the machine is slightly bigger than the others in this group, the keys are further apart and the whole thing feels a lot less cramped. In addition to the standard keyboard there are four icons next to the screen and ten special keys above the keyboard. These are all shortcuts to various applications, apart from the on/off switch and a button that automatically launches the Voice Recorder application and begins recording via the built-in microphone. Hewlett-Packard claims that its compression allows an impressive one hour of voice recording per megabyte. We weren't all that thrilled by the quality of the recordings we made, with the microphone barely able to pick anything up below a shout.

Recording can also be activated without opening the 620LX, by holding down the button on the case. This button doubles as an alarm and a useful battery-charging indicator.

The 620LX comes with 16Mb RAM as standard and has both PC Card and CompactFlash slots. A docking cradle for connection to your PC is also included.

Adam Evans

PCW Details

Contact Hewlett-Packard 0990 474747 www.hp.com

Price £799 (£680 ex VAT)

Good Points Fabulous screen. Bigger and better keyboard. Runs CE 2.0/

Bad Points Battery life is a worry. Not exactly lightening quick.

Conclusion At this price, it is a serious threat to a lot of notebooks.

Screen	★★★★★
Keyboard/Input	★★★★☆
Linking with PC	★★★★☆
Features	★★★★☆
Comms	★★★★☆
Overall	★★★★☆

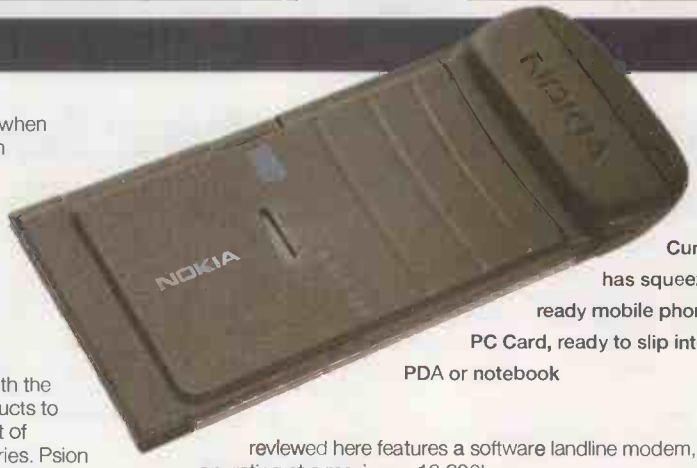
PDA communications

While electronic organisers are undeniably handy, they only really come into their own when doing things an ordinary paper notepad can only dream of. Accessing your email for instance, firing a few back, maybe sending some faxes or even browsing the web — and all this while on the move too, possibly.

As far as comms are concerned, a PDA is no different from a notebook computer: you'll need some kind of modem. Most PDA modems are based on cards or clip-on modules, either proprietary in the case of Psion and the PalmPilot, or employing the PC Card standard such as Windows CE. Compatibility with the PC Card standard may provide a wide variety of products to choose from, but PC Cards draw a significant amount of power, which could leave your PDA gasping for batteries. Psion offers a PC Card adapter powered by its own batteries for its Series 3 and 5 models.

It's possible to connect some digital mobile phones to PDAs for portable comms, although the current GSM standards limit data rates to 9600bps, and of course will only operate where the phone can get decent reception. Most so-called data-capable mobile phones require the help of an additional card for connection to a notebook or PDA. Unfortunately, there is no standard for data interfaces on mobile phones (or PDAs for that matter), so it is very much a case of finding out whether a connection is available between your particular phone and PDA; most mobiles use optional PC Card data interfaces. At the time of writing, Option International had just released its Snap-On GSM adaptor for the Palm Pilot (£129 inc VAT), including versions for Nokia 8110/3110, and Ericsson 300, 600/700 mobiles.

Neater still are modems emulated using software alone. Yes, it is possible to have a PDA or notebook emulate a modem's functions, therefore only requiring a suitable cable to connect it directly to a telephone jack or mobile phone. The Philips Velo Windows CE reviewed here features a software landline modem, albeit operating at a maximum 19,200bps.



Fed up with carrying cables? Cunning Nokia has squeezed a data-ready mobile phone into this PC Card, ready to slip into a suitable PDA or notebook

Nokia has developed a software data suite for its most recent 3110 and 8110 (i) mobile phones. It requires a 32-bit operating system, and although only Windows 95 is supported today, there's no reason why, in the future, Windows CE or EPOC-32 couldn't be; software cellular data has already been demonstrated with a Psion 5. Neatest of all are totally wireless connections using the infra-red standard on most PDAs and becoming increasingly common on new mobile phones.

Don't despair if your PDA didn't come with the comms software or web browsers you desire. If you've got one of the more popular models, chances are there's loads of stuff to download from the web itself: it may be best if you do this with your PC initially, and use that all-important connectivity kit to transfer the files.

Gordon Laing

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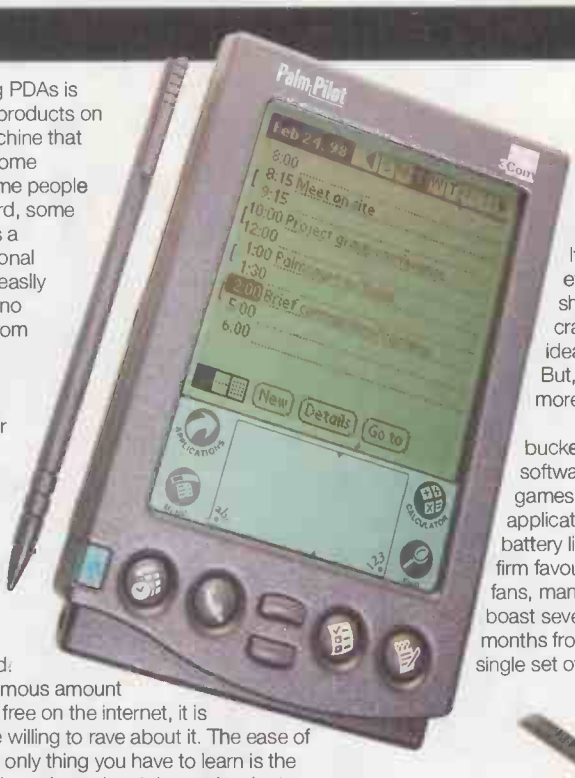
Editor's Choice

The difficulty with reviewing PDAs is the sheer diversity of the products on offer. There is no one machine that does everything for everyone. Some people want touch-screens, some people don't. Some want a big keyboard, some don't want a keyboard at all. It's a controversial and intensely personal area; the palmtop you love can easily be loathed by another. There is no way of picking a single winner from the machines we tested, so consequently we are awarding Recommended awards to each of the following four products for different combinations of features, ease of use, available software and value for money.



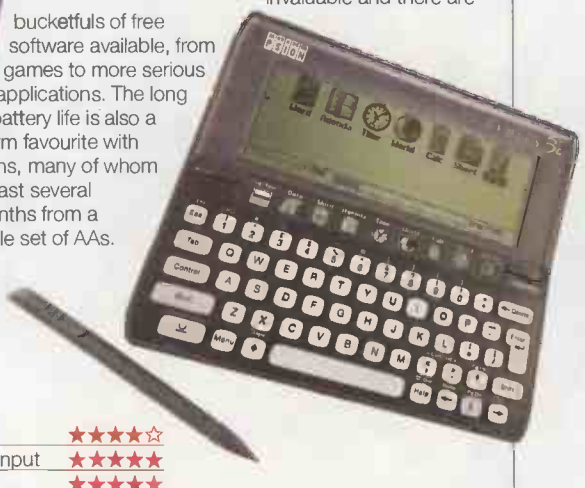
3Com Palm Pilot Professional

The Palm Pilot is the lightest, sleekest, smallest device around. Reasonably priced with an enormous amount of third-party software available free on the internet, it is not hard to find plenty of people willing to rave about it. The ease of use is its main selling point. The only thing you have to learn is the Graffiti characters and everybody we know has taken only minutes to master the basics. There are also lots of trendy accessories for the Palm Pilot in the way of cases and pens. For the time being it is the master of its domain, but it will be interesting to see how it stands up to the forthcoming battle with Windows CE-powered Palm PCs.

Screen	★★★★☆
Keyboard/Input	★★★★☆
Features	★★★★☆
Linking with PC	★★★★★
Comms	★★★★☆
Overall	★★★★☆

Psion Series 3c

It seems like the Psion 3c has been around for an eternity, yet despite this, its massive popularity shows no sign of waning. Compact, light and craftily designed, the Series 3c is many people's ideal solution for contacts, diary and note taking. But, as we indicated in the review, the Psion is much more than this. Many people find the spreadsheet invaluable and there are bucketfuls of free software available, from games to more serious applications. The long battery life is also a firm favourite with fans, many of whom boast several months from a single set of AAs.



Screen	★★★★☆
Keyboard/Input	★★★★★
Features	★★★★★
Linking with PC	★★★☆☆
Comms	★★★★☆
Overall	★★★★★

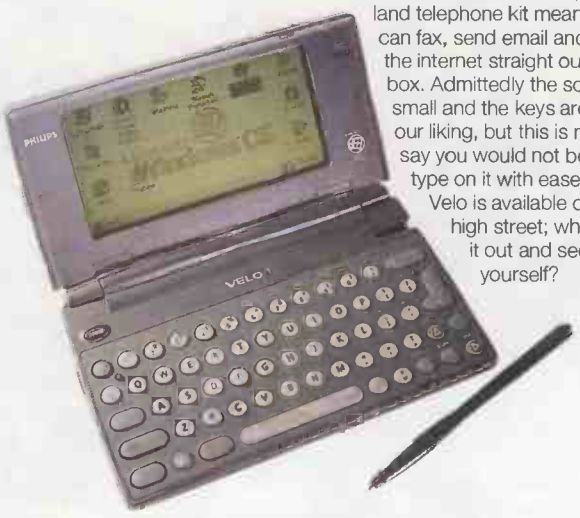
Hewlett-Packard 620LX

We were sceptical about the need for a colour screen when word was first spread about the latest Windows CE palmtops. But we were suitably impressed when the HP 620LX landed in the *PCW* office. Few people need a screen as good as this but everybody who sees it will want one. Bigger and heavier than most palmtops, the 620LX machine is baggable rather than pocketable, but the increased size makes for the least cramped keyboard we have seen. At £799 the 620LX is certainly not cheap, but it will appeal to people with thick wallets who don't mind the relatively short battery life of around five and a half hours.

Screen	★★★★★
Keyboard/Input	★★★★☆
Linking with PC	★★★★☆
Features	★★★★☆
Comms	★★★★☆
Overall	★★★★☆

Philips Velo 1

If you are searching for a Windows CE machine on a tight budget, look no further than the Velo 1 from Philips. This little machine is the best-looking palmtop around and, at £349.99, is good value for money. The software modem and supplied land telephone kit mean you can fax, send email and surf the internet straight out of the box. Admittedly the screen is small and the keys are not to our liking, but this is not to say you would not be able to type on it with ease. The Velo is available on the high street; why not try it out and see for yourself?



Screen	★★☆☆☆
Keyboard/Input	★☆☆☆☆
Linking with PC	★★★★☆
Features	★★★★★
Comms	★★★★★
Overall	★★★★☆

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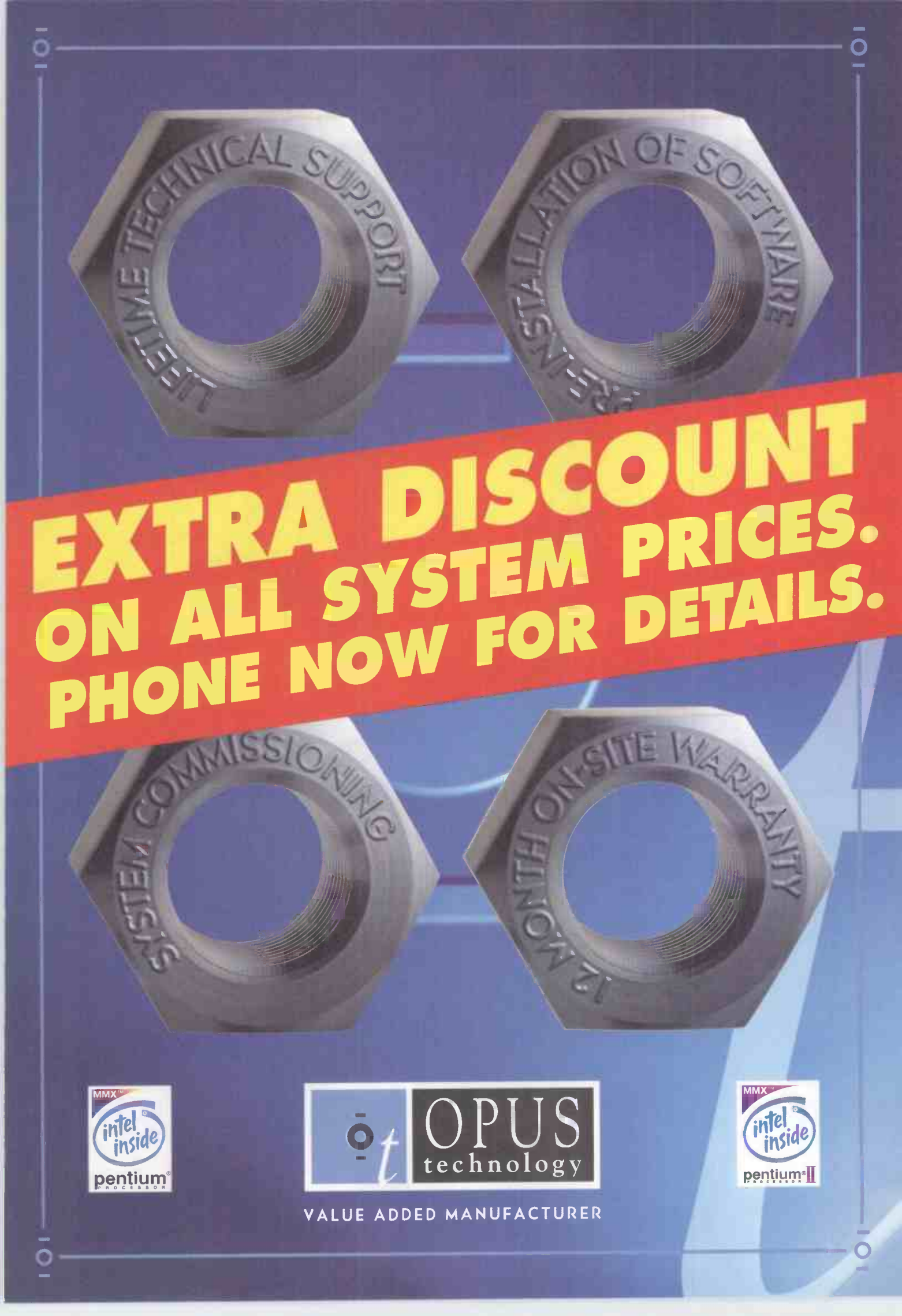
Table of Features

Manufacturer	3Com	Apple	Casio	Compaq	Geofox	Hewlett-Packard
Model	**PalmPilot Professional**	**MessagePad 2100**	**Cassiopeia A-20E (CE 2)**	**PC Companion C120**	**Geofox One**	**360LX (CE 2)**
Price (RRP inc. VAT)	Pro £350, Personal £257	£734.38	£499.99	£233.83	£449	£599
Phone contact	0800 225252	0800 600 6010	0181 450 9131	0161 798 5588	0845 844 0109	0990 474747
Web site	www.3com.com	www.apple.com	www.casiohpc.com	www.compaq.com	www.geofox.co.uk	www.hp.com
Size (w x d x h in mm)	81 x 18 x 119	118 x 210 x 27	185 x 94 x 24.5	175 x 92 x 26	187 x 120 x 20	185 x 93 x 27
Weight (with batteries) in g	161	640	430	380	390	457
Screen size (w x h in mm)	56 x 77	83 x 129	154 x 58	115 x 57	154 x 78	154 x 58
Screen res (w x h in pixels)	160 x 160	320 x 480	640 x 240	480 x 240	640 x 320	640 x 240
No. colours / greyscales	2 greyscale	16 greyscale	4 greyscale	4 greyscale	16 greyscale	16 greyscale
Batteries required	2 x AAA	4 x AA	2 x AA	2 x AA	2 x AA	2 x AA
Quoted battery life (hrs)	50	24	25	20	25	10
Memory	1Mb (512Kb)	8Mb	8Mb	2Mb	16Mb	8Mb
Expansion slots	None	mod slot, 2 Type II PC Card	PC Card, Com Flash	PC Card	PC Card	PC Card, Com Flash
Touch-sensitive screen?	●	●	●	●	○	●
Word processor?	○	●	●	●	●	●
Spreadsheet?	3rd party	●	●	●	●	●
Notepad/jotter?	●	●	●	●	●	3rd party
Handwriting recognition?	● / Graffiti special chars	● Natural	3rd party	3rd party	○	3rd party
Spell-checker?	3rd party	●	●	●	●	●
Infra-red capabilities?	○	●	●	●	●	●
Windows PC Link?	●	●	●	●	●	●
Mains input?	○	●	●	£29.38 extra	●	●
Tone phone dialling?	○	●	○	○	●	○
Email ability?	●	●	●	●	●	●
Web browsing ability?	3rd party	●	●	●	●	●
Audio recording?	○	● / 8 mins per Mb	● / 3 mins per Mb	○	● / 4 mins per Mb	● / 60 mins per Mb

Table of Features

Manufacturer	Hewlett-Packard	Nokia	Philips	Psion	Psion	Texas Instruments
Model	**620LX (CE 2)**	**9000i Communicator**	**Velo 1 (CE 1*)**	**Series 3c**	**Series 5**	**Avigo 10**
Price (RRP inc. VAT)	£799	£299 with connection	£349.99	£299.95	4Mb £399.95, 8Mb £429.95	£229
Phone contact	0990 474747	01480 434343	0800 961445	0990 143050	0990 143050	0181 230 3184
Web site	www.hp.com	www.nokia.com	www.philips.com	www.psion.com	www.psion.com	www.ti.com
Size (w x d x h in mm)	195 x 103 x 32 mm	173 x 64 x 38 mm	171 x 95 x 32 mm	165 x 85 x 22	170 x 90 x 23	83 x 140 x 19
Weight (with batteries) in g	586	397	430	275	354	198
Screen size (w x h in mm)	154 x 58	120 x 40	115 x 57	126 x 44	133 x 50 mm	51 x 76 mm
Screen res (w x h in pixels)	640 x 240	640 x 200	480 x 240	480 x 160	640 x 240	160 x 240
No. colours / greyscales	256 colour	16 greyscale	4 greyscale	4 greyscale	16 greyscale	2 greyscale
Batteries required	Rechg Lithium ion	Rechg Lithium ion	2 x AA	2 x AA	2 x AA	2 x AAA
Quoted battery life	6 hrs	3 hrs active, 35 hrs stdby	15 hrs	60 hrs	35 hrs	1 wk of normal usage
Memory	16Mb	4MB	8Mb	2Mb	4Mb/8Mb	1Mb (680Kb avail)
Expansion slots	PC Card, Com Flash	None	2 x Mini Card slots	2 x Solid State disk drives	CompactFlash	None
Touch-sensitive screen?	●	○	●	○	●	●
Word processor?	●	○	●	●	●	○
Spreadsheet?	●	○	●	●	●	○
Notepad/jotter?	3rd party available	●	3rd party available	●	●	●
Handwriting recognition?	3rd party available	○	3rd party available	○	3rd party	○
Spell-checker?	●	○	●	●	●	○
Infra-red capabilities?	●	●	●	○	●	●
Windows PC Link?	●	●	●	● (extra cost)	●	●
Mains input?	●	●	●	●	●	○
Tone phone dialling?	○	●	Using software modem	●	●	○
Email ability?	●	●	●	3rd Party	●	○
Web browsing ability?	●	●	●	3rd Party	●	○
Audio recording?	● / 60 mins per Mb	○	● /16 mins per Mb	● /2 mins per Mb	● /4 mins per Mb	○

● Yes ○ No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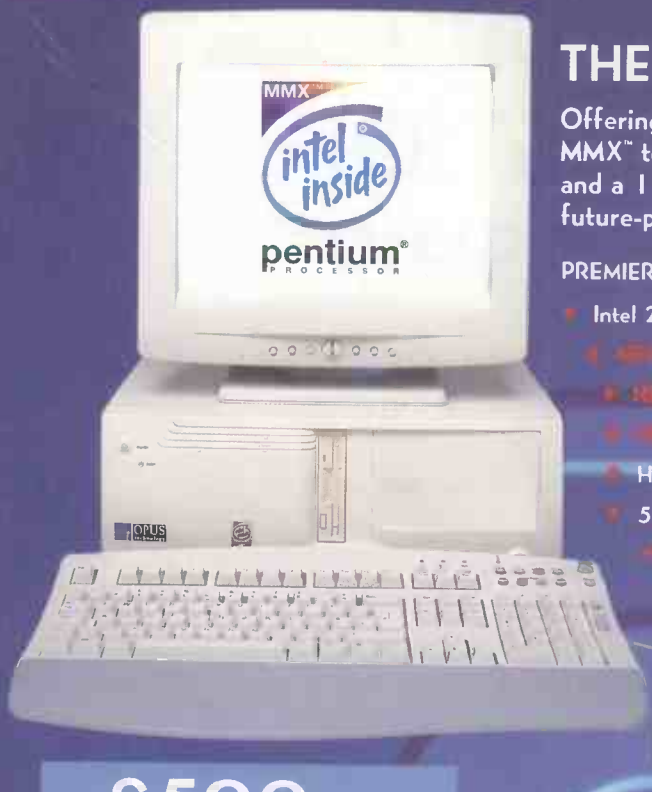
* source: Romtec.



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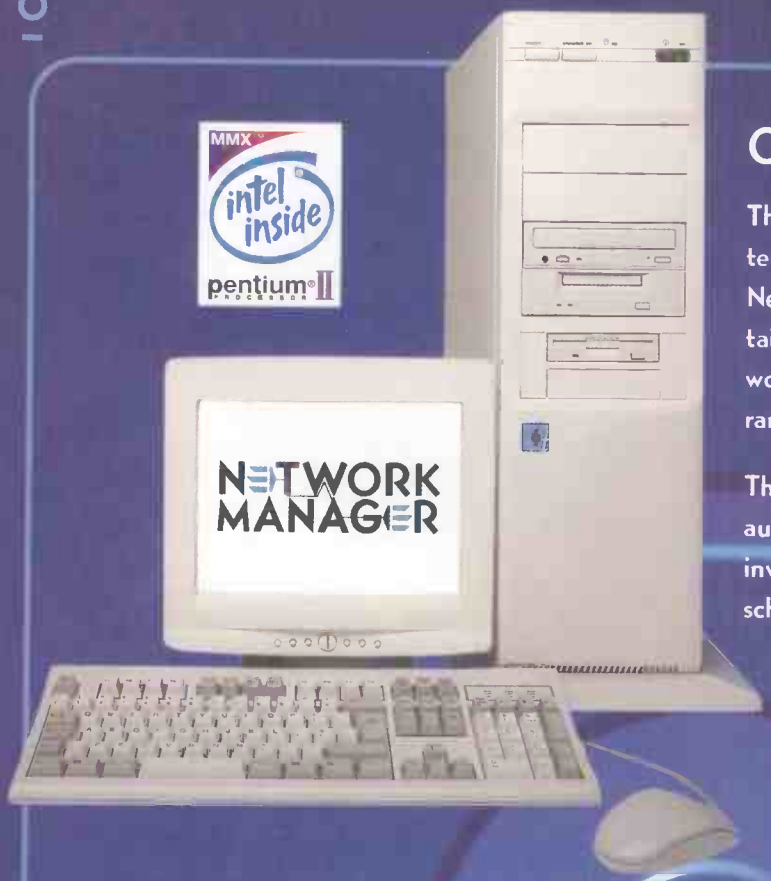

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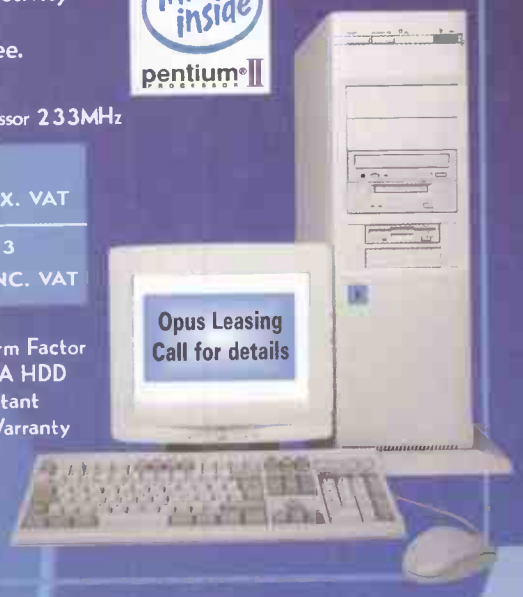

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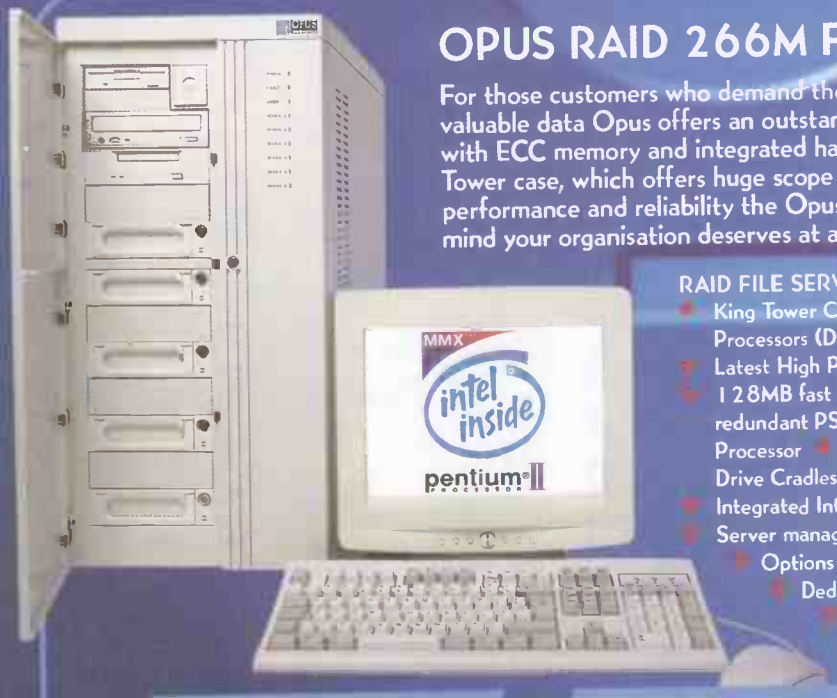

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Iris eyes are smiling

Adele Dyer looks at the identification possibilities of iris scanning. The days of the PIN could be long gone as cashpoint trials are already taking place in this country.

In an ideal world all you would have to do is to look at a cash machine and it would give you money. Sadly, banks will never be that generous, but the fantasy could be partly realised. Iris scanning could replace PIN numbers as a safer and efficient way of verifying your identity at a cashpoint and in the future you could use it for everything from collecting your email to starting your car.

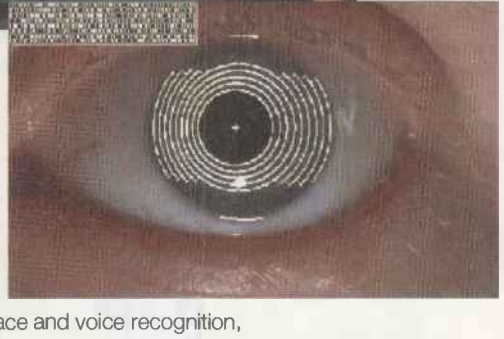
Of all the biometric systems, such as fingerprint, voice and face recognition, iris scanning is one of the more reliable ways of identifying individuals. Every iris has over 250 characteristics which make up a unique pattern. No two irises are ever alike in their details and even identical twins have different irises. Neither does your iris change over time, unlike your fingerprint or voice. Compared to fingerprints, which only have around 25 characteristics and can get scratched and scarred, it is a far more reliable way of identifying yourself.

In practice, iris scanning is relatively quick and non-intrusive. A monochrome video camera with a close-up lens takes a picture of the iris. It takes less than three seconds to capture the image which can be taken from up to a metre away. Systems should be able to cope with such circumstances as differing light conditions and users wearing spectacles and even sunglasses, although there is a problem with users wearing mirrored sunglasses. They will also be able to tell if the user is trying to defraud the system with a photograph of an iris by looking for natural contraction and dilation in the pupil.

Once it has the image, the computer scans it in much the same way it would a barcode and generates a unique identifying code, known as an IrisCode. The details are then stored on a network and can be compared to the code generated the next time the same person tries to use the system. The features of an iris can be encoded in as little as 256 bytes and codes can be compared and matched at the rate of 40,000 per second.

It may not be long before you have the chance to try it out yourself. NCR, which makes cashpoints for many of the high-street banks, has been looking at the idea for some time, and the Nationwide building society is currently running the first trial scheme in Swindon. BT has also been looking at the idea, mostly for building security.

The six-month Nationwide trial will place iris scanners on counters and on one cash machine in the branch under its head office. To use it you will have to take a few minutes to register with an initial iris scan, but after that you can choose to use the iris scanner instead of signing documents at the counter or keying-in your PIN number at the cashpoint. If the pilot scheme is successful, it could still be 18 months to two years before the technology is deployed in the high street.



NCR developed the prototype cashpoint used by Nationwide at its research laboratories in Dundee. Richard Lander of NCR says the company has been looking at various biometric systems including eye, hand, face and voice recognition, and points out that iris scanning does not suffer from the problems inherent in other biometric systems like the weather, noise and ageing.

Lander predicts it will not be the new technology itself that attracts, but the advantages it offers: "There will probably be the usual objections there are with any new technology. People feel that a little bit of their soul is being eaten up. It will make consumers more secure, but the new services that can be offered are the most important draw." New cashpoints will be able to offer everything from ordering cinema tickets to printing out share certificates and organising bank loans.

The list of uses for iris scanning goes way beyond cashpoints. It could be used with SmartCards, which have memory on-board to store personal details, to perform any number of different functions, letting you access your personal and company files from any PC, authorising access to pay-per-view TV or replacing your passport when crossing borders. You could even dispense with credit cards: your SmartCard has your bank details and your iris acts as your signature.

Top NCR iris-scanning machines are on trial by Nationwide Above Every iris has 250 characteristics making up a unique pattern

p278 ➢

Meta-physical change

Finding what you want on the overloaded, data-saturated web will get easier with the development of meta-data, "information about information". Toby Howard reports.

It's been called the Second Coming of the web. After a February 1998 announcement by the World Wide Web Consortium, the closest the web has to a governing body (www.w3.org), many web watchers have been seized with an almost religious fervour. The bad old days of an information-saturated but essentially unintelligent web are over, they say, and its saviour is "meta-data" — information about information.

Although the web is a global repository of information on a scale the world has never seen before, because the information is stored in unstructured blobs, finding what you want is hard and getting harder. Automated search engines such as those created by the excellent MetaCrawler (www.metacrawler.com) scan huge databases compiled by indexing programs which ferret around as much of the web as they can, noting which words occur in which pages. If a page happens to contain the text: "Absolutely no information whatsoever about penguins on this page", as far as a search engine is concerned, it's as valued a penguin resource as a specialised site such as The Penguin Page (www.vni.net/~kwelch/penguins/). Run a web search for "penguin" and you'll probably find both pages, but you'll also find the Pittsburgh Penguins Ice Hockey team, Penguin Books, an online club for running enthusiasts and an interactive dating agency in Utah.

If anything has been responsible for the enormous growth of the web, it's been the simplicity of its *lingua franca*, HTML. It's a small, simple and inflexible language, precisely the attributes an IT language needs for fast mass acceptance. But, as the web has developed, HTML has started to creak under the strain. The problem is that it codes the visual presentation of web documents, not their information content. Now there's a new language for the web: the Extensible Markup Language (XML) (www.w3.org/XML/).

Here's a slightly more useful version of my penguins page. In HTML, I might write:

```
There are at least
<I>seventeen</I>species of
<B>penguin</B>
```

The tags control the visual appearance of the words "seventeen" (italics) and "penguin" (bold). XML takes a quite different approach, by allowing tags that can be used to describe the data in the document. To illustrate, my penguins page in XML might look like this:

```
<penguin-bird-facts> There are at least
<penguin-species> seventeen </penguin-species>
species of penguin </penguin-bird-facts>
```

In this example the tags provide information about the information in the page. They are "meta-data". The <penguin-bird-facts> tag, for example, says that all the text between it and the matching </penguin-bird-facts> is "useful information about penguins". It's unlikely the same tags would be used in Penguin Books pages.

XML does not, of course, provide a set of tags for penguin enthusiasts. Instead, it provides a powerful mechanism for you to define any tag you like, to suit to your own purposes. You create a "document type definition" which specifies what your tags mean, and refer to this within the XML file.

As well as custom tags XML provides much greater sophistication with hyperlinks. In HTML, clicking on a hyperlink takes you direct to the appropriate web resource. In XML, links can be bi-directional, or clicking on a link might bring up a menu of related links; and links can be "transcluded" — the referred page is seamlessly inserted into the page you are reading.

But the power of XML comes at a price — discipline. Much of the HTML on the web is actually incorrect, but browsers are very tolerant. With XML, conforming browers are not permitted to ignore faulty tags and carry on as best as they can. The rule is simple: documents which contain incorrect XML code are ignored. Sceptics might be thinking: nobody will buy this, but in fact both Netscape and Microsoft argued vigorously for it. If you can browse an XML page, you can be sure it is correct. And well-formed, syntactically correct pages are essential if the web is to continue growing without falling apart.

As for meta-data being the saviour of the web, XML is providing the basis for the development of a new proposed standard called the Resource Description Framework, or RDF (www.w3.org/Metadata/). RDF is intended to provide an industry-wide standard for describing and organising web data, and promises to revolutionise web searching and navigation. Although XML is streamlined for the web, the vision is that ultimately RDF will unify all the information that comes our way: email, newsgroups, web searching, databases, and even the files on our hard disks.

When the problem of global information storage and delivery is eventually solved, we'll enjoy easy access to masses of it. The next question is: will it be any good? ■

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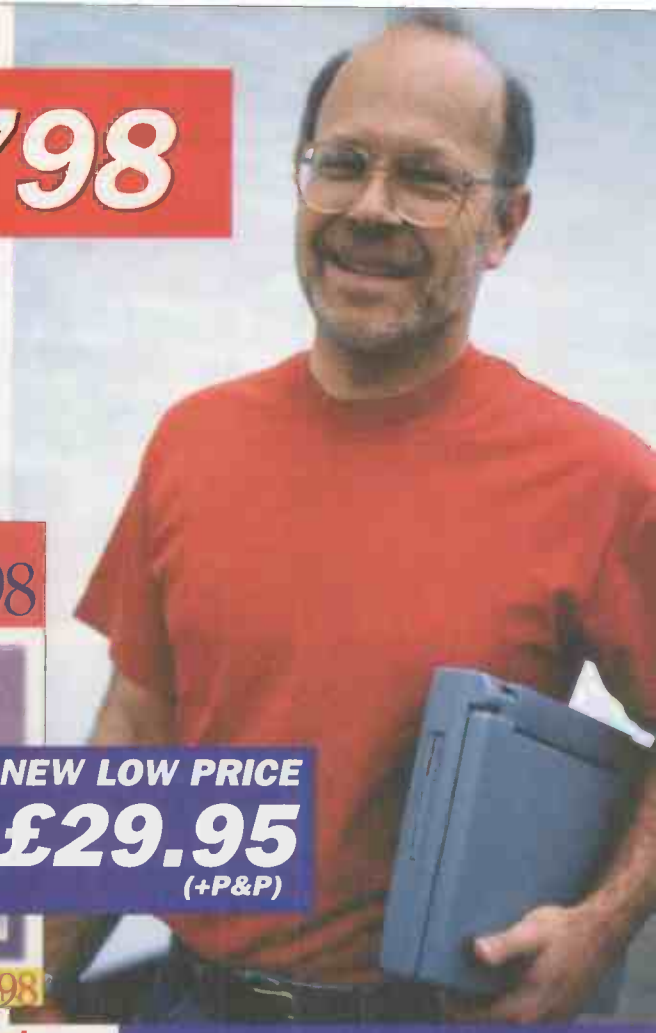

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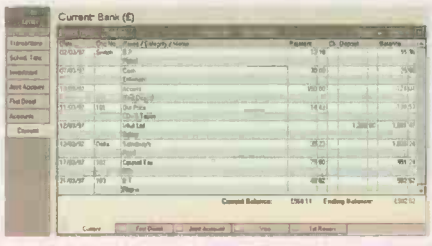

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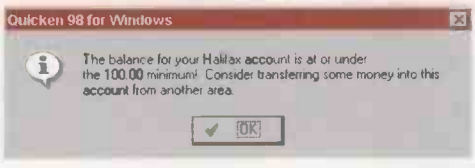

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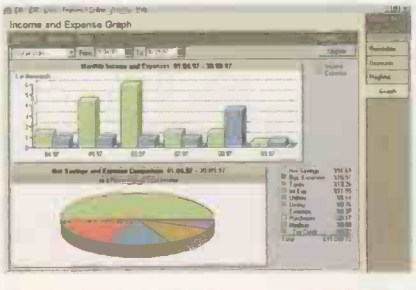

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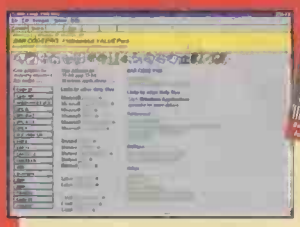

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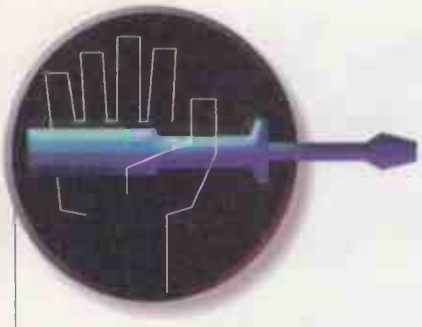


Connection section

Mark Whitehorn continues his tutorial on client-server databases. He provides a step-by-step guide to installing an ODBC connection, letting front end communicate with back end.

We've started to consider client-server databases, with particular reference to upgrading an Access database to SQL Server. Last month we covered the installation of SQL Server, so this month we'll look at making an ODBC connection. I've already discussed the theory behind ODBC (in Hands On Databases, *PCW* March). To briefly recap: an ODBC connection allows some form of front-end program (say Access, FoxPro, C++, Visual Basic, Delphi) to communicate with a back-end database like SQL Server.

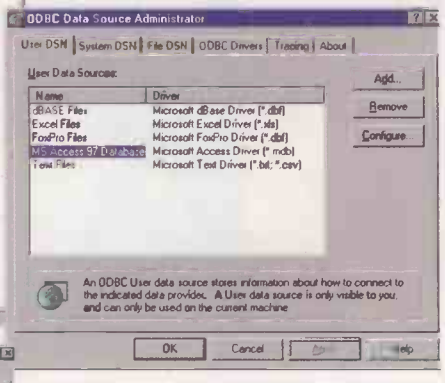
An ODBC data source is essentially a description of a potential connection which can be made between a workstation and a database on a database server. When you make use of a database from a workstation you must have an ODBC connection between the two machines, so you first create and store a description of the connection. That description details which ODBC driver to use, what it connects to, who is the default user, and so on.

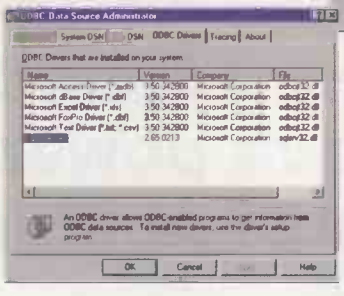
Thereafter, whenever you want to make that connection, you call up the description of it rather than have to redefine it. This description of the connection is called the ODBC data source. You can set up and configure ODBC data sources using the appropriate icon from the control panel.

Tooling up with GUI

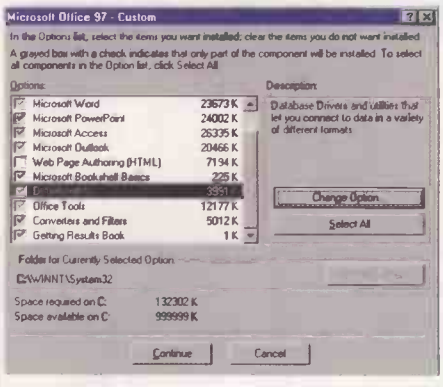
As soon as I install a new server-based RDBMS I feel that my hands are tied behind my back unless I can get a GUI-based query tool in operation. The easy way to achieve this is to make an ODBC connection to the database server from a front-end that has a GUI query tool. In addition, every user of a client-server database will also need an ODBC

Fig 1 (left) The 32-bit ODBC in the control panel of the workstation

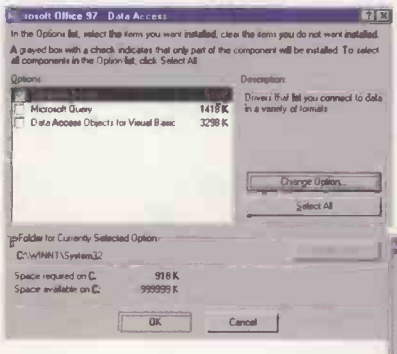




Figs 2 & 3 (above & left) Assuming that you make reasonable choices during the installation of Office 97, it should set up the 32-bit ODBC Data Source Administrator (DSA) as shown



Figs 4 & 5 (right & below) And this is how you can make those reasonable choices during the installation of Office



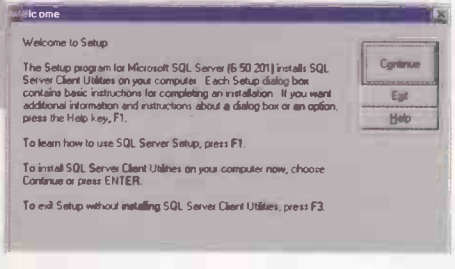


Fig 6 (right) Starting the install on the workstation from the SQL Server CD-ROM

connection from their workstation to the database server. In order to make such an ODBC connection you will need: a workstation, a server running SQL Server, a network to connect them, an ODBC Data Source Administrator on the workstation, the correct ODBC driver and the SQL Server CD-ROM.

Truck stop

To demonstrate this I started with a Windows 95 portable machine. It has never been connected to a network before and has certainly never had any truck with database servers in its long and interesting life. I have just installed Office 97 Professional and made sure that Access 97 runs OK, so let's get started.

1. Installing Office 97 added the 32-bit ODBC Data Source Administrator (DSA). The icon for this program now appears in the Control Panel (top left in Fig 1). It is worth firing up the DSA and having a look at the tabbed options (Figs 2 & 3). The options that you see here have all been set during the installation of Office, and during that installation (Figs 4 & 5) I elected to install the database drivers for SQL Server (among other packages).

2. The next step is to install the bits of software that are required, onto the workstation. Put the SQL Server CD-ROM in the drive, navigate to i386, find setup.exe and fire it up. After the excitement of the splash screen has passed, you will find that SETUP has noticed you are running the CD-ROM on a Win95 workstation (Fig 6). All it will let you do at this point is to install the necessary utilities (Fig 7) but that's fine because it's what you had in mind anyway. How many of the utilities you actually install depends on exactly who will be using the workstation and what they will do with it. It is perfectly possible to administer SQL Server from a workstation rather than directly from the server, and a system administrator may well want to do this.

In this case, since I intend to use the workstation as an administrator and disk space isn't limiting, I've plumped for the lot (Fig 8). The next screen asks about installing the SQL Server books, which I elected not to do on the workstation (it takes another 15Mb and I have the documentation on the server anyway).

3. After that, it should be plain sailing until the install finishes and you are required to reboot. After rebooting you will find that you have a set of utilities (assuming you installed

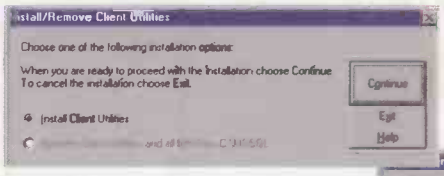


Fig 7 (left) The install program has detected that we are installing in Windows 95 and is offering the client install option

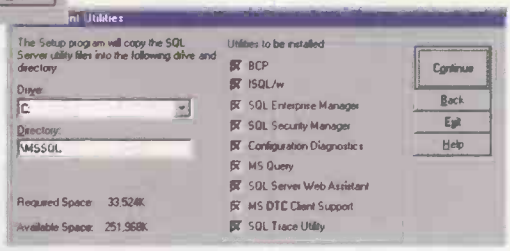


Fig 8 (right) You don't have to choose all of these options...

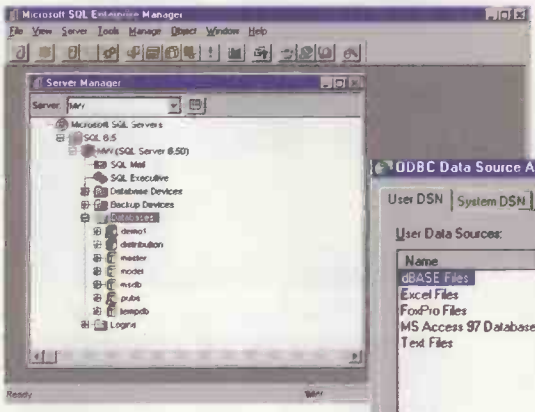


Fig 9 (left) ...but if you intend to administer the server from the workstation, you will need at least some of them

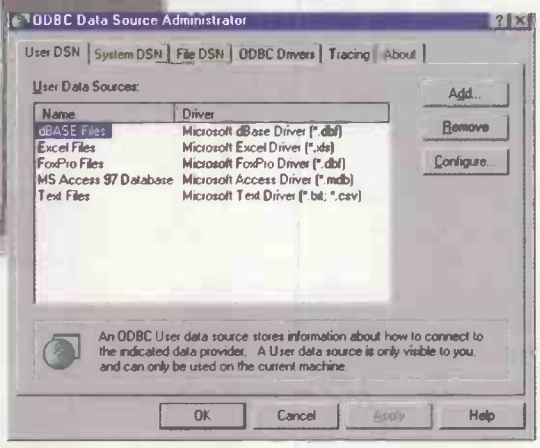


Fig 10 (right) Using the DSA to create an ODBC data source, in this case a user-specific one

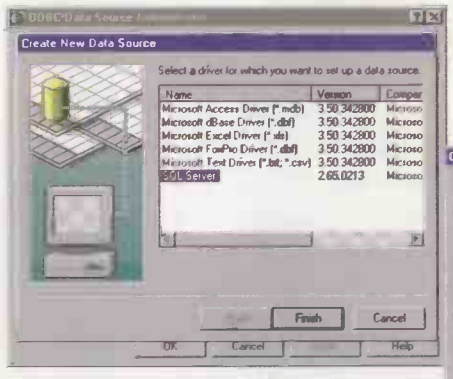


Fig 11 (left) First you need to choose the driver...

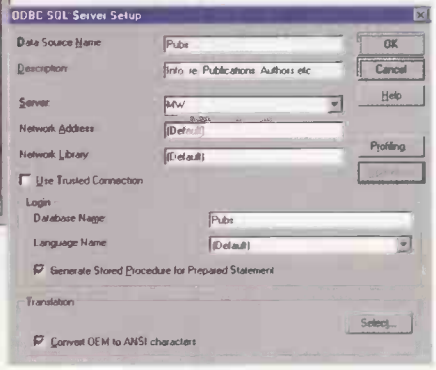


Fig 12 (right) ...then tell it which server to use and, if you like, which database within that server

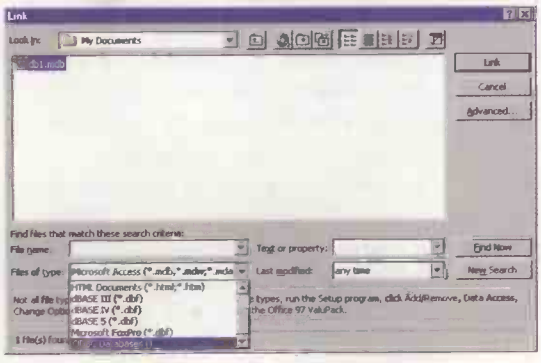


Fig 13 (left) Next, from within Access you can elect to link to a table via an ODBC connection

p286 >

them) and can spend some happy hours playing with them. For example, here I am (Fig 9) running Enterprise Manager from the Win95 portable.

The network connection is actually made using a PCMCIA card but I could be using dial-in from a portable phone on a train. In turn, this means that I could be administering a mission-critical client-server database from the 10:20am to Waterloo. While this is an almost terrifying thought, it seems like a much better use for a portable phone than the usual. "Gerald?... Gerald?... *GERALD!* Ah, Gerald. You're fired. *FIRED... YES*. Put me on to Barry... *BARRY!*"

4. Anyway, I digress, and we are here to make an ODBC connection, so fire up the DSA and click on the User DSN tab. As the info at the bottom of the dialog tells you, this data source will only be visible to the current user of the Win95 machine (Fig 10). A System DSN is visible to any user. Whichever you elect to use, the mechanism demonstrated here is the same.

Click on the Add button, choose SQL Server (Fig 11). Click on the Finish button and fill-in the next dialog as appropriate. Where it asks for the Server name (third box down in Fig 12) it needs the name of the SQL Server, not the NT Server. In my case, rather confusingly, these are actually the same (MW) but as long as you enter the appropriate one, all should be well.

I am going to connect to the Pubs database which is supplied with SQL Server and so I have elected to click the Options button and fill in a bit more detail, as shown. OK, finish the selections, close down the DSA and you should be ready to rock'n'roll.

5. Fire up Access, create a blank database and select File, Get External Data and Link Tables. Use the Files of type: combo box to select ODBC Databases () (Fig 13) and this dialog appears. Move to the Machine Data Source tab, select Pubs, click OK (Fig 14).

An SQL Server login dialog box should appear and you should log in as appropriate. I'm using the "sa" login (System Administrator) and that should be fine for testing purposes (Fig 15). Wow! It works! "Gerald... *GERALD!* You're reinstated."

You should now be able to see the tables and you can pick, say, "authors" (Fig16). Now follow the same route but elect to Import rather than Link Tables. If you choose authors again you can end up with two versions in the database. The linked one, as common sense suggests, is actually the one

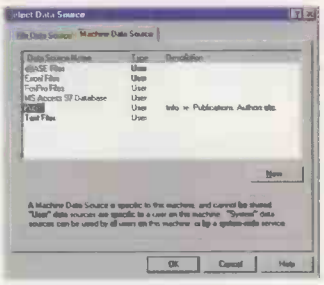


Fig 14 (right) Choose the data source you have just created...

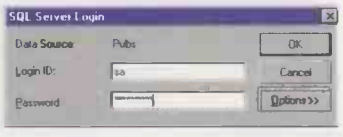


Fig 15 (above) ...log in to the SQL Server...

Fig 16 ...choose the table(s) you want and...

Fig 17 ...you're linked. This screenshot also shows a table I have imported

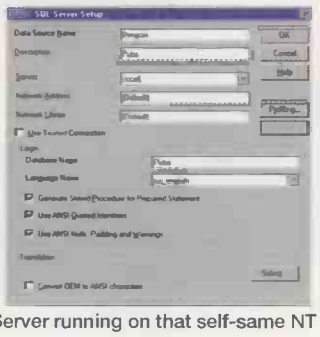


Fig 18 This shows the same sort of connection being set up on an NT Server, connecting to an SQL Server running on that self-same NT Server

sitting in the server, while the other is now an Access table sitting in the MDB file. If you shut down the workstation, pretend it is another day, fire it up, open Access and the appropriate MDB file, the two tables will appear in the database window as before (Fig 17). You are free to open up the imported file, but if you try to open the linked table you'll need to log in to SQL Server before proceeding.

So, that's one of several ways of making an ODBC connection. Such a connection is essential for any users of the database but it is also a major boon to any DBA (DataBase Administrator) who wants to manipulate the data in a database. Such a DBA can connect in from a workstation, although it seems to be common practice now to actually work sitting at the NT Server. In this case, you can make an internal connection from the NT Server to the SQL Server in much the same way as illustrated here. The only major difference is that you need to select "(local)" as the server name when setting up the ODBC connection (Fig 18).

Summary and homework for next month

During the next few issues we are going to look at the planning and execution of moving an Access database up to an SQL Server-based one. Much of the grunt-work in upsizing a database in this way can be done with one of the upsizing wizards that Microsoft has written. The company makes these freely available, so we will be putting them onto our CD-ROM next month. The grunt-work involves defining the table structures in SQL Server, moving the data across and so on. However, this still leaves a fair amount of work for the human (some of which I will cover next time). In preparation, here is something that I "stole" from one of Microsoft's presentations on upsizing.

An Access database application can be thought of as layers like this:

- User Interface
- Input Validation
- Application Tasks
- Business Rules
- Data Integrity Rules
- Data Management

Some of these layers map directly onto SQL Server (the bottom three, for example). This means that when you upsize your Access application you can expect SQL Server to take over the business rules, data integrity rules and data management. You cannot expect it to take over the upper three, so they will have to stay in Access.

It is worth thinking about your Access application and trying to work out where you have implemented these layers, and what will happen if/when you split them between Access and SQL Server.

PCW Contact

You can contact **Mark Whitehorn** at the usual *PCW* address (p10) or email him at database@pcw.vnu.co.uk

■ Mark Whitehorn's book, *Inside Relational Databases*, is available via our Reader Offers. See page 370 for details.

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The **name** of the game

Memorable domain names are being snapped up fast. There are some extra top-level domains but you should act quickly to register your choice, recommends Nigel Whitfield.

Names are valuable things, and on the internet an easy-to-remember name can make the difference between your site receiving lots of visits or hardly any at all. Small wonder then that the registration of internet domain names is now big business, with many companies competing to register names for you, at surprisingly cheap prices.

There are a lot of opportunistic registrations, like the high-profile case where the Harrods name was registered by someone who tried to sell it on at a hefty premium, or the huge number of domains related to Princess Diana. Add the domains that have been registered because they might be useful in the future, and the chances of your being able to register exactly what you want are getting smaller all the time.

Partly because of that, and partly to create more competition in the registration of names, there are now some extra top-level domains where you can register sites whose name will hopefully give people a clear idea of what sort of thing they can expect when they visit: for instance, .shop, .sex and .arts are fairly self-explanatory, with the added bonus that you'll easily be able to guess that some sites, like .sex, won't be suitable for the kids.

And of course the new scheme is a lot more friendly than the old .com, .org and so forth. It will help net newcomers to find their way around much more easily. Don't believe, however, that it's going to solve all the problems you might have had with finding a domain that you want. Many domain companies are already pre-registering in time for the launch of the new domains this spring, so if you want to be sure of grabbing the right name, get your applications in now.

For many casual users, of course, a registered domain is little use without somewhere to host it, and if you're struck by what seems like a cheap deal for registration look very carefully to see exactly what it includes. Some of the best-*sounding* deals might not even include a web page, or at least nothing more than one which states: "This is a placeholder for www.mysite.com."

Yes, you can register your domain and host web pages elsewhere but, before you do, remember that there's more to having a fancy domain than just pointing an address at a web server. If you have the free space

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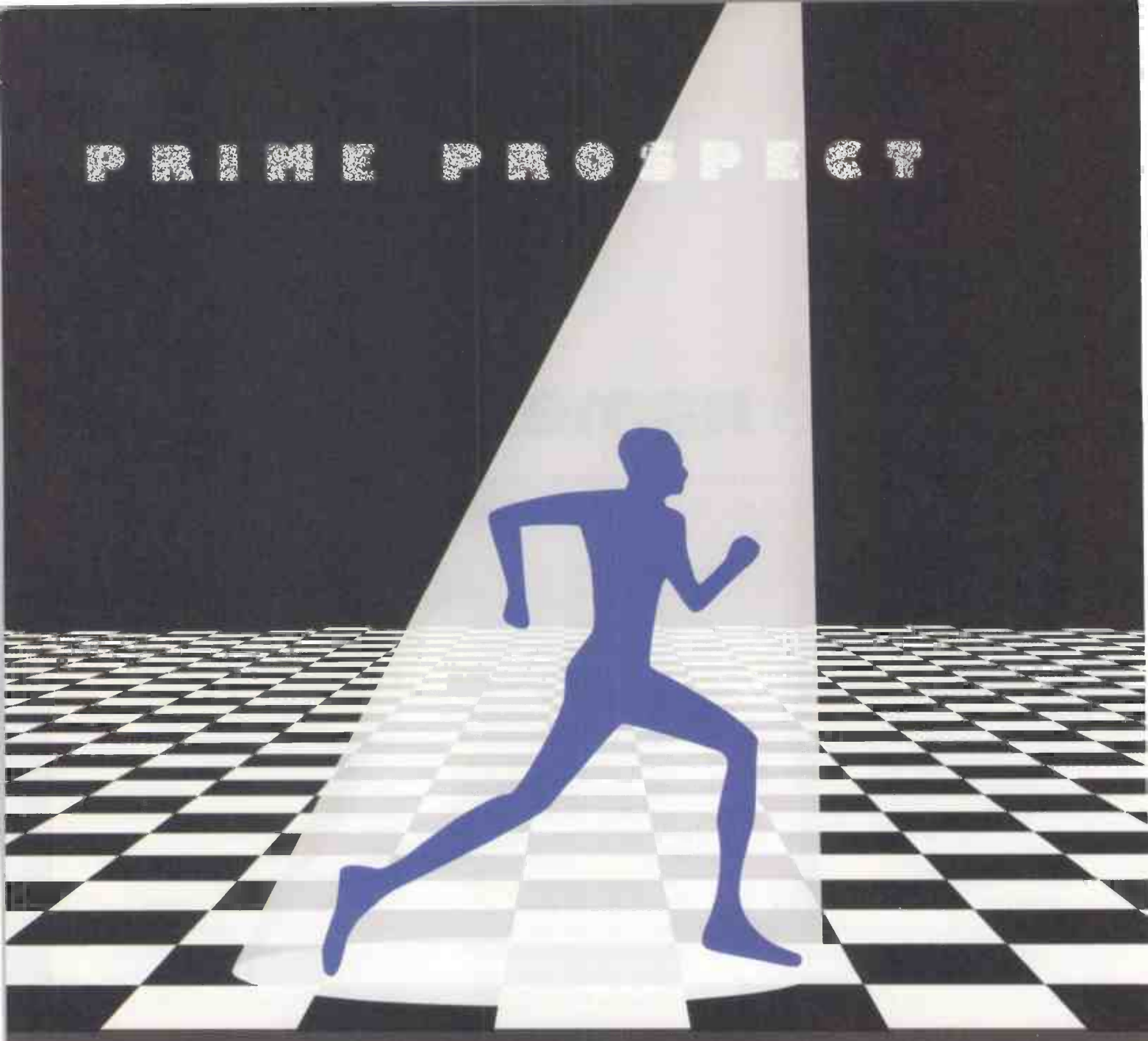

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that's provided with many dialup accounts, you won't be able to point a new domain straight to your own space. In short, you'll need to liaise with the people who host your web site to ensure that it works with the domain that you've registered. So, if you want to join the crowd with the newest domains, shop around, and before you jump at the cheapest offer, check to find out what's really included. *Caveat emptor*.

Hack attack

Keeping track of security on systems connected to the internet can be tricky, and even the most experienced people can make the occasional slip-up that leaves systems vulnerable and open to abuse. If you're one of the growing number of people setting up a site of your own, you may not have thought of the different ways in which your computers may be attacked.

If you're running a web server and you have CGI scripts installed, they could potentially be used to cause all sorts of havoc, especially if your server runs a version of the Unix operating system. Although the vulnerabilities in web servers are well known, if you simply download or install from CD the handiest software you can find, you may well end up using something that's not up to date and which leaves your system open. One of the most common security holes is in a program called phf which is provided as a sample with some NCSA and Apache web servers. Even if you're not running one of those servers, if the program is in your /cgi-bin/ directory then your systems are still at risk.

At its simplest, this well-known hole lets people execute arbitrary commands on your server. If the actual web server is running with sufficient privileges, then the results could be disastrous. For instance, it could allow someone to access your system, breach the security and change the root password. Less obviously, even if the server is running as a user with few rights, it can still be used to mount a denial of service attack on someone else, by running the ping command against a different target, eating up your bandwidth and identifying your system, rather than the hacker's, as the source of an attack.

The simplest solution is to check your CGI directories and remove the programs you don't use by deleting them or removing the execute permissions from them. The Unix command "chmod -x phf" will stop people from being able to exploit the well-known phf security hole. Also remember to run the server as a user other than root; you can simply change the entry in its configuration file to "nouser" or "nobody" depending on which your system has defined in /etc/passwd. More details of the exploitation of CGI scripts can be found at www-archive.stanford.edu/lists/www-managers/hyper95/0597.html and the Computer Emergency Response Team, which provides information about vulnerabilities in a wide range of systems, is at www.cert.org. Even if you think your system is secure, it pays to double-check: to protect your data and to ensure that your system cannot be used by a third-party to attack others.

Questions & Answers

Q I know this may sound like a very basic question, but how do I access ftp sites using Netscape Navigator without using another app? I've tried everything I know but cannot directly access these sites, which is a pain, as some www sites such as uploaded.com have a direct link to an ftp site for downloads.

A The simplest way to access an ftp server is simply by turning the details of the server into a URL and typing that into your web browser. For instance, if you wanted to access the /pub/ibmpc directory on ftp.demon.co.uk, then the full URL that you'll need to give the browser is ftp.demon.co.uk/pub/ibmpc

If you're still having problems, there are a number of things you can look at. First, check the preferences of your browser to make sure that it has your email address properly configured (Fig 1). In Navigator 4, the Advanced preferences option has a checkbox for sending your email address as a password. This should be checked to ensure that you can access those sites that insist on knowing it.

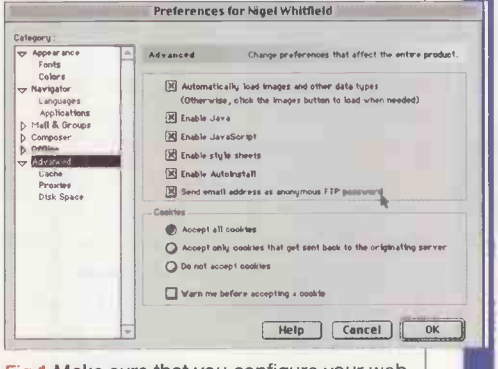

Fig 1 Make sure that you configure your web browser to send your email address when you ftp

It's also worth making sure that your ISP provides what's called "reverse

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lookup" which is the way in which incoming connections to many ftp servers are verified. If a reverse lookup can't be carried out, you may be refused access.

Finally, if you have problems downloading files, use the right mouse button (or a long click for Mac users) to select a file and choose to save it to disk. If the file has an unusual extension your browser may become confused about what to do with it otherwise, and it's best to say that you want the data saved to a file.

Q I am using an AOL free trial at the moment and I want to use other programs such as Pegasus Mail and mIRC, but I have to load the AOL program and sign on first and this takes a long time on a 486 with 4Mb of RAM. I have seen other people just launch whatever program and use it, but I can't. It is beginning to get annoying as the web, ftp and email facilities take an extremely long time to load, whereas WS_FTP, Internet Explorer and Pegasus Mail launch in seconds. Any suggestions?

A The reason other people can launch whatever application they want and use it directly is that they're not using AOL. Although you can access the internet via AOL, it's not actually a true net connection in the strict sense of the word since the link between you and AOL uses their own proprietary protocol rather than TCP/IP.

This means that you have to sign on to AOL and then use its special version of Winsock, which sends information over its network and out onto the internet. Since the connection to AOL is handled via the AOL software, you can't opt not to load it.

By contrast, a connection to a more standard ISP is a straightforward TCP/IP link using the Point-to-Point Protocol, which is the way in which internet information is sent over the modem link. Support for this is built into Windows 95, which can also detect when you're trying to access a site on the net and automatically make the connection using the DialUp Networking facility, without you having to launch any special programs. Windows 3.1 users can use software like Trumpet Winsock, which will do the same thing. If you have Trumpet in your startup group, then you'll be able to connect automatically in much the same way as a Win95 user.

If you only have four megabytes of memory, you'll almost certainly receive better results by using a standard ISP since there'll be less to clutter up the memory in your machine. But bear in mind that you'll also continue to suffer from speed problems, especially on graphically-intensive web pages where you may find the browser running out of memory. If you want to persevere with the internet after your free trial, then you should seriously consider upgrading your computer with more memory.

Q I use AOL in the US and I've heard lots of stuff about email signatures. Could you please tell me, how do you change that file under AOL?

Also, is there a way to get *Personal Computer World* articles online? For example, is there a mailing list to which I can send my email address and automatically receive articles via email? I'm asking this because I cannot seem to find a copy of *PCW* where I live, and I badly miss your magazine.

A There's no direct support on AOL for signatures on your email messages, although you can add one to postings that you make to newsgroups: to access this, go to keyword NEWSGROUPS and click on the Set Preferences button; you can enter a signature in the box that appears below (Fig 2). Remember that you should try to keep it as brief as possible.

If you want to add a signature to your email messages you have two solutions. One is to compose messages with a text editor or word processor that has an "automatic text" feature and then paste them into AOL's Compose Message window. The alternative is to download Power Tools for AOL, which will allow you to add signatures to your messages more easily.

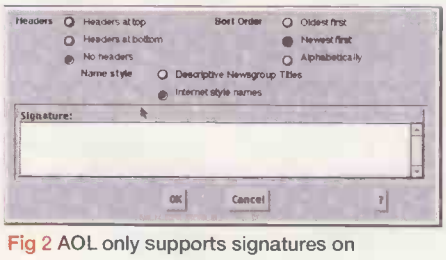

Fig 2 AOL only supports signatures on newsgroup messages, not email

Thanks for your kind words about *PCW*. You can't read the whole thing online but it is possible to access some parts of it. You can visit our VNU web site at www.vnu.co.uk and if you're on AOL you'll also be able to find the magazine there, by using the keyword PCW

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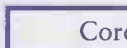

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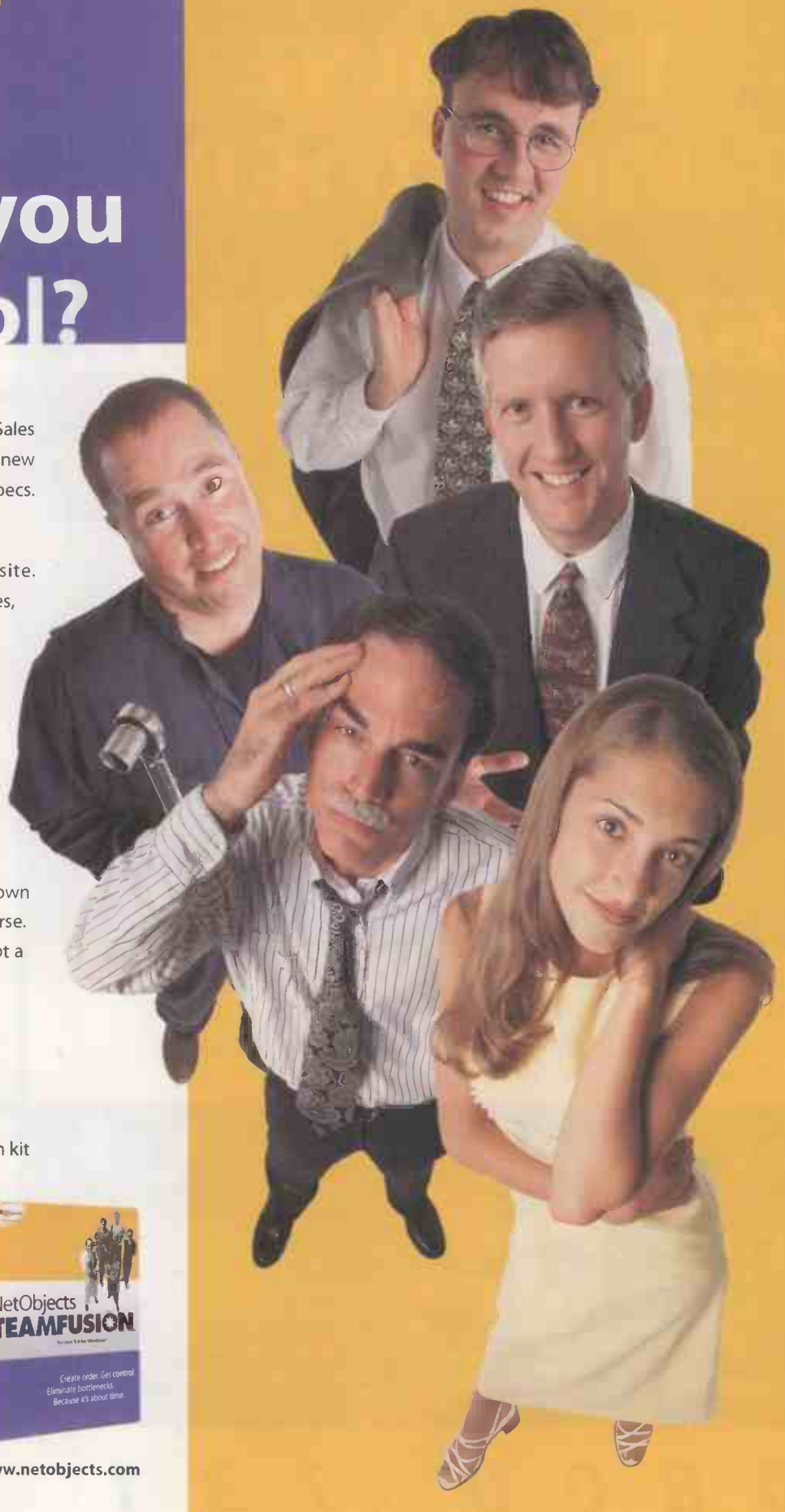

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Q Every time I try to use any of my internet applications I get a message stating: "An essential file is missing, please re-install dialup networking". The thing is, I have re-installed dialup many times. I even got to the point of re-installing Windows 95 and that had no effect on the problem. The only internet I can use is AOL.

A Your problems are most likely caused by having installed AOL or some similar software that provides access to the internet. As we mentioned in a previous answer (*p292*) some internet services rely on their own version of Winsock.dll and if that's put into the Windows directory it can cause problems with using DialUp Networking.

The best solution is to remove all files that are not part of Windows: remove the TCP/IP protocol from the networking control panel, if it's already present, then delete any winsock.dll and wsock32.dll files from your Windows directories (Fig 3). You can then add TCP/IP again via the network control panel and the correct versions of Winsock will be restored from the CD-ROM or floppy disks. If you still have problems, then it may be worth considering a new install of Windows.

If you wish to continue using AOL make sure you're using the latest 32-bit version rather than the 16-bit versions that some Windows 95 users have. You can go to keyword UPGRADE to download a new version, which will coexist more happily.

Since you have a connection to an ISP you can also use that to connect to AOL rather than dialling into its own numbers. The performance may not be as good, but you may find it simpler to restrict the number of programs with a Winsock.dll on your system to prevent such problems in the future.

Q I've heard people on the internet talk about "Denial of Service" attacks. What are these, and how can I protect myself against them?

A A Denial of Service attack is a name for a specific class of attack on a computer system. Its intention is to make it difficult or impossible to use either the computer or its net connection, and it can take many different forms.

Fig 3 Remove the TCP/IP protocol and Winsock files if you think they've been overwritten by software such as AOL

For instance, some people choose to mount this type of attack using the ping command, to send lots of data to a remote system on the internet. Some computers cannot cope with certain attacks made in this way and will simply crash, while in other cases the net connection becomes so overwhelmed with the amount of information that it's effectively useless for anything else.

Another type of attack is "mailbombing", where lots of messages are sent to a particular system with the intention of filling up the disk space and preventing legitimate messages from being received. You could unwittingly become part of such an attack by responding to what appears to be a piece of junk mail from an address; it's not unknown for people to forge messages in the hope that all the angry replies will overwhelm their true target's mail system.

The bad news is that because there are so many different types of Denial of Service attack, there's little that can be done to prevent them, although a system with security loopholes is obviously more vulnerable. As a dialup user, if someone wants to overwhelm your connection with lots of pings, there is very little you can do about it.

PCW Contact

Nigel Whitfield is a freelance journalist, maintainer of several internet mailing lists and consultant to a number of non-profit organisations. Write to him via the *PCW* address (p10) or contact him at internet@pcw.co.uk

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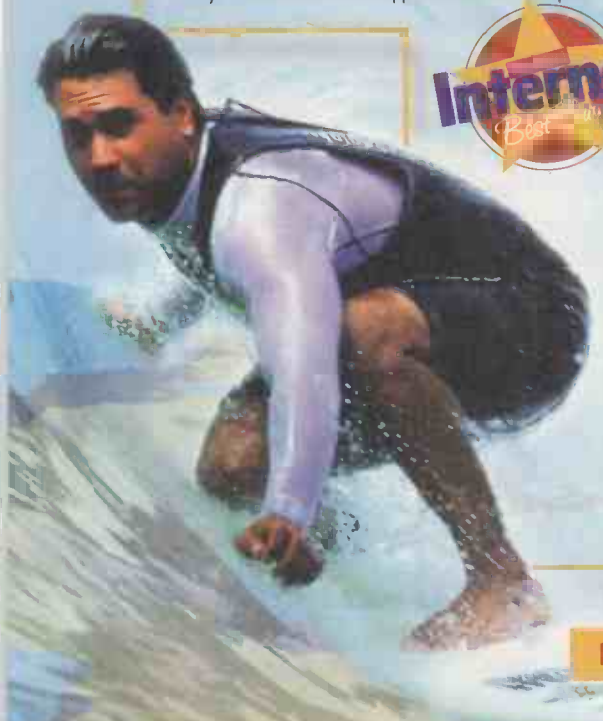

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The recent documents list is often a bit wayward but Tim Nott has the answer to a couple of mysteries: controlling what goes into the list in the first place, and why 16-bit apps are choosy.

The Recent Documents list has been a long-standing favourite in this column, with tips on how to get at it, how to clear it automatically and how to clear it selectively, cropping up at irregular intervals. A mystery I don't think we've cracked is why sometimes 16-bit apps store recently-opened documents here, while at other times they don't.

The answer is that it depends on how you open them. Sixteen-bit (designed for Windows 3.1) applications don't record Recent Documents from their File Open or Save dialogs. However, if you open a document by double-clicking in Explorer, to launch both it and its parent application, then Explorer will record it.

The other problem we've never been able to crack is controlling what goes into the list in the first place. Enter Recent Documents 97, from Oakley Data Services. Here you can control both the size of the list and the age of files before they drop off it: you're not limited to the default maximum of 15 and you can "lock" documents so they never fall off. That, however, is just the start, as you have various ways of viewing the files, grouped by date, folder, type, user-defined category or all in together.

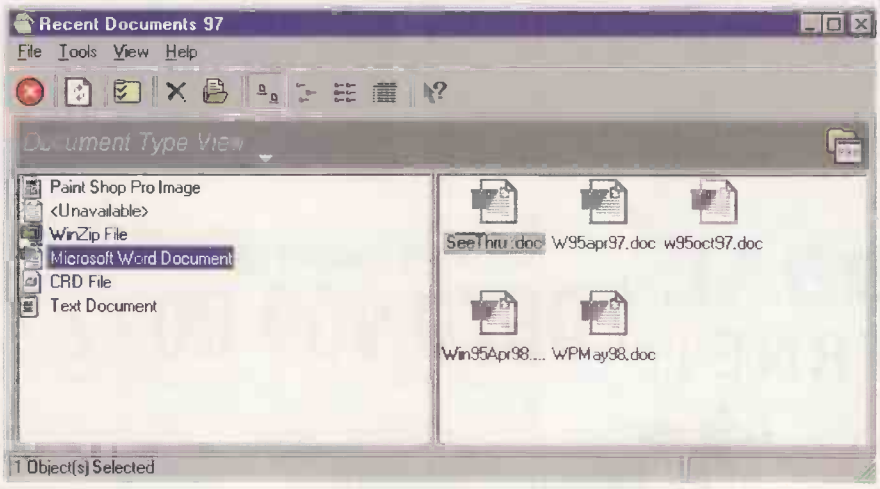
Then it gets more clever, and more complicated, with rules. Rules are created in a simple (*ho-ho!*) Unix-style syntax and can be used to include specific filetypes or documents whose name contains a specified string of characters, exclude them or move them to a certain category.

Each category, by the way, can have its own size and date limits. For PCs with multiple profiles, each user has his or her own set of documents, categories and rules. The only disadvantage I can find is that it takes longer to open the Recent Documents folder than it does to display the standard Windows menu-style list.

The trial version is on our cover-mounted CD-ROM this month or is available from www.smartcode.com.

Fig 1 Four new shortcuts

```
"c:\paint shop\psp.exe" /browse c:\windows\tempor~1\cache1
"c:\paint shop\psp.exe" /browse c:\windows\tempor~1\cache2
"c:\paint shop\psp.exe" /browse c:\windows\tempor~1\cache3
"c:\paint shop\psp.exe" /browse c:\windows\tempor~1\cache4
```



Recent Documents as never before: shareware from UK-based Oakley

Checking the cache

Paint Shop Pro is such a popular piece of software that I make no apologies for passing on hints and tips about it. In last May's column, which should still be on the *PCW* CD-ROM, I passed on Tim Bailey's tip for adding Browse Pictures as a right-click option for folders. Chris Gil has been pondering a way to make this work with Internet Explorer's cache.

As we've noted before, with IE3, the actual files are located in four hidden subfolders which can't be seen in Explorer or PSP's file dialog, but they do show up in File Manager. So, the Browse command cannot find them either directly or by using Tim Bailey's trick. Chris' answer was to create four new shortcuts in Paint Shop's Start Menu folder, as in Fig 1. If you don't keep PSP.EXE in c:\paint shop you need to modify the path accordingly.

Having written that, I then tried it on a machine with IE4 and a beta build of Windows 98. It doesn't work, because the individual cache folders had new, exciting names like "ugbdode5". So I modified the shortcuts to suit, and it worked. Having written *that*, I found that although Paint Shop's browser open dialog still couldn't find these folders, Explorer now could (Fig 2), and the right-click Browse Pictures trick now worked... *Doh!*

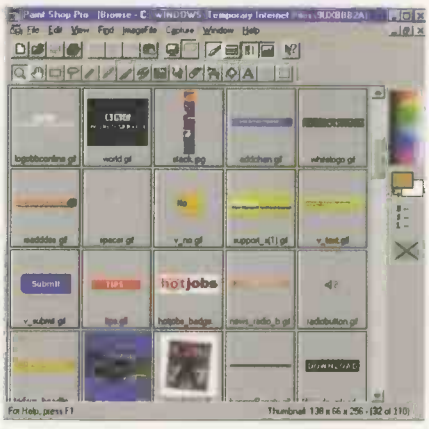


Fig 2 At last, it can be done! See what images Internet Explorer has squirreled away

Keyboard quickie

Here's a keyboard quickie, from Hugh Lacey, in response to the tip of creating shortcuts to hop straight to a specific page of a Control Panel property sheet.

This one's specifically for Device Manager. If you have a Windows key, press that, and the Pause/Break key that doesn't seem to do much beside keep the equally-useless Scroll Lock key company and stop DOS batch files running. You should see the System Properties panel leap to the fore.

Now here's the bit that has taken me three years to realise. The arrow keys switch pages in tabbed dialogs or property boxes. So a quick jab at the right arrow button gets you to System Properties.

Ciao, wow!

Bob Monroe, of Perugia in Italy, had an exciting new problem. He noticed that Help no longer worked in any program, nor from the Start menu. If he double-clicked a help file in Explorer it obligingly sprang to life, but from applications the disk went chunter, chunter, then nothing.

The same thing happened with the little question mark in the top corner of dialog boxes. Then he bought Encarta 98 and it wouldn't play the videos, putting up a pathetic note stating: "Cannot find vids.iv32 decompressor". However, once again, if he double-clicked on the .AVI files on the CD, they played perfectly. So, in Bob's words: *"It looks like the knitting at the centre of Win95 has become a bit unravelled. Any ideas?"* Quick as a flash, I was able to reply: "None whatsoever."

Fortunately, Bob tracked down the problem to a missing .DLL with the aid of "Norton Something-or-Other".

"The file has the ridiculous name of WOW32.DLL, and though only 4K it seems to keep all the bits talking to each other. A quick extraction from win95_11.cab on the Windows 95 installation CD solved both problems."

Stop start

Another tip from the indefatigable Peter McGarvey. He's not getting a book token this time as he'll only squander it on some programming tome and anyway it's only a little tip, and one for spoilsports at that. *"If you want to stop 'Restart in MS-DOS mode' option from working, there is a PIF file called Exit to DOS in the Win95 folder which is called up whenever you select 'Restart in MS-DOS mode' from the shutdown box. By altering the properties of this PIF to run a batch file with nothing but an EXIT command, the MS-DOS mode option does not work. I know there is a system policy option to disable all DOS apps which has the same effect, but I needed a way to run a DOS batch file each time someone logged on."*

A find tip you've got me into...

Here's yet another Find tip. Last month we made the amazing discovery that you don't necessarily have to type asterisks or question marks to do a wildcard search: typing ABC into the space will find any file whose name or extension contains that text. You can use the symbols if you want to narrow the search down: ABC*.* will only find files that start with those letters.

This month's tip is equally revealing: leaving a space in the filename field finds multiple patterns, so ABC DEF will find all files containing ABC or DEF in their names. This same trick doesn't work in the Containing text field; if you type more than one word it will look for the phrase. Don't put quotes around a phrase, by the way, unless the text for which you are searching also has quotes around it.

Dept. of obscure tips

If you have IE4 installed and don't feel your Active Desktop is active enough, try this wonderfully daft tip from Marc Ball, who writes: "Want to *really* slow down your system? Yeah, course you do! First, install IE4. Next, catch yourself a good animated gif from the web. Then set your Desktop to Web Page view and finally set the moving gif as your wallpaper, preferably tiled. *Voilà!* Instant PC treacle. I really ought to get out more!..."

p300 >

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Questions & Answers

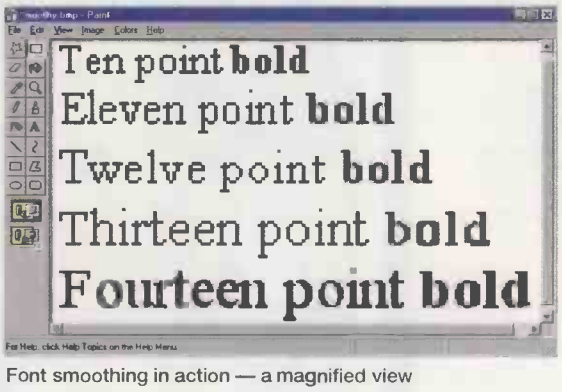
Q In January's column you mentioned a file (W95GRAY.EXE) which could be downloaded from the Microsoft web site, free, and which added font smoothing and other goodies to Windows 95 display settings. I can't find it anywhere, searching the MS web site.

Gerri Bulger

A Quite a few readers have had the same problem — it seems to move around a bit. At the time of writing, the file can definitely be found at www.microsoft.com/typography/free.htm. Failing that, a web search on the filename will turn it up at a variety of other sites.

Q Considering the font smoother only appears to use four-or-so greyscales to smooth the font anyway, why doesn't it work in 256-colour mode? I'm using a very basic video card and it doesn't perform very well at 16-bit colour modes. Secondly, is there a way to get it to work for small letters? The smoothing only seems to kick in at about 14pt and by then you don't usually need it as much, which makes it seem a bit pointless.

Cyke O'Path



Font smoothing in action — a magnified view

A Nice name, tricky question. Although the documentation claims that the font smoother works in 256 colours or higher, it doesn't work for me, either, at that colour depth. I suspect this may just be a case of mis-documentation. With regard to it not working at small sizes, what the smoothing does is interpolate various shades of grey alongside the existing black pixels. At around 13pt or smaller (a bit less for bold) there just aren't enough pixels to play with. You'd end up with a smeary-looking mess.

Q I have been having terrible trouble getting my Dell PII to fax and connect to the net without a great deal of coaxing. Every time I boot into Windows a notepad window opens, titled Ndislog. I have no idea what this is about. I was wondering whether you have an idea as to what is going on, and how I can get rid of it?

Simon Nicholson

A NDISLOG.TXT is a log file created when you start Windows. Normally it doesn't contain anything, but if errors arise loading real-mode network drivers, then they will be recorded in this file and shown on startup.

Without looking at the file it's impossible to be sure of the cause but likely candidates are real-mode network drivers loading in autoexec.bat. If you have a line reading Net Start, REM it out. This could also be responsible for the other problems to which you allude.

Q In DOS Prompt (in Windows Mode) why is it that when I type cd progra~1, or cd mydocu~1, the prompt says C:\Program Files\> or C:\My Documents>?

Nick Lee

A It is just being accommodating.

You can see both the short name and the long name from the DOS DIR command, but old 16-bit applications (e.g. File Manager) will only show the shortened version. Typing the long version inside double quotes (cd "Program Files") also works.

Q In your December '97 column you described how to create icons in Windows Paint. My problem is that VB 5.0 Pro refuses to believe that they are icons and displays a dialog box stating "Invalid property value". Why?

Andrew Rendle

A It's because they are not real icons. They are .BMP files rather than true .ICO files. Windows has the mechanism to display them as if they *were* icons but Visual Basic is more stringent and does not have this ability.

Q While playing DOS-based full-screen games, if the window key is pressed the start menu pops up and the game crashes. Is there any way to disable the window key action while running these DOS applications? The DOS property sheets that accompany each program shortcut let you disable other Win95 hotkeys, but why is the Window key not listed among them?

Mike Box

A Indeed, on the Misc page of the DOS shortcut (PIF) property sheet there are options for disabling various key combinations as well as the screensaver, so I think the answer to your second question is just that someone forgot. The answer to the first question is to run the game in MS-DOS mode, but you'll need to load whatever drivers and settings your CD-ROM drive, sound card, mouse and joystick need for real-mode operation.

Q When I go to change the system date/time in Windows, the months are displayed in French! The regional settings and keyboard settings are set up for English/British as far as I can tell.

Andi Hames

A Are you sure of the settings? The only way I can reproduce this is by going to Control Panel/Regional Settings and changing the language that appears above the map in the first, Regional Settings, tab. It should be English (United Kingdom), if you want British settings.

Q Is there a way I can change the Windows settings to show British spelling in "Color" and "Favorites"?

Peter Dantry

A Although you can rename, say, the Favorites folder, this won't affect menu items, toolbar captions, dialog boxes or Tooltips. Console yourself with the thought that Wordsworth, Byron and Longfellow used "favorite" and Shakespeare used "colour" and "color" at random. In his day, spell-checking meant verifying you had the toe of newt and eye of frog in the right proportions.

PCW Contact

Email Tim Nott at win95@pcw.co.uk or write to him c/o the usual *PCW* postal address (p10).

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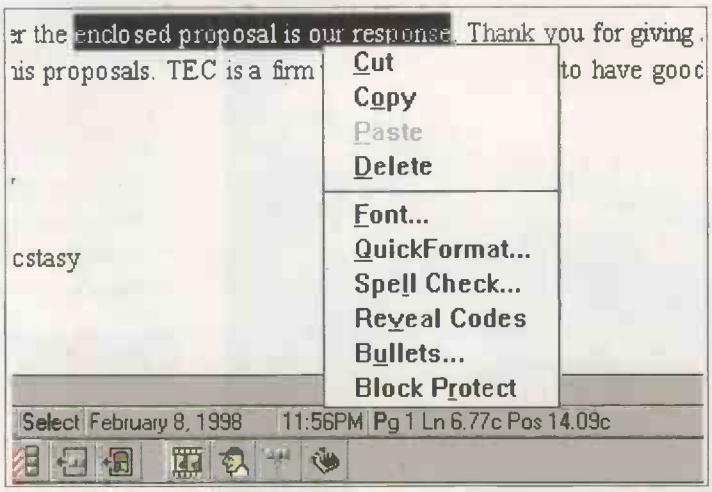
Copy cats

Panicos Georghiades and Gabriel Jacobs round off a triple dose of DOS under Windows magic with hints and tips, including the copying of data. Plus, a look at a new Corel suite.

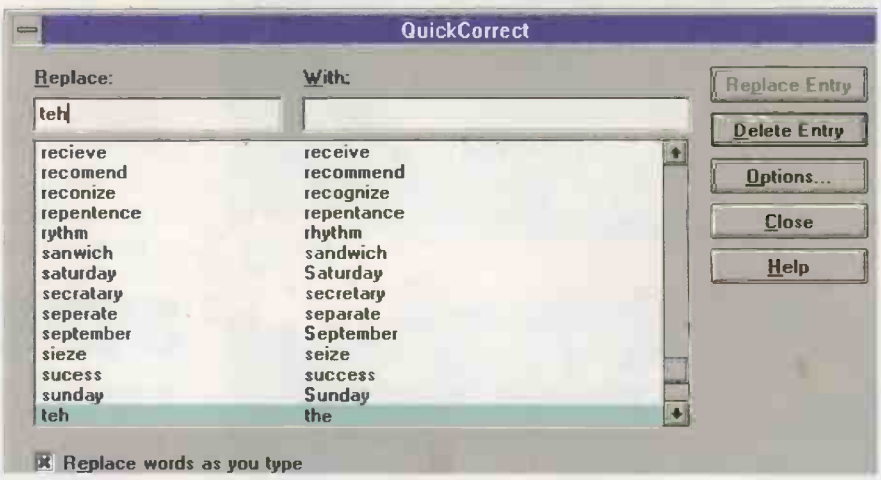
As well as answering a selection of your queries this month, we conclude our three-part mini-series on how to set up Windows to run DOS programs. And, you should check out some classic DOS games on our cover-mounted CD-ROM. We also take a look at an interesting brand-new release from Corel, for Windows 3.1.

We have examined the various settings in the PIF editor previously, so we will conclude with some hints and tips. It is handy to create multiple PIF files for your applications with different settings, depending on how you want to use them at certain times. You can use different start-up directories, say, where you keep different sets of data, or different memory and video settings. Or you may decide to have windowed versions you can copy from, and full-screen versions for faster work.

And while we are on the subject of editing settings, remember that it's so easy to use the Save command when you really mean Save As (that is, the new settings). So use the Save As command as soon as you start editing a file, before your mind gets too involved in what settings you should use!



The new Windows 3.1 version of WordPerfect has right mouse support and QuickCorrect features



Copying data

One of the advantages of running DOS programs under Windows is the ability to copy data to and from other applications.

The crudest method is available when you run DOS applications full-screen, either in Standard or 386 Enhanced mode. All you are allowed to do is dump the complete screen to the Clipboard by pressing PrtScr (on some PCs you might need to use Alt-PrtScr or Shift-PrtScr). You can then paste this to any other Windows application using Edit, and Paste. When you copy this way, the screen is copied as graphics.

A more flexible way becomes available when you run DOS programs windowed. From the DOS program's Control menu you select Edit, and Mark. You move the mouse inside the program's window and click and drag to select the area you want to copy. Next, you go back to the Control menu and select Edit, and Copy. This copies the selected area to the Clipboard. Finally, you can paste this into another application. In this way you can copy text or numbers. But you can't copy data back into a DOS application which is running full screen.

Pasting into another DOS program, or into the same DOS program in a different position (essentially a Move operation) can only be done when the program is running in a window, and therefore only when running Windows in 386 Enhanced mode.

Questions & Answers

Q I am using Windows 95 and a friend of mine is using Windows 3.1. He finds the startup logo of Windows 3.1 really annoying. Can we really change that logo to another, more meaningful one?

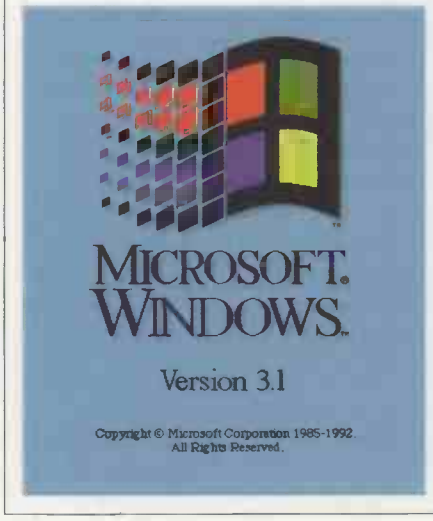
Chan Hoi Ching
h_c_chan@usa.net

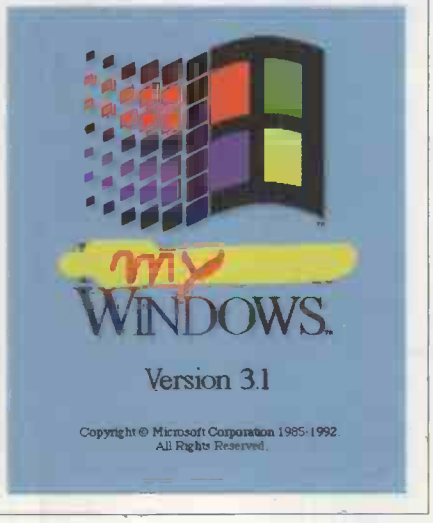
A Yes, it is possible to change the startup logo, but it is not a straightforward matter and we do not recommend it.

In the Windows\System sub-directory you will find a file named Vgalogo.rle which contains the default image. This gets embedded in another file called Win.com (in the Windows directory) when you set up your VGA card. You can edit Vgalogo.rle or create one of your own. You will need image-editing or paint software that can save to RLE (Run Length Encoding) format.

To avoid unpredictable results, use the same image attributes as those of the original file: 355 x 425 pixels and 16 colours. The file size of the original is around 27Kb. If your new file is much larger, Windows may not start, so it's an idea to make copies of your original Win.com (and the Vgalogo.rle) before you start.

After you have replaced the original Vgalogo.rle with yours, you then need to change the setting of your graphics card to the standard VGA setting and back again to the resolution at which you usually work, so that the new image will be embedded in Win.com.





You select Edit and Paste from the program's Control menu.

When copying aligned text from a DOS program into a Windows application, you might find that the alignment is lost due to the use of a proportionally-spaced font (for instance, Times Roman) by the Windows application. In this case, you have two choices: either insert tabs to re-align the text, or change to a non-proportional font like Courier.

DOS and the mouse

If your DOS program does not run with the mouse driver installed for Windows, and requires you to run a mouse.com, mouse.exe or similar driver, you need to ensure that the relevant mouse driver is loaded before the DOS program itself. This is best done by creating a little batch file which you use as the executable program in the PIF file (do not run the mouse driver program before you start Windows). Here's an example batch file:

```
cd\utils
mouse.com
cd\apps
dosapp.exe
```

While you are in Edit, Mark mode, mouse control is temporarily taken away from the DOS application and given to Windows, until you have selected an area to copy.

Running TSRs

Any Terminate and Stay Resident (TSR) program run before you start Windows will be made available to all DOS applications running under Windows. However, not only

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Questions & Answers (cont'd)

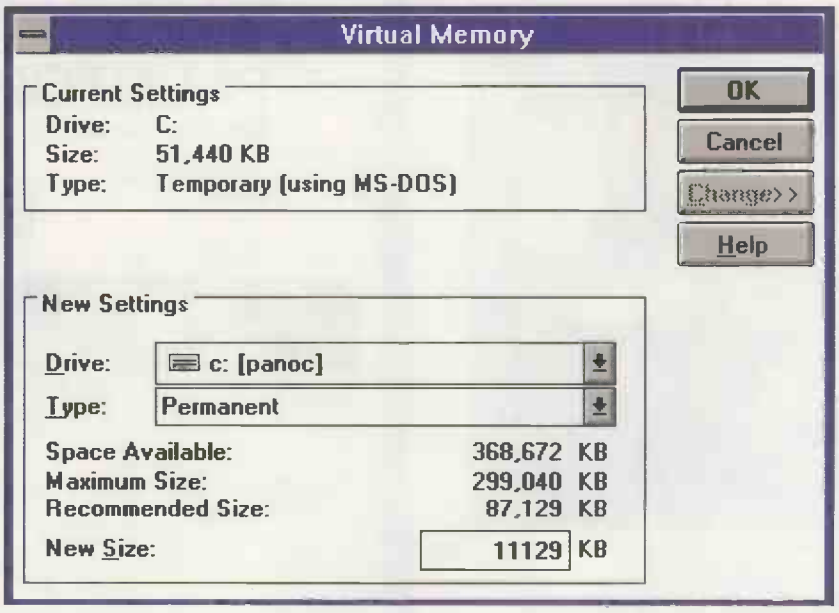
Q I have a Toshiba notebook with a 350Mb hard disk, so space may well become a problem. In the C root directory there is an enormous file of 11,976,704 bytes labelled 386spart.par. It has an exclamation mark on the file icon. What does this file do? Is it essential? I'd be most grateful for your advice.

Robert Newmark
rownew@compuserve.com

A This hidden system file (hence the exclamation mark) is your Windows permanent swap file, where Windows does its temporary work. The official advice is that you should never attempt to delete it yourself, although we once deleted it accidentally and, when it was automatically recreated, the deletion seemed to have had little effect. Anyway, it's far better not to.

If you need to make this file smaller, you should use the Control Panel's 386 Enhanced icon (click on the Virtual Memory button) to change the setting, either to a smaller value or to a temporary swap file. Permanent swap files use up the space allocated to them even when you are not running Windows, while temporary swap files use the space only during a Windows session and clear it when you exit Windows. Permanent swap files are said to give a faster performance.

Our experience is that they make little difference but we haven't tested this out on a large range of machines. The choice is yours.



Use the 386 icon in the Control Panel if you wish to change the settings of your swap file

might there be conflicts between the TSR program and Windows, but also TSR programs run in this way will take up valuable memory from other DOS applications running under Windows which do not need them. On top of that, they will also slow Windows down.

The best solution depends on the nature of the TSR. If it provides support for a particular DOS program, simply create a batch file which brings the two together on the lines of the batch file suggested above for a mouse driver. If the TSR program acts in a standalone way, create a PIF file for it, install it like any other DOS application, and let Windows multitask it.

Note that you should avoid using hot-key combinations to initiate TSRs. If you have to, make sure they do not conflict with any Windows key combinations.

Corel WordPerfect

We have had the chance recently to take a look at a brand-new and very interesting release from Corel, specifically for the Windows 3.1 market.

Yes, it's three years since the release of Windows 95, and Windows 98 is on the horizon, but judging from the number of letters we receive from readers it seems there are still many people out there who prefer Windows 3.1. And it is hardly news that Windows 3.1 users have been ignored for the last three years because every major software release has been for Windows 95.

Well, Corel has spotted a market in those ignored users and has just updated its WordPerfect-based Office Suite for them. This version of the WordPerfect Suite not only adds functionality available in the Windows 95 version (apart from features related to the operating system) but also contains one of the richest arrays of programs you will find in any office suite. And with competitive software not having been upgraded, it is certainly now the best choice on the market.

Just listing the known names of programs contained in it can make your mouth water, and if you add up their individual prices (easily over £600) it has to be a good deal.

You get WordPerfect 7 (word processor), Quattro Pro 7 (spreadsheet), Paradox 7 (database), Corel Presentations 7 (presentation software), 10,000 clipart images, and 1,000 fonts and 200 photos. You also get CorelFlow (flowcharting program), Time Line (project management and scheduling), the Corel Address Book, a rhyming dictionary, the American Heritage Concise Dictionary, Sidekick 2.0 (personal organiser) and Dashboard 3.0 (a task automation launcher). Since one of the main features of this release is integration with the internet, you get Netscape Navigator and Envoy (a workgroup and net electronic publishing tool).

Some of the functions which have been upgraded are internet connectivity, Spell-as-You-Go, Format-As-You-Go, support for new file formats, right mouse button support and other similar stuff.

Could this be the first of some new major releases for Windows 3.1? Other software producers will no doubt be carefully watching how Corel's product fares — and we will keep you up to date on the latest developments.

PCW Contacts

If you have any queries or Win3.1-related topics to discuss, contact **Panicos Georghiades** and **Gabriel Jacobs** at win3.1@pcw.co.uk

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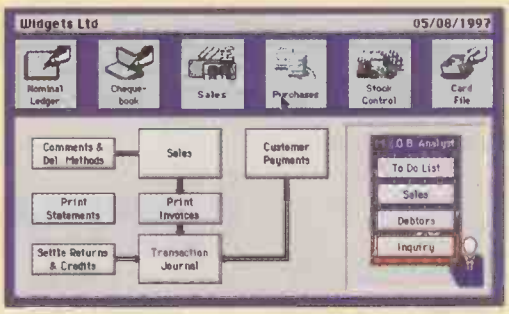

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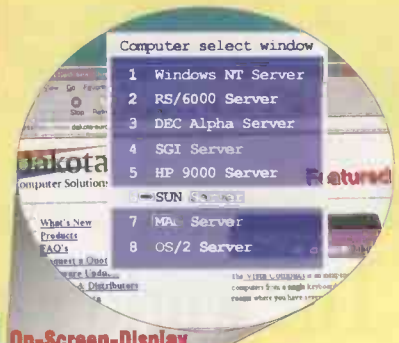

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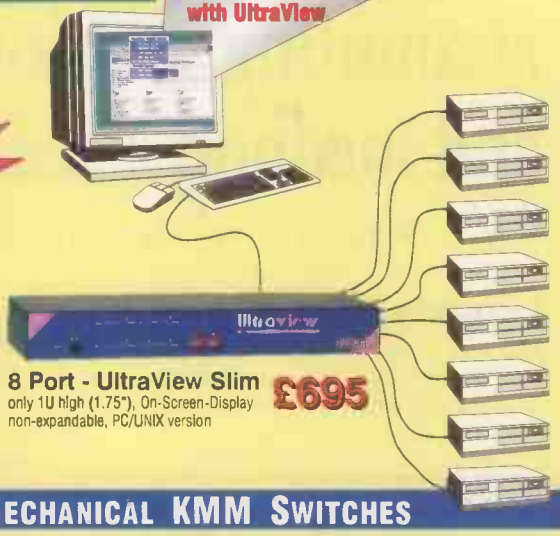

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Cleaning up your act

Or, to be precise, your Registry. The new RegClean hunts out any faulty entries for fixing or deleting. It's not foolproof though, says Andrew Ward, so take care when you use it.

A few readers have asked where they can find the RegZap program I mentioned in the March issue. Ah, well... It was actually on the cover disc. My fault for not saying so within the article itself. If you missed that issue it's also available from CIX, if you have a CIX account, at cixfile:windows/files_32:regzap.zip.

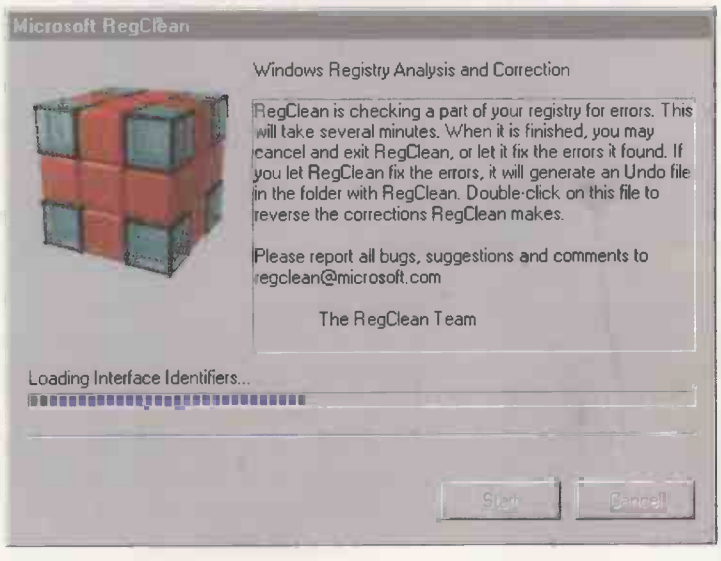
This month there is another treat for you. A new version of Microsoft's registry cleanup program, RegClean, which (finally) works with Windows NT 4 Service Pack 3. Called RegClean 4.1a (build 7364.1) it was released by Microsoft on 30th December 1997. It's on our cover disc, and you can also get it from CIX at cixfile:windows/files_32:regcln41a.zip.

RegClean runs in only a few seconds on my machine but Microsoft warns that it could take up to 30 minutes to complete its working. Unfortunately, unlike RegZap, RegClean doesn't tell you what errors have been found nor give you a chance to select those you'd like fixed; it just fixes everything (or not) — you can always press cancel. But what it does do is to create an undo file, so if something goes awry after running RegClean you can always restore the previous situation. This is just as well, because Microsoft confesses that on rare occasions RegClean will actually cause more problems than it solves.

Remember that neither RegZap nor RegClean can fix a corrupt registry: all they can do is to remove faulty entries from a working registry. And both programs need to be run more than once until they no longer report any errors.

RegClean should now work with Microsoft Windows NT 3.51 (with Service Pack 3 or later), Microsoft Windows NT 4.0 and Microsoft Windows 95, and with NT 5.0 and Windows 98 as far as I can tell.

There are problems you might encounter when trying RegClean. If you get the error message "REGCLEAN.EXE is linked to missing export OLEAUT32.DLL:421" then run the file OADIST.EXE that came with RegClean (if you are using NT 4.0 or Windows 95). Otherwise, check the read-me file for instructions.



Cleaning out dodgy registry entries the Microsoft way

Even faster web browsing

A while ago I suggested using a local cacheing-only DNS server in order to speed up web browsing, by saving on the number of DNS lookups that have to take place across the link to your ISP. A problem with this method is that the cache is not persistent across reboots. Paul Kane has written in to put forward an alternative method of achieving the same ends.

Before the Domain Name System ever existed, you had to set up mapping between host names and IP addresses manually, in a file called HOSTS. This file is still actually scanned today even though, of course, it isn't usually populated; a DNS server is used instead. But you can populate it yourself manually, for example, with an entry like this:

```
194.72.64.86     www .pcw.co.uk
```

In future, when you type www.pcw.co.uk into your web browser it will fetch the IP immediately from the local hosts file instead of forcing a DNS lookup.

There are two obvious problems with this. One is that it's a pain to have to create these entries yourself: clearly, any potential timesaving by avoiding the need for DNS lookups will be wiped out by the pain of manually setting up the file. Secondly, what if someone's IP address changes?

Fortunately there's an answer to the first problem, contained in the file LGN111.EXE on this month's cover disc. Legion — The Hosts Master will look up the IP address for a given URL and place it in the file for you. In fact, it will go one better than that. You

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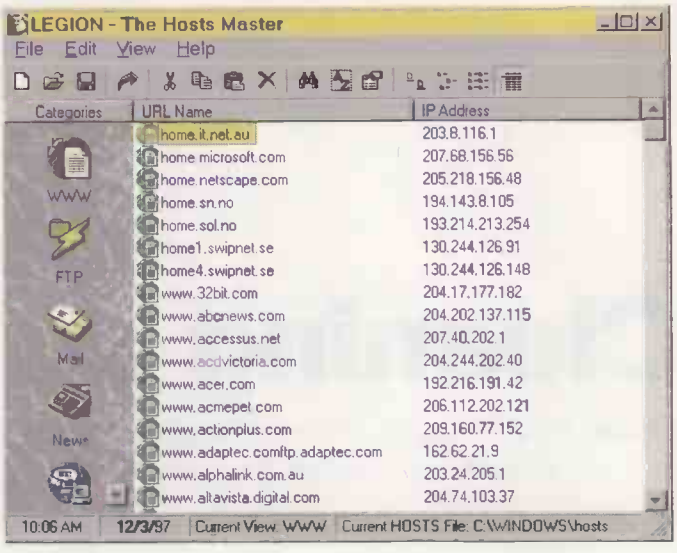


A natty program to maintain your local HOSTS file

notice. It could just be that my ISP's DNS servers are nice and fast, and that having an ISDN line makes a difference, too. The documentation for Legion talks about having to wait seconds for DNS lookups, but that's certainly not the case with BT Internet.

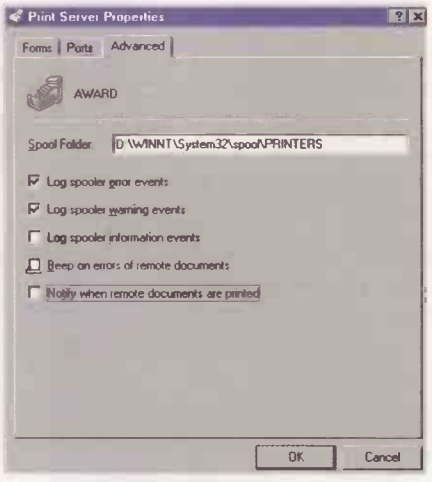
can get it to trawl through a URL database (such as the Microsoft Internet Explorer favourites folder) and look up all the IP addresses automatically.

It needs to carry out this exercise online, of course, but it's a hands-free process and consumes very little CPU effort so you can get on with something else for the few minutes it takes (just how long that is depends, I suppose, on the number of bookmarks you've saved).

You'll have to work out for yourself whether, or when, you need to repeat the process depending on how often you add new bookmarks and how much you use them. You can also import the Legion defaults: these populate the HOSTS file with a few commonly-used values that could come in handy.

But really, I've gone off the idea of these various speed-ups. After all, isn't the whole point of the new networked computing paradigm that we offload complexity from our own machines to network services looked after by someone else? So why load up your hard drive, memory and processor with software that you need to install, configure and maintain, to duplicate a function that is already being quite happily executed by your ISP's DNS server? The additional time invested surely cannot be justified by the saving of the odd half-second here and there on DNS lookups (but remember that a DNS lookup is performed for every single page when you're web-browsing).

Nevertheless, I am giving Legion a try. I've imported all my IE4 favourites and have added the addresses of the mail servers I use most often. But after a few days I'm not sure that it makes enough of a difference to



Setting the folder used for print spool files

Printer folder

John Howells quite rightly points out that fiddling with the registry is to be avoided whenever possible, and explains how the location of the print spool folder can be modified without registry manipulation.

Open up the printer folder, select File/Server Properties, and then under the Advanced tab you can change the entry in the Spool Folder text box. There's no Browse button so you're on your own with typing mistakes. Thanks to John for that tip.

Double the trouble

Andrew Butler writes in to observe that the price of multiprocessor motherboards has fallen quite dramatically. But he very sensibly wants to know whether there's any point in having more than one processor: will Windows NT support it, and will programs run any faster?

p312 ➢

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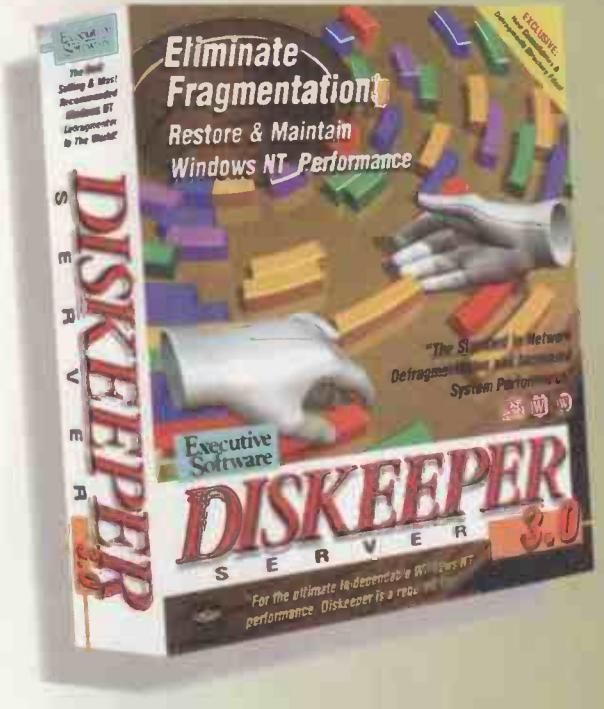

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3 If you drive, do you go as fast as the law allows?	**P** = *Mostly* **C** = *Never* **W** = *Always*
4 If there's a ladder in your way, do you walk under it?	**P** = *Mostly* **C** = *Never* **W** = *Always*
5 Do you forget to back-up your files regularly?	**P** = *Mostly* **C** = *Never* **W** = *Always*
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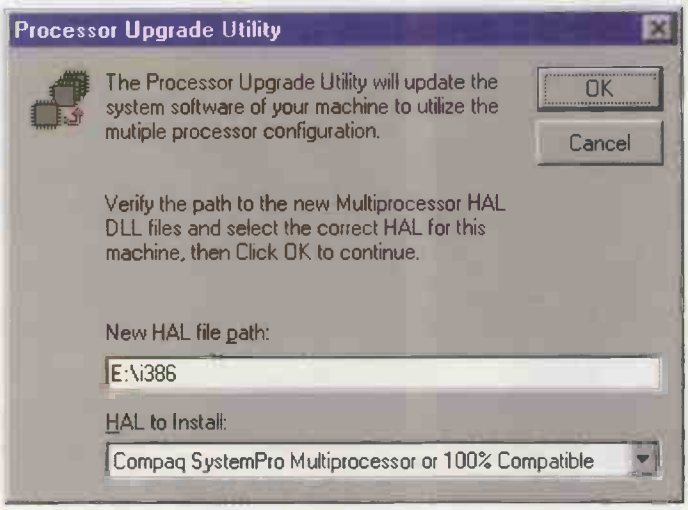

Upgrading to a multiprocessor system made easier

Windows NT certainly does support multiple processors and from version 4.0 onwards, four-processor support is included as standard (previously, a special HAL was required from the system manufacturer) with Windows NT 4 server, and two-processor support with Windows NT 4 workstation.

There are two sorts of multiprocessing. With asymmetrical multiprocessing, different types of task are assigned to different processors which can result in unbalanced processor use. Windows NT offers symmetric multiprocessing in which any task can be assigned to any processor. While more difficult to implement, you get better processor utilisation.

As to whether programs will run any faster, the answer is that it depends. As a rule of thumb, for someone running just one application on a desktop machine there won't be much (or indeed, any) gain unless the application is specially written to be multithreaded. But if you are running multiple applications or a multithreaded application you can get significant gains, and may well be better off with two slower processors than one fast one — and save some dosh into the bargain. Even so, you'll only see gains if your applications are processor-bound. If it's the hard drive slowing things up, then having two processors waiting on the hard drive instead of one doesn't help anything (except Intel's profits). There's little point in even considering a multiprocessor system if you still use IDE hard drives, for instance.

Where the multiprocessor problems start is if you take the apparently sensible route of buying a dual-processor motherboard and then install one processor with a view to adding the second later. Windows NT has two different kernels, one for single-processor systems and another for multiprocessor systems.

When you first set up Windows NT, normally the single-processor kernel will be the one installed (at some point during the setup program, the kernel type is reported). Thus, to use a second processor you'll have to completely reinstall NT or run a program called UPTOMP that comes with the Resource Kit.

UPTOMP copies the necessary bits and pieces to upgrade from single to multiprocessor kernel. If installing it manually from the Resource Kit CD, be sure to remember to copy the file UPTOMP.INF and to find and read UPTOMP.TXT. And after having installed NT or run UPTOMP, you'll have to apply or re-apply the latest service pack of course. Before playing with any of this, it would help to install a spare working copy of NT on your hard drive, with which you can boot if all else fails. Ideally, you should anyway have this to hand at all times.

Fortunately, you don't need to worry about restoring the system to the uniprocessor kernel if, for some reason, you should subsequently have to temporarily remove the second processor. The system will still work, albeit slightly more slowly than if you had downgraded to the single-processor kernel. And if you want to, you can start up a multiprocessor system using just one CPU by editing boot.ini to add the /onecpu parameter to the start-up line.

And a final note: some of the Windows NT hotfixes which appear between service packs affect the kernel. Make sure you apply the one that is appropriate to the kernel you are using — either the uniprocessor or multiprocessor version — because the hotfixes are not intelligent enough to stop you going wrong here, and if you get it wrong you'll be stuck with an unbootable system.

New folder views

Matthew Willard poses a question to which I'm afraid I don't have the answer; perhaps someone else can help him out? He would like the default view for a new folder to be Detail rather than Large Icon. Apparently, it used to work that way for him but has suddenly reverted to Large Icon. I have IE4 installed here and the default view of a new folder is also Large Icon and I can't find any way to change it. Of course, once a folder has been created it is possible to change the view applicable to that folder, but it's the default view for new folders that Matthew is after. If anyone can help, please contact me by the usual means.

HP OfficeJet Pro 1150C

Lovers of the Hewlett-Packard OfficeJet Pro 1150C will have been frustrated and perplexed that when this product was launched, there were no drivers for Windows NT 4. The reason for this apparently extraordinary omission is explained by a difference between how the US and Europe view Windows NT. Over here, many people (like me) have always seen NT as an application operating system, be it for desktops or servers, but in the US it has until recently been viewed purely as a potential replacement for network file and print services hitherto offered by Novell-powered fileservers.

At long last, HP has woken up to the fact that NT can also be used to power desktop machines and, in Europe, has been quite widely adopted for this task. Thus 1150 drivers are now available both for scanning and printing, but the compressed files available on the web are an incredible 7204Kb and 8,264Kb respectively. While installing the drivers you need 100Mb of free space on the hard drive and once installed they will occupy 60Mb. Of course, the download time is also considerable.

The drivers are available from officejet-support.com/oj1150c/drivers/ntdriver.htm. Unfortunately, these drivers include neither the OCR software nor the picture-editing packages that are supplied on the Windows 95 CD-ROM.

PCW Contact

Andrew Ward can be contacted at NT@pcw.co.uk or write to him at the usual *PCW* address (p10).

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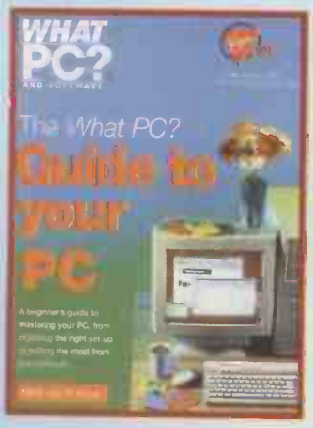

Written by Rob Young, author of *The MIDI Files* and the *UK Internet Starter Kit*, also available from Prentice Hall

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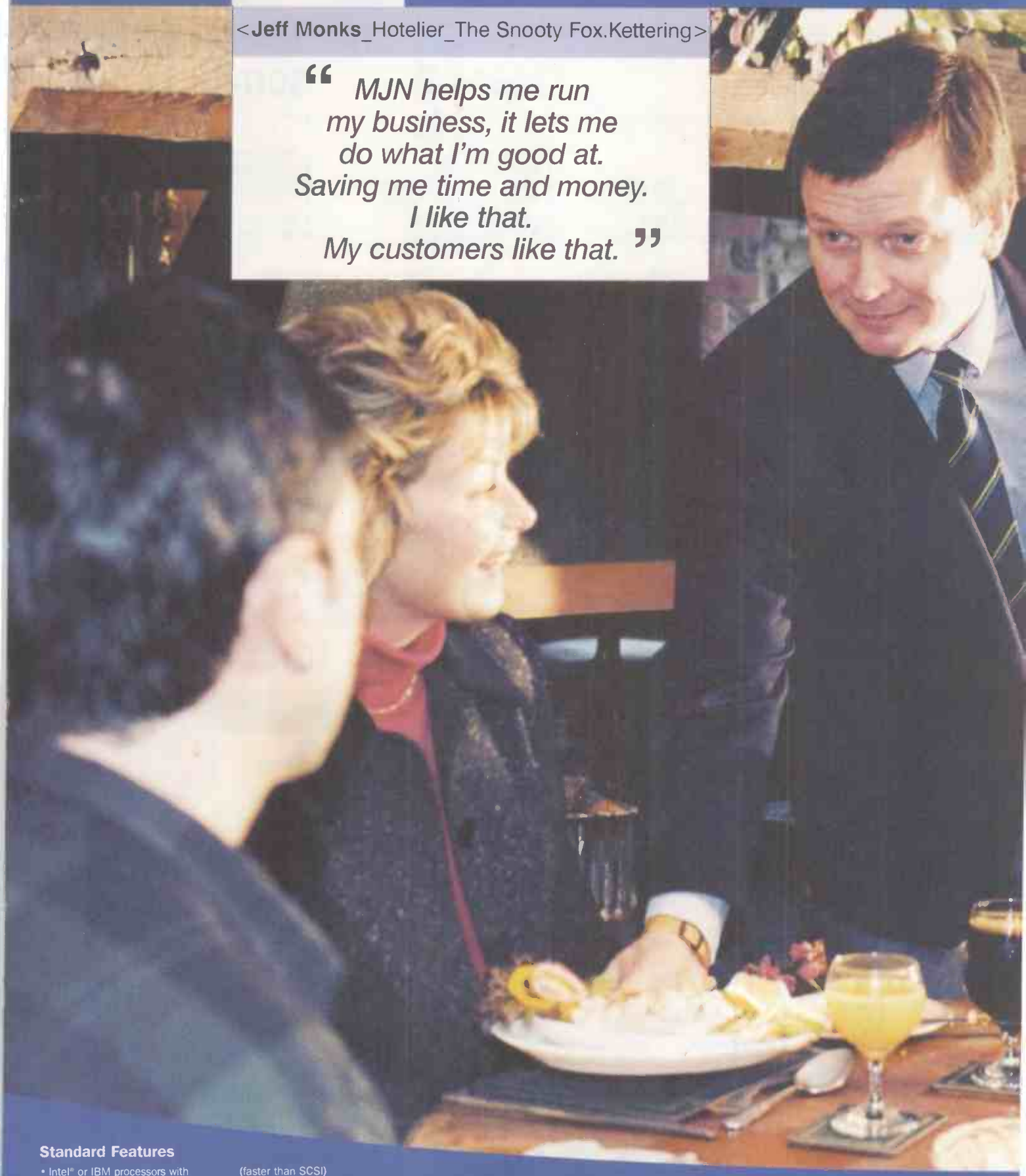

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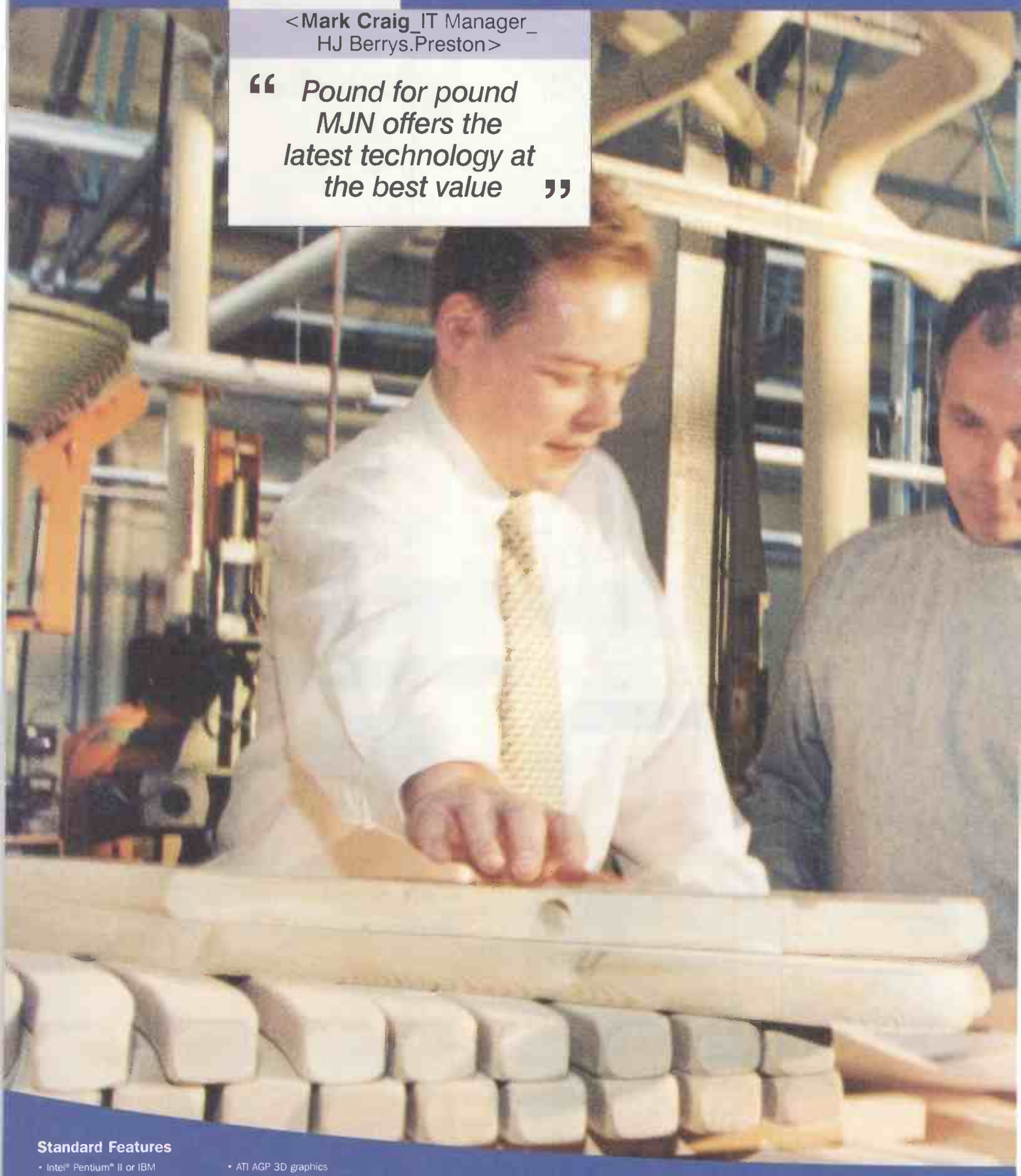

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Tar for the memory

Having explored the simple use of tar, the tape archiver, Chris Bidmead shifts up a gear to show you how to access individual files on a multi-archive tape and craftily labels a tarball.

Last month we explored the simple use of tar with a local device, like this:

```
tar cvf /dev/st0 <dir>
```

which backs up <dir> to the local tape device /dev/st0.

If you address the tape as /dev/st0 it rewinds to position 0 every time you try to talk to it. I found that addressing the tape instead as

```
/dev/nst0
```

(the "n" standing for "non-rewinding") didn't disturb the current tape position.

When you write an archive to /dev/nst0 a filemark gets written at the end of the file and the tape stays in that position. If you immediately write another archive it won't overwrite the first and you'll end up with two separate archives on the tape. Repeat this exercise n times (and with a 24Gb device like the HP24DAT, n can be very large!) and you have a multi-archive tape.

So how do you get to individual archives on such a tape? One way would be to read out each archive in turn until you get to the one you need. You don't actually need to restore each archive; it's enough just to list them, thus:

```
tar tf /dev/nst0
```

So, to get to the fifth archive on the tape for example, I simply run the above command line four times, remembering to use /dev/st0 for the first command to ensure I start at the beginning of the tape.

There must be a better way of doing this. And, of course, there is. But not within tar. To position and generally manipulate the tape you run a special utility called mt. With mt you can forget about /dev/st0 altogether. Any time you need to rewind the tape you simply give the command:

```
mt /dev/nst0 rewind
```

In fact, while we're about it, let's dispense with the need to mention the tape device by name each time. Now that we're just dealing with a single device we can set a shell variable:

```
TAPE=/dev/nst0 ; export TAPE
```

to tell both tar and mt to use this as the default device. Mt can move your tape directly to any particular point on the tape. For example:

```
mt /dev/nst0 seek 2210
```

will move the tape directly to block 2210. (One complication is that blocks can be

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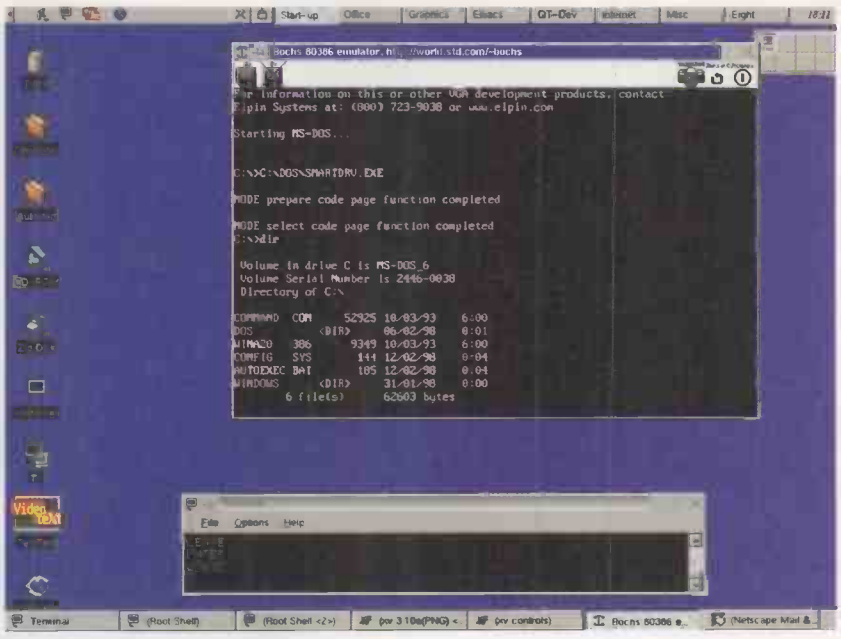
The Bochs x86 emulator: slow but sure

Several of you have picked up on the suggestion I relayed from reader Derek McKee <dmckee@cix.compulink.co.uk> to check out the Bochs x86 emulator at www.world.std.com/~bochs. Chris Liddel <bcl003@baseng.commm.mot.com>, a software engineer with Motorola's Radio Products Group, is impressed with the technology but warns not to expect lightning performance. He writes: "I had to leave the Windows 95 installation running overnight — it is very, very slow…".

Aidan Boran <aboran@lucent.com> confirms this. He writes: "(1) Bochs is very, very slow (even on a 200MHz Pentium with 64Mb). (2) No mouse support. (3) Installation took a whole weekend…".



Many thanks to Simon Hawketts <simon@shawkett.nildram.co.uk> who took the trouble to send me this screenshot of the Bochs x86 emulator running a DOS window inside the latest Beta 3 build of the KDE desktop

Book review — *UNIX Unleashed: Internet Edition*

I suppose the publisher didn't want to call it *UNIX Unleashed, Volume 2* because that would have made it a hard sell to someone who hasn't already got volume one. This is a pricey product, even for a hardback of over 1,000 pages. But then again, if its content saves you half a day or whatever sorting out some problem, the book would easily pay for itself.

I wasn't quite clear about this volume 1/volume 2 business when I first got the book — the misleading title seems to suggest that it's a second, updated edition — and I wondered why so much of the basics of UNIX were missing. The answer is that they're in volume 1, the proper title of which is *UNIX Unleashed: System Administrator's Edition*. In fact they're not missing because the whole of the original book is supplied on CD, together with a complete electronic version of this latest edition.

These HTML pages are probably the most useful thing about the publication. The contents of both books ranges across a number of different Unices, including AIX, HP-UX, Silicon Graphics' IRIX and Linux. Unfortunately this makes the coverage rather shallow, despite both books being rated intermediate/advanced by the publisher, Sams.

There are also some strange omissions. For example, given the title of the second book I would have expected to have found at least a mention of, and perhaps even a chapter about, Apache, the most widely used (and incidentally, free) web server. The word "Apache" doesn't even appear in the index — although oddly enough, the software is included on the CD.

As well as the text, the CD also contains complete installable versions of Linux and FreeBSD, together with a number of freeware and shareware utilities. This is very handy if you don't have a net connection, although the software provided on the CD tends to be one or two versions behind what you'd get if you fished for it yourself. The Linux, for example, is RedHat 4.2 and at the time I'm writing this you can either download RedHat 5.0 from www.redhat.com or (recommended) send off a couple of quid to The Linux Emporium <www.polo.demon.co.uk/emporium.html> and get the CD by snail mail.

This does rather raise the question of what, exactly, imposing tomes like this are for in these days of internet access. For example, on page 975, the book goes out of its way to tell me that the current version of Netscape is 3.01. At the time I'm writing this, Netscape happens to be up to version 4.x but things move so fast these days I wouldn't even dare make an assertion about "the current version" of anything even in this magazine, let alone in a hardcover book with a shelf life of at least a year. Details like this really only belong on a frequently updated web page.

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different sizes, so for now I'm just sticking to the default size and ignoring this point. And things work fine.)

Now you can use mt tell to report the current position (in terms of the number of blocks from the start of the tape).

Similarly, mt eod will move to the "end of data" which is the place to write the next archive without overwriting the existing tape contents.

Labelling archives with GNU tar

Here's a simple manual system I devised for handling multiple tape archives. It uses a feature of GNU tar we haven't mentioned yet — the ability to attach meaningful labels to archives. So, for example:

```
tar cvV "Total Backup" /
```

will backup all your files below the root and label the archive "Total Backup". V stands for volume, the old parlance for a tar archive, which you'll also find is sometimes called a "tarball".

• *Here's a little tip: It took me ages to realise that there's no point labelling a backup "Backup" — of course it's a backup. You can put the label space to better use by inserting the current date using command substitution:*

```
tar cvV "`date` Total" /
```

Now, we know how to position tape and to write and read archives. What I like about this is that we're working at the command line, taking control at a low level which lets us understand exactly what's going on. I also relish the fact that everything we are

The path to Enlightenment

A number of readers, including Glen Grey <slaine@enterprise.net>, David Coulson <root@djcoulson.demon.co.uk> and Geoff Roughton <Geoff@sharron0.demon.co.uk>, have been urging me to cover their favourite X Window Manager, Enlightenment. If you are artistically inclined, it opens up all kinds of possibilities, as you can see from this pyrotechnic desktop borrowed from Enlightenment guru Carsten Haitzler's web page at www.rasterman.com

Questions & Answers

■ *This month I have received a whole list of questions from reader, Geoff Wexler* g.wexler@open.ac.uk

Q I'm getting much correspondence about the superior reliability of Linux/UNIX over any version of Windows. Do you agree?

A No question, Geoff. I wouldn't bother doing this column if I thought otherwise. Actually, it's not just reliability that's the issue. UNIX has an entirely different philosophical approach to the question of what an operating system is for, but that's a longer story.

Q I might be buying a new computer soon and am tempted to start by partitioning part of the hard disk and reserving a part of it for UNIX. Do you think that would be sensible? If so, could advise me how to find out more?

A In answer to the first part of your question, yes, and it's very easy to do these days, now that 2Gb drives seem to be the entry level. (My first hard drive was 3Mb — yes, that's megabytes!) Windows 95 is still going to leave you plenty of room for an extra, say, 800Mb, which is fine for a full Linux installation.

Visit www.linux.org and follow the documentation link there (it's embedded in text) to the HOWTOs. There are several mini-HOWTOs on running dual- and multi-boot Linux systems. At www.linux.org/help/projectguide you'll find several online books including "Installation and Getting Started Guide" (recommended). Also visit www.ora.com and find out how to get hold of the hard copy of "Running Linux".

You also ask me "Is it a steep learning curve?" I never know what this expression means. Literally, a steep learning curve would mean that you learn quickly, assuming the usual (horizontal) position of the time axis!

To be frank, you probably won't have the impression of learning quickly with UNIX. It's nearly a 30-year-old operating system and a lot of wisdom has accumulated around it and within it.

Documentation is freely available by the ton, but it's sometimes contradictory and some of it is out of date. Windows gets you started more quickly and manages to give you the impression of learning fast, but in my opinion the knowledge you acquire is shallow and doesn't help you out of a fix when things go wrong. Acquiring UNIX knowledge tends to be a slower burn, but things fit together better and you get more insight into what goes on below the water line. Eventually, this all adds up to a sense of understanding and control that you'll never achieve with Windows.

Q Can you type Greek letters and maths symbols in UNIX?

A Yes. UNIX has been used by scientists and academics pretty much since its inception. It's the home of TeX, a pioneering computer text compositing system (see, for example, sunsite.doc.ic.ac.uk/packages/TeX) and there are many other approaches to the same task available under UNIX.

learning at this level is platform, hardware and manufacturer independent.

Next month we'll move up to the next level and assemble what we've learned into a simple shell script.

ISDN routers and IP-Masquerading

Your email to me shows much more interest than I'd dared hope in my rather flash ZyXEL ISDN router (*PCW*, February) and the fast internet connection it provides, pretty well automatically, to all the machines on my network.

I've dared suggest that a dedicated router like this, with a basic street price of what one used to pay for a decent modem a year or so ago, renders obsolete the complexities of a dedicated Linux machine with IP-Masquerading.

Reader, Richard Oxborrow <richard@micrologic-ltd.co.uk> is among those arguing that I'm being too simplistic about this. He's taken the trouble to put up a helpful web page on setting up a Linux machine as an ISDN router, at www.micrologic-ltd.co.uk/linux. Thanks, Richard.

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Email **Chris Bidmead** at unix@pcw.co.uk

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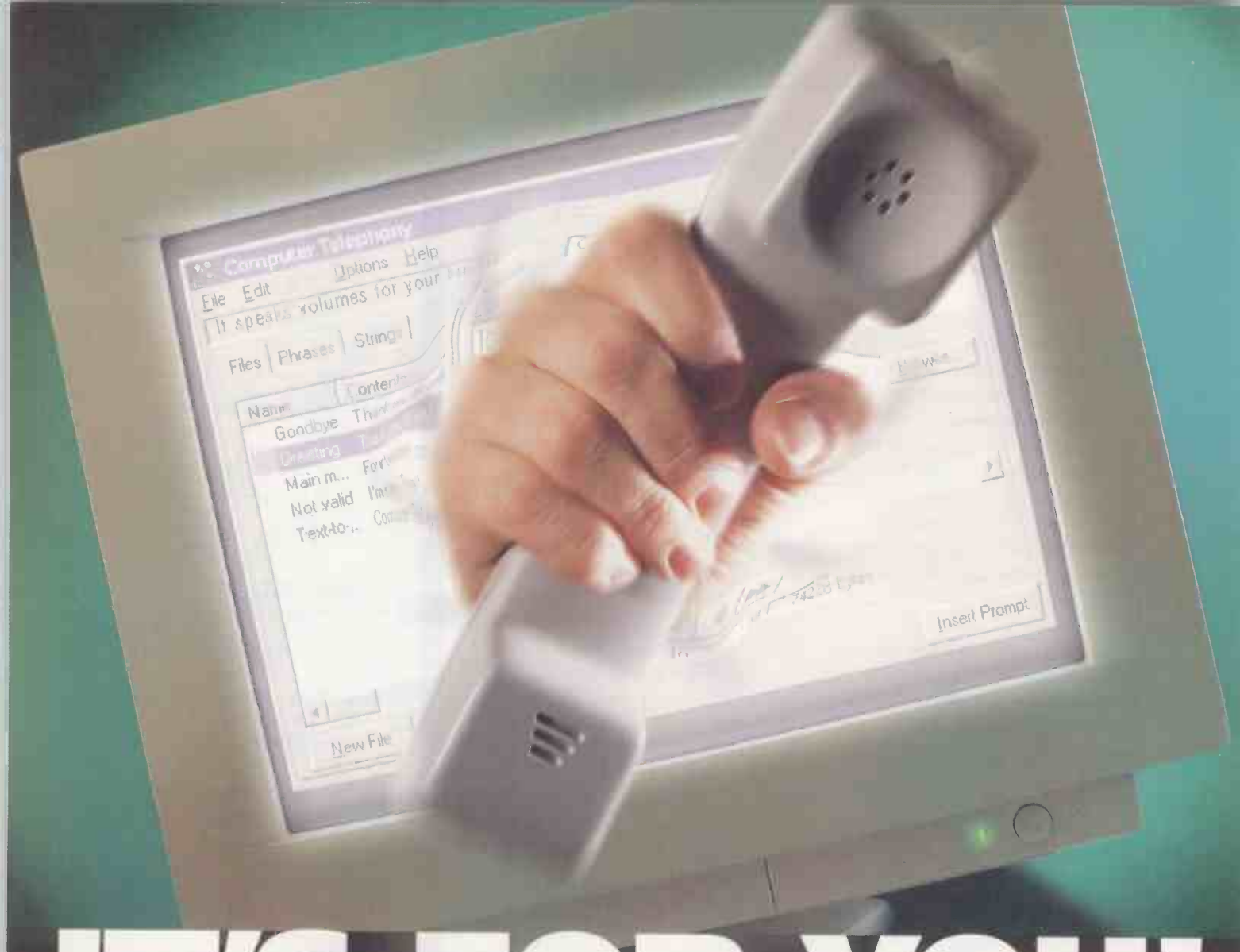

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What a **performance**

Terence Green takes a look at performance perks or perils when changing from Windows to Warp. He opens up advice on locked files and considers whether it's good to talk on the net.

Lots of readers write to say that they are running Windows 3.1 or Windows 95 and would like to upgrade to Warp. Many readers are running on older 386s and 486s with low memory configurations and this obviously raises some doubts as to whether they'll find performance to be the same, better or worse with Warp installed.

Paradoxically, the Warp 3 system kernel isn't as highly tuned as Warp 4 but the former generally runs in less memory because users have fewer bells-and-whistles system services to add. WarpCenter is handy but it adds to the memory requirement, as do background graphics and other user-interface improvements. For more information on the subject of performance tuning, look on IBM's Warp web site for Warp 3 and Warp 4 tuning papers (Fig 1).

Justin Megawarne wanted to know whether OS/2 Warp 3 would run on his 486SX2/50 with 4Mb RAM and a 270Mb hard drive. Yes, it will. Warp 3 calls for 35Mb to 50Mb of free disk space and the Bonus Pack, which includes the Internet Access Kit, needs another 30Mb.

One of the first points to note is that Warp 4 requires a 486 processor running at 33MHz or better, so if you have a 386 or even a 386SX you will have to be content with Warp 3. Although it is discontinued it's still possible to find old copies, even shrink-wrapped and boxed, by searching through classified ads online and through the MicroMart section of *PCW*.

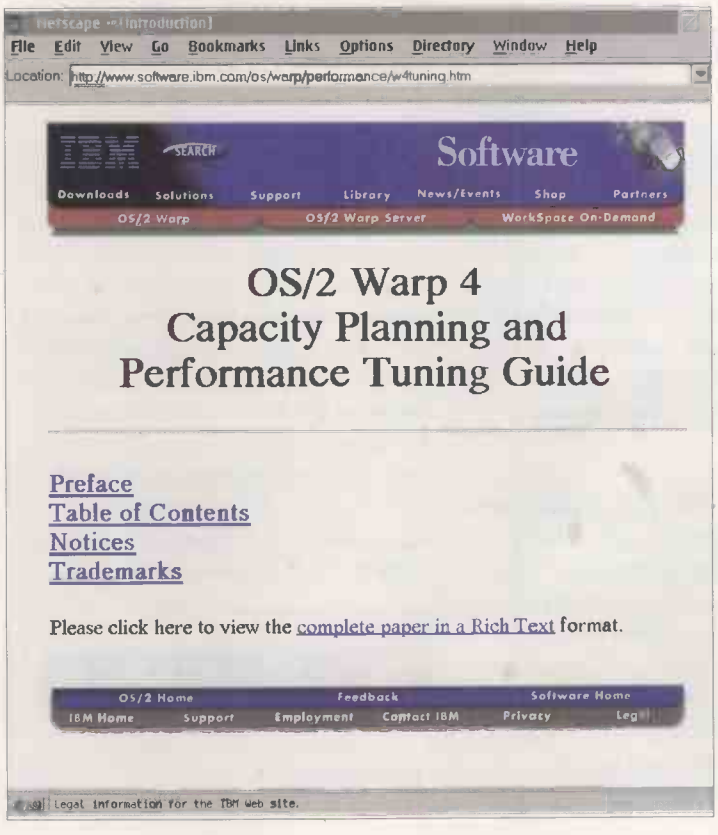

Fig 1 Warp 4 tuning information can be found at www.software.ibm.com/os/warp/performance/w4tuning.htm

Warp benefits 486

A good point was made by Tony Rogers, who says the performance benefit Warp has over Windows 95 is less pronounced on a Pentium whereas with a 486, on which he loaded Warp, there was a marked improvement. Tony thinks this is due to the Warp kernel and I would agree with that in the case of the base operating system. It seems self-evident to me, having used both Warp and Windows 95 for years, that an OS/2 kernel is more reliable and efficient than a DOS kernel.

The situation changes once you begin to add applications and extra services such as networking and internet access. At this point, memory and swap space on disk becomes more important than sheer processor speed, although a Pentium will always have an edge over a 486. Operating systems' blurbs always post low minimum RAM requirements because back in the dark ages of two years ago, memory cost ten times as much as it does today. The point to bear in mind is that minimum memory refers to the least amount of RAM that will support the base operating system. In other words, once the OS is running you can look but don't touch!

More memory

It always pays to upgrade your memory. The 30-pin SIMMs that fit most 386 and 486 PCs aren't quite as cheap as Pentium RAM, and the price dropped more slowly, but they're a quite reasonable investment

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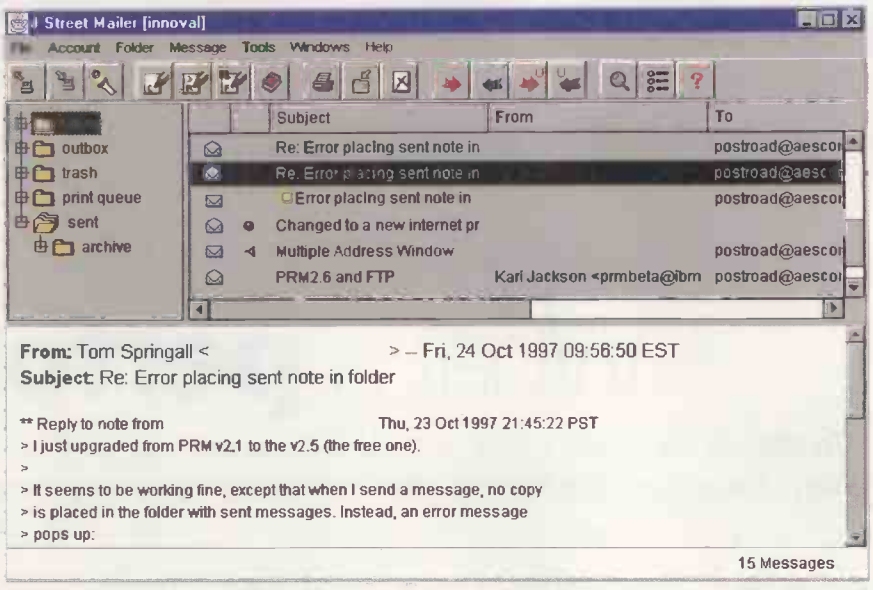

Fig 2 Java email: J Street Mailer from the people who brought you Post Road Mailer

now if you intend to continue using a 386/486 for the next year or longer.

The minimum memory requirement for Warp 3 and Warp 4 is 4Mb RAM but this figure refers to the base operating system only. It needs to be adjusted upwards according to the features you use. For example, if you run Warp 3 or 4 and run a word processor and nothing else, you can get good performance with some simple system tuning. As soon as you start adding services you bump up the amount of RAM in use, and if you don't have enough the swapfile comes into play.

Take internet access, for example. The TCP/IP stack in Warp needs between 4Mb and 6Mb just to sit there in memory waiting for you to go online. Add that to your 4Mb base requirement, and a 386SX running the Internet Access Kit needs at least 10Mb RAM to avoid swapping.

Due to design, Warp will always swap regardless of how much RAM you have, but the aim should be to match the real RAM requirements of your "working set" as best as possible with a combination of RAM and swapfile to reduce excessive swapping.

Internet phones

AC Littlejohn has written to me asking about internet phones. I'm not really up on the subject, having been previously put off by poor quality, so I guess I need to try harder. If any readers have suggestions...

My own feeling is that Java is the most likely candidate for new web applications for OS/2. Thus far there is the AOL Instant Messenger for Java (available from Netscape's site) and ICQ for Java (in beta).

Java emailer

As I was writing this month's column InnoVal released the first beta of its Java emailer, J Street Mailer (Fig 2) at www.innoval.com. I haven't tried it yet, but it's a sign of the direction in which web applications for OS/2 Warp are heading.

I see loads of OS/2 users in the newsgroups with ICQ pager numbers now.

There still seem to be some problems but there's a new version of Java 1.1.4 for OS/2 and an updated Netscape Navigator for OS/2 that supports it. I'll be trying these out, along with ICQ Java which you can find at www.mirabilis.com.

Locked files

Chris Potts had a problem with locked files when trying to upgrade WordPro96 for OS/2. The upgrade requires a number of files to be re-named including WORDPRO.EXE which resolutely refused to be renamed, claiming to be "in use" despite all running applications having been closed down. The usual way to defeat the problem of locked system files, and files that reference DLLs which are housed in one of the paths named in the CONFIG.SYS, is to boot the system from floppy disks so as to bypass the system CONFIG.SYS before re-naming the file.

PCW Contact

Terence Green can be contacted by post via the usual *PCW* address (p10) or by email at os2@pcw.co.uk

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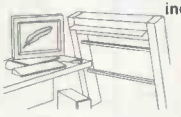

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Ruler rules, OK

Tim Nott's bluffer's guide to tinkering with those tiny ruler buttons will set your documents on the straight and narrow. And, how to auto-open and export multiple WordPerfect files.

Yes, it's that thing with the tiny little buttons that are almost impossible to get hold of and which you can never remember what they do. So here's a quick seven-point bluffer's guide to rulers:

1. The little square at the left of the ruler toggles between left, right, centred and decimal tabs. Choose your tab then single-click on the ruler to place it. You can then drag them around. To get rid of them, drag them right off the bar.
2. The tiny triangles control indents or paragraph boundaries: top left is the first line of a paragraph, bottom left the rest. Dragging the little square below the bottom triangle moves both. The right triangle moves the right boundary of the paragraph.
3. Note that you can move paragraph boundaries outside the page margins. These settings, as with tabs, only affect the current paragraph so if you want to apply them to several paragraphs you need to select the latter first.
4. With tables you can control column divisions and indents within each column. Text boxes, frames and snaking (newspaper-style) columns also have ruler controls when selected.
5. To set margins with the ruler, put the pointer over the white/grey join so it turns to a double-headed arrow, then drag. This only works in page layout view.
6. Holding down the Alt key as you drag ruler controls gives a continuous numeric readout of the distance between margins, tabs and indents.
7. Finally, if you hide the Word 97 ruler (it's on the View menu, not Tools, Options) to get a little more screen space, you'll find when you waft the pointer over where it should be, it slides out automatically.

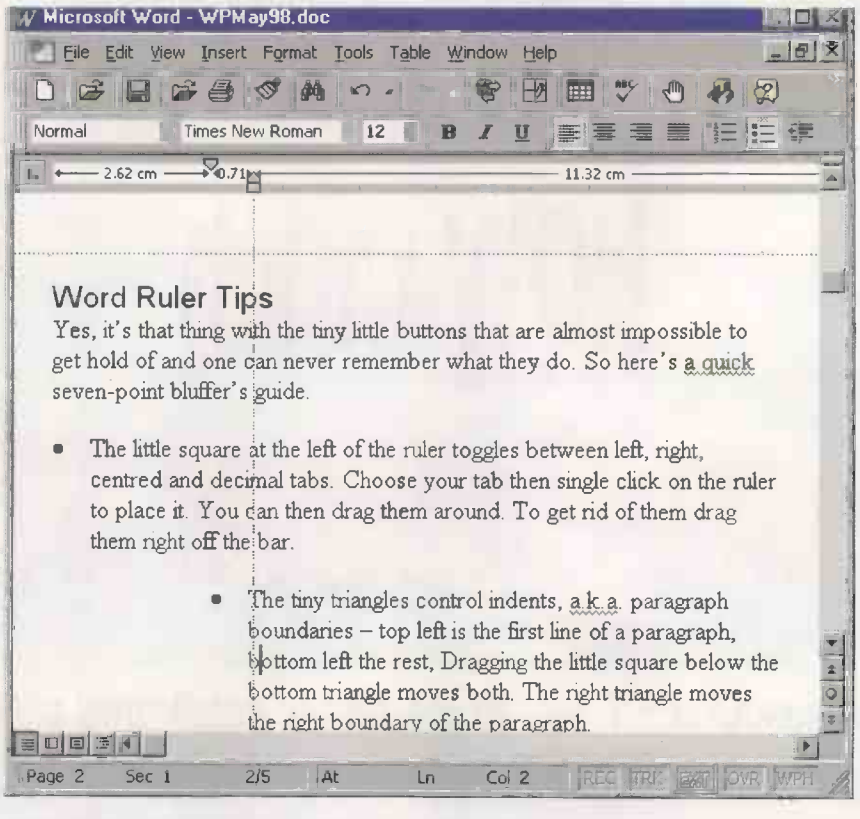
Feedback frenzy

David Graham's plight, outlined in my column in the March issue, was that he had 2,000 WordPerfect secondary merge files created in various versions of WordPerfect. He wanted to find a way to automate the opening of each of these files in turn, to export the data from each file to another. I hadn't a clue how this could be done, so I threw it open to the floor.

James Gilliver and Jon Moorby both rose to the challenge. James first:

"Having faced a similar problem in mass-converting thousands of documents from WordPerfect to Microsoft for one of my clients, I would suggest that WordBasic could provide a medium for such an operation by using it to read each merge file in turn and copy the contents into an appropriate word document (which could then be resaved as a WordPerfect file if required).

"I appreciate that this may seem like sacrilege to a WordPerfect user, but needs must. Alternatively, since WordPerfect secondary merge files can be saved as text (the field and record delimiters become control characters) it should be possible to effect a conversion by concatenating all the files using a macro-equipped DOS text



Hallelujah! It's the ruler. This screenshot took both hands and a nose

editor (anyone else remember Intel's AEDIT? I still have a copy and I find it invaluable) and reformatting as necessary."

And now, Jon: *"I don't have any experience of WordPerfect beyond v5.1, but I suggest that the solution may be one of creating a file list using DIR /b > file.txt. I used to do this a lot to extract data from text output files generated by statistics programs.*

"If a macro could be written to do the job for just one of the files (and it may be better to do it by importing into the spreadsheet, rather than exporting from WP, or it may have to be a combination) then a search-and-replace for the CR/LF combination on the file.txt list will enable a macro (presumably a huge one) to be created to process each file in turn, by name. Alternatively, under VBA, Word and Excel 97 would be able to do the job by taking filenames directly from the file.txt file in a loop."

Nerd processor

It struck me that a column on the subject of word processing really ought to concern itself from time to time with the raw ingredients and end product. After all, were this a column about food processors, then I wouldn't just be rabbiting on about how to clean them, change the fuse, lubricate the bearings and get hardened batter out of the hollow bit that whizzes round. Most people would expect a recipe or two and perhaps a few tips on where to obtain the best avocados at this time of the year, or the secrets of successful mayonnaise.

However, it seems that because this column is all about computers, we can cheerfully forget about the words themselves and concentrate instead on the perfection of our digital dexterity and general nerdhood.

Which brings me neatly to a fine example. Why do we call people whose technical ability exceeds their social skills "nerds"? Or "geeks"? Or "anoraks"?

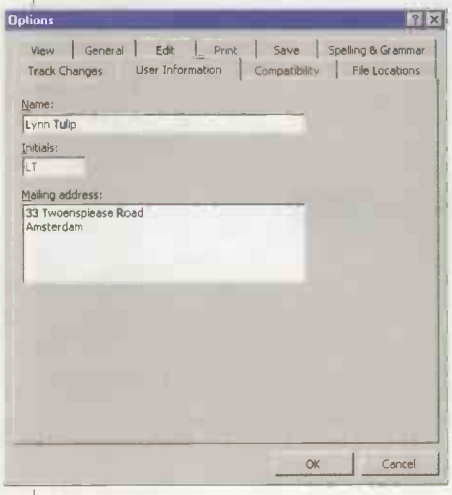
The word "nerd" is attributed to the children's writer, Dr Seuss, who, in his 1950 book *If I Ran a Zoo*, wrote: "And then, just to show them, I'll sail to Ka-Troo and bring back an It-Kutch, a Preep and a Proo, a Nerkle, a Nerd, and a Seersucker, too".

After that, nerd seems to have acquired the meaning of a swot, before being taken up as a computing-specific term. I

Questions & Answers

Q A friendly and helpful colleague installed my software and in Explorer I note that all files etc. that I generate are attributed to *Lyn*. How can I change the registered name so that it appears correctly? Because I use Word as my email editor the erroneous Lyn appears on that, too.

Lynn Tulip

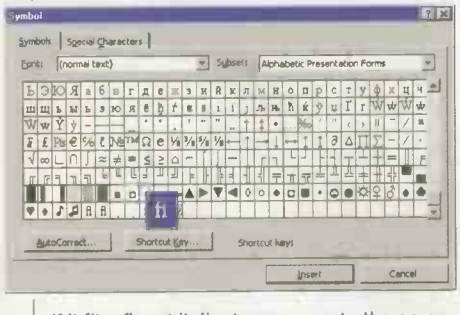


Please get my name right: rectifying installation errors

A You can change the author name for individual documents from File, Properties (File Summary Info in Word 2). To change the default author name go to Tools, Options, User Information. The name here is originally taken from that given on installation but can be changed — all subsequent documents will reflect the change. You'll still see the original, incorrect name in the Help, About box, but it takes a reinstallation to change this.

Q Ligatures are letter combinations, such as fi or fl, that are often joined on the printed page to give a more harmonious look. In Times New Roman, for instance the dot of the i interferes with the dangling part of the f. It is possible to get these on a Mac, but how can this be done on a PC?

Nick Lawrence



If it fits, flaunt it: ligatures come to the core fonts

A Up until today I'd only seen ligatures in custom-made Adobe Type 1 fonts where they replaced other standard characters in the upper ASCII range, but having a look through the Word 97 Insert Character dialog, under Normal text I found these right at the end of the list. You may need to update the Windows core fonts to get them (see "Euro update" in the "Readers' Tips" box on p328).

Q My problem is disk space and no money to get more. What I would like is a compact and reliable WP. It has to run under NT4 or, at a push, under OS/2. It can be shareware or preferably freeware. Would you be able to point me in the direction of something like this? It doesn't have to have loads of whizz-bang flashy-button stupid paperclip things; it should just be able to produce a sensible, clear document but be a tad more flexible than Wordpad.

P.S. Could you please send any reply to the _slayer@unforgettable.com as this follows me around.

Jerry

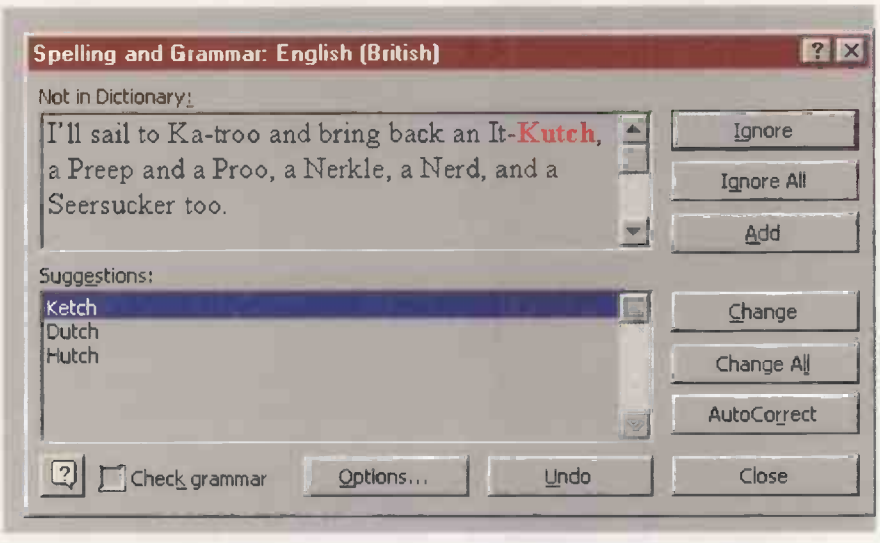
Cheap and cheerful: Word Express

A I'm rather worried about this slayer who is following you around, but there's a shareware product called Word Express which isn't bad. Last time I looked it had everything except a macro language and took up less than 9Mb of

p328 >

wonder what accident of language means that we don't speak of nerkles or preeps?

A geek seems to have been popular as a description of a "wild man" kept in a cage at circus sideshows, to entertain the visitors by biting the heads off live chickens or snakes. I don't think they go in for that sort of behaviour in the Redmond office cubicles, so why "programming geek"? Alternatively, the word in the simple sense of a fool may go back to Shakespeare's day. In Twelfth Night Malvolio says: "Why have you suffered me to be imprisoned... and made the most notorious gecke and gull that e'er invention played on?"



It appears that the Microsoft Word spell-check is not familiar with Dr Seuss

Readers' tips

Euro update

Thank you, Nick Mortimer, for the good news that further fonts with the Euro symbol are available from /www.microsoft.com/typography/fontpack/default.htm. I've since noticed that the Windows 98 beta core fonts all now contain the Euro. The problem is, as we saw in March's column, getting at it.

Personal preference

Thom Milton pointed out a useful tip that really belongs in the Windows rather than the WP section, but never mind. If you use the general MS Office Open Document command, you may find it starts in My Documents irrespective of where you actually keep your documents. You can change this by backing up the Registry, then opening Regedit and going to: HKEY_CURRENT_USER\ Software\ Microsoft\ Windows\ CurrentVersion\ Explorer\ User Shell Folders. Double-click the entry in the right pane entitled Personal and change it to the path of your choice.

Text squared

Here's an admirably obscure Word tip from someone who signs herself, or himself, Gadlewasam. If you hold down the Alt key while dragging with the mouse, you can select a rectangular area of text such as one column of a tabbed list. Word 2 users can do this with the right mouse button.

No conspiracy

In my March column I mentioned the strange case of the Word file which continued to load from a double-click and have its extra properties visible from a right-click, after the .DOC extension had been removed. Thanks to Ben Summers for the following explanation: *"Most MS apps use an OLE-structured storage file format which stores properties — which explains why they still show up as extra tabs on the properties dialog — and the program that created them, in a common format. Windows 95 and NT recognise this format so the conspiracy extends to everyone who uses this file format, support for which is built in to the OS. It basically stores a directory-type structure inside a file."*

■ Please note: although I do like to hear from you, may I please remind you not to send binary attachments to text messages. This especially applies to WP files containing macros — for reasons that should be obvious. Stick to plain-text only, please, for hints, tips and macro code.

The most mysterious, however, is the term "anorak". The word itself comes from Greenland and means a waterproof jacket with a hood, usually sealskin and often highly decorated with beads.

Did the Eskimos sit around in their igloos boring each other senseless with techie-speak during the long, dark, Arctic winter? Or did they spend long, cold days standing around kayak-spotting?

Your opinions on this and other important or irrelevant matters would be appreciated.

Q & A (cont'd)

disk space. A UK contact is the Thompson Partnership on 01889 564601 or www.ttp.co.uk.

Alternatively, have a look at Yeah Write and Trellix which were mentioned in the November and December '97 columns (see the Hands On back issues on our cover-mounted CD-ROM).

Q We have two identical PCs at work, both with identical, or so I thought, Office 97 installations. One takes much longer to close a document, even if it has just been saved. This seems to happen to large and small documents alike. As far as I can tell, all the relevant options in Word are set the same on both machines.

Malcolm Klein

A It's not Word that is slowing down your machine it's... (dramatic pause — Nott moves to centre stage, wheels around swiftly, cloak swirling, finger pointing at...) Outlook! (Lady Bartwell faints, the butler makes a run for it but is seized by two policemen.)

Aha! Even if you don't think Outlook is running, it's there, secretly spying on your every move. There is an option to create a "journal" that logs all the files you work on. Turn this off from the Outlook Tools, Options, Journal, Also record files from... box.

PCW Contact

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As Above Plus
24x max CD ROM Drive
16-bit 3D Wave Audio Soundcard
High powered speakers (50w PMPO)

200MHz	£549	INC VAT £645
With Intel Pentium® Processors		
200MHz	£599	INC VAT £704
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24x max CD ROM Drive
16-bit 3D Wave Audio Soundcard
High powered speakers (50w PMPO)
Logitech Mouse

200MHz £699
INC VAT £821

233MHZ	£749	INC VAT £880
With Intel Pentium® II Processors		
233MHZ	£849	INC VAT £998
266MHZ	£929	INC VAT £1092
300MHZ	£1049	INC VAT £1233
333MHZ	£1199	INC VAT £1409

CRESTA

The Mertec Cresta system is designed as an entry level platform to to the vast world of the Internet, with it's 56k Voice/Fax/Data modem you will be able to download data up to an unbelievable 56Kbps.

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Intel Pentium® or Pentium® II processor with MMX™ technology
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56k Voice/Fax Data Modem
24x max CD ROM Drive
16-bit 3D Wave Audio Soundcard
High powered speakers (50w PMPO)
Logitech Mouse

200MHz £779
INC VAT £915

233MHZ	£829	INC VAT £974
With Intel Pentium® II Processors		
233MHZ	£929	INC VAT £1092
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£59 + vat

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PC MAGAZINE *Office Pro Nov 97*

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16-bit 3D Wave Audio Soundcard
High powered speakers (50w PMPO)
Microsoft Mouse

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233MHZ	£899	INC VAT £1056
With Intel Pentium® II Processors		
233MHZ	£999	INC VAT £1174
266MHZ	£1079	INC VAT £1268
300MHZ	£1199	INC VAT £1409
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EXPLORA MEDIA

PC MAGAZINE *Explora Media Dec 97*

"A five-year warranty is more than any other vendor in this review offers the home user,."

The Explora Media is the perfect computer system for your on-line requirements, with it's 56k voice/fax & data modem you will always get peak performance whatever the use. For serious multimedia or games enthusiasts we have included the awesome AWE64 soundcard for the richest audio experience available.

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56k Voice/Fax Data Modem
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Satellite & Sub Woofer speakers
Microsoft Intelli-Mouse

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Hewlett Packard 690c	£159 +VAT
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*upto **300**MHz

PCM¹ Windows 95 Workstation

PCM¹ is a machine designed specifically for Windows 95, utilising the latest TX chipset from Intel, MMX processors and Diamond Stealth accelerators.

P166 MMX	£799	£938.83 inc VAT
P200 MMX	£854	£1003.45 inc VAT
P233 MMX	£914	£1073.95 inc VAT

Choice of:
Microsoft Works 95 or Lotus Smartsuite 97 pre-installed with all PC systems

PCM¹ Specifications:

- QDI Jumperless Motherboard (Intel 430TX)
- 512K Pipeline Burst Cache
- Choice of Intel MMX Processors
- 32 MByte EDO 60ns RAM
- 2.6 GByte Fujitsu Ultra DMA Drive
- 2 MByte Diamond Stealth 3D Graphics Accelerator
- 15" ADI Digital Monitor (3 year Warranty)
- Choice of Mini-Tower/ Desktop Case
- Toshiba 24 speed CD-ROM
- 32 Voice Wave-table Sound Card
- Mains Powered Multi-media Speakers

*For other items included with this PC please refer to: *All machines include*

PG² Games Station

PG² combines the power of Intel MMX processors and the *new* Matrox Mystique 220 to bring you high performance 3D games and devastatingly quick graphics.

P166 MMX	£949	£1115.08 inc VAT
P200 MMX	£964	£1132.70 inc VAT
P233 MMX	£1025	£1204.38 inc VAT

PG² Specifications:

- QDI Jumperless Motherboard (Intel 430TX)
- 512K Pipeline Burst Cache
- Choice of Intel MMX Processors
- 32 MByte EDO 60ns RAM
- 2.6 GByte Fujitsu Ultra DMA Drive
- 4 MByte Matrox Mystique 220 Graphics Card
- 15" ADI Digital Monitor (3 year Warranty)
- Choice of Mini-Tower/ Desktop Case
- Toshiba 24 speed CD ROM
- Creative Labs AWE64 Wave-table Sound Card
- Mains Powered 300W Speakers with Sub-Woofer
- Mystique 3D Games Pack

*For other items included with this PC please refer to: *All machines include*

PPX³ Power User

PPX³ is based around the next generation Intel Pentium II processor. The Iiyama monitor is driven through the Accelerated Graphics Port system, and the memory sub-system consists of 64 bit 10ns DIMMS.

Pentium II 233MHz	£1599	£1878.83 inc VAT
Pentium II 266MHz	£1699	£1996.33 inc VAT
Pentium II 300MHz	£1849	£2172.58 inc VAT

PPX³ Specifications:

- Intel 440LX Chipset
- Choice of Intel Pentium II Processors
- 64 MByte Synchronous 10ns DIMMS
- 4.3 GByte Fujitsu Ultra DMA Drive
- 4 MByte Accelerated Graphics Port Video
- 17" Digital Iiyama Monitor (1280 x 1024@80Hz)
- Midi-Tower Case
- Toshiba 24 speed CD-ROM
- Creative Labs AWE64 Wave-table Sound Card
- Mains Powered 300W Speakers with Sub-Woofer

*For other items included with this PC please refer to: *All machines include*

*All Homeuser machines include

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Choice of:
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32 speed CDROM

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FS[1] Designed for networks of up to 30 PCs, FS1 is especially suited to Windows 95 and Windows NT solutions. This machine has plenty of room for expansion and is ideal for use as an Internet gateway and/or mail server. We will pre-install the operating system of your choice and pre-configure any Internet or email services that you may require.

FS[1] Specifications:

- QDI Jumperless Motherboard (Intel 430TX)
- 512K Pipeline Burst Cache
- Intel 233MMX Processors
- 64 MByte EDO 60ns RAM
- 1 x 2.6 GByte Fujitsu Ultra DMA Drive
- 1 x 6.5 GByte Fujitsu Ultra DMA Drive
- 2 MByte Diamond Stealth Graphics Accelerator
- 14" ADI Digital Monitor [3 year Warranty]
- Professional Large Midi-Tower Case
- PCI Network Combo Card (NE2000 Compatible)
- Hewlett Packard 5 GByte Backup Tape
- Toshiba 32 speed CD-ROM
- Keyboard, MS-Mouse, etc.

FS[1]

Windows 95 Release 2	£1249
Windows NT 4.0 *Workstation*	£1284
Windows NT 4.0 *Server (5 user)*	£1595
Windows NT 4.0 *Server (10 user)*	£1695

HP 800T £890

8 port 100M switch
Fibre & UTP combo

HP 208T £650

8 port 10M switch
100M backbone

PSX[2] Professional Server

PSX[2] is designed for the more demanding network of more than 30 users. The disk sub-system is based around ultra-wide SCSI systems with 7,200rpm disk velocities. The Fujitsu drives used in this system carry a five year warranty.

PSX[2] Specifications:

- QDI Jumperless Motherboard (Intel 440LX)
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- 128 MByte Synchronous 10ns DIMMS
- Adaptec AHA2940uw Ultra Wide SCSI Controller
- 1 x 9.1 GByte Fujitsu Ultra Wide SCSI Drive
- 2 MByte Diamond Stealth Graphics Accelerator
- 14" ADI Digital Monitor [3 year Warranty]
- Professional Full Tower Server Case
- 3Com PCI 10/100 Mbps Network Card
- Toshiba 32 speed SCSI CD-ROM
- Keyboard, MS-Mouse, etc.

Operating systems available separately. Please telephone for prices.

PSX[2]

Pentium II 233MHz	£1995
Pentium II 266MHz	£2145
Pentium II 300MHz	£2245

NW[3] NetworkWorkstation

NW[3] is aimed at the volume user of PC workstations. Through the incorporation of QDI motherboards and Fujitsu hard disk drives, the performance of this machine is enough to match the needs of the most demanding network user.

NW[3] Specifications:

- QDI Jumperless Motherboard (Intel 430TX)
- 512K Pipeline Burst Cache
- Choice of Intel MMX Processors
- 32 MByte EDO 60ns RAM
- 2.6 GByte Fujitsu Ultra DMA Drive
- 2 MByte Diamond Stealth Graphics Accelerator
- 14" ADI Digital Monitor [3 year Warranty]
- Choice of Mini-Tower/ Desktop Case
- PCI Network Combo Card (NE2000 Compatible)
- Windows 95 Release 2
- Keyboard, MS-Mouse, etc.

NW[3]

P166 MMX	£599
P200 MMX	£664
P233 MMX	£715

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Pigeon coup

Whether or not you fancy pigeons, follow Stephen Wells' advice as he homes in on how you can use spreadsheet rankings to add a useful dimension to your leisuretime activities.

I often receive questions from hobbyists about using spreadsheets for summarising and analysing their records. These queries are often too specialised to be of general interest but the matter of ranking results is a common topic. Let's take the fictional example of a pigeon racer.

To keep it simple, let us assume that your club races monthly and that you have nearly two years' results for your own birds. First, 2nd, 3rd and 4th prizes are £50, £25, £15 and £10 respectively. Each month you win a prize with one of your five pigeons: Boss, Hasty, Jack, Spud and Whitey. In January, Hasty wins £10. In February, Whitey wins £25. In March, Boss wins £50.

Enter the race dates in the range E2:E24, the pigeon names in F2:F24 (and give it the name, Pigeons) and the winnings in G2:G24 (giving this range the name, Winnings). I've used Excel in Fig 1.

Now we'll enter the pigeon names in alphabetical order in A2 to A6. In B2 to B6, we want to total each pigeon's cash winnings, so in B2 we enter

```
=SUMIF(Pigeons,"Boss",Winnings)
```

In B3 to B6 is the same formula except for the change of pigeon name in the middle. The syntax of this function is as follows: "Pigeons" typifies the range of cells we want evaluated, "Boss" represents the criteria which defines what cells will be added, and "Winnings" is the range in which to look for the cells to sum. In other words, we want to look at all the pigeons, pick out the applicable one, and add up its winnings.

With a list as short as this, it's easy to see the best- and worst-performing pigeon. However, we can enter the RANK function just to see how it works. In cell C2 enter

```
=RANK(B2,$B$2:$B$6)
```

This means B2 holds the number we wish to rank, and B2:B6 is the list of numbers with which to compare it. You can drag this formula down to C6. The RANK function gives duplicate numbers the same rank; as Jack and Whitey tied for 3rd place, there is no fourth place so Hasty drops to 5th position.

This example is in the file, "Position.xls", on this month's CD-ROM.

Microsoft Excel - Ranking.xls

File Edit View Insert Format Tools Data Window Help

	A	B	C	D	E	F	G
1	*Pigeon names*	*Total winnings*	*League position*		*Race dates*	*Pigeon names*	*Winnings*
2	Boss	£120.00	1		Jan-15	Hasty	£10.00
3	Hasty	55.00	5		Feb-15	Whitey	25.00
4	Jack	75.00	3		Mar-15	Boss	50.00
5	Spud	90.00	2		Apr-15	Spud	15.00
6	Whitey	75.00	3		May-15	Jack	10.00
7	Total	£ 415.00			Jun-15	Boss	10.00
8					Jul-15	Whitey	25.00
9					Aug-15	Jack	10.00
10					Sep-15	Spud	15.00
11					Oct-15	Hasty	10.00
12					Nov-15	Boss	10.00
13					Dec-15	Hasty	25.00
14					Jan-16	Whitey	15.00
15					Feb-16	Boss	25.00
16					Mar-16	Spud	50.00
17					Apr-16	Jack	15.00
18					May-16	Boss	10.00
19					Jun-16	Whitey	10.00
20					Jul-16	Jack	15.00
21					Aug-16	Spud	10.00
22					Sep-16	Hasty	10.00
23					Oct-16	Boss	15.00
24					Nov-16	Jack	25.00

Fig 1 On the right of the screenshot is the list of pigeons and their prizes. At upper left, the pigeons' winnings are totalled and ranked

Language problem

Steve Lyons, of Bubendorf, writes: "*I have a problem with Excel 5.0. The company I work for is in England and Switzerland. We routinely send spreadsheets between the two sites regarding configuration information for the machines we manufacture. The problem is that the team in England are not able to open some spreadsheets from the team in Switzerland due to a missing file called VBADE.DLL. Is this to do with the Visual Basic macros, using the German language?*

"*Is there any way I can get around this, other than emailing, with the spreadsheets, the VBADE.DLL and associated VBADE.OLB files? This would be a little over the top as eventually we will also need to send the spreadsheets to our sister companies in Denmark and the US, and perhaps even to our clients.*"

I sent Steve some general information about dynamic link libraries, but after a couple more messages Steve said he found the easiest solution was to delete the module worksheet which was calling for these files. All the sheet contained was a macro, written in German, for displaying a custom Visual Basic toolbar that wasn't needed. I'm grateful to Steve for letting me know the outcome.

It is my understanding that with Excel 97, one is less likely to have this language problem. Object library files (with the .OLB extension) are now incorporated in the DLL files. You are more likely to have problems trying to use Excel for Windows macros on a Mac, than going from German to English.

You can install Multilanguage support by choosing Start, Settings, Control Panel and the Add/Remove Programs icon. Then click the Windows Setup tab. In the Components

box, click Multilanguage Support, and then click Details and select the check boxes for the language or languages you want to use.

Wandering symbols

Willie Miller writes: *"I have a problem with Excel 5.0a on Windows 3.11. If I type a number in a cell and wish to have commas entered automatically, I choose Format, Cell, Number, but all the options show the commas raised to the top of the line rather than in their normal position (i.e. instead of 4,537,567.00 it shows 4'537'567.00). How can I get the program to revert to normal? I've checked the languages in Control Panel and Excel; both are UK English / English International. The problem also affects Word 6 if I use calculation fields. It sounds like a reinstall to me — but I'd rather not."*

Go to Control Panel, Settings, Number, and check the Digit Grouping Symbol. This is for all Windows applications. Also, it's not unusual for Excel users to be messed about by Word settings. Readers often find that other users have changed a setting in Word, which then affects Excel. Go to Word, Tools, AutoCorrect and check carefully through AutoText and AutoFormat.

Willie replied: *"In Control Panel under settings, the number format had been changed to 1'234.22. I changed it back to normal and Excel is now okay. Thanks."*

Two to a page

Jacques Dillen asked: *"How do I print more than one sheet out of a workbook onto the same page?*

"Using Windows 95 I find that Excel prints every sheet on a new page and I sometimes want to avoid that and follow on with a second sheet after the first, on the same page. So far, I have to feed the sheet in again and adjust the page setup for the second sheet so that it prints further down the page rather than overprint the first sheet already there! That is highly unsatisfactory."

I replied that the easiest way would be to open a new Word document and link pages into that. Jacques responded: *"Stephen, thanks for your advice. It works perfectly!"*

Playing footsie

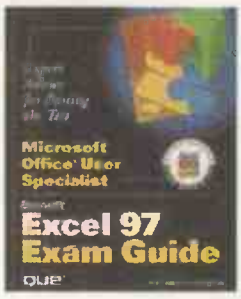
It seems like every month it gets easier to download London share prices straight into spreadsheets. Fig 2 shows the top of the MoneyWorld opening page at www.moneyworld.co.uk/stocks. Scroll down, and you are offered a number of options for downloading. If you download the current FTSE 100 prices it will put a file called ftse 100.tsv in the directory of your choice (TSV means Tab Separated Values).

Later, offline, you can import this file into your spreadsheet. In Excel, choose Open. In the Files of Type box, choose All Files. Now your new .tsv file will show and you can select it to open. In Excel 97, this will automatically start the Import Wizard.

You can probably successively accept the default settings (Delimited, Tab, General). The file will immediately open with

p336 >

Testing times — the *Excel 97 Exam Guide*



Newspaper recruitment ads for executive PAs often specify the need for familiarity with MS Office applications. Now that Microsoft offers two levels of a Certified User exam (Proficient and Expert) you can expect some employers to ask for these qualifications. Part of a new series by Que, the *Excel 97 Exam Guide* is written by Jane Calabria and Dorothy Burke, instructors, consultants and frequent contributors to Que books. Of course, you could ignore the section about registering for the exams and taking the tests and just read this book to learn all the features of Excel 97. There are 31 lessons covering not only the basics like managing workbooks, formatting, printing, importing and exporting data, and creating charts, but also many advanced areas are also explained. You can become more familiar with graphics and other objects, with advanced use of Excel as a database, auditing, creating macros and sharing workbooks in workgroups. There is a useful glossary of spreadsheet jargon and one of the best-integrated CD-ROMs I have seen. Each lesson has at least two files on the CD: a worksheet on which to carry out the practice exam questions at the end of each chapter, and an example of each completed exercise.

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Fig 2 Home page of the MoneyWorld web site from which you can download selections of the latest London share prices

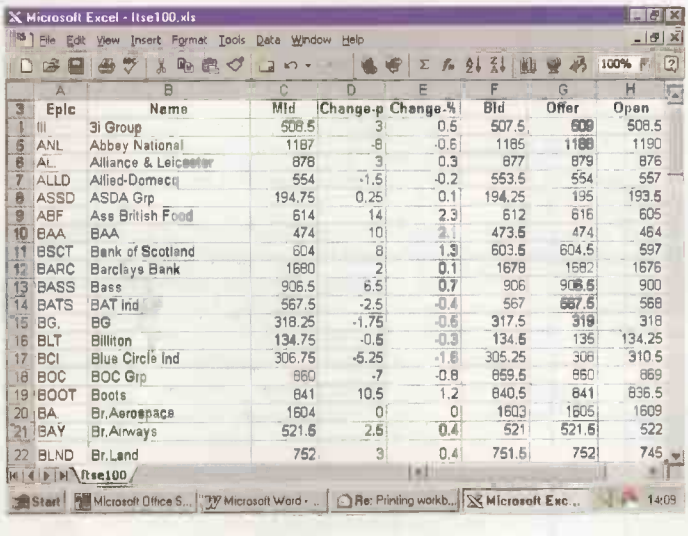

Fig 3 FTSE 100 data loaded into an Excel worksheet from a file offered at the MoneyWorld web site shown in Fig 2 (above)

Q & A — XLS

Q How can I tell how many pages my printed document will be?

A Hold the Shift key as you choose the Printer icon (or choose the Print Preview icon) and the number of pages will appear in the Status Bar at the bottom of the window. If the Status Bar isn't displayed, Choose View, and click the Status Bar check box.

Q How can I stop some cells on a sheet being changed?

A Hold Ctrl and click on the remaining cells which can be changed, or highlight them by dragging across a range. Then choose Format, Cells, Protection, OK. Choose Tools, Protection, Protect Sheet and enter an optional password if you wish.

Q What's the difference between a formula and a function?

A Not a lot — a function is simply a predefined formula.

Q How can I get Excel to use dBase, Paradox, Access or FoxPro data files?

A Use Add/Remove programs in Control Panel to install an Excel supplementary program called Microsoft Query. It offers you the choice of a Query Wizard for simple imports, or you can create a parameter query (which establishes conditions, such as only import data about a particular customer).

Q Can I AutoFill column headings in quarters rather than months?

A Yes. Excel establishes the step value by comparing the first two cells selected. If you enter Mar in cell B1 and Jun in C1 and drag the fill handle, Excel will use a step value of 3 and display Sep in D1, Dec in E1, and Mar in F1.

Similarly, if you enter Qtr 1 in B1 and Qtr 2 in C1 and drag the fill handle, Excel will use a step value of 1 and display Qtr 3 in D1, Qtr 4 in E1 and Qtr 1 again in F1. And they say computers can't think!

Q How does Excel define the x and y axes in a chart?

A On a line chart, the horizontal x axis usually refers to the data categories such as sales, tax, profit and so on. The vertical y axis refers to the plotted values. A bar chart typically reverses this with values plotted along the horizontal x axis. On a 3D chart, the vertical axis is referred to as the z axis, and the x and y axes are both horizontal.

Unusual functions

These functions are available in later versions of all three current top-selling spreadsheets. Precede the function name with = in Excel and @ in 1-2-3 and Quattro Pro.

■ COMBIN — You have 20 pupils available and three pupils can play on each team. You can calculate how many possible teams could be formed using the COMBIN function (short for number combinations). This function assumes that the order of pupils within each team is not significant. The syntax is COMBIN(N,NC) where N is the number of items and NC is the number of items in each combination. So, in this example, you would enter COMBIN(20,3) and the answer is 1,140.

In Quattro Pro, the function name is COMB and the number of items in each combination is entered first, like this:

```
@COMB(3,20)
```

■ PERMUT — The number of such combinations is not the same as the number of possible permutations that could be obtained. Permutations assume the internal order is significant, as in calculating probabilities.

Given 20 differently coloured marbles, the permutation function, PERMUT, calculates how many different ways an ordered subset of three marbles can be constructed such that no two constructions contain the same three marbles in the same order. Different constructions can contain the same three marbles but they cannot share the same ordering. Using the same numbers as above you would enter PERMUT(20,3) and the answer would be 6,840.

■ SUBTOTAL / GRANDTOTAL — Subtotalling using a function is a useful feature you may not be employing. It's intended for database lists but you can use it in any worksheet:

1. In Excel, the Subtotal function will add up everything in a range except another subtotal. You might have a list of values in cells A1 to A6 and want a subtotal in A7. Then more values in A8 to A13 and another subtotal in A14 and a full total A15. In A7, enter =SUBTOTAL(9,A1:A6). In A14 enter =SUBTOTAL(9,A8:A13). In A15 enter =SUBTOTAL(9,A1:A14). You can't use SUM in A15 or the total will be twice what it should be. The first argument in the function is a number, 1 to 11, which specifies whether you want the values added (9), averaged (1), counted (2) and so on.
2. The Lotus 1-2-3 @SUBTOTAL function doesn't have the extra argument. Nor could you use it in cell A15. Instead you would use @GRANDTOTAL(A1..A14). GRANDTOTAL only adds the subtotals.
3. Quattro Pro works just like Excel, except for the @ sign. So, you could enter @SUBTOTAL(9,A1..A14) in cell A15. Alternatively you could use the GRANDTOTAL123 function which, logically, works like the 1-2-3 GRANDTOTAL function.

ftse100 on the worksheet tab and the data laid out as in Fig 3. The only formatting you need to do is adjust your column widths and bolden the column labels in row 3. After a couple of goes you'll find you can complete the operation in a few seconds.

At home on the range

A reader, just signed "Ken", who is more familiar with Lotus 1-2-3, asks how to print selected ranges in Excel 97. Let's assume he wants to print columns A to C plus column H from row 1 to 20. Choose View, Page Break Preview. Click on and drag the surrounding blue border to cover the area A1: H20. Click between column header letters G and H and drag left to C. Excel displays the block which will print. Select this whole block. Right-click within it and choose Set Print Area on the Short Cut menu. Now choose File, Print, Printer Properties and make sure they are as you expect. Then print your worksheet.

Later, to restore display of the missing columns, drag over column letters C and H and double-click between them.

PCW Contacts

Stephen Wells can be contacted at the usual *PCW* address (p10) or email spreadsheets@pcw.co.uk

Let's make **a date!**

Mark Whitehorn fixes you up with Access functions in general and date functions in particular. But first, which is the one for you — GUI or command line? Let's talk about it...

In the March 98 issue of *PCW* I wrote about GUI database admin tools and how much I preferred them to the more common text-based ones. The following arrived from Mark E Nolan:

"I'm sure you never expected to make those comments about GUI admin tools in your article and get away without any correspondence on the subject!

"I don't want to take issue with any of your general points. However, a significant advantage for us of using a command-line interface (working with Sybase on Solaris) is in admin and change control.

"All tables, stored procedures, triggers etc. are in individual Unix files. These files have extensive comment blocks including edit histories and are stored in a version control system. This means:

1. We can see the edit history of all database components.

2. We can use Unix tools to apply bulk changes, where necessary.

3. We can recreate the database schema in moments. For example:

```
cat *.sql | isql -U...,
```

plays all .sql files into a database. I'm sure there are other advantages, but these are the ones that occur to me straight off."

I have no argument with this at all. I have nothing against command-line interfaces; in fact, I still use a DOS command line for some file-copying operations because I can use that faster than Windows Explorer. In addition, I still use DOS batch files because Microsoft has never come up with a viable GUI alternative in Windows. However, GUIs come into their own for some operations, and querying, as discussed in the March issue, is one of them; at least it is for me. I can type raw SQL but I can work faster with a GUI, particularly for complex expressions.

Fig 1 Calculating age in Access

```
Function GetAge (varBD As Variant)
    Dim varAge As Variant

    varAge = DateDiff("yyyy", varBD, Now())
    If Now() < DateSerial(Year(Now()), Month(varBD), Day(varBD)) Then
        varAge = varAge - 1
    End If
    GetAge = varAge
End Function
```

Clearly the best of both worlds is to get both a command line and a GUI. Since almost all RDBMSs already have a command-line interface and the GUI is simply a bolt-on, it seems unlikely that the command line will disappear, at least for the foreseeable future.

Printers

"In your March column you printed a question from Simon Smith about selecting printers from within Access at runtime. Microsoft has produced an OCX component for this (commdlg.ocx) but a more flexible shareware utility is available from Attac Consulting ourworld.compuserve.com/homepages/attac-cg/acgsoft.htm. This works with reports only, and will not enable a printer to be selected when printing other objects such as forms."

Ken Sheridan

I visited the site and discovered a whole host of goodies, so all you Access freaks out there might want to go along and have a look. Ken sent me a file that he had downloaded and I was tempted to put it and several others on the CD-ROM, but as there may be copyright issues it seems better to simply point you to the URL.

Date, don't you love him?

The rest of the column is devoted to a discussion of functions. In particular it concerns itself with the functions that exist, and can be created, to handle dates. The interest in dates was sparked off by the following question: *"I was asked the other day to display someone's age on an Access form, given their date of birth in the underlying database.*

"Eventually I came up with this line:

```
=IIf((Now()-(Now()
DatePart("y",Now())+1))+1>
([dtedob-([dteDob]
DatePart("y",[dtedob])+1)),
DateDiff("yyyy",[dteDob],Now()),
DateDiff("yyyy",[dteDob],Now())-1)
```

"Here, dteDoB is an Access date, the date of birth. Is there a simpler way of doing it?"

Simon Faulkner Simon@titanic.co.uk

A quick trawl of my hard disk revealed that this particular question had surfaced before in the column (*September 1994*). Way back then I was asked for a method of calculating age and came up with what you see in Fig 1. At that time I simply published the function as a solution. Now it seems a better idea to use this function as an excuse

p340 ➢

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The Debug window

When you are playing with functions, a great trick is to use the Debug Window, as it is called in Access 97. In Access 2.0 it is a simpler tool called the Immediate Window. To reach it, you will find that a Debug button appears in the VBA toolbar as soon as you open a programming module. Just press it.

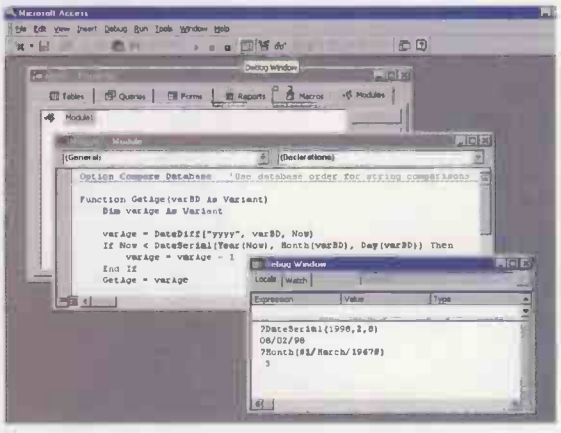
In the debug Window you can test functions. Try typing:

```
?DateSerial(1998,2,8)
```

(The ? character simply says "Print the value that comes back from the function".)

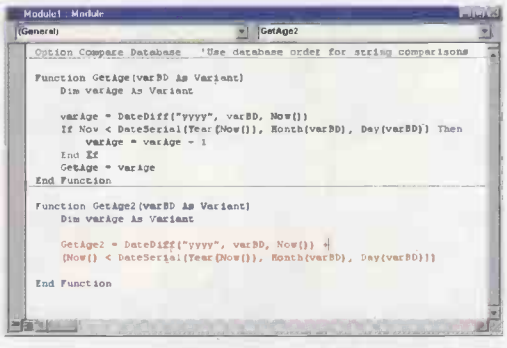
The window will return the value from DateSerial, in this case:

```
08/02/98
```



Using the Debug Window. You can use it to test the effects of the different date functions

The two GetAge functions. Note that part of the code is red: this is because I have split the line so that it all shows on the screen. Access won't run it in this state, but the copy on the CD-ROM should be fine. Note also that this code is *not* error-trapped; you would need to add that if you wanted to use the code for real



to look at Access functions in general and date functions in particular.

Functions in general

A function, in programming terms, is a device that returns a value. Typically, you give one or more pieces of information to a function, it carries out some calculations on that/those value(s) and returns some other information. In this case we want to give (or pass) to the function a date of birth. We want it to give back (or return) the current age of the person who has that date of birth.

Access Basic and VBA, like most programming languages, come with a whole variety of built-in functions. Of these, you will find that quite a few exist solely to perform apparently obscure manipulations upon dates, upon parts of dates, or even upon numbers which might one day be considered to be parts of dates. When I was little and just starting to learn about programming, I came across these functions and couldn't work out why they were all provided. The answer lies, of course, in the fact that no language can possibly provide every function a programmer will one day need. So the language provides a whole set of primitive functions from which more complex ones can be derived. An excellent example is this concept of "Age". Neither Access basic nor VBA, to my knowledge, has a function that will return a value which corresponds to an age in years when it is given a date of birth.

But we can build one using the more primitive functions.

In order to understand how this is done, you need some background about what some of the primitive date functions are up to, and that information follows. Remember that this is just a synopsis. If you want more detail, check in the online help.

Some date functions

1. Now() Returns a double-precision number which represents the current date/time. Now() assumes that January 1, 1900 has a value of 2 and works forwards from there. (Yes, I know that the value 1 sounds more logical for Jan 1st, 1900, but I'm sure there's a good reason why Microsoft chose 2. Does anyone know what it is?): numbers to the left of the decimal point represent the date; numbers to the right represent the time. I am writing this at about 6:50pm on 8/2/1998 and Now() is returning 35834.79.
2. DateDiff() Can work out the difference between two dates. You may be interested in the difference in years, months, days etc. and you tell DateDiff which one interests you by passing it a parameter. So, if you pass "yyyy" to DateDiff(), that says you want to know the difference in years.

The only problem, as Simon has noted, is that DateDiff is a crude tool and simply returns the numerical difference between two dates. Thus if you ask DateDiff() for the difference in years between, say, 14th May 1966 and 8th Feb 1998 it will return 32. While it is true that 1998-1966 = 32, it is also true that someone born on the first date will only be 31 years old by the second.

3. DatePart() Returns part of a date. DatePart("yyyy",Now()), for example, returns 1988 (the four-digit year part of the current date).
4. DateSerial() Returns a date if you give it a year, month and day as numeric values. Remembering that dates are stored as numbers, if you pass today's date to DateSerial() as three numbers — 1998, 2, 8 — it will return the double-precision number that corresponds to that date.

DateSerial is a great example of a built-in

Fig 2 Function with TRUE value as -1

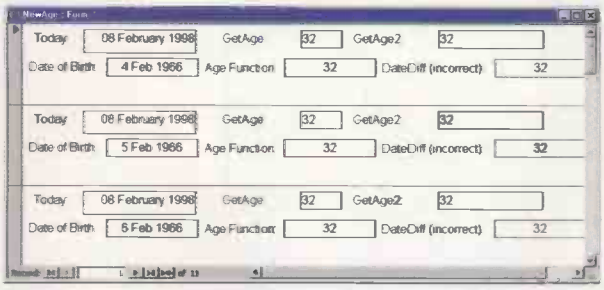
```
Function GetAge2 (varBD As Variant)
    Dim varAge As Variant

    GetAge2 = DateDiff("yyyy", varBD, Now) + (Now < DateSerial(Year(Now), Month(varBD), Day(varBD)))
End Function
```

date function that seems at first sight to be totally useless. If you give it 1998, 2, 8 it will return 08/02/98. Great. But it is really useful in the function for returning someone's age.

5. Year() Pulls the year value out of a date. In other words, if you give Year() the date #1/March/1967#, it will return 1967.

6. Month() Pulls the month value out of a date. In other words, if you give Month() the date #1/March/1967#, it will return 3.

7. **Day()** Pulls the day value out of a date in much the same way; in the above example, it will return 1.



The NewAge form. This screenshot was taken on 8/2/98 and you can see that the DateDiff function is not returning the person's age (and in fairness, it was never intended to do that job). Simon's solution (see *main text*) and the two versions of GetAge appear to be giving the correct answer

8. **Function GetAge (varBD As Variant)**

This line tells us that GetAge is expecting to be passed a value (in this case, a date) which will be known within the function as varBD. Essentially this means that whenever you see varBD you can imagine a date, say, 14th May 1996.

```
Dim varAge As Variant
```

Set up a variable called varAge (which we will use to hold the age of the person).

```
varAge = DateDiff("yyyy", varBD,
Now())
```

Set the variable varAge to be equal to the value that DateDiff returns for the year difference between 14th May 1966 and Now() which is currently 8th Feb 1998. DateDiff obligingly returns 1998-1966=32 and so 32 is put into varAge. Not that this is *not* the person's age because they were born later than 8th Feb. In fact, their age is currently 32 – 1 = 1.

The next line:

```
If Now() < DateSerial(Year(Now()),
Month(varBD), Day(varBD)) Then
        varAge = varAge - 1
```

is complex at first sight. The apparent complexity lies in the bit:

```
DateSerial(Year(Now()),
Month(varBD), Day(varBD))
```

DateSerial() builds up a date from three values which it gets from the functions:

```
Year(Now())
Month(varBD)
Day(varBD)
```

In turn these functions can be expanded:

```
Year(Now()) – Year(8th. Feb. 1998)
```

- which is 1998

```
Month(varBD) – Month(14th. May
1966)
```

- which is 5

```
Day(varBD) – Day(14th. May 1966)
```

- which is 14.

So DateSerial gets these three values and builds a new date, 14th May 1998. Why do we want this date? So that we can compare it with today's date to see if this person has had a birthday this year. We do that comparison with the bit that reads:

```
If Now() < DateSerial(Year(Now()),
Month(varBD), Day(varBD)) Then
        varAge = varAge - 1
End If
```

which says: if today is earlier than the date we have just built, then the person hasn't had a birthday yet, so deduct one from the value you got using DateDiff.

This means that the value in varAge changes to 31, which is the person's age.

These two bits:

```
GetAge = varAge
End Function
```

ensure that the value we have calculated is returned by the GetAge function.

Simon was kind enough to supply his solution in a file called AGE.MDB and a form called fmAge. I have added a form called NewAge. NewAge makes use of the GetAge function and another one, GetAge2, which is more elegant but less readable.

This function in Fig 2 uses the fact that a TRUE value is the same as –1. The formula adds on the value of:

```
Now < DateSerial(...)
```

This statement is evaluated for truth and will return -1 if the current date is less than the birthdate passed to it.

PCW Contacts

Mark Whitehorn welcomes readers' correspondence and ideas for the Databases column. Write to him at the usual *PCW* address (p10) or email him at database@pcw.co.uk

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If you want to fit a big fat drive, things can get complicated when you have to fight the joint conspiracy of BIOS and OS. Conquer the problem by getting your disk partitioning right.

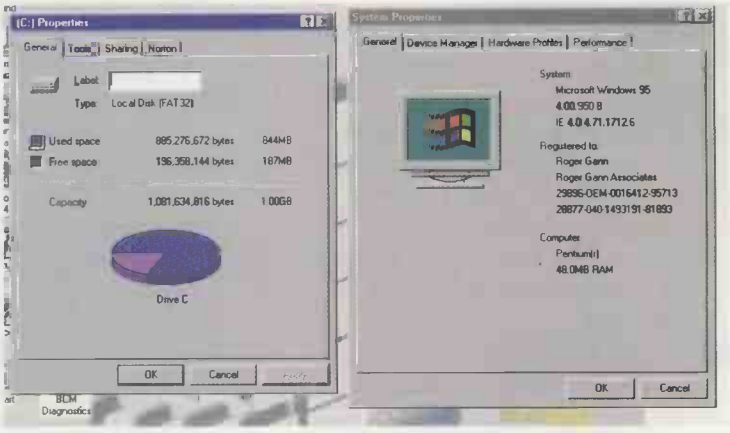
Installing a hard disk these days is no longer a big deal and is well within the capabilities of most PC users. However, things can get a bit tricky if you really push the boat out and try to install a hard disk larger than 8.4Gb. There are, in fact, two factors which conspire to prevent you fitting larger drives than this to your PC: the BIOS and the operating system. Luckily, neither problem is insurmountable.

The BIOS

In the little table provided in my April article, the first column detailed the normal BIOS limitations on hard-disk capacity which restrict support to drives with no more than 63 sectors per track, 255 heads and 1,024 cylinders. Multiply these numbers by the standard sector size of half a kilobyte and you get a capacity ceiling of 8,032.5Mb (approximately 8Gb). Such a limit is inherent in all BIOSes that use the CHS (Cylinder, Head, Sector) 24-bit addressing method. However, Logical Block Addressing (LBA) uses a 32-bit address representation and so can support larger capacities. An IDE drive can accept 28-bit addresses and so the capacity ceiling increases to a more reasonable 137.4Gb (228 x 512 bytes). For the past couple of years most PCs have supported LBA, but if you have an older "CHS" PC all is not lost.

Occasionally you'll be able to upgrade the BIOS to one that supports LBA via a free download from the PC manufacturer's web site, or you can use special translation drivers like OnTrack Disk Manager which are often bundled with larger IDE drives. But don't forget, BIOS restrictions only affect drives larger than 8Gb. If you're fitting a smaller drive, no probs — it's just the OS with which you'll have to contend!

The other major restriction comes courtesy of the operating system. Very early versions of DOS could address a mere 32Mb of data per hard disk — just as well because most users had 10Mb or 20Mb drives.



You'll need OSR2 for a FAT32 disk partition: right-click on My Computer and select Properties. If you're running OS2R you'll see Microsoft Windows 95 4.00.950B listed in the system area

It all began humbly with MS-DOS 2.0 which introduced us to a new utility called FDISK which allowed supported hard disks to be partitioned into a single 15Mb partition, using a 12-bit File Allocation Table (FAT). MS-DOS 3.0 supported partitions up to a 32Mb maximum, using a 16-bit FAT, allowing a smaller cluster size and more efficient disk usage. The 32Mb limit was a function of the FAT file system MS-DOS uses. This can contain 65,536 entries and each one lists the location of a particular 512-byte sector on the hard disk. So 0.5Kb x 65,536 gives us our 32Mb.

MS-DOS 3.3 introduced support for more than one logical drive per hard disk. (Logical drives are treated as separate disks under MS-DOS, even though they can occupy the same physical hard disk.) As well as a Primary partition you could also have an Extended partition which could be carved up into "logical" drives.

For a while there were several varieties of DOS in use, each with its own way of supporting large (i.e. <32Mb) partitions. The first "official" release of MS-DOS to support drives larger than 32Mb was MS-DOS 4.0. It did this by breaking the one-to-one relationship between a FAT entry and a disk sector, so if a FAT entry represented two sectors (a.k.a. a cluster or allocation unit) the capacity limit would be increased to 64Mb, 128Mb for four sectors and so on. However, to fully access these large drives required SHARE.EXE to be loaded, but hard disks continued to increase in size and soon this proved inadequate.

After eight

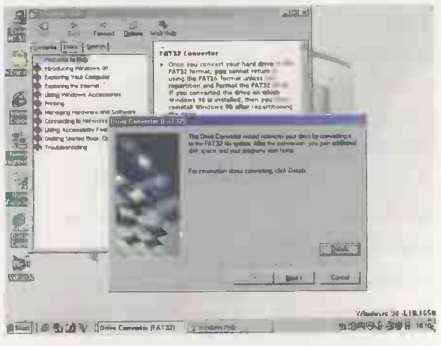
MS-DOS v5.0 and later support up to eight physical hard disks. Partitioning became standardised with this release of DOS and all subsequent versions have followed this standard (dubbed FAT16, thanks to its use of 16-bit entries) — Windows 95, too. Windows 95 actually introduced two slightly different partition types to specifically cater for the new breed of EIDE drives that supported Logical Block Addressing. But

the maximum partition size remained stuck at 2.1Gb: if you had a drive bigger than this, it had to be partitioned, with partitions limited to a ceiling of 2.1Gb. So, for instance, if you installed a 6.4Gb hard disk, its primary partition couldn't exceed 2.1Gb and the extended partition could occupy the remaining disk space. However, the logical drives carved out of the extended partition could not themselves exceed 2.1Gb in size, so in this example, with 4.3Gb remaining you could have a pair of 2.1Gb drives plus one 100Mb or some permutation thereof.

Microsoft's FAT16 regime allows partitions to be as large as 2.1Gb. You can have up to four primary partitions per drive, any one of which can in theory be bootable (it just has to be "active"), but only one extended partition. Even Windows NT 4.0, with its much-vaunted NTFS file system, is not immune from some of these problems: the first partition can be no larger than 4Gb in size, which means all drives larger than this must be partitioned.

My problems in installing either drive began much sooner than I had expected. For a start I had BIOS trouble, getting the PCs to correctly recognise the full capacity of the drives. Take one of my PCs, which has a fairly recent Phoenix BIOS 4.04 (a fairly respected BIOS). Whenever I tried to get the CMOS Setup to auto-recognise either of the new drives, it would actually lock up; something I've never, ever seen in a firmware-based setup program.

I had a little more success with an Elonex PC which used an AMIBIOS 1.00.04. This had no problems in recognising the 8Gb Maxtor but while it correctly identified the Quantum TX12, it claimed it was an 8Gb drive. This was because the Maxtor's capacity was a shade under the 8Gb BIOS ceiling, 8,016Mb rather than 8,032Mb. I had a near-identical problem with an AST Bravo LC PC: its AST BIOS correctly dealt with the Maxtor, which I was able to fully partition and format under MS-DOS 6.2. However, the Bigfoot TX12 was treated as though it were a 16Mb drive (!) under both FAT16 and FAT32. I had to use the supplied Disk Manager software in order to partition and format the drive.



The drive converter wizard

As well as having size limitations, FAT16 is a very inefficient file system and careless use of it can lead to a lot of wasted space on a large hard disk. If you didn't partition a 2.1Gb hard disk, DOS would allocate 64 512-byte sectors as the cluster size, meaning that the smallest space a file could occupy is 32Kb. On average a file wastes half a cluster, and with most modern PCs having literally thousands of files, this lost or slack space soon mounts up.

32-bit boost

Microsoft quietly released an updated version of the DOS file system, FAT32, in the OEM Service Release of Win95 over 18 months ago. With the introduction of FAT32, both the FAT entries and the sector numbering are now 32-bit. At a stroke, maximum disk capacities rocketed: 4,294,967,296 distinct 32-bit values multiplied by 512 bytes per sector yields a theoretical maximum disk size of two terabytes. It gets better: cluster size remains a mere 4,096 bytes for partitions up to 8Gb in size, so FAT32 is relatively space efficient.

FAT32 adds a few other improvements. The root directory on a FAT32 drive is now an ordinary cluster chain, so it can be located anywhere on the drive. This removes FAT16's previous limitation of 512 root directory entries. And, the boot record on FAT32 drives has been expanded to allow a backup of critical data structures, which makes FAT32 drives less susceptible to failure.

There are some drawbacks to FAT32 however. To use the FAT32 file system on an IDE drive, your motherboard or disk controller's BIOS must fully support logical block addressing (LBA) mode extensions for drives larger than 1,024 cylinders. The upper limit for a single partition under most SCSI configurations is 8Gb. For partitions larger than 8Gb on an IDE or SCSI drive, the BIOS must support INT 13 extensions. To use FAT32 you also have to upgrade your disk utilities and anti-virus software to compatible versions. Some older apps, including Microsoft Office 95 and 4.3, may not install properly under FAT32. What's more, FAT32 disk partitions cannot be seen under older versions of DOS, the original release of Win95 or NT 4.0. Dual-booting between FAT32 and the previous version of DOS becomes a no-no as well. And what you gain in efficient use of disk space, you can lose in performance: FAT32 can actually slow your PC down as it now has to hoover up many more clusters in order to load a file. If you had 32Kb clusters before, you'll now have four FAT32 clusters to load for every one previous FAT16 32Kb cluster, which is fine if they're contiguous but not so cool if they're fragmented to the four winds.

In short, it can be a lonely life with FAT32. Some power users keep a 512Mb FAT16 partition as their primary partition simply so they can boot from any DOS disk and still "see" at least some of their hard disk. If you need to boot older versions of DOS on a regular basis, then either forget about FAT32 or let boot drive C: remain as a FAT16 partition and install FAT32 on subsequent partitions. In this case you should be able to dual-boot into an old DOS 6.x on drive C:. However, like it or lump it, if you want to use the new breed of super-large disks, you'd better get used to the idea of embracing FAT32.

If you want to install a very large hard disk, one way or another you'll need FAT32. So where can you buy it? The answer is, you can't. Well, not by itself. It's only supplied on new PCs: the retail version of Win95 doesn't feature it. Even if you can get hold of an OSR2 CD-ROM disc from a friend, it's not an "upgrade" version and so cannot be installed over an existing Win95 installation. It's a blank disk or nothing!

Partitioning summary

Partition type	FDISK Reports	Size	FAT type	Introduced in
01	PRI DOS	0-15Mb	12-Bit	MS-DOS 2.0
04	PRI DOS	16-32Mb	16-Bit	MS-DOS 3.0
05	EXT DOS	0-2Gb	n/a	MS-DOS 3.3
06	PRI DOS	32Mb-2Gb	16-bit	MS-DOS 4.0
0E	PRI DOS	32Mb-2Gb	16-bit	Windows 95
OF	EXT DOS	0-2Gb	n/a	Windows 95

PCW Contact

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Master class

What's more powerful than many tape-based studios, cheaper and more flexible? VST, that's what. Steven Helstrip introduces Ian Waugh's VST master class, the first of a four-part series.

In this month's column we'll be finding out what Cakewalk V6 has in store and what it's like to get behind a virtual set of turntables with Mixman Studio. We also have news of the latest developments for Rebirth. But let's start with the first of a four-part series on mastering Cubase VST, with Ian Waugh.

VST master class

If you're thinking of upgrading to VST, perhaps from Cubase, what gear do you need and how do you get the best from it?

VST is capable of 32-track playback with 128 real-time EQs and two sets of four real-time effects. It's more powerful than many tape-based studios, much cheaper and inherently more flexible. Without doubt, digital audio is the recording system of the future, yet the potential of current software like VST far outstrips the capabilities of affordable hardware.

VST is essentially Cubase with direct-to-disk recording facilities and real-time effects. Forget these, and you can run it on a low-end Pentium — perhaps even a 486. However, the digital audio stuff needs lots of power and the minimum suggested system is a Pentium 100 with 24Mb of RAM, although the minimum *recommended* system is a Pentium 166 with 32Mb. This ought to allow playback of between 12 and 16 tracks. A Pentium 200 may manage up to 24 tracks but performance also depends on other parts of the system and how many real-time digital effects you are running.

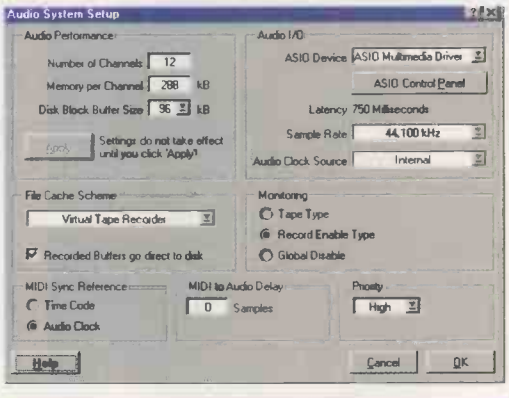
Remember that VST was designed to work with Intel processors and although it should run fine with a Cyrix or AMD processor, this is not guaranteed. An MMX chipset should improve performance by ten to fifteen percent.

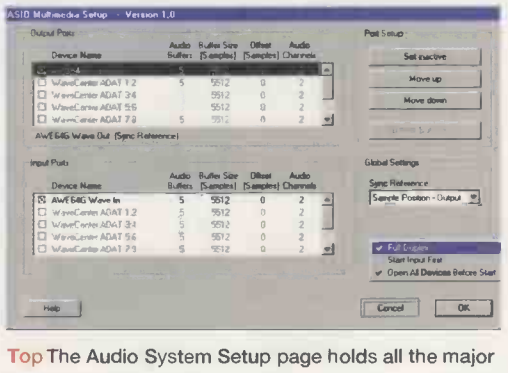
You will get better performance with a SCSI hard drive than with an EIDE drive, but do get an AV drive if you can because they don't perform thermal recalibrations during data transfer (which can cause a hiccup in the audio transfer). However, they do carry a price premium.

The drive should be as fast as possible, preferably with a 9ms (millisecond) average seek time or less, a sustainable data transfer rate of 7Mb/sec or more and a rotation speed of 5,700rpm or faster.

Store the digital audio data on its own drive if possible and, if you have two drives, splitting the audio tracks between them should also improve performance. Defragment any disks before using them for dtd (direct to disk) recording.

For high-quality audio you need a high-quality sound card, although VST should work with any MME-compatible card including "consumer" cards. The Event Electronics cards such as the Gina work well and Steinberg has had good results with Terratec, Multisound and MIDIMan

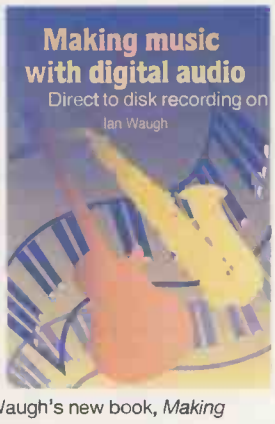




Top The Audio System Setup page holds all the major digital audio settings

Above It's important that Sync Reference and Card Settings are set correctly in order to optimise VST's digital audio performance

Making Music with Digital Audio



If you are interested in a broad range of digital audio applications, from learning the basics to mastering your own CDs, you might want to get your hands on a copy of Ian Waugh's new book, *Making Music with Digital Audio*. You can find out what each of the leading music packages has to offer, learn more about digital effects processing, get to grips with direct-to-disk recording on the PC, and much more.

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cards as well as Creative's AWE32 and AWE64. Several users have reported problems with the AWE64, though. If you are one of them, the first thing to do is make sure you have the latest drivers — this goes for any card you use. For the latest Creative drivers go to www.cle.creaf.com/wwwnew/tech/ftp/ftpnew.html.

The AWE64's Wave Guide Synth/WG driver does conflict with the digital audio system. You must disable this to use the card with VST, so follow these steps:

1. Reboot your computer and make sure no programs are running.
2. Run the Setup MME program.
3. Look in the Outputs box for AWE MIDI Mapper and AWE64 Wave Guide Synth/WG.
4. Select them in turn, then click on the Set Inactive button.
5. Click on "OK" and try Cubase. If the audio still doesn't work, launch the Creative Audio Mixer and switch on the LEDs.

In order to achieve the best performance, the audio drivers and the audio system need to be optimally configured:

1. Open the Audio System Setup window. If you're using a "standard" sound card, the ASIO Device should be set to ASIO (Audio Stream Input/Output) Multimedia Driver. Other cards should come with an ASIO driver — check with the manufacturer and/or Steinberg before you buy.
2. Open the ASIO Control Panel and select the Input and Output devices you wish to use. If you have more than one device, the one at the top of the list will be used for the Sync Reference.
3. In the Global Settings area, Sync Reference is used to synchronise MIDI playback to the audio. The Sample Position setting is best. It reports the number of samples played to VST which uses the number to synchronise MIDI playback. It is the equivalent to synchronising to a sample-accurate external clock.

If your card does not support this, select DMA Block. DMA (Direct Memory Access) transfers blocks of data to the card and it's not as accurate. You need to select the correct buffer size so click on the Detect Buffer Size button.

Get the Card Options right, too. Select Full Duplex unless you only want to playback samples. If your card doesn't appear to work correctly with Full Duplex, select the Start Input First option. This starts the card's Input before the Output and it may help solve the problem.

The Open All Devices Before Start option is for multiple I/O cards. If you have one, this option is preferred, but deselect it if it causes problems.

The PC is a beast of many parts and there is no such thing as a "standard" PC. It is a fact that the same software running on similar machines may work fine on some but not so well on others. That holds true for VST, too, but one thing is clear: you need a fast and powerful system to get the most from it.

Cakewalk version 6

It doesn't seem that long ago since we looked at the first release of Cakewalk and it's now already in version 6. There are three tiers in this release, starting with Cakewalk Express and Home Studio for entry-level users, and Cakewalk Professional for more demanding applications.

The main focus in all three is the integration of digital effects processing, or the CFX Effects Pack which provides a collection of reverbs and choruses (although not real-time) and support for DirectX audio plug-ins. There are also graphic and parametric EQs equipped with common presets to tweak your mixes.

StudioWare, not available in Express, is the next significant addition and provides on-screen automation for MIDI instruments and other studio gear such as the Roland VS-880 (Fig 1)

Arranging in the main window has been

Fig 1 **Cakewalk's StudioWare provides on-screen panels for synths and digital audio workstations like the Roland VS-880**

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Fig 2 At last, a TR-909 mod for Rebirth. Here's where all your techno dreams come true

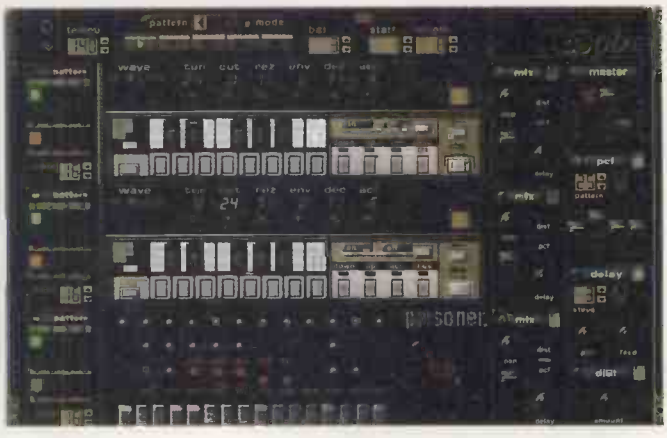

Fig 3 Another Rebirth mod for the darker side of your imagination

simplified and you can now have linked clips, which are basically clones of a master clip. When you go to edit MIDI data, changes are made in all the clips that are grouped. The controllers view and piano-roll editor have also been merged, enabling you to align controller and note information more easily — doesn't it seem as if with each release, Cakewalk becomes more like Cubase?

Express provides two tracks for audio and basic editing capabilities with notation printing thrown in for just £49. Home Studio has four audio tracks with a mix-down option and better editing and notation editors. Professional has it all: eight audio tracks, pro score editor, a full complement of sync options and more. All three versions have support for RealMedia, enabling both audio and MIDI files to be streamed across the internet.

Rebirth update

Following in the footsteps of ID software, Propellerhead has made available toolkits for users wishing to develop their own Rebirth modifications. And not only can you change the samples that form the rhythm section, you can alter the way the whole package looks.

When I first reviewed Rebirth, some eight months ago, I was astounded that the TR-808 was implemented and not the TR-909, given that the latter has been pivotal to so many dance genres. Well, it was always going to happen and now it has: one of the first "mods" available is the TechnoBox TR-909e (Fig 2). The 909 implementation is complete down to every sample but don't expect faithful representation of the tonal and decay parameters — these are based on the 808 model.

Another mod worth knowing about is the PBE, or Pitch Black Edition (Fig 3). This should appeal to the darker side of your music creations, with heavy industrial sounds and a rough-and-ready mix of hardcore drum and bass samples just waiting to be fired up.

An original Rebirth CD is required to run these modifications and they can be obtained from www.propellerheads.se/mods/index.html

Mixman Studio

Mixman Studio is a sample-based sequencer that enables you to create royalty-free tunes from a vast collection of professionally-recorded musical clips, called elements. Hidden behind what is probably the world's most straightforward interface lies a neat 16-track studio that features some high-end gizmos like pitch-shifting and auto time-scaling. As in previous versions of Mixman, songs are created by piecing together elements from the CD.

Get behind those decks and you could find yourself remixing one of the latest dance tunes

There's a good choice of dance-orientated styles from which to choose, including hip-hop, house, techno and acid jazz. An element could be a bass line, drum loop, a vocal or an entire orchestral passage. And you aren't just limited to what's on the CD: you can import your own wave files and even record a vocal take over the top.

You might go about making a song by first laying down a rhythm track, then spend some time jamming over the top using keys to trigger elements. When you're onto something, you can slot the pieces together to make an arrangement. While a song is playing, you can "drop-in" elements over the top and solo/mute any part. Word has it that, in the near future, several record labels will be releasing enhanced CDs to provide audio tracks and their constituent parts in Mixman format.

Remixing the latest dance tunes has never been so easy and you don't need to be a studio whizz-kid to get great results. You just need an ear for what sounds good.

■ Price £39.95

Contact Time + Space 01837 841100

PCW Contacts

Steven Helstrip and **Ian Waugh** can be contacted at the usual *PCW* address (p10) or via email at sound@pcw.co.uk

Cakewalk: Express £49; Home Studio £99; Professional version £199. Available from **Et Cetera Distribution** 01706 228039

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Acrobatic display

Ken McMahon takes a long hard look at Acrobat. With this active software you can create electronic versions of your pages for emailing or for use on the web. It's quite a show.

This month I want to take a fresh look at Adobe Acrobat, cross-platform portable document software. It lets you create electronic versions of your pages that can be viewed by anyone regardless of hardware platform, OS, applications software or fonts.

A PostScript-based format is used, called Portable Document Format (pdf). All the viewer needs is the Acrobat reader (available free from Adobe's web site). The advantages are that you don't waste paper on hard copies, you can email files quickly and cheaply, the recipient can forward them to colleagues and back to you with Post-It note comments on them, and it's simpler and cheaper than colour lasers.

Fancy that!

Acrobat is based on Adobe's Multiple Master font technology which creates on-the-fly copies of unavailable fonts. It puts layout accuracy first and foremost, so your linebreaks will be exactly as they were in the original, although any fancy fonts you may have used may look a little plainer than you'd expect. If you can't bear for this to happen, you can embed the fonts, although you'll pay a penalty in increased file sizes.

Acrobat 3.01 for Windows includes the Acrobat Reader; Acrobat Exchange, a pdf editing package; Acrobat Distiller, for creating pdfs from PostScript files; Acrobat Catalogue, for creating searchable text indexes; and an Acrobat Capture plug-in with OCR for creating pdfs from scanned paper originals.

There's also pdf Writer for creating pdfs directly from word-processing software. It's ideal for converting paper-based publications for online use, with the minimum of effort. Adobe recognised this early on and has worked hard to expand and improve Acrobat's online features. There's a growing number of web sites with pdf content that can be read online from within your browser. According to Adobe, more than a quarter of a million web sites now deliver pdf documents and more than 20 million people have downloaded the Acrobat reader.

Multimedia authoring

With the addition of interactive forms and dynamic controls (interactive buttons that trigger QuickTime or AVI movies) Acrobat has become a useful multimedia authoring tool. Let's suppose you've just completed your annual report and want to make it available on the company's intranet or publish it on a web site. First, breathe a sigh of relief that you don't have to go anywhere near HTML, then open up your document in the application which created it. It's a three-step process. First you create a PostScript file by printing to disk using the distiller ppd in place of your usual printer. The next stage is to distil the document (this creates the pdf). Third, you need to do a bit of quick editing in Acrobat Exchange.

1. Make sure your document will fit on the page. If it's A4 print, it spreads on A3 landscape paper at 70 percent with crop marks. If this is your first attempt and it's a big document, make a test run with the first few pages. Big, picture-heavy documents can take a while to distil and if there's a problem you'll have to start again from scratch.
2. Open distiller and set the job options. My advice is to go for as much compression as possible. Most people would rather see a poorer-quality picture quickly than wait forever for something better to download. You can experiment with the JPEG settings to see what kind of quality gain you get and what you have to pay in terms of increased file size (Figs 1 & 2).

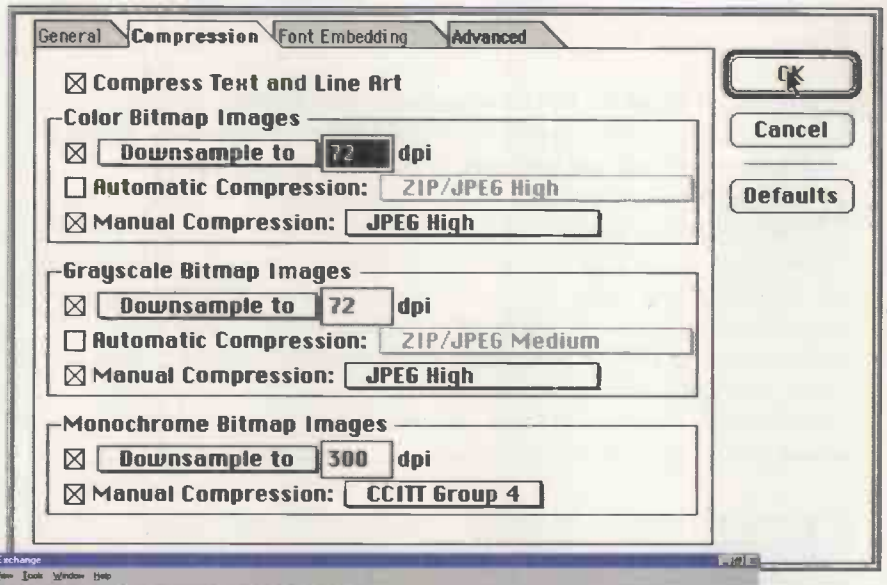
I've distilled the examples in Fig 2 from a 4.9Mb PostScript file using both the highest and lowest JPEG setting for colour pictures to give you an idea of the size/quality trade-off. The pdf on the left in Fig 2 (shown at 200 percent) has been created using the low setting (the setting refers to the degree of compression and therefore higher quality) and the one on the right by using the highest JPEG compression option. As you can see, the difference in quality is marginal and wouldn't be noticed by someone viewing the file at 100 percent unless they looked closely. The difference in file size? The higher compression results in a 129Kb pdf against 323Kb with the low setting.

3. Once the distillation process has finished you can open the pdf in Acrobat Exchange. Don't forget to throw away the PostScript file (they tend to be big, so if you leave them lying around they will eat up disk space).

Patchwork demonstration

To demonstrate Acrobat's versatility I've created these pdfs from a Quark file using Distiller 3.0 on a Mac and edited them in Exchange 2.1 on a PC. It probably represents the patchwork nature of most people's setup and only cynics would suspect it has anything to do with the chaotic nature of my Acrobat installation. If you think your files might be viewed by people using 2.1, make sure to select 2.1 compatibility from the job options general tab (3.0 uses file compression that is not backwards compatible). Exchange allows you to carry out editing on the pdf (Fig 3)

You can't redo the layout but you can make minor corrections, change the order



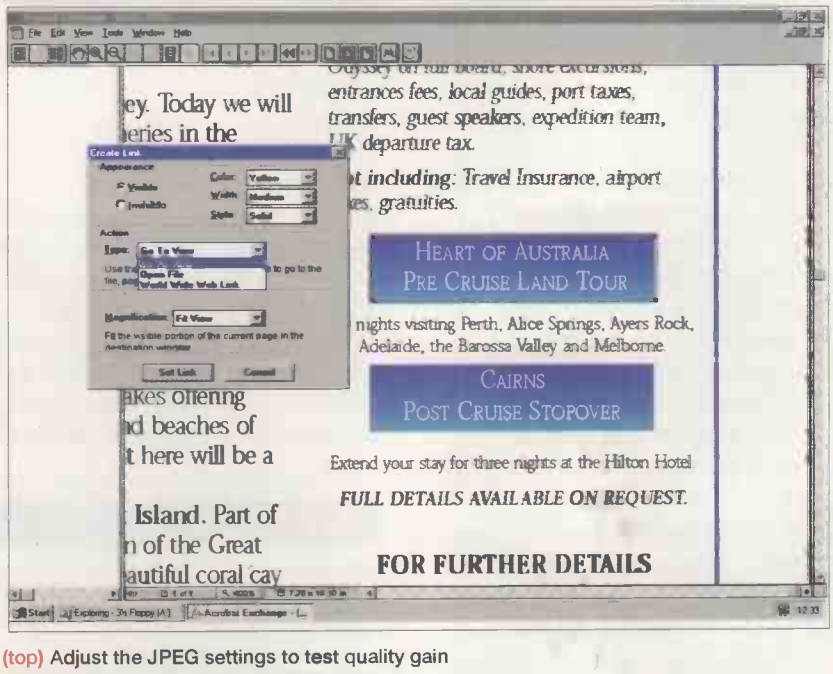


Fig 1 (top) Adjust the JPEG settings to test quality gain

Fig 2 (middle) The difference between the highest and lowest JPEG settings

Fig 3 (above) In Exchange you can edit on the pdf

p350 >

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Two chips for a tenner

Paul Bunyan has some advice for RG Mackenzie-Bell (*Q&A, March*) who wanted to know if upgrading his graphics card would improve his scanning and printing (to which the answer was a qualified no). Paul says the Cirrus GD-5446 PCI card takes a two-chip RAM upgrade which costs a mere tenner. With 2Mb on board he manages a respectable 1,024 x 768 in 16-bit colour, good enough for photoretouching. He doesn't say whether there's a 4Mb upgrade, but if you must have 24-bit colour you could drop the resolution to 800 x 600.

PC output bureaux

A while ago I promised I'd start compiling a directory of PC output bureaux and asked for contributions from anyone who had used, or knew of anywhere that provided, such a service. The response has not been overwhelming and, to date, I've had an email from JJ@softrax.co.uk plugging the services of West London Bureau Pollyprint (see "PCW Contacts"). JJ says Pollyprint doesn't look down its nose at PC customers and provides a comprehensive service including film output and colour lasers from applications including Quark XPress, Adobe Illustrator, Photoshop, CorelDraw, Ventura, MS Office, MS Publisher and eps. My contribution is ABC, also in London, which provides a professional output service including film and bromide output, lasers, scanning, large-format inkjets, 35mm slide output and OHPs. Its price list has useful advice on preparing files for output.

What about the rest of the country? I can't believe there are only two PC output bureaux in the UK, so let's hear from you!

Questions & Answers

Q I would like to use the Desdemona typeface with Word97, but it is an outline font. Do you know of a method of downloading a few characters, to form the word "Millennium", say, and then filling in the middle of each letter?

A If you've got a vector-drawing package like Adobe Illustrator or CorelDraw, just type in the text using the text tool, then, making sure the text object is selected, choose convert to outline paths. Next, select the letterforms and apply whatever stroke and fill values you want, in the usual way. If you don't have a vector-drawing package you can do the same thing in a bitmap editor that supports text. Type in your word, select the interior of the letterforms using the magic wand tool and fill with the desired colour. This method won't produce scaleable type so make sure you use a high resolution to avoid jaggy edges. If your application supports it, select anti-aliased type and use a greyscale mode, not bitmap, even if your type is black on white.

Q I have been using the excellent Lucinda Casual font which I copied from the *PCW* CD-ROM. Unfortunately, having discarded the CD, I lost the font when formatting my hard drive. Could give me information about obtaining it?

Hugh Bonsey

A You can get Lucinda Casual from www.waughs.com/jason/fonts/l.html, the truly weird Waughzoo web site of the Waugh household of Cincinatti. Jason Waugh's font library holds hundreds of TrueType fonts, including Lucinda Casual. I am assuming that these are all public domain and, if so, we'll put Lucinda on next month's cover-mounted CD-ROM, along with a selection of other public domain TrueType fonts.

Where's the connection?

Peter Stevens responded to my suggestion (*Q&A, March*) about emailing his large files to a service bureau: "*Amazingly, this often cannot be done. While many Mac-based bureaux have ISDN this is not a normal email (i.e. net connection), it merely allows the transfer of files between two Macs. It seems incredible that someone would pay for an ISDN line and not have net access through it, but this seems quite common.*"

It's true that bureaux use ISDN primarily for Mac-to-Mac file transfer, but that doesn't prevent them from using it for net access too. I use my ISDN connection for sending Mac files direct to bureaux and for internet access via both Mac and PC.

BT has recently announced an affordable "domestic" version of ISDN which doesn't require the installation of a dedicated line: a box plugs into your existing analogue socket, providing an ISDN connection and a through-connector for the existing line. If BT sticks to its promise, affordable ISDN could be with us before the end of the year.

Hermstedt and 4-Sight control the market for Mac-based ISDN file transfer and, as far as I am aware, 4-Sight doesn't have a PC product under development. Hermstedt, however, has Leonardo Da Windows, which works in conjunction with its Leonardo range of ISDN terminal adapter cards or any other PC ISDN card. I've been using an Eicon Technology Diva 2.0 card which cost about £100 and has worked perfectly.

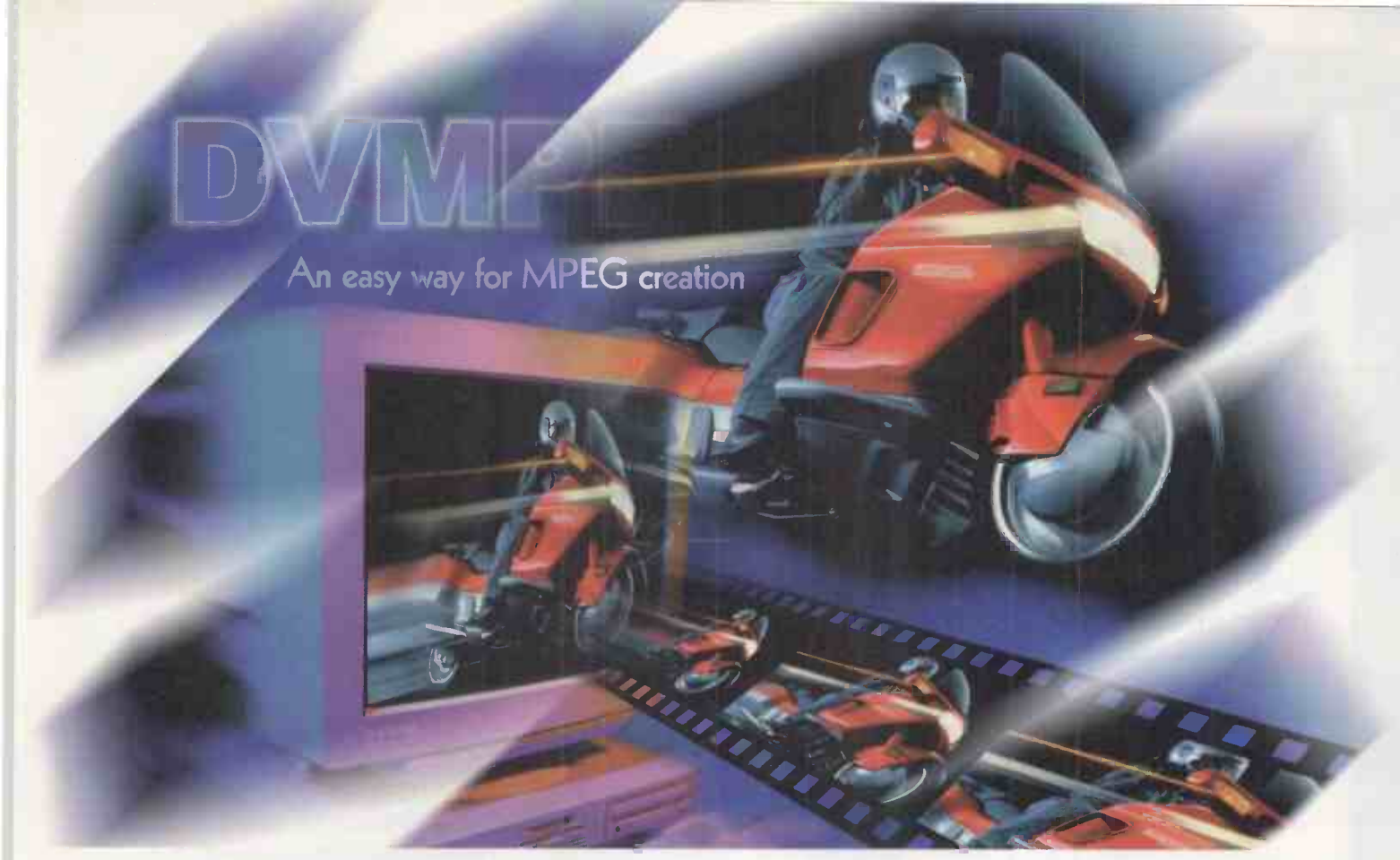
Whether you're using ISDN or a 14.4Kbps modem, sending graphics-intensive files down phone lines can be a slow business and file compression is one way to speed it up. I'll be looking at compression options in the near future, so if you have any questions or observations, I'd be glad to hear from you. I'd appreciate it if you could limit the size of any emails to two megabytes.

Oops! A hard fact about Softy

So taken was I with Dave Emmett's Softy font editor (*March issue*) I started inventing features it did not have. It *won't* handle Adobe Type 1 fonts, only TrueType, but I still recommend you check it out at www.home.iclweb.com/icl1/d.w.emmett. If you have connection problems do persevere: the server seems to be somewhat erratic.

PCW Contacts

Ken McMahon can be contacted by post c/o *PCW* at the usual address (p10) or via email at graphics@pcw.co.uk
ABC 0171 278 5004
abc.graphics@btinternet.com
Pollyprint 0181 597 1441, sales@pollyprint.co.uk or www.users.dircon.co.uk/~polprint



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The eyes have it

You can forget the silly 3D glasses, Benjamin Woolley has seen the future for himself and it's phenomenal: 'autostereoscopic display technology' is 3D image projection on a flat screen.

A few weeks ago I found myself in an old church on a dark winter's night, and I beheld an apparition: the image of a man. The man was normal enough and I was looking at a picture of him displayed on a perfectly flat LCD screen — *yet he appeared in 3D*. Miraculously, the three-dimensional effect was reproduced without my having to wear any sort of funny headgear or eyeglasses!

You would normally expect to see visions of a more spiritual kind in a church, but this one had been deconsecrated and turned into the HQ of Reality Vision, a small British company which specialises in the development of 3D or, as they prefer to call it, "autostereoscopic" display technology.

The company's founders, David Traynor and Edwina Orr, were demonstrating its latest prototype at a meeting of the London Virtual Reality Group (LVRG), having kindly donated the converted church as a venue. I was there as one of the meeting's speakers. Also present was the excellent, invigorating Tim Regan, who is in charge of the "shared spaces" experiments being undertaken at BT's research labs at Martlesham in collaboration with the TV production company Illuminations, for BBC2's *The Net* and Channel 4's *Heaven and Hell*.

Autostereoscopic screens are, in a sense, the holy grail of 3D display: a flat screen which can display a 3D image without the viewer having to wear any special equipment. It is different from the holy grail of full-blown holography, the sort of thing you see in futuristic films like Star Wars which project a complete 3D object into a space as though it was physically there.

There are various experiments under way to achieve this but there are severe technical limitations that, according to David Traynor, make it a tough technology to crack. For example, Traynor claimed that the resolution of holographic images is equivalent to 5,000 lines per millimetre (compared with a few hundred in a high-resolution photograph) which means that you need supercomputers to manipulate them. Still, it may happen.

Meanwhile, we have a number of prototype technologies based on the less ambitious concept of "autostereoscopy" being touted by companies around the world. Reality Vision's own "Full Parallax Autostereoscopic Display using Holographic Optical Elements" is, as the church demonstration showed, up and running. And, on the basis of my own brief experience, it looks promising. The image I saw was of a man stretching out towards me, his hand seeming to reach through the screen. It was an odd experience, my eyes having difficulty knowing what to focus on.

HOE it's done

Autostereoscopy is, as its name suggests, technology that uses stereoscopy, which will be familiar to anyone who has watched a film wearing those silly cardboard specs with different-coloured lenses.

The basic principle is that when we look at the world we recover depth information from what we see by unconsciously comparing the slightly offset views our right and left eyes perceive. If you substitute your eyes for cameras, you get two pictures which are similar but with the same slight offset. If each eye then looks at each respective image, you will recover the same depth information you would have seen had you been there in person.

That's the theory. It works in practice by projecting both images on top of each other on a screen and giving the viewer a pair of glasses which filters out the right-hand image so that it is only seen by the right eye, and the left-hand image so that it is only seen in the left. But glasses are inconvenient and can cause eyestrain.

This is where the "auto" bit of autostereoscopy comes in. Reality Vision has come up with a technique that is based around a standard LCD screen. LCDs act like transparencies, with a backlight — in the case of laptop LCDs, or reflected light in the case of most palmtop LCDs — illuminating the image they form. The Reality Vision system replaces the backlight with a matrix of Holographic Optical Elements (HOEs) which "diffract" the light coming from a single light source behind (Fig 1). How exactly the HOEs do this is a matter of complex optics, but take my word for it, they seem to do the job.

Head start

One of the problems with autostereoscopic displays, as opposed to stereoscopic ones relying on some form of headgear, is that if you move your head the stereoscopic effect almost instantly disappears.

Reality Vision's solution to this problem is based on the fact that the position of the light source behind the HOE matrix determines the position of the stereoscopic viewing area in front. So, by tracking head movements and moving the light source accordingly, the effect can be maintained dynamically from any viewing angle. Furthermore, if you add more light sources, each one being tracked, you can have several people looking at the same stereoscopic at the same time (Fig 2).

As for the model demonstrated at the LVRG meeting, the tracking was carried out

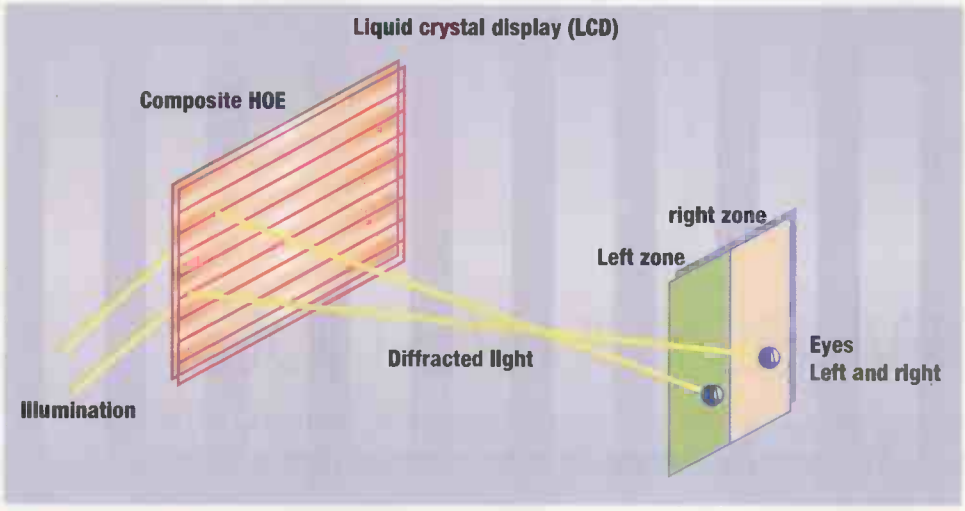

Fig 1 A simplified diagram of how the display works

using a lightweight Perspex crown which was monitored by a detector on top of the screen. So, some form of headgear is still necessary, at least for the moment, but it doesn't get in the way of the image.

Reality Vision is looking for manufacturers to license the technology and is talking to a number of firms. Traynor says that, so far, most of the interest has come from Japan but he is keen to talk to European companies. Whenever the first models appear, and whoever makes them, they will be relatively costly, but that is largely because they will use large LCDs which are, as we know, horrendously expensive. The rest of the technology, including the HOEs, is relatively cheap.

Such devices would certainly be a boon for complex 3D graphics applications, making it a lot easier to figure out the geometry and position of intricate scenes. But Traynor did not know when autostereoscopic displays will appear on the market. I'm afraid it's a case of that old journalistic cliché, time will tell.

Designated drivers

Last month I took delivery of my new, extremely powerful 300MHz Dell PC, the replacement for my clapped-out Compaq which will serve out its retirement grazing on my tiny render farm (three computers so far). It came complete with an AGP slot with a Matrox Millennium II card plugged in, and the promise of instant renderings and running the display at high resolutions in true colour.

With any new system the improvements it promises are dependent not so much on the hardware but on the drivers that will determine how well your software will run on it. With 3D, this means having a driver for the graphics adapter that is well written and supports the widest range of graphics standards on the widest range of operating systems. In this respect I chose poorly, as the Millennium driver, unlike the one for the Diamond File GL 1000 in my Compaq, has no support for Open GL under Windows 95 (Matrox told me support may be included in the Windows 98 version).

Matrox's excuse for this omission is that Win95 does not include full support for Open GL. This is partly true, although support in the form of a DLL has been there since the release of OSR2 and now a number of Win95 programs, such as SGI's VRML browser Cosmo, can exploit it. Furthermore, there are many things that OpenGL, a sophisticated graphics API which offers high levels of accuracy, can do that Win95's built-in API, Direct3D, cannot. So I was a bit disappointed, even annoyed, with the Matrox card.

However, a development which took place at around the same time could make such irritations a thing of the past. At the beginning of this year Microsoft and SGI shocked the industry by announcing that their respective graphics technologies, OpenGL and DirectX, would be combined, creating a single, unified architecture for graphics on the PC. The new standard has been codenamed "Fahrenheit" and will cover the gamut of graphics "from low-level APIs to full-blown scene graphics with large model visualisation", as graphics analyst Jon Peddie put it in the SGI announcement.

It should mean that, within a few years, companies like Matrox will have no excuse for offering anything other than high-quality drivers which provide the maximum functionality, available on all platforms. This is excellent news, a rare instance of sensible co-operation that could benefit all of us.

■ *A Reality Vision paper given to the UK Virtual Reality special interest group on its autostereoscopic display technology can be found at* www.brunel.ac.uk/~empgrrb/VRSIG97/proceed/008/hasdpape.htm

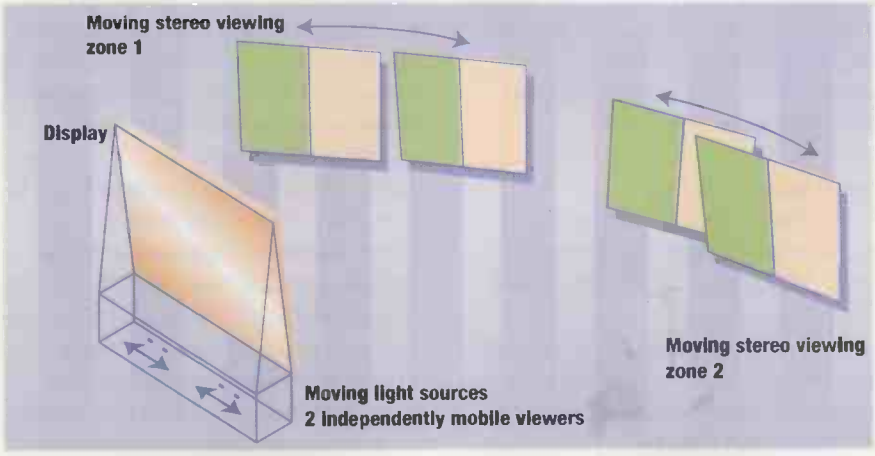

Fig 2 A diagram of a display designed for two people, the green half of each panel representing what would be seen by the left eye of each viewer, the red half by the right eye. A tracking device would independently monitor the movement of each person viewing the image, and move each of the two light sources correspondingly

PCW Contact

Benjamin Woolley can be contacted by post c/o *PCW* at the usual address (p10) or via email at 3dgraphics@pcw.co.uk

It's **not** what you've got...

...it's how you use it. The best development tool won't necessarily help you achieve a successful project, argues Tim Anderson: careful project management is the key.

Judging by my email, everyone wants to know which is the best development tool. But the answer is never straightforward because of the diversity both of tools and projects.

What some people do not realise is that the choice of development tool is secondary. Projects mostly fail because of problems with management rather than tools. Another common scenario is a solution which works initially, yet proves impossible to maintain or enhance as needs change. Sometimes the reason is simply that the developer has moved on and nobody else understands the code. Other problems are bug reports or change requests that get lost or are never implemented. Successful development is thus largely a result of successful project management rather than the use of a great development tool.

There are steps you can take to tackle these problems, and one is to use a version control system. A common misconception is that version control is only worthwhile for development teams or large projects. In truth, every developer practises version control and using dedicated software is useful even for a one-man project.

Imagine, for example, that your Widget Pro application is complete and working fine. You are working on version 2.0 but dealing with minor problems in version 1.0, simultaneously. Any changes you make to version 1.0 need to be made in version 2.0 as well, but not vice versa.

Another issue is that you have an experimental version of the user interface that might not make it into the release version. You need to test the experimental one but also need the ability to go back to the original. Soon, your hard disk is littered with directories called "widget trial", "widget buggy" and "widget backup" or whatever. This is exactly the kind of scenario with which version control software can deal, whatever the size of the team.

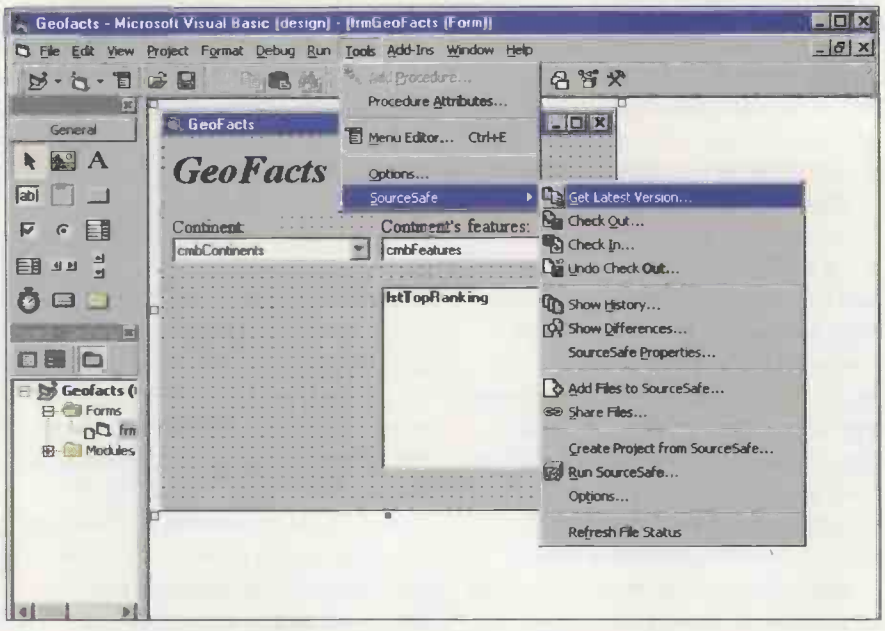

Fig 1 **Visual SourceSafe integrates with Visual Basic 5.0 so that these options appear in the Tools menu**

Visual SourceSafe

If you have Microsoft's Visual Studio, you already have a version control system. Visual SourceSafe is Microsoft's product (Fig 1) and works well. It consists of a central source code database and a client Explorer application. There is also an administration utility which lets you edit the list of authorised users.

When you add a project to SourceSafe, it makes a copy of the source files and stores them in its database. The idea is that each developer on the team has their own working directory and can check out the source files in order to work on them. Once checked out they are unavailable to other developers. If this is too restrictive you can immediately check the file in to make it available to other developers, but continue working on the local copy. When it is time to share your work, you can check it in again.

If the master copy has been edited by someone else in the meantime, you can use the Visual Merge editor for resolving conflicts. A strong feature is that Visual SourceSafe is integrated with Developer Studio, the IDE used by Visual C++, Visual J++ and Visual InterDev. It also hooks into the Visual Basic and Visual FoxPro IDEs, so covering most Microsoft tools. You can use it with Access 97 as well, but only if you have the Developer Tools version of Office.

Books for visual programming

Active Server Pages Unleashed

by Stephen Walther

Microsoft's Active Server Pages are a cheap and easy way to set up a web site with server-side processing including features like dynamic database access, provided that you are working on an intranet or with a service provider that supports this technology.

Here is a tutorial aimed at web-programming beginners. It tackles everything from basic HTML and scripting, through to building server-side DLL components with Java or Visual Basic. There is plenty of good advice but hundreds of pages are devoted to topics that are already well covered elsewhere, like basic web page authoring, leaving insufficient space for the topic that is meant to be the subject of the book. For example, Microsoft Transaction Server gets only ten lines while the general introduction to HTML gets over 100 pages. I would happily have done without the chapters on Microsoft Music Producer or Web Site Promotion in exchange for more detail about web database programming. This title will get you started with Active Server Pages, but no more.

Price £46.95 (including CD)
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Visual Basic 5 Development Unleashed

by A Hobbs *et al*

This is a book with well planned, targeted content. There is nothing whatsoever about Do...While loops or how to place a button on a form. Instead, the authors kick off with an introduction to object-orientated development with VB, including how to use Visual Modeler to design an application.

The next part of the book is devoted to ActiveX with a focus on web development. Part three is about database development, the emphasis being on using SQL and ODBC. An excellent section on advanced topics follows, with chapters on the registry, creating add-ins and wizards, and performance optimisation. Finally, Part 5 covers the setup wizard, help workshop and Visual SourceSafe. This last chapter is subtitled "A necessity for serious developers".

Here is a title which can be recommended to competent VB programmers who want to move on by exploiting the new features of version 5.0. It is a shame that it has appeared so late after the release of VB 5.0, as it forms a valuable supplement to the official documentation.

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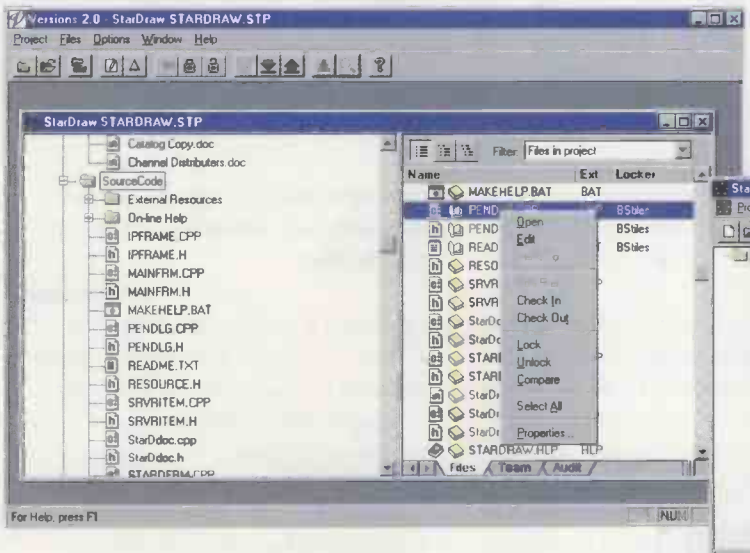

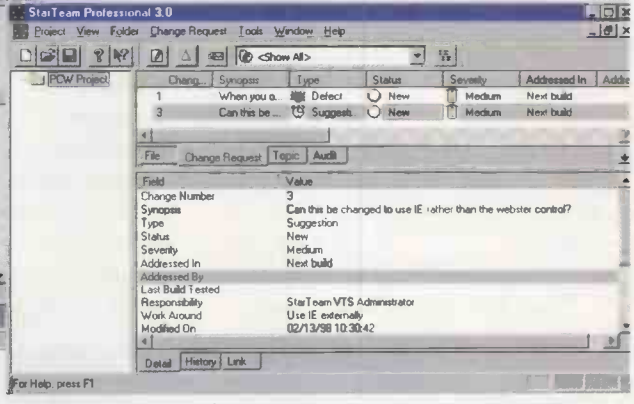

Fig 2 (left) StarBase Version 2.0 offers basic version control in an easy-to-use budget package

Fig 3 (below) The StarTeam client includes a list of change requests which can be linked to source files or discussion entries

It works less well with Access because project elements like VB code and Access reports are stored in a single MDB file. SourceSafe has to perform behind-the-scenes trickery to manage this and it can cause problems.

Even a developer working alone should use Visual SourceSafe or an alternative version control system. One advantage is that each time a file is checked in, you can add comments that describe the changes. Better still, it tracks the changes so you can view an earlier version or roll back to it if necessary. You can also apply a label to all files in a project, identifying a significant build or milestone.

Another great feature is the built-in difference, or merge, editor. The two are similar except that the merge editor shows the resolved file in an additional pane. The fact that version control forces you to always work on a copy of your source code is worth the small amount of extra work.

StarBase version control

Another choice for managing your source code is one of the products from StarBase. Version 2.0 is a budget-priced package (Fig 2) which has been around for a couple of years. StarTeam Professional 3.0 (Fig 3) is a new high-end product which I looked at in a late beta version.

There are many similarities with Visual SourceSafe. Like its competitor, the StarBase package has a central database of source files, the ability to manage users and also to check out files and mini-applications for comparing and merging different versions of the same file. Even the budget version 2.0 is a capable product that works over a network. The main

p356 ➤

Questions & Answers

Q I have created a form in Delphi to collect data from the keyboard. It has a number of edit boxes on it and I want to be able to pass control from one box to the next as the user hits the enter key. At present, to move from one edit box to the next, the user needs to press the tab bar. One way around this would be to write some code which checks each character as it is typed, but this does not seem very elegant. Is there another way?

Steve Jones

A You can easily do this by writing a line of code for the KeyPress event as shown in Listing 1 (see also, Fig 4). It may seem inelegant to check each character as it is typed, but you will not find a noticeable performance loss doing this. Windows executes a horrific amount of code in response to the simplest of actions in any case, so your small contribution will not matter much. With longer KeyPress procedures, the trick is to ensure a quick exit from the procedure if the key pressed is not one in which you are interested.

Listing 1 Trap the KeyPress event

```
procedure TForm1.Edit1KeyPress(Sender: TObject; var Key: Char);
begin
if key = chr(13) then Edit2.setfocus;
end;
```

Q In defining my own procedures and passing variables between them, I would like to be able to use variables whose scope is local to the controlling and sub-procedures.

For example:

```
onbuttonclick
begin
do_this_proc (value);
do_this_proc (another value);
end;
procedure do_this_proc (variable);
```

Could you advise me and give sample code to show how to do this?

John Sharland

A This is easy in Delphi, even though the technique is not presented prominently in the documentation. If you look at the VCL source though, you will see it used a lot. It is a matter of placing the sub-procedure in the declarations section of the controlling procedure (using your terms). See Listing 2 for an example.

Note that the nested procedure doesn't appear in the interface section of its unit. It is entirely local to the containing procedure. You can even nest further procedures within the nested procedure. This is a great way to shorten and simplify your code if you have repetitive code within a procedure, although too many nested blocks of code may make it hard to navigate.

An important point to note is that local variables can be declared before or after the nested procedure. If they are declared above it, they are visible to the nested procedure, but not if they are declared below. Of course, you can also have declarations in both places for complete control over visibility, even within a procedure.

Listing 2 Scope of procedures

```
procedure TForm1.Button1Click(Sender: TObject);
 procedure do_this_proc(myparm: integer);
 begin
 showmessage(inttostr(myparm));
 end;
begin
do_this_proc(1);
do_this_proc(2);
end;
```

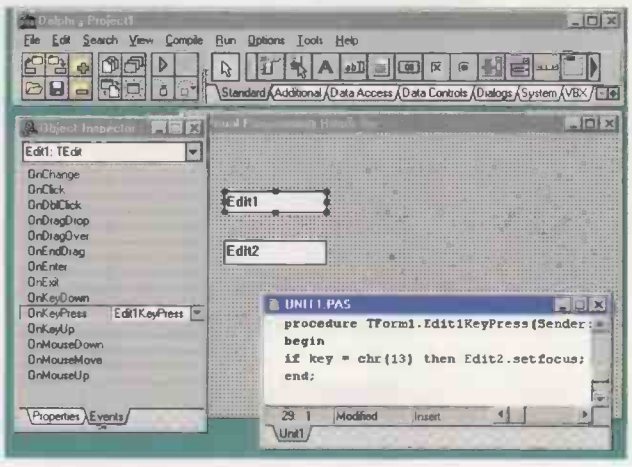

Fig 4 Trap the KeyPress event to customise the data entry in Delphi

Q With MFC or VB is it possible to globally subclass a window in order to get it to look and behave differently (e.g. add another button to the title bar)?

Jon Mulligan

A Yes, it is possible, but it depends what you mean by "global". In 16-bit Windows you can easily use global sub-classing to change the behaviour of every window of that class in the system. But this is anti-social programming and is discouraged. In 32-bit Windows class information is kept separately for every process, so the equivalent code will only affect the windows used by your application. This is generally a good thing, unless you really want global to be global. There are techniques to do this, such as using an APPINIT_DLLS entry in the registry to add a dll to every process. But again, this is generally not good practice.

Global sub-classing within your application's process is useful, though. There is a good article by Kyle Marsh called Safe Sub-classing in Win32 on the MSDN library CD, which I recommend.

Another way to print a memo

Referring to a question about printing the contents of a TMemo object (*PCW March*), Neil Howie has a quicker solution: *I've read your answer in PCW to the problem of getting a quick print of memo text. Bearing in mind that all true Pascal i/o takes place in files, how about:*

```
Memo1.Lines.SaveToFile('prn');
```


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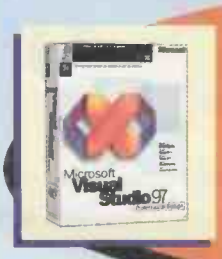

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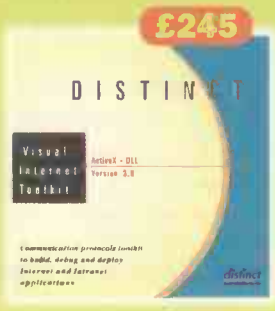

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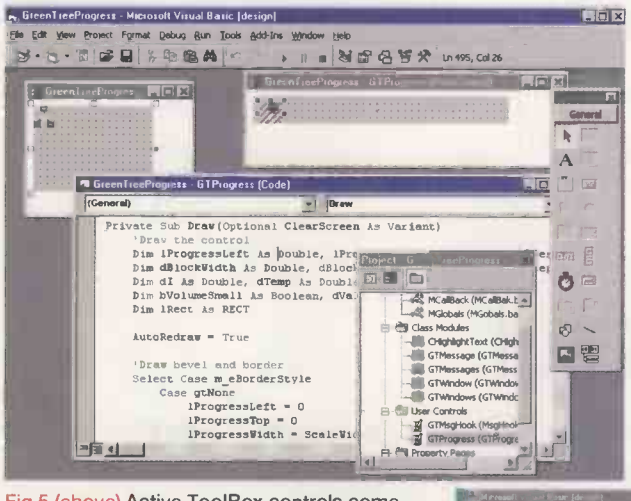


Fig 5 (above) Active ToolBox controls come with full VB source

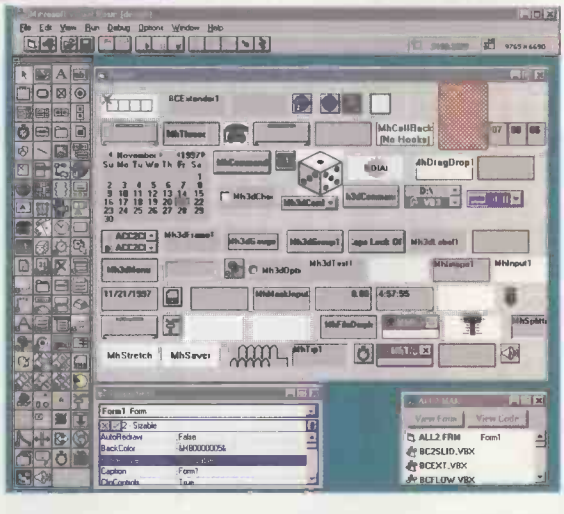


Fig 6 (right) The VB project from hell: VB Tools 6.0 comes with over 60 controls

limitations are lack of integration with IDEs like Visual Studio and file-server based networking that restricts usage to small networks.

StarTeam Professional makes good both of these deficiencies. It is a client-server package that can use any ODBC data source and this makes it suitable for wide-area networks. There is a web-browser interface, too, although this lacks the full functionality of the StarTeam workstation client. The advantage is that you can use StarTeam for cross-platform projects: for example, a web project involving a Unix server, a Windows web editor and designers working on Macs.

The real interest of StarTeam is that, unlike Visual SourceSafe, it goes well beyond simple version control. It includes a flexible change request database. A change request can be a bug report or a suggestion for a future enhancement. Requests can include a description, workaround or fix, and attachments such as screenshots to illustrate a problem.

Requests can also be linked to particular source files. For instance, if you find a problem with a particular routine you can link it to a change request so that whenever the file containing that code is selected, the problem is listed below. When you fix the problem, the link is maintained to remind you and others about what was done.

StarTeam also has an integrated discussion area with full threading. This has great potential for improving team communication and lets you keep a discussion of technical issues alongside the related source code.

Another strong feature is the fine degree of control over access rights. You can hide files completely from groups of users, so you might have a marketing group with access to documentation but not source code.

Rather than just being a developer tool, StarTeam can involve users, testers, designers, managers, and sales and marketing people. It is therefore a tool which addresses several key issues of software development including communication, source-code management and documentation of change.

Active Toolbox

C++ or Delphi developers are used to the idea of getting source code with third-party components. Visual Basic users aren't usually so lucky. But not any more, since Active Toolbox is written entirely in Visual Basic and comes with complete source code (Fig 5).

This is a huge advantage, since running into an incurable component bug late in the development cycle is every developer's nightmare. It also means you can use Active Toolbox as a tutorial example for how to create full-featured ActiveX controls in VB.

The controls themselves include an Outlook-style sliding grouplist, an Office 97 flat-button toolbar, a splitter control, a control for system tray applications and a progress bar. Although not especially original, it is a useful set of components for creating an interface with an up-to-date look-and-feel. The toolbar neither floats nor docks, so it is not quite true Office 97 style.

In general the controls are not as sophisticated as typical feature-laden components from FarPoint or Sheridan but that is not necessarily a disadvantage, given that you can get in and customise them for yourself if needs be. Only the Professional version has the source, which means you should avoid the Standard version.

VB Tools 6

Still coding with Visual Basic 3.0 or Delphi 1.0? You are not forgotten. BeCubed Software has released a new version of VB Tools, formerly a Microhelp product.

There are seven new controls, including a flowchart control and an international control to assist the use of resource scripts — files which let you store the text for captions and dialogs so that you can easily replace one language with another. Judging by the documentation there will shortly be an OLE Tools 6 as well, with the equivalent controls in OCX versions. It's a good-value bundle, with 60 controls altogether (Fig 6). There are old favourites like the gauge, calendar and enhanced listbox, and plentiful 3D controls.

The package is spoilt by a casual attitude to details like the online help, which is in Windows 95/NT format only and features a painful inability to spell possessive pronouns. Do not look instead for the printed manual — it does not exist.

There are many useful controls here but individually they are seldom the best in their class. Most are little changed from earlier versions.

PCW Contacts

Tim Anderson welcomes your Visual Programming tips and queries. He can be contacted at the usual *PCW* address (p10) or at visual@pcw.vnu.co.uk

Active Toolbox £111.63 (£95 ex VAT) from QBS on 0181 956 8000 www.qbss.com

Contemporary Software 01344 873434 www.contemporary.co.uk can supply: **VB Tools 6** £116.33 (£99 ex VAT); **Visual SourceSafe** is either bundled with various Microsoft development products or is available separately at around £468.83 (£399 ex VAT) (Microsoft 0345 002000); **StarBase Version 2.0** costs £88.13 (£75 ex VAT); **StarTeam 3.0** prices not yet announced.

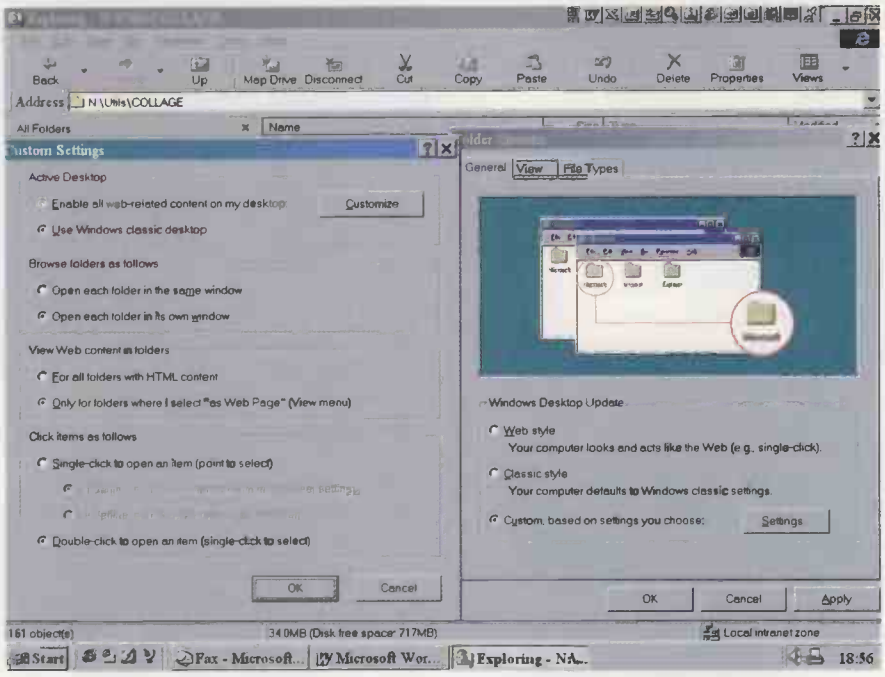
Looking forward

Bob Walder provides a taster of networking in Windows 98: we've got new features like Accelerator Packs, FAT32 and integrated internet to look forward to. Roll on release date!

Let's take a quick look at a few of the new networking and internet features which are going to make it into the release version of Windows 98.

1. The ISDN 1.1 Accelerator Pack doesn't need to be installed in Windows 98. The features which the Accelerator Pack provides are included as part of the OS.
2. The Win32 Driver Model (WDM) is an all-new, unified driver model for Windows 98 and Windows NT 5.0, allowing new devices to have a single driver for both operating systems.
3. FAT32 is an improved version of the FAT file system. FAT32 enables disks over two gigabytes to be formatted as a single drive. It also uses smaller clusters than do FAT drives, which results in more efficient use of space on large disks.
4. With the integrated internet shell included with Windows 98, internet access becomes a seamless part of the user interface. Not too sure this is a good thing, myself!
5. The Dialup Networking included with Windows 98 has been updated to support Dialup Scripting and Multilink Channel Aggregation. This latter feature enables users to combine all available dialup lines to achieve higher transfer speeds.
6. Client Support for Point-to-Point Tunnelling Protocol, providing a way to use public data networks such as the internet to create virtual private networks connecting client PCs with servers.
7. Windows 98 includes all the components necessary to enable your desktop to act as a Remote Access Server. Dialup clients will be able to connect remotely to a Windows 98 machine for access to both local and connected network resources.
8. Windows 98 includes Client Services for NetWare that fully support Novell NetWare Directory Services (NDS).
9. 32-Bit Data Link Control (DLC) protocol is included, enabling a network administrator to add support for 32-bit and 16-bit DLC programs. (DLC is used mainly to access IBM mainframe and AS/400 computers.)

I have been using Beta 3 for some weeks on a live machine and have found it to be stable and usable. Even Internet Explorer 4.1 is behaving itself. Just stay clear of the Active Desktop!



A new range of folder settings within Explorer. Check out the new-style tool bar in Windows 98

Top Tip: Long filenames in Windows 95

As if the advice on staying clear of Active Desktop were not enough, I have another gem for you regarding Windows 95 long filenames.

At first glance they may seem like the perfect tool for organising the directories and files on your PC. But although you can exploit long filenames to describe the contents of your directories, you should be cautious about using them in your root directory. DOS imposes a 512-entry limit in the root and this is still true in Windows 95.

While 512 may sound like an extremely large number of entries, it's not, because when you create a long filename Windows 95 uses one directory for the file's 8.3-style DOS name and another for its long filename alias. Therefore, if all your filenames are longer than the 8.3 format can handle, your limit is reduced to 256 entries.

Book review: a sense of déjà vu

Windows 98 Official Preview Kit (Beta Release)
Author Russell Borland
Publisher Microsoft Press
Price £27.99

A couple of months ago I reviewed a book entitled *Introducing Windows 98 (Beta Release)* written by Russell Borland and published by Microsoft Press for £18.49.

I concluded that "If you don't already have a book entitled *Introduction to Windows 95* then this particular tome is a reasonable grounding in Windows 9x technology and provides a useful early look at all the new features to come in Windows 98, even if it lacks any real nitty-gritty detail. If you do have some Windows 95 books lying around, however, then there is an awful lot of that information which will be duplicated here and you might be better off reading a few in-depth magazine reviews to glean details of the new features in Windows 98. For anyone looking for extensive coverage of networking topics, then you should leave well alone."

I thought I would get hold of this book to compare and, lo and behold, it is identical! "Oh well." I consoled myself. "Being a Preview Kit, at least I can install a beta release of Windows 98 from the CD." No such luck. All that is on the CD is a version of Internet Explorer 4 with a few shell extensions which provide an idea of what the Windows 98 web-based user interface will look like, an online version of the book and a few other less-than-interesting items.

In short, I wasn't that impressed with the original version and, for an extra £10, I would definitely give this one a miss.

• *My thanks to Computer Manuals (0121 706 6000) for supplying me with review copies.*

Windows — Pan-European or not?

In my February column I posed a question regarding the Pan-European version of Windows 95. I expected to get a deluge of answers — maybe even a definitive one from Microsoft itself — but alas, no. Thankfully, Gilles Reichert was kind enough to put finger to keyboard, and it is his solitary reply I reproduce here:

"I would like to add some comments about the Pan-European version of Windows. I used to have one at work for some months — it's an English version of Windows, with the support for extra code pages and character sets such as Cyrillic, Turkish and Greek.

"I think the sentence 'Do not install the SP1 Update English version on the English Pan-European version of Windows 95 or any other non-English version of Windows 95' merely means that to cope with those special characters, some binaries have been slightly modified, and so the 'normal' English SP1 would overwrite some vital files for the Pan-European version.

"I'm using a French version of Windows 95 at home and I have installed many English bugfixes (even ones like the Kernel Update) over it. I have no problem at all with this. Sometimes I end up with a message box whose question is in English and the buttons are in French, but I think that's always the case when you use non-French programs on a French version of Windows.

"I don't know any right way to be sure your version of Windows is Pan-European. One test that should work is to check in WordPad if you can select some fonts in Greek or Turkish and then display them correctly. Just try putting two 'i' characters in a WordPad document, one in lower case and the other in upper case, then change the font to a Turkish one. If you can display Turkish characters correctly, even the capital 'I' will have a dot on it. If you see them as European 'i' (lowercase with the dot, uppercase without), then it's not a Pan-European version. Please take note that I'm not *100 percent* sure that this test is correct but I hope this email will help you and Mr. Mallik understand the difference between English and Pan-European Windows." p364 ➢

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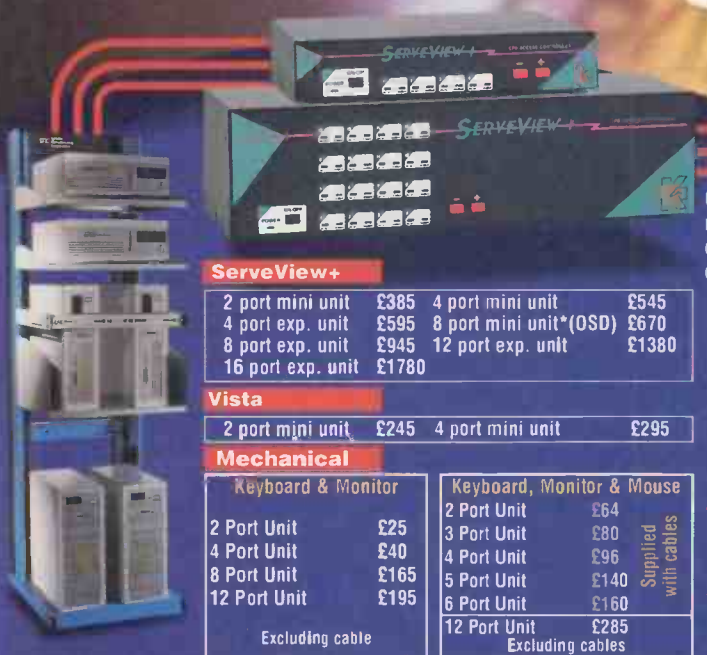

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Please call for further information on the ServeView range which includes ServeView Plus, ServeView Enhanced, Vista, UltraView, Station Master & Matrix.

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8 port exp. unit	£945	12 port exp. unit	£1380
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Excluding cable	

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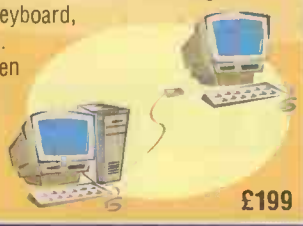

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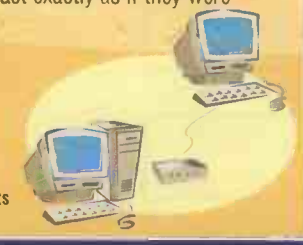
*PS/2 Mouse Units also available



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Keyzone Extenders allows you to place your system unit at a distance from your keyboard, monitor & mouse. Keyzone Sharers are similar to the Extenders but feature a local keyboard, monitor & mouse port as well.

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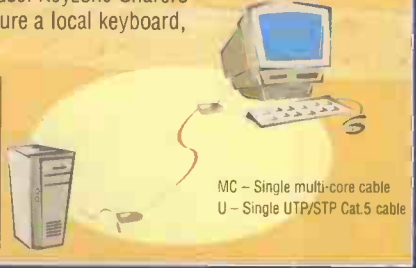

MC – Single multi-core cable
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Questions & Answers

Q I have just bought a new PC and rather than throw the old one away, I would like to connect the two together. They both have network cards and run Windows 95. What else do I require to connect them?

A This question crops up from at least one person every month, so rather than just keep directing you all to the *PCW* web site to look at old columns I will quickly recap on what is needed. As far as the software is concerned, of course, you have everything you need with Windows 95.

In terms of additional hardware and cabling, however, the easiest way to connect two PCs together is using Thin Ethernet. Standard Thin Ethernet (also called 10Base-2) coaxial cable is readily available and is easy to use, although cards which support it are beginning to get a little "thin" on the ground (*sorry – couldn't resist the pun!*).

You also need two T-connectors and two "terminators": the T-connectors are plugged into the BNC connector of the network card, and one terminator is connected to each T-piece. Each end of the Thin Ethernet cable can then be connected to the remaining connector on the T-piece and that's it — you're cabled up and ready to go. Please do not try to connect a single piece of coax cable directly to the BNC connector on the network cards as it will not work. You must use the T-connectors.

The other option is to use 10Base-T, where we no longer connect PCs in a chain. Instead, we use a "star" configuration with a hub at the centre. Each port of the hub is connected to a PC or to another hub, and all communications go via the hub. This provides much more flexibility in cabling up our networks and uses lighter and cheaper cable (which resembles telephone wire).

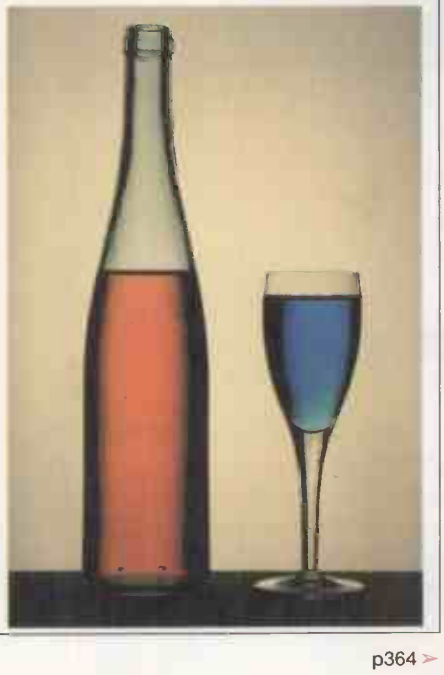
This can get a little expensive for connecting just two PCs, especially in a home environment, since the hub is quite an overhead (although you can now get four-port hubs for under £30). Standard 10Base-T cable is designed to connect a PC to a hub, however, not a PC to a PC — the signalling simply will not work.

There is one other possible option in this particular case. When we need to connect two hubs together which do not have "cascade" ports, or when we need to connect a file server directly to a router, for instance, we have to use something called a "crossover cable". Externally this cable looks identical to standard UTP cable but the pairs of wires inside the outer sheath are arranged slightly differently. Using a crossover cable plugged directly into the UTP ports of your network cards should allow you to achieve the same effect as using a single piece of Thin Ethernet cable. Crossover cables are not quite as readily available as standard ones, so make sure you specify your requirements carefully.

Q I have a direct-sales wine operation and have a small web site hosted by an ISP on which I advertise my products. How can I take the next step and actually begin taking orders and selling via the web without spending an absolute fortune (after all, I don't know if it will take off yet, do I?).
Andrew Morgan

A s it happens, I have just finished looking at a product called Actinic Catalog which is specifically designed to enable small companies to set up shop on the internet. It includes everything you need to set up and service a state-of-the-art web-based sales channel and is designed for ease of use.

The only sticking point for some is that



p364 >

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Questions & Answers (cont'd)

Perl is required on the target web server (which may take some negotiation if your web server is being hosted by a third party) in order to run the scripts which support the catalogue, shopping cart and ordering processes. Once the thing is configured, the rest really is idiot-proof.

Everything is run from a single, intuitive program and the first job is to create the product catalogue itself. The software allows you to create a two-level catalogue (with subject headings and products beneath) using a simple form where you can enter product descriptions, pricing information and so on. You can even include pictures to illustrate the products if you wish. Although the easiest method of catalogue creation is to use the default web-page layout included "out of the box", those with some HTML knowledge might prefer to customise things to their own tastes by amending the standard HTML "templates" and included icons.

Payment options include credit cards, cash on delivery, cheque on delivery, invoice with order, invoice and payment before delivery, and credit-card details sent separately. The last option is for those paranoid customers who are reluctant to send credit-card details over the web but would still like to order via the catalogue: Catalog prints out an order confirmation for them, on which they can write their card details before posting it to you.

All catalogue amendments and order-processing functions are performed off-line and connection is only required for the time it takes to upload the catalogue or amendments, or download sales orders. This keeps connection costs to a minimum if your web site is hosted by a third party, and updating your catalogue on the web server can be done at the click of a button.

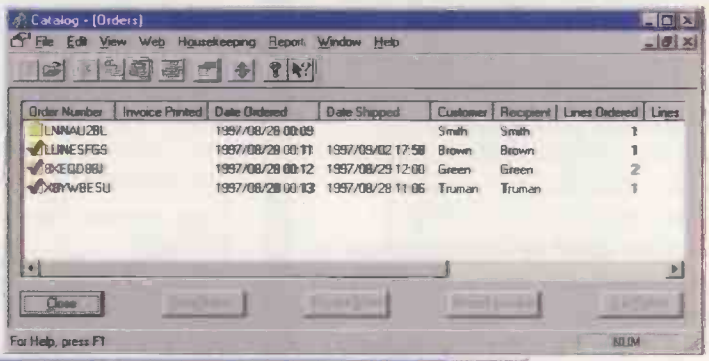
Visitors to your web site (potential customers now, of course) see a number of buttons representing the catalogue sections, and clicking on these presents the product descriptions, images and pricing details. Ordering goods is as simple as clicking the Add To Shopping Cart icon, and orders can be amended or discarded at any time. When the customer is ready to order he simply clicks on the "Order" icon, and this is where the really neat bit of Catalog comes into play.

Normal e-commerce solutions use SSL to provide a secure encrypted channel between web browser and commerce server. This level of complexity is not required by Catalog, but in getting around it the security has actually been improved.

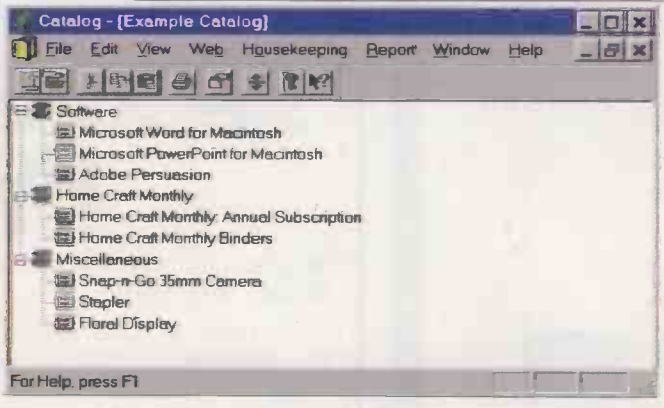
To process the order, the browser will download an ActiveX or Java applet (depending on the browser being used) which presents an order form where the user can enter his name and payment details. Because of the high level of encryption, entering credit-card details is very secure, but users can opt to forward their details later or choose other methods of payment such as COD or invoice with order. Only when the orders are safely within the vendor's system are they finally decrypted.

Basic order-processing software is included as part of the package and retrieving encrypted orders from the web site is simply a matter of clicking on the Download icon. Once they have been transferred to the local PC, they are decrypted and made available via the Catalog software.

This is the only way to dip your toe in the waters of e-commerce without having to spend a fortune on infrastructure, development and support, and the product pretty much does everything that is expected of it. If you fancy seeing just what it can accomplish, take a trip around the Actinic web site at www.actinic.co.uk/acatalog/index.html where there is an online catalogue. Also, see our *First Impressions* review, *PCW* April, p94. Actinic Catalog can be purchased from Actinic (01932 860524) for £410.08 (or £349 ex VAT).



Right Actinic Catalog: processing sales orders



Left Actinic Catalog: creating a catalogue

I also had a letter from Colin Marshall, pointing out an omission in my answer (*PCW* March) to a question from Chris Smith regarding Windows 95 file sharing over a Novell 3.12 network.

"To allow the file sharing to take place he needs to set up a user account on Novell in the name of 'WINDOWS_PASSTHRU'. No password is required for this account and single login permission is sufficient. I know this works as I currently manage a Novell 3.12, 25-user network which uses Win95 file sharing to access a CBT course CD-ROM on a PC with file-sharing rights granted."

My thanks goes to Gilles and Chris for taking the trouble to write in.

PCW Contacts

Bob Walder can be contacted via the *PCW* office (p10) or email networks@pcw.vnu.co.uk

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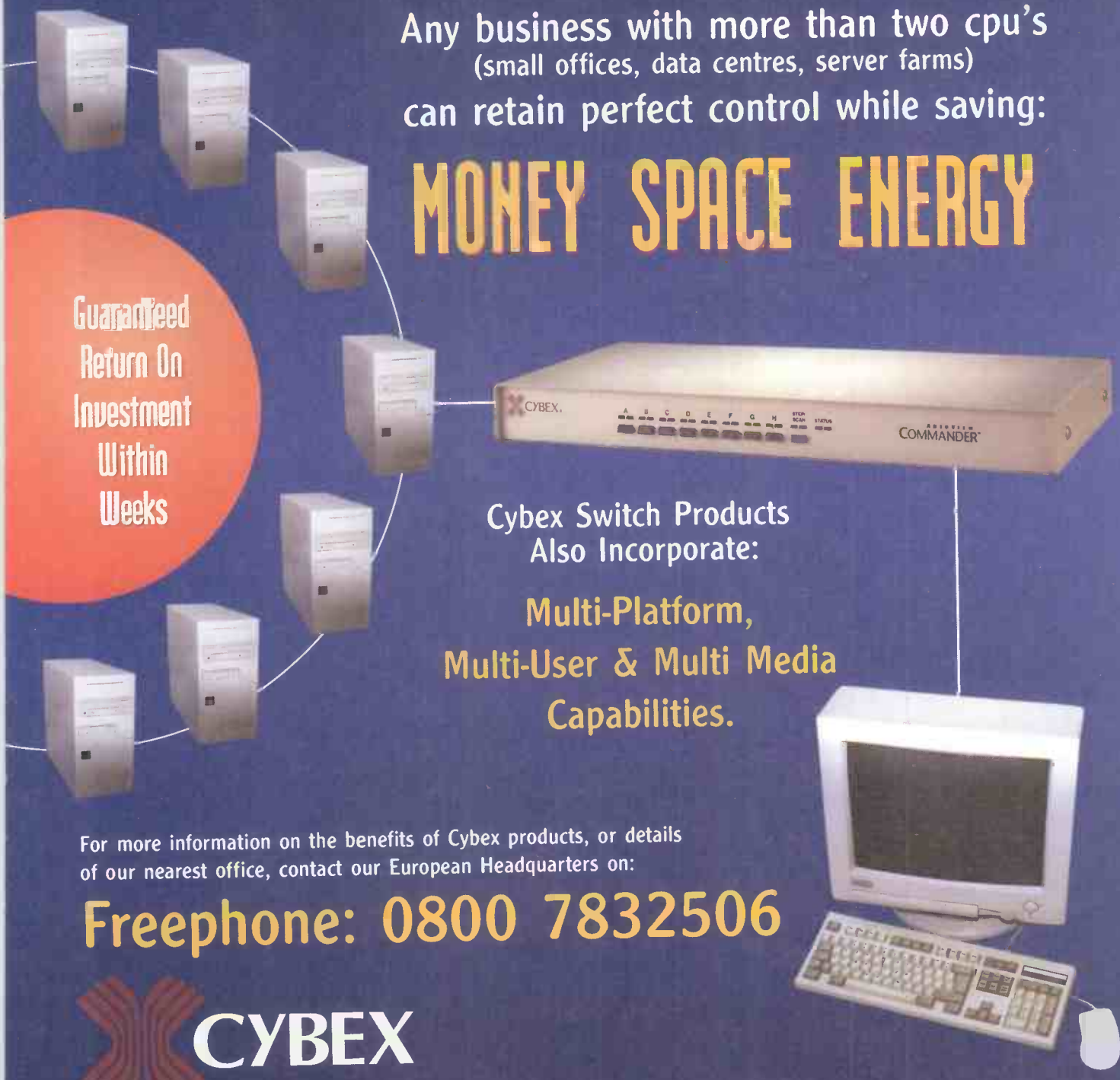

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Interior design

What can you expect to find lurking benneath the beige shell of your PC, and what role does each part play? Lynley Oram shows you how to get on first-name terms with your PC's insides.

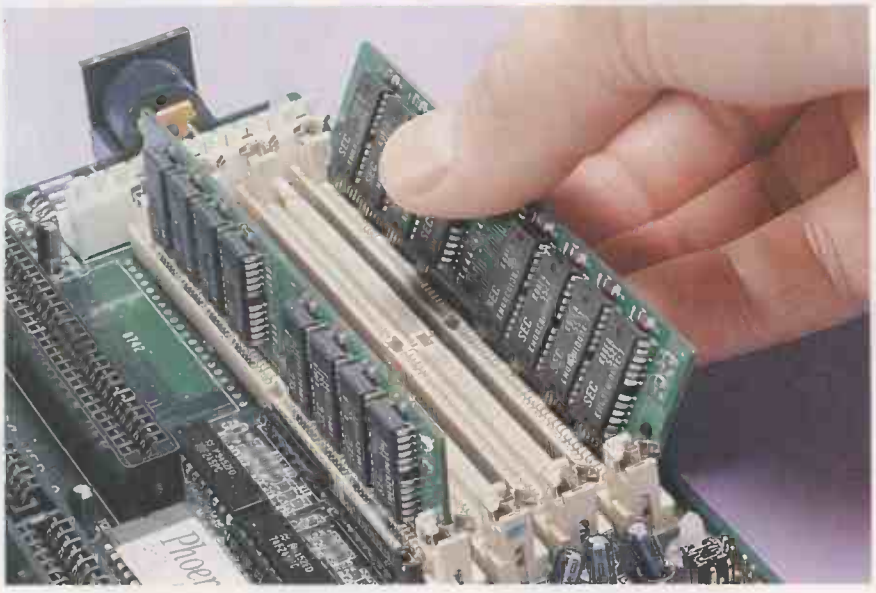
Personal computers have changed considerably in the past 20 years since the launch of the first IBM PC in 1981. However, if you had looked inside a PC in, say, 1991 when 486s were all the rage, you would be amazed at the similarity to today's PC.

This month we're going to indulge in a quick overview of what's inside your machine, and follow the path that data takes as it moves about your system.

Before removing the casing on your system box, check to make sure that doing so doesn't void your computer's warranty. Once inside you'll see a large board, known as the motherboard, onto which are stuck a number of slots and bits of silicon (these are the large, square, dark-grey things soldered onto the board). At the top and to the rear of the case will be a large, encased, square object with a fan at the back: this is the power supply unit (PSU) which takes mains electricity and converts it for use within the computer.

At the front will be a number of bays containing your CD-ROM drive, floppy drive and zip drive. These bays come in two sizes, 5.25in and 3.5in. The hard drive may be in one of these bays, but since it doesn't require external access to use it, the manufacturer may have placed it beneath the floppy drive or tucked it under the PSU.

The multi-coloured wires littered about your PC are power cables. Your drives will be connected to the motherboard with some grey, ribbon-like cables known, unsurprisingly, as "ribbon cables".



RAM is commonly fitted into PCs by soldering several memory chips onto long, thin cards known as memory modules. There are two types of modules: SIMMs (*seen being fitted, above*) and DIMMs which can hold SDRAM, the fastest type of memory

Central Processing Unit

The CPU (central processing unit) lies at the heart of any PC. Just to confuse matters, it is also referred to as a processor and even as a computer chip. It is in fact a chip, but this is a broad generic term for bits of silicon that can do everything from run your PC, to monitoring the fuel injection in a car engine, to telling you when your fridge is too warm.

Unlike the other chips attached to your motherboard, the CPU is not soldered. Instead, it is fitted either into a Socket 7 or, in the case of a Pentium II, into a Slot One. Apart from the processor being the largest bit of silicon you can see, it differs in that it will be covered by a fan or a heatsink and this prevents the processor overheating.

The fan/heatsink required for a Pentium II is exceptionally large and the processor itself slots into the motherboard in a similar way to an add-in card such as a sound card. To stop it falling out or just keeling over, it slots in with the help of a couple of braces. The Slot One is proprietary, in that its patents belong to Intel and therefore only Intel processors may be made to fit it. Socket 7 is not proprietary: any processor that fits a Socket 7 can use it. There is a little lever on the side of the socket, so removing a processor is a matter of unclipping and raising this lever to move it out of its locked-in position.

There is an acronym, ZIF, that often crops up when people are referring to processors and Socket 7, and it stands for zero insertion force. This simply means that no force at all is required to lift the CPU in and out. If it is not fitting properly, then something is wrong: you should check that all the pins on the underside of the processor are still in alignment.

Thanks to Intel's massive marketing drives, most people realise that the processor is an important part of the PC. It is the most vital component because it processes data and controls all the other parts of the computer. Intel is not the only manufacturer of processors. Both AMD and Cyrix produce very good CPUs, with AMD's K6 processors competing well against Intel's Pentium II units.

What the CPU can do

The CPU can only do simple things, such as move numbers from one place to another or perform basic mathematical operations, but it does these very quickly. It works by continually retrieving instructions from the memory that tell it where to get data, what operations to perform on it and where to store the results.

The CPU will process data as instructed by the programs you're running. If my computer is able to produce reports, it has a program which instructs the CPU to execute a particular group of instructions which create those reports.

Often the CPU performs several operations on the same data, or it may need to hold the result from one operation, to be used on the next. Such data needs to

be stored close at hand, so it is put into places called address registers and data registers on the CPU itself. This prevents the processor from having to access the memory each time it generates data.

In 1991 you'd have been really with-it if your PC had a 486 33MHz processor, but today's entry-level machines will have at least a Pentium-class MMX 200MHz CPU.

RAM (Random Access Memory)

A concept which is confusing for beginners is the location of data. The CPU spends its time fetching instructions and executing them. But from where? Is the data in the hard disk, the main memory, or the cache memory? The answer is, all of these. Data is continually moved around. Its location depends on the stage of the CPU cycle.

The data on your hard disk must be copied into main memory before it can be used effectively. This memory is also known as RAM (random access memory) and operates much faster than your hard disk. It is used for handling data currently in use, such as your open documents and applications. Data which the system is not currently processing will be swapped onto the hard disk to save precious RAM resources, using what is known as virtual memory.

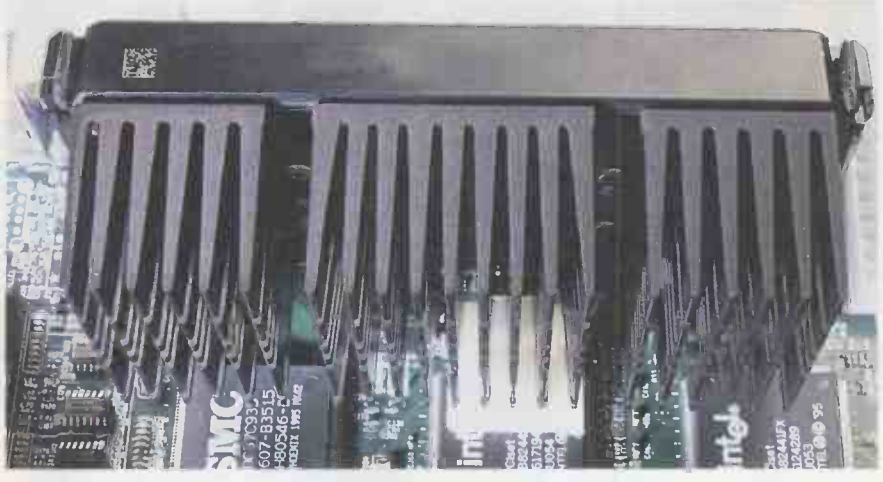
Nothing is kept permanently in the main memory: RAM is wiped clean each time your PC is switched off, or crashes. That's why you must regularly save your documents while working on them. This copies them from RAM back onto your hard disk for permanent and safe storage.

RAM is commonly fitted into PCs by soldering several memory chips onto long, thin cards known as memory modules. There are two types of module: SIMMs (single in-line memory module) and DIMMs (dual in-line memory module). The most common types of RAM are EDO (extended data output) and DRAM (dynamic RAM), both of which can be found on SIMMs and DIMMs. An increasingly common type of memory is SDRAM (synchronous DRAM) which can only be found on DIMMs and is the most desirable memory to have. It works by synchronising signal input/output so the memory chips work at the same speed as the CPU, thus increasing the speed of your computer.

On your PC's motherboard there will be several slots with little clips at the ends. Some or all of these will be fitted with RAM. Slots which take SIMMs are smaller in length than DIMM slots and are usually a lighter colour. In 1991 you could have bought a PC with 4Mb RAM. Today's entry-level machines will have 32Mb of RAM, with many boasting SDRAM, although some budget machines still come with 16Mb. If you can afford it, opt for 64Mb RAM as this will help to prolong the life of your PC — today's programs are becoming increasingly memory-hungry.

Cache memory

Sitting between the CPU and the RAM is something called cache memory. Cache is designed to supply the processor with the most frequently requested instructions and data and is usually much faster than normal main RAM memory. Cache comes in two flavours: Level 1 (between 16Kb and 64Kb fitted within the CPU itself) and Level 2 (typically 256Kb to 512Kb) usually fitted near the CPU, on the motherboard. The exception is Intel's Pentium II, which has its Level 2 cache fitted on the main CPU cartridge, hence its bulk.



The Pentium II processor is big and fast. Note the size of the heatsink and the way the cartridge, encasing the processor, sits upright

Hard disk

The hard disk is that part of your PC which holds all the programs, documents and data when your PC is switched off. The longer you have your PC, the more documents you create, the more data you store and the more valuable your hard disk.

Programs such as your word processor are replaceable. Even if it came installed on your PC, the set of floppy disks or CDs should be included. If anything goes wrong, you can re-install your programs from the floppies or CD back on to your hard disk. However, anything else, such as your precious documents, should be frequently backed up onto spare floppy disks or a storage device of some kind, such as a Zip Drive or Super Disk.

As its name implies, the hard drive is made of aluminium alloy covered with a magnetic coating, making it pretty rigid. As hard disks spin very quickly and have high recording densities, they must be kept free from dust and any other kind of environmental contamination. Consequently, they are completely sealed.

Hard-disk capacity is an area where PCs have changed over the years. In 1991 an entry-level PC sported a 40Mb hard disk: compare that to today, when an entry-level PC ships with a 2Gb (2,000Mb) hard drive.

Data is recorded onto the magnetic surface of the hard disk in exactly the same way as it is on floppies or digital tapes. If you've ever defragmented your hard drive, you probably have some mental image of how the surface of the disk looks. It is treated as an array of dot positions, each of which can be identified and set to a binary 1 or 0. The position of each array element is not identifiable in an "absolute" sense, so a scheme of guidance marks helps the recorder find positions on the disk. The need for these guidance markings explains why disks must be formatted before use. This formatting used to be carried out by the user when a new drive was fitted, but these days drives come pre-formatted.

PCW Contact

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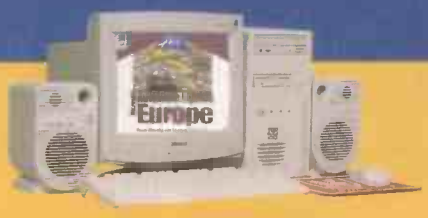

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AMD K6	£836	£869			
CYRIX M2	£809	£839			

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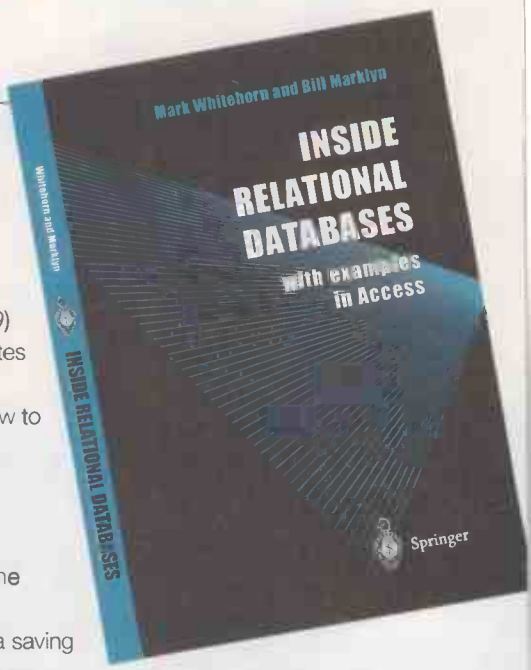

Inside Relational Databases

(reviewed in PCW November 97, p329)

- Written by Mark Whitehorn, who writes *PCW*'s Hands On Databases column.
- Explains everything you need to know to create efficient relational databases.
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- Includes masses of examples using Microsoft Access.
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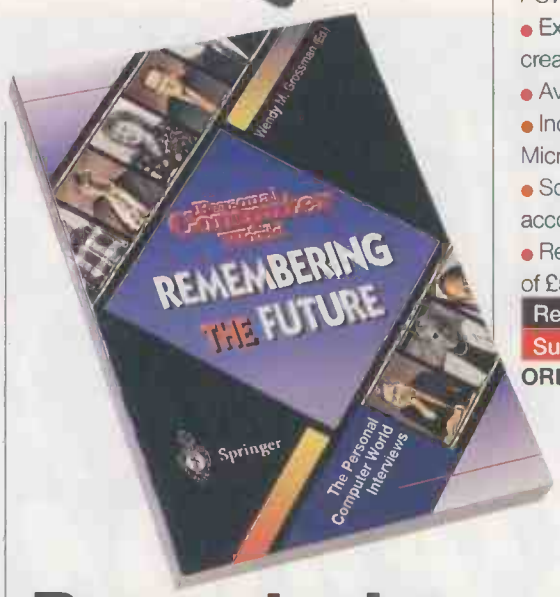

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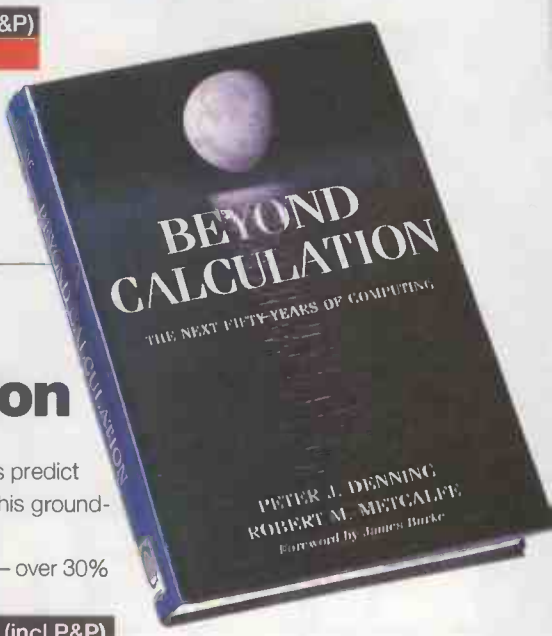

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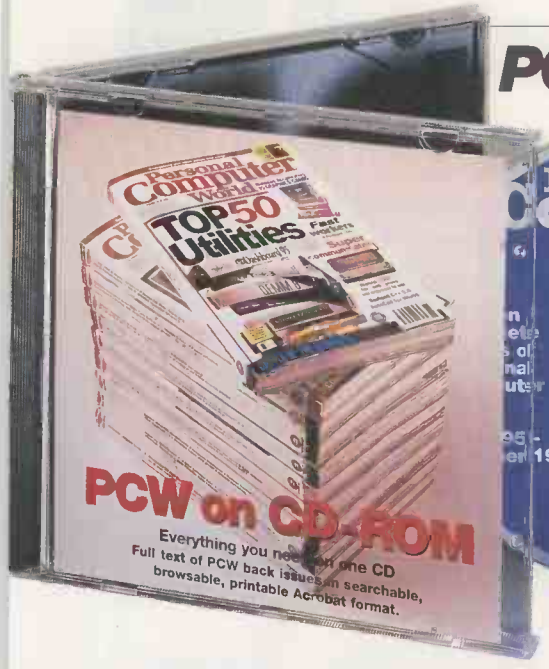

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Starship Titanic

Personal Computer World Recommended

The most advanced space vehicle ever built — The Ship That Cannot Possibly Go Wrong — crash-lands in your living room. Fortunately, little damage is done (to the ship, that is) and you are escorted on board by a rather confused robot called Fentible.

The ship is fabulous, with sumptuous art-deco interiors, vast galleries and even a canal complete with gondola and gondolier. You can spend a lot of time just wandering about gawping, but to reach all the parts you'll first need to wangle an upgrade or two from Super Galactic Traveller (3rd class) status. Then it gets complicated. The fact that the bowl of nuts is really the central robot's missing ear can really only be explained by the fact that this is a Douglas Adams production.

It's big, it's beautiful, and it's just crashed into your house

Adams and his team have taken the best points of the point-and-click adventure game and reintroduced the lost art of conversation by providing free-text entry for the player to talk to the characters. A clever parsing engine ensures that the replies, which are both spoken and written, are in some way relevant... or not, as the case may be.

Although you are the only human on the ship there are a number of variously-deranged robots with which to converse, as well as a parrot and the ubiquitous Succ-u-bus (voiced by Adams himself) which transports objects to any chosen destination on the ship... or not, as the case may be.

Tim Nott

PCW Details

Price £44.99

Contact Zablac 01626 332233
www.starshiptitanic.com

System Requirements PC: P100, 16Mb RAM, 10-50Mb disk space, 16-bit colour. Mac: System 7.5, PowerPC 100, 16Mb RAM, 10-50Mb disk.

★★★★★

The Meaning of Life

The Meaning Of Life is the third release in the Python series. It contains strategy, adventure and, above all, a bit of comedy.

The wizards at Python research labs have invented a new feature for this game. Called Surround-O-Vision, it enables you to navigate 360 degrees around the Monty Python environment.

The first part of the game relates mainly to the Python film, integrating clips with gameplay. Those who have seen the film will be able to relive the scenes as they instinctively click on the appropriate characters at the appointed times. Other parts of the game also include clips from the original Monty Python's Flying Circus television series, such as the "How to defend yourself against a man armed with a banana" sketch.

Above The Meaning of life starts off by giving birth

Left A clip from the film

The crazy pursuits involved in completing puzzles should keep fans entertained, although after hours of playing the jokes do start to wear thin and become silly rather than funny.

I enjoyed some of the sections like clicking on parts of the screen and listening to the responses. I also liked the puzzles within the game such as You Don't Know John, and I had fun with Live Organ Transplants where the player has to try and perform interactive surgery.

The Python team however, although funny, seem outdated. So don't buy this game unless you're a real fan.

Michael Murphy

PCW Details

Price £39.99

Contact Take Two 01753 854444
www.pythonline.com

System Requirements IBM PC or compatible, Pentium 100 or greater, Windows 95 or Windows NT 4.0, 16Mb RAM.

★★★☆☆

Nightmare Creatures

It is 1660, and a secret society known as the Brotherhood of Hecate is causing fear and panic on the streets of London. Founded by Adam Crowley, the BOH is busy conjuring up deformed evil creatures that roam the fog-shrouded streets, tearing the arms and legs off anyone they meet. You play one of two heroes in a hugely enjoyable quest to defeat these malign forces. Titling himself as "a Man of God", Ignatius is actually a staff-wielding nutter with a penchant for dismembering monsters. Similarly, Nadia is an athletic psychopath with a big, sharp sword — just be glad they're on your side. Both characters have a wide repertoire of fighting moves and, although you can play the game using a keyboard, you'll find Nightmare Creatures far more fun with a joypad.

Monster madness sweeps London

The game uses a cinematic, roving-camera third-person perspective similar to Tomb Raider. The 3D graphics are excellent: solid monsters, transparent fog and impressive rain effects. Nightmare Creatures supports a variety of 3D accelerator cards. The audio is realistic, with a particularly fine squelch as a zombie's dismembered head falls to the floor. The monsters are clever and vicious, and the difficulty is pitched at the right level to keep you enthralled for hours on end.

In the UK, Nightmare Creatures is currently available for the Playstation. The PC version will arrive later this year.

Adam Evans

PCW Details

Price In the US, $49.95

Contact Activision 001 310 255 2000
www.activision.com

System Requirements Win95, P133, 16Mb RAM, 2X CD-ROM drive, 20Mb HD space, 16-bit colour SVGA video card with 1Mb RAM (hardware acceleration recommended), uses MS DirectX.

★★★★☆

TOCA Touring Car

Looking for some serious pedal-to-the-metal action? Then stick-shift your way to one of the newest racing games in town. TOCA Touring Car Championship, from Codemasters, is the perfect racing game, with a domestic twist that keeps you revving for more. TOCA is based on the British Touring Car Circuit, with tracks similar to Brands Hatch or Silverstone.

There are eight cars from which to choose, each with its own unique handling characteristics. You can select your favourite car, whether it is the Vauxhall Vectra, the Renault Laguna or the Nissan Primera. There are four modes of racing: Single Race, Championship, Time Trial and Network Play. You have seven race tracks to play but you'll have to start winning a few before you progress from the first to the last.

The gameplay is smooth and fairly realistic. If you crash your car it will slow you down, and if you drive dangerously or the wrong way around the track you can expect a penalty.

Watch out! You need to stay on the track or you lose precious points

TOCA Touring Car is one of the most accurate racing games around. It has patches for 3DFX, PowerVR and OpenGL-based graphics cards and makes good use of Microsoft's latest 3D API, DirectX 5.0 and, more specifically, Direct3D (D3D). With this last you get a true 3D feel: textures on oddly shaped objects and transparent smoke effects — gone are the days of square, black blockiness when you screech away.

Dylan Armbrust

PCW Details

Price £34.99

Contact Codemasters 01926 814132
www.codemasters.com

System Requirements Windows 95, 16Mb RAM, 4-speed CD-ROM, 14Mb hard-disk space, with 3D graphics card, P133 CPU and without 3D graphics card, P166 CPU.

★★★★☆

p374 >

The Reap

"Adrenalin in its purest form" claims the packaging, so there was no way I could say no to reviewing The Reap, from Take 2. It is a shoot-em-up with a plot that treads the well-worn path of aliens taking over the earth. You are cast as a mercenary pilot whose job it is to fly ten killing missions. Random fire usually does the job, as your brief is to clear earth of humans, buildings and vehicles in preparation for alien occupation.

Take 2 uses the isometric 3D perspective, most famously seen in Zaxxon in the eighties. It's a good job you've been told that you're a pilot because the perspective sheds no light on whether you're driving on the ground, hovering just above the surface or flying high in the sky.

The motion of the game is quick and smooth and the graphics, dull and dark at first, improve as you go. The main problem is that you cannot identify with the craft you are supposedly controlling: the reality of being in the craft and firing bullets is lacking.

Although this game boasts DirectX technology and a level of artificial intelligence rare to shoot-em-ups, I got bored long before the benefits showed. Sadly, there was no adrenalin involved.

Rachel Spooner

Top Fire at everything you see from your little aircraft
Above Is this the Blue Plasma or the Electric Spline? It's time to weapon-up!

PCW Details

Price £34.99
Contact Take 2: 01753 854444 www.take2europe.com
System Requirements Win95, P75 (min), 16Mb RAM, quad CD, sound card, 1Mb video card (recommended 2Mb video card and DirectX 5)
★★★☆☆

Myth

Myth, the Fallen Lords, is a fantasy real-time strategy game with a few impressive tricks up its sleeve. The background setting to this game reminds me, in part, of JRR Tolkien's *Lord of the Rings*.

The Fallen Lords have risen from the dead and their evil forces have ravaged most of the continent. One city remains, stemming this evil tide and preventing the world from falling into utter ruin. But at the point you enter the game, the city is under siege.

The continent is in ruins, the one remaining city is under siege...

Before each scenario begins, an old "experienced soldier" explains what has happened and what you are meant to do during your mission. This is related to you in the style of a tale and adds a bit of character to the game, which is a nice touch.

The impressive part of this game is that the missions you undertake are completely 3D. Rotating the screen means that you can view your men from different angles. To become good at the game you must truly master your orientation skills because it gets confusing at times, particularly when you are controlling different groups of soldiers. It seems that no detail is too small, even down to the dismembered body parts caking the terrain in blood. This is a very realistic strategy game and should provide many hours of frustrating enjoyment.

Michael Murphy

PCW Details

Price £44.99
Contact EIDOS 0121 356 0831 www.eidos.com
System Requirements Pentium 90MHz, 16Mb RAM, Win95/NT4, 32Mb free hard-disk space, DirectX-compatible video card.
★★★★☆

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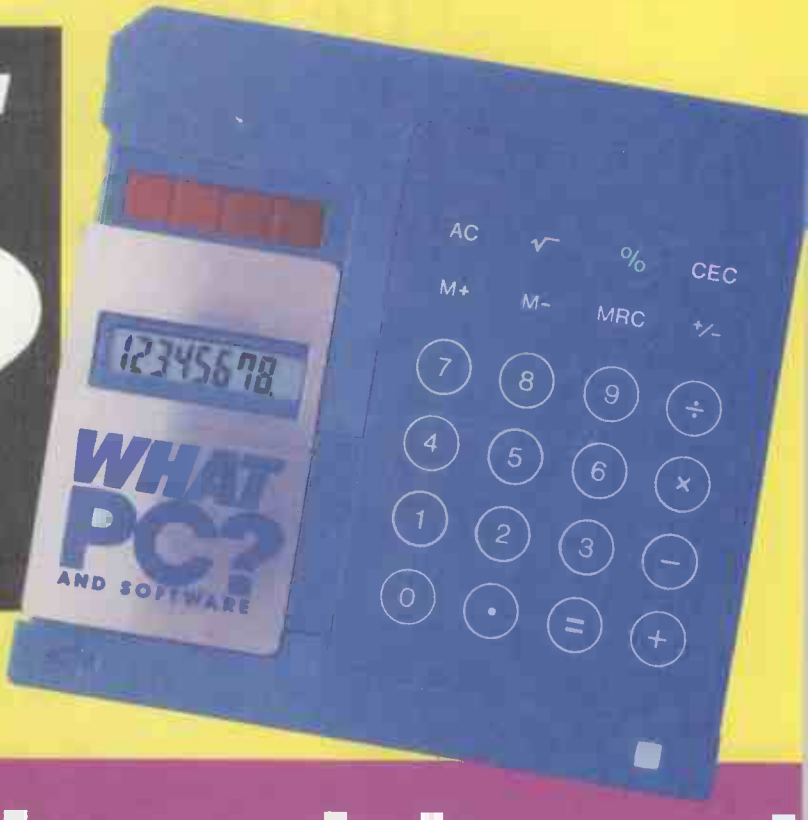

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Brainteasers

Quickie

What single item can be found at the back of every bus and at the front of some sports cars?

This month's prize puzzle

This month's problem isn't too difficult and can be solved by analytical means if you know how. But for those who don't, it should yield easily to a not-too-complicated computer program.

In previous puzzles we have mentioned the island of Tonterias. The population there is growing steadily in numbers and at today's birth and death rates it should have doubled in 100 years.

The current annual birth rate is 1 birth per N of the population, the death rate is 1 death per (N+24).

What is N?

Send your answers on a postcard or on the back of an empty sealed envelope to:
PCW Prize Puzzle - May 1998
P.O. Box 99
Harrogate
N. Yorks HG2 0XJ
to arrive not later than 20th May 1998.
Please do not send solutions on floppy disks or in envelopes.

Winner of February 98 prize puzzle

A good response to a fairly easy problem. Well over 200 entries were received, most of them with the correct solution — Boss 41, Secretary 31.

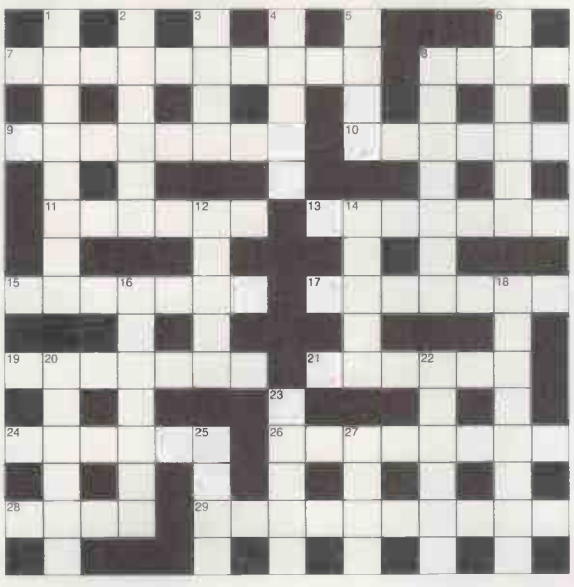
It was rather unfortunate for someone that the first card we drew out from the correct entries had neither name nor address on it, so this mystery entrant missed out on a prize.

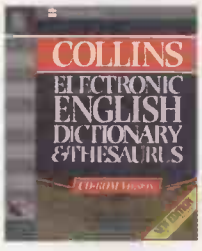
However, the next selected card had no such problems: it was from Mr Manthos Kallios of Brentwood in Essex. Congratulations, Mr Kallios, your prize is on its way.

Meanwhile, to all the others — keep trying, it could be your turn next. And do make sure that you have enclosed your name and address with your entry.

JJ Clessa

Prize Crossword No. 7





Haven't got a clue? Maybe you could do with the help of the Collins Electronic Dictionary & Thesaurus. Each month, we're offering one lucky *PCW* reader the chance to win a copy. Send your completed crossword to PCW March Prize Crossword, VNU House, 32-34 Broadwick Street, London W1A 2HG, to arrive by 24th May 1998.

• Please state clearly on your entry if you do not wish to receive promotional material from other companies.

ACROSS

7 3.5 inch slot receives it (6, 4)
8 Begin with footwear! (4)
9 Get all the data from another source (8)
10 Programmer's language from a while ago (6)
11 The person who produced the software (6)
13 Pay close attention to the screen? (7)
15 Separate part of a disk (7)
17 Useful jump from one site to another (3, 4)
19 Partial internal stores for data (7)
21 Itemised list of activities performed (6)
24 Software box requiring an answer, in American-English (6)
26 The second T of HTTP (8)
28 Just a term for part of Gates's office package? (4)
29 Dreaded failure messages (5, 5)

DOWN

1 Aliot (8)
2 Old keyboard instrument (6)
3 Printing mistake (4)
4 Very breezy (5)
5 Jump over (4)
6 Spud (6)
8 Like a wild animal (7)
12 Proprietor (5)
14 Threatened atmospheric layer (5)
16 Silenced (7)
18 Chatted (8)
20 Agreement (6)
22 Exhibited (2, 4)
23 Tempest (5)
25 Delight (4)
27 Broadcasts (4)

April solutions

ACROSS
7 ASCII 8 Gifs 9 Read 11 Archie 12 Firewall 13 Go to 15 URL 16 Demos19 Uniform 20 Pirated 23 Trees 25 EXE 26 Spam 28 Protocol 30 Mosaic 32 HTML 33 Unix 34 Beeps

DOWN
1 User 2 Fight off 3 Pitfall 4 Astra 5 Browse 6 Pail 10 Require 14 Owner 17 Omega 18 Dilemma 21 Assisted 22 Declaim 24 Extols 27 Scrum 29 Rate 31 I-spy

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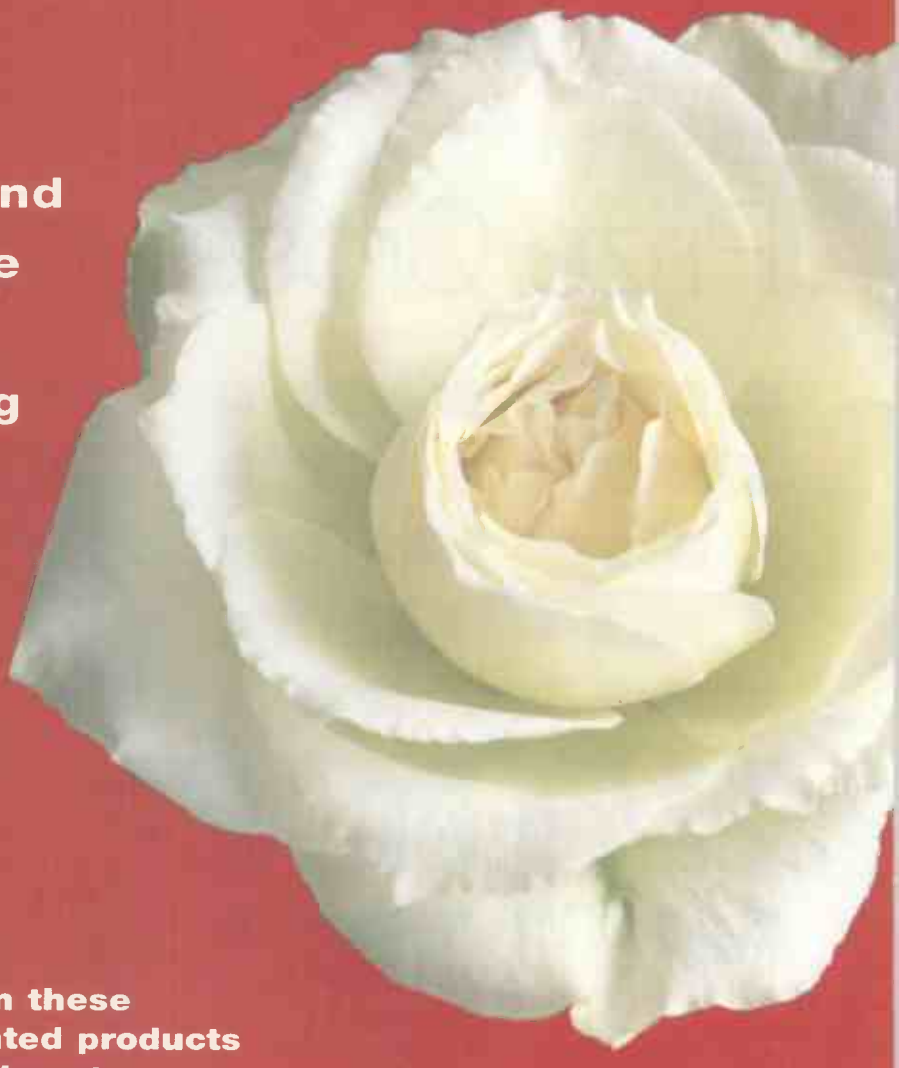

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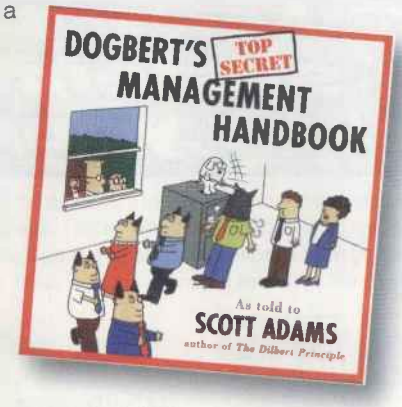
Books

What PC?'s no-nonsense beginner's guide to mastering your PC and its software. And Adams does the double on Dilbert/Dogbert.

Seven Years of Highly Defective People: A Guide to the Evolution of Dilbert

The whole Dilbert universe is here, with accompanying commentary on the characters, their evolution, those who came and were liked, and others who received the thumbs down.

Why does Dilbert's boss have a devil's haircut? Whatever happened to Dilbert's girlfriend? All the answers are here but this book is not as exhaustive as it sounds. Dilbert creator, Scott Adams, claims in the introduction to have written all the commentary "off the top of my head" in three sittings, stopping "only long enough to rest my weary hand". Essentially the book is a cash-in. But who cares? I found it so funny, I had trouble breathing.



Dogbert's Top Secret Management Handbook

This book should satisfy Adams aficionados, as the author has obviously taken longer than three sittings to pen his thoughts (*see the review above*).

If the horn-haired boss is your favourite character, then this is the book for you. This excellent handbook compresses all Adams' cynicism and frustration with corporate life: frightening to witness because the workplace he describes could be yours.

Illustrating his points with cartoons, Adams gives his theories on how to manage in a world where sniffer dogs are "specially trained to detect wasted resources". And there is a priceless Seventh Rule of Management: "If ten people can complete a project in ten days, then one person can complete the project in one day". The contents page for each chapter seems innocuous enough, with sections entitled Employee Satisfaction and Motivation Task Force. But lurking inside are Adams' warped views on nineties corporate life.

Approach with caution if you're experiencing even the remotest twinges of dissatisfaction at work.

Paul Trueman

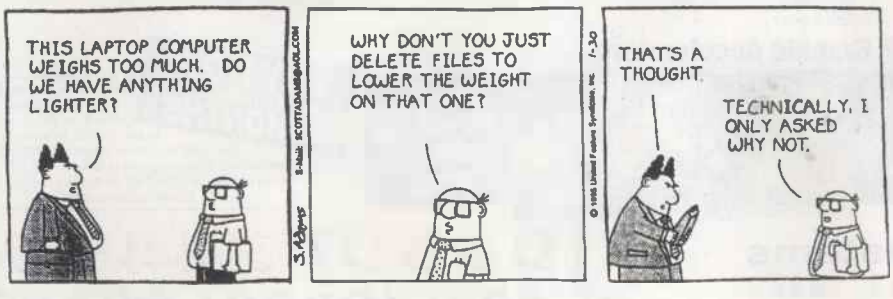
What PC? Guide to Your PC

A cover-mounted New Riders WWW directory CD (previously priced at £9.99) and the What CD? disc attached to the inside back cover make the *Guide* exceptional value for money. The latter CD features a variety of software including Paint Shop Pro, Ulead Animator and Family Tree Generator, a variety of reference materials and an online Jargon Buster. We were not surprised that some of the links in the WWW directory disc were outdated, for such is the nature of the internet, but we were disappointed by its American bias. This was particularly evident in the politics and television sections.

The 34 chapters of this weighty tome are divided into four easy-to-follow sections: buying and upgrading your PC, getting to grips with Windows, choosing and using software, and surfing the net. It has been written in a style that even beginners will find easy to follow and its jargon-buster boxes explain the technical terms. The text is peppered with amusing tips. For instance: "Never swing the mouse around by its tail, tempting though it is. And if it stops working, don't flush it down the toilet!" The book offers useful buying advice and one particularly important point stands out: "It's hard to be sure that this is all you will want to use the PC for in a year's time... Think ahead".

Don't be tempted to follow the example on the cover, though, and stand a water-filled vase of flowers on top of a live computer monitor!

Nik Rawlinson



PCW Details

The What PC? Guide to Your PC
Author Rob Young
Publisher Prentice Hall
ISBN 0-13-095132-3
Price £16.99
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> dan Ultimate/200, Best Buy, What PC?, April '97

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Home Plus/166 Performance February 97

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dantum /166MMX Gold Award March 97

dan Ultimate/200X Best Buy April 97

dantum /200MMX Gold Award June 97

1997 ANNUAL AWARDS

"THANK YOU"

To Everyone Who Voted For Us

We're proud of the numerous accolades we win for Dan Technology PCs month after month. And nothing gives us more pleasure than being up there amongst the winners of the magazines annual awards. Sometimes our votes come from expert journalists, as with the What PC? Awards. With PC Direct and Personal Computer World, recognition comes from the readers themselves. But wherever they come from, we're very grateful for these tributes to the efforts of our workforce. Thank You.

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Personal Computer World, July 1997

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dantum /200 Editor's Choice December 96

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MMX intel inside pentium II

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> dan Home Plus, What Personal Computer, October '97

dan Home PC
Best Budget PC
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Service & Reliability
User Survey, Desktop PCs
August 1997

dan Xplora Plus/166
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August 1996

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July 96

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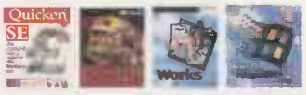
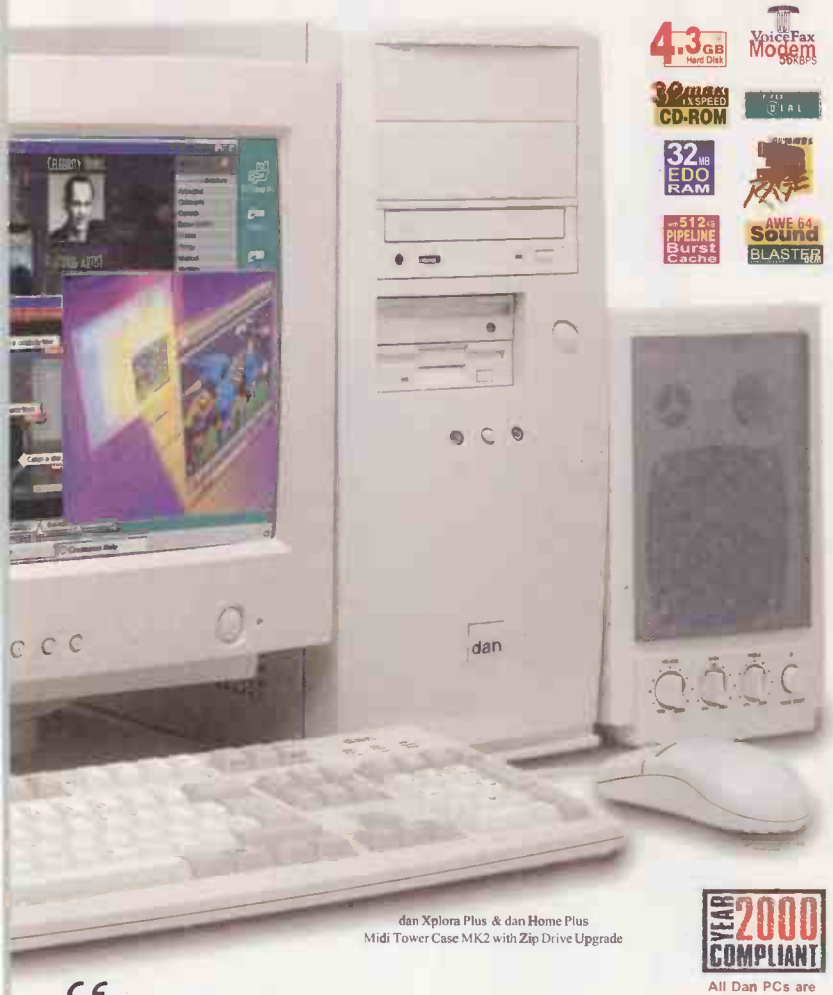


*ATi 3D Charger Graphics Card includes two 3D Games (Wipeout & Assault Rigs)



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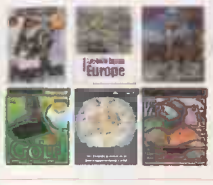

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WHAT PC, Best Buy *(dan Home Plus/233), Oct'97*

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Ironbridge Close,
Great Central Way,
London NW10 0NW

for more info, visit our Web site:
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Personal Computer World Editors Choice

"We judged the PCs in this month's group test on three main criteria: performance, price and internet readiness...There is usually quite a bit of hand-wringing over our Editor's Choice award, but not this month. Sheer value for money, performance and a no-strings internet access trial means that this month's winner just had to be the Dan Xplora Plus/166XT. It is well built, well specified and is one of the few machines to be truly internet ready. Superb."
PCW, Editor's Choice (dan Xplora Plus/166XT), Sept'97

PC PRO SERVICE

dan technology ltd
1997 Service Award

Watch TV & TELETEXT on your PC

Capture Pictures and Video Clips

Included as standard in dan Home Plus PC

ATi Perfecting the PC

(Requires ATI Video Card with AMC connector)
This card combines TV program viewing with video recording on your PC. It enables the PC to receive TV broadcast signals directly from an aerial or cable and display a live TV program on your standard VGA monitor. You can connect it to a VCR, laser disk player or camcorder to capture images or movie clips. These can then be saved to disk, copied to business presentations, web pages or e-mail.

For UK only
TV on your PC
&
Teletext

In addition to the TV capability you can display teletext pages with Fast text. Additional features include:

- Full screen TV, zoom and movie clip capture.
- Save/print capture images or teletext pages.
- MPEG-1 Playback (30 fps - supports Video CD 2, Karaoke etc).
- Save captured still images direct to Windows Wallpaper.
- Enlarge any area of the TV picture you select.

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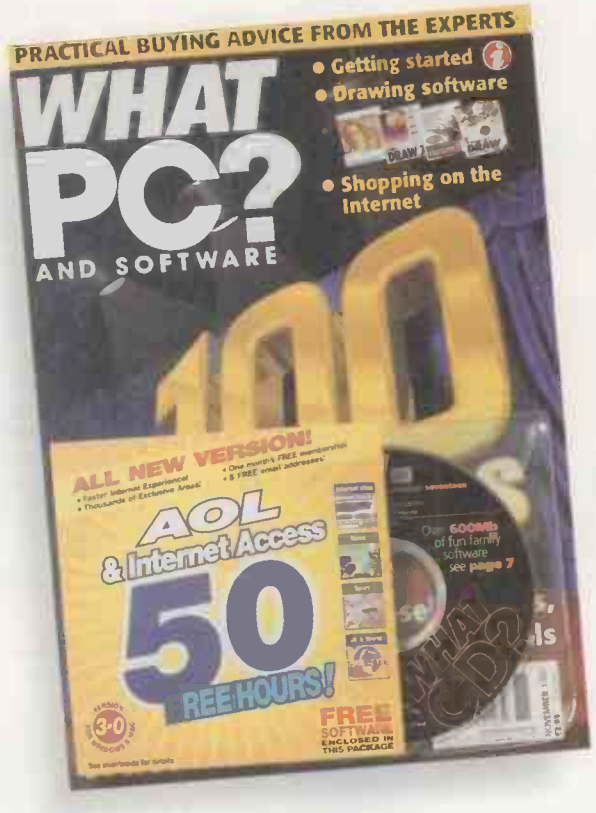

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PRACTICAL BUYING ADVICE FROM THE EXPERTS

For peripherals, contact dp...

Memory

72-pin Modules	
4MB Memory Module with Parity	£ 15 (18)
8MB Memory Module with Parity	£ 25 (30)
16MB Memory Module with Parity	£ 30 (36)
8MB Memory Module EDO RAM	£ 11 (13)
16MB Memory Module EDO RAM	£ 23 (28)
32MB Memory Module EDO RAM	£ 45 (53)
64MB Memory Module EDO RAM	£ 164 (193)
30-pin Modules	
4MB Memory Module with Parity	£ 11 (13)
168-pin Modules	
16MB Memory Module SDRAM	£ 24 (29)
32MB Memory Module SDRAM	£ 45 (53)
64MB Memory Module SDRAM	£ 116 (137)

RAM Prices are subject to change. Call for latest prices.

Hard Disk Drives

3.5GB	EIDE	£ 117 (138)
4.2GB	EIDE	£ 129 (152)
5.2GB	EIDE	£ 164 (193)
6.4GB	EIDE	£ 176 (207)
6.4GB EIDE UDMA (IBM)		£ 209 (246)
8.0GB EIDE UDMA (Seagate)		£ 216 (254)
2.1GB	SCSI	£ 146 (172)
4.0GB	SCSI	£ 324 (381)
9.0GB	SCSI	£ 528 (621)
2.1GB	Wide SCSI	£ 276 (325)
4.0GB	Wide SCSI	£ 332 (391)
9.0GB	Wide SCSI	£ 544 (640)
Adaptec PCI 2920 SCSI controller		£ 105 (124)
Adaptec PCI 2940 SCSI controller		£ 167 (197)
Adaptec PCI 2940 UW SCSI controller		£ 203 (239)
Adaptec PCI 3940 SCSI controller		£ 300 (353)
Adaptec PCI 3940 UW SCSI controller		£ 342 (402)
Promise VESA 2300plus EIDE controller		£ 33 (39)

Multimedia Devices

24max Speed IDE CD-ROM	£ 44 (52)
32max Speed IDE CD-ROM	£ 53 (63)
24x Speed SCSI CD-ROM	£ 76 (90)
Creative PC-DVD Encore Dxr2	£ 180 (212)
TEAC CD-R55S CD Writer	£ 286 (337)
PC Desktop Video Camera	£ 83 (98)
Sound Blaster 16	£ 19 (23)
Sound Blaster AWE 64 SE (OEM)	£ 46 (55)
Sound Blaster AWE 64 Gold	£ 102 (120)
dp Hi-Fi Power Speakers (150W PMPO)	£ 16 (19)
dp Advanced Speakers (10W PMPO)	£ 7 (9)
Yamaha YST M15 Speakers	£ 37 (44)
Yamaha YST M15 Spkrs + MSW10 Subwoofer	£ 93 (110)

Video Cards

ATi PCi 64-bit 2MB EDO RAM Video Card	£ 24 (29)
ATi 3D Charger PCI 2MB Video Card + 2games	£ 33 (39)
ATi Xpert@Work PCi 4MB SGRAM Video Card	£ 70 (83)
ATi AGP Xpert@Work 4MB SGRAM Video Card	£ 74 (87)
ATi Xpert@Work PCi 8MB SGRAM Video Card	£ 100 (118)
Matrox Mystique 220 PCi 4MB SGRAM Video Card	£ 65 (77)
Matrox Mystique 220 PCi 8MB SGRAM Video Card	£ 104 (123)
Matrox Millennium II PCi 4MB WRAM Video Card	£ 104 (123)
Matrox AGP Millennium II 4MB Video Card	£ 104 (123)
Matrox Millennium II PCi 8MB WRAM Video Card	£ 152 (179)
Matrox RainbowRunner Studio	£ 135 (159)
Diamond 3D Monster Accelerator Card	£ 96 (113)

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Network Products

ISA 16-bit Ethernet Combo Card	£ 18 (22)
ISA 32-bit 3COM509 Combo Network Card	£ 55 (65)
PCi 32-bit 3COM905 Base-T Network Card	£ 50 (59)
PCI 32-bit 3COM900 Combo Network Card	£ 57 (67)
8-port 10 base-T mini Ethernet Hub	£ 32 (38)
16-port 10 base-T mini Ethernet Hub	£ 102 (120)

New Products

ATi All in Wonder Pro £135 (159)

A new single PCi upgrade card with multiple functions, including:

- Rage Pro powered 3D graphics
- Rage Pro powered 2D graphics
- Video Playback/Editing Software
- Intelligent TV Tuner
- TV Set Display
- Still/Motion Video Capture

CPUs/Motherboards

CPUs	
AMD K6-233MHz	£ 79 (93)
Pentium 200MHz MMX	£ 79 (93)
Pentium 233MHz MMX	£ 112 (132)
Pentium II 233MHz	£ 164 (193)
Pentium II 266MHz	£ 203 (239)
Pentium II 300MHz	£ 309 (364)
Pentium II 333MHz	£ 406 (478)
Motherboards	
PCi Pentium VX w/512K Pipeline Cache	£ 70 (83)
PCi AT Pentium TX w/512K Pipeline Cache	£ 84 (99)
PCi ATX Pentium TX w/512K Pipeline Cache	£ 105 (124)
PCi PCI Pentium II LX (Supermicro)	£ 94 (111)
PCi PCi Pentium II LX (Asus)	£ 108 (127)
PCI Dual Pentium II LX w/ SCSI Controller	£ 268 (315)

Backup Devices

2GB DAT Tape Streamer	£ 410 (482)
2GB (4GB w/compression) DAT Tape Streamer	£ 439 (516)
4GB (8GB w/compression) DAT Tape Streamer	£ 547 (643)
Seagate Tape Stor 8000 (IDE or SCSI)	£ 192 (226)
IOMEGA 2GB Floppy Tape Streamer + tape	£ 80 (94)
IOMEGA 3200 Internal Tape Drive + tape	£ 128 (151)
IOMEGA 100MB ZIP Int. ATAPI Drive	£ 64 (76)
IOMEGA 100MB ZIP Cartridge	£ 10 (12)
IOMEGA 1GB JAZ Internal SCSI Drive	£ 184 (217)
IOMEGA 1GB JAZ Cartridge	£ 61 (72)
Jaz Drives require SCSI Controller & backup software.	
Adaptec AHA-1520 SCSI 16-bit Controller *for SCSI Tape Streamers & Jaz*	£ 47 (56)

Fax/Modems

Internal 56.6KBPS Fax/Modem w/voice	£ 75 (89)
External 56.6KBPS Fax/Modem w/voice	£ 117 (138)
Sportster External 33.6KBPS Flash Fax/Modem	£ 120 (141)
US Robotics External 56.6KBPS Message Plus	£ 161 (190)
Pace ISDN Terminal Adapter	£ 260 (306)

All modems are BABT Approved

Input Devices

Cherry Keyboard for Windows 95	£ 15 (18)
Keytronics Keyboard for Windows 95	£ 16 (19)
Microsoft Natural Keyboard	£ 39 (46)
Microsoft IntelliMouse	£ 40 (47)
Joystick	£ 19 (23)

Prices in brackets Include VAT @ 17.5% E.&O.E.

Monitors

3 YEAR ON-SITE 3 WARRANTY for iiyama monitors only

17" iiyama 8617T SVGA Colour Monitor FST Tube, .26dot, 1600x1200 @ 69KHz	£ 384 (452)
17" iiyama 9017T SVGA Colour Monitor DiamondTron, .25ag, 1600x1200 @ 72KHz	£ 427 (502)
21" iiyama 9221T SVGA Colour Monitor DiamondTron, .28ag, 1800x1440 @ 75KHz	£ 871 (1024)
19" ADi MicroScan 6P SVGA Colour Monitor FST Tube, .26dot, 1600x1200 @ 75KHz	£ 460 (541)
14" CTX SVGA Colour Monitor Shadow Mask, .28dot, 800x600 @ 72KHz	£ 113 (133)
15" CTX 1569SE FST Colour Monitor Shadow Mask, .28dot, 1280x1024 @ 60KHz	£ 144 (170)
15" CTX 1569UA FST Colour Monitor Trinitron, .25dot, 1280x1024 @ 60KHz	£ 197 (232)
17" CTX 1769SE FST SVGA Colour Monitor Shadow Mask, .28dot, 1280x1024 @ 60KHz	£ 269 (317)
17" CTX 1792UA FST SVGA Colour Monitor Shadow Mask, .25dot, 1600x1200 @ 70KHz	£ 340 (400)

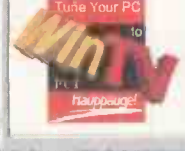
TV & Teletext Cards

ATi 2MB EDO RAM Video Card and ISA Tuner Card

£ 82 (98) TV Card only £ 58 (69)

This two card combination enables your the PC to receive TV broadcast signals directly from an aerial or cable and display a live TV program on your standard VGA monitor. You can connect it to a VCR, laser disk player or camcorder to capture and save images or movie clips for use in other applications. In addition you can also display Teletext pages with Fast text.

Hauppauge PCi WinTV Card £ 82 (97)



The Hauppauge Win/TV PCi board is a single slot Plug and Play card with a 125-channel TV tuner and video digitiser and Teletext Decoder. Capture pro-quality stills or motion video in AVI format. Fully compatible with wide range of PCi VGA cards.

dp is a tradename of dan Peripherals Ltd, Ironbridge Close, Great Central Way, London NW10 0NW, UK.

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No-nonsense Buyer's Guide

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5. If possible, pay with a personal credit card. All transactions over £100 should be covered by the card company's insurance scheme.
6. Does the price quoted include everything discussed? Is VAT extra?
7. Check how the supplier will deliver and whether or not delivery times are guaranteed.
8. Is free telephone technical support included in the price? Some suppliers offer support only on premium 0891 numbers. Is it easy to get through? Try dialling the number to test it out.
9. Is the warranty return-to-base or onsite? "Return-to-base" means that you'll have to pay to ship the product back to the supplier.
10. If you're paying extra for online support, does the manufacturer offer guaranteed response times? If you rely on your PC for your business you'll need it fixed, pronto.
11. Is the supplier reputable? Does it comply with BS5750 or ISO900? If in doubt, ask to see customer testimonials.
12. When your PC arrives, check that all branded components are genuine.

Buying a PC

PCs get cheaper and faster all the time and your state-of-the-art PC can quickly become outdated. That may not matter, though, if it still does what you require. But if you're buying a new general-purpose PC now, it should be fitted with a CD-ROM drive, sound card and speakers so that you'll be able to play games and run a wide range of modern software.

Minimum specifications

- It is a false economy to buy a new PC with less than 16Mb of RAM. The jump from 8Mb to 16Mb of RAM makes a huge difference to performance.
- Ensure Pentium motherboards have an Intel Triton 430 VX, HX, TX, LX or compatible chipset.
- Avoid 14in monitors. The difference between 14in and 15in doesn't sound much but means the screen is 15 percent smaller. If you can afford it, buy a 17in monitor.

Other things to consider

Most small PC manufacturers buy their motherboards from Taiwanese or far eastern manufacturers. Larger companies either design their own motherboards (e.g. Apricot, Compaq, IBM) or get motherboards built to their specification (e.g. Gateway). Intel chips are no longer the only choice. AMD's K6 processors are well worth considering, too. It is amazing how hard disks fill up and it's unusual to have *too much* disk space.

Some suppliers offer you the choice of Windows 95 or Windows NT. For general home or small office use, Windows 95 is still the best choice. You may need to consider NT for some specialist applications like programming, DTP or CAD.

Practically every month, CD-ROM drives get faster. Higher speeds and bigger numbers just mean you can access files from them more quickly and that video clips on them play more smoothly.

Look closely at the software that's bundled with your PC. If you want an Office suite it's usually cheaper to buy it bundled with your PC. Software bundles can also be an excuse for manufacturers to unload piles of old or second-rate software. Check whether you get the original media if you need to re-install.

For this Buyer's Guide we've drawn up four specifications. We haven't mentioned particular manufacturers because you'll find up-to-date PC reviews in every issue of *PCW*.

Personal Computer World Buyer's Charter

If things go wrong

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Buying a **Notebook**

Notebooks belong in the one area in which it is often safer to stick to brand names. It is not so much that some of the Far Eastern kit doesn't work perfectly well, but reliability seems to be a problem and it can be fiendishly difficult to obtain spares. A useful guideline when choosing a notebook is to try before you buy.

Remember that standard notebook specifications are generally a step or two behind their desktop equivalents.

What to look for in a notebook

- **Pointing device** There has been a move away from trackballs to trackpads. Some notebooks, notably IBM Thinkpads, use stick technology (a device which looks like the rubber on top of a pencil and is controlled by the use of one finger).
- **CD-ROM drives** These are rapidly becoming standard in notebooks. If your notebook is going to be your only machine, it's worth getting one.
- **Floppy disk drive** Often, there is a choice between a CD-ROM drive and a floppy disk drive. If the notebook is to be your only machine, make sure that the CD-ROM drive and the floppy drive can be used simultaneously.
- **PC Cards** Modern notebooks all have at least one PC Card slot. They take credit card-sized expansion cards which add a fax-modem, a network interface card or even an extra hard disk to your computer.
- **Battery life** Battery life varies, from as little as 30 minutes to over six hours. Lithium Ion and Nickel Metal Hydride batteries have now replaced the older NiCad (Nickel Cadmium) batteries.
- **TFT screens** TFT screens are of a higher quality than dual-scan or passive-matrix screens, using a sharper picture and no shadowing or ghosting.
- **Warranty** Drop a notebook and it may break, so it is vital to check the terms of your warranty. How long is it? What level of service is provided? Remember — better safe than sorry.

PCW Second-hand spec

Buying second-hand or discontinued kit is the cheapest way to get started. This is the minimum spec we think you should choose for general business use, playing games and accessing the internet.

- Windows 3.1 or 3.11
- 90MHz Pentium processor
- 16Mb RAM
- Graphics card with 1Mb of memory
- 1Gb hard disk
- 3.5in floppy disk
- CD-ROM drive
- 14in colour monitor

PCW Minimum specification

This is the absolute minimum spec we think you should consider if you are buying a new PC. Suitable for general business use: word processing, databases, spreadsheets and, with a modem, accessing the internet.

- Windows 95
- Pentium 166MHz MMX processor
- 32Mb RAM
- Graphics card with 2Gb of memory
- 1.2Gb hard disk
- 12-speed CD-ROM drive
- 15in colour monitor

PCW Recommended spec

If you are not short of cash, this is the specification we recommend. No-one at *PCW* would settle for less.

- Windows 95 or Windows NT 4.0
- Pentium or equivalent 233MHz PII processor
- 32Mb EDO RAM
- 3D graphics card with 4Mb of memory
- 4Gb hard disk (modern computer software takes up a lot of space)
- 16-speed CD-ROM drive
- 17in colour monitor
- 16-bit SoundBlaster-compatible sound card

PCW Best specification

This is as good a PC as you are likely to need for most software. For some specialist applications, like professional DTP or CAD, you may need even more memory, a bigger hard disk, a more powerful graphics card or a larger monitor.

- Windows 95 or Windows NT 4.0
- 333MHz PII
- 64Mb SDRAM
- 8Gb hard disk
- 20-speed CD-ROM drive
- 19in colour monitor
- 4Mb VRAM or WRAM graphics card (this means your graphics card can display more colours, and at a higher resolution on your monitor: 16 million colours at a resolution of up to 1,280 x 1,024
- 16-bit wavetable sound card

PCW Minimum specification

Notebooks change quickly. It is possible to pick up end-of-line machines with Pentium processors from brand-name manufacturers like Toshiba and Compaq at discounted prices of £1,000 or less. These can be a very good buy. Just make sure they can run the software you need to use.

PCW Recommended spec

- Windows 95
- Pentium 166MHz
- 16Mb RAM
- On-board graphics with 1Mb of memory, PCI local bus
- 2.5Gb hard disk, 3.5in floppy disk drive and/or 6X CD-ROM drive
- TFT 800 x 600 screen

PCW Best specification

The state-of-the-art notebook: either you're loaded, or your company's picking up the tab.

- Windows 95 or Windows NT
- Pentium 266MMX
- 512Kb secondary cache
- 64Mb RAM
- On-board graphics with 2Mb of VRAM memory, PCI local bus
- 5Gb hard disk
- 3.5in floppy disk drive
- 20-speed CD-ROM drive
- Active matrix 1,024 x 768 TFT screen
- Long battery life

Glossary of computing terms

A

Access time
The time it takes for a device to access data. The access time, quoted in milliseconds (ms) for hard disks and nanoseconds (ns) for memory, is usually an average as it can vary greatly. Together with the transfer rate, it is used to gauge the performance of hard disks and other devices. The lower the number, the better the performance.

Applications
An application, or package, is one or more programs used for a particular task. For example, word processing, invoicing or spreadsheeting. Applications are bought shrink-wrapped (wrapped in cellophane for general use) or custom-built for specific uses.

ASCII (American Standard Code for Information Interchange)
Usually a synonym for plain text without any formatting (like italics, bold or hidden text). Since computers naturally use binary rather than Roman characters, text has to be converted into binary in order for the processor to understand it. ASCII assigns binary values to Roman characters. RTF, a Microsoft standard, adds extra formatting features to plain ASCII.

B

Backwards compatible
Compatibility of hardware or software to older versions of the product or standard.

Baud rate
The number of electronic signals that can be sent along a communications channel every second. In common usage, it is often confused with bits per second. These days modem speeds are normally measured in bits per second. (See V and Bit).

BIOS
Basic Input/Output System. Software routines that let your computer address other devices like the keyboard, monitor and disk drives.

Bit
Binary digit, the basic binary unit for storing data. It can either be 0 or 1. A Kilobit (Kbit) is 2^{10} (1,024 bits); and a Megabit is 2^{20}, which is just over a million bits. These units are often used for data transmission. For data storage, megabytes are more generally used. A megabyte (Mb) is 1,024 kilobytes (Kb) and a Kb is 1,024 bytes. A gigabyte (Gb) is 1,024Mb. A byte (binary digit eight) is composed of eight bits.

Bug (See Crash)

Boot
Short for bootstrap. Refers to the process when a computer loads its operating system into memory. Reboot means to restart your computer after a crash, either with a warm reboot (where you press CtrlAltDel) or a cold reboot, where you switch the computer off and back on again.

Bus
A "data highway", which transports data from the processor to whatever component it wants to talk to. There are many different kinds of bus, including ISA, EISA, MCA, and local bus (PCI and VL-bus).

C

Cache (See Memory)

COAST
Cache On A Stick.

CD-ROM
A CD-ROM is the same as a normal audio CD, except it can store data as well as sounds. A CD-ROM player can be attached to your computer to read information from the CD-ROM into the computer's memory in the same way that a domestic CD player reads information from the CD into your hi-fi. The advantage of distributing information on CD-ROM rather than other media is that each one can hold up to 680Mb of data: equivalent to about 485 high-density 3.5in floppy disks. The disadvantage, however, is that you can only write once on CD-ROMs, yet this makes them ideal for archiving.

CISC (See **RISC**)

CPU
Central Processing Unit. Normally refers to the main processor or chip inside a PC. (See Processor.)

Crash
Common term for when your computer freezes. Can be caused by a power surge, a bug (which is a fault in software) or a GPF.

D

DRAM (See Memory)

DOS (Disk Operating System)
Once the standard operating system for PCs, it is now being replaced by Windows 95 and Windows NT.

DPI (Dots Per Inch)
Common measure of the resolution on a printer, a scanner or a display.

Drive controller card
An expansion card that interprets commands between the processor and the disk drives.

Drivers
Pieces of software that "drive" a peripheral. They interpret between the computer and a device such as a CD-ROM. If you have a SCSI CD-ROM drive connected, you will be able to use it on a PC or a Mac just by loading up the relevant driver on each machine.

E

EIDE (See IDE)

EISA (Extended Industry Standard Architecture)
A bus standard designed to compete with MCA. Now being replaced by PCI.

Electronic mail (E-mail, email)
Still the biggest single use of the internet. When you sign up with an ISP you are given an email address. Usually you can incorporate your name, or part of it, into your email address to make it easy to remember.

Expansion card
Circuit boards which fit inside PCs to provide extra functionality. For example, one might be an internal modem, providing the same functions as an external version (which is more common) but sitting inside the PC. Expansion cards are designed to be fitted and removed by people with little knowledge of PCs.

F

Floppy disk drive
Practically all PCs come with a floppy disk drive: 3.5in HD (high density) 1.44Mb floppy disks are now the standard. They come in hard plastic cases and have replaced the older, literally floppy, 5.25in disks.

Fonts
A font is an alphabet designed in a particular style. Fonts apply both to screen and printed letters. TrueType and Type 1 fonts are stored as shape descriptions, scalable to any size.

Format
To wipe a floppy or hard disk in order to prepare it to accept data.

G

GPF
General protection fault.

Graphics card
An expansion card which interprets commands from the processor to the monitor. If you want a better, higher-resolution picture or more than your existing setup, you'll need to change your graphics card and/or your monitor.

GUI (Graphical User Interface)
(See Windows)

H

Hard disk
Sometimes called a fixed disk, hard disks are hermetically sealed rigid disks able to store data and programs. Disk capacities increase all the time. The standard is now 1Gb but disks of up to 9Gb are available.

Hardware
All electronic components of a computer system, including peripherals, circuit boards and input/output devices.

HTML (Hypertext mark-up language)
The standard language used in the creation of web pages, which can be read by web browsers.

I

IBM-compatible
Originally meant any PC compatible with DOS.

Now tends to mean any PC with an Intel or compatible processor capable of running DOS or Windows.

IDE (Integrated Drive Electronics)
A control system designed to allow computer and device to communicate. Once the standard for PC hard disks, now being replaced by EIDE (enhanced IDE) which offers improved performance and extra features.

Internet
Millions of computers interconnected in a global network.

ISP (Internet Service Provider)
ISPs provide access to the internet. You use your modem to dial the ISP's modem. The ISP has a high-bandwidth permanent connection to the internet.

IRDA (Infra-Red Data Association)
The standard for exchanging data using infra-red, typically from PDAs or notebooks to a PC or printer.

ISA (Industry Standard Architecture)
This was the original bus architecture on 286 PCs. Also known as the AT bus (the 286 was known as the AT), it remains in use today. Slow by modern standards, but so widely accepted that expansion cards are still made for it. (See EISA, PCI.)

ISDN (Integrated Services Digital Network)
Offers significant advantages over analogue telephone lines. It can handle multiple transfers on a single connection and is faster. In the UK, however, costs of installation and rental remain high.

J

JPEG (See MPEG)

K

Kbit (kilobit), Kb (kilobyte)
(See Bit)

L

LAN (Local Area Network)
(See Network)

Local Bus
PCI (Peripheral Component Interconnect), developed by Intel, is now the standard for local bus architecture. It is faster than the older VL-Bus (Video Electronic Standards Association local bus) it replaces.

M

Macintosh (Mac)
A personal computer made by Apple and which is incompatible with PCs. Developed as a rival standard, its operating system looks like Windows but pre-dates it and (in some people's view) looks and works much better.

Maths co-processor
A specialised chip that handles mathematical calculations (floating point operations) for the processor. Modern processors such as the Pentium have a co-processor built into them.

Mbit (megabit) (See Bit)

Mb (megabyte) (See Bit)

MCA
A type of bus designed by IBM to beat EISA. Although faster, it never became popular: this was because every machine that used it had to pay a royalty to IBM, and because it was not backwards-compatible with ISA.

MPEG (Moving Picture Expert Group)
A standard for compressing video, available in several flavours: MPEG 1, MPEG 2, MPEG 4. JPEG (Joint Photographic Expert Group) is a standard for still image compression.

Memory
The term normally refers to RAM (Random Access Memory). This is the kind which disappears when you turn off your computer and is much faster to access than a hard disk. It acts as a staging post between your computer's hard disk and its main processor.

- **Cache memory** Temporary memory set aside to store the information that is accessed most frequently. The Pentium processor has 8Kb of in-built cache. This can be further speeded up by a secondary cache, typically 256Kb. Part of your DRAM is often used to cache your hard disk.
- **DRAM (Dynamic Random Access Memory)** This requires its contents to be replaced every one thousandth of a second and is the most common form of memory found in PCs.
- **EDO (Extended Data Out RAM)** Memory that is cached to improve performance.
- **FPM RAM (Fast page mode)** Like EDO Ram but without the onboard cache
- **ROM (Read-Only Memory)** A type of memory which can only be read: you can't make changes to it as you can to RAM. It is commonly used for things that will never need to be changed, like the information the computer requires when you start it up.
- **SDRAM (Synchronous DRAM)** The latest type of fast memory. This runs at the same speed as the processor and allows the input and output of data at the same time.
- **SRAM (StaticRAM)** Retains memory until the power is switched off.
- **VRAM (VideoRAM)** Faster than DRAM, this is used by graphics cards.

MMX (Multimedia extensions)
(See Pentium)

Modem
The word is a contracted version of "modulator/demodulator", which means that a modem is a box (or, less commonly, an expansion card) that lets your computer talk over phone lines to other computers.

Monitor
Your computer's screen. Signals are sent to it from the video card.

Motherboard
The main printed circuit board which houses processor, memory and other components.

N

Network
A network is a group of computers linked together with cable. The most common form of network is a LAN (Local Area Network), where electronic mail and other files can be exchanged between users without swapping floppy disks. Printers and other resources can be shared. All the PCs on a LAN are connected to one server, which is a powerful PC with a large hard disk that can be shared by everyone.

O

OS (Operating System)
The operating system communicates with the hardware and provides services and utilities to applications while they run, such as saving and retrieving files.

P

PC Card
Formerly PCMCIA. A standard to allow PCs, particularly notebooks, to be expanded using credit card-sized cards.

PDA (Personal Digital Assistant)
Small electronic organisers. The Psion 3a is a typical example.

PCI (See Local bus)

PCMCIA (See PC Card)

Package (See Applications)

Parallel ports
Used by your PC to communicate with the outside world, usually via a printer. Information can travel in parallel along a series of lines, making it faster than serial ports which can only handle one piece of information at a time.

Pentium
Fast 32-bit processor with a built-in 16Kb cache. Now the standard on PCs. It is about to be replaced by the Pentium MMX chip which has extra instructions and a 32Kb cache. The Pentium Pro is a higher-end workstation CPU with 256Kb cache meant for full 32-bit operating systems like Windows NT.

Pixel
Picture element. The smallest addressable dot displayed on a monitor.

PowerPC
This family of RISC chips is the result of a collaboration between IBM, Apple and Motorola. It is now used in all Apple Macintosh computers and many IBM workstations.

Processor
Chip which does most of a computer's work.

Programs (See Applications)

Public domain
Software that is absolutely free. The author usually retains the copyright but you can make as many copies as you want and pass them to other people. "Public domain" software is often confused with "shareware".

Q

QWERTY
The name of a standard English-language keyboard, derived from the first six letters in the top row. French equivalent is AZERTY.

R

RAM (Random Access Memory)
(See Memory)

Reboot
(See Boot)

RISC (Reduced Instruction Set Computing)
These are beginning to replace CISC (Complex Instruction Set Computing) as they're usually faster. The PowerPC chip is a typical example.

ROM (Read Only Memory)
(See Memory)

RTF (Rich Text Format)
(See ASCII)

S

SCSI
Small Computer System Interface is a bus that comes as standard in a Macintosh and is beginning to rival EIDE on PCs.

Serial port
Serial ports (com1 and com2) are used by your PC to communicate with the outside world. Mostly used by modems and similar devices which communicate quite slowly. Faster communications are achieved through the parallel port.

Shareware
A method of distributing software. It is freely available, but not free of charge. You are honour-bound to pay a small fee to the software's developer if you continue to use the program after a set period.

SIMM (Single Inline Memory Module)
The standard modules for memory expansion on PCs. Older 30-pin SIMMs have now been replaced by the 72-pin variety available in capacities up to 16Mb.

T

Tape streamer
Magnetic tape recorder for backing up data from a hard disk.

U/V

UART (Universal Asynchronous Receiver Transmitter)
Pronounced "you-art", this is a chip that allows your PC to cope with high-speed communications.

V.34 Plus, V.34, V.32bis
A series of CCITT standards which define modem operations and error correction. There are more than 20, but the key ones are:
- **V.32bis**, the standard for 14.4Kbps (kilobits per second) modems.
- **V.34**, the standard for 28.8Kbps modems (see Baud).
- **V.34 Plus**, the new standard for speeds up to 33.6Kbps.

VESA (See Local Bus)

VGA
Video Graphics Array is the name given to a popular display. VGA graphics have 640 pixels horizontally and 480 vertically, and can display 16 colours. SuperVGA (SVGA) graphics can display 800 x 600 or 1,024 x 768 in as many colours as the memory in your graphics card will allow: up to 16.4 million, or true colour.

VL-Bus (See Local Bus)

VRAM (See Memory)

W

Windows
A GUI (Graphical User Interface) developed by Microsoft. Windows is intended to make programs easier to use by giving them a standard, mouse-driven interface.
- **Windows 3.11** 16-bit operating system.
- **Windows NT** Robust, fully 32-bit operating system from Microsoft. The latest, version 4.0, features a Windows 95 interface.
- **Windows 95** Major improvement to Windows 3.11, with a redesigned interface. Less prone to crashes and easier to use, but requires more memory.

Winsock
Short for "sockets for Windows". The Winsock.dll is an extension for Windows which is necessary for connecting to TCP/IP networks.

World Wide Web
Service on the internet using special software called web browsers (Netscape and Internet Explorer are two best-known browsers) to give access to pages of information with text, pictures and multimedia.

WYSIWYG
"What You See Is What You Get": what you see on the screen is exactly what you will get when you print out your work.

Z

ZIF (Zero Insertion Force)
Sockets used for large CPUs. Lifting a handle enables you to remove the processor.

ZIP
The common standard for compressing files so that they take up less space. Zipped files have the extension .zip and are compressed and decompressed using shareware utilities such as Winzip and PKZip.

Buying a **Printer**

There are two main types of printer: laser and inkjet.

Lasers

Most office printers are lasers. They work much like photocopiers. They are cheap to run and print quickly. The disadvantage is the higher initial cost and mono output. Laser printers are available in all sizes and all prices. Small desktop printers cost as little as £300. You can buy colour laser printers but they are still expensive; typically £5,000 or more.

Types of laser
PCs print by sending a description of the page to be printed down a printer cable. There are three commonly-used page description languages (PDLs):

- PostScript

This sends an outline in vector form (see Drawing Software) to the printer where it is rasterised (converted into dots) and printed to the device's best ability. PostScript is device-independent so the image looks the same on a monitor (75dpi), a laser printer (300dpi) and a professional image-setter (2,400dpi).

- PCL (Printer Control Language)

Hewlett-Packard's alternative to PostScript, licensed to many clone-printer manufacturers. Printers using PCL tend to be cheaper than PostScript ones, but output will vary from one machine to another, making it less well suited to professional use.

- GDI (Graphical Device Interface)

These printers download the description of your page, already used by Windows, straight to your printer. They only work with Windows but are cheap and fast. They are only suitable for a personal printer and will not work across a network.

Inkjets

Inkjets work by spraying ink onto paper. There are still some mono inkjet printers available, but it is best to stick with a colour inkjet as the price difference is negligible. They are cheap to buy but more expensive to run, and slower. Even cheap inkjets can print in good-quality colour, especially on high-resolution paper.

PCW Recommended products

Inkjet printers

Canon BJC-80: RRP £233;
Canon 0121 680 8062 (*PCW* January 98)

ALPS MD-1000: RRP £299;
ALPS 0800 973405 (*PCW* January 98)

Canon BJC-4650: £279 (ex VAT);
Canon 0121 680 8062 (*PCW* April 1998)

Laser printers

- **Cheap: Panasonic KX-P6300** £217;
Panasonic 0500 404041

Kyocera F5-600: £280; Kyocera 01734 311500 (*PCW* February 1998)

- **Sub-£750: Hewlett-Packard 5P:**
HP 01344 369222 (*PCW* November 95)

Hewlett-Packard 5M: RRP £1,659 ex VAT;
HP 01344 369222

Buying a **Multi Function Device**

For home use and in small offices, a hybrid device could be the answer.

Typically, MFDs combine a printer, a fax machine and photocopying and scanning capability into one device. And while this saves space, it does have some drawbacks. For one thing, they tend to be based on inkjet technology which means higher running costs and lower speeds than laser-based units. Many only offer black-and-white printing: while colour models are appearing in greater volume, they tend to be based on earlier inkjet printing technologies rather than the current state-of-the-art models. Also, the scanning quality is no match for a dedicated scanner: it's normally only 200dpi, which is the same quality as a fax machine and, worse, often black-and-white only. Finally, there's one fundamental problem — if your MFD breaks down, you won't be able to print or receive faxes. That said, they are here to stay, and some people love 'em.

PCW Recommended products

Hewlett-Packard OfficeJet: £650; HP 0990 474747 (*PCW* January 97).

Buying a **Digital Camera**

Just about every camera manufacturer now offers a budget-priced device and prices start from as little as £135.

A digital camera works like a conventional camera except that instead of a film, it has a grid of light-sensitive elements. These convert light into a voltage proportional to the brightness, which is then converted into digital information the PC can understand.

The elements produce a colour bitmap file, typically of 640 x 480 pixels, although models boasting 800 x 600, 1024 x 768 and even higher resolutions are becoming increasingly common.

Most digital cameras use flash memory to store images, and offer a wired connection to a computer — slow serial on budget models or fast SCSI on professional ones.

Some cameras feature removable memory cards, usually compatible with the PC Card standard. Quality is getting better all the time, but to match the print quality of a 35mm film camera today, you'll still have to spend thousands of pounds. The current crop of entry-level to mid-range cameras are, however, more than suitable for electronic publishing on CD-ROM or the internet.

PCW Recommended products

Sony DSC-F1: £546; Sony 0990 424424 (*PCW* January 98)

Sanyo Digicam: £449.99; Sanyo 01923 477295 (*PCW* January 98)

Epson Photo PC: £781.38; Epson 0800 289622 (*PCW* Jan 98)

Choosing an **ISP**

With over 100 ISPs to choose from, selecting an Internet Service Provider has never been so difficult.

All ISPs (Information Service Providers) allow you to send and receive email across the Internet, browse and surf the world wide web and download files from Internet servers. But there are big differences between the quality of service that each provides in terms of technical support and the quality of software supplied when you first sign up. Usually they charge a flat monthly rate for Internet access of around £10, but on top of that you also have to pay for your phone charges

Choosing a Content Provider

There are really only three players in this field: AOL, Compuserve and MSN. They are not the best or fastest way of browsing the world wide web. Instead they aim to supply their own content in the form of discussion areas, online magazines and easily searchable file libraries. All these services offer free trials which is a good way of finding out if they're for

PCW Recommended products

Our PCW Award winners in July 97:

Pipex Dial: Major player with an excellent reputation.

BT Internet: BT has now got its act together with internet service provision.

Direct Connection: One of the best of the smaller ISPs.

Content providers

AOL: 0171 385 9404; Consumer-orientated service that offers good performance even for users of older 14.4K modems.

CompuServe: 0800 289378; more business content than AOL.

Buying a **Monitor**

Regardless of your computer application, you'll be looking at your monitor all day, so make sure you get a good one.

Some people claim not to see monitor flicker, but your brain does, resulting in fatigue and headaches. A refresh rate of 70Hz or higher will produce a flicker-free image on most monitors.

Interlacing also results in flicker. Always run in non-interlaced modes and ignore interlaced quotes. The resolution refers to the number of dots (pixels) horizontally and vertically on-screen. Standard VGA mode runs at 640 x 480 pixels, while other typical modes include 800 x 600 and 1,024 x 768. The more pixels, the more you'll be able to fit on the screen, but everything will be smaller and may only be suitable on a larger screen. Go for a 15in or 17in monitor capable of running a resolution of 1,024 x 768 non-interlaced at 70Hz or higher.

The visible area of most monitors (and TVs for that matter) is smaller than the model implies: a 15in screen may only have a 14.5in visible area, and a 17in may have only 16in visible. Aperture grille tubes such as Sony's Trinitron or Mitsubishi's Diamondtron are very bright, but need two fine but visible wires running across the screen for stability.

PCW Recommended products

Mitsubishi DiamondPro 700 (£395 ex VAT); Iiyama Vision Master Pro 17 (£409 ex VAT); Nokia 447ZA (£375 ex VAT); Belinia 10 70 15 (£289 ex VAT). *See group test, p192, this issue, for details.*

Contacts Panasonic 0500 404041; Taxan 01344 484646; ADI 0181 236 0801; Iiyama 01438 745482

Buying a **Scanner**

Scanners are used to import text, graphics or pictures into a PC. They vary from low-cost hand scanners not much bigger than a mouse, to drum scanners costing thousands of pounds. The latter are designed to scan photographic transparencies to professional standards.

Flatbed scanners

These are the most common type of scanner, and cost from around £300 to more than £3,000.

They are capable of scanning colour pictures to a high standard. Most have transparency adaptors as optional extras.

Document scanners

A new category of scanner which aims to combine the reliability of a flatbed scanner with speed and portability. They are intended for OCR and document management. Most will cope with photographs and some with colour, but it's not really their forté.

PCW Recommended products

Document scanners

Visioneer PaperPort VX: street price £299; Computers Unlimited 0181 200 8282
Logitech PageScan Colour: street price £155; Logitech 01344 894300

Flatbed scanners

• **Intermediate**
Agfa Studio Star: street price £499 (ex VAT); Agfa 0181 231 4906 (*PCW* August 97)

• **Budget**
Umax Astra 610P: £99; IMC 01344 871329 (*PCW* February 1998)
Microtek Phantom 4800: £147; Midwich Thame 01379 649200 (*PCW* February 1998)

Buying a **Storage Device**

For backup and storage there's a range of devices available — conventional tape backup devices, superfloppies like the LS120 and proprietory systems like the Iomega Zip drive.

Additional storage devices, taking removable media, offer endless capacity. Iomega's ZIP drive and OR Technologies' a: drive (aka LS120) offer 100Mb and 120Mb respectively. The a: drive is an alternative to a floppy as it is compatible with normal floppies. The ZIP drive only works with ZIP cartridges.

Iomega's Jaz drive and SyQuest's SyJet, take 1Gb and 1.5Gb respectively. The SyJet is quicker and boasts cheaper media, but it's new as against Iomega's proven device.

Larger storage means slow, cheap tape drives with big capacity, perfect for overnight backup. Most quote compressed capacity, double "native" uncompressed capacity. DAT DDS-2 drives offer 4Gb native, which Seagate matches with faster Travan TR4 cartridges on its TapeStor 8000. Iomega's cheaper, slower Ditto 2000 offers 2Gb compressed backup.

CD recorders, offering double-speed writing and quad-speed reading, are around £400 ex VAT. The fastest are 24-speed, but there's little benefit in anything over 12.

PCW Recommended products

Iomega ZIP Plus: £169.99 (£144.68 ex VAT); Iomega 0800 973194 (*PCW* March 98)

Iomega JAZ drive: internal £189 ex VAT; 1Gb media £60 ex VAT; Iomega 0800 973194 (*PCW* August 1997)

Iomega Ditto 2000: external £89 ex VAT; Iomega 0800 973194 (*PCW* July 97)

Seagate TapeStor 8000: internal £220 ex VAT; Seagate Technology 01628 890366 (*PCW* July 97)

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Brother	Exc Vat	Inc Vat
HL730 Plus 1Mb 600Dpi	£205.00	£240.88
HL760 5Mb	£245.00	£287.88

Canon	Exc Vat	Inc Vat
BJC250 Colour	£85.00	£99.88
BJC4300	£127.00	£149.23
BJC80	£142.00	£166.85
BJC80+ Scanner	£185.00	£217.38
BJC4550	£186.00	£218.55

Epson	Exc Vat	Inc Vat
Stylus 300 Colour	£99.00	£116.33
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Stylus 600 Colour	£155.00	£182.13
Stylus 800 Colour	£207.00	£243.23

Hewlett Packard	Exc Vat	Inc Vat
DeskJet 400L	£86.00	£101.05
DeskJet 670C	£115.00	£135.13
DeskJet 340	£135.00	£158.63
DeskJet 690+ Photo Cart	£142.00	£166.85
DeskJet 690+E. Photo/Rdr	£169.00	£198.58
DeskJet 720C	£172.00	£202.10
DeskJet 890C	£202.00	£237.35
LaserJet 6L	£232.00	£272.60
LaserJet 6P	£461.00	£541.68
LaserJet 4000	£711.00	£835.43

Kyocera	Exc Vat	Inc Vat
FS 600	£218.00	£256.15

Oki	Exc Vat	Inc Vat
4W Plus	£139.00	£163.33

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GTX 5000 Parallel	£130.00	£152.75
GT 5500 SCSI For PC	£187.00	£219.73

Hewlett Packard	Exc Vat	Inc Vat
ScanJet 5100	£144.00	£169.20

Spot Technology	Exc Vat	Inc Vat
Spot Scantak 3C	£69.00	£81.08

Graphics

ATI	Exc Vat	Inc Vat
ATI TV Tuner	£59.00	£69.33

Diamond		
3D2400 Pro 4Mb EDO	£47.00	£55.23
Diamond Monster 4Mb White	£93.00	£109.28

Hauppage	Exc Vat	Inc Vat
Win TV Radio	£89.00	£104.58

Matrox	Exc Vat	Inc Vat
Mystique 220 4Mb	£70.00	£82.25
M3D Accelerator Card	£55.00	£64.63
Millennium II 250 4Mb	£105.00	£123.38
Rainbow Runner Studio Myst	£109.00	£128.08

Maxi		
Voodoo 4Mb 3D FX Acc	£80.00	£94.00

Novatech	Exc Vat	Inc Vat
PCI S3 3D DX Virage Mpeg 2Mb	£30.00	£35.25
PCI S3 3D DX Virage Mpeg 4Mb	£40.00	£47.00

Orchid	Exc Vat	Inc Vat
PCI Righteous 3D 4Mb	£105.00	£123.38

Videologic	Exc Vat	Inc Vat
Apocalypse 3DX 4Mb	£64.00	£75.20

Monitors

ADI	Exc Vat	Inc Vat
Microscan 4P 15"	£145.00	£170.38
Microscan 5P 17"	£239.00	£280.83

Iiyama	Exc Vat	Inc Vat
Vision 350 15"	£168.00	£197.40
Vision Master Pro 17T 17"	£365.00	£428.88

Novatech	Exc Vat	Inc Vat
14" 0.28mm DP Digital	£89.00	£104.58
15" 0.28mm DP	£119.00	£139.83
17" 0.28mm DP	£229.00	£269.08

Hard Drives

Fujitsu	Exc Vat	Inc Vat
MPB3032AT-UDMA 3.2Gb	£107.00	£125.73

Quantum	Exc Vat	Inc Vat
SE2160 EIDE 2.1Gb	£80.00	£94.00
SE3240 UDMA 3.2Gb	£109.00	£128.08
SE4300 UDMA 4.3Gb	£117.00	£137.48
SE6480 UIDE 6.4Gb	£155.00	£182.13

Seagate	Exc Vat	Inc Vat
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ST33232A 3.2Gb UDMA	£101.00	£118.68
ST36451A 6.4Gb UDMA	£160.00	£188.00

Western Digital	Exc Vat	Inc Vat
AC2100 2.1Gb UDMA	£90.00	£105.75
AC36400 6.4Gb UDMA	£164.00	£192.70

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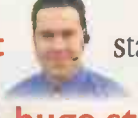
Novatech is a successful business which is **financially** **stable** due to **eleven years** of profitable trading. We aim to offer the **lowest prices** and the **best service**. PC Direct HITS AWARDS '97 Our **sales**, **service** and **technical support**  staff are helpful, friendly and professional.

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Novatech 33.6 External	£47.00	£55.23
Novatech 56K Internal	£59.00	£69.33
Novatech 56K External	£69.00	£81.08

US Robotics	Exc Vat	Inc Vat
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Sportster Winmodem PCMCIA	£75.00	£88.13
Sportster Flash X2	£99.00	£116.33
Sportster Message Plus Ext	£125.00	£146.88

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Creative Labs	Exc Vat	Inc Vat
SB 16 Value Non IDE	£27.00	£31.73
AWE 64 Value	£55.00	£64.63
AWE 64 Gold	£104.00	£122.20

Novatech	Exc Vat	Inc Vat
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Typhoon		
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120 Watt Speakers	£23.00	£27.03

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Novatech	Exc Vat	Inc Vat
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32 Speed EIDE	£49.00	£57.58

HP Reader Writer	Exc Vat	Inc Vat
7200I 2x Write 6x Rd EIDE	£239.00	£280.83
7200E 2xWrite 6xRd Par	£293.00	£344.28
Media Rewrite CD's/C4431C	£18.00	£21.15

Processors

AMD	Exc Vat	Inc Vat
K6 200	£69.00	£81.08
K6 233	£99.00	£116.33

Intel	Exc Vat	Inc Vat
Pentium 200 MMX	£79.00	£92.83
Pentium 233 MMX	£129.00	£151.58
Pentium II 233Mhz	£179.00	£210.33

Storage

Iomega	Exc Vat	Inc Vat
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Zip Drive Parallel Plus SCSI	£109.00	£128.08
Zip 100Mb Disk	£9.50	£11.75

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8Mb Simm	£9.00	£10.58
16Mb Simm	£17.00	£19.98
32Mb Simm	£39.00	£45.83

72 Pin Parity	Exc Vat	Inc Vat
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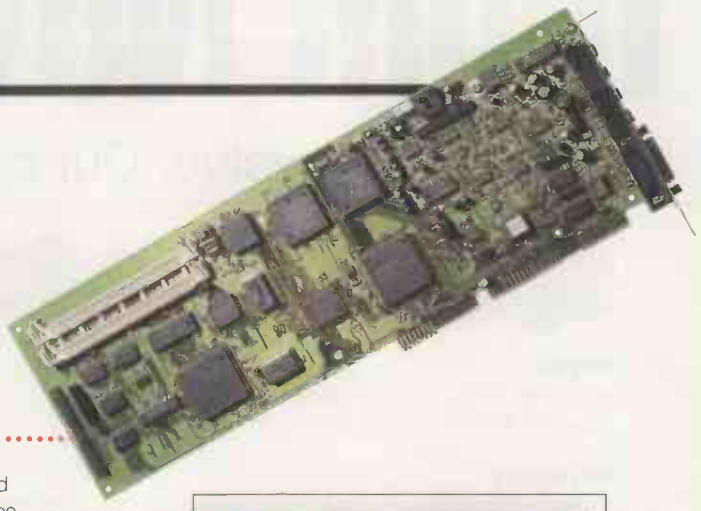
Buying a **Sound Card**



You need one of these to add sound capability to your PC.

Check compatibility with your CD-ROM drive, and remember that 16-bit cards capable of 44KHz provide higher-quality sound than slower 8-bit cards. Better sound cards now include wavetable synthesis which means they have samples of real instruments held in ROM.

The quality of wavetable synthesis still varies widely. Even cheap cards which have the inferior Frequency Modulation synthesis should have a daughterboard connector allowing them to be upgraded to wavetable. The newer cards are also plug and play which means, in theory, that you should be able to plug them straight into a PC without any extra configuration. Most cards are bundled with extra software, normally sequencers, wave editors and audio players.

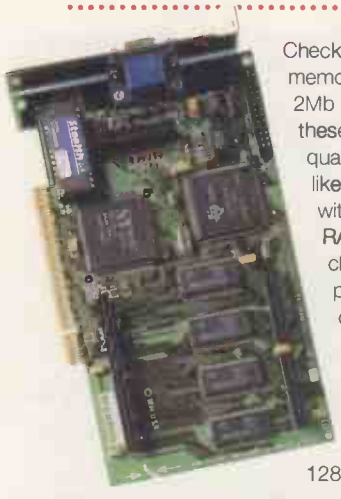
PCW Recommended products

AWE 64 Gold: £199; Creative Labs 01734 344322 (*PCW* June 97)

Maestro 32/96: £139; Terra Tec 01635 294394 (*PCW* June 1997)

Buying a **Graphics Card**

The graphics card sits inside the PC and controls the features which the software displays on the monitor.



Check the amount of memory on the card. 2Mb is standard these days. Better-quality cards are likely to be fitted with VRAM (Video RAM). Also, check out the performance capability of the card. Video cards come as 16-bit, 32-bit, 64-bit and even 128-bit: a large number of bits means faster performance.

The most important aspect of your video card, and the most frequently quoted feature, relates to the resolution that the card supports in Windows. This is measured by the number of pixels the card displays on-screen. The absolute minimum these days is 1,024 x 768 with a refresh rate of 70Hz.

A 2Mb card can display 16-bit colour (65,000 colours) at 1,024 x 768 pixels. A 1Mb card can manage only 8-bit colour (256 colours) at 1,024 x 768 pixels. To display 24-bit colour (16 million colours) at 1,024 x 768 you'll need 4Mb of memory. The refresh rate (measured in Hz) is important, too. It represents the number of frames displayed on-screen per second. A flickering display is very tiring to use.

Find out if your video card is "local bus". Local bus (PCI or VL) is an interface which connects your video card to the motherboard. It allows the memory in the card to be addressed directly by the CPU, which makes it a lot faster than the standard ISA interface.

PCW Recommended products

ATI Xpert@ play: £163 (4Mb); ATI 01628 533115

Hercules Stingray 128/3D: £210 (6Mb); Hercules 01635 294300

Orchid Righteous 3D: £132; Orchid 01256 479898

(*PCW* January 1998)

Buying a **Fax Modem**

You'll need a modem to connect to the internet or an online service, such as CompuServe or AOL, and also to send and receive email.

Modems are available in three formats: either as PC Cards to plug into notebooks, or as external boxes, or as expansion cards. PC Card modems are the most expensive, while external modems cost slightly more than expansion cards.

Apart from the casing and the external power supply, there is often very little difference between the internal and external versions of a modem. Most now have a built-in fax capability, which means you can receive faxes on your personal computer to view or print out.

Go for a V.34 28.8Kb/sec modem or one of the new V.34+ 33.6Kb/sec modems. Or, look out for the new 56K versions: these use one of two rival technologies but as yet are unsupported by Information Service Providers.

PCW Recommended products

- **Internal fax modem**

Pace 56 Voice: £169; PMC 0990 561001 (*PCW* November 97)

Buying **Software**

Only a few years ago there were dozens of different software applications in each category. During the past two years or so, however, there has been rapid product consolidation. Other magazines list large numbers of packages, most of which are out of date and not worth considering. We've distilled each category down to just one or two recommended products.

A

■ ACCOUNTS SOFTWARE One of the few categories in which there are still masses of packages on the market at a huge range of different prices. Accounts is also one of the last bastions of DOS.
Recommended products:
MYOB, Intuit QuickBooks.

B

■ BROWSERS are programs which are used to navigate the internet. A modern browser lets you navigate web pages, download files and send and receive email.
Recommended products:
There are only two worth talking about: Netscape Navigator and Microsoft Internet Explorer.

C

■ CAD SOFTWARE Computer Aided Design covers everything from architectural drawings, through office planning, to complex engineering drawings.
Recommended products:
AutoCAD is the industry standard but we think MicroStation 95 is a more capable product at the high end of the market. At the cheap end, DesignCAD 3D offers astonishing value for money.

■ CONTACT MANAGERS
(See PIMs)

D

■ DATABASE At its simplest, an electronic card index. For just a few hundred names and addresses an electronic-type Filofax, such as Lotus Organizer, may be more appropriate. But for more sophisticated applications like tracking products and customers, the power of a relational database is required. Databases are generally the least user-friendly of the main suite applications. In most offices you are likely to use a database application that somebody else has written for you.
Recommended products:
Lotus Approach, Microsoft Access.

■ DESKTOP PUBLISHING SOFTWARE (DTP) This is software used to create newsletters, magazines, books, brochures or advertisements.

Typically, it enables you to incorporate graphics, lay out text in multiple columns and run text around graphics. You also have control over how text appears, in varying degrees of sophistication.
Recommended products:
The high-end market leader is Quark XPress on the Mac. On the PC, PageMaker is strong. For serious work on a budget we recommend Serif Publishing Suite, and for sheer ease of use, Microsoft Publisher.

■ DRAWING SOFTWARE Programs for drawing, which work using vectors. This means each shape drawn is described using mathematical equations.
Recommended products:
At the budget end of the market, MicroGraphx Windows Draw 5 stands out. At the professional end, Corel Draw 7 gets our vote.

■ IMAGE EDITING SOFTWARE A program for editing bitmap files (files made up of pixels). Typically used for converting graphics files, retouching photographs and preparing pictures for printing.
Recommended products:
For simple image editing the popular shareware program, PaintShop Pro, is fine. For professionals, Adobe's Photoshop is the industry standard.

■ INTEGRATED PACKAGES Typically, these combine the functionality of a database, word processor and spreadsheet in one application. This makes it easy to move data from one component to another but integrated packages tend to lack some of the advanced features of individual applications.
Recommended product:
Microsoft Works.

J

■ JAVA. A language based on C++, but easier to learn and use. Java runs on a "virtual machine" interpreter, so programs can run on many different platforms.
Recommended products:
Borland JBuilder

M

■ MULTIMEDIA AUTHORING TOOLS Programs designed for producing interactive multimedia applications; typically for training applications or for CD-ROMs. The software lets you control and manipulate different types of media such as sound files, audio files, video clips and graphic files.
Recommended product:
Macromedia Director, the product used to produce *PCW*'s cover-mounted CD-ROM, gets our vote.

O

■ OCR SOFTWARE Optical Character Recognition software converts printed text into computer text you can edit. You will need a scanner or fax card to get the printed text onto your PC. OCR saves re-keying documents and can cut down drastically on paper filing systems.
Recommended products:
OmniPage is the best product we have found, but TextBridge offers most of the same capabilities for less cash.

P

■ PERSONAL INFORMATION MANAGERS (PIMs) PIMs are an electronic way of storing names, addresses, phone numbers and appointments. Contact managers take the idea one step further to include business information about dealings with clients.
Recommended products:
SideKick 95 and Organizer are excellent PIMs. For contact managers we would recommend Goldmine for Windows.

■ PRESENTATION GRAPHICS Increasingly, the trend is towards doing presentations on a PC and the latest packages tackle this by including sound, sophisticated transitions between slides and support for video clips.
Recommended products:
Powerpoint and Freelance 97 are both capable products sold with Microsoft Office and SmartSuite respectively.

■ PROGRAMMING TOOLS Applications designed for writing software. These range from "low-level" languages which are powerful but difficult to learn and use, to "high-level" languages which, although much easier to use, generally sacrifice performance and flexibility in the process. Commercial programs like Word for Windows are written using low-level languages. Bespoke applications and prototypes are often written using Delphi or Visual Basic.
Recommended products:
Delphi 3.0 is a great example of scalability, catering for beginners and serious developers working on major projects. Optima Power++ is the pick of the high-end Windows development tools.

■ PERSONAL FINANCE PACKAGES These help manage home finances. They are also well suited to some small businesses and tend to be easier to use than full-blown accounts packages.
Recommended product:
Quicken is the outstanding product in this category and has no serious rivals.

■ PROJECT MANAGEMENT Programs for managing large projects — anything from building a power station to planning a

marketing campaign.
Recommended product: SuperProject 4.0 for Windows.

R

■ REMOTE CONTROL S/W Lets you access and control a PC remotely, usually via a modem.
Recommended product: ReachOut, for its simple interface and support for different networks, particularly TCP/IP.

S

■ SPREADSHEET This is an electronic version of what would be an old-fashioned ledger. Excellent graphing and charting facilities are included.
Recommended products: Lotus 1-2-3, Microsoft Excel.

■ SUITES Most general business software is now sold in suites.

Two suites are widely available: Lotus SmartSuite and Microsoft Office. Lotus SmartSuite also contains a database. With Microsoft Office, you pay extra for Office Professional which contains Microsoft's Access database.
Recommended product: Microsoft Office is close to the industry standard. Its high level of integration gives it the edge over the opposition.

V

■ VISUAL PROGRAMMING (see Programming Tools)

W

■ WEB EDITORS Programs designed to do for web page design what DTP did for magazines and newsletters. They let you create web pages without writing HTML. You can incorporate graphics, backgrounds, tables, images and sounds.
Recommended products: HotMetal Pro 3.0 is our first choice, while Adobe Pagemill is a capable alternative.

■ WORD PROCESSOR An application in which you can write letters and prepare reports, or produce a simple newsletter. The latest word processors have advanced features such as outliners, table editors and facilities for adding columns of figures.
Recommended products: Microsoft Word is the clear market leader but WordPro is a capable alternative.

A-Z of Recommended **Software Products**

■ *If you would like to read any of the reviews of software listed here and do not have the original issues, you can order Personal Computer World on CD-ROM. It costs just £9.95 (including postage and packing). See pages 370/371 for full details.*

	Category	Product	Supplier	Contact	Price (ex VAT)	Date of *PCW* review
A	Accounts	Sage Instant Acctng.	Sage	0800 447777	£84.26	April 1998
	Accounts	QuickBooks	Intuit	01932 578501	£125	April 1997
B	Browsers	Netscape Navigator	Netscape	0181 564 5100	£49	Mar 1997
	Browsers	Internet Explorer	Microsoft	0345 002000	Free	Jun 1996
C	CAD	Microstation	Bentley	01344 412233	£3,495	Jan 1997
	CAD	DesignCAD 3D	BVG	01874 611633	£149.95	Jan 1997
D	Database	Approach 97	Lotus	01784 455445	£40	Oct 1997
	Database	Access 97	Microsoft	0345 002000	£235	Oct 1997
	Desktop publishing	XPress 3.3	Quark	01483 454397	£795	May 1997
	Desktop publishing	Publisher	Microsoft	01734 270000	£70	May 1997
	Desktop publishing	Publishing Suite 3.07	Serif	0115 9421502	£99	May 1997
	Drawing	CorelDraw 7	Corel	0800 973189	£495	Sept 1997
	Drawing	Windows Draw 5	MicroGraphx	0345 089372	£38.30	Sept 1997
I	Image editing	Photoshop	Adobe	0181 606 4000	£382	Dec 1996
	Image editing	PaintShop Pro	Digital Workshop	01295 258335	£49.95	Jun 1995
	Integrated package	Works/Win 95	Microsoft	0345 002000	£93.61	Apr 1997
J	Java programming	JBuilder	PowerSoft	01628 597100	£399	N/A
M	Multimedia authoring	Director 5.0	Macromedia	0181 200 8282	£99	Oct 1996
O	OCR	PaperPort Plus	Visioneer	0800 973245	£58.72	Dec 1997
	OCR	Presto! OCR Pro 3.0	Guildsoft	01752 895100	£58.72	Dec 1997
P	Personal finance	Quicken	Intuit	0800 585058	£34	May 1996
	PIM/contact manager	Organizer 2.1	Lotus	01784 455445	£99	Jun 1997
	PIM/contact manager	Goldmine 4.0	AVG Sales & Mktg.	0171 335 2222	£195	April 1998
	PIM/contact manager	Sidekick 95	Starfish UK	0181 875 4400	£39	Jun 1997
	Presentation graphics	Freelance	Lotus	01784 445808	£42	Mar 1998
	Presentation graphics	Powerpoint	Microsoft	0345 002000	£277	Mar 1998
	Programming tools	Power ++ 2.0	PowerSoft	01628 597100	£345	Sept 1997
	Programming tools	Delphi 3.0	Borland	01734 320022	£89	Apr 1997
	Project management	SuperProject 4.0	Computer Associates	01753 679679	£495	May 1996
R	Remote control/Access	PC Anywhere	Symantec	01628 592320	£139	Nov 1997
S	Spreadsheet	Excel	Microsoft	0345 002000	£220	May 1995
	Spreadsheet	1-2-3	Lotus	01784 455445	£365	May 1997
	Suite	Office (Standard)	Microsoft	0345 002000	£360	Jul 1997
	Suite	Office (Professional)	Microsoft	0345 002000	£460	Jul 1997
W	Web authoring	HoTMetal Pro 4.0	SoftQuad	0181 387 4110	£69	Jan 1998
	Web authoring	FrontPage 98	Microsoft	0345 002000	£99	Jan 1998
	Word processing	Word	Microsoft	0345 002000	£220	Oct 1996

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£1610.22 +vat

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• Intel P166Mhz with MMX • 32MB EDO Ram • 2.17GB Hard disk • 12.1" HCA/TFT colour • Swapable 10x CD-Rom • Built-in 16-bit sound, mic and Stereo speakers • 2x 32bit PCMCIA slots • Infra-red • Weight 3.2kg • 3 Year Int'l. Warranty

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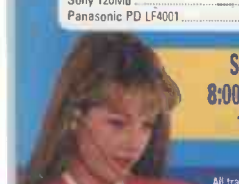

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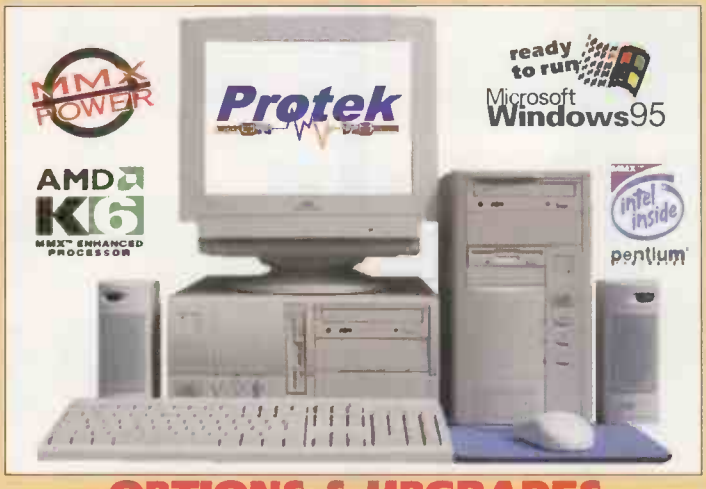

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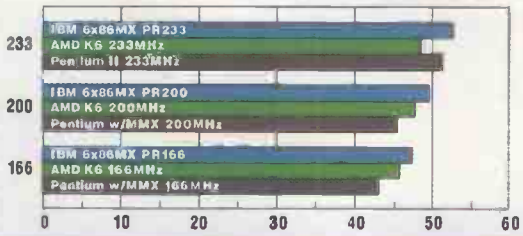

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Toshiba
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High Quality AT Bus 4-Port Serial Communications Card. Shown above. Supplied with 16550 UARTs for baud rates to 115kbps

- Port address 100H - 3F8H
- Interrupts IRQ2-7, 10-12, 15
- Transmit & Receive LEDs
- Compatible with Arnet 4-Port Card
- Can be used for adding 4 ports to Windows and SCO Unix
- Also supports RS422/RS485
- Supplied with 4-way cable set

£120

16550 Serial Card

Ideal for hardware requiring high speed communications. Highly recommended for Windows.

- Two 16550 serial ports COM1-COM4, IRQ2-5
- Bi-directional Parallel Port LPT1-LPT3, IRQ5,7
- Optional games port
- Enable/disable any port

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The most flexible 2-Port Serial Card on the market. Supports any port address and high interrupts. Perfect for COM1-COM4 under windows.

- 2 RS232 serial ports
- Interrupts IRQ2-7, 10-12, 14-15
- Port address 100H-3F8H
- 16 bit AT bus

£75

16550 option supplied as standard

Dual RS422/RS485 Card

Offering 2 high speed serial ports for transmissions up to 4000 feet

- 2 RS422/RS485 serial ports
- Supplied with 16550 UARTs
- Up to 115K baud
- Port address 200H-3F8H
- IRQ2-7, 10-12, 15
- 16 bit AT bus

£60

Also Isolated RS422/RS485 Card £80

DigiBoard Serial Cards

The Best Engineered Multi-Channel Boards on the market today. The DIgiCHANNEL PC/X is ideal for use in multi-user environments, most operating systems are supported with drivers available for DOS, XENIX, UNIX, OS/2, and many more.

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PC/4s	4-Port with 16550	£325
PC/8s	8-Port with 16550	£450
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PC/8r	8-Port Acceleport	£495

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The DigiCHANNEL PC/Xe range are intelligent multi-port RS232 high speed communication boards with on-board 80186 processor and 64K memory for increased throughput. Drivers available for DOS, Windows NT, Windows, OS/2, Xenix and UNIX.

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An Intelligent Modular System offering 16 to 64 high speed serial channels. The system comprises one host adapter with on-board 20MHz RISC processor and 1 to 4 external concentrators each providing 16 serial ports. Data rates of 115kbps can be achieved on 32 ports. Drivers for DOS, SCO UNIX, OS/2, Netware Connect and Windows NT.

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Providing 2 Isolated RS-232 or current loop serial ports with baud rates up to 56Kbps.

- Supplied with 16550 UARTs
- Provides 500VDC Isolation
- Port address 200H - 3F8H
- Interrupts IRQ2-7, 10-12, 15
- 16-Bit AT bus

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Synchronous Serial Card

Single channel, multi-protocol communications adapter which uses an AMD 85C30-10 serial communications controller (SCC) as standard.

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- DMA Channels 1 - 3

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Also Synchronous RS422/RS485 £220

Remote Data Acquisition Modules for RS485 Network

ADAM Modules (shown below) are compact intelligent sensor-to-computer interface units designed specifically for reliable operation in harsh environments. Their built-in microprocessors, encased in rugged industrial grade plastic packages provide analog I/O, digital I/O, thermocouple measurement and data display. Each module has a built-in RS485 serial interface for data transfer with the host computer.

Isolated RS232/RS485 Converter

ADAM modules need only 2 wires to communicate with their controlling host computer over a multidrop RS-485 network. ADAM modules also accept any power source between 10V and 30V and are protected against power reversal.

- Automatic control of data flow
- Input RS232 (4-wire)
- Output RS485 (2-wire)
- Baudrate 1.2K to 38.4K

£65

Analog Input module

ADAM modules can accommodate multiple types and ranges of analog input. You select type and range remotely by issuing ASCII commands from your host computer.

- Input for thermocouple, mV, V, or mA
- Input range 15mV to 2.5V, 20mA
- 10 samples per second
- 1 digital input / event counter
- 2 digital outputs
- Baudrate 1.2K to 19.2K

£129

ADAM Modules

ADAM 8ch Analog Input Module	£155
ADAM 8ch Thermocouple Module	£169
ADAM Analog Output Module	£119
ADAM Digital I/O Module	£80
ADAM Relay Output Module	£80
ADAM Counter/Frequency Module	£119
ADAM IP66 Industrial Enclosure	£85
ADAM Power Supply Unit 24V	£149

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Provides complete IEEE-488 functionality on a half size card.

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- DMA & Interrupt
- On-board firmware driver
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- Basic, Pascal & C drivers
- IEEE-488 cable 2m

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The simple solution for providing digital I/O and timer functions.

- 32 digital inputs
- 32 digital outputs
- 3 channel programmable counter/timer
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- Output status readback

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Relay Board 16ch, 120V 1A	£89
Relay Board 24ch, 120V 1A	£110
Relay Board 16ch, 250V 5A	£110
Relay Board 24ch, 250V 5A	N/A
SSR Module Carrier Board 8ch	£60
SSR Module Carrier Board 16ch	£95
SSR Module 280V AC 3A	£9
SSR Module 60V DC 3A	£9

PC-104 MODULES

PC-104 Modules (shown below) simply stack together to form a compact modular PC- based system which has very low power consumption.

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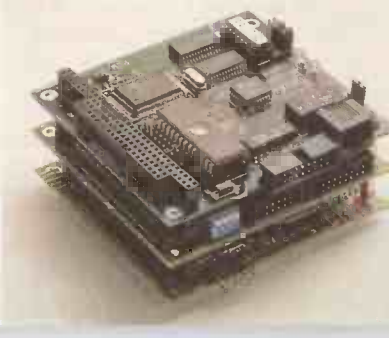
PC-104 SVGA Display Module	£90
PC-104 Ethernet Module	£80
PC-104 Super I/O Module	£80
PC-104 RAM/ROM Disk Module	£60
PC-104 PCMCIA Memory Module	£120
PC-104 RS422/RS485 Module	£140
PC-104 Digital I/O Module	£80
PC-104 Global Positioning (GPS)	£350



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- Wiring Terminal Board

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- 1 D/A Output
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- 16 digital outputs
- Pacer Clock
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- DMA and Interrupt
- Wiring Terminal Board

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- 8 on-board SPDT relays
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- Easy to use and program

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Industrial I/O Cards

D/A Output Card 2ch.	£145
D/A Output Card 6ch.	£265
D/A Output Card 12ch.	£375
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- IP56/IP52 sealed hardened front panel
- Heavy duty aluminium and steel chassis
- 250-watt power supply
- 8 ISA slots

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Rugged heavy duty workstation with flat-panel LCD display and 80-key membrane keypad.

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- 640 x 480 colour TFT display
- 19" rack/panel mount
- IP56/IP52 front panel
- 200-watt power supply
- 8 ISA slots

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Flash Card 16Mb	£320
Flash Card 32Mb	£600

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Passive Backplane 8 slot	£30
Passive Backplane 12 slot	£40
Passive Backplane 14 slot	£40
Passive Backplane Dual 8+4 slot	£50
Passive Backplane Dual 8+6 slot	£50

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Only supplied as part of a system.

IDE Hard Drive 2.0Gb	£130
IDE Hard Drive 3.2Gb	£145
IDE Hard Drive 4.3Gb	£170
IDE Hard Drive 5.2Gb	£210
IDE Hard Drive 6.5Gb	£230
IDE Hard Drive 8.4Gb	£365

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The rugged all steel chassis conforms to the 19" rack mounting standard. The unit includes a 14 slot passive backplane and a high efficiency power supply (250W) in a dual-fan cooled chassis.

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- Hold down clamp to protect plug in cards from vibration
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- Removable air filters

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Industrial 19" Chassis ISA/PCI backplane

The same robust 19" Industrial Chassis as described left but fitted with a special backplane offering 4 PCI slots and 9 ISA slots for use with our Pentium range of CPU Cards.

- High Quality and Rellability
- Heavy-duty steel construction
- Supports Pentium CPU Cards
- 4 PCI short slots
  9 ISA long slots
  1 CPU Card slot
- PICMG Standard

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Industrial Grade CPU Cards designed to be highly reliable in harsh industrial environments. Built to ensure high end stability under extremes of temperature, shock and vibration. Special features include watchdog timers, RAM/ROM disk, PC-104 interface, floppy/IDE interface, parallel and RS232/RS485 serial ports.

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CPU Card 486DX4/100 ISA-bus	£195
CPU Card Pentium/166MMX ISA-bus	£300
CPU Card Pentium/200MMX ISA-bus	£360
CPU Card Pentium/233MMX ISA-bus	£420

Industrial CPU Cards ISA/PCI-Bus

Additional features to those above include 2 Enhanced IDE controllers, SCSI controller and PS/2 Mouse Port.

Full-size Cards

CPU Card Pentium/166 MMX ISA/PCI	£250
CPU Card Pentium/200 MMX ISA/PCI	£300
CPU Card Pentium/233 MMX ISA/PCI	£360
CPU Card Pentium/166 MMX + SCSI	£350
CPU Card Pentium/200 MMX + SCSI	£400
CPU Card Pentium/233 MMX + SCSI	£460

Display and Keyboards

14" SVGA Colour Monitor	£200
Rack Mount Kit for 14" Monitor	£200
SVGA Display Card 1Mb ISA bus	£60
SVGA Display Card 2Mb PCI bus	£60
Rack Mounted Compact Keyboard	£195
Compact keyboard	£60
Standard Keyboard	£40

Memory Components

Only supplied as part of a system

SIMM 4Mb 72pin parity	£20
SIMM 8Mb 72pin parity	£40
SIMM 16Mb 72pin parity	£50
SIMM 4Mb 72pin EDO	£10
SIMM 8Mb 72pin EDO	£15
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SIMM 32Mb 72pin EDO	£60

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- AMD, IBM, Cyrix, SGS & Intel CPUs
- Windows95 Keyboard
- 3 Button Mouse
- 14 NILR .28 SVGA Monitor 1024x768 (3yrs onsite warranty)

	Ex. Vat	Inc. Vat
Cyrix 200MX	£379.00	£445.35
Cyrix 233MX	£409.00	£480.60
AMD K6 200	£415.00	£487.66
AMD K6 233	£419.00	£492.35
Intel 166 MMX	£389.00	£457.10
Intel 200 MMX	£405.00	£475.90
Intel 233 MMX	£445.00	£522.90
IBM 166MMX	£359.00	£423.58
Winchip 200MMX	£389.00	£457.10

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- 512K Pipeline Burst Cache
- 2MB 64-bit PCI Video Card
- Processor Cooled
- AMD, IBM, Cyrix, SGS & Intel CPUs
- Windows '95 Keyboard
- 3 Button Mouse
- 14" NILR .28 SVGA Monitor 1024x768 (3yrs onsite warranty)

Level 2

	Ex. Vat	Inc. Vat
IBM 166MMX	£415.00	£487.64
Cyrix 200MX	£425.00	£499.39
Cyrix 233MX	£459.00	£539.34
AMD K6 200	£435.00	£511.14
AMD K6 233	£465.00	£546.39
Intel 166MMX	£435.00	£511.14
Intel 200MMX	£455.00	£534.64
Intel 233MMX	£489.00	£574.59
Winchip 200MMX	£435.00	£511.14

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- TX Pentium Motherboard DMA33
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- 4.3 GB EIDE Hard Disk Drive
- 1.44MB Floppy Disk Drive
- 512K Pipeline Burst Cache
- 4MB 3D 64-bit PCI Video Card
- Processor Cooled
- AMD, IBM, Cyrix, SGS & Intel CPUs
- Windows95 Keyboard
- 3 Button Mouse
- 14" NILR .28 SVGA Monitor 1024x768 (3yrs onsite warranty)

Power User

	Ex. Vat	Inc. Vat
Cyrix 200MX	£495.00	£581.65
Cyrix 233MX	£519.00	£609.86
AMD K6 200	£509.00	£598.10
AMD K6 233	£529.00	£621.60
Intel 166MMX	£505.00	£593.40
Intel 200MMX	£635.00	£746.16
Intel 233MMX	£559.00	£656.85
Winchip 200MX	£505.00	£593.40

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- Processor Cooled
- AMD, IBM, Cyrix, SGS & Intel CPUs
- Windows95 Keyboard
- 3 Button Mouse
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	Ex. Vat	Inc. Vat
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Pentium II 300	£849.00	£997.58
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UP500	X16 CDR 16 Sound Card Speakers	£53.00	£62.28
UP700	X24 CDR 16 Sound Card Speakers	£57.00	£66.98
UP800	X32 CDR 16 Sound Card Speakers	£75.00	£88.13

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Peripherals

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C200AK6	AMD K6 200 CPU	£69.00	£81.08
C233A	AMD K6 233 CPU	£95.00	£111.63
INTEL			
C166I	Intel 166 CPU	£65.00	£76.38
C166MMX	Intel 166 MMX CPU	£69.00	£81.08
C200MMX	Intel 200 MMX CPU	£79.00	£92.83
C233MMX	Intel 233 MMX CPU	£105.00	£123.38
C233P2	Intel Pentium2 233	£149.00	£175.08
C266P2	Intel Pentium2 266	£219.00	£257.33
C300P2	Intel Pentium 300	£299.00	£351.33
C333P2	Intel Pentium2 333	£399.00	£468.83
CYRIX			
C166C	Cyrix 686 166	£39.00	£45.83
C200C	Cyrix 686 200	£45.00	£52.88
C166MMX	Cyrix 166 MMX	£49.00	£57.58
C200MMX	Cyrix 200 MMX	£55.00	£64.63
C233MMX	Cyrix 233 MMX	£85.00	£99.88
SGS-Thomson			
C166ST	686 P166+	£39.00	£45.82
C200W	IDT Winchip 200MMX	£69.00	£81.08

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		Ex. Vat	Inc. Vat
M100-V	Opti Viper Up to 200 MHz	£25.00	£29.38
M101	VX Pro Motherboard 512k	£37.00	£43.48
M102	TX Pro Motherboard 512k	£39.00	£45.83
M103	Intel Triton TX430 512k Cache	£47.00	£55.23
M106A	VX Pro 512K with soundcard	£39.00	£45.83
M92-TXPA	Intel Triton 512k with soundcard	£49.00	£57.58
M250	LX Intel 440 512k Cache	£75.00	£88.13
M107	TX Pro 512K with soundcard	£47.00	£55.23
M108	TX Pro 512k with sound & video	£49.00	£57.58
M109	TX Motherboard 1MB Cache	£53.00	£62.28
M92-TXG	Gigabyte TX Motherboard 512k	£65.00	£76.38
M130	Gigabyte TX Mboard 512k ATX	£79.00	£92.83
M199	Gigabyte LX Mboard 512k ATX	£95.00	£111.63
M150	Twister AT 430 TX 512k	£69.00	£81.08
M160	Twister ATX 430 TX 512k	£69.00	£81.08
M170	P2 Tiger Car 440 LX	£139.00	£163.33
M200LXM	Spitfire 440 LX 512/1024k DualP2	£309.00	£363.08
M300MLX	P2 Stingray 440 LX 512/1024k	£119.00	£139.85
M400LX	P2 Tiger 440 LXA M/board +Sound	£222.00	£260.85
M200LX	Intel Pentium 2 AI440LX	£105.00	£123.38
M200LXA	Intel Pentium 2 AL440LXA + Sound	£129.00	£150.32
M111	LX Intel Triton	£72.00	£84.60
ATREND	Atrend TX pentium 512k	£55.00	£64.63

Upgrade Kits *from £104 +Vat*

		Ex Vat	Inc Vat
UP30	Cyrix 686 P200 Upgrade Kit	£102.00	£119.85
UP40	Cyrix 686 166MMX Upgrade Kit	£105.00	£123.38
UP50	Cyrix 686 200MMX Upgrade Kit	£112.00	£131.60
UP60	Intel Pentium 166MMX Upgrade Kit	£122.00	£143.35
UP70	Intel Pentium 200MMX Upgrade Kit	£139.99	£164.49
UP80	Intel Pentium 233MMX Upgrade Kit	£176.00	£206.80
UP90	AMD K6 166MMX Upgrade Kit	£129.00	£151.57
UP100	AMD K6 200MMX Upgrade Kit	£132.00	£155.10
UP110	AMD K6 233MMX Upgrade Kit	£152.00	£178.60
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UP200	P2 233 Upgrade Kit	£255.00	£299.63
UP266	P2 266 Upgrade Kit	£319.00	£374.83
UP210	P2 300 Upgrade Kit	£419.00	£492.33
Motherboard & Processor Bundle			
Pentium VX Motherboard, Heatsink & fan, 1MB Video Card			

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PR60	Epson 400 Inkjet Colour Printer	£115.00	£135.13
PR61	Epson 600 Inklet Colour Printer	£155.00	£182.13
PR100	Epson 800 Inklet Colour Printer	£209.00	£245.58
PR26	Hewlet Packard 400L	£85.00	£99.88
PR34	Hewlet Packard 670 C	£112.00	£131.60
PR35	Hewlet Packard 690 Plus	£138.00	£162.15
PR40	Hewlet Packard 820 Cxi	£149.00	£175.08
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MOI4HO	Hansol 14" Digital 400A	£99.00	£116.33
MOI5HO	Hansol 15" Digital 500A	£139.00	£163.33
MOI5H	Hansol 15" Digital 500P	£149.00	£175.08
MOI5HS	Hansol 15" Digital Speakers	£169.00	£198.58
MOI7HO	Hansol 17" Monitor 700A	£259.00	£304.33
MOI7H	Hansol 17" Monitor 700P .26	£329.00	£386.58
ADI			
MO14A	14" ADI Provista E30 Digital	£105.00	£123.38
MO15A	15" ADI Microscan 4P Digital	£155.00	£182.13
MO17A	17" ADI Microscan 5P Digital	£289.00	£339.58
MO17AT	17" ADI Microscan 5G Digital .26	£349.00	£410.08
MO17XA	17" ADI 17X A4 Pivot	£299.00	£351.33
MO19A	19" ADI 6P Digital	£539.00	£633.33
MO21A	21" ADI 6G Digital	£739.00	£868.33
Targa			
MO14T	14" Targa Digital Monitor	£89.00	£104.58
MO15T	15" Targa Digital Monitor	£129.00	£151.58
MO17T	17" Targa Digital Monitor	£259.00	£304.33

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HD17S	Seagate 1.7GB	£79.00	£92.82
HD21S	Seagate 2.1GB	£82.00	£96.35
HD21SU	Seagate 2.1GB Ultra DMA 33	£85.00	£99.88
HD32SU	Seagate 3.2GB Ultra DMA 33	£105.00	£123.38
HD43SU	Seagate 4.3GB Ultra DMA 33	£125.00	£146.88
Quantum			
HDIQFB	Quantum 1 GB Quantum Fireball	£69.00	£81.08
HD32QS	Quantum 3.2GB Stratus Ultra DMA	£109.00	£128.08
HD43QS	Quantum 4.3GB Stratus Ultra DMA	£129.00	£151.58
HD84QFB	Quantum 8.4GB Stratus Ultra DMA	£219.00	£257.33
HD43QBF	Quantum 4.3GB Cyclone	£109.00	£128.08
HD65QBF	Quantum 6.5GB Cyclone	£155.00	£182.13
HD64QS	Quantum 6.4GB Stratus Ultra DMA	£159.00	£186.83
Maxtor			
HD1M	Maxtor 1GB	£65.00	£76.38
HD13M	Maxtor 1.3GB	£75.00	£88.13
HD21M	Maxtor 2.1GB Ultra DMA33	£89.00	£104.58
HD52M	Maxtor 5.2GB Ultra DMA 33	£142.00	£166.85
HD64M	Maxtor 6.4GB Ultra DMA33	£159.00	£186.83
HD7M	Maxtor 7GB Ultra DMA33	£185.00	£217.38
HD84M	Maxtor 8.4GB Ultra DMA33	£219.99	£258.49
Fujitsu Ultra DMA			
HD17F	Fujitsu 1.7GB Ultra DMA 33	£79.00	£92.82
HD21F	Fujitsu 2.1GB Ultra DMA 33	£89.00	£104.58
HD26F	Fujitsu 2.6GB Ultra DMA 33	£95.00	£111.63
HD35F	Fujitsu 3.5GB Ultra DMA 33	£112.00	£131.60
HD43F	Fujitsu 4.3GB Ultra DMA 33 V2	£125.00	£146.88
HD52F	Fujitsu 5.2GB Ultra DMA 33	£159.00	£186.83
HD65F	Fujitsu 6.5GB Ultra DMA 33	£169.00	£198.58

Video Cards *from £12 +Vat*

		Ex.Vat	Inc.Vat
VCI6	Cirrus Logic 5446 1MB MPEG	£12.00	£14.10
VC09	SIS Chipset 1MB MPEG	£12.99	£15.26
VC24	SIS Chipset 2MB MPEG	£18.00	£21.15
VC21	Cirrus Logic 5446 2MB MPEG	£18.00	£21.15
VC20	S3 Trio 64V+ 2MB EDO	£19.00	£21.33
VC22	S3 Trio 64V2+ 2MB EDO	£21.00	£24.68
VC40	S3 Virge 2MB 2000 DX	£23.00	£27.03
VC41	S3 Virge 4MB 3D2000	£33.00	£38.78
VC45	Mega 3D 4MB Cirrus GD5464	£39.00	£45.83
VC-250	Creative Labs Graphics Blaster	£69.00	£81.08
VC90	4MB Orchid Righteous 3D	£99.00	£116.33
VC91	Maxi 4MB Voodoo FX	£79.99	£93.99
VC92	Modular Tech 3D FX	£75.00	£88.13
VC210	STB Velocity 128K	£89.00	£104.58
MATROX			
VC-101	4MB 220V Matrox Mystique	£65.00	£76.38
VC-151	4MB Matrox Millenium 2	£89.00	£104.58
VC-158	8MB Matrox Millenium 2	£125.00	£146.88
VC-130	Matrox Rainbow Runner	£109.00	£128.08
VC-135	Matrox M3D Power VR	£55.00	£64.63
ATI			
VC80	ATI 3D Pro Turbo 4MB PC2TV	£89.00	£104.58
VC81	ATI 3D Pro Turbo 8MB PC2TV	£125.0	£146.88
VC82	ATI 4MB Expert at Play	£79.00	£92.83
VC83	ATI 8MB Expert at Play	£115.0	£135.13
VC87	ATI 4MB Expert at Work	£79.00	£92.83
VC88	ATI 8MB Expert at Work	£115.0	£135.13
VC-180	ATI 4MB Expert at Work AGP	£79.00	£92.83
HERCULES			
VC2000OEM	Hercules Stingray 3D 6MB OEM	£145.00	£170.36
VC200	Hercules Stingray 3D 6MB Retail	£149.00	£175.08
VC201OEM	Hercules Stingray 3D 8MB OEM	£159.00	£186.83
VC201	Hercules Stingray 3D 8MB Retail	£16900	£198.58
APPOCOLYPSE			
VC500	Apocolypse 3D 4MB	£49.99	£58.74
VC600	Apocolypse 5D 6MB	£125.00	£148.05
DIAMOND			
VC60	Diamond 3D2000	£35.00	£41.13
VC62	Diamond 3D2000 pro 4MB	£45.00	£52.88
VC89	Diamond 3D Monster 4MB Voodoo	£99.00	£116.33
VC65	Diamond Fire GL 8MB	£115.00	£135.13
VC66	Diamond Fire GL 8MB PRO	£125.00	£146.88
VC62	Diamond Viper 4MB	£105.00	£123.38
VC63	Diamond Viper 4MB AGP	£115.00	£135.13

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		Ex. Vat	Inc. Vat
ME4-2C	4MB 72 Pin 2 Chip	£7.99	£9.39
ME8-4C	8MB 72Pin 4 Chip	£10.00	£11.75
ME16-8C	16M8 72Pin 8 Chip	£22.00	£25.85
ME32-16C	32MB 72 Pin 16 Chip	£42.00	£49.35
ME4-2CE	4MB 72 Pin EDO	£7.99	£9.40
ME8-4CE	8MB 72Pin EDO	£10.00	£11.75
ME16-8CE	16MB 72Pin EDO	£15.00	£17.63
ME32-16CE	32MB 72Pin EDO	£35.00	£41.13
ME32SD	32MB SDRAM 64 Bit	£38.00	£44.65
ME32SDE	32MB SDIMM 64 Bit E-PROM	£43.00	£50.53
ME64S	64MB SDRAM 64 Bit	£79.00	£92.83
ME64SDE	64MB SDIMM 64 Bit E-PROM	£89.00	£104.58

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SO06	Pine ESS 16-bit Sound Card	£8.99	£10.58
SO45	Pine ESS 1868 3D Sound Card	£14.00	£18.45
SO21	Pine Audio 100 Plus Sound Card	£12.00	£14.10
SO70	Pine PCI 32 Schubert	£29.00	£34.08
SO25	Yamaha 3D PnP 32 Sound	£16.99	£19.96
SO02	MaxPower 16 Bit	£10.00	£11.75
SO12	CreativeLabs SoundBlaster 16	£25.00	£29.38
SO64V	Creative Labs AWE 64V	£44.00	£51.70
SO64G	Creative Labs AWE 64 Gold	£105.00	£123.38

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		Ex. Vat	Inc. Vat
CD8M	X8 Mitsumi CD Rom Drive	£32.00	£37.60
CD16H	X16 Hitachi CD Rom Drive	£35.00	£41.12
CD16G	X16 Goldstar CD Rom Drive	£35.00	£41.12
CD24C	X24 Creative CD Rom Drive	£41.00	£48.18
CD24P	X24 Panasonic CD Rom Drive	£39.00	£45.83
CD24PI	X24 Pioneer CD Rom Drive	£45.00	£52.88
CD24A	X24 Acer CD Rom Drive	£37.00	£43.48
CD24G	X24 Goldstar CD Rom Drive	£45.00	£52.88
CD24E	X24 (x100) CD Rom Drive	£49.00	£57.58
CD32G	X32 Goldstar CD Rom Drive	£59.00	£69.33
CD32PI	X32 Pioneer CD Rom Drive	£59.00	£69.33
CD32T	X32 Toshiba CD Rom Drive	£62.00	£72.85
CD32N	X32 CD Rom Drive	£52.00	£61.10
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CDRM26	Mitsumi X6 IDE Drive INT	£175.00	£205.62
CDRM28	Mitsumi X8 IDE Drive INT	£209.00	£245.58
CDS	CD writable Disks	£1.35	£1.59

Fax Modems *from £35 +Vat*

		Ex. Vat	Inc. Vat
FM33GI	Gallant 33600 Fax Modem	£35.00	£41.13
FM30	Diamond 33600 Voice BABT INT	£42.00	£49.35
FM40	Diamond 33600 Voice BABT EXT	£49.00	£57.58
FM41	US Robotics WIN Modem 33600	£55.00	£64.63
FM56	Datafax 56600 Internal	£52.00	£61.10
FM57	Diamond 56600 Internal Supra	£67.00	£78.73
FM58	Diamond 56600 External Supra	£79.00	£92.83
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FM33MI	Modular Tech 33600 Fax/Modem	£29.00	£34.08

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		Ex. Vat	Inc. Vat
SP30	Ultimate 30 Watt Speakers	£7.99	£9.39
SP160S	Ultimate 160 Watt Speakers	£16.00	£18.80
SF200S	Ultimate 200 Watt Speakers	£18.00	£21.15
SP120W	Wavemaster 120 Watt Speakers	£15.00	£17.63
SP240W	Wavemaster 240 Watt Speakers	£22.00	£25.85
SP300	Trust 300 Watt Speakers	£32.00	£37.60
SP25Y	Yamaha 25Watt Speakers subWoofer	£59.00	£69.32

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M102	Ultimate 2 Button Mouse	£2.50	£2.94
M103	Quality 3 Button Mouse	£3.50	£4.11
MI10	Mitsumi 2 Button Mice	£6.00	£7.05
MI20	Microsoft 2 Button Mice	£14.00	£16.45
K50	Mitsumi 105 Windows95 Keyboard	£10.00	£11.75
K10	STD 105 Windows 95 Keyboard	£5.99	£7.04
K15	Ultimate Windows 95 Keyboard	£6.99	£8.21
K55	Microsoft Natural Keyboard	£44.00	£51.70
K33	BTC Windows 95 Keyboard	£7.99	£9.39
K65	Cherry Windows 95 Keyboard PS2	£19.99	£23.49
K70	Cherry Windows 95 Keyboard	£19.99	£23.49
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FD1S	Sony 1.44 Floppy Drive	£12.00	£15.26
FD1M	Mitsumi 1.44 Floppy Drive	£11.99	£14.09
FD-A120	120MB Floppy Drive	£55.00	£64.63
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HSF4	486 Heat Sink & Fan	£3.00	£3.53
HSF5	Pentium Heat Sink & Fan	£4.00	£4.70
HSF6	686 Heat Sink & Fan Heavy Duty	£5.00	£5.38
HSF8	Pentium and 686 Fan	£5.00	£5.38

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CS30	Ultimate Quality Minitower Case	£21.00	£24.68
CS40	Ultimate Quality Desktop Case	£21.00	£24.68
CS32	Ultimate Quality Full Tower Case	£36.00	£4230
CS15	WT Quality Minitower Case	£21.00	£24.68
CS16	WT Quality Desktop Case	£21.00	£24.68
CS17	WT Quality Miditower Case	£27.00	£31.73
CS18	WT Quality FullTowerCase	£39.00	£45.83
CS80	Enlight EN6562 Minitower Case	£35.00	£41.13
CS85	Enlight EN6414 Desktop Case	£39.00	£45.83
CS90	Enlight Miditower Case	£56.00	£65.80
CS130	Enlight 7230 Miditower ATX Case	£59.00	£69.33
CS131	Enlight 7200 Desktop ATX Case	£45.00	£52.88
CS140	Enlight 7237 Miditower ATX Case	£65.00	£76.38

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		Ex. Vat	Inc. Vat
NC09	ISA NE2000 Net Card BNC Rj45	£13.99	£16.45
NC20	PCI NE2000 Net Card BNC Rj45	£19.00	£23.33
NET-T	Network terminator- 50ohm	£1.00	£1.18
NET-TP	Network T-piece	£2.00	£2.35
NET-CABLE	Network Cable 100M	£19.00	£22.33
NET-CABLE	Network Cable per metre	£0.75	£0.88
NET-CP	Crimp Plug	£1.00	£1.18

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SCAN20	Targa Parallel Scanner 30-bit	£69.00	£81.08
SCAN50	Mustek ScanExpress 600	£69.00	£81.08
SCAN51	Mustek ScanExpress 600P	£75.00	£88.13
SCAN60	Mustek Paragon 600 SCSI	£79.00	£92.83
SCAN70	Mustek Paragon II CD SCSI	£85.00	£99.88

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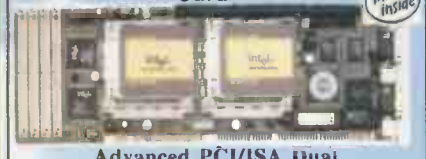

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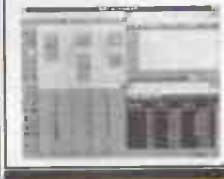

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HP Laserjet IIP / IIIP	(92275A)	£47	**£149
HP Laserjet 4L / 4ML / 4P / 4MP	(92274A)	£39	**£179
HP Laserjet 5L/6L	(C3906A)	£36	
HP Laserjet 5P / 5MP / 6P / 6MP	(C3903A)	£45	
HP Laserjet 4/4M/4+/5/5N/5M	Standard (92298A)	£54	**£179
HP Laserjet 4/4M/4+/5/5N/5M	High Cap. (92298X)	£60	**£179
HP Laserjet IIISi / 4Si	(92291A)	£69	**£269
HP Laserjet 4V / 4MV	(C3900A)	£82	
HP Laserjet 5Si	(C3909A)	£92	
HP Laserjet 4000 Series	Standard (C4127A)	£59	
HP Laserjet 4000 Series	High Cap. (C4127X)	£85	
HP Color Laserjet 5	Black Toner (C3105A)	£6	
HP Color Laserjet 5	Cyan/Yellow/Magenta (C3102/3/4A)	£27	
IBM 4019/28/29/WInWriter 600	(High Yield-1380520)	£145	
IBM 4039 / 3916	(High Yield-1380950)	£149	
IBM Lexmark Optra/L/4039	(High Yield-1382150)	£155	
IBM Lexmark Optra N	(High Yield-1382140)	£145	
Kodak Ektaplus 7008		£20	£89
Kodak Ektaplus 7016		£89	**£65
Kyocera F800 / 800T / 820	(TK6/DK5)	£22	£105
Kyocera FS1550 / 1600	(TK12)	£40	

**Photoconductor Unit		TONER	DRUM
Mannesmann Tally MT904/908	(Pack of 2)	£18	£75
Mannesmann Tally MT905 or MT906	(Pack of 2)	£18	£85
Nec Silentwriter S60P/S62P/S102P		£119	
Nec SuperScript SS610		£77	
Oki Okipage 4W	(5089/5096)	£17	£85
Oki OL100/400/800/30/40/50/70	(4452/4459)	£18	£149
Oki Laser OL400E / 410E-EX	(4851/4858)	£17	£119
Olivetti PG306/308/404*/408*	(82376x2/82377/82505*)	£24	£99
Panasonic KXP4400/4401/5400	(KXP455/PDM6)	£9	£55
Panasonic KXP4420	(KXP451/PDM2)	£25	£57
Panasonic KXP4410/4430/4440	(KXP453/PDM5)	£26	£75
Panasonic KXP4450/4451/4455	(KXP450/PDM1)	£19	£75
Panasonic KXP6100/6150	(KXP457/PEP3)	£11	£105
Panasonic KXP6300/6500	(KXP459/PEP5)	£12	£115
Panasonic KXP7200	(PEP6)	£145	
Ricoh PC 6000 / Oki Laserline 6	(6000TC/6000OPC)	£12	£85
Ricoh LP1200	(G728-05/1200DK)	£85	£99
Sharp JX9200/9210	(JX92TC/92DR)	£39	**£55
Sharp JX9400/9460/9600/9660	(JX96DC/DR)	£69	£79
Sharp JX9500	(JX95TC/95DR)	£32	**£89
Star WinType 4000 EPX-B	(ST87339430)	£69	
Texas Instruments MicroLaser	(2559879/81)	£32	£95

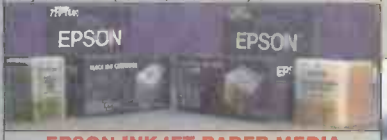
CANON SUPPLIES

CANON INK CARTRIDGES	Black	Colour
Canon BN22/32 (BJI101)	4.95 P/H	£25
Canon BJ130 (BJI481)	10.95	
Canon BJ300/330 (BJI642)	10.95	
Canon BJ10E/EX/20 (BC01)	12.50	
Canon BJ200/E/X/230 (BC02)	12.50	
Canon 210/240/250 (BC02/05)	12.50	16.95
Canon 240/250 Photo Cart. (BC06)	17.95 Kit	22.95
Canon 240/250 Flourescent (BC09F)		18.95
Canon BJ30/70/80 (BC10)	21.95	
Canon BJ30/70 TANKS 3's (BCI10)	9.95	
Canon BJ70/80 (BC11)		25.95
Canon BJ70/80 TANKS 3's (BCI11)	8.95	13.95
Canon BJC600 (BJI201BK/C/M/Y)	6.95	5.95
Canon BJC600 Series SET OF COLOURS		20.95
Canon BJC600 Series PRINTHEAD		£82
Canon BJC800 (BJI643)	13.95	17.95
Canon BJC4000 Series (BC20/21E)	18.95	28.50
Canon BJC4000 TANKS (BCI21)	5.95	12.95
Canon 42/4300/45/4650 Photo Cart (BC22E)		23.95
Canon 42/4300/45/4650 Photo Kit (BC22Kit)		29.95
Canon 42/4300/45/4650 Flourscent (BC29F)		22.95
Canon BJC7000 (BC60/61)	22.95	23.95
Canon BJC7000 Colour Ink Tank (BCI61)		15.95
Canon BJC7000 (BC62)		34.95

CANON INKJET MEDIA	A4	A3
Coated Paper (200) (LC101)	18.95	39.95
DoubleSidedCoated (200) (LC301)	12.95	25.95
High Resolution (200) (HR101)	18.50	20.95
Glossy Paper (A4-50/A3-10) (GP201)	21.95	11.95
High Gloss Film (20) (HG101)	16.95	38.95
High Gloss PhotoFilm (20) (HG201)	16.95	
Iron-on-Transfer (10 / 5) (TR101)	11.95	11.95
Transparency (50) (CF102)	34.95	
Back Print Film (20) (BF102)	29.95	49.95

EPSON SUPPLIES

EPSON INK CARTRIDGES	Black	Colour
Stylus Col. Pro XL (S020034/36)	9.50	17.95
Stylus Pro XL+ (S020034/66)	9.50	19.95
Stylus Photo (S020093/20110)	13.50	15.95
Stylus 200 (S020047/97)	13.95	19.95
Stylus 300 (4 Colour Cart.) (S020138)		17.50
Stylus 500 (S020093/97)	13.50	18.95
Stylus 400/600 (S020093/89)	13.50	14.95
Stylus 800/1520 (S020108/20089)	14.95	14.95
Stylus Col. II/IIS/820 (S020047/49)	12.95	17.95
Stylus 1500 (S020062/49)	31.95	17.95
Stylus 3000 (S020118/C30/M26/Y22)	35.95	36.95



EPSON INKJET PAPER MEDIA	
Photo Paper 4"x6" (20)	(S041134) 5.25
A6 Photo Inkjet Card (50)	(S041054) 6.25
A4 Glossy (15)	(S041071) 21.95
A4 Photo Glossy (20)	(S041126) 6.95
A4 720/1440 Dpi (100)	(S041061) 8.95
A4 360 Dpi (100)	(S041059) 7.50
A4 Iron on Transfer (10)	(SE41001) 10.50
A4 Transparency (30)	(S041063) 31.95
A3 Glossy (10)	(S041073) 37.95
A3 720/1440 Dpi (100)	(S041068) 25.95
A3 360 Dpi (100)	(S041065) 18.95
Super A3 Glossy (10)	(S041074) 49.95
Super A3 720/1440 Dpi (100)	(S041069) 29.95
Super A3 360 Dpi (100)	(S041066) 21.95
A3 Photo Glossy (20)	(S041125) 19.95
A3+ Photo Glossy (20)	(S041133) 20.95
A2 Photo Glossy (20)	(S041123) 34.95
A2 720/1440 Dpi (30)	(S041079) 27.95
A2 360 Dpi (30)	(S041078) 22.95
13"x19" Iron Transfer (10)	(SE41003) 69.95

KODAK SUPPLIES

PHOTO INKJET PAPER	15's	50's
Kodak Letter Weight Paper	8.95	23.95
Kodak Photo Weight Paper	8.95	23.95

HP SUPPLIES

HP INK CARTRIDGES	Black	Colour
HP Deskjet Portable (51633/25)	14.25	15.95
HP D/Jet 500 Series (51626/25)	14.95	15.95

HP DESKJET 500 SERIES BLACK
3 x 26A Ink Cart @ £14.75 £44.25

HP D/Jet 600 Series (51629/49)	15.75	16.95
HP D/Jet 690 Photo Cart. (C1816A)		22.95
HP D/Jet 690 Photo Kit (C4584A)		39.95
HP 800Series/720/1100 (51645/41)	16.95	17.50
HP D/Jet 890C (51645/C1823A)	16.95	19.95
HP Deskjet 1600 (51645/40C/Y/M)	16.25	18.95
HP Deskjet 1200 (51640A/40C/Y/M)	16.95	18.95
HP Paintjet XL (51606A/067)	19.95	20.95
HP P/Jet XL300 (51639A/39C/Y/M)	13.95	15.95

HP INKJET PAPER MEDIA	
HP Premium LX Inkjet Paper (200) (51634Z)	15.95
HP Premium GlossyPaper (100) (C3831A)	5.95
HP Premium Glossy Paper (50) (C3837A)	29.95
HP Premium Photo Paper (??) (C6040A)	6.50
HP BrightWhite Inkjet Paper (200) (C5977A)	4.95
HP BrightWhite InkjetPaper (500) (1825A)	7.95
HP Photo Paper (Deskjet 690) (20) (C1847A)	7.95
HP Deluxe Photo Paper (890C)(??) (C6057A)	9.50
HP Banner Paper 90gsm/2Fold (100) (C1821A)	7.95
HP Greeting Card Paper A4 (20) (C6042A)	5.50
HP Premium Transparency (20) (C3832A)	12.95
HP Premium Transparency (50) (C3835A)	29.95

3M FILM SUPPLIES

3M INKJET TRANSPARENCY (A4)	
3M Films Epson/Canon Colour (50) (CG3410)	19.95
3M Films HP Deskjet/Paintjet (50) (CG3460)	21.95
3M Films Canon/Dec/Epson/HP (50) (CG3480)	24.95

OTHER SUPPLIES

	Black	Colour
Apple Stylewriter I/II (APM8041G)	13.95	
Apple Stylewriter 2400 (Cart.)	22.95	28.95
Apple Stylewriter 2400 (Ink Tank)	6.50	12.95
Apple Stylewriter 2500 (Cart.)	22.95	28.95
Apple Stylewriter 2500 (Ink Tank)	6.50	12.95
Apple Stylewriter 2200 (Cart.)	29.95	34.95
Apple Stylewriter 2500 (HighCap)	15.95	
Apple Stylewriter 2200 (Ink Tank)	11.95	17.95
Brother HJ100/400 (BRIN10)	31.50	
Brother HJ770 (BRIN20)	22.50	
Kodak Diconix 150/180/330C	9.95	14.95
IBM Execjet II/IIC/100/150C	20.95	25.95
IBM 4079 Plus (CYMK)(6's)	14.95	19.95
Mannesmann T7070 PRINTHEAD	25.95	37.95
Mannesman T7070 TANKS	4.95	12.95
Olivetti JP150/170/350 Series	18.95	
Olivetti JP360/450	18.95	27.50
Olivetti Printhead +4 Ink Tanks	38.95	
Olivetti JP790 High Resolution Block	23.95	32.95
Olivetti JP790 Printhead+1Refill	37.50	43.95
Olivetti JP790 Refills (2's)	12.95	19.95
Xerox 4020 (Pack of 2's)	8.50	8.50
Xerox 4020 Maintenance Fluid		13.95

THERMAL	Black	Colour
Citizen Printiva 600/700/1700	3.99	4.50

INKJET REFILLS (2's)	
Jetfill Epson Stylus800	Refills 2's £9.95
Jetfill Canon BC01/02	Refills 2's £9.95
Jetfill HP Double/Cap	Refills 2's £14.95

MISC. LASER/INKJET

Copy Speed Paper	(80gsm) (2500)	19.95
PlusJet Paper	(90gsm) (500)	5.95
Matchmaker Paper	(100gsm) (500)	8.95
Business Cards White or Ivory	350's	5.75
3M Laser Film Unbacked (50)	(CG3300)	11.95
3M Laser Film Paper Backed (50)	(CG3360)	12.95
HP Laser Transparency (50)	(92296U)	13.95

LS120/Ditto/Zip Drives

PARALLEL PORT DRIVES	
3M SuperDisk LS-120 120Mb Floppy Drive	£109
SONY StorStation 2Gb Tape Back-up Drive	£105
iOMEGA ZIP Drive 100Mb Zip Drive	£95

DATA STORAGE CARTRIDGES

3M Data Cartridges	1's	5's
3M DC 2120 (120Mb/250Mb)	6.50	£32
3M DC 2120Xi (QIC-80 Formatted)	5.50	£26

3M DC2120 Ximat (QIC80)
10 x Cartridges for £50

3M DC 2120XLxi (Formatted)	8.50	£41
3M MC 3000XL PIMAT (700Mb)	16.50	£81
3M MC 3000XL TAUMAT (1400Mb)	16.95	£83
IOMEGA Ditto 2Gb	12.95	£64
3M DC 600A 60Mb	11.50	£56
3M DC 6150 150Mb	7.95	£38
3M DC 6250 250Mb	10.95	£53
3M DC 6525 525Mb	11.50	£56

3M Travan Cartridges	1's	5's
3M TR1 Travan 400Mb	11.95	£59
3M TR2 Travan 800Mb	19.95	£99
3M TR3 Travan 1600Mb	16.50	£81
3M TR4 Travan 4000Mb	18.50	£91

3M Travan (Comp. HP-T1000)
10 x TR1 (400Mb) £115

HP TR5 Travan 5000Mb	20.95	£100
SONY QW5122F 240Mb	8.95	£43
SONY QW3000XL 1.0Gb	13.95	£68
SONY QW3010XLF 850Mb	14.95	£73
SONY QW3020XLF 1.7Gb	16.95	£83
SONY QW3080XLF 4.0Gb	17.95	£88

DDS TAPES

Digital Data Storage	1's	5's
3M D4/120M 4mm DDS2	8.95	£44
3M D4/90M 4mm DDS1	3.25	£15
3M D4/60M 4mm DDS1	3.95	£19
3M D8/112M 8mm	3.95	£19

3M D4/90 Digital Data Tapes
10 x 4mm/90m for £27.50

SONY DG4/90M 5 x Tape +1 Cleaning Tape		£13
SONY DG4/120M DDS2 (4Gb)	7.95	£39
HP 125M 4mm DDS3 (12Gb)	21.95	£99
HP 120M 4mm DDS2 (92300A)	9.50	£45
HP 4mm CleaningTape (92283K) (2's)		£15
Digital Compac IV (20/40Gb) (TK88)	69.00	£325

MAGNETO OPTICAL

Magneto Optical	1's	5's
TDK / MAXELL 3.5" 230Mb	7.95	£39
TDK / MAXELL 3.5" 128Mb	6.95	£34
TDK / MAXELL 3.5" 540Mb	26.50	£125
TDK / MAXELL 3.5" 640Mb	27.95	£130

TDK Magneto Optical Disks
10 x 3.5" 230Mb Disks £75

3M 5.25" 600Mb or 650Mb	26.95	£130
3M 5.25" 1.2Gb or 1.3Gb	25.95	£128
3M 5.25" 2.3Gb or 2.6Gb	39.95	£195
3M IMATION LS120 120Mb	8.95	£43
3M 650Mb PD Disk	21.95	£105
Panasonic 650Mb PD Disk	21.95	£105

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UNBRANDED FORMATTED

100	£20.00
250	£47.50
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3½" BRANDED DISKS

100 DS/HD FORMATTED

SONY	£22
TDK	£23
3M	£25

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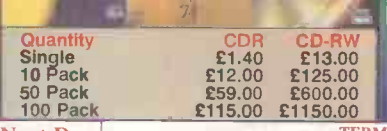

Quantity	CDR	CD-RW
Single	£1.40	£13.00
10 Pack	£12.00	£125.00
50 Pack	£59.00	£600.00
100 Pack	£115.00	£1150.00

SYQUEST & iOMEGA

SYQUEST EZ-135
EZ-135 Cartridge £10.95
EZ-230 Cartridge £16.95

iOMEGA ZIP Disks
1 x ZIP 100Mb Disk £8.49
6 x ZIP 100Mb Disks £48
1 x JAZ Disk £69

Carriage	Standard	Next Day
UK Mainland ☞	£3.50	£5.00
Outside UK Mainland ☞	P.O.A.	P.O.A.
Hardware ☞	£8.00	£12.00

VISA MasterCard

TERMS & CONDITIONS
TRADING HOURS: 9.00 A.M. - 5.30 P.M. (MON - SAT)
PAYMENT MUST ACCOMPANY ALL ORDERS. TELEPHONE CREDIT CARD ORDERS ARE NORMALLY DESPATCHED SAME DAY. PLEASE ALLOW 5 WORKING DAYS FOR CHEQUES TO CLEAR.
WE ACCEPT VISA, MASTERCARD, ACCESS, DELTA & SWITCH. NO CREDIT CARD SURCHARGE.
PRICES & SPECIFICATION MAY CHANGE WITHOUT NOTICE. (ALL TRADEMARKS ACKNOWLEDGED)
GOODS OFFERED SUBJECT TO AVAILABILITY. ALL PRICES EXCLUDE DELIVERY & V.A.T. (E. & O. E.)

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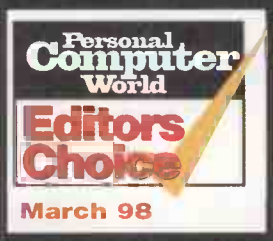

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- *512KB cache, 20 speed CD-ROM for instant response*
- *Quicker processing with power up to 233MHz MMX*
- *Amazing graphics with 4MB EDO video*
- *Crystal clear image with XGA resolution*
- *14.1" Screen available now*

- Upgradeable to Intel Pentium 233 MMX
- XGA, TFT 13.3"/14.1" Active matrix screen up to 1024x768 resolution
- 32MB EDO RAM upgradeable to 128MB, 512 KB cache
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- Removable interchangeable 2.1GB Hard Disk
- 4MB EDO graphics card
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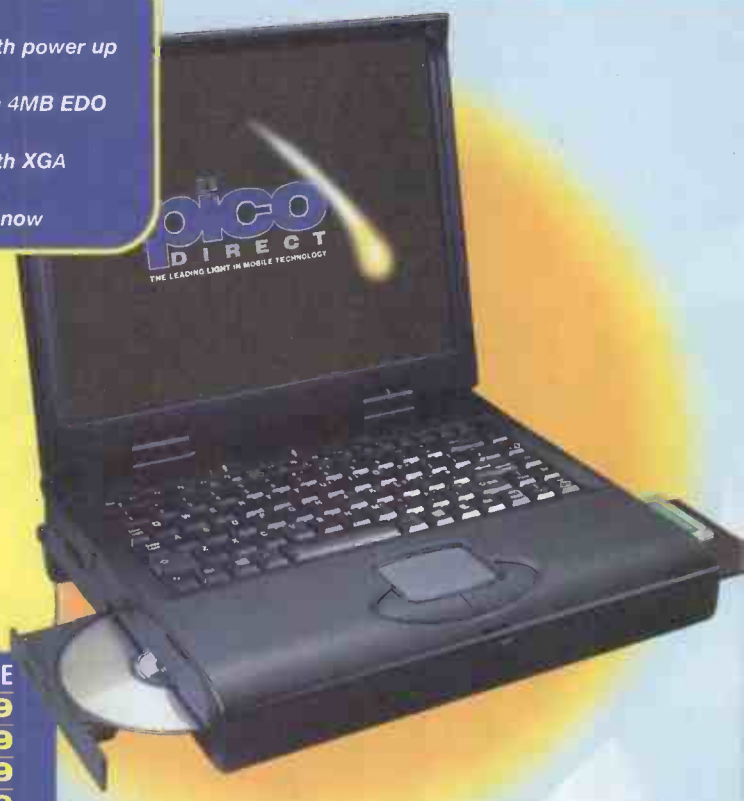
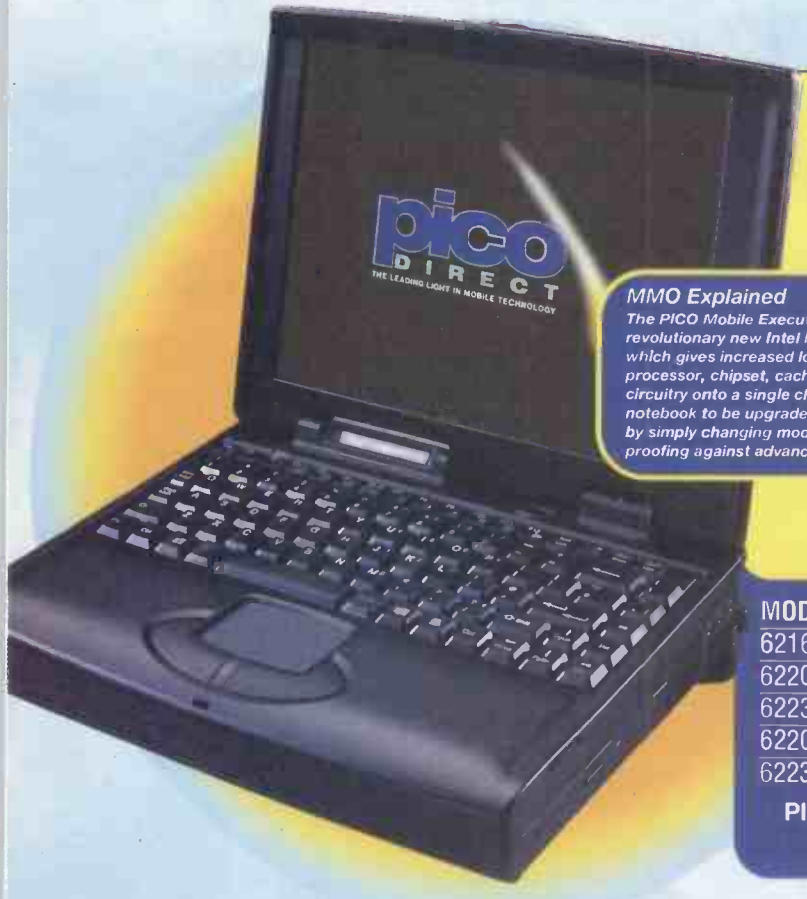
- A4 size Windows 95 keyboard
- Built-in 20 Speed CD ROM
- 16Bit Wavetable Sound System with Stereo Speakers and Microphone
- IrDA and FIR Infrared technology
- Built-in Trackpad for ease of use
- Lilon Battery for additional battery time
- MPEG for live video and CDI as standard
- Delux carry case with additional compartments for accessories
- 2 x PCMCIA slots, 2 x Type II or 1 x Type III
- TV Output, Video and ZV port
- 3 Year support plan
- Line in jacks, headphone jack
- Serial Port, Parallel Port MIDI and dual USB Ports
- 323(w) x 263.5(d) x 58mm
- Weight 4.1Kg

Machines come configured with 2.1GB Hard Disk, 32MB EDO Ram, MPEG and Lithium Ion Battery



MODEL	PROCESSOR	SCREEN	PRICE
76166	Intel P166MHz MMX	13.3" TFT XGA	£1399
76200	Intel P200MHz MMX	13.3" TFT XGA	£1449
76233	Intel P233MHz MMX	13.3" TFT XGA	£1499
76166	Intel P166MHz MMX	14.1" TFT XGA	£1499
76200	Intel P200MHz MMX	14.1" TFT XGA	£1549
76233	Intel P233MHz MMX	14.1" TFT XGA	£1599



pico MOBILE EXECUTIVE

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MMO Explained

The PICO Mobile Executive now features the revolutionary new Intel Mobile Module (MMO) which gives increased longevity by integrating a processor, chipset, cache and other electrical circuitry onto a single chip. This allows the notebook to be upgradeable to a faster processor by simply changing modules which ensures future proofing against advances in technology.

- Upgradeable to Intel Pentium 233 MMO
- SVGA 12.1"TFT OR 12.1" DSTN colour screen
- 32MB EDO RAM upgradeable to 72MB
- Built-In 20 speed CD ROM & 3.5" Floppy Disk Drive
- 512KB Cache
- 2MB Graphics card, Windows accelerator
- TV output, Serial/Parallel port
- Built-in sound card and speakers
- IRDA port, supports 1280x1024 to external monitor
- 3 year support plan
- Carry case

Machines come as standard with 2.1Gb Hard Disk, 32MB EDO Ram, MPEG and lithium Ion Battery

MODEL	PROCESSOR	12.1" DSTN	12.1" TFT
62166	Intel P166MHz MMX	£949	£1149
62200	Intel P200MHz MMX	£999	£1199
62233	Intel P233MHz MMX	£1049	£1249
62200	Intel P200MHz MMO		£1549
62233	Intel P233MHz MMO		£1649

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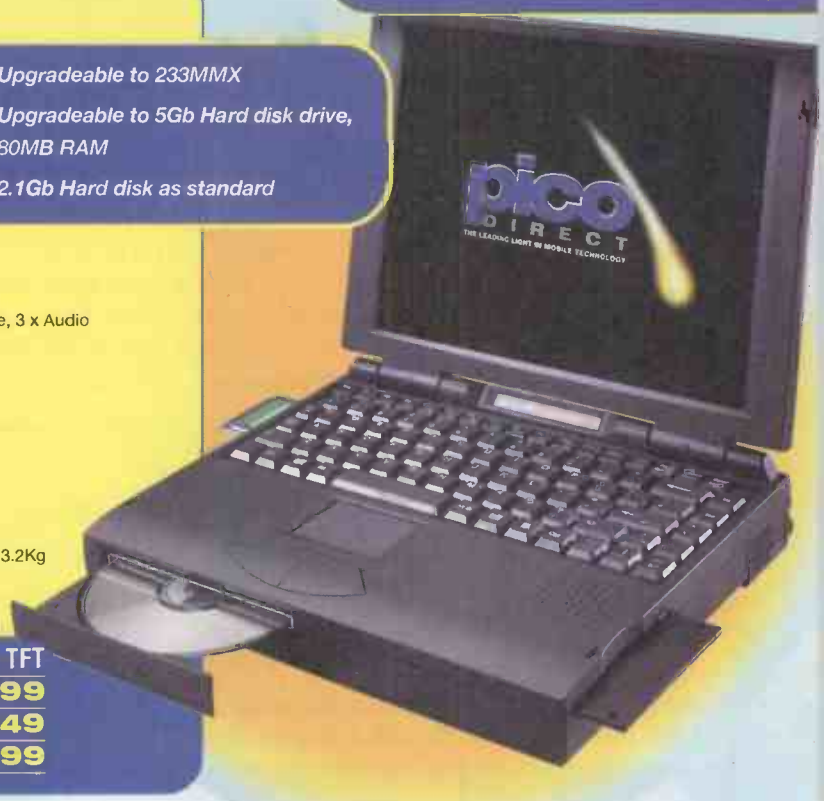
- *Upgradeable to 5Gb Hard disk drive, 80MB RAM*
- *2.1Gb Hard disk as standard*

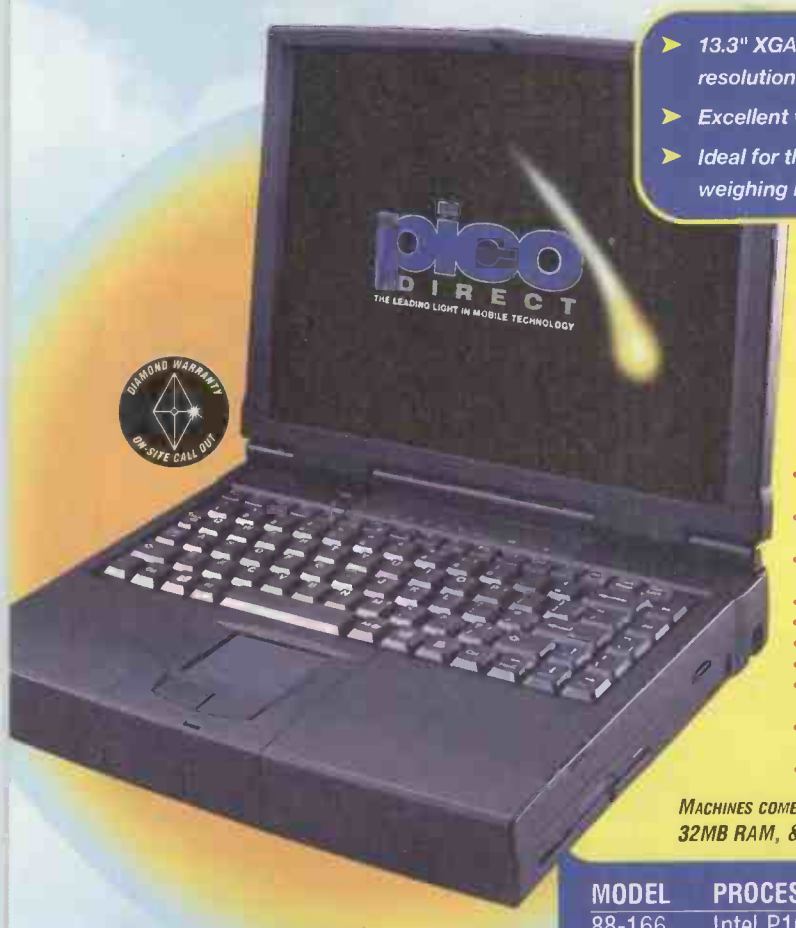
A brand name notebook, top quality components, ergonomic design with Intel CPUs from probably the largest notebook manufacturer in the world.

- Intel MMX Pentium upgradeable processor
- 32MB EDO RAM expandable to 80MB
- 256KB Level 2 Pipeline Burst Cache RAM
- 2MB EDO Video RAM
- 2.5" 2.1GB removable HDD
- 3.5" 1.44MB Floppy
- 20 speed CD-ROM
- Built-in 16-bit stereo sound system, Soundblaster Pro compatible
- PCMCIA slots: 2 x Type II or 1 x Type III & 1 x Type II
- Built-in Trackpad mouse module
- Smart rechargeable battery
- 2 x Speakers and microphone, 3 x Audio jacks
- TV Output (S-Video)
- APM, Plug & Play
- Zoomed Video ZV Port
- Serial Parallel & PS2 Ports
- Monitor & MIDI Ports
- Docking station port
- IrDA Port
- Windows 95 keyboard
- Carry Case
- 299mm x 232mm x 54.4mm. 3.2Kg

Machines come as standard with Intel MMX Processor, 2.1GB Hard Disk, 32MB RAM and 20 speed CD-ROM



MODEL	PROCESSOR	12.1" DSTN	12.1" TFT
87-166	Intel P166MMX	£899	£999
87-200	Intel P200MMX	£949	£1049
87-233	Intel P233MMX	£999	£1099



- *13.3" XGA (1024x768) high resolution screen*
- *Excellent value for money*
- *Ideal for the mobile user weighing in at just 7lbs*

pico MOBILE AMBASSADOR

For the power user who wants to be one step ahead of the rest, this range of notebooks combines the latest notebook technology and design to provide a completely upgradeable system that will provide years of use and great value for money.

- Intel MMX Pentium upgradeable processors
- 32MB EDO RAM expandable to 144MB
- 256KB Level 2 Pipeline Burst Cache RAM
- 2MB EDO Video RAM
- 2.5" 2.1GB removable HDD
- 3.5" 1.44MB Floppy
- 20 speed CD-ROM drive
- Built-in 16-bit stereo sound system, Soundblaster Pro compatible
- PCMCIA slots: 2 x Type II or 1 x Type III
- Built-in Trackpad mouse module
- Smart rechargeable battery
- 2 x Speakers and microphone, 3 x Audio jacks
- TV Output (S-Video)
- APM, Plug & Play
- Zoomed Video ZV Port
- Serial Parallel & PS2 Ports
- Monitor & MIDI Ports
- USB - Universal Serial Bus Port
- Docking station port
- IrDA Port
- Windows 95 keyboard
- Carry Case
- 314mm x 244mm x 59.5mm. 3.7Kg

Machines come as standard with Intel MMX processor, 2.1GB Hard Drive, 32MB RAM, & 20 speed CD-ROM

MODEL	PROCESSOR	13.3" XGA FTF	15.1" XGA TFT
88-166	Intel P166MMX	£1299	£1749
88-200	Intel P200MMX	£1349	£1799
88-233	Intel P233MMX	£1399	£1849

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pico MOBILE ENVOY

- Up to 14.1" XGA (1024x768) high resolution screen
- DVD (optional) for video multimedia applications
- MPEG II module allows DVD movies to come alive

PGA or MMO Intel processors, designed with Intel 430TX core logic chipset. Large and comfortable 13.3"/14.1" TFT LCD screens, 4MB SGRAM and 512KB cache with Dual video support, 20/24 CD-ROM drive with optional DVD drive. Second battery option or Zip drive. ATAPI DVD Interface and ACPI BIOS support.

- Intel PGA or MMO upgradeable processors
- 64MB EDO RAM expandable to 128MB
- 512KB Level 2 Pipeline Burst Cache RAM
- 4MB SGRAM, Dual view
- 2.5" 3.2GB removable HDD
- 3.5" 1.44MB Floppy
- DVD/Zip drive options
- 20/24 speed CD-ROM drive
- ATAPI interface, ACPI BIOS support
- Built-in Wavetable stereo sound card, Supports 3D Audio, Windows compatible
- PCMCIA slots: 2 x Type II or 1 x Type III
- Built-in Trackpad mouse module
- Smart rechargeable battery
- 2 x Speakers and microphone, 3 x Audio jacks
- Internal TFT screen 1024x768 resolution
- TV Output (S-Video)
- APM, Plug & Play
- Zoomed Video ZV Port
- 1 x Serial 16C550, Parallel & PS2 Ports
- Monitor & MIDI Ports
- USB - Universal Serial Bus Port
- Docking station port
- IrDA Port version 1.1
- Windows 95 keyboard
- Carry Case
- 324mm x 258mm x 52mm. 3.2Kg

Machines come as standard with Intel MMX Processor, 3.2GB Hard Drive, 64MB SD RAM, & 20 speed CD-ROM

MODEL	PROCESSOR	12.1T	13.3" XGA	14.1" XGA
90-166	Intel P166MMX	£1349	£1649	£1749
90-200	Intel P200MMX	£1399	£1699	£1799
90-233	Intel P233MMX	£1449	£1749	£1849
90-200	Intel P200MMO	£1749	£1949	£2049
90-233	Intel P233MMO	£1799	£2049	£2149

Please Call for DVD with MPEG II Version Pricing

Take your presentation on the road! A notebook incorporating a built-in panel for overhead projector presentations

pico SHOWMAN PRO

• In-built TFT overhead projector tablet with 12.1" SVGA • Intel CPU upgradeable from P133 to P233MMX multimedia • 128bit Video graphics with MPEG as standard for full screen video presentation • 32MB EDO RAM as standard expandable to 128MB • 11/16 Speed CD ROM built-in with 3.5" 1.44MB floppy drive • 2.1GB Hard Drive upgradeable to 3GB and beyond • 86 key Win '95 keyboard with multi language options • USB, serial, IrDA, CRT, parallel ports • PS2 KB &mouse port, docking slot, ZV port & card bus • 512KB L2 Pipeline Burst Cache RAM • PCMCIA slots: 2 x Type II or 1 x Type III • 16 bit 3D sound with speakers, headphone microphone line in & line out • Autoswitching mains charger • Smart battery • Built-in touch pad • Firm carry case with fan & stand • TV NTSC output • Slimline design: only 53mm & 3.3KGs • CD & FDD exchangeable for 2nd battery or 2nd HDD • Full 3 year support plan

MODEL 9600 – *Prices for configurations of: 2.1GB Hard Drive, 64MB SD RAM. Windows '95 & CD ROM (Includes build-in projection panel)*

PROCESSOR	12.1" TFT
Pentium 166MMX	£2499

PROCESSOR	12.1" TFT
Intel Pentium 166MMX	£2199
Intel Pentium 200MMX	£2299
Intel Pentium 233MMX	£2399

ACCESSORY	PRICE
Logitech Infra Red Remote Control	£69
Portable 400W OHP Inc. Carry Case	£459
RAM Upgrade Per 16MB	£95
Extended Warranty per Year	£125
Magneto Optical Drive (M/O)	£199
120MB Floppy Disk Drive	£199

ACCESSORY	PRICE
Port Replicator	£99
Lithium Battery	£99
Windows '95	£69
Car Adaptor	£45
Upgrade to 3GB HDD	£100
Video Capture Module	£199

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MOBILE SOLUTIONS?

IT'S WORTH PHONING PICO JUST FOR THE EXPERIENCE...

The PICO portfolio is overflowing with the latest mobile technology. we are in touch with all four corners of the world to bring you up to the minute products at unmatchable prices. You'll be talking to highly trained customer advisors who understand this specialised market sector and will give you sensible and impartial advice. Experience counts for much when you need the best in mobile solutions...call today to see the pico difference

PANASONIC

CF-25 MKIII from £1979+vat

Built for the mobile environment; dust proof, splash proof, shock proof and a magnesium alloy case.
- Max RAM 72MB • 1 or 2 MB VRAM
- Optional internal 10 speed CD ROM
- PC-Card - 3 x II or 1 x Type II and III

CF-35 from £1949+vat

Uncompromised performance at only 4.9lbs and 1.5" height.
- Max RAM 80MB • 9 MBits VRAM
- Optional internal 10 speed CD ROM • TouchPad
- Li-Ion Battery • Optional Hardware MPEG
- PC-Card - 2xII or 1x Type III

CF-63 from £3449+vat

The ultimate multimedia notebook.
- Max RAM 80MB
- 2MB VRAM
- Integral FDD and CD-ROM
- TouchPad
- Li-ion Battery
- Optional Hardware MPEG
- PC-Card - 2xII or 1x Type III

MODEL	PROCESSOR	RAM	HDD	SCREEN	PRICE
CF25 LGC4	166MMX	16MB	1.4GB	10.4"	£1979
CF25 LJF8	166MMX	32MB	2.1GB	12.1"	£2849
CF63DVD	166MMX	32MB	3.2GB	13.3" XGA	£3449
CF35 KJF4	150MMX	16MB	2.1GB	12.1"	£1895
CF35 PJJ8	200MMX	32MB	3.0GB	12.1" TFT	£2349

PLEASE CALL FOR LATEST PRICES

PC CARDS

Argosy CD-ROM	
8 Speed	£189
10 Speed	£204
D-Link 660 CT Ethernet Combo	£49
Game Card Joystick	£45
Actiontec SCSI	£89
APEX Data 33.6 Fax/Data modem	£119

OPTION GSM
CELLULAR + PSTN

Works with Nokia, Ericsson, Panasonic, Sony and Siemens handsets.
- Choice of handset
- 14.4 or 33.6
- GSM or PSTN
- Supports SMS
- Internal line interface
- GSM speeds upto 9600
- Effortless installation and auto-configuration

GSM+33.6 £219

GSM Only £129

PCMCIA MEMORY

512KB SRAM	£69	10MB ATA Flash Card	£199
1MB SRAM	£99	20MB ATA Flash Card	£349
2MB SRAM	£184	30MB ATA Flash Card	£549
5MB ATA Flash Card	£139	40MB ATA Flash Card	£659

PICO WARRANTY

- *Lifetime telephone support*
- *Inclusive 3 year support plan*
  - *1st year full parts and labour*
  - *2nd year labour free*
- *Optional 2nd & 3rd year full parts and labour*
  - *Insurance backed*
  - *£90/year*
- *Diamond warranty*
  - *Engineer callout within 48 hours*
  - *90% of on-site callouts fixed on-site*
  - *2nd year Diamond Warranty. On-site call out with parts and labour £165*
  - *3rd year £199*

PICO ASSURANCE

Providing quality products that are reliable backed by the best in-house technical support. To further enhance your protection we offer an All Risks insurance policy for total peace of mind. This policy covers loss and accidental damage anywhere in the world, has no excess and is underwritten by Royal Sun Alliance.
- *1st year - 4.5% of invoice value*
- *2 years - 9% of invoice value*
- *3 years - 12.5% of invoice value*

PICO PEDIGREE

Part of the DIP Group of Companies, a multi million pound research and development IT Group established over 11 years. Products developed include the Atari Portfolio and Sharp 3000 PDA's

PICO FINANCE

PICO Direct is a licensed credit broker
- *Company lease purchases*
- *6 month interest free credit*
  - *No deposit, nothing to pay for 6 months*

APR 0% Interest Free if you repay before or with your 6th monthly repayment. Otherwise APR 27.5%. Typical example; Cash price £1200: Loan amount £1200. Either, settle in full by the 6th month, total payment £1200. Or, pay nothing for 6 months and then make 36 monthly repayments of £47.46. Total amount repayable £1708.56 - APR 27.5%.

PICO PORTFOLIO

- *PICO in mobile market for 11 years*
- *Designed and developed Atari Portfolio and Sharp PC3000*
- *Specialists. We know our products*
- *Match products to your requirements*
- *Software development for handheld corporate applications*
- *Independant advice*

PICO CREDIBILITY

- *Consultants to UK corporates*
- *PCMCIA member*
- *Providers to the public and educational sectors*
- *24 & 48 hour delivery*
- *Year 2000 compliant*

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CTX EZ SHOW

ONLY 4.5KG

The 4 data & video projectors in the CTX range only weigh 4.5Kg, offering the simplest solution for the travelling executive and mobile presenter. They project at a brightness of 250-550 ANSI lumens for 'Lights On' presentations producing a 2 metre image at 2 metres distance. CTX EzShow projectors provide great resolutions & high definition images. The units will arrive 'ready-to-go' with hard carry case and a fully featured remote control.

Colours	16 .7 million colours
Video	NTSC/ PAL / SECAM
Dimensions	26.7cm x 15.3cm x 40.7cm
Audio	Built-In
Warranty	2 year full Parts and Labour

CTX EzShow 500 **(640x480) 250ANSI**	£1195
CTX EzShow 550 (800x600) 270**ANSI**	£1725
CTX EzShow 550M (800x600) 350**ANSI**	£2245
CTX EzShow 600 **(800x600) 550ANSI**	£2845

INFOCUS 720

The Infocus 720 is very portable at only 5.4kg. It has all the features for the future with 450 ANSI Lumens and true 800x600 resolution and the facility to compress to 1024x768 resolution. July 97 Editor's Choice PC Magazine.

Infocus 720 (800x600) 500 **ANSI**	£3895
Infocus 730 (1024x768)	£5645

INFOCUS 420

Lightweight at only 3.1Kg offering no compromise. 500 ANSI lumens and 800x600 resolution, it cannot be matched for portability and brightness and capable of running at 1024x768 resolution (intelligently compressed)

ONLY 3.1KG

Infocus 420 (800 **x** 600) 500 **ANSI**	£3750

CTX 600

CTX have now released this high brightness 550 ANSI lumens data projector. Being very lightweight (12lbs) is supplied with a carry case and 2 year RTB warranty. 800x600 resolution it is the excellent companion for the brightest of mobile presentations.

200:1 CONTRAST RATIO

Colours	16 .7 million
Video	NTSC/PAL/SECAM
Weight	5.4Kg
Audio	Built-in

CTX600 (800 x 600) 550 **ANSI**	£2845

HITACHI CPL850

The CPL850 (800x600 resolution) video data projector has stunning brightness with 650 ANSI lumens, is incredible in bright rooms. With Polysilicon technology the projectors will astound and add to every corporate presentation and training session. The other unique feature about this model is that it includes 2 video and 2 VGA outputs.

650 ANSI

Colours	16.7 million colours
Video	NTSC/ PAL / SECAM
Weight	7.5Kg
Dimensions	32cm x 17cm x 46cm
Audio	Built-in
Warranty	2 year RTB Warranty Plan including Parts and labour
Accessories	Remote Mouse as standard

Hitachi CPL 850 (800x600) 650ANSI	£3045

PROXIMA

POLYSILICON TECHNOLOGY

The new Proxima 5800, 5900 and 9200 video and data projectors (6.4Kg) combine polysilicon technology with SVGA (800x600) resolution and 700 ANSI lumens to produce razor sharp images in well lit rooms. The 5800 comes with a motorised zoom lens giving you the flexibility to place it at almost any distance in the room. The Proxima models come with a 2000 hours lamp life.

Proxima 9200 **(1024x768)** 500**ANSI**	£4925
Proxima 5800 (800x600)	£3395
Proxima 5900 (800x600) 700 **ANSI**	£3495

PICO PROJECTOR

With FREE 10MB Flash Card, this 500 ANSI Lumens, 5.5Kg, 800x600 resolution projector requires no computer for presentations! With 200 hour lamp life it is the ultimate light-weight presentation solution delivered by PICO Direct.

PICO Projector	£2995

NEC MT810/1000

200:1 CONTRAST RATIO

The NEC MT810 and MT1000 LCD projectors provide highly portable display solutions, sophisticated images and customizeable controls.

MT810 (800x600) 600 **ANSI**	£3495
MT1000 (1024x768) 500**ANSI**	£5395

HIRE OPTION for projectors starting from £75.00 per day

Up to 1 week of hire charges fully refundable against any projector purchase - The ultimate in try before you buy.

ASK A4+ & A6+

300:1 CONTRAST RATIO

5Kg

ASK have just upgraded the ASK A4 and A6 to the A4+ and A6+, continuing in their mission to produce the brightest and lightest projectors. The projectors now come with a massive 700 ANSI Lumens of power light and still have an incredibly high contrast ratio of 300:1 leaving your audience with a lasting impression. The ASK A4+ and A6+ include a power zoom, PC mouse control, reveal functions, 4 high output speakers and smooth video play.

ASK A4+ (800x600) 700 **ANSI**	£3495
ASK A6+ (1024x768) 700 **ANSI**	£5395
ASK 8300 (800 x 600) 650 **ANSI**	£3295
ASK 1280 (1280 x 1024)	£8995

EPSON

Epson offer a complete range of quality projectors - the new EMP5100 has an amazing brightness of 750 ANSI Lumens and can compress to 1024x768. The EMP7100 has true 1024 x 768 resolution providing high quality images at 650 ANSI lumens.

Colours	16 .7 million colours
Video	NTSC/PAL/SECAM
Weight	6.4Kg
Dimensions	24cm x 38cm x 15cm
Accessories	Remote mouse & soft carry case

EMP7300 (1024 x 768)	£8995
EMP5100 (1024x768) 650**ANSI**	£3745
EMP7100 (1024x768) 500**ANSI**	£5595

SANYO 5605

The Sanyo 5605 video and data projector combines polysilicon technology with 800x600 resolution and 700 ANSI lumens to produce razor sharp, brilliant images in well-lit rooms. The unit comes with a power focus zoom lens giving you flexibility to place it at any distance in the room.

POLYSILICON TECHNOLOGY

LCD Panel	800x600 Polysilicon
Brightness	700 ANSI Lumens
Colours	16 .7 million colours
Video	NTSC/PAL/SECAM X 2
Weight	5.9Kg
Dimensions	29.6cm x 45.9cm x 14.9cm
Accessories	Pointing device as standard

Sanyo 8805 (1024x768) 500 **ANSI**	£4995
Sanyo 5605 (700 **ANSI**)	£3795

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HANDHELD

HP Colour 620LX PALMTOP PC
with Windows CE version 2

Built on the features of the HP 360LX . A bright, 256-colour display delivers unmatched readability. The optional VGA-out PC card lets you give full colour PowerPoint presentations using any standard VGA monitor or projector. With instant voice recording you can document ideas. Complete with Word, Excel and other CE applications.

MODEL	360LX	620LX
Display	640x240 LCD, 16 Grey Levels, Touch Panel, White backlight	640x240 LCD, 256 colours, Backlit, Auto dimming
Memory	8MB RAM, 16bit Bus, 60Mhz CPU	16MB RAM, 75Mhz CPU
Expansion Slot	1 x PC Card Type II, Compact Flash	1 x PC Card Type II, Compact Flash
Dimensions	7.2 x 3.67 x 1.1"	7.8 x 4.1 x 1.4"
Power	Two 1.5V AA NiMH batteries	Lithium-ion rechargeable battery pack
Interface	1 x RS232C, 1 x IrDA. Includes	1 x RS232C, 1 x IrDA. Includes
Applications	Word, PowerPoint, Excel, Internet Explorer, bFAX Pro	Word, PowerPoint, Excel, Internet Explorer, bFAX Pro
Price	£429	£549

Optional VGA Card - £89

PERIPHERALS
Compact Flash - See Below
Compact Flash PC Card Reader - £79
Leather Case - £49
3 Year Warranty - £66
Chess - £49

SHARP HC-4100A
with Windows CE (v.2)

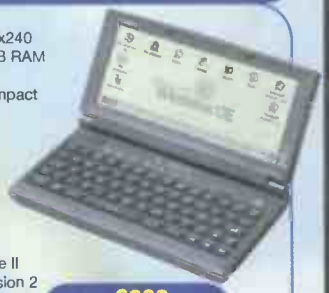
Sharp's unique image editor allows you to draw and edit image files as well as capture images from the internet or with the optional digital camera card.

- 7 one-touch application keys
- 640x240 touch screen LCD
- Backlit VGA screen
- Image editor. Create/edit images.
- Voice recorder
- Multimedia E-mail
- Seamless connectivity
- PC Card slot Type II
- CE Windows Version 2
- Optional docking station

£389
Colour Screen
£559

CASIO CASSIOPEIA
WITH 80MHZ CPU AND 8MB RAM

- Wide display 640x240
- 80MHz CPU. 8MB RAM
- Sound speaker
- PC Card and Compact Flash slot
- 2 x AA batteries
- Tranfer images to/from digital camera
- CE software & additional applications
- PC Card Slot Type II
- CE Windows Version 2
- Optional docking station

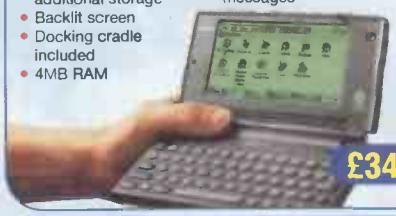


£369
Docking Cradle £25

PHILIPS VELO
with Windows CE

The Velo incorporates everything you'd expect from Windows CE but uniquely includes a simple connector for your GSM phone enabling you to tie into corporate e-mail, send faxes and browse the internet.

- Record up to 16 minutes of voice memos
- Miniature card slot for additional storage
- Backlit screen
- Docking cradle included
- 4MB RAM
- Includes BABT modem cable
- Indicator lights showing charging, communicating, and receiving alarms or messages



£349

CE PERIPHERALS

PICO CE Modem 33.6 + GSM upgrade option	£175
Mail-on-the-Run Send/receive e-mail remotely by cable or modem	£99
AA World Travel Companion Everything about the world's 22 most visited cities	£24
Noteable Dates and Events 1998	£12
On Schedule for Windows CE Contact and information manager	£39
IntelliSync for CE	£79
Backgammon & Chinese Chess	£49
Parallel printer adaptor	£49

Call for CE Software & Peripheral Guide

SIMPLE COMPACT FLASH

Works with Psion Series 5, HP 300/320LX, all CE machines (except Philips Velo) and most digital cameras. No battery required.

4MB Compact Flash	£49.00
8MB Compact Flash	£59.00
12MB Compact Flash	£84.00
16MB Compact Flash	£99.00
32MB Compact Flash	£199.00

For ACTI for CE software add £10 to CF prices

PSION SERIES 5

- Full VGA-width touch sensitive screen
- Backlight. Multiple zoom
- 2 x AA batteries give 1 month typical useage
- Connect to PCs, printers, modems and mobile phones
- Laptop style touch type keyboard
- Digital recording and playback of voice memos
- Compact Flash slot for extra memory
- Infra-red for wireless comms
- Wordprocessor, spreadsheet, time manager, database, sketch, calculator, world information.

BUNDLE OFFER
Series 5, 8MB + PSIWin + 8MB CFlash £469

Series 5 4MB with PsiWin -£368
Series 5 8MB with PsiWin -£379
3C 2MB Backlit - £279
3C 2MB - £249
3C 1MB - £225

Compact Flash 4MB	£59	Chess	£26
Compact Flash 8MB	£84	Beritz Interpreter	£29
Compact Flash 12MB	£129	Finance Pack 3a	£44
Compact Flash 16MB	£164	Aluminium Desk Stand	£15
AC Adaptor	£20	128KB Flash	£29
128KB RAM	£39	512KB Flash	£69
512KB RAM	£99	1MB Flash	£94
1MB RAM	£190	2MB Flash	£154
Leather Wallet	£20	4MB Flash	£259
Games Pack 3	£26	Data View	£49
Mac Comms Link	£64	PsiWin	£62
Parallel Cable	£28	Autoroute	£57
Fax Modem	£154	ACT for Psion	£79
Microfax	£179	Telenote	£59

USR PALM PILOT

Stores thousands of addresses, phone and fax numbers, hundreds of To-Do lists and personal notes and dozens of e-mail messages. The backlit screen lets you see it all easily.

- Seamless synchronisation with a desktop
- Find information instantly
- Long battery life
- Intuitive easy-to-use interface with accurate pen recognition
- Optional SnapOn GSM adaptor enables you to update your schedule, access your e-mail and synchronise all your data wherever you are

Professional - £213
Personal - £159

Slim Leather Case - £17
Delux Leather Case - £49
GSM Modem -£99
PSTN MOdem £79

HOW TO ORDER

1. Call us on 01483 20 20 22
2. Fax us on 01483 20 20 23
3. Send your cheque/postal order or credit card details to the address below.
   Note that your credit card will not be debited until goods are despatched
4. Visit our showroom and see the entire range in action
5. Send or call for our free product and PCMCIA directory

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Or our easy-to-remember number:
07000 PC MOBILE

FAX
01483 20 20 23

Technical Support:: 01483 209200

Mon to Fri 8:30am - 6pm
Sat 10am - 1pm (Sales Only)

- All prices quoted exclude VAT
- Delivery charges - next day £10, 2-3 day £8, Notebooks £15
- We accept VISA ACCESS SWITCH AMEX

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DT-RAID

RAID 5 PROTECTION

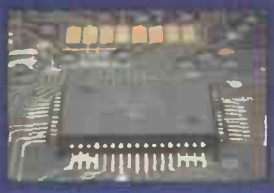
DT-RAID combines the quality and features you would find only in high end RAID subsystems into a convenient, cost effective storage solution offering full RAID data protection. DT-RAID is available in either a 3, or 5 bay metal construction tower, with hot swap hard drive carriers. The system features a PCI RAID adapter with 4MB ECC cache memory expandable to 64MB. Which supports hardware RAID 0, 1 and 5 including the ability to hot swap failed drive without bringing the system down, and support for automatic or scheduled rebuild of the replacement drive. Optionally the system can be expanded via the addition of a 2nd RAID channel and DAT tape back system.

CONFIGURATION

SIZE	COST
12GB	£1750
18GB	£1950
30GB	£2995
45GB	£3995

3 or 5 Bay Tower
Hot Spare Drive
Integral DAT backup
2nd RAID channel

RAM-RAID



SOLID STATE STORAGE
SEEK TIMES < 2ms
NON VOLATILE

SIZE	COST
500MB	£9500
750MB	£12000
1.25GB	£16000
2.56GB	£29000
5GB	£45000
10GB	£75000

For I/O performance nothing in the mass storage world beats Solid State Disks (SSDs). SSDs achieve near instantaneous access times by eliminating the latency associated with magnetic disk rotation and head seek. RAM-RAID delivers the performance of Solid state disks and the reliability of RAID. RAM-RAID uses Solid State Disks but the data is also duplexed on to static non volatile memory. Protection against disk failure is provided by RAID technology. RAM-RAID is the ultimate solution for high availability database and IO intensive applications requiring constant access times or massive updates.

TRANS-STOR

SERVER-LESS STORAGE

TRANS-STOR is a new generation of storage technology Designed for the needs of the dynamic networking environments of the late 90's. The TRANS-STOR system Comes with a direct network connection module. The system can be connected to an existing network and serving the storage needs of users within 15 minutes. No need for client licences or servers. The clients can be PC's MAC's, SUN, HP, DEC in fact virtually any type of client which can connect to the network. The system is optimized for I/O processing and delivers much better performance than general servers.

CONFIGURATION

SIZE	COST
27GB	£6500
45GB	£8500
72GB	£10950
99GB	£14250

FT-SERVER

SOLID STATE SERVER

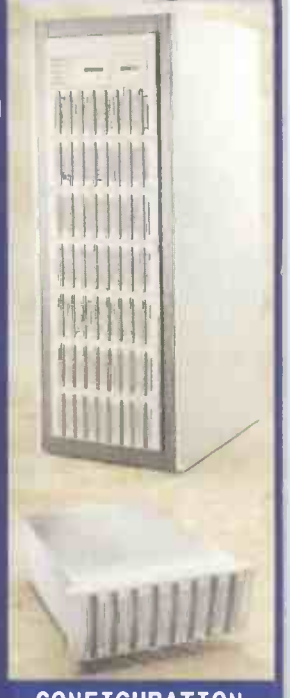
FT-SERVER is a high performance server designed to deliver the ultimate in reliability. The system consists of no moving parts. The system has no disk drives and relies on FT-RAID for fault tolerant storage. The system features multiple redundant power supplies to ensure continuous operation. The system has on-board both dual channel Ultra Wide SCSI and dual 10/100mbit fast ethernet controllers. In the unlikely event that a fault does ever develop, the system can instantly be swapped out for a new FT-SERVER without having to worry about configuration or internal hard drives e.t.c. Multiple FT-SERVERS can be configured into an FT-CLUSTER with the addition of management modules.

Pentium II

No	Mhz	COST
1 x	300	£2750
2 x	300	£3500

FT-RAID

SERVER-INDEPENDANT



Today's network servers are complicated machines with many components such as video cards, motherboards, network cards, serial interfaces and memory etc If the data storage has also been integrated into the server, when a fault develops on the server all of the data will be off-line until the fault is fixed. FT-RAID is designed to deliver a **true** fault tolerant solution for mission critical data storage. It achieves this by making the data storage and RAID controller independent of the server. FT-RAID takes for granted that components will fail ! It caters for this eventual failure by having redundancy of every single key component within the system. Disk drives and power supplies are mounted in hot swap canisters and even the external RAID controller can optionally be duplexed to cater for controller failure. When a failure occurs the component can be replaced without bringing the system off-line.. If a failure occurs on a connected server, another standby server or even a workstation (performing the role of a server) can boot of the FT-RAID system and bring the network back on-line with minimum disturbance while the faulty server is fixed. FT-RAID also supports an automated means of bringing standby servers on-line. FT-RAID can service multiple servers at the same time including NT, Netware, Sun, RS6000, SG, HP, ,Apple and DEC Clustering Hardware etc...
A Direct Network Attach Module is available which allows FT-RAID to share storage on the Network without SCSI connection to the Server.
FT-RAID can also be configured with both FT-SERVER and FT-CLUSTER to deliver exceptional fault tolerant server and storage in the most demanding network environments. With its vast array of features and expansion capability FT-RAID is the ideal bedrock storage system on which to base your network.

OPTIONS

DUPLEX CONTROLLER
FIBRE CHANNEL
DIFFERENTIAL SCSI
DEC INTERFACES: CI FDDI DSSI
19" RACKMOUNT
FAIL SAFE SERVER SUPPORT
4 HOST CHANNELS
DIRECT NETWORK ATTACH

CONFIGURATION

SIZE	COST
27GB	£5500
45GB	£7500
72GB	£9950
99GB	£13250
153GB	£20500
207GB	£26500
252GB	£32000
306GB	£37500
504GB	£52500
1TB	£89000
2TB	£169000

FT-CLUSTER

DUAL ACTIVE REDUNDANT

FT-CLUSTER is fault tolerant scaleable network server.The system consists of two independent PC servers connected together into a network cluster. The cluster appears to attached clients as a single server. The network tasks are shared by the two servers. If one server fails the other server takes over the workload automatically. Both servers are connected to **FT-RAID** storage and share access to the same data. FT-CLUSTER delivers the type of scaleable and fault tolerant network computing previously only available on proprietary mini and mainframe hardware using standard PC components. The system is a totally open design and can be upgraded using standard PC memory and parts.

Pentium II

No	Mhz	COST
2 x	300	£7000
4 x	300	£8500

Cost does not include FT-RAID which is required for operation.

STORAGE FOR: PC'S MAC SUN SG DEC RS6000 HP AS400 COMPAQ +

HARD DRIVES

ULTRA WIDE MODELS

SIZE	MODEL	PRICE
4GB	IBM Ultrastar	£370
9GB	IBM Ultrastar	£550
4GB	QUANTUM VIKING	£350
9GB	QUANTUM 39100W	£585
4GB	MICROP 4345W	£370
9GB	MICROP 3391W	£540
4GB	SEAGATE 34572W	£370
9GB	SEAGATE 19171W	£590
4GB	SEAGATE 34501W	£425
9GB	SEAGATE 19101W	£700
23GB	" " 423451W	£1600

We have listed our most popular models please phone for pricing on others from: IBM SEAGATE WD MICROPOLIS QUANTUM. We also stock drives with SCA, SSA, FCAL and DIFFERENTIAL

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From 7 to 70 ROMS
SCSI or
Direct Network Attach

7	CD TOWER	£1250
7	CD RACK	£1400
14	CD TOWER	£1950
35	CD RACK	£2850
35	CD TOWER	£2500
70	CD TOWER	£4000

CD ARCNET

Read & Write to Network CD s

CD-ARCNET servers are designed to allow the archive and retrieval of information on to CD media. The servers include a CD writer, so attached client workstations or servers can write information to CD's across a network. Once data has been archived the data can be made available via the CD server to attached users. All the data on all the CD's are available concurrently to all the users, unlike a jukebox approach there is no waiting for CD's to load or waiting for a player to be freed. Due to the efficient caching built into the servers data is made available at greater than 50X speed. No software needs to be installed on workstations for access.

CONFIGURATIONS

25	CD	£3500
60	CD	£5000
110	CD	£8000
160	CD	£11000
210	CD	£14000

TAPE

UP TO 3000MB PER MINUTE
FIBRE CHANNEL

	Native Size	Comp Size	Transfer Rate/Min	Comp Rate	Price
TANDBERG 3800	525MB	1GB	11MB	16MB	£275
SONY SDT5000	4GB	8GB	22MB	30MB	£450
SONY SDT9000	12GB	24GB	72MB	140MB	£650
HP 35470	2GB	4GB	11MB	16MB	£400
HP 1533	4GB	8GB	30MB	60MB	£500
HP 1554	12GB	24GB	60MB	120MB	£700
HP C5648A	72GB	144GB	60MB	120MB	£1850
EXABYTE 8505XL	7GB	14GB	30MB	45MB	£1100
MAMMOTH	20GB	40GB	180MB	360MB	£2650
SONY AIT	25GB	50GB	180MB	360MB	£2550
DLT 2000XT	15GB	30GB	75MB	150MB	£1850
DLT 4000	20GB	40GB	90MB	180MB	£2450
DLT JBOX4000	140GB	280GB	90MB	180MB	£5950
DLT 7000	35GB	70GB	300MB	600MB	£5500
DLT JBOX7001	245GB	490GB	300MB	600MB	£6995
NET-TAPE 20	20GB	40GB	1GB	2GB	£11500
NET-TAPE 35	35GB	70GB	1.5GB	3GB	£16500
NET-TAPE 70	70GB	140GB	1.5GB	3GB	£22500
NET-TAPE 140	140GB	280GB	1.5GB	3GB	£34500
NET-TAPE 245	245GB	490GB	1.5GB	3GB	£59500

CHEYENNE ARCSERVE 6 NETWARE SS:£295 ENT:£720
CHEYENNE ARCSERVE 6 NT SS:£295 ENT:£520
SEAGATE BACKUP EXEC SS:£295 ENT:£520
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DX

MODEL	WRITERS	SPEED	COST
DX1	1	2X	£795
DX3	3	2X	£1495
DX3PRO	3	4X	£2795
DX5	5	4X	£3995
DX8	8	4X	£4995
DX12	12	4X	£6500
DX16	16	4X	£8000
CD PRINTER			£600
CD PRINTABLE MEDIA			£1.29

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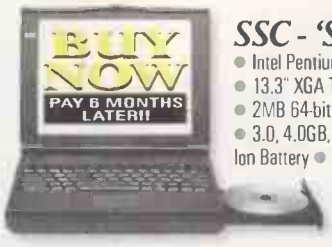

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SSC	AST	PROCESSOR	MEMORY	HARD DRIVE	SCREEN TYPE	PRICE	INC VAT
N10	J10	Pentium 75Mhz	16MB	800MB	10.4" COLOUR	£575	£675.63
N30	J30	Pentium 100Mhz	16MB	800MB	10.4" COLOUR	£649	£762.58
N30	J30	Pentium 100Mhz	16MB	800MB	10.4" TFT COL.	£699	£821.33
N30	J30	Pentium 133Mhz	16MB	800MB	10.4" TFT COL.	£749	£880.08

SSC 'i' & AST 'A' SERIES NOTEBOOKS

SSC	AST	PROCESSOR	MEMORY	HARD DRIVE	CD	SCREEN TYPE	PRICE	INC VAT
i41	A41	Pentium 120Mhz	16MB	1GB	CD✓	11.3" COLOUR	£849	£997.58
i43	A41	Pentium 120Mhz	16MB	1.4GB	CD✓	11.3" COLOUR	£875	£1028.13
i42	A42	Pentium 120Mhz	16MB	1GB	CD✓	12.1" TFT COL.	£999	£1173.83
i51	A51	Pentium 133Mhz	16MB	1.4GB	CD✓	12.1" TFT COL.	£1025	£1204.38
i60	A60	Pentium 150MMX	16MB	1.4GB	CD✓	12.1" TFT COL.	£999	£1173.83
i70	A70	Pentium 150MMX	32MB	2.1GB	CD✓	12.1" TFT COL.	£1049	£1232.58

SSC 'C' & AST 'P' SERIES NOTEBOOKS

SSC	AST	PROCESSOR	MEMORY	HARD DRIVE	CD	SCREEN TYPE	PRICE	INC VAT
C50	P50	Pentium 133Mhz	16MB	800MB	CD✓	11.3" TFT COL.	£949	£1115.08
C50	P50	Pentium 133Mhz	16MB	1.2GB	CD✓	11.3" TFT COL.	£975	£1145.63
C55	P55	Pentium 133Mhz	24MB	1GB	CD✓	12.1" TFT COL.	£1025	£1204.38
C55	P55	Pentium 133Mhz	24MB	2GB	CD✓	12.1" TFT COL.	£1075	£1263.13
C57	P57	Pentium 166Mhz	16MB	2GB	CD✓	11.3" TFT COL.	£1049	£1232.58
C70	P70	Pentium 150MMX	32MB	2GB	CD✓	12.1" TFT COL.	£1099	£1291.33
C80	P80	Pentium 166MMX	32MB	3.2GB	CD✓	12.1" TFT COL.	£1199	£1408.83

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S5130T	M5130T	Pentium 133MMX	16MB	1.6GB	CD✓	12.1" TFT COL.	£1099	£1291.33
S5150T	M5150T	Pentium 150MMX	32MB	2.1GB	CD✓	12.1" TFT COL.	£1199	£1408.83
S5160T	M5160T	Pentium 166MMX	32MB	3GB	CD✓	12.1" TFT COL.	£1249	£1467.58
S5200T	M5200T	Pentium 200MMX	32MB	3GB	CD✓	12.1" TFT COL.	£1349	£1585.08
S5200X	M5200X	Pentium 200MMX	32MB	3GB	CD✓	13.3" XGA TFT	£1649	£1937.58
S5230X	M5230X	Pentium 233MMX	64MB	4GB	CD✓	13.3" XGA TFT	£1899	£2231.33
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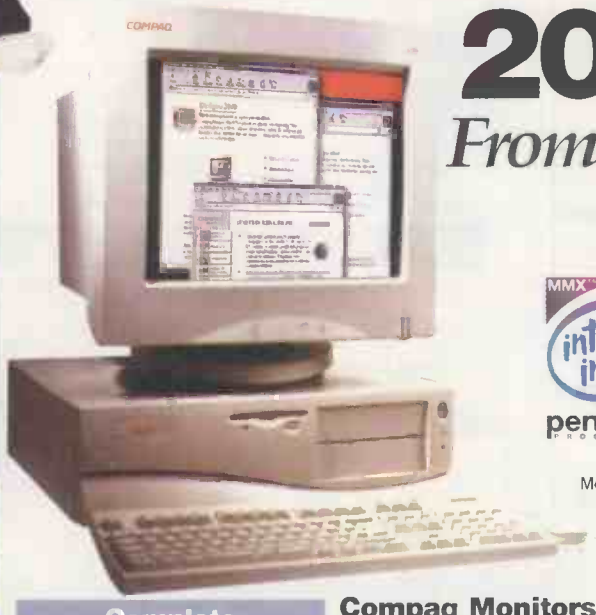

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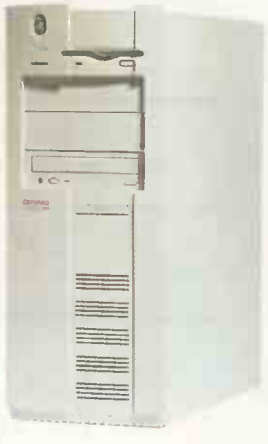

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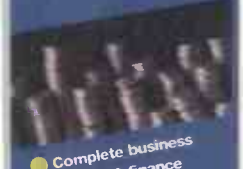

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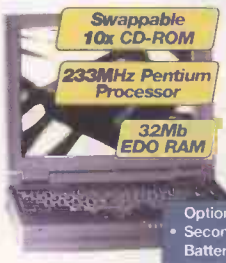

- Intel 233MHz Pentium™ Processor with MMX™ Tech.
- 32Mb EDO RAM (Exp. to 160Mb EDO RAM)
- 4.100Mi.B HDD
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- Swappable 10x CD-ROM
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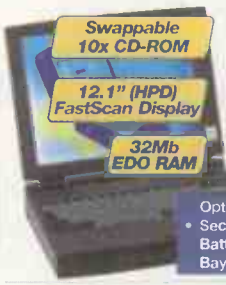

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- Swappable 10x CD-ROM
- Slimline Select Bay for additional Flexibility

Options Include:
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- Built-in Sound System • Select Bay
- 3 Year International Warranty

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- DeskStation V Plus
- Adv. V.34 Data/Fax PC Card
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Options Include:
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- DeskStation V Plus

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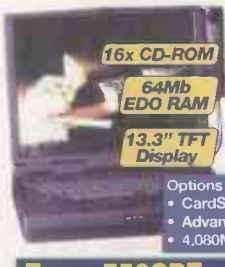

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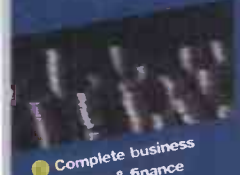

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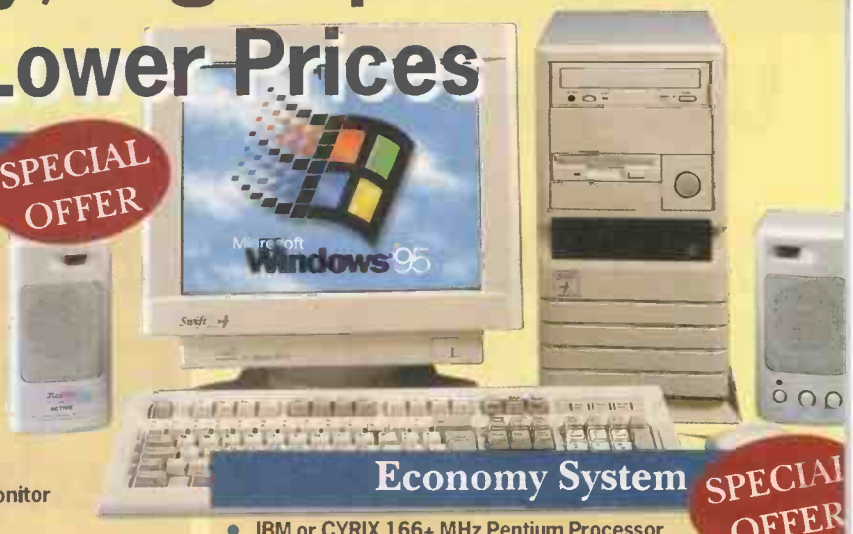

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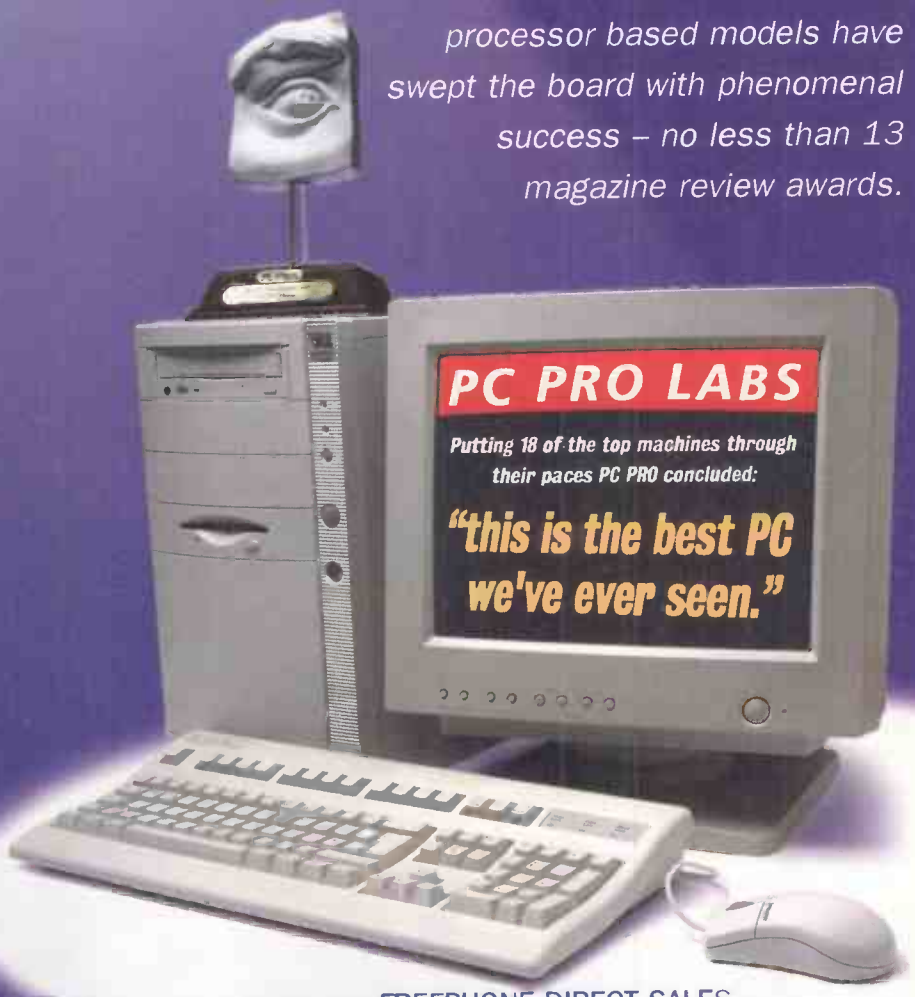

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Evesham Micros BIRMINGHAM **0121 683 6868** *Fax:* 0121 683 6869

EveshamVale

BUY NOW PAY LATER
ON HOMESTART MODELS - SEE PAGE 2

HomeStart

Internet Ready Multimedia. Installed, Configured and Demonstrated at Home.

The complete solution for the home buyer.

Evesham Micros have introduced the EveshamVale 'HomeStart PC', available in two configurations depending on power and budget.

Both highly specified multimedia systems are installed, configured and demonstrated so you can enjoy the generous Microsoft software bundle or surf the superhighway with one months FREE unlimited access via Virgin Net*.

Each "HomeStart PC" also comes with a FREE lifetime technical support line and on-site maintenance as standard.

HomeStart 200 model:

- 200MHz Intel Pentium® MMX processor
- Intel Socket 7 for processor upgrades
- 512kb Pipeline-Burst cache
- 32Mb RAM
- 4.3Gb hard disk
- 64 bit SIS Advanced graphics using 2Mb system RAM with Microsoft 3D support
- 14" SVGA monitor
- K56flex modem
- 1 month free unlimited Internet access with Virgin Net*
- Panasonic 24x CD-ROM drive
- SoundBlaster 16 compatible sound card
- Zy-Fi amplified speakers
- 14 day moneyback guarantee
- 1 year on-site maintenance for parts and labour
- Lifetime technical support hotline

only (£765.11+VAT)

£899 inc VAT

HomeStart 233 models feature the following enhancements:

- 200MHz Intel Pentium® II processor
- Intel Slot One for processor upgrades
- 2x Universal Serial Bus (USB) ports
- ATI 4Mb AGP video card
- 15" SVGA monitor
- 2 years on-site maintenance for parts and labour

only (£1020.43+VAT)

£1199 inc VAT

All HomeStart models also feature:

- Year 2000 ready BIOS
- 3xPCI & 3x16-bit expansion slots
- 1 EPP parallel port and 2 serial ports with 16550 UART
- 3.5" 1.44Mb floppy disk drive
- Mini-tower case
- TÜV approved power supply with low noise fan
- 'Windows95' keyboard
- Mouse
- Windows 95 installed, with full manuals and disks supplied

Add a splash of colour with the LEXMARK 1000 Colour Jetprinter

for only (£85.11+VAT)

£100 inc VAT

The family colour printer with Disney's *Print Studio CD-ROM* featuring Hercules

Want to Surf the Internet?

Virgin net

The PC is configured for quick and convenient connection to Virgin Net, widely praised for the quality of its package. You get one month's free use* with unlimited access to the World Wide Web, your own Email address and 10Mb of server space to start your own Web site.

"bags of free Web space, useful software and great service put Virgin Net at the top of the pile" **What PC June 1997**

WHAT PC?

"Virgin Net came out top, offering all the cost savings, with none of the disadvantages." **Practical Internet** awarded 5 out of 5 for connection and support, with an overall score of 90%.

• You need to provide a telephone line, and pay for (local rate) call charges

Media98

A huge bundle of high quality Microsoft software is part of the package:

- Microsoft Works – for Windows 95. Leading word processor, spread sheet and database package.
- Microsoft Encarta 98 – the world's leading encyclopaedia (International Edition)
- Microsoft Monster Truck Madness – down and dirty racing.
- Microsoft Money – the easy way to manage your money.
- Microsoft Magic School Bus Rainforest – a fun filled, fact pacted science adventure in the Costa Rican rainforest.
- Microsoft 3D Moviemaker – create and direct your own 3D movies.
- Microsoft Golf 3 – the top selling golf game for Windows.
- Microsoft Football – experience all the atmosphere of world class football.
- Microsoft Cinemania – interative movie guide with all the information on current movies.
- Suncom Joystick

This bundle is available with *any* EveshamVale PC – see the following pages

Software boxes shown for illustration only. Please note that the software is not supplied in retail packaging

EveshamVale

BUY NOW PAY LATER
ON MEDIA98 MODELS - SEE PAGE 2

Prima

From **£469**+VAT (£551.08)

We have set out to build a quality PC and sell it at a keen price, whilst still offering a standard of equipment that allows us to maintain our award winning level of service and support. The Prima is the result and is now established as a standard setting entry level PC, as confirmed by winning Computer Shopper's "Best Buy" award when pitted against computers from 13 leading suppliers.

Prima Standard models:

- 512kb Pipeline-Burst cache
- 16Mb or 32Mb RAM
- Intel Socket 7 for processor upgrades
- 64 bit SIS Advanced graphics using 2Mb system RAM with Microsoft 3D support
- 14" SVGA monitor
- 14 day moneyback guarantee
- 1 year on-site maintenance for parts and labour
- Lifetime technical support hotline
- Year 2000 ready BIOS
- 3xPCI & 3x16-bit expansion slots
- 1 EPP parallel port and 2 serial ports with 16550 UART
- 3.5" 1.44Mb floppy disk drive
- Mini-tower case
- TÜV approved power supply with low noise fan
- 'Windows95' keyboard
- Mouse
- Windows 95 installed, with full manuals and disks supplied

Prima MULTIMEDIA models and Media98 models also have:

- Panasonic 24x CD-ROM drive
- Genuine Creative Labs SoundBlaster 16 sound card
- Zy-Fi Compact amplified speakers

A Prima Multimedia PC

EveshamVale Prima

	Standard	MULTIMEDIA	Media98
200 MMX, 16Mb RAM, 2.1Gb HDD	£469+VAT (£551.08)	£549+VAT (£645.08)	£629+VAT (£739.08)
200 MMX, 32Mb RAM, 4.3Gb HDD	£519+VAT (£609.83)	£599+VAT (£703.83)	£679+VAT (£797.83)
P200 MMX, 32Mb RAM, 4.3Gb HDD	£549+VAT (£645.08)	£629+VAT (£739.08)	£709+VAT (£833.08)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch. See page 3 for details of Media98 pack.

See p 3 for details of Media98 software.

Prima upgrades

OPERATING SYSTEM
Windows NT4 (supplied on CD-ROM) ..... £75+VAT (£88.13)

RAM & DISK DRIVES
16Mb to 32Mb RAM ..... £50+VAT (£58.75)
32Mb to 64Mb RAM ..... £50+VAT (£58.75)
Panasonic 120Mb floppy disk drive instead of 1.44Mb unit ..... £60+VAT (£70.50)

MONITORS
15" EveshamVale (as Prestige) ..... £50+VAT (£58.75)
15" Taxan Ergovision 550 TCO95 ..... £75+VAT (£88.13)
17" EveshamVale (as Platinum) ..... £200+VAT (£235.00)

MULTIMEDIA HARDWARE
Panasonic 650Mb PD drive instead of CD-ROM ..... £149+VAT (£175.08)
Panasonic PD media ..... £19+VAT (£22.33)
Panasonic PD media 3 pack ..... £49+VAT (£57.58)
Multimedia Labs TC1500 speakers – see page 14 (Multimedia models) ..... £39+VAT (£45.83)

COMMUNICATIONS
K56flex EveshamVale modem ..... £59+VAT (£69.33)
"Internet ready" pack – see p13 ..... £159+VAT (£186.83)

IOMEGA STORAGE SOLUTIONS
100Mb zip drive (external) ..... £99+VAT (£116.33)
1Gb jaz drive inc. SCSI card (internal) ..... £281+VAT (£330.18)

CASE
Desktop case ..... £20+VAT (£23.50)

SUPPORT
HomeStart service ..... £50+VAT (£58.75)
Second year maintenance ..... £40+VAT (£47.00)
Second and third year maintenance insurance ..... £109 (VAT exempt)

Reviews

Computer Buyer Recommended
"Its quality and breadth make the Evesham well worth its asking price." EveshamVale Prima

COMPUTER SHOPPER
"Good specification, good performance and a good price." EveshamVale Prima

"If we were choosing the machine that combined performance, presentation and configuration then our choice would be narrowed down to the Evesham. ...we fully approve of its documentation, setup and choice of components" EveshamVale Prima

Computer Buyer Recommended
"There is little doubt that the Evesham is the winner as far as performance goes. It raced ahead of the competition." EveshamVale Prima

Do you need a little help installing your new computer?

The **EveshamVale "HomeStart"** service could be your answer!

Just add £50+VAT (£58.75)

to the price of any EveshamVale Prima, Prestige or Platinum PC

We'll install your new PC and get you started

One of our HomeStart technicians will come to your home and ensure that your computer is properly installed and configured and then demonstrate to you how to use the PC to its full potential.

One the engineer has left, you're not on your own either – Evesham Micros give you the reassurance of a dedicated, knowledgeable and friendly technical support line, for the lifetime of your PC. The technicians are there to answer your questions, give you advice or point you in the right direction should you take a wrong turn. And what's more, calls to the Technical support line are free.

Unlike most suppliers we include on-site maintenance as standard. If something goes wrong we will send one of our engineers to your home to sort out the problem. Let's face it, the last thing you will want to do if your computer breaks down is to have to pack it all up and return it to a supplier for an unknown length of time!

Microsoft software bundles

Available with any EveshamVale Multimedia or Media98 PC

Microsoft Office97 Professional Edition

For the home user we offer Office97 Professional Student Edition:

- Word 97
- Excel 97
- Outlook 97
- Access 97
- Powerpoint 97

£99+VAT (£116.33)

To qualify you or someone in your family needs to be aged 5 or over and in full or part time education on a Dept for Education & Employment recognised course, as either a student or teacher. Product supplied via voucher redemption.

Microsoft Office97 Small Business Edition

- Word 97
- Excel 97
- Outlook 97
- Publisher 97
- AutoRoute Express

£139+VAT (£175.08)

Product supplied is Office97 Upgrade Pack, plus a suitable product to upgrade from.

Microsoft Office97 Professional Edition

- Word 97
- Excel 97
- Outlook 97
- Access 97
- Powerpoint 97

£239+VAT (£280.83)

Product supplied is Office97 Upgrade Pack, plus a suitable product to upgrade from.

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EveshamVale

BUY NOW PAY LATER
ON MEDIA98 MODELS - SEE PAGE 2

MMX™ intel inside

pentium® II PROCESSOR

Prestige

Amazing new prices on Pentium® II processor models

Prestige Standard models:
- Intel 440LX PCIset *(Pentium® II processor models)*
- Intel 430TX PCIset *(all other models)*
- 512kb Pipeline-Burst cache
- 32Mb SDRAM, expandable to 256Mb
- 4Mb ATI 3D Charger AGP video card *(Pentium® II processor models)*
- 2Mb ATI 3D Charger PCI video card *(all other models)*
- 15" EveshamVale monitor
- 2x Universal Serial Bus (USB) ports
- 14 day moneyback guarantee
- 2 years on-site maintenance for parts and labour
- Lifetime technical support hotline
- Year 2000 ready BIOS
- 4x PCI & 3x16-bit expansion slots (one shared)
- 1 EPP parallel port and 2 serial ports with 16550 UART
- 3.5" 1.44Mb floppy disk drive
- Choice of desktop or midi-tower case
- TÜV approved power supply with low noise fan
- 'Windows95' keyboard & mouse
- Windows 95 installed, with full manuals and disks supplied

AGP GRAPHICS
Pentium® II processor models

A Prestige Multimedia PC with optional 15" Taxan monitor (PC case style may vary)

Prestige Office models also have (In addition to Standard):
- Panasonic 24x CD-ROM drive
- Microsoft Office97 Small Business Edition (see page 4)

Prestige MULTIMEDIA models and Media98 models also have (In addition to Standard):
- Panasonic 24x CD-ROM drive
- Genuine Creative Labs SoundBlaster 16 sound card
- Zy-Fi amplified speakers

See p3 for details of Media98 software.

EveshamVale Prestige – Pentium® II processor models

	Standard	Office	MULTIMEDIA	Media98
Pentium® II 233, 32Mb RAM, 4.3Gb HDD	£769 +VAT (£903.58)	£949 +VAT (£1115.08)	£849 +VAT (£997.58)	£929 +VAT (£1091.58)
Pentium® II 266, 32Mb RAM, 4.3Gb HDD	£819 +VAT (£962.33)	£999 +VAT (£1173.83)	£899 +VAT (£1056.33)	£979 +VAT (£1150.33)
Pentium® II 300, 32Mb RAM, 4.3Gb HDD	£939 +VAT (£1103.33)	£1119 +VAT (£1314.83)	£1019 +VAT (£1197.33)	£1099 +VAT (£1291.33)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch. See page 3 for details of Media98 pack.

EveshamVale Prestige

	Standard	Office	MULTIMEDIA	Media98
200 MMX, 32Mb RAM, 4.3Gb HDD	£619 +VAT (£727.33)	£799 +VAT (£938.83)	£699 +VAT (£821.33)	£779 +VAT (£915.33)
P200 MMX, 32Mb RAM, 4.3Gb HDD	£649 +VAT (£762.58)	£829 +VAT (£974.08)	£729 +VAT (£856.58)	£809 +VAT (£950.58)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch. See page 3 for details of Media98 pack.

Prestige upgrades

OPERATING SYSTEM
Windows NT4 (supplied on CD-ROM) ..... £75+VAT (£88.13)
RAM & DISK DRIVES
32Mb to 64Mb RAM ..... £50+VAT (£58.75)
Panasonic 120Mb floppy disk drive instead of 1.44Mb unit ..... £60+VAT (£70.50)
VIDEO CARDS & MONITORS
ATI TV card ..... £69+VAT (£81.08)
15" Taxan Ergovision 550 TCO95 ..... £25+VAT (£29.38)
17" EveshamVale ..... £130+VAT (£152.75)
17" iiyama Vision Master ..... £250+VAT (£293.75)
17" Taxan Ergovision 750 TCO95 ..... £300+VAT (£352.50)
MULTIMEDIA HARDWARE
Panasonic 650Mb PD drive instead of CD-ROM ..... £149+VAT (£175.08)
Panasonic PD media ..... £19+VAT (£22.33)
Panasonic PD media 3 pack ..... £49+VAT (£57.58)
Multimedia Labs TCI500 speakers (Multimedia models) - see p14 ..... £39+VAT (£45.83)
TCI500 & SP7001 speakers (Multimedia models) ..... £79+VAT (£92.83)
COMMUNICATIONS
K56flex EveshamVale modem ..... £59+VAT (£69.33)
"Internet ready" pack - see p13 ..... £159+VAT (£186.83)
IOMEGA STORAGE SOLUTIONS
100Mb zip drive (internal) ..... £75+VAT (£88.13)
1Gb jaz drive inc. SCSI card (internal) ..... £281+VAT (£330.1
SUPPORT
HomeStart service ..... £50+VAT (£58.75)
Third year maintenance insurance ..... £99 (VAT exempt)

Want the PC with the best game-playing performance?

EveshamVale **GameStation**

Prestige Pentium® II 233 MULTIMEDIA PC with the following upgrades:
- Canopus Pure3D 6Mb 3Dfx accelerator – the best 3Dfx card available for unprecedented 3D graphics (see page 13)

canopus PURE3D

- Genuine Creative Labs SoundBlaster AWE64 Value wavetable sound card
- Zy-Fi Pro amplified speakers

only (£977.87+VAT)

£1149 inc VAT

Reviews

"The Prestige is a good machine at a very competitive price. If you're working to a tight budget, this machine must be at the top of your short list"
EveshamVale Prestige

PC PRO
"Superb value in a machine which doesn't compromise on speed either. ...comes with such a good selection of peripherals and software that it scoops our Value award."
EveshamVale Prestige

PC HOME SILVER AWARD
"an excellent starter pack of software... Internally there is plenty of space to plug in any extra bits and pieces... I feel I'd have to recommend this machine to the beginner." **EveshamVale Prestige Media97**

Computer Buyer Recommended
"very well future-proofed."
"Fastest of all was the Evesham... It doesn't even have a 266MHz processor, but beats those that do."
"with the Evesham reputation, we reckon this machine would be a good budget choice, so recommend it."
EveshamVale Prestige P-II 233

COMPUTER SHOPPER
"For the price you get a well-made computer from a reputable supplier, with a good mix of software." **EveshamVale Prestige**

"Evesham is just as capable at entry level machines as at big network servers. Performance is a particular strong point of this machine."
"At £1000, like all the others and with markedly superior performance, the Vale Prestige PII-233 deserves and earns a *PC Plus* Performance Award."
EveshamVale Prestige

TOP SCORE
"The Evesham uses quality components throughout which help maximize the potential of its powerful CPU...faster than some Pentium 200sf One of the first MMX machines we tested, the Evesham is a great example of the technology's potential."
EveshamVale Prestige

EveshamVale

BUY NOW PAY LATER
ON MEDIA98 MODELS - SEE PAGE 2

SeePU
Simple jumperless CPU upgrade installation

APTC
Active Processor Temperature Control: – multi-level CPU temperature protection function

Platinum

"THE BEST PC EVER"

EveshamVale Platinum PC Pro, December 1997

EveshamVale Platinum PCs have always been a favourite with reviewers – in fact *PC Pro* recently described one as "the best PC EVER". The current Platinum is an enhanced version of that review specification, with more hard disk space and our own 17" monitor (instead of 15"). Despite the improvements, we have managed to *reduce* the price.

All Platinum models:

- Chaintech 6LTM motherboard with Intel 440LX PCIset, and SeePU and APTC technologies
- 512kb Pipeline-Burst cache
- 64Mb SDRAM, expandable to 256Mb
- 2x Universal Serial Bus (USB) ports
- 6Gb Quantum Ultra ATA hard disk
- 4Mb ATI Xpert@work AGP 2X 3D graphics accelerator
- 17" EveshamVale monitor
- Panasonic 32x CD-ROM drive
- Microsoft Intellimouse
- 14 day moneyback guarantee
- 2 years on-site maintenance for parts and labour
- Lifetime technical support hotline
- Year 2000 ready BIOS
- 4xPCI & 3x16-bit expansion slots (one shared)
- 1 EPP parallel port and 2 serial ports with 16550 UART
- 3.5" 1.44Mb floppy disk drive
- Keytronic PS/2 'Windows 95' keyboard
- Choice of high quality ATX style desktop or midi-tower case
- TÜV approved power supply with low noise fan
- Windows 95 installed, with full manuals and disks supplied

A Platinum Multimedia PC with the EveshamVale 17" monitor

Platinum Office models have:

- Microsoft Office97 Small Business Edition (see page 4)

Platinum MULTIMEDIA models and Media98 models have:

- Creative Labs SoundBlaster AWE64 Value wavetable sound card
- Zy-Fi amplified speakers

Now with 6Gb hard disk and 17" monitor – and £250 less than the review price!

EveshamVale Platinum
64Mb SDRAM, 6Gb hard disk

See p3 for details of Media98 software.

	Office	MULTIMEDIA	Media98
P-II 266	£1229+VAT (£1444.08)	£1149+VAT (£1350.08)	£1229+VAT (£1444.08)
P-II 300	£1349+VAT (£1585.08)	£1269+VAT (£1491.08)	£1349+VAT (£1585.08)
P-II 333	£1419+VAT (£1667.33)	£1339+VAT (£1573.33)	£1419+VAT (£1667.33)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.

"THE BEST PC EVER"

"You'll be amazed at how much power you can buy for £1500. We put 18 machines through their paces. Only two come up trumps, and one is the best PC we've ever seen."

"Despite the affordable price point, Evesham has still managed to include cutting-edge components to produce a machine that can cope with anything thrown at it."

"Evesham has created a lightning-fast PC at a really low price point. If you want cutting-edge technology, without taking out a second mortgage, look no further. This is a worthy speed award winner."

"The EveshamVale Platinum is quite simply the fastest PC on test, and considering the price it's an amazing machine."

"Evesham is definitely building a reputation for producing fast PCs. The Platinum is the second Pentium II-based Evesham system to win an award in three months."

EveshamVale Platinum December 1997

PC PRO: PERFORMANCE ●●●●●● FEATURES ●●●●●● VALUE FOR MONEY ●●●●●● OVERALL ●●●●●●

THE A-LIST

BEST PC FOR UNDER £1500:

"Fast, future-proof, well-equipped and based around lightning-fast Pentium II technology"

EveshamVale Platinum December 1997

Platinum SE

Platinum SE models have the following enhancements to Platinum models:

- 8Gb Quantum Ultra ATA hard disk
- 8Mb ATI Xpert@work AGP 2X 3D graphics accelerator
- 17" Taxan Ergovision 750 TCO95 monitor with DiamondTron tube
- Multimedia Labs TC1500 speakers (MULTIMEDIA and Media98 models)
- K56flex modem

EveshamVale Platinum SE
64Mb SDRAM, 8Gb hard disk

See p 3 for details of Media98 software.

	Office	MULTIMEDIA	Media98
P-II 266	£1579+VAT (£1855.33)	£1499+VAT (£1764.33)	£1579+VAT (£1855.33)
P-II 300	£1699+VAT (£1996.33)	£1619+VAT (£1902.33)	£1699+VAT (£1996.33)
P-II 333	£1769+VAT (£2078.58)	£1689+VAT (£1984.58)	£1769+VAT (£2078.58)

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.

Platinum upgrades

Operating system
Windows NT4 (supplied on CD-ROM) ..... £75+ VAT (£88.13)

RAM & Disk drives
64Mb to 128Mb RAM ..... £280+VAT (£329.00)
64Mb to 256Mb RAM ..... £649+VAT (£762.58)
Panasonic 120Mb floppy disk drive instead of 1.44Mb unit ..... £60+VAT (£70.50)

Video cards & monitors
ATI 8Mb All-in-Wonder Pro card ..... £90+VAT (£105.75)
15" EveshamVale ..... deduct £130+VAT (£152.75)
17" Taxan 760 TCO95 ..... £30+VAT (£35.25)
17" iiyama Vision Master ..... £120+VAT (£141.00)
17" iiyama Vision Master ES ..... £160+VAT (£188.00)
17" Taxan 750 TCO95 ..... £170+VAT (£199.75)
17" iiyama Vision Master Pro ..... £170+VAT (£199.75)
19" Taxan 975 TCO95 ..... £250+VAT (£293.75)
21" iiyama Vision Master Pro ..... £700+VAT (£822.50)

Multimedia hardware
No CD-ROM drive ..... deduct £70+VAT (£82.25)
Panasonic 650Mb PD drive instead of CD-ROM ..... £149+VAT (£175.08)
SoundBlaster AWE64 Gold ..... £80+VAT (£94.00)
Multimedia Labs TC1500 speakers – see page 14 ..... £39+VAT (£45.83)
TC1500 & SP7001 ..... £79+VAT (£92.83)

Communications
K56flex EveshamVale modem ..... £59+VAT (£69.33)
"Internet ready" pack – see page 13 ..... £159+VAT (£186.83)

IOMEGA storage solutions
100Mb zip drive (internal) ..... £75+VAT (£88.13)
1Gb jaz drive inc. SCSI card (internal) ..... £281+VAT (£330.18)

Support
HomeStart service ..... £50+VAT (£58.75)
Third year maintenance insurance:
Models up to £2500 ..... £99 (VAT exempt)
Models over £2500 ..... £119 (VAT exempt)

Platinum SE upgrades

See Platinum models for other upgrades

Video cards & monitors
Matrox Millennium II 8Mb (PCI) ..... £99+VAT (£116.33)
ATI 8Mb All-in-Wonder Pro card ..... £60+VAT (£70.50)
17" iiyama Vision Master Pro ..... £20+VAT (£23.50)
19" Taxan 975 TCO95 ..... £80+VAT (£94.00)
21" Taxan 2150 TCO95 ..... £500+VAT (£587.50)
21" iiyama Vision Master Pro ..... £500+VAT (£587.50)

Multimedia hardware
TC1680 speakers system ..... £89+VAT (£104.58)
SP7001 sub-woofer ..... £39+VAT (£45.83)

Communications
12 months Internet access ..... £99+VAT (£116.33)
No modem ..... deduct £50+VAT (£58.75)

Microsoft software bundles

Available with any EveshamVale Multimedia or Media98 PC – see page 4 for details

Evesham Micros
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Web: http://www.evesham.com
Evesham Micros BIRMINGHAM 0121 683 6868
Fax: 0121 683 6869

BUY NOW PAY LATER
ON MEDIA98 MODELS - SEE PAGE 2

Platinum Wonder

"THE BEST" GETS BETTER

2x DVD ROM

The Platinum Wonder is the affordable 'ultimate' PC. Like the rest of the Platinum range it is based on our proven formula of the very best components, solid and reliable build quality, and award winning customer care.

Platinum Wonder key features:

- ATI 8Mb All-in-Wonder Pro AGP video card
- Panasonic DVD-ROM drive (instead of CD-ROM)
- Multimedia Labs TC1680 speaker system with sub-woofer – see page 14
- 333MHz Intel Pentium®II processor
- 64Mb SDRAM
- 8Gb Quantum Ultra ATA hard disk
- Choice of monitors: Taxan 17" 760, 17" 750 DiamondTron, or 19" 975

Other features as standard Platinum models

PC MAGAZINE EDITORS' CHOICE December 2 1997

All-in-Wonder Pro

The 7-in-1 TV, graphics and multimedia board

The heart of the incredible video capabilities of the Platinum Wonder is ATI's new All-in-Wonder Pro card. This combines the acclaimed *3D Rage Pro* graphics accelerator found in the Xpert@work with a host of multimedia functions

PC PRO

"All in all, this is an extremely impressive package... when you bear in mind the price you could expect to pay for all those extra bits on board, it's something of a bargain... Just for once, this is a product that does everything it sets out to do, and it does it all well."
All-in-Wonder Pro April 1998

A Platinum Wonder PC with 17" Taxan 750 DiamondTron monitor and Multimedia Labs TC1680 speaker system (sub-woofer not shown)

Platinum Wonder models

	MULTIMEDIA	Media98
17" Taxan 760	£1699 +VAT (£1996.33)	£1779 +VAT (£2090.33)
17" Taxan 750	£1849 +VAT (£2172.58)	£1929 +VAT (£2266.58)
19" Taxan 975	£1929 +VAT (£2266.58)	£2009 +VAT (£2360.58)

See p 3 for details of Media98 software.

Prices highlighted are "Ready to Ship" models which we try to keep in stock for immediate despatch.

Upgrade from 19" to 21" Taxan monitor ..... £400+VAT (£470.00)
32x CD-ROM drive instead of DVD drive ..... deduct £40+VAT (£47.00)

SEE PLATINUM MODELS FOR OTHER UPGRADES

Reviews

Platinum & Platinum SE

TOP 50 BEST BUY

"This is a well thought-out home system. It's quick, well built... the software, modem and joystick provided are of high enough quality to be genuinely useful."
EveshamVale Platinum November 1997

PC GAMER

"Evesham Micros have built themselves up into one of the most cost effective PC suppliers in the country. This new Platinum pulls together a stream of good components, including one of the fastest current processors available... clear crisp picture. It's unusual to get a 17" unit at this price point and the extra couple of inches gives a more absorbing experience. The keyboard and mouse are from KeyTronics and Microsoft respectively, and are as good as you're going to get... with a two-year on-site warranty, this must be one of the best £1750 worth of PC kit currently on the market."
Verdict: 92% **EveshamVale Platinum** January 1998

LA

"This is a well specified system... and is configured appropriately for both home and games usage, delivering very good performance."
"Evesham's Vale gets our vote for it's overall level of presentation."
EveshamVale Platinum December 1997

PC PRO

"THE FASTEST WINDOWS 95 SYSTEM WE'VE SEEN. SUPERB"
"There's no doubt that the Platinum is a powerful performer."
"combines the PII/233 with good quality multimedia capabilities to produce a high powered, general purpose desktop PC."
"The Multimedia Labs speakers were more impressive, delivering 12W per channel of clear, bass-rich sound efficiently enough to set the ears ringing."
"It's not difficult to work out that this is going to be a fast machine. In fact, it turned out to be the fastest Windows 95 machine we've yet seen. As a result, this Platinum sets a new speed standard for the systems of 1998 to follow."
EveshamVale Platinum March 1998

PC PRO

PERFORMANCE	○○○○○○
FEATURES	○○○○○○
VALUE FOR MONEY	○○○○○○
OVERALL	○○○○○○

PERFORMANCE PC Plus

"Fastest PC on the Planet"
"Evesham has put together a 'no expense spared' system, which shows what the 266MHz Pentium II can do – it's breathtaking"
"Evesham must know something others don't about heat generation – there's certainly little to support the 'hot running' rumours here"
"What distinguishes this machine beyond doubt is its Windows NT performance. Turning in a PC Plus index of 4.24, the highest we've ever seen, earns it a Performance award"
EveshamVale Platinum SE August 1997

PC HOME SILVER AWARD

"Once the lid was off, this gained the most points for upgrading potential... Sound quality was excellent... a really good pair of speakers... One of the best things about this is the software suite, which is a real treat... the performance in this machine across all criteria is very good, and would make an excellent family PC for those with a variety of purposes."
EveshamVale Platinum Media98 February 1998

GOLD PC Plus

"We can always rely on Evesham to come up with something good..."
"The Platinum is an unpretentious machine with a lot under the hood."
"Add in a two year, on-site warranty to the machine and you have a high value bundle which few suppliers can touch. This is a machine which should last you well to the millennium and is a sound buy for serious home use and the odd game. It's well worth a *PC Plus* Gold."
PC Plus Verdict: 10/10 **EveshamVale Platinum** January 1998

PC MAGAZINE UK EDITORS' CHOICE

"As well as being one of the fastest systems here, the Platinum PII SE 266's build quality is of the highest order"
"The best combination of performance, features and price is offered by the EveshamVale Platinum SE 266. Our brief to the manufacturers emphasised performance, features and manageability appropriate to the needs of an advanced Windows 95 user, and this system combines all of these in a package that offers superb value for money"
"Performance, good build quality, good expansion capabilities, a well-thought-out design and a good support package all combine to produce an award-winning system"
EveshamVale Platinum SE October 1997

Personal Computer World

"1 year test"
"Based on price and quick delivery times, I decided to go with Evesham Micros"
"GOOD POINTS: Fast, expandable, quiet fan"
"CONCLUSION: I'm very happy"
EveshamVale Platinum SE March 1998

PC MAGAZINE

"There's a lot of expansion potential in this system, despite its compact size..."
"Excellent build quality, and supports AGP graphics... If you're looking for an AGP system, this is the one to go for."
EveshamVale Platinum January 1998

Personal Computer World HIGHLY COMMENDED

"the machine excelled in our benchmark tests, benefiting from a speedy hard drive."
"The Vale came with a 17" Taxan monitor offering a clear, steady, flicker-free image."
"A machine to suit most business needs."
EveshamVale Platinum February 1998

PCGAMER

"I thought you might like to read about the fastest PC I've ever tested"
"All this cutting edge hardware adds up to a machine which goes faster than a greyhound on Lassie Vindaloo Chunks."
"PC Gamer Verdict: 88%" **EveshamVale Platinum SE** July 1997

computer arts

"As always, we tried hard to be critical – but this time around, we have to hold our hands up and admit that the Platinum SE is a great system. So, is there anything negative to say? We could try and claim that the casing is plain and ugly, but then, they all are aren't they?"
Rating: ★★★★½ **EveshamVale Platinum SE** November 1997

Personal Computer World HIGHLY COMMENDED

"The DiamondTron tube is bright and vibrant.. The image is sharp, clean and does not suffer from misconvergance... The power supply and regulator are excellent, and were unfazed by our tricky tests."
"Great spec, image and price... An excellent choice."
Taxan Ergovision 750 TCO95 May 1997

PC MAGAZINE UK EDITORS' CHOICE

"consistently among the best performers in PC Labs' tests, with notably good graphics and disk WinMark results... outstripping the others on price and features, was our Editors' Choice, the EveshamVale Platinum SE Pro." **EveshamVale Platinum SE** November 1996

Computer BUYER RECOMMENDED

"A beneficial aspect of the DiamondTron tube is it's so-called short neck, which reduces the depth of the cabinet, leaving more actual deskspace free in front of it."
Taxan Ergovision 750 TCO95 June 1997

PC PRO

"The system produced a well defined top end sound. Bass response is more than adequate, and the complex controls allow users to modify the sound to their own tastes."
Multimedia Labs TC1680 April 1997

PC MAGAZINE UK EDITORS' CHOICE

"Excellent performance at a reasonable price"
ATI Xpert@work April 1998

Evesham Vale

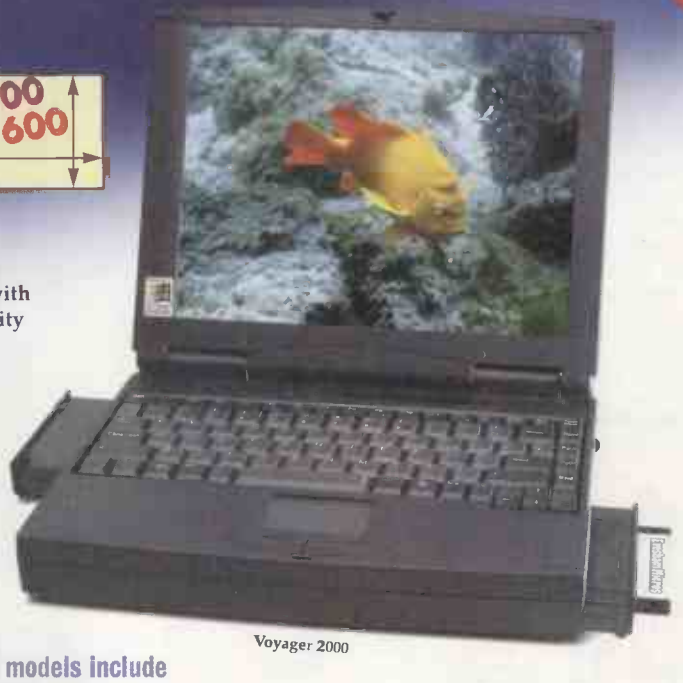
BUY NOW PAY LATER
On Media98 models - see page 2

Voyager 2000

A flexible approach to mobile computing.

800 x 600

The Voyager 2000 is the perfect solution for the person on the move. With the unique adaptability of the two device bays this notebook provides the user with all the performance they would demand from a desktop PC, but with flexibility that is hard to beat.



Voyager 2000

Voyager 2000 models:

- 2 year warranty, with accidental damage insurance
- 256kb asynchronous cache
- 32Mb EDO RAM
- 64Mb maximum RAM capacity
- Removable hard disk
- 2Mb 64bit PCI graphics accelerator
- 12.1" colour display with 800x600 SVGA resolution
- 20x CD-ROM drive
- 3.5Ah NiMH battery
- Extensive power management features, including 'suspend to RAM' and 'suspend to disk'

Voyager 2000 models also feature:

- 297 x 231 x 52mm
- 3.2kg
- Good solid keyboard with Windows 95 keys
- Built-in touchpad with palm rest
- Built-in 16bit stereo sound with stereo speakers and microphone
- 3.5" floppy drive
- Windows 95 installed
- ZV-enabled PCMCIA ports for two type II or one type III card
- 16550 compatible serial port
- EPP/ECP bi-directional parallel port
- PS/2 mouse or keyboard port
- External monitor port (runs simultaneously)
- Jacks for external speakers and stereo line in
- Infra red data link
- Anchor for Kensington security cable

P233 models include Microsoft Office 97 Small Business Edition

See page 4 for details

Voyager 2000 – 12.1" display, NiMH battery

	Standard	Media98
200 MMX, DSTN, 32Mb RAM, 2.1Gb HDD	£999+VAT (£1173.83)	£1079+VAT (£1267.83)
200 MMX, TFT, 32Mb RAM, 2.1Gb HDD	£1249+VAT (£1467.58)	£1329+VAT (£1561.58)
P233 MMX, DSTN, 32Mb RAM, 3.2Gb HDD	£1299+VAT (£1526.33)	£1379+VAT (£1620.33)
P233 MMX, TFT, 32Mb RAM, 3.2Gb HDD	£1549+VAT (£1820.08)	£1629+VAT (£1914.08)

Prices highlighted in yellow indicate "Ready to Ship" models which we try to keep in stock for immediate despatch.
Media98 models include the cost of the CD-ROM drive.

See page 3 for details of Media98 pack.

FLEXIBLE DEVICE BAYS

The Voyager 2000 has two device bays, so you can fit any two of the following:

- Battery (standard)
- Mains PSU (standard)
- Floppy drive (standard)
- CD-ROM drive (standard)
- Second battery (optional)

For example – if you are away on business, the mains PSU fits inside and you can leave the battery at home. For long distance travelling you can fit two batteries.

Mains PSU installed in the left hand device bay

CD-ROM drive installed in the right hand device bay

Devices clip in and out, and can be changed in seconds. The mains PSU connects via a cable if both of the bays are otherwise occupied.

WHAT PC? Testdrive

"When he looked at the EveshamVale Voyager 2000's specification, Tim found it hard to believe it fell within his budget."
"Tim liked the large, clear DSTN screen and comfortable keyboard. He also liked the removable floppy drive which can be replaced with the mains adaptor or optional CR-ROM drive. Since he rarely needed a floppy drive when he was on the road, this would cut down on the number of bits he had to carry around."
"In the end, the EveshamVale Voyager 2000 looked the most promising."
EveshamVale Voyager 2000

WHAT PC?

"quality screen... good colour and contrast: it is also visible from a good range of angles."
"The keyboard is comfortable to type on."
"The modular drive bays, though, provided the nicest touch in the design... an elegant solution... this is extremely flexible... it also helps keep down the weight and bulk"
EveshamVale Voyager 2000

Voyager 2000 upgrades

Power supply
Additional battery ..... £79+VAT (£92.83)
Car cigar lighter adaptor ..... £79+VAT (£92.83)
RAM & Hard disk
16Mb RAM module ..... £69+VAT (£81.08)
32Mb RAM module ..... £139+VAT (£163.33)
1.4Gb to 2.1Gb HDD ..... £70+VAT (£82.25)
Communications
"Internet ready" pack – see page 13 ..... £179+VAT (£210.33)
Desktop expansion
External keyboard ..... £29+VAT (£34.08)
Zy-Fi® 2 amplified speakers – see page 14 ..... £29+VAT (£34.08)

We've got you..

2 YEAR WARRANTY WITH ACCIDENTAL DAMAGE INSURANCE

On-site maintenance is not really practical with notebook computers – but how many of our competitors look after you this well? All Voyager notebooks have a *two year* 'return to base' warranty with *accidental damage insurance* as well! For a modest sum you can extend this peace of mind to three years.

Computer Luggage

Stylish, practical carry cases for your notebook and accessories.

Pisa £65+VAT (£76.38)

Hamburg £50+VAT (£58.75)

New York (back pack) £35+VAT (£41.13)

Madrid (£35.25)

Evesham Micros
FREEPHONE DIRECT SALES 0800 6345 999
Web: http://www.evesham.com
Evesham Micros BIRMINGHAM 0121 683 6868
Fax: 0121 683 6869

Evesham Vale

BUY NOW PAY LATER
ON MEDIA98 MODELS - SEE PAGE 2

MMX™ intel inside pentium® II PROCESSOR

1024 x 768

Voyager 4000

Slim, stylish and powered by Pentium® II!

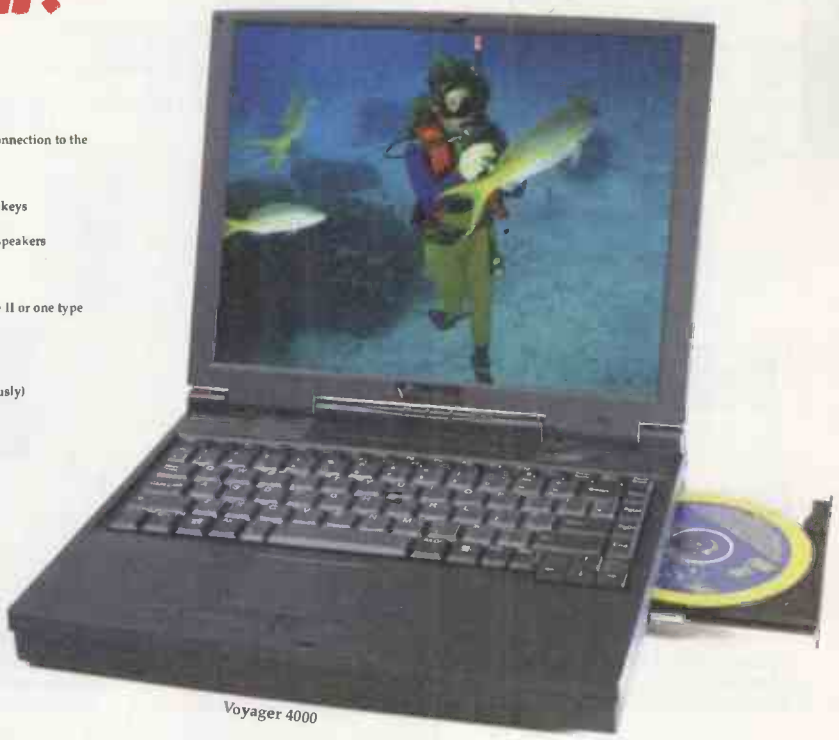
The Voyager 4000 harnesses the latest Pentium® II processor for the ultimate notebook performance

Voyager 4000 models:

- 2 year warranty, with accidental damage insurance
- Low voltage Intel Mobile Pentium® II processor for maximum battery life
- 256kb asynchronous cache
- 32Mb EDO RAM (max 96Mb)
- High performance 3.2Gb enhanced IDE hard disk
- 4Mb 64bit PCI graphics accelerator
- 1024x768 resolution 13.3" TFT display with 64000 colour palette
- Li-Ion battery for maximum life and minimum weight
- Extensive power management features, including 'suspend to RAM' and 'suspend to disk'
- 20 speed CD-ROM drive built-in
- Superior quality fit and finish
- Super slim design

Voyager 4000 models also feature:

- Optional port replicator gives instant connection to the peripherals on your desk
- 2 year 'return to base' warranty
- 310 x 245 x 52mm
- Good solid keyboard with Windows 95 keys
- Built-in touchpad with palm rest
- Built-in 16bit stereo sound with stereo speakers and microphone
- 3.5" floppy drive
- Windows 95 installed
- ZV-enabled PCMCIA ports for two type II or one type III card
- 16550 compatible serial port
- EPP/ECP bi-directional parallel port
- PS/2 mouse or keyboard port
- External monitor port (runs simultaneously)
- Jacks for external speakers and stereo line in
- Infra red data link
- Anchor for Kensington security cable



Voyager 4000

Li-Ion battery, 32Mb EDO RAM, 3.2Gb HDD

	MULTIMEDIA	Media98
P-II 233, 13.3" TFT	£2299+VAT (£2701.33)	£2379+VAT (£2795.33)

Prices highlighted in yellow indicate "Ready to Ship" models which we try to keep in stock for immediate despatch.

See page 3 for details of Media98 pack.

PC MAGAZINE

"The EveshamVale Voyager 4000 is a well-designed and powerful notebook"
"On performance, the Voyager 4000 fares well. Its disk subsystem...is particularly fast. Its video subsystem performance is also good."
EveshamVale Voyager 4000

Voyager 4000 closed view

Voyager 4000 upgrades

POWER SUPPLY
Li-Ion battery.....£99+VAT (£116.33)
Additional PSU.....£59+VAT (£69.33)
Car cigar lighter adaptor..£79+VAT (£92.83)

RAM & HARD DISK
16Mb RAM module.....£69+VAT (£81.08)
32Mb RAM module.....£139+VAT (£163.33)

COMMUNICATIONS
"Internet ready" pack – see page 13.....£179+VAT (£210.33)

DESKTOP EXPANSION
Port replicator.....£69+VAT (£81.08)
External keyboard.....£29+VAT (£34.08)
Zy-Fi® 2 amplified speakers – see page 14.....£29+VAT (£34.08)

...covered

3RD YEAR WARRANTY

Models up to £1700+VAT.....£99
Models from £1700+VAT to £2500+VAT.....£129
Models from £2500+VAT to £3200+VAT.....£179
The extended warranty rates are exempt from VAT and are applicable only at time of purchase.

PCMCIA card options

EveshamVale 33.6 modem.....£89+VAT (£104.58)
EveshamVale 56k modem.....£119+VAT (£139.83)
EveshamVale ethernet adaptor.....(£92.83)
USR Sportster Xjack modem.....(£182.13)
Pace microlin NB 33.6 voice.....(£190.35)
3Com Etherlink III 10BaseT LAN & 33.6 modem combo.....(£209.15)
Psion Gold Card 56k modem.....(£263.20)
Psion Gold Card Combo LAN & 33.6 modem.....£231+VAT (£271.43)
Xircom Global Access 10BaseT LAN & 33.6 modem combo.....£219+VAT (£257.33)

TOSHIBA

SATELLITE PRO

230CX.....£919+VAT (£1079.83)
300CDS.....£1199+VAT (£1408.83)
300CDT.....£1479+VAT (£1737.83)
310CDS.....£1379+VAT (£1620.33)
310CDR.....£1669+VAT (£1961.08)
460CDX.....£1379+VAT (£1620.33)
460CDT.....£1849+VAT (£2172.58)
480CDT.....£2499+VAT (£2936.33)

TECRA

520CDT.....£2219+VAT (£2607.33)
540CDT.....£3049+VAT (£3582.58)
750CDT.....£3679+VAT (£4322.83)
750DVD.....£4049+VAT (£4757.58)

LIBRETTO

70.....£1199+VAT (£1408.83)

Multimedia software bundles

Available with any EveshamVale Multimedia or Media98 PC – see page 3 for details

Evesham Vale PROFESSIONAL

Rapier Business Network Server

The EveshamVale Rapier Business Network provides a complete, integrated solution to the growing communication needs of small businesses – conceived, installed and commissioned by the people who understand what it's all about:

A sound foundation for running your business:

- Powerful EveshamVale Rapier Server with ample power and storage, and enough expansion capacity to grow with your business
- Microsoft BackOffice Small Business Server software – file, print and application services; essential communication services; and safe, secure Internet connection are all combined, tested and optimized to work seamlessly together
- Based on Microsoft Windows NT Server 4.0 – the secure and reliable network operating system
- Easy to set up, manage and grow

What can you do with it?

- Operate more efficiently by easily scheduling group meetings; automating mass mailings; and creating a single, shared customer list
- Communicate in new and more efficient ways – use e-mail, the Internet and fax to communicate with suppliers and customers right from the desktop
- Full desktop management of e-mail messages, faxes, appointments, contacts and tasks
- Create and manage professional looking web sites without programming
- Powerful, secure relational database for running business applications
- Share resources such as printers and modems
- Dial-up networking allows home and mobile users to work as if they were in the office
- Efficient use of shared modem on the server – allows a single secure gateway to the Internet, with routing to all workstations.

How easy is it to run?

- Extremely simple to configure and maintain, with automated routines for installation of printers, further workstations etc
- On-line guide provides training to the administrator; including tutorials, comprehensive help and trouble-shooting tips, and a fast search engine
- Seagate DAT drive and software – simple backups help avoid catastrophic data loss
- Large uninterruptible power supply protects the server from mains supply faults

How well do we look after you?

- All Rapier Business Network packages from Evesham Micros include installation by one of our own trained engineers (subject to site survey). We offer free hardware technical support, and software support at highly competitive rates. Any on-site work required is always carried out by our own engineers, who will be aware of the exact configuration supplied and be able to remedy your problems in the shortest possible time.

Microsoft BackOffice Small Business Server

3Com

Seagate

An EveshamVale Rapier fileserver

Example configuration

- EveshamVale Rapier Server (see below) with 2x 4Gb SCSI hard drives
- K56flex modem
- Seagate 4/8Gb DAT backup drive
- Seagate Backup Exec software
- Galatrek 1000VA UPS
- Microsoft BackOffice Small Business Server software
- 3Com Office Connect hub

£4999 +VAT

Business Rental Scheme: £179.81 +VAT per month 3 year term payable quarterly by Direct Debit. Other terms are available – Please call for details.

Includes installation by an Evesham Micros engineer (subject to site survey)

This is an example configuration – call us on 0800 765500 to discuss your specific server and workstation requirements

Reviews

TECHNICAL MERIT COMPUTER SHOPPER LABS

"If you were going to invest in a dual processor-capable Pentium Pro system of this spec, then you should be looking to spend your money with someone who understands how to configure it. Evesham fits this profile... Evesham was also the only company to install the latest NT Service pack. This gives you confidence that the company actually understand the issues that NT raises... We were sufficiently well impressed with the Evesham, both in terms of its components and its configuration, that it receives a Technical Merit award."
EveshamVale Platinum SE

BEST BUY COMPUTER SHOPPER LABS

"Business NT servers"
EveshamVale Fileserver

COMPUTERWEEKLY

Best "Product knowledge of sales staff" in *'Quality of IT Suppliers 1995' survey.*

Rapier Server EL

IMPROVED SPECIFICATIONS ON ALL MODELS

- Intel Pentium® II 233MHz processor with Intel 440FX chipset
- 32Mb high performance RAM
- 512kb Pipeline-Burst cache
- 4.3Gb IDE hard drive
- 10/100Mbps PCI ethernet card
- Panasonic CD-ROM drive
- 1Mb PCI video card
- 14" SVGA colour monitor
- ATX style midi-tower case
- 3 years on-site maintenance

from £949 +VAT

Business Rental Scheme: £34.14 +VAT per month 3 year term payable quarterly by Direct Debit. Other terms are available – Please call for details.

Server upgrades

PROCESSOR

P II-233 to P II-266	£60+VAT
P II-266 to dual P II-266	£230+VAT
P II-266 to dual P II-300	£450+VAT

Rapier EL models do not support dual CPUs

RAM

32Mb to 64Mb	£50+VAT
64Mb to 128Mb	£190+VAT
64Mb to 256Mb	£500+VAT

HARD DISK

4Gb SCSI to 9Gb SCSI	£250+VAT

DAT DRIVE

4/8Gb DAT drive	£650+VAT
12/24Gb DAT drive	£999+VAT

Full range of upgrades and cabling available – please call to discuss your exact requirements

Rapier Server

Rapier Server models differ from Rapier EL models in the following respects

- Intel Pentium® II 266MHz processor (upgradeable to dual processors)
- Dual processor capable motherboard
- 64Mb high performance RAM
- Adaptec Ultra Wide SCSI controller
- 4Gb SCSI hard drive
- Dedicated case with 6 further drive bays behind lockable front panel (illustrated above)
- Dual redundant PSUs

from £1999 +VAT

Business Rental Scheme: £71.90 +VAT per month 3 year term payable quarterly by Direct Debit. Other terms are available – Please call for details.

Samurai RAID Server

- Intel Pentium® II 266MHz processor (upgradeable to dual processors)
- Dual processor capable motherboard
- 512kb Pipeline-Burst cache
- Adaptec AAA-131 RAID controller
- 64Mb high performance RAM
- 10/100Mbps PCI ethernet card
- Dual redundant PSUs
- Panasonic CD-ROM drive
- 20Gb SCSI RAID 5 array with hot swappable hard drives
- 1Mb PCI video card
- 14" SVGA colour monitor
- 3 years on-site maintenance

from £3499 +VAT

Business Rental Scheme: £125.86 +VAT per month 3 year term payable quarterly by Direct Debit. Other terms are available – Please call for details.

Hardware delivery and commissioning by an Evesham Micros engineer is included in the price

An Evesham Vale Samurai RAID server

Business Sales Centres:

EVESHAM (fax 01386 769416)
BIRMINGHAM (fax 0121 683 6869)
NOW OPEN IN GLASGOW (fax 0141 445 2626)
• **MILTON KEYNES** (fax 01908 230865)
• **CAMBRIDGE** (fax 01223 322883)
LEEDS (fax 0113 203 2001)

Novell. Authorised Reseller PartnerNet. Novell. EDUCATION CNE Microsoft Certified Solution Provider Microsoft CERTIFIED PROFESSIONAL Product Specialist

Evesham Micros FREEPHONE BUSINESS SALES 0800 765500 Web: http://www.evesham.com Evesham Micros

For six years we've made EveshamVale Computers the centre of our business...

...isn't it time they were the centre of yours?

VOLUME DISCOUNTS AVAILABLE – PLEASE CALL

EveshamVale OfficeStation

The workhorse with a thoroughbred heart

Designed to meet the most exacting departmental needs, the EveshamVale OfficeStation uses a core of genuine Intel products. The PC is based on an Intel designed and manufactured Pentium® II motherboard featuring that latest 440LX chipset, and an Intel 10/100 network card. Combined with trusted components form other top name suppliers, and EveshamVale build quality, the result is a dependable platform that can form the mainstay of any office environment.

PC MAGAZINE

"Evesham's Vale Professional NT Workstation is a very capable and well specified Pentium Pro system, and although expensive, represents good value for money... Well-specified thanks to it's well integrated Intel motherboard, the NT Workstation has performance to spare." EveshamVale DesignStation

cadid

"The well-balanced configuration and great build quality makes for a good workhorse with a huge capacity" EveshamVale DesignStation

"the folk in the UNIX camp must be beginning to sweat... As Evesham Micro's flagship CAD machine, the DesignStation is a solid machine from the motherboard up." EveshamVale DesignStation

CAD CAM RECOMMENDED

"a well specified and capable system and in use proved to be an ideal system for running CAD solid modelling applications... For someone moving from DOS or Windows 3.11 up to a Windows NT platform, this system represents good value for money." EveshamVale DesignStation

OfficeStation EL

- Genuine Intel motherboard with Intel 440LX chipset
- Intel Pentium® II processor
- 32Mb SDRAM
- 512kb Pipeline-Burst cache
- 4.3Gb Ultra ATA hard drive
- 2Mb ATI video card
- 15" Taxan Ergovision monitor
- Low profile desktop case
- Microsoft Windows NT 4.0
- Microsoft Office 97 Small Business Edition
- LANDESK client manager licence
- 1 year on-site maintenance

PII-233 model **£1049** +VAT

Business Rental Scheme: £37.73+VAT per month 3 year term payable quarterly by Direct Debit. Other terms are available – Please call for details.

EveshamVale OfficeStation

OfficeStation

OfficeStation models differ from OfficeStation EL models in the following respects

- 4Mb ATI AGP video card
- Panasonic 24x CD-ROM drive
- Intel 10/100Mbps ethernet
- Creative Labs 16-bit audio

PII-233 model **£1199** +VAT

Business Rental Scheme: £43.13+VAT per month 3 year term payable quarterly by Direct Debit. Other terms are available – Please call for details.

PII-266 model **£1249** +VAT

Business Rental Scheme: £44.93+VAT per month 3 year term payable quarterly by Direct Debit. Other terms are available – Please call for details.

OfficeStation/EL upgrades

RAM
32Mb to 64Mb ..... £50+VAT

MONITOR
15" to EveshamVale 17" ..... £150+VAT

WARRANTY
2 years on-site maintenance ..... £40+VAT

DesignStation

- Intel Pentium® II 266MHz processor (upgradeable to dual processors)
- Dual processor capable motherboard featuring Intel 440LX chipset
- 64Mb SDRAM
- 512kb Pipeline-Burst cache
- 8Gb IDE hard drive
- Panasonic 24x CD-ROM drive
- 4Mb ATI Xpert@work AGP video card
- 17" Taxan Ergovision 750 TCO95 monitor with DiamondTron tube
- 3 years on-site maintenance

EveshamVale DesignStation

Power user? CAD/CAM user?

Experience astonishing performance at a fraction of the cost of a typical Workstation from the likes of Sun or Silicon Graphics with EveshamVale DesignStations. Using a combination of single or dual Intel Pentium II processors, huge RAM capacity, the latest Diamond GL equipped graphics cards and Microsoft's Windows NT4 operating system, you are guaranteed unsurpassed power for your pound.

from **£1699** +VAT

Business Rental Scheme: £61.11+VAT per month 3 year term payable quarterly by Direct Debit. Other terms are available – Please call for details.

DesignStation upgrades

PROCESSOR
P II-266 to P II-300 ..... £120+VAT
P II-266 to P II-333 ..... £190+VAT
P II-266 to dual P II-266 ..... £230+VAT
P II-266 to dual P II-300 ..... £450+VAT
P II-266 to dual P II-333 ..... £610+VAT

RAM
64Mb to 128Mb ..... £100+VAT
64Mb to 256Mb ..... £500+VAT

HARD DISK
8Gb IDE to 4Gb UW SCSI ..... £330+VAT
8Gb IDE to 9Gb SCSI ..... £550+VAT

MONITOR
17" to iiyama 17" Pro ..... £30+VAT
17" to 21" Taxan DiamondTron ..... £430+VAT
17" to iiyama 21" Pro ..... £460+VAT

VIDEO CARD
8Mb ATI Xpert@work AGP ..... £60+VAT
8Mb MAtrox Millennium PCI ..... £60+VAT
8Mb Diamond GL1000 ..... £100+VAT
Diamond GL4000 ..... £800+VAT

DAT DRIVE
4/8Gb DAT drive ..... £650+VAT

EveshamVale DesignStation with optional Diamond video card and dual 21" monitors

3 year on-site maintenance

EveshamVale Servers and DesignStations have 3 years on-site maintenance for parts and labour, operated by Evesham Micros' own engineers, with next business day response.

INTERGRAPH SOLID EDGE™

Powerful 3D Solid Modelled CAD

If you are interested in the power and flexibility of a professional 3D CAD system then you must look at Solid Edge – we believe that £ for £ nothing else comes close. Evesham Micros is a Solid Edge Business Partner and we would be delighted to discuss your requirements.

KINETIX

3D Studio MAX R2

The market leader in 3D graphics – we can supply you the fantastic new version and some amazing systems to run it on! Call us to discuss your requirements.

Evesham Micros

FREEPHONE BUSINESS SALES
0800 765500
Web: http://www.evesham.com

Evesham Micros

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Peripherals

MOTHERBOARDS

Buy a motherboard and processor together, and you get a free heatsink and fan.

Name	Form factor	Processor support: K6	Pentium	Pentium II	Chipset	Cache	RAM support: Fast page/EDO	SD	Exp. slots: ISA	PCI	AGP	USB	Price
Chaintech 5SDA	Baby AT	●	●		SiS 5598	512kb	●	●	3	3		Opt'	£59+VAT (£69.33)
Chaintech 5TDM	Baby AT	●	●		430TX	512kb	●	●	3*	4*		Opt'	£65+VAT (£76.38)
Chaintech 5TTM	ATX	●	●		430TX	512kb	●	●	4*	4*		Opt'	£69+VAT (£81.08)
Supermicro P5MMA	ATX		●		430TX	512kb	●	●	3*	4*		●	£95+VAT (£111.63)
Chaintech 6LTM	ATX			●	440LX	on CPU	●	●	3*	4*	1	●	£99+VAT (£116.33)

*One slot shared †Use of USB requires cable @ £5+VAT (£5.88)

SeePU – Innovative simple CPU installation via BIOS – no jumpers

APTC – High security Active Processor Temperature Control – multi-level CPU temperature protection function

CHAINTECH
COMPUTER CO., LTD.

RUN!PC
"Technology Creativity" award, Chaintech 5TDM & 5TTM, June 1997

Chaintech 5TDM, March 1998

Chaintech 5TDM, June 1997

Anand's Hardware Tech Page

5TTM
"features the spectacular SeePU jumperless CPU setup"
"I suggest that you seriously consider the Chaintech 5TTM"
Ratings: Performance ★★★★☆
Ease of use ★★★★★
Documentation ★★★★★

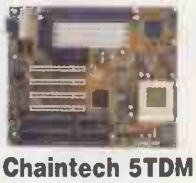
6LTM
"still smokes the competition"

Chaintech 6LTM
- Pentium II ATX motherboard
- Supports 66, 68.5, 75 & 83MHz bus speeds

£99+VAT (£116.33)

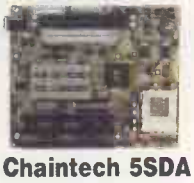
Chaintech 5TTM
- Pentium class ATX motherboard
- Supports 66 & 75MHz bus speeds

£69+VAT (£81.08)



Chaintech 5TDM
- Pentium class Baby AT motherboard
- Supports 66 & 75MHz bus speeds

£65+VAT (£76.38)



Chaintech 5SDA
- Pentium class Baby AT motherboard
- On-board 64-bit SVGA accellerator using up to 4Mb of system RAM
- Supports 66MHz bus speed

£59+VAT (£69.33)

Motherboard and processor from £69+VAT

430VX motherboard with K5-166 processor	£69+VAT (£81.08)
430VX motherboard with Winchip C6-200 MMX processor	£99+VAT (£116.33)
Chaintech 5TTM with Pentium® P200 MMX processor, fan, & 32Mb SDRAM	£215+VAT (£252.63)
Chaintech 6LTM with Pentium® II 233 processor, fan, & 32Mb SDRAM	£339+VAT (£398.33)
Chaintech 6LTM with Pentium® II 266 processor, fan, & 32Mb SDRAM	£419+VAT (£492.33)

SCSI/RAID CONTROLLERS

adaptec

2910 SCSI controller	£89+VAT (£104.58)
2920 SCSI controller	£99+VAT (£116.33)
2940UW SCSI ctrller	£189+VAT (£222.08)
AAA-131 RAID controller	£299+VAT (£351.33)
AAA-133 RAID controller	£499+VAT (£586.33)

120Mb FLOPPY DRIVE

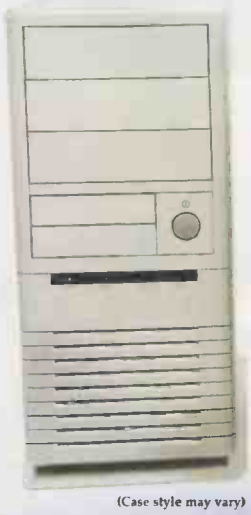
Panasonic Superdisk LS-120

LS-120 Internal with controller card	£99+VAT (£116.33)
120Mb floppy disk	£14+VAT (£16.45)
Panasonic 1.44Mb floppy disk drive	£15+VAT (£17.63)

UPGRADE PCs

Q How do you give your system a **serious performance** boost **without spending a fortune?**

A Easy – get one of our **'Upgrade PCs'** and use your existing monitor, floppy drive etc.



(Case style may vary)

UPGRADE YOUR PC!

430VX upgrade PC

Midi-tower case fitted with:
- 430VX chipset motherboard
- Processor & fan
- Power supply
- 32Mb EDO RAM
- 1Gb hard disk

NB – has baby AT keyboard port and serial mouse port

Winchip C6-200 MMX ...£249+VAT (£292.58)

Pentium® II upgrade PC

Midi-tower case fitted with:
- ATX style motherboard with 440LX chipset
- Pentium II processor
- Power supply
- 32Mb SDRAM

NB – has PS/2 keyboard and mouse ports

Pentium® II 233.....£389+VAT (£457.08)

Pentium® II 266.....£469+VAT (£551.08)

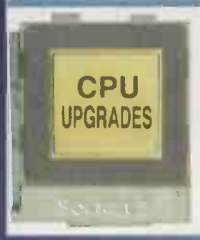
ATX upgrade PC

Midi-tower case fitted with:
- 430TX chipset ATX motherboard
- Processor & fan
- Power supply
- 32Mb SDRAM
- 2Mb video card
- 24 speed CD-ROM drive

NB – has PS/2 keyboard and mouse ports

Pentium® 200 MMX.....£369+VAT (£433.58)

PROCESSORS



K6-233 MMX	£109+VAT (£128.08)
Pentium 200 MMX	£95+VAT (£111.63)
Pentium 233 MMX	£145+VAT (£170.38)
Pentium II 233	£199+VAT (£233.83)
Pentium II 266	£279+VAT (£327.83)
Pentium II 300	£399+VAT (£468.83)

K6 & Pentium require Socket 7, Pentium II requires Slot One

Heatsink and fan recommended for all processors.

Pentium class h/sink & fan ..£10+VAT (£11.75)

MEMORY MODULES

4Mb 72-pin	£12+VAT (£14.10)
8Mb 72-pin	£19+VAT (£22.33)
16Mb 72-pin	£35+VAT (£41.13)
4Mb EDO	£11+VAT (£12.93)
8Mb EDO	£18+VAT (£21.15)
16Mb EDO	£34+VAT (£39.95)
32Mb EDO	£69+VAT (£81.08)

SDRAM DIMMs for 430VX/TX

32Mb	£50+VAT (£58.75)

Twinhead Slimnote memory

8Mb for SL7	£39+VAT (£45.83)
16Mb for SL7	£69+VAT (£81.08)
32Mb for SL7	£109+VAT (£128.08)
16Mb for SL9	£59+VAT (£69.33)
32Mb for SL9	£109+VAT (£128.08)

UPSs

Protect your installation from mains power faults with an uninterruptible power supply.

Station series UPSs
- Reliable protection from mains surges, spikes, noise and failure
- Interface port and power management software for automatic system shutdown and remote alarm notification by paging/email

Station 280 (280VA)	£99+VAT (£116.33)
Station 420 (420VA)	£129+VAT (£151.58)
Station 650 (650VA)	£189+VAT (£222.08)
Station 1000 (1000VA)	£249+VAT (£292.58)

System series on-line UPSs
- PowerSave software and intelligent interface allows comprehensive monitoring and control, plus automated alarm and shutdown routines

System 1000 (1000VA)	£599+VAT (£703.83)
System 3000 (3000VA)	£1249+VAT (£1467.58)

HARD DISKS & CONTROLLERS

Optional installation kit (5.25" mounting bracket kit plus cables)	£10+VAT (£11.75)
HD I/O card	£15+VAT (£17.63)

Quantum – Capacity for the Extraordinary™ – thinkBIGGER®

Bigfoot 2.1Gb IDE (5.25")	£99+VAT (£116.33)
Fireball ST Ultra ATA 3.2Gb IDE (3.5")	£125+VAT (£146.88)
Fireball ST Ultra ATA 6.4Gb IDE (3.5")	£215+VAT (£252.63)
Viking 2.2Gb SCSI (3.5")	£309+VAT (£363.08)
Viking 4.5Gb SCSI (3.5")	£459+VAT (£539.33)
Atlas II 4.5Gb Wide SCSI (3.5")	£519+VAT (£609.83)
Atlas II 9.1Gb Wide SCSI (3.5")	£899+VAT (£1056.33)

Seagate

1.2Gb IDE	£59+VAT (£69.33)
Barracuda 4Gb Ultra SCSI	£379+VAT (£445.33)
Barracuda 4Gb Ultra Wide SCSI	£399+VAT (£468.83)
Barracuda 9Gb Ultra Wide SCSI	£649+VAT (£762.58)
Cheetah 4Gb Ultra Wide SCSI	£459+VAT (£539.33)
Cheetah 9Gb Ultra Wide SCSI	£749+VAT (£880.08)

HITACHI

1.4Gb (2.5")	£129+VAT (£151.58)
2.1Gb (2.5")	£169+VAT (£198.58)
3.2Gb (2.5")	£269+VAT (£316.08)

PROMISE TECHNOLOGY INC

Promise PCI Ultra ATA controller .....£49+VAT (£57.58) NEW!

CASES WITH POWER SUPPLY

Style	Form factor	Drive bays: Internal	External	Price
Desktop	Baby AT	2x3.5"	3x5.25" 2x3.5"	£55+VAT (£64.63)
Midi tower	Baby AT	2x3.5"	3x5.25" 2x3.5"	£45+VAT (£52.88)
Desktop	ATX	4x3.5"	2x5.25" 2x3.5"	£59+VAT (£69.33)
Midi tower	ATX	3x3.5"	2x5.25" 3x3.5"	£59+VAT (£69.33)

Evesham Micros
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0800 6345 999
Web: http://www.evesham.com
Evesham Micros BIRMINGHAM
0121 683 6868
Fax: 0121 683 6869

PURE3D canopus 3Dfx Video Card

£129 +VAT (£151.58)

without Pure3D

with Pure3D

"BEST 3D-ONLY ACCELERATOR" "the name 'Voodoo' has become synonymous with high-end gaming. Ah, but which Voodoo Graphics card to single out for special recognition? That's easy: Canopus's Pure3D." Gamecentre 1997 Hardware Awards

"Pure3D is a hands-down winner, offering 3Dfx image quality and speed at a great price." Rated ★★★★★ Computer Gaming World

PC GAMER "We reckon it's the best 3Dfx card yet, mainly because it has 6Mb of on-board RAM to help your wheezing old PC keep up with today's (and tomorrow's) whizz-bang games."

"you should definitely buy the Pure3D. The extra texture memory, the TV out, and the insanely high quality driver support really do make this card a must have." Online Gaming Review

"Pure3D. Put the card in and that's what you get." The Adrenalin Vault

"If you're in the market for a dedicated 3D accelerator, the Pure3D is the cream of the crop!" Rating 98% PC Multimedia & Entertainment

The best 3Dfx card available

3Dfx's Voodoo Graphics has become the standard platform for 3D gaming. Whether using direct 3D or Glide, the hottest game titles will perform the fastest and look the best with 3Dfx acceleration. And, with the most complete feature set, user-friendly display utilities, and superior board design, Pure3D is the premier 3Dfx gaming accelerator available.

With Pure3D's 4Mb of dedicated texture memory (twice that of other Voodoo based cards), the latest games can offer greater detail without sacrificing performance. Ziff-Davis' new 3D WinBench shows the difference more texture memory makes.

Pure3D's TV out feature takes the excitement beyond your PC monitor. Play your favourite PC games on your big-screen TV, videotape your deathmatches, or display your greatness to the roaring crowds. Plus, we've included all the cables you need, right there in the box.

Requires: Windows 95, Pentium 100 with 430FX chipset or higher, 16Mb RAM, PCI expansion slot, CD-ROM drive, and VGA adaptor.

TAXAN Monitors

All Taxan monitors have 3 years warranty (1st year on-site).

Taxan Crystalvision

15" Ergovision 550 TCO95	£179 +VAT (£210.33)
17" Ergovision 730 TCO	£329 +VAT (£386.58)
17" Ergovision 750 TCO95 DiamondTron	£449 +VAT (£527.58)
17" Ergovision 760 TCO95	£339 +VAT (£398.33)
19" Ergovision 975 TCO95	£549 +VAT (£645.08)
21" Ergovision 2150 TCO95 DiamondTron	£899 +VAT (£1056.33)
10.4" Crystalvision 600	£899 +VAT (£1056.33)
12.1" Crystalvision 620	£1099 +VAT (£1291.33)
14.5" Crystalvision 650	£1519 +VAT (£1784.83)

SHINHO

14" SM483	£109 +VAT (£128.08)
15" SM585	£159 +VAT (£186.83)
17" SM785	£299 +VAT (£351.33)

NEC

15" MultiSync A500	£189 +VAT (£222.08)
17" MultiSync A700	£345 +VAT (£405.38)

iiyama

With over 20 UK magazine awards for technical excellence, display quality and value for money, iiyama monitors are firmly established as the choice of the professional user.

The Evesham difference

All our iiyama prices include 3 years on-site maintenance, normally £££ extra.

15" Vision Master 350 (MF-8515G)	£183 +VAT (£215.03)
17" Vision Master 17 (MF-8617)	£369 +VAT (£433.58)
17" Vision Master 17ES (MF-8617ES)	£399 +VAT (£468.83)
17" Vision Master Pro 17 (MT-9017)	£399 +VAT (£468.83)
21" Vision Master 500 (MF-8721T)	£799 +VAT (£938.83)
21" Vision Master Pro 500 (MF-9221)	£829 +VAT (£974.08)
Vision Master Pro Lite 35 (LP-1014P)	£1149 +VAT (£1350.08)
TXA-3601GT 14.1" LCD	£999 +VAT (£1173.83)

Please note that industry standard practice is to quote a monitor's CRT size – the actual viewing area is approximately 1" less.

Video Cards

Evesham Vale

4Mb 3Dfx card	£85 +VAT (£99.88)

ATi

Mach64 1Mb (PCI Bus)	£22 +VAT (£25.85)
3D Charger 2Mb (PCI Bus)	£29 +VAT (£34.08)
3D Charger 4Mb (PCI Bus)	£49 +VAT (£57.58)
Xpert@work 4Mb (AGP Bus)	£99 +VAT (£116.33)
Xpert@work 8Mb (AGP Bus)	£139 +VAT (£163.33)
Xpert@play 4Mb (PCI Bus)	£110 +VAT (£129.25)
Xpert@play 8Mb (PCI Bus)	£150 +VAT (£176.25)
TV card	£69 +VAT (£81.08)

DIAMOND MULTIMEDIA

Stealth VRAM 2Mb	£35 +VAT (£41.13)
Stealth VRAM 4Mb	£50 +VAT (£58.75)
Monster 3D Video 4Mb OEM version	£105 +VAT (£123.38)

matrox

m3D	£75 +VAT (£88.13)
Mystique 2Mb (OEM version)	£35 +VAT (£41.13)
Mystique 4Mb (OEM version)	£50 +VAT (£58.75)
Upgrade from 2Mb to 4Mb for Mystique	£49 +VAT (£57.58)
Mystique 220 4Mb (OEM version)	£65 +VAT (£76.38)
Millennium 2Mb (OEM)	£55 +VAT (£64.63)
Millennium 4Mb (OEM)	£75 +VAT (£88.13)
Upgrade from 4Mb to 8Mb for Millennium	£79 +VAT (£92.83)
Millennium II 4Mb (OEM)	£95 +VAT (£111.63)
Rainbow Runner Studio	£119 +VAT (£139.83)
Rainbow Runner Studio/Mystique 220 combo	£175 +VAT (£205.63)

Note: Rainbow Runner requires Pentium P90 or higher, Matrox Mystique, and CD-ROM drive. Cannot be used in conjunction with Mystique memory upgrades. Large hard disk recommended for video capture. Videoconferencing requires modem and video camera.

ORCHID

Righteous 3D	£115 +VAT (£135.13)

Psion Organisers

Series 3C 2Mb	£255 +VAT (£299.63)
Series 5 4Mb	£369 +VAT (£433.58)
Series 5 8Mb	£419 +VAT (£492.33)

Storage & Backup

iomega

Iomega ditto tape drives:

2Gb internal	£67 +VAT (£78.73)
2Gb external 'parallel port'	£102 +VAT (£119.85)
Tapes for ditto 2Gb	3 pack £39 +VAT (£45.83)
Tapes for ditto 3.2Gb	£25 +VAT (£29.38)

Iomega ditto Max tape drives:

7Gb internal	£99 +VAT (£116.33)
7Gb external 'parallel port'	£129 +VAT (£151.58)
Tapes for ditto Max 7Gb	2 pack £35 +VAT (£41.13)
10Gb internal	£184 +VAT (£216.20)
Tapes for ditto Max 10Gb	£22 +VAT (£25.85)

All ditto capacities quoted are with 2x compression

Iomega zip drives:

100Mb zip external drive 'parallel port'	£99 +VAT (£116.33)
zip plus external drive	£119 +VAT (£139.83)
Cartridge for zip drive	£12 +VAT (£14.10)
Cartridge for zip drive	6 pack £55 +VAT (£64.63)
Battery pack for zip drive	£49 +VAT (£57.58)

Iomega jaz drives:

1Gb internal	£212 +VAT (£249.10)
1Gb external SCSI	£269 +VAT (£316.08)
1Gb external 'parallel port'	£265 +VAT (£311.38)
Cartridge for jaz drive	£69 +VAT (£81.08)
PCI SCSI interface card for jaz drive	£69 +VAT (£81.08)

hp

SureStore 12/24Gb DAT drive	£999 +VAT (£1173.83)

Seagate

3.2Gb TapeStor internal	£129 +VAT (£151.58)
3.2Gb TapeStor external 'parallel port'	£69 +VAT (£81.08)
Tapes for 3.2Gb TapeStor	£25 +VAT (£29.38)

All TapeStor capacities quoted are with 2x compression

4/8Gb DAT drive internal bare mechanism	£650 +VAT (£763.75)
120m DAT tape	£25 +VAT (£29.38)

Evesham Vale Modems

APPROVED for connection to communication systems specified in the instructions for use subject to the conditions set out in it-em.

Quality hardware voice modems

- Internet access starter pack: includes full Internet and World Wide Web access software, with first month membership free and 10 hours free on-line time
- Cables included
- K56flex units include SuperVoice software

K56flex internal ..... £49 +VAT (£57.58)

K56flex external	£59 +VAT (£69.33)
33.6 PCMCIA (not voice)	£89 +VAT (£104.58)
56k PCMCIA (not voice)	£119 +VAT (£139.83)

ISDN card ..... £99 +VAT (£116.33)

- Plug & Play 16 bit ISDN card
- 32 bit VxD CAPI 2.0 driver
- Answering machine
- Telephone book/call log
- Telephone through port
- RVS-COM software for Windows 95/NT provides Microsoft Internet Explorer, Fax group 3 reception/ transmission, and E-Mail

At last! **A COMPLETE INTERNET SOLUTION!**

Many packages offer 30 day trial access, often with limited access times and leading to high monthly charges. At Evesham Micros we provide the complete solution

- EveshamVale K56flex external modem
- 12 Months UNLIMITED Internet Access via Premier Internet – one of the UK's largest providers
- 100% UK local rate telephone access
- Full e-mail account
- Full technical support

Complete Internet solution	£159 +VAT (£186.83)
Software only	£99 +VAT (£116.33)

Pace

56 Voice internal	£79 +VAT (£92.83)
56 Voice external	£109 +VAT (£128.08)

External version supports UK Caller ID.

International Travel Pack	£39 +VAT (£45.83)

Allows use of modem in the USA and most of Europe.

US Robotics

Sportster 33.6 internal	£109 +VAT (£128.08)
Sportster 56.6 Flash external	£103 +VAT (£121.03)
Courier ISDN internal	£259 +VAT (£304.33)
Courier ISDN external	£219 +VAT (£257.33)
Sportster WinModem	£77 +VAT (£90.48)

All modems include Internet connection software with free trial connection period.

Network Products

Evesham Vale

Plug-N-Play ethernet adaptor	£19 +VAT (£22.33)
PCI ethernet adaptor	£29 +VAT (£34.08)
PCMCIA ethernet adaptor	£79 +VAT (£92.83)
Mini-hub (pocket size, 5 ports, stackable)	£39 +VAT (£45.83)

Intel

Pro 10/100 PCI	£55 +VAT (£64.63)
Pro 10/100 PCI 5 pack	£259 +VAT (£304.33)
10Mbps 5 port hub	£45 +VAT (£52.88)
10Mbps 8 port hub with BNC	£65 +VAT (£76.38)
100Mbps 4 port fast hub	£135 +VAT (£158.63)
100Mbps 8 port fast hub	£245 +VAT (£287.88)
100Mbps 8 port fast hub with 10/100 bridge port	£485 +VAT (£569.88)
10Mbps 8 port switch	£365 +VAT (£428.88)
10Mbps 8 port switch with two 10/100 bridge ports	£499 +VAT (£586.33)
Internet station (illustrated)	£275 +VAT (£323.13)

- The cost effective way to share one internet connection over your 10Base-T network
- Uses analog or ISDN modems
- Use up to two additional modems to share fax services, bulletin board access etc.

3Com

3C509 Combo	£75 +VAT (£88.13)
3C589 PCMCIA Combo	£119 +VAT (£139.83)

OfficeConnect products:

3C16704 Hub TP4	£51 +VAT (£59.93)
3C16700 Hub 8/TPO	£79 +VAT (£92.83)
3C16702 Hub TP16C	£175 +VAT (£205.63)
3C16720 Hub 8/TP100	£485 +VAT (£569.88)
3C16730 Switch 140	£675 +VAT (£793.13)
3C410000 Remote 510	£400 +VAT (£470.00)
3C410011 Gateway 535	£995 +VAT (£1169.13)
3C8842 NetBuilder 142	£1005 +VAT (£1180.88)

CASTELLE

OfficeConnect Print Server	£245 +VAT (£287.88)
OfficeConnect Fax Server	£1075 +VAT (£1263.13)
OfficeConnect CD-ROM Server	£450 +VAT (£528.75)

hp

Jet Direct External Plus 3	£265 +VAT (£311.38)

Cabling & Terminators

Ethernet cable with BNC plugs: 5m length	£8.50 +VAT (£9.99)
10m length	£14.00 +VAT (£16.45)
20m length	£20.00 +VAT (£23.50)
BNC 'T' Connector	£3.20 +VAT (£3.76)
Through Connector	£1.80 +VAT (£2.12)
Cable plug	£1.75 +VAT (£2.06)
Terminator	£2.00 +VAT (£2.35)

MULTIMEDIA LABS SPEAKER SYSTEMS

Multimedia Labs ▶ TC1680

High End, Thin Line, Tri-Amp with SP7002 and SP508 Speakers

PC Amp, with it's advanced three channel amplifier incorporating Spatializer® 3-D Audio Technology, 2 way satellite speakers and an earth shaking subwoofer, is the first and last multimedia sound system you need ever purchase!

PC PRO April 1997 "The system produced a well defined top end sound. Bass response is more than adequate, and the complex controls allow users to modify the sound to their own tastes."

only £109+VAT (£128.08)

(Monitor not included!)

▶ TC 1500

Compact Hi-Fi Stereo 75 Watt Amplifier System

A BARGAIN AT ONLY £49+VAT (£57.58)

- Micro size amplifier 1⅛"W x 7"H x 6"D giving 12 Watts RMS per channel at less than 1% THD (1kHz).
- 75 Watts maximum power rating both channels driven.
- Unique palm size remote IR control.
- Two way speaker system with side firing 4" woofers and front firing high frequency piezo tweeters

SPECIAL OFFER! TC1500 & SP7001 £85+VAT (£99.88)

UPGRADE your existing speaker system with the

Killer Sub ▶ SP7001

- [illegible] RMS – ono power with built in [illegible] tronic crossover.
- Free standing, speaker cabinet made of natural wood material for perfection in bass response. Size: 6¼"W x 12"H x 10"D.

50 Watt Amplified Bass Reflex Subwoofer

only £39+VAT (£45.83)

Front View Rear View

CD-ROM DRIVE & PACKS

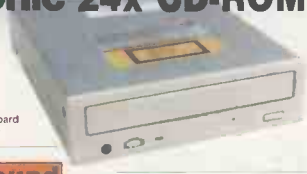
Panasonic 24x CD-ROM

Bare drive

£45+VAT (£52.88)

Includes cables

NB – Bare drive and packs 21B/22B/23B require motherboard with secondary IDE connector



Pack 22B
Bare drive with Sound Blaster SB 16 card
£64+VAT (£75.20)

Pack 23B
Bare drive with SB 16 and M/M Labs TC1500 speakers
£108+VAT (£126.90)

Pack 21B
Bare drive with ▶ TC 1500 M/M Labs TC1500 speakers
£89+VAT (£104.58)

Pack 24B
Bare drive with AWE64 Gold
£159+VAT (£186.83)

NEW! Panasonic CR-586 32x IDE CD-ROM drive.....£70+VAT (£82.25)
Panasonic CR-508 24x SCSI CD-ROM drive.....£65+VAT (£76.38)

NEW! DVD DRIVE

Panasonic SR-8582B 2xDVD drive (20x CD-ROM drive, IDE Interface).....£99+VAT (£116.33)

Panasonic PD DRIVE

650Mb rewritable optical disk drive

Easy to use, high speed, high capacity, rewritable and removable storage – combined with a fast CD-ROM drive.

- Uses high speed, optical disks with massive 650Mb capacity
- Amazingly low cost media
- As easy to use as a floppy drive
- Reads conventional CD-ROM disks with 8x performance

Internal model
£199+VAT (£233.83)

External model
£269+VAT (£316.08)

PD media
Single.....£19+VAT (£22.33)
3 pack.....£49+VAT (£57.58)
10 pack.....£149+VAT (£175.08)

Requirements: Enhanced IDE interface and 5.25" drive bay (internal version only); Parallel port (external version); Pentium processor or equivalent; and DOS 6.0, Windows 3.1, Windows 95 or Windows NT 3.51 or higher

CD-ROM AUTO-CHANGER

- 6 disc half height internal auto-changer
- Change discs with a mouse click or the touch of a button
- True 8x performance – 190ms access
- Enhanced IDE interface – requires suitable sound card or motherboard

only £99+VAT (£116.33)

Drive with SoundBlaster 16 card.....£144+VAT (£169.20)

CD-524EK 24x IDE CD-ROM drive.....£69+VAT (£81.08)
CD-532EK 32x IDE CD-ROM drive.....£89+VAT (£104.58)
CD-524S 32x SCSI CD-ROM drive.....£99+VAT (£116.33)
CD-R55SK 4x12 SCSI CD-R kit.....£334+VAT (£392.45)

CD-ROM WRITERS

Everything you need to make and read your own data/audio CDs!

SureStore CD-RW 7100 (internal kit).....£249+VAT (£292.58)
SureStore CD-RW 7100 (external kit).....£320+VAT (£376.20)
SureStore CD-RW 7200 (internal kit).....£260+VAT (£305.50)
Adaptec Easy CD Creator software for above.....£69+VAT (£81.08)

Blank CD-RW disk.....£15+VAT (£17.63)
Blank CD-R disks: Single.....£2+VAT (£2.35) 5 pack.....£9+VAT (£10.58)
10 pack.....£17+VAT (£19.98) 20 pack.....£33+VAT (£38.78)
Labeller kit: label applicator, labelling software, and 20 labels
CD labeller kit.....£22+VAT (£25.85) 50 labels.....£10+VAT (£11.75)

KEYBOARDS, JOYSTICKS ETC

MITSUMI Mouse as used in EveshamVale Prestige PCs.....£10+VAT (£11.75)
EveshamVale Windows 95 Keyboard.....£10+VAT (£11.75)

KEY TRONIC
'Windows 95' Keyboard as used in EveshamVale Platinum PCs.....£25+VAT (£29.38)

"one of the best weighted and most comfortable set of keys of any mainstream keyboard and with its well raked rows and full Win95 compatibility, it gets our top vote."
PC Plus, January 1997

DIGITAL EDGE

F1 SIM.....£135+VAT (£158.63)
F1 SIM compact.....£65+VAT (£76.38)

F1 SIM RACING SIMULATOR

PCGAMER
"as comfortable and realistic as you could hope for... This truly is the Aston Martin of steering wheels"
Rating: 90% January 1998

MSC MSC Multi-System – combined steering wheel, handlebars, yoke.....£49+VAT (£57.58)

Flightstick.....£27+VAT (£31.73)
Flightstick Pro.....£49+VAT (£57.58)
Virtual Pilot.....£62+VAT (£72.85)
Virtual Pilot Pro.....£65+VAT (£76.38)
Pro Pedals.....£69+VAT (£81.08)

Suncom TECHNOLOGIES

FX3000.....£19+VAT (£22.33)
F-15E series – an authentic replica of the F-15E Strike Eagle flight stick:
F-15E Hawk.....£25+VAT (£29.38)
F-15E Raptor.....£39+VAT (£45.83)
F-15E Talon.....£49+VAT (£57.58)

Microsoft

IntelliMouse.....£45+VAT (£52.88)
Home Mouse with 'Intellipoint' software.....£18+VAT (£21.15)
Natural Keyboard.....£57+VAT (£66.98)

ZY-FI SPEAKERS

ZY-FI COMPACT £12+VAT (£14.10)

- 16 Watts PMPO (4 Watts RMS)
- Active or Passive use (active use requires batteries or optional mains adaptor)
- Magnetically shielded • Volume Control
- Bass Booster • Treble Booster

ZY-FI 2 £30+VAT (£35.25)

- 64 Watts PMPO (12 Watts RMS)
- Magnetically shielded
- Volume & tone controls
- Styling as Zy-Fi2 Pro (below)

"Zy-Fi2s are definitely a sound investment." PC Answers "Recommended"

Classic Zy-Fi – the original.....£29+VAT (£34.08)

ZY-FI 2 PRO £49+VAT (£57.58)

"These are the boys to add a bit of oomph to your PC." PC Answers "Recommended" March 1995

Rating 9/10. "Excellent value for money." PC Zone April 1995

Rating 9/10. "a lot of sound for the money" PC Plus April 1996

Rating 6/6. "sound quality on a different level from the other speakers" PC Guide "Best Buy" September 1996

- 120 Watts PMPO (36 Watts RMS)
- Magnetically Shielded
- 140 x 230 x 150mm
- Volume Control
- Bass control
- Treble control

ZY-FI BASS £75+VAT (£88.13)

- Subwoofer unit 80 Watts PMPO (20 Watts RMS). 273 x 165 x 275mm
- Satellite speakers 24 Watts PMPO (6 Watts RMS). 120 x 96 x 98mm
- 5.25" subwoofer drive unit
- 3" satellite units
- Magnetically shielded
- Individual volume and bass controls
- External mains PSU

CD DRIVES

CREATIVE LABS Discovery 64 24x CD-ROM drive kit.....£99+VAT (£116.33)
DVD Encore.....£225+VAT (£264.38)

SOUND CARDS

Evesham Vale Plug-N-Play 3D sound card with Spatializer 3D sound system, universal wavetable upgrade port and MIDI/joystick port.....£19+VAT (£22.33)

CREATIVE LABS SoundBlaster AWE64 Gold.....£117+VAT (£137.48)

Killer sound for awesome 3D gaming!

Sound is amplified, directed to specific positions, and approaches you from all directions

Requires Windows 95, Pentium P90 or higher, 8Mb RAM, PCI expansion slot, CD-ROM drive, and amplified speakers
Please note: OEM version

only £95+VAT (£111.63)

Evesham Micros
FREEPHONE DIRECT SALES 0800 6345 999
Web: http://www.evesham.com
Evesham Micros BIRMINGHAM 0121 683 6868
Fax: 0121 683 6869

Mustek

FLATBED SCANNING

- All Mustek Scanexpress flatbeds use *single-pass* scanning – much faster than models which scan each colour separately
- Colour, 8-bit grey and line art modes
- 12 built-in halftoning patterns
- Simply connects to your parallel port for easy installation
- 'Small footprint' design with compact exterior dimensions and 216mm x 296mm scan area
- Includes *ImagePals GO!* image scanning and photograph re-touching software, and powerful *Textbridge OCR* software

Requirements: Pentium processor, Windows 3.11/95 (Windows 95 recommended), mouse, CD-ROM drive, SVGA graphics or higher, at least 16Mb RAM, and hard disk with at least 70Mb free

from £69 +VAT (£81.08)

EASY INSTALL – Connects to Parallel port

PLEASE NOTE: remember that large scans at high resolution require a lot of RAM (or a lot of hard disk space and patience). For example, an A4 document scanned in 24 bit colour at 300dpi is 24Mb. At 600dpi it is 96Mb!

HOMEPC WINNER LAB – "...ease of use, great colour quality and exemplary OCR output ...offers both low price and impressive speed via its Enhanced Parallel Port interface ...fast and easy to setup–just five minutes and you're done" *August 1997* Mustek 600

PC FORMAT "The bundled software is impressive... The scans themselves...are satisfying and higher than you could reasonably expect for the price. The design of the case is sleek and it's compact enough to fit on the smallest desktop." *March 1997* Mustek 600

PC PRO – "As far as output quality is concerned the Scanexpress excelled... the Scanexpress 1200P is a good choice...and a cost effective one as well." Quality 5/6 Value for money 5/6 *March 1998* Mustek 1200

CD-ROM Today – "This scanner gives a whole new meaning to easy installation – it really is an absolute dream." *June 1997* Mustek 600

SYMBOL OF EXCELLENCE WINNER

FamilyPC – Family Tested BEST BUY hardware

Scanexpress 600 ..... £65 +VAT (£76.38)
Optical resolution: 300x600dpi, Interpolated resolution: 1200dpi, Colour depth: 24-bit

Scanexpress 1200 ..... £109 +VAT (£128.08)
Optical resolution: 600x1200dpi, Interpolated resolution: 2400dpi, Colour depth: 30-bit

Software offers with any Mustek scanner:
Photo Impact 3.0 SE and Wordlinx ..... £30+VAT (£35.25)
Photoshop 3.0 LE ..... £40+VAT (£47.00)

Mustek Colour 800 hand scanner:
with internal interface card ..... £49+VAT (£57.58)
with 'parallel port' interface .... £99+VAT (£116.33)

hp
ScanJet 5100C ..... £159+VAT (£186.83)
ScanJet 6100C ..... £479+VAT (£562.83)
Office Pro 4C ..... £599+VAT (£703.83)
Graphics Pro 4C .... £549+VAT (£645.08)

PICTURE THIS! – DIGITAL CAMERAS

Superb colour pictures – straight into your PC.
No fuss, no films, no developing costs, and no scanner required!

Digital Camera VDC-200

- Capture vibrant colour images any time, any place for instant use with your PC or laptop
- Use it to build-up your family album, or create flyers, adverts, newsletters, reports, or for property guides or insurance claims

- Simple point and shoot operation – fixed focus lens and automatic exposure
- 1.8" colour LCD screen for viewfinding and picture review
- Up to 640x480 resolution with 24 bit colour
- Fixed focus lens – 250mm to infinity
- Store up to 48 images in memory, then download to your PC with the serial cable supplied
- Built-in 2Mb flash memory
- Internal slot supports CF card for extra memory
- Auto flash
- Preview the output image on the camera, a PC or your TV screen
- Complete with batteries, image editing software, TWAIN driver, carry pouch and Mains power supply!

System requirements: as VDC-100

£179 +VAT (£210.33)

Digital Camera VDC-100

Mustek

- Up to 480x320 resolution with 24 bit colour
- Store up to 20 images in memory
- iPhoto Express image editing software supplied to view and manipulate your images on your PC. You can also create exciting photo-based documents such as personalised greetings cards and invitations
- Compact lightweight design
- Includes carrying pouch

System requirements: 486 or higher processor, Windows 3.1 or higher, 3.5" floppy disk drive, hard disk drive with at least 15Mb available, 8Mb RAM or higher, 256 colour VGA display or higher, RS232 serial port

£79 +VAT (£92.83)

CASIO
QV-11 ..... £225+VAT (£264.38)
QV-70 ..... £247+VAT (£290.23)
QV-200 ..... £299+VAT (£351.33)
QV-700 ..... £375+VAT (£440.63)
Mains PSU for QV-11/100/200/300 ..... £12+VAT (£14.10)
Mains PSU for QV-70/700 ..... £24+VAT (£28.20)
DP-8000 printer ..... £299+VAT (£351.33)
Postcard pack (25) ..... £15+VAT (£17.63)
Paper pack (25) ..... £15+VAT (£17.63)

VIDEO CAPTURE

LOGITECH

Instant video capture.

SNAPPY Video Snapshot

16 million colours at up to 1500x1125

£148 +VAT (£170.38)

- Snappy Video Snapshot grabs amazing stills from any PAL video source such as camcorder, VCR, TV etc.
- Includes Adobe's outstanding PhotoDeluxe for painting and retouching your pictures, Kai's Power Goo for incredible special effects, and Gryphon's award-winning Morph programme.

System requirements: 386 or higher processor, Windows 3.1 or higher, hard disk drive with at least 4Mb available, 8Mb RAM or higher, 256 colour VGA display or higher, parallel port

SOFTWARE BARGAINS

COREL
CorelDRAW! 7 for Windows 95 CCP ..... £149+VAT (£175.08)
Office Pro 7 CCP ..... £329+VAT (£151.58)
Word Perfect Suite 8 CCP ..... £99+VAT (£116.33)

MICROSOFT
Autoroute Express 5 ..... £43+VAT (£50.53)
Bookshelf ..... £35+VAT (£41.13)
Cinemania 97 ..... £22+VAT (£25.85)
Encarta 97 ..... £34+VAT (£39.95)
Encarta 97 World Atlas ..... £34+VAT (£39.95)
Flight Sim for Win 95 ..... £32+VAT (£37.60)
FrontPage 97 ..... £119+VAT (£139.83)
Greetings Workshop ..... £22+VAT (£25.85)
Home Essentials ..... £89+VAT (£104.58)
Money 97 ..... £22+VAT (£25.85)
Music Central 97 ..... £22+VAT (£25.85)
Windows NT Workstation full ..... £229+VAT (£269.08)
NT Workstation upgrade V3.51 to V4 ..... £112+VAT (£131.60)
NT Server 5 user ..... £620+VAT (£728.50)
NT Server client licence ..... £29+VAT (£34.08)
Office 97 Pro CCP ..... £225+VAT (£264.38)
Office 97 Std CCP ..... £163+VAT (£191.53)
Office 97 Small Business Edition ..... £163+VAT (£191.53)
Picture It! ..... £36+VAT (£42.30)
Project ..... £310+VAT (£364.25)
Publisher 97 ..... £75+VAT (£88.13)
Publisher Student License £35+VAT (£41.13)
Windows 95 upgrade ..... £65+VAT (£76.38)

Office 97 Professional ..... £99 +VAT (£116.33)
For the home user we offer Office97 Professional – Student Edition. Are you or someone in your family aged 5 or over and in full or part-time education on a Dept. for Education & Employment (DfEE) recognised course as either a student or teacher? If so you qualify for this offer! (Product supplied via voucher redemption.)

DR SOLOMON
for Win 95 (Quarterly) ..... £77+VAT (£90.48)
for Win 95 (Monthly) ..... £138+VAT (£162.15)
for Win NT (Quarterly) ..... £78+VAT (£91.65)
for Win NT (Monthly) ..... £139+VAT (£163.33)
for Windows NT Server (Quarterly) ..... £259+VAT (£304.33)
for Windows NT Server (Monthly) ..... £389+VAT (£457.08)

McAFEE
Deluxe (2 years) ..... £55+VAT (£64.63)
Quarterly updates (1 year) ..... £35+VAT (£41.13)
Internet updates (1 year) ..... £25+VAT (£29.38)

NORTON
Utilities for Win 95 CCP ..... £31+VAT (£36.43)
Utilities for Win 95 full ..... £53+VAT (£62.28)
Utilities for Win NT full ..... £68+VAT (£79.90)
WinFax Pro for Win 95 ..... £69+VAT (£81.08)
AntiVirus for Win 95 ..... £49+VAT (£57.58)

OTHERS
Powerquest DriveCopy ..... £19+VAT (£22.33)
PQuest Partition Magic ..... £45+VAT (£52.88)
Taxcalc ..... £25+VAT (£29.38)
Cheyenne Backup ..... £39+VAT (£45.83)
Cheyenne Infinite Disk ..... £39+VAT (£45.83)
Cheyenne Anti-Virus ..... £39+VAT (£45.83)
Rescue Me for Win 3.1/95 ..... £25+VAT (£29.38)
Rescue Me (NT) ..... £35+VAT (£41.13)
Checkit Diag ..... £45+VAT (£52.88)
Route 66 UK & Ireland ..... £35+VAT (£41.13)
Route 66 Europe ..... £36+VAT (£42.30)
Route 66 UK Ultimate Traveller ..... £72+VAT (£84.60)

HEWLETT PACKARD

PRINTERS

HP DeskJet 720C

£182 +VAT (£213.85)

The colour business printer that does it all

■ HP's PhotoREt II and ColourSmart II give outstanding results every time ■ Up to 8ppm black, up to 4ppm colour ■ Supports Intel's MMX technology for faster colour printing ■ Designed for MS Windows 3.1x/95/NT4 ■ Amazingly quiet ■ 1000 page per month duty cycle

Black consumable kit...£19+VAT (£22.33) ... 3 pack...£50+VAT (£58.75)
Colour consumable kit...£20+VAT (£23.50) ... 3 year OSM ..£Call

HP OfficeJet 635

£399 +VAT (£468.83)

All in one colour printer, plain paper fax, scanner and copier

PRINT ■ 600x600dpi black with REt ■ 600x300dpi colour with ColourSmart ■ Versatile media handling including envelopes
FAX ■ Plain paper and PC faxing ■ 100 speed dials ■ Approx 65 page memory ■ Confirmation and activity reports
SCAN ■ 300dpi optical (1200dpi interpolated) ■ 24-bit colour ■ 256 greyscale ■ OCR software included ■ TWAIN interface
COPY ■ 600x300dpi text ■ 300x300dpi graphics/photos ■ Sheet-fed design ■ Up to 99 copies from original

Black consumable kit...£19+VAT (£22.33) ... 3 pack...£50+VAT (£58.75)
Colour consumable kit...£22+VAT (£25.85) ... 3 year OSM....£Call

LaserJet 5000

The new standard in A3 performance printing

...flows first ...seconds ...1200dpi print quality without performance sacrifice ■ Full-bleed A3 output ■ 16ppm engine and 100MHz RISC processor ■ PostScript Level 2 ■ Duplexing unit for double sided printing ■ Straight-through paper path allows a wide variety of media ■ HP JetAdmin and HP WebJetAdmin software provided easy LAN setup ■ Enhanced driver support, including the latest AutoCAD

£1079 +VAT (£1267.83)

LaserJet 5000 N ..... £1549+VAT (£1820.08)
LaserJet 5000 GN ..... £1899+VAT (£2231.33)
Consumable kit...£Call HP Support pack 3 year On-Site agreement...£Call

HP SCANNERS

HP ScanJet 5100C ..... £159+VAT (£186.83)
HP ScanJet 6100C ..... £479+VAT (£562.83)
HP Office Pro 4C ..... £599+VAT (£703.83)
HP Graphics Pro 4C ..... £549+VAT (£645.08)

HEWLETT PACKARD
Authorised Reseller
Personal Computer
Products

HP DeskJet 670C ..... £123+VAT (£144.53)
Black consumable kit ..... £19+VAT (£22.33)
Black consumable kit ...3 pack £50+VAT (£58.75)
Colour consumable kit ..... £18+VAT (£21.15)
3 year on-site maintenance ..... £40+VAT (£47.00)

HP DeskJet 340 ..... £145+VAT (£170.38)
Black consumable kit ..... £18+VAT (£21.15)
Black consumable kit ...3 pack £48+VAT (£56.40)
Colour consumable kit ..... £19+VAT (£22.33)
3 year on-site maintenance ..... £40+VAT (£47.00)

HP DeskJet 690C ..... £152+VAT (£178.60)
Black consumable kit ..... £19+VAT (£22.33)
Black consumable kit ...3 pack £50+VAT (£58.75)
Colour consumable kit ..... £18+VAT (£21.15)
3 year on-site maintenance ..... £40+VAT (£47.00)

HP DeskJet 690C with EasyPhoto Reader ..£172+VAT (£202.10)

HP DeskJet 890 ..... £213+VAT (£250.28)
Black consumable kit ..... £21+VAT (£24.68)
Black consumable kit ...3 pack £59+VAT (£69.33)
Colour consumable kit ..... £26+VAT (£30.55)
3 year on-site maintenance ..... £66+VAT (£77.55)

HP DeskJet 1100 ..... £299+VAT (£351.33)
Black consumable kit ..... £22+VAT (£25.85)
Black consumable kit ...3 pack £60+VAT (£70.50)
Colour consumable kit ..... £23+VAT (£27.03)
3 year on-site maintenance ..... £80+VAT (£94.00)

HP DeskJet 1600 ..... £899+VAT (£1056.33)
Black consumable kit ..... £20+VAT (£23.50)
Black consumable kit ..... £52+VAT (£61.10)
Colour consumable kit ..... £21+VAT (£24.68)
3 year on-site maintenance ...£105+VAT (£123.38)

HP DeskJet 1600CM £1329+VAT (£1561.58)
Consumables & OSM as DeskJet 1600

HP OfficeJet 350 ..... £449+VAT (£527.58)
HP OfficeJet 590 ..... £319+VAT (£374.83)
HP OfficeJet Pro 1150C ..£599+VAT (£703.83)
Black consumable kit ..... £21+VAT (£24.68)
Black consumable kit ...3 pack £53+VAT (£62.28)
Colour consumable kit ..... £24+VAT (£28.20)
3 year on-site maintenance ..... £118+VAT (£138.65)

HP LaserJet 6 L ..... £249+VAT (£292.58)
Consumable kit ..... £45+VAT (£52.88)
Consumable kit ...3 pack £116+VAT (£136.30)
3 year on-site maintenance ..... £77+VAT (£90.48)

HP LaserJet 6 P ..... £489+VAT (£574.58)
Consumable kit ..... £59+VAT (£69.33)
Consumable kit ...3 pack £153+VAT (£179.78)
3 year on-site maintenance ..... £142+VAT (£166.85)

HP LaserJet 6 MP ..... £599+VAT (£703.83)
Consumables & OSM as LaserJet 6 P

HP LaserJet 4000 ..... £829+VAT (£974.08)
HP LaserJet 4000 T ..... £949+VAT (£1115.08)
HP LaserJet 4000 N ..... £1059+VAT (£1244.33)
HP LaserJet 4000 TN ...£1189+VAT (£1397.08)
Consumable kit ..... £Call
3 year on-site maintenance ..... £Call

HP LaserJet 5 Si ..... £1849+VAT (£2172.58)
Consumable kit ..... £110+VAT (£129.25)
Consumable kit ...3 pack £289+VAT (£339.58)
3 year on-site maintenance ..... £530+VAT (£622.75)

HP LaserJet 5 Colour ..£2949+VAT (£3465.08)
3 year on-site maintenance ..... £948+VAT (£1113.90)

HP LaserJet 5 M Col ....£3749+VAT (£4405.08)
3 year on-site maintenance ..... £948+VAT (£1113.90)

LEXMARK

1000 Colour Jetprinter
only (£85.11+VAT)
£100 inc VAT

The family colour printer with Disney's *Print Studio CD-ROM* featuring Hercules

Black consumable kit....£Call Colour consumable kit....£29+VAT (£34.08)
On-site maintenance ..... £37+VAT (£43.48)

3000 Colour Jetprinter ..... £125+VAT (£146.88)
Black consumable kit ..... £20+VAT (£23.50)
Colour consumable kit ..... £24+VAT (£28.20)
On-site maintenance ..... £37+VAT (£43.48)

7000 Colour Jetprinter ..... £215+VAT (£252.63)
Black consumable kit ..... £25+VAT (£29.38)
Colour consumable kit ..... £29+VAT (£34.08)
On-site maintenance ..... £37+VAT (£43.48)

EPSON®

Stylus 300 Colour ....£107+VAT (£125.73)
Black consumable kit ..... £18+VAT (£21.15)
Black consumable kit .....3 pack £48+VAT (£56.40)
Colour consumable kit ..... £19+VAT (£22.33)
3 year on-site maintenance ..... £40+VAT (£47.00)

Stylus 400 Colour ....£125+VAT (£146.88)
Consumables & OSM as Stylus 300

Stylus 600 ..... £169+VAT (£198.58)
Black consumable kit ..... £18+VAT (£21.15)
Black consumable kit .....3 pack £48+VAT (£56.40)
Colour consumable kit ..... £17+VAT (£19.98)
3 year on-site maintenance ..... £65+VAT (£76.38)

Stylus 800 ..... £221+VAT (£259.68)
Consumables & OSM as Stylus 600

Stylus 1520 ..... £549+VAT (£645.08)
Consumables & OSM as Stylus 600
3 year on-site maintenance ..... £199+VAT (£233.83)

Stylus 3000 ..... £1149+VAT (£1350.08)
Black consumable kit ..... £Call
Black consumable kit ..... 3 pack £Call
Colour consumable kit ..... £Call
3 year on-site maintenance ..... £Call

Stylus Photo ..... £215+VAT (£252.63)
Black consumable kit ..... £18+VAT (£21.15)
Black consumable kit .....3 pack £48+VAT (£56.40)
Colour consumable kit ..... £15+VAT (£17.63)
3 year on-site maintenance ..... £65+VAT (£76.38)

EPSON PAPER & FILM

S041078 A2 360dpi inkjet paper (30 sheets)	£19+VAT (£22.33)
S041065 A3 360dpi inkjet paper (100 sheets)	£19+VAT (£22.33)
S041066 A3+ 360dpi inkjet paper (100 sheets)	£22+VAT (£25.85)
S041059 A4 360dpi inkjet paper (100 sheets)	£7+VAT (£8.23)
S041063 A4 inkjet transparencies (30 sheets)	£35+VAT (£41.13)
S041073 A3 Photo quality glossy film (10 sheets)	£40+VAT (£47.00)
S041074 A3+ Photo quality glossy film (10 sheets)	£51+VAT (£59.93)
S041071 A4 Photo quality glossy film (15 sheets)	£23+VAT (£27.03)
S041107 A6 Photo quality glossy film (10 sheets)	£4+VAT (£4.70)
S041123 A2 Photo quality glossy paper (20 sheets)	£35+VAT (£41.13)
S041125 A3 Photo quality glossy paper (20 sheets)	£17+VAT (£19.98)
S041133 A3+ Photo quality glossy paper (20 sheets)	£21+VAT (£24.68)
S041126 A4 Photo quality glossy paper (20 sheets)	£7+VAT (£8.23)
S041069 A3 Photo quality inkjet paper (100 sheets)	£27+VAT (£31.73)
S041061 A4 Photo quality inkjet paper (100 sheets)	£9+VAT (£10.58)
S041106 A4 Photo quality self adhesive sheets (10)	£8+VAT (£9.40)
S041031 A4 starter pack	£14+VAT (£16.45)
S041134 Photo paper 6" x 4" (20)	£6+VAT (£7.05)

CLEARANCE BARGAINS

Categories: 1. As new, complete
2. Slightly soiled, complete
3. Soiled, incomplete

VALE NOTEBOOKS

Voyager II Mk II High spec Pentium P150, 1.4Gb HDD, 16Mb RAM, Windows 95 Category 2...£999+VAT (£1173.83)
Voyager II Docking station Category 2 ..... £129+VAT (£151.58)
Voyager II Mk I Port replicator Category 2 ..... £99+VAT (£116.33)
Quest II Docking station Category 1 ..... £149+VAT (£175.08)
Voyager Cigar lighter adaptor NEW ..... £25+VAT (£29.38)
Numerical keypad Cat 1 ..... £49+VAT (£57.58)

BACKUP DEVICES

HP Surestore 7100 ext Cat 2 ....£229+VAT (£269.08)
HP Surestore 2000 int Cat 2 ....£199+VAT (£233.83)
HP Surestore 5000 ext Cat 1 ....£299+VAT (£351.33)
HP Surestore C1525G drive only Category 2 ..... £199+VAT (£233.83)
Seagate 3.2Gb TapeStor external NEW ..... £129+VAT (£151.58)

MODEMS

Hayes 336 Business NEW..... £49+VAT (£57.58)

MONITORS

21" Iiyama MF8721 Category 2..£749+VAT (£880.08)
17" GoldStar Studioworks Category 2 ..... £249+VAT (£292.58)
17" NEC A700 Category 2 ..... £249+VAT (£292.58)
15" NEC A500 Category 2 ..... £149+VAT (£175.08)
17" Taxan 730 TCO95 Cat 2 ....£229+VAT (£269.08)
14" Optiquest V641 Category 2 ....£79+VAT (£92.83)

MICE

Truemouse NEW ..... £5+VAT (£5.88)
Truemouse PS/2 Category 1 ..... £5+VAT (£5.88)

PRINTERS

DOT MATRIX
Citizen Swift 240+ Category 2 ..£129+VAT (£151.58)

CONSUMABLES
Canon BJ-30 portable kit Cat 1 ....£29+VAT (£34.08)
Canon BJ-10E battery Cat 1..... £25+VAT (£29.38)
Kingston KTH-4000/P 4Mb for LaserJet Cat 2 ..... £25+VAT (£29.38)
Texas Instruments TI-201 toner kit Cat 1 ..... £10+VAT (£11.75)

SCANNERS

HP ScanJet 5100C Category 2..£119+VAT (£139.83)
Mustek A4 600dpi Category 2 ..... £69+VAT (£81.08)
Mustek A4 800dpi Category 2 ..... £89+VAT (£104.58)
Mustek A4 1200dpi Category 2..£109+VAT (£128.08)

SPEAKERS

Multimedia Labs SP7001 Sub woofer Category 2 ..... £40+VAT (£47.00)
Multimedia Labs TC1500 Cat 2 ....£39+VAT (£45.83)
Zydec Zy-Fi Category 2 ..... £5+VAT (£5.88)
Zydec Zy-Fi Bass Category 2 ..... £20+VAT (£23.50)

MISCELLANEOUS

Bitsurf Adaptor Ext ISDN NEW..£99+VAT (£116.33)
Casio QV300 camera Cat 2 ..... £200+VAT (£235)
Galatrek 1000VA UPS Cat 2 ....£150+VAT (£176.25)

Please contact our Evesham branch for these products. All are clearance lines, shop soiled or second hand stock and all carry 12 months warranty. This stock changes quickly – please call to check availability before ordering.

More clearance bargains are held at our other branches – please call them if you do not see what you require.

Evesham Micros

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Call us now on
0800 6345 999

TELESALES OPENING TIMES:
0900 – 1900 Monday-Friday
0900 – 1730 Saturday

Mail Order Fax:
01386•765354

Order by Email:
sales@evesham.com

Send Cheque, Postal Order or credit card details to:
**Evesham Micros Ltd.,
Unit 9, St Richards Road,
Evesham, Worcs. WR11 6TD**

– DELIVERY –

EveshamVale orders ..... (per system) £19+VAT (£22.33)
Other orders above £750 ..... £15+VAT (£17.63)
Other orders from £300 to £750 ..... £10+VAT (£11.75)
All above are Express service – normally next working day after despatch.
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These rates for UK mainland only, others please call.

Same day despatch whenever possible. Please note that 5 banking days must be allowed for cheque clearance. Immediate clearance on Bank Drafts and Building Society cheques. Account facilities available to qualified commercial customers.

Credit card orders: We do not charge the card until the goods are despatched.

AMERICAN EXPRESS Cards Welcome · MasterCard · VISA · SWITCH
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Monday-Friday 0900-1900, Saturday 0900-1730

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St Richards Rd, Four Pools Industrial Estate, Evesham, Worcs WR11 6TD
☎ 01386•765500
fax : 01386 765354

BIRMINGHAM
Melchett Rd, Kings Norton Business Centre, Kings Norton, Birmingham B30 3HP
☎ 0121•683 6868
fax : 0121 683 6869

CAMBRIDGE
5 Glisson Road, Cambridge CB1 2HA
☎ 01223•323898
fax : 01223 322883

MILTON KEYNES
320 Witan Gate, Milton Keynes MK9 2HP
☎ 01908•230898
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CHECK OUT OUR WEB SITE
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1 YEAR WARRANTY ON ALL GOODS

All orders are subject to Evesham Micros standard Terms and Conditions of trading. These are available on request.

THIS ADVERT IS EFFECTIVE FROM 1/4/98
SOME PRICES AND SPECIFICATIONS MAY CHANGE AFTER 30/4/98

PC Buyer™

All Offers Must End 30th April 1998

ISSUE 98/5

Expert Advice And Special Offers From The

UK's Nº1

Direct Computer Supplier To Homes And Small Businesses

Money Back Guarantee

MONEY BACK GUARANTEE

All Models Are Year 2000 Compliant

Buy Now... Pay Oct 98

0%

Interest Free Credit

Option available on Exec Models

266-2

HomeOffice PC™ for only

MMX™ intel inside pentium® II PROCESSOR

- Intel® 266MHz Pentium® II processor
- 64Mb SDRAM
- 6.4Gb Seagate hard disk
- 56k Voice modem
- 32 Speed LG Max CD-ROM
- 3D Creative Labs wavetable stereo sound
- ATI AGP 4Mb 3D graphics

Plus A Lot More...

£1173.83 Inc VAT.

£999 + VAT

See Inside For Full Details And Ordering Information

Freephone Time Now

0800 77 11 07

TIME® COMPUTER SYSTEMS

Buy With **Confidence** From **Time**

UK's Leading PC Supplier For 10 Years

Time Computers have been established as one of the UK's leading PC suppliers for over 10 years with many hundreds of thousands of satisfied customers. We supply more PC systems direct to home users than any other UK company.

Full Service, Support And Warranty

We have over 700 staff all dedicated to providing the best quality and service. We offer comprehensive direct hotline hardware support in addition to support via our 45 showroom service centres nationwide.

Buy Now... Pay October '98 Interest Free Credit

0% APR

Most models can be purchased on interest free credit. You can pay just 10% deposit with 6 months interest free credit - see examples below.

Example: Total PC System Price £1000 inc Vat & delivery. 6 months interest free option - pay just 10% deposit (£100) and the rest (£900) within 6 months interest free Total price = cash price = £1000. APR 0% only if fully repaid within 6 months.

2.5 years finance option - pay just 10% deposit (£100) and then nothing for 6 months. Then pay 24 equal monthly payments of £50.90. Total price £1321.75 - APR 23.9%

Time Computers HQ Is situated In the Ribble Valley near the M65 & M66 motorway network

Money Back Guarantee

MONEY BACK GUARANTEE

We endeavour to provide complete customer satisfaction, and you may, for whatever reason, return your PC complete to us within 14 days for a full refund (excluding carriage costs). This limited 14 day money back guarantee is in addition to your statutory rights.

Buy Direct From The Manufacturer - No Middlemen!

Time Computers and our sister companies (Colossus and Omega) manufacture all the PC systems we sell. This means that your PC has been designed, manufactured, configured, delivered, supported, serviced and, if necessary, upgraded by the same company. We take total responsiblity.

Direct support and service staff will provide help when needed

Designed For Home And Small Business Buyers

Our direct relationship with customers allows us to fully assess customer needs and design these features into our products. All our systems come with a 90 minute video user guide, comprehensive, yet easy to follow documentation and are ready to use with appropriate pre-loaded software.

Pre Sales Advice

Our knowledgeable sales staff are fully trained on all the latest technology available within the PC industry and are on hand to answer all your questions. They will discuss your specific requirements, provide free expert advice on the system most suitable for your needs and recommend how you will get the best out of it.

Repair And Upgrade Facilities

As well as local service centres, we have fully equipped in-house central facilities to repair all the systems we sell. This ensures a fast turn around should your system ever develop a fault. Our upgrade service will enable you to keep your system future-proof by installing new processors, more RAM and larger storage devices.

One of the Time Computers testing and configuration areas

How Can We Offer Such Amazing Value?

Compare the quality, specification, features and prices of our systems with consumer systems from other suppliers in the world. We can offer such amazing value for several reasons:

We Only Supply PC Systems We are focused and very efficient at manufacturing and supplying PC systems. We do not supply other electrical goods.

We Get Better Value From Suppliers Our huge buying power, together with the fact that we promote suppliers brands and software in our advertising allows us to negotiate very low prices on the top quality components and software.

No Middleman We manufacture and supply direct so you do not have to pay the extra 20% to 30% margin of the large electrical retailers. Our systems are therefore higher spec but cost much less!

You Can Come And See Us Unlike some direct suppliers, who are actually based overseas with redirected UK telephone numbers, we have 45 showrooms/service centres nationwide. These are located primarily in retail parks with easy access, where you can come and have a face to face chat with one of our PC specialists.

No Old Technology Because PC technology is moving at a rapid pace, a PC system from other retailers may depreciate whilst sitting in their store. We commece building your system on the day you place your order and aim to have it delivered to you within a few days. This ensures you receive the latest technology and the best possible price.

We Move Faster Our flat overhead structure, centralised resources, family culture and focus on the UK PC industry enables us to deliver more suitable products for UK consumers than the slow moving, big multinationals. VideoPhone, voice recognition and PC-TV are just some examples.

How To **Order**

Choose Direct Or Retail

Order your PC direct by calling on 0800 77 11 07 now for quick delivery or alternatively visit one of our 45 showrooms located nationwide, all fully staffed with PC specialists.

Direct Freephone Order Line

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Direct Sales Order Line
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Upgrades No - 01282 77 99 78

Head Office - Granville House, Blackburn Rd, Burnley, Lancashire. Fax: 01282 77 07 01

Showrooms Located Within The Superstores of Powerhouse

POWERHOUSE

Aylesbury - Unit 2 Cambridge Close, Cambridge Retail Park, Aylesbury. Tel: 01296 436767

Banbury - 2 Lockhead Close, Banbury Retail Park, Banbury. Tel: 01295 279585

Basildon - Unit 6B, Mayflower Retail Park, Arterial Rd, Basildon. Tel: 01268 282526

Bracknell - Unit 6B, Skimpedhill Lane Retail Park, The Peel Centre, Bracknell. Tel: 01344 486353

Brentwood - 81/85 High Street, Brentwood. Tel: 01277 263541

Bristol - Unit 2, Block C, Lysander Rd, Patchway, Cribbs Causeway, Bristol. Tel 0117 950 2076

Cambridge - The Bee Hive Centre, Coldhams Lane, Cambridge. Tel: 01223 360899

Cannock - Unit 10, Orbital Retail Centre, Cannock. Tel: 01543 468869

Cardiff Bay - Unit 1G, Ferry Road, Cardiff Bay Retail Park, Cardiff. Tel: 01222 232 453

Cardiff Newport Rd- Unit B, Segar Retail Park, Newport Rd, Cardiff . Tel: 01222 461714

Chippenham - Unit 3B, Hathaway Retail Park, Foundry Lane, Chippenham. Tel: 01249 461230

Coventry - Unit 3, Gallagher Retail Park, Stoney Stanton Rd, Coventry. Tel: 01203 663588

Dagenham - Unit 3, Merrielands Retail Park, Ripple Rd, Dagenham. Tel: 0181 517 2785

Time Showroom Within Powerhouse, Stoke

Time Showroom Glasgow

Derby - Unit 2, The Kingsway Retail Park, Derby. Tel: 01332 349443

Guildford - Ladymead Retail Park, Europa Park Rd, Guildford. Tel: 01483 562448

Hayes - Unit 4 Lombardy Retail Park, Cold Harbour Lane, Hayes. Tel: 0181 573 1531

Hedge End - Unit 1, 27 Hedge End Retail Park, Toll Bar Way, Southampton. Tel: 01489 795975

Huntingdon - Unit B, Huntingdon Retail Park, St Peters Rd, Huntingdon. Tel: 01480 459392

Ipswich - Unit 3, Sandlings Retail Park, Ransomes Way, Ipswich. Tel: 01473 729308

Kettering - Unit 5, Kettering Retail Park, Carina Road, Kettering. Tel: 01536 519813

London - Unit 2, Humphrey St,Southwark, London. Tel: 0171 394 7315

Northampton - Riverside Retail Park, Northampton. Tel: 01604 415018

Norwich - Unit 1, Blackberry Court, Sweetbriar Rd, Norwich. Tel: 01603 484752

Poole - Unit 3, Manning Heath Retail Park, Yarrow Rd, Poole. Tel: 01202 743138

Slough - 300 Bath Rd, Slough Retail Park, Slough. Tel: 01753 534636

Solihull - Unit 3, Sears Retail Park, Marshall Lake Rd, Solihull. Tel: 0121 733 1936

Southampton - Unit 4, Nursling Ind Estate, Southampton. Tel: 01703 740693

Stevenage - Roaring Meg Retail Park, Monks Wood Way, Stevenage. Tel: 01438 741435

Stoke - Festival Park, Etruria, Stoke. Tel: 01782 279895

Swindon - Unit 4, Greenbridge Retail Park, Drakes Way, Swindon. Tel: 01793 434112

Tamworth - Unit H, Ventura Retail Centre, Bitterscott, Tamworth Tel: 01827 63963

Telford - Unit 3, Telford Forge Retail Park, Colliers Way, Telford. Tel: 01952 291 372

Worcester - Unit C, Elgar Retail Park, Blackpole, Worcester. Tel: 01905 757947

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Bolton Unit 13a Middlebrook Retail Park, Bolton ***(Opens 23rd March)***

Gateshead - MetroCentre, Unit 6, Cameron Walk, Red Quadrant, Gateshead. Tel: 0191 461 0942

Glasgow - 34-38 Sauchiehall St, Glasgow. Tel: 0141 331 0573

Hull - Ferensway, Hull. Tel: 01482 223802

Leeds - Unit 13, Crown Point Retail Park, Leeds Tel: 0113 2432589

Manchester - Unit D, Trafford Retail Park, Neary Way, Urmston, Manchester. ***(Opens 10th April)***

Middlesborough - Unit 19, Teeside Retail Park, Stockton on Tees. ***(Opens 23rd April)***

Plymouth - Unit 2, Coypole Retail Park, Plymouth. ***(Opens 24th April)***

Preston - Unit 5, The Capitol Centre, London Way, Preston. Tel: 01772 562370

Sheffield - Unit K, Meadowhall Retail Park, Sheffield Tel: 0114 2431193

Watford - Unit 10, Asda Shopping Centre, St. Albans Rd, Watford. Tel: 01923 247535

▲ Time Computer Systems Showrooms

● Time Computer Systems Showrooms located within the Superstores of POWERHOUSE

▲ Time Computer Systems Showrooms Opening Soon

IMPORTANT
Ordering Information And Conditions Of Sale

Send no money now. Please phone or visit your local showroom. Prices are shown both without and with VAT and exclude delivery charge which varies with destination. UK Mainland courier delivery charge (excluding scottish highlands) is £25 +VAT = £29.38. Showroom prices that are shown as "Total Price" will include the stated delivery charge. Prices and specifications are subject to change. Goods subject to availability and to our conditions of sale copies of which are available on request. Systems normally delivered within 7 to 14 days. All goods will be delivered within 28 days unless otherwise specified. Depending on application, software packages are pre-loaded or supplied on CD with on-line help. There is a printed software guide covering the pre-loaded software. Traditional manuals and retail packs not supplied- pack shots are shown to illustrate the software only. In the PC industry, screen sizes are measured using the CRT tube size; thus the visible diagonal on a 14" screen may only be 13". All offers are limited by quantity or date. All trademarks acknowledged. Intel Inside and Pentium are registered trademarks and MMX is a trademark of Intel corporation. PC Buyer, Home PC, Home Office, Professional PC, Ultimate PC, OfficeStation, Compass and Time Logo are trademarks of Time Computer Systems Ltd. E&OE.

HomePC™

Ideal for Home and Education

From Around **£900+**

Our popular 233M HomePC™ system with Intel® Pentium® 233MHz processor with MMX™ technology includes 32Mb RAM, fast 4.3Gb hard disk, 56k modem and speech recognition at just £799 +VAT!

The 233-2 model provides higher performance and includes a Pentium II processor, 64Mb RAM, 6.4Gb hard disk and AGP graphics at just £929 +VAT

The best buy model is the 233M-2e system which provides excellent performance due to the amazing IBM MX processor with MMX technology and faster bus speeds. It also includes a Free Epson printer.

233M

HomePC

- Intel 233MHz Pentium® processor with MMX™ technology
- 32Mb EDO RAM
- 4.3Gb Seagate Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- 32 Speed LG Max CD-ROM
- 3D wavetable stereo sound
- 4Mb ATI Rage II+ graphics with 4Mb video RAM , MPEG and Microsoft direct 3D
- 512k Pipeline burst cache
- Stereo Sound Force 525 mains speakers
- 14" SVGA NI 0.28dp colour screen (15" and 17"optional)
- ATX PC'97 motherboard year 2000 compliant
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Software bundle and standard features as shown below

Product Codes: 233M 14" 399-30-300
233M 15" 399-30-301
233M 17" 399-30-302

£938.83 Inc VAT

£799 + VAT

233M-2e

HomePC

- IBM 6x86MX PR233 processor with MMX technology
- 32Mb EDO RAM
- 4.3Gb Seagate Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- 32 Speed LG Max CD-ROM
- 3D ESS wavetable stereo sound
- 4Mb SIS Advanced Graphics using 4Mb system RAM with MPEG and Microsoft direct 3D
- 512K Pipeline burst cache
- Stereo Sound Force 525 mains speakers
- 14" SVGA NI 0.28dp colour screen (15" and 17"optional)
- ATX PC'97 motherboard year 2000 compliant
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Software bundle and standard features as shown below
- **FREE** Epson 300 colour printer included

Product Codes: 233M-2e 14" 399-30-306
233M-2e 15" 399-30-307
233M-2e 17" 399-30-308

£1056.33 Inc VAT

£899 + VAT

233-2

HomePC

- Intel 233MHz Pentium II processor
- 64Mb SDRAM
- 6.4Gb Seagate Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- 32 Speed LG Max CD-ROM
- 3D Creative Labs wavetable stereo sound
- 4Mb ATI AGP 3D graphics with 4Mb video RAM , MPEG and Microsoft direct 3D
- 512k Pipeline burst cache
- Stereo Sound Force 525 mains speakers
- 14" SVGA NI 0.28dp colour screen (15" and 17"optional)
- ATX PC'97 motherboard year 2000 compliant
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- Software bundle and standard features as shown below

Product Codes: 233-2 14" 399-30-312
233-2 15" 399-30-313
233-2 17" 399-30-314

£1091.58 Inc VAT

£929 + VAT

All Systems Include

Software bundle including • SmartSuite 97 • Lotus e-mail • Pressworks • Designworks • Homewise • Microsoft Internet Explorer 4 • IBM AntiVirus • IBM Simply Speaking GOLD (microphone optional) • EZ Language 2 and Pacioli Accounts.

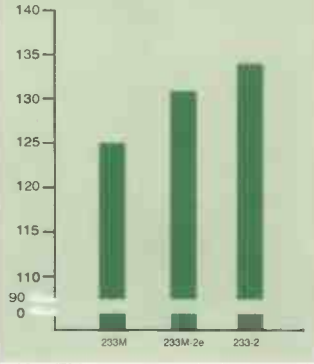
Standard system features • Windows® 95 with manual & CD • 105 keyboard • 1.44Mb floppy drive • PS/2 mouse • advanced PC'97 motherboard with all standard ports (2 USB ports, games serial, parallel etc) and year 2000 compliant BIOS • full support and 12 months warranty extendible to 5 years.

Popular Options

- Exec Models £79 +VAT = £92.83
- 15" screen Models £69 +VAT = £81.08
- 17" screen Models £218 +VAT = £256.15
- OfficeStation™ Models with Microsoft Office 97 (see page 20-21 for details)
- Media M Models with Microsoft 98 Family Pack (see page 22-23 for details)
- 5 Top Games bundle alone £38 +VAT = £44.65 (RRP £145, included with Exec models)

System Performance

(see page 8-9 for details)



Buy Now... Pay Oct 98 Interest Free Credit

Only when purchased with EXEC models

Example: Total PC system price £1000 inc. VAT and delivery purchased from 1st April 98:

6 Months Interest Free Option Pay just 10% deposit (£100) and the rest (£900) within 6 months interest free. Total price = cash price = £1000. APR 0% only if loan fully repaid within 6 months.

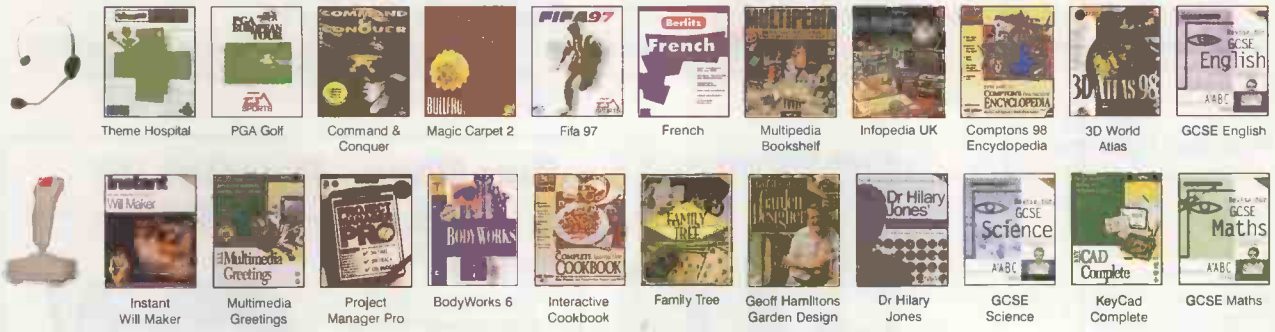
Finance also available over longer period of 2.5 years at APR 23.9%. See detailed example on Page 3 Finance is subject to status. Written details are available on request

0% APR

EXEC Models include

PC joystick, PC headset microphone, 5 top games and over 13 superb multimedia titles at only £79 +VAT = (£92.83 Inc. VAT) extra.

Product Codes: 233M 14" 303; 15" 304; 17" 305; 233M-2e 14" 309; 15" 310, 17" 311, 233-2 14" 315; 15" 316; 17" 317



Freephone Time Now Offers End 30th April

0800 77 11 07

Sales Lines Are Open: Monday - Friday 8.30am - 7pm, Saturday 9am - 5pm

See page 3 'How to Order' and Conditions of Sale

TIME COMPUTER SYSTEMS

HomeOfficePC™

Ideal for Home and Small Business Use

From Around **£1100+**

Our popular 266-2 HomeOfficePC™ system with Intel Pentium® II 266MHz processor with MMX™ technology includes 64Mb RAM, fast 6.4Gb hard disk, 56k modem, speech recognition, and advanced ATI 3D AGP graphics at just £999 +VAT!

The 233M-2 model is almost as fast and also includes a PC-TV system and VideoPhone at a lower price of just £936 +VAT. The new advanced 266M-2 system is the best buy. It provides even more power and in fact is faster than our 32Mb 300-2 Pentium II processor based systems due to the amazing IBM MX processor with MMX technology, faster bus speeds and massive 64Mb RAM.

233M-2

HomeOfficePC

- IBM 6x86MX PR233 processor with MMX™ technology
- 64Mb EDO RAM
- 6.4Gb Seagate Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- PC-TV with Teletext and video capture
- 32 Speed LG Max CD-ROM
- 3D ESS wavetable stereo sound
- SIS Advanced graphics using 4Mb system RAM, MPEG & Microsoft direct 3D
- 512k Pipeline burst cache
- Stereo Sound Force 525 mains speakers
- 14" SVGA NI 0.28dp colour screen (15" and 17" optional)
- ATX PC'97 motherboard year 2000 compliant
- VideoPhone receive
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- Compass™ Menu System
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Software bundle and standard features as shown below

Product Codes: 233M-2 14" 399-30-318
233M-2 15" 399-30-319
233M-2 17" 399-30-320

£1099.80 Inc VAT

£936 + VAT

266-2

HomeOfficePC

- Intel 266MHz Pentium II processor with MMX technology
- 64Mb EDO RAM
- 6.4Gb Seagate Ultra ATA hard disk
- 56K Rockwell flash upgradeable voice modem
- 32 Speed LG Max CD-ROM
- 3D Creative Labs wavetable stereo sound
- ATI AGP 3D graphics with 4Mb video RAM, MPEG & Microsoft direct 3D
- 512k Pipeline burst cache
- Stereo Sound Force 525 mains speakers
- 14" SVGA NI 0.28dp colour screen (15" and 17" optional)
- ATX PC'97 LX chipset motherboard year 2000 compliant
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Software bundle and standard features as shown below

Product Codes: 266-2 14" 399-30-324
266-2 15" 399-30-325
266-2 17" 399-30-326

£1173.83 Inc VAT

£999 + VAT

266M-2

HomeOfficePC

- IBM 6x86MX PR266 processor with MMX technology
- 64Mb EDO RAM
- 6.4Gb Seagate Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- PC-TV with Teletext and video capture
- 32 Speed LG Max CD-ROM
- 3D ESS wavetable stereo sound
- 4Mb SIS Advanced Graphics using 4Mb system RAM with MPEG & Microsoft direct 3D
- 512k Pipeline burst cache
- Stereo Sound Force 525 mains speakers
- 14" SVGA NI 0.28dp colour screen (15" and 17" optional)
- ATX PC'97 motherboard year 2000 compliant
- VideoPhone receive
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Compass Menu System
- Software bundle and standard features as shown below

Product Codes: 266M-2 14" 399-30-330
266M-2 15" 399-30-331
266M-2 17" 399-30-332

£1197.33 Inc VAT

£1019 + VAT

All Systems Include

Software bundle including • SmartSuite 97 • Lotus e-mail • Pressworks • Designworks • Homewise • Microsoft Internet Explorer 4 • IBM AntiVirus • IBM Simply Speaking GOLD (microphone optional) • EZ Language 2 and Pacioli accounts.

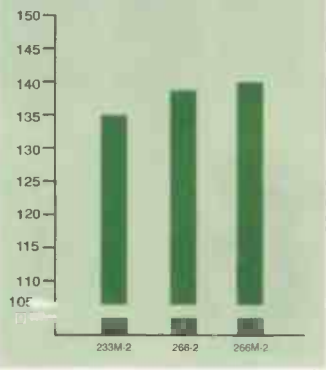
All standard features • Windows® 95 with manual & CD • 105 keyboard • 1.44Mb floppy drive • PS/2 mouse • advanced PC'97 motherboard with all standard ports (2 USB ports, games, serial, parallel etc) and year 2000 compliant BIOS • full support and 12 months warranty extendible to 5 years.

Popular Options

- Exec Models £79 +VAT = £92.83
- 15" screen Models £69 + VAT = £81.08
- 17" screen Models £218 +VAT = £256.15 extra
- Colour VideoPhone Camera £79 +VAT =£92.83 (VideoPhone models only)
- OfficeStation™ Models with Microsoft Office 97 (see page 20-21 for details)
- Media M Models with Microsoft 98 Family Pack (see page 22-23 for details)
- 5 Top Games bundle alone £38 +VAT = £44.65 (RRP £145, included with Exec models)

System Performance

(see page 8-9 for details)



Buy Now... Pay Oct 98 Interest Free Credit

Only when purchased with EXEC models

Example: Total PC system price £1000 inc. VAT and delivery purchased from 1st April 98:

6 Months Interest Free Option
Pay just 10% deposit (£100) and the rest (£900) within 6 months interest free. Total price = cash price = £1000. APR 0% only if loan fully repaid within 6 months.

Finance also available over longer period of 2.5 years at APR 23.9%. See detailed example on Page 3 Finance is subject to status. Written details are available on request

0% APR

EXEC Models include

5 top games, PC joystick, PC headset microphone and over 13 superb multimedia titles at only £79 +VAT = (£92.83 Inc. VAT) extra.

Product Codes: 233M-2 14" 321; 15" 322; 17" 323; 266-2 14" 327; 15" 328; 17" 329; 266M-2 14" 333; 15" 334; 17" 335;

Freephone Time Now Offers End 30th April

0800 77 11 07

Sales Lines Are Open: Monday - Friday 8.30am - 7pm, Saturday 9am - 5pm

See page 3 'How to Order' and Conditions of Sale

TIME COMPUTER SYSTEMS

ProfessionalPC™

From Around **£1200+**

Ideal for the professional power user

The new 266-2 ProfessionalPC™ system with Intel® 266MHz Pentium® II processor includes 64Mb RAM, fast 6.4Gb hard disk, 56k modem, speech recognition, large 15' screen, premium speakers and advanced ATI 3D AGP graphics at just £1079 +VAT!

Our best buy advanced 266M-2 system provides even more power and due to the amazing IBM MX processor with MMX™ technology and faster bus speeds. It also includes PC-TV system with Teletext and VideoPhone receive at an amazing £1099 +VAT.

266-2

ProfessionalPC

- Intel 266MHz Pentium® II processor
- 64Mb SDRAM
- 6.4Gb Seagate Ultra ATA hard disk
- 56k Voice modem
- 32 Speed LG Max CD-ROM
- 3D Creative Labs wavetable stereo sound
- ATI AGP 3D graphics with 4Mb video RAM, MPEG and Microsoft direct 3D
- 512k Pipeline burst cache
- Premium mains speakers
- 15" SVGA NI 0.28dp colour screen
- ATX PC'97 LX chipset motherboard year 2000 compliant
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Software bundle and standard features as shown below

Product Codes: 266-2 15" 399-30-337
266-2 17" 399-30-338

£1267.83 Inc VAT

£1079 + VAT

266M-2

ProfessionalPC

- IBM 6x86MX PR266 processor with MMX™ technology
- 64Mb EDO RAM
- 6.4Gb Seagate Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- PC-TV with Teletext and video capture
- 32 Speed LG Max CD-ROM
- 3D ESS wavetable stereo sound
- 4Mb SIS Advanced Graphics using 4Mb system RAM with MPEG and Microsoft direct 3D
- 512k Pipeline burst cache
- Premium mains speakers
- 15" SVGA NI 0.28dp colour screen
- ATX PC'97 motherboard year 2000 compliant
- VideoPhone receive
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Compass Menu System
- Software bundle and standard features as shown below

Product Codes: 266M-2 15" 399-30-342
266M-2 17" 399-30-343

£1291.33 Inc VAT

£1099 + VAT

300-2

ProfessionalPC

- Intel 300MHz Pentium II processor
- 64Mb SDRAM
- 6.4Gb Seagate Ultra ATA hard disk
- 56K Voice modem
- 32 Speed LG Max CD-ROM
- 3D Creative Labs wavetable stereo sound
- ATI AGP 3D graphics with 4Mb video RAM, MPEG and Microsoft direct 3D
- 512k Pipeline burst cache
- Premium mains speakers
- 15" SVGA NI 0.28dp colour screen
- ATX PC'97 LX chipset motherboard year 2000 compliant
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Software bundle and standard features as shown below

Product Codes: 300-2 15" 399-30-346
300-2 17" 399-30-347

£1385.33 Inc VAT

£1179 + VAT

All Systems Include

Software bundle including • SmartSuite 97 • Lotus e-mail • Pressworks • Designworks • Homewise • Microsoft Internet Explorer 4 • IBM AntiVirus • IBM Simply Speaking GOLD (microphone optional) • EZ Language 2 and Pacioli Accounts.

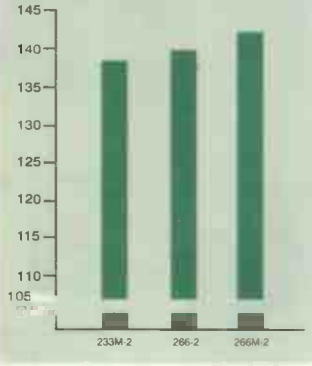
Standard system features • Windows® 95 with manual & CD • 105 keyboard • 1.44Mb floppy drive • PS/2 mouse • advanced PC'97 motherboard with all standard ports (2 USB ports, games serial, parallel etc) and year 2000 compliant BIOS • full support and 12 months warranty extendible to 5 years.

Popular Options

- Exec Models £79 +VAT = £92.83
- 17" screen Models £149 +VAT = £175.08 extra to 15" models
- Colour VideoPhone Camera £79 +VAT =£92.83 (VideoPhone model only)
- OfficeStation™ Models with Microsoft Office 97 (see page 20-21 for details)
- Media M Models with Microsoft 98 Family Pack (see page 22-23 for details)
- 5 Top Games bundle alone £38 +VAT = £44.65 (RRP £145, included with Exec models)

System Performance

(see page 8-9 for details)



Buy Now... Pay Oct 98 Interest Free Credit

Only when purchased with EXEC models

Example: Total PC system price £1000 inc. VAT and delivery purchased from 1st April 98:

6 Months Interest Free Option Pay just 10% deposit (£100) and the rest (£900) within 6 months interest free. Total price = cash price = £1000. APR 0% only if loan fully repaid within 6 months.

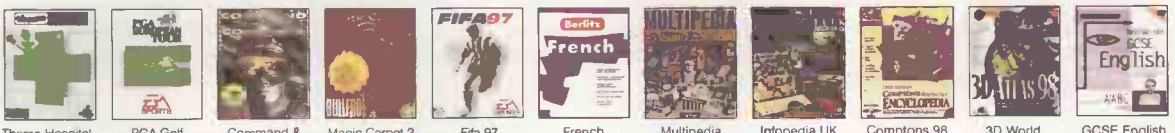
Finance also available over longer period of 2.5 years at APR 23.9%. See detailed example on Page 3 Finance is subject to status. Written details are available on request

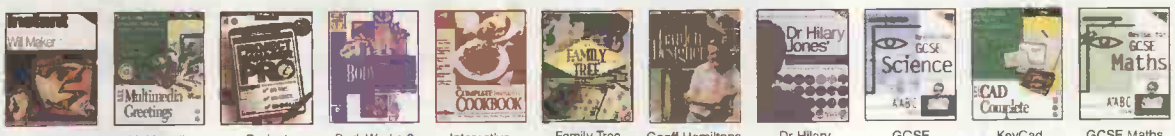
0% APR

EXEC Models include

PC joystick, PC headset microphone, 5 top games and over 13 superb multimedia titles at only £79 +VAT = (£92.83 Inc. VAT) extra.

Product Codes: **266-2** 15" 340; 17" 341; **266M-2** 15" 344; 17" 345; **300-2** 15" 348; 17" 349





Freephone Time Now Offers End 30th April

0800 77 11 07

Sales Lines Are Open: Monday - Friday 8.30am - 7pm, Saturday 9am - 5pm

See page 3 'How to Order' and Conditions of Sale

TIME COMPUTER SYSTEMS

UltimatePC™

The most powerful systems you can buy

From Around **£1400+**

Our 333-2 UltimatePC™ system with Intel® 333MHz Pentium® II processor includes 64Mb RAM, fast 8.4Gb hard disk, TV and Teletext, 56k modem, VideoPhone receive, speech recognition, and advanced 4Mb ATI AGP graphics from just £1269 +VAT!

Our best buy advanced 266M-2 XL system includes a superb subwoofer system and similar specification at a lower price of just £1189+VAT. The 333-2 S provides the ultimate performance and specification!

266M-2 XL

UltimatePC

- IBM 6x86MX PR266 processor
- 64Mb EDO RAM
- 8.4Gb Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- PC-TV with Teletext and video capture
- 32 Speed LG Max CD-ROM
- 3D ESS wavetable stereo sound
- 4Mb SIS Advanced graphics using 4Mb system RAM, MPEG and Microsoft direct 3D
- 512k Pipeline burst cache
- Executive subwoofer system
- 15" SVGA NI 0.28dp colour screen (17" optional)
- ATX PC'97 chipset motherboard year 2000 compliant
- VideoPhone recieve
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Software bundle and standard features as shown below

Product Codes: 266M-2 XL 15" 399-30-350
266M-2 XL 17" 399-30-351

£1397.08 Inc VAT

£1189 + VAT

333-2

UltimatePC

- Intel 333MHz Pentium® II processer
- 64Mb SDRAM
- 8.4Gb Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- PC-TV with Teletext and video capture
- 32 Speed Max CD-ROM
- 3D Creative Labs wavetable stereo sound
- ATI AGP 3D graphics with 4Mb video RAM, MPEG and microsoft direct 3D
- 512k Pipeline burst cache
- Premium mains speakers
- 15" SVGA NI 0.28dp colour screen (17" optional)
- ATX PC'97 motherboard year 2000 compliant
- VideoPhone receive
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Software bundle and standard features as shown below

Product Codes: 333-2 15" 399-30-354
333-2 17" 399-30-355

£1491.08 Inc VAT

£1269 + VAT

333-2 S

UltimatePC

- Intel 333MHz Pentium II processor
- 128Mb SDRAM
- 8.4 Gb Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- PC-TV with Teletext and video capture
- 32 Speed LG Max CD-ROM
- 3D Creative Labs wavetable stereo sound
- 8Mb ATI AGP x2 Rage Pro 3D 'Expert @ Work' graphics with 8Mb video RAM, MPEG and Microsoft direct 3D
- 512k Pipeline burst cache
- Executive subwoofer system (shown)
- 15" SVGA NI 0.28dp colour screen (17" optional)
- ATX PC'97 LX chipset motherboard year 2000 compliant
- VideoPhone recieve
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Software bundle and standard features as shown below

Product Codes: 333-2 S 15" 399-30-358
333-2 S 17" 399-30-359

£1690.83 Inc VAT

£1439 + VAT

All Systems Include

Software bundle including • SmartSuite 97 • Lotus e-mail • Pressworks • Designworks • Homewise • Microsoft Internet Explorer 4 • IBM AntiVirus • IBM Simply Speaking GOLD (microphone optional) • EZ Language 2 and Pacioli accounts.

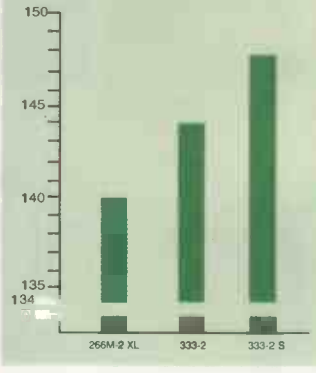
Standard system features • Windows 95 with manual & CD • 105 keyboard • 1.44Mb floppy drive • PS/2 mouse • advanced PC'97 motherboard with all standard ports (2 USB ports, games serial, parallel etc) and year 2000 compliant BIOS • full support and 12 months warranty extendible to 5 years.

Popular Options

- Exec Models £79 +VAT = £92.83
- 17" screen Models £149 +VAT = £175.08 extra to 15" models
- Colour Videophone Camera £79 +VAT =£92.83
- OfficeStation™ Models with Microsoft Office 97 (see page 20-21 for details)
- Media M Models with Microsoft 98 Family Pack (see page 22-23 for details)
- 5 Top Games bundle alone £38 +VAT = £44.65 (RRP £145, included with Exec models)

System Performance

(see page 8-9 for details)



Buy Now... Pay Oct 98 Interest Free Credit

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Finance also available over longer period of 2.5 years at APR 23.9%. See detailed example on Page 3 Finance is subject to status. Written details are available on request

0% APR

Lotus 123 | Lotus Approach 97 | Lotus Freelance 97 | Lotus Organizer 97 | Lotus ScreenCam 97 | Lotus Word Pro 97 | Lotus Mail | Internet Explorer

GSP Pressworks | GSP Designworks | GSP Homewise | Simply Speaking Gold | IBM AntiVirus | Pacioli 2000 | IMSI EZ Language 2 | Windows 95

EXEC Models include

PC joystick, PC headset microphone, 5 top games and over 13 superb multimedia titles at only £79 +VAT = (£92.83 Inc. VAT) extra.

Product Codes: **266M-2 XL**15" 352; 17" 353; **333-2** 15" 356; 17" 357; **333-2 S** 15" 360; 17" 361

Theme Hospital | PGA Golf | Command & Conquer | Magic Carpet 2 | Fifa 97 | French | Multipedia Bookshelf | Infopedia UK | Comptons 98 Encyclopedia | 3D World Atlas | GCSE English

Instant Will Maker | Multimedia Greetings | Project Manager Pro | BodyWorks 6 | Interactive Cookbook | Family Tree | Geoff Hamiltons Garden Design | Dr Hilary Jones | GCSE Science | KeyCad Complete | GCSE Maths

Freephone Time Now Offers End 30th April

0800 77 11 07

Sales Lines Are Open: Monday - Friday 8.30am - 7pm, Saturday 9am - 5pm

See page 3 'How to Order' and Conditions of Sale

TIME COMPUTER SYSTEMS

233M-2 HomeOffice PC™ £936+VAT

Ideal for the Home and Office use

The new 233M-2 HomeOffice™ PC system includes 64Mb RAM, fast 6.4Gb hard disk, 56k modem, speech recognition and superb software. It provides even more power than our 233-2 Pentium® II processor based system due to the amazing IBM MX processor with MMX™ technology and faster bus speeds. It also includes PC-TV system with Teletext, VideoPhone receive and video capture at an amazing £936 +VAT.

233M-2 HomeOffice PC

- IBM 6x86MX PR233 processor with MMX™ technology
- 64Mb EDO RAM
- 6.4Gb Seagate Ultra ATA hard disk
- 56k Rockwell flash upgradeable voice modem
- PC-TV with Teletext and video capture
- 32 Speed LG Max CD-ROM
- 4Mb SIS Advanced Graphics using 4Mb system RAM with MPEG and Microsoft direct 3D
- 3D ESS wavetable stereo sound
- 512k Pipeline burst cache
- 525 mains speakers
- 14" SVGA NI 0.28dp colour screen
- ATX PC'97 motherboard year 2000 compliant
- VideoPhone receive
- IBM speech recognition
- Recovery disk and IBM AntiVirus
- 90 Minute VHS video trainer
- 14 Day money back guarantee
- Compass™ Menu System
- Software bundle and standard features

6x86MX PROCESSOR
MANUFACTURED BY IBM

£1099.80 Inc VAT

£936 + VAT

See inside for full details.

Freephone Time Now Offers End 30th April

0800 77 11 07

Sales Lines Are Open: Monday - Friday 8.30am - 7pm, Saturday 9am - 5pm

See page 3 'How to Order' and Conditions of Sale

TIME COMPUTER SYSTEMS

Our **prices** always **reflect** the best **value.**

tiny

MMX
intel inside
pentium PROCESSOR

First we make it easy for you to understand what you get from our computers.

Tiny have been making computers since 1981 and now have thousands of satisfied customers who we listen to, helping us to understand what you want and need from a PC.

Tiny head office at Redhill

Typical Tiny Showroom

Buying Guide

Unless you are immersed in technology day in, day out the prospect of buying a PC can be a daunting one. As the UK's leading Independent PC manufacturer, we pride ourselves on understanding our customers' needs. That's why each of our staff are trained to advise you in plain English on the best system for you and your budget.

As well as being jargon-free, whenever you visit one of our showrooms you can be assured of a hassle-free zone where, until you require advice, you can spend some hands on time with your preferred system before making any decision. You can also buy your system direct via our freephone sales line.

Delivery

Our courier will deliver direct to you between 9am and 6pm on the date stated on your order form. We regret that we are unable to state exact delivery times, however, in the unlikely event of a delay, we will contact you.

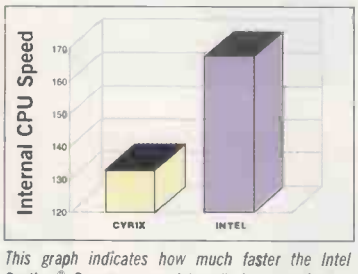
Then we make sure our computers give you a level of performance and price you won't find anywhere else.

MMX™ intel inside pentium® II PROCESSOR

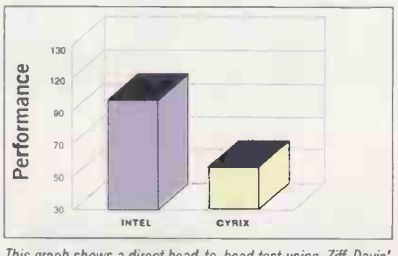
The processor is the brain of the PC and therefore makes the biggest difference to the price. All of Tiny's systems include Intel Pentium® processors with MMX™ technology or Intel Pentium® II processors which are measured in true MHz, which indicates it's clock speed. Beware of other PC manufacturers who use non-Intel processors. They often use a different scale such as Performance Related (e.g.PR200), which may be up to 30% slower in true MHz.

Warning

MMX™ technology software is designed specifically to Intel standards to deliver consistently high levels of performance in multimedia, games and graphics applications. The use of non-Intel processors can lead to performance inconsistencies with these MMX™ technology software applications and is therefore not recommended.



This graph indicates how much faster the Intel Pentium® Processor runs internally in comparison to the equivalent processor from Cyrix.



This graph shows a direct head-to-head test using Ziff-Davis' 3D WinBench 97' comparing an Intel 166 MHz Pentium® Processor with MMX™ technology to a Cyrix 6x86-PR166 MMX™ processor. This test was performed without independent verification from Ziff-Davis. A description of the environment under which the test was performed is available upon request from Fax number 01293 822933.

WARNING

IT HAS COME TO OUR ATTENTION THAT TO MATCH OUR PRICES SOME OF OUR COMPETITORS HAVE STARTED REDUCING THE SPEC ON THEIR PCs.

ALWAYS CHECK THE SPECIFICATION

tiny

0800 731 3476

Delivery charges may vary for some UK areas and Ireland. Please ask for details.

And then everything else that matters.

To help you make your decision we have compiled the following information to take the mystery out of computers and to explain much of the jargon that is used

RAM (Random Access Memory)

This is the kind of memory the contents of which disappears when you turn off your computer and is much faster to access than a hard disk. It acts as a staging post between your computer's hard disk and it's processor. All Tiny PCs feature ultra fast SDRAM. The more RAM you have in your system, the more multiple tasks your PC will be able to perform, resulting in faster, smoother applications. Investing in more RAM will provide a greater level of future proofing as more and more memory intensive applications appear.

Motherboard

This is the most important part of the system. If the processor is the brain, the motherboard is the spine which supplies all the electrical connections among various components of the computer. Tiny Computers use the latest and fastest chipsets available in the world: the i430TX PCIset and i440LX PCIset, both from Intel. The i440LX is currently the fastest in the world being over 15% faster than its nearest rival. This means your system can access programmes more quickly and will be more able to handle future hardware and software developments.

Beware of buying systems with out of date motherboards. Systems with VX and FX are obsolete and will not comply with PC '97.

Tiny customer support teams

ATX & PC '97

All Tiny systems are ATX which means that all of the components are laid out in a more structured and efficient way. With more of the components integrated into the motherboard, there are fewer wires, making upgrading and maintenance easier. ATX also provides greater reliability and power management features such as suspend and standby - saving the lengthy boot-up every time you wish to use your machine.

Beware of systems being sold by other manufacturers that do not conform to PC'97. Systems that are PC'97 compliant are guaranteed to be compatible with current and pending releases of operating system from Microsoft such as Windows - the industry leader.

Graphics Cards

The Graphics Card creates the image you see on your monitor. The type of card you have in your PC affects the quality of image you see. Thanks to MMX™ technology, all of Tiny's systems are capable of rendering 3D graphics; however, in some of our latest systems we use the AGP (Advanced Graphics Port) based ATI 3D Charger 4MB AGP or ATI Xpert @ Work 4MB SG RAM AGP, running at 133MHz which is four times faster than a standard PCI graphics adapter (33MHz). This means that for the first time, you can have true arcade quality graphics on your PC.

Warning: When buying a PC, ensure that the Graphics Card does not steal main system RAM, thus reducing the overall performance of the computer, but instead has dedicated high speed graphics memory, as in all Tiny PCs. Our dedicated graphics RAM and 3D graphics chip mean you can take advantage of the realistic 3D, full colour graphics that the multimedia applications of tomorrow will deliver.

Soundcards

The majority of existing soundcards are 16-bit, including the basic soundcard and Wavetable32. The '32' of Wavetable32 refers to the number of different instruments that can be played at once. The Intel Pentium® II processor means you can now experience 3D sound, which makes the sound appear as though it is coming from a sound stage wider than the area in which the speakers are placed, therefore creating a much more enjoyable and realistic listening experience.

Beware of other vendors offering "software" wavetable solutions - these waste valuable system resources and thus slow down the computer. Our wavetable 32 soundcard is a hardware wavetable solution, delivering superb sound, without harming system performance

CD & DVD Drives

A CD ROM Drive is essential on a modern PC. Each disk can contain up to 680MB of data and therefore is essential for storing the latest software. The CD ROM drives that come with Tiny systems are at least 24 speed max - more than fast enough for the software that is available today.

The Home Entertainment and Sound & Vision Freedom Systems (within these pages) bring you incredible images with their Intel Pentium® II processors and DVD ROM drives. The advent of DVD (Digital Versatile Disk) means that you can now view digitised video on your PC, clearer than you could ever see on your TV or at the cinema. Plus a DVD ROM drive can perform all the usual tasks of a normal CD ROM drive only better - an excellent way to future proof now!

Voice Fax/Modem

A modem connects the PC to the telephone line. All Fax Modems supplied by Tiny are internal, running at 56,600 bps. Tiny's modems also allow you to send and receive faxes just like having a normal fax machine. As with all modems you can also connect to the Internet where you can 'surf' looking for information and free software.

Cache

Cache is a smaller area of ultra fast memory that is used as a buffer between the processor and the RAM memory to prevent your computer from being slowed down by other components. This results in an overall increase in system efficiency, thereby making your PC run more smoothly.

Hard Disk Drive

This is where software is permanently stored even when the PC is switched off. It is best to buy the largest drive you can afford - as technology advances, software is needing more and more space on the hard disk. Tiny systems now include Ultra DMA Hard Drives which operate at twice the transfer rate of other IDE Hard Drives, therefore accessing your software much faster.

Monitor

All Tiny monitors are SVGA and non-interlaced (pin-sharp to reduce eye-strain). They will run most software, including 3D games and are available in 15" and 17" sizes. As the monitor is the part of the PC you will be looking at all day, it is advisable to buy the largest your budget will allow.

Software

Throughout the life of your PC, your software library will grow and grow. To get you off to a good start, Tiny has teamed up with the major software manufacturers to offer some of the best known and most useful titles available. When you buy your PC, the software will be pre-loaded to save you time, but we also supply you with back-up disks in case you decide to re-install them. Beware: A lot of our competitors sell systems without back-up disks.

The Year 2000

All Tiny PCs are 2000 compliant which means that your system will not need costly re-programming at the turn of the millennium.

COMPLETE PEACE OF MIND

All Tiny systems benefit from a high level of service including after sales support which offers a 12 months parts & labour warranty including collect & return at our expense (UK mainland). We can also tailor an on-site service contract for you.

Customer satisfaction is our utmost priority - we have a large technical call centre and a unique customer care policy; all customers are phoned within two working days of delivery of PC to ensure a high standard of customer care quality. Additionally all Tiny systems come with an easy to use system restorer pack. In case of disaster, you can reset your computer to its original format.

60 SHOWROOMS NATIONWIDE

All prices exclude delivery. E & OE. Intel Inside logo and Pentium are registered trademarks and MMX is a trademark of the Intel Corporation.

tiny

Home Enterprise Plus System

- Midi Tower Case with 3x5.25" & 4x3.5" drivebays
- ATX Form Factor conforming with PC '97
- Intel Pentium® II Processor 266 MHz
- High Performance Intel AL 440 LX Chipset Motherboard with Advanced Graphics Port (7 PCI/ISA slots)
- 512K CPU Cache
- 64MB FAST SD RAM (expandable to 384MB)
- 6.4GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 17" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1280 x1024)
- ATI 3D Charger 4 MB AGP Arcade Quality Graphics with MPEG Software
- 32 Speed Max CD ROM Drive
- Wavetable 32 3D Integrated Sound
- 500 Watt PMPO Sub Woofer and 2 Satellite Speakers
- Voice Fax/Modem 56Kbps (56K flex) with *Free* BT LineOne Internet Access
- Epson Stylus 400 Colour Printer
- 1.44MB FDD
- 2 USB Ports
- Joystick
- *New* PS2 Instant Access Keyboard
- Microsoft® Intellimouse™ with "Zoom & Scroll" button
- Windows 95

- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £300 of Microsoft Family '98 Software
- Dorling Kindersley Software
- Home Entertainment Software
- Arcade Quality Games
- 12 Months Collect & Return Parts & Labour Warranty

£1299 ex VAT
£1526.33 inc VAT

SOFTWARE INCLUDED

MICROSOFT FAMILY '98:
- MS Works 4.5 (Spreadsheet, Word Processor, Database)
- MS Encarta '98 (Encyclopaedia) • MS CD Sampler
- MS Money '98(Home Finance) • 3D Movie Maker
- MS Golf Version 3 • Flight Simulator '98

HOME ENTERTAINMENT SOFTWARE:
- Bodyworks • Kitchen Gourmet
- Design IT! 3D • The Oregon Trail
- Home Gardener • Typing Teacher
- Reading Journey • Berlitz French

DORLING KINDERSLEY
- Childrens Encyclopaedia
- The Way Things Work 2
- Encyclopaedia of Science 2
- Encyclopaedia of Nature 2
- Childrens Dictionary

AGP GAMES
- G Police
- Redline Racer
- Jazz Jack Rabbit 2

0% **PAY NOTHING UNTIL APRIL 1999 - NOT EVEN A DEPOSIT** **26.9%**

REPAYMENT EXAMPLE

PC cash price £1558.05 (Inc. Delivery £27.00+ VAT @ 17.5%) Pay whole balance on or before due payment date interest free, alternatively pay 36 monthly payments of £76.09. Total amount payable £2739.24. APR 26.9%. Interest is calculated from day one of the agreement. Written quotations upon request. Finance subject to status.

tiny

0800 731 3476

† Industry standard practice is to measure monitors using CRT size. Actual viewing area can be approx 1.2" less.

Home Value System

- Desktop Case with 2x5.25" & 3x3.5" drivebays
- ATX Form Factor conforming with PC '97
- Intel 233 MHz Pentium ® Processor with MMX™ technology
- High Performance Intel i430 TX chipset Motherboard (7 PCI/ISAslots)
- 512K Pipeline Burst Cache
- 16MB FAST SD RAM (expandable to 256MB)
- 3.2GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 15" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1024 x 768)
- ATI 3D Charger 2MB PCI Graphics Card with MPEG Software
- 24 Speed Max CD ROM Drive
- 16bit Stereo Soundcard plus 180 Watt PMPO Speakers
- 1.44MB FDD • 2 USB Ports • Joystick
- ***New*** PS2 Instant Access Keyboard
- Microsoft® Intellimouse™ with "Zoom & Scroll" button
- Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £300 of Microsoft Family '98 Software
- Software for MMX™ technology
- 12 Months Collect & Return Parts & Labour Warranty

£699 ex VAT
£821.33 inc VAT

HOME MEDIA OPTION

Pay a little extra for the Home Entertainment Software bundle worth over £180 and pay nothing until April 1999 - not even a deposit. Bundle includes • Bodyworks • Kitchen Gourmet • Design IT! 3D • The Oregon Trail • Home Gardener • Typing Teacher • Reading Journey • Berlitz French

£769 ex VAT **£903.58** Inc VAT

SOFTWARE INCLUDED

MICROSOFT FAMILY '98:
- MS Works 4.5 (Spreadsheet, Word Processor, Database)
- MS Encarta '98 (Encyclopaedia)
- MS CD Sampler
- MS Money '98 (Home Finance)
- 3D Movie Maker
- MS Golf Version 3
- Flight Simulator '98

SOFTWARE FOR MMX™ TECHNOLOGY:
- Pod • Ultimate Human Body 2
- Space Station Simulator
- Third Dimension
- Timetables of Technology

Home Study System

- Desktop Case with 2x5.25" & 3x3.5" drivebays
- ATX Form Factor conforming with PC '97
- Intel 233 MHz Pentium ® Processor with MMX™ technology
- High Performance Intel i430 TX chipset Motherboard (7 PCI/ISAslots)
- 512K Pipeline Burst Cache
- 32MB FAST SD RAM (expandable to 256MB)
- 4.3GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 15" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1024 x 768)
- ATI 3D Charger 2MB PCI Graphics Card with MPEG Software
- 24 Speed Max CD ROM Drive
- Wavetable 32 Stereo Soundcard plus 180 Watt PMPO Speakers
- Voice Fax /Modem 56Kbps (56K flex) with ***Free*** BT LineOne Internet Access
- 1.44MB FDD • 2 USB Ports
- Joystick
- ***New*** PS2 Instant Access Keyboard
- Microsoft® Intellimouse™ with "Zoom & Scroll" button
- Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £300 of Microsoft Family '98 Software
- Software for MMX™ technology
- Dorling Kindersley Software
- 12 Months Collect & Return Parts & Labour Warranty

£799 ex VAT
£938.83 inc VAT

HOME MEDIA OPTION

Pay a little extra for the Home Entertainment Software bundle worth over £180 and pay nothing until April 1999 - not even a deposit. Bundle includes • Bodyworks • Kitchen Gourmet • Design IT! 3D • The Oregon Trail • Home Gardener • Typing Teacher • Reading Journey • Berlitz French

£869 ex VAT **£1021.08** Inc VAT

SOFTWARE INCLUDED

MICROSOFT FAMILY '98:
- MS Works 4.5 (Spreadsheet, Word Processor, Database)
- MS Encarta '98 (Encyclopaedia) • MS CD Sampler
- MS Money '98 (Home Finance) • 3D Movie Maker
- MS Golf Version 3 • Flight Simulator '98

SOFTWARE FOR MMX™ TECHNOLOGY:
- Pod • Ultimate Human Body 2
- Space Station Simulator
- Third Dimension
- Timetables of Technology

DORLING KINDERSLEY
- Childrens Encyclopaedia
- The Way Things Work 2
- Encyclopaedia of Science 2
- Encyclopaedia of Nature 2
- Childrens Dictionary

Home Study Plus System

- Desktop Case with 2x5.25" & 3x3.5" drivebays
- ATX Form Factor conforming with PC '97
- Intel 233 MHz Pentium ® Processor with MMX™ technology
- High Performance Intel i430 TX Chipset Motherboard (7 PCI/ISAslots)
- 512K Pipeline Burst Cache
- 32MB FAST SD RAM (expandable to 256MB)
- 4.3GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 15" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1024 x 768)
- ATI 3D Charger 2MB PCI Graphics Card with MPEG Software
- 24 Speed Max CD ROM Drive
- Wavetable 32 Stereo Soundcard plus 180 Watt PMPO Speakers
- Voice Fax /Modem 56Kbps (56k flex) with ***Free*** BT LineOne Internet Access
- Epson Stylus 300 Colour Printer
- 1.44MB FDD • 2 USB Ports • Joystick
- ***New*** PS2 Instant Access Keyboard
- Microsoft® Intellimouse™ with "Zoom & Scroll" button
- Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £300 of Microsoft Family '98 Software
- Home Entertainment Software
- Software for MMX™ technology
- Dorling Kindersley Software
- 12 Months Collect & Return Parts & Labour Warranty

£899 ex VAT
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REPAYMENT EXAMPLE

PC cash price £1088.05 (Inc. Delivery £27.00+ VAT @ 17.5%) Pay whole balance on or before due payment date interest free, alternatively pay 36 monthly payments of £53.14. Total amount payable £1913.04. APR 26.9%. Interest is calculated from day one of the agreement. Written quotations upon request. Finance subject to status.

SOFTWARE INCLUDED

MICROSOFT FAMILY '98:
- MS Works 4.5 (Spreadsheet, Word Processor, Database)
- MS Encarta '98 (Encyclopaedia) • MS CD Sampler
- MS Money '98 (Home Finance) • 3D Movie Maker
- MS Golf Version 3 • Flight Simulator '98

SOFTWARE FOR MMX™ TECHNOLOGY:
- Pod • Ultimate Human Body 2 • Space Station Simulator
- Third Dimension • Timetables of Technology

HOME ENTERTAINMENT SOFTWARE:
- Bodyworks • Kitchen Gourmet
- Design IT! 3D • The Oregon Trail
- Home Gardener • Typing Teacher
- Reading Journey • Berlitz French

DORLING KINDERSLEY
- Childrens Encyclopaedia
- The Way Things Work 2
- Encyclopaedia of Science 2
- Encyclopaedia of Nature 2
- Childrens Dictionary

60 SHOWROOMS NATIONWIDE

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MMX™ intel inside pentium® II PROCESSOR

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- Midi Tower Case with 3x5.25" & 4x3.5" drivebays
- ATX Form Factor conforming with PC '97
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- High Performance Intel AL 440 LX Chipset Motherboard with Advanced Graphics Port (7 PCI/ISA slots)
- 512K CPU Cache
- 64MB FAST EDO RAM (expandable to 256MB)
- 4.3GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 15" Pin Cushion Control NI Power Management Colour Monitor †(Max resolution 1024 x 768)
- ATI 3D Charger 4MB AGP Arcade Quality Graphics with MPEG Software
- 32 Speed Max CD ROM Drive
- Wavetable 32 Stereo Soundcard
- 500 Watt PMPO Sub-Woofer and 2 Satellite Speakers
- Voice Fax/Modem 56Kbps (56K flex) with ***Free*** BT LineOne Internet Access
- TV Tuner with Teletext
- Epson Stylus 300 Colour Printer
- 1.44MB FDD • 2 USB Ports
- Joystick • ***New*** PS2 Instant Access Keyboard
- Microsoft® Intellimouse™ with "Zoom & Scroll" button • Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £300 of Microsoft Family '98 Software
- Arcade Quality Games
- Home Entertainment Software
- Dorling Kindersley Educational Software
- 12 Months Collect & Return Parts & Labour Warranty

SOFTWARE INCLUDED

MICROSOFT FAMILY '98:
• MS Works 4.5 (Spreadsheet, Word Processor, Database)
• MS Encarta '98 (Encyclopaedia) • MS CD Sampler
• MS Money '98 (Home Finance) • 3D Movie Maker
• MS Golf Version 3 • Flight Simulator '98

HOME ENTERTAINMENT SOFTWARE:
• Bodyworks • Kitchen Gourmet • Design IT! 3D
• The Oregon Trail • Home Gardener
• Typing Teacher • Reading Journey • Berlitz French

DORLING KINDERSLEY
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• Encyclopaedia of Science 2
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- Intel Pentium® II Processor 233 MHz
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- 512K CPU Cache
- 64MB FAST SD RAM (expandable to 384MB)
- 4.3GB Ultra DMA IDE HDD (2 x Transfer Rate)
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SOFTWARE INCLUDED

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• MS Encarta '98 (Encyclopaedia) • MS CD Sampler
• MS Money '98 (Home Finance) • 3D Movie Maker
• MS Golf Version 3 • Flight Simulator '98

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• Typing Teacher • Reading Journey • Berlitz French

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AGP GAMES
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- Midi Tower Case with 3x5.25" & 4x3.5" drivebays
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- 512K CPU Cache
- 64MB FAST SD RAM (expandable to 384MB)
- 6.4GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 15" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1024 x 768)
- ATI 3D Charger 4 MB AGP Arcade Quality Graphics with MPEG Software
- 32 Speed Max CD ROM Drive
- Wavetable 32 3D Integrated Sound plus 180 Watt PMPO Speakers
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- Joystick
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- Intel Landesk Anti-Virus Protect Software
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- Home Entertainment Software
- Arcade Quality Games
- 12 Months Collect & Return Parts & Labour Warranty

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SOFTWARE INCLUDED

MICROSOFT FAMILY '98:
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• MS Encarta '98 (Encyclopaedia) • MS CD Sampler
• MS Money '98 (Home Finance) • 3D Movie Maker
• MS Golf Version 3 • Flight Simulator '98

HOME ENTERTAINMENT SOFTWARE:
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• The Oregon Trail • Home Gardener • Typing Teacher
• Reading Journey • Berlitz French

DORLING KINDERSLEY
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• Encyclopaedia of Science 2 • Encyclopaedia of Nature 2
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- 512K CPU Cache
- 64MB FAST SD RAM (expandable to 384MB)
- 8.4GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 17" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1280 x 1024)
- ATI Xpert @ work 4MB SG RAM AGP 133 MHz Arcade Quality Graphics with MPEG Software
- DVD ROM Drive • Soft DVD (Software MPEG 2)
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- 5 x 90 Watt PMPO Powered Speakers
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- ***Tiny Cordless Infrared Keyboard***
- ***Tiny Cordless Infrared Joypad***
- Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £300 of Microsoft Family '98 Software
- Dorling Kindersley Software
- Home Entertainment Software
- Arcade Quality Games
- ***'Jumanji' & 'Space Jam' on DVD ROM***
- 12 Months Collect & Return Parts & Labour Warranty

SOFTWARE INCLUDED

MICROSOFT FAMILY '98:
- MS Works 4 (Spreadsheet, Word Processor, Database)
- MS Encarta '98 (Encyclopaedia) • MS CD Sampler
- MS Money '98 (Home Finance) • 3D Movie Maker
- MS Golf Version 3 • Flight Simulator '98

HOME ENTERTAINMENT SOFTWARE:
- Bodyworks • Kitchen Gourmet
- Design IT! 3D • The Oregon Trail
- Home Gardener • Typing Teacher
- Reading Journey • Berlitz French

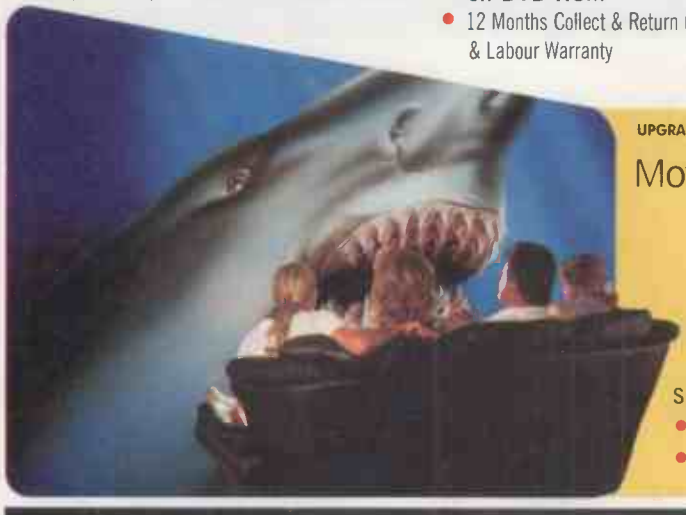
DORLING KINDERSLEY
- Childrens Encyclopaedia
- The Way Things Work 2
- Encyclopaedia of Science 2
- Encyclopaedia of Nature 2
- Childrens Dictionary

AGP GAMES
- G Police
- Redline Racer
- Jazz Jack Rabbit 2

DVD ROM
- Jumanji • Space Jam

£1699 ex VAT

£1996.33 inc VAT



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- 512K CPU Cache
- 64MB FAST SD RAM (expandable to 384MB)
- 8.4GB Ultra DMA IDE Hard Disk Drive (2 x Transfer Rate)
- 17" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1280 x 1024)
- ATI Xpert @ Work 4MB SG RAM AGP 133 MHz Arcade Quality Graphics with MPEG Software
- 32 Speed Max CD ROM Drive
- Wavetable 32 3D Integrated Sound plus 180 Watt PMPO Speakers
- Zip Drive (100MB removeable media)
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- 1.44MB FDD
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- Joystick
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- Microsoft® Intellimouse™ with "Zoom & Scroll" button
- Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-VirusProtect Software
- Over £300 of Microsoft Family '98 Software
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- Home Entertainment Software
- 12 Months Collect & Return Parts & Labour Warranty

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£1599 ex VAT
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SOFTWARE INCLUDED

MICROSOFT FAMILY '98:
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- MS Encarta '98 (Encyclopaedia) • MS CD Sampler
- MS Money '98 (Home Finance) • 3D Movie Maker
- MS Golf Version 3 • Flight Simulator '98

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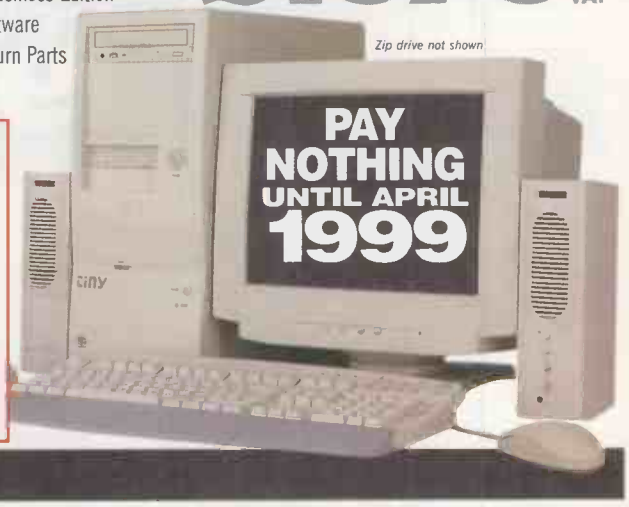

Office Power System

- Midi Tower Case with 3x5.25" & 4x3.5" drivebays
- ATX Form Factor conforming with PC '97
- Intel Pentium® II Processor 300 MHz
- High Performance Intel AL 440 LX Chipset Motherboard with Advanced Graphics Port (7 PCI/ISA slots)
- 512K CPU Cache
- 64MB FAST SD RAM (expandable to 384MB)
- 8.4GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 17" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1280 x 1024)
- ATI Xpert @ Work 4MB SG RAM AGP 133 MHz Arcade Quality Graphics with MPEG Software
- 32 Speed Max CD ROM Drive
- Wavetable 32 3D Integrated Sound plus 180 Watt PMPO Speakers
- Voice Fax/Modem 56Kbps (56K flex) with ***Free*** BT LineOne Internet Access
- 1.44MB FDD
- 2 USB Ports
- Joystick
- ***New*** PS2 Instant Access Keyboard
- Microsoft® Intellimouse™ with "Zoom & Scroll" button
- Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £300 of Microsoft Family '98 Software
- Microsoft Office Small Business Edition
- Home Entertainment Software
- 12 Months Collect & Return Parts & Labour Warranty

£1399 ex VAT
£1643.83 inc VAT

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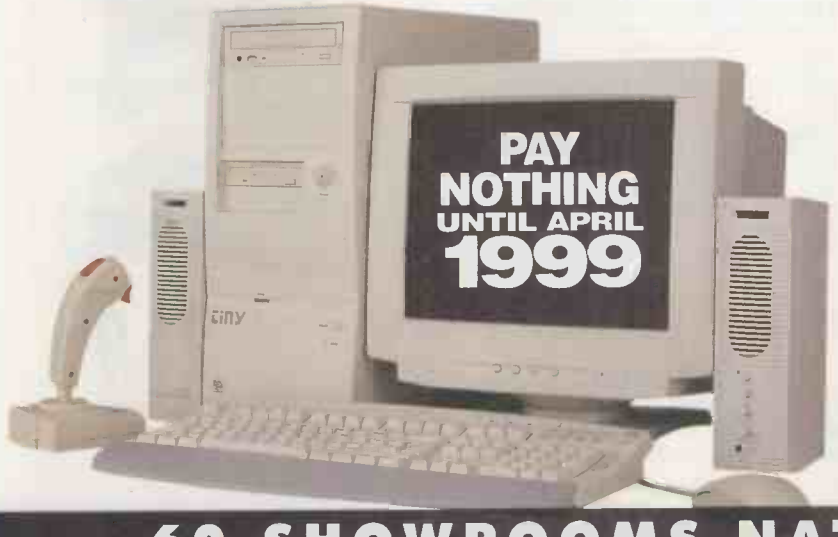

SOFTWARE INCLUDED

MICROSOFT FAMILY '98:
- MS Works 4.5 (Spreadsheet, Word Processor, Database)
- MS Encarta '98 (Encyclopaedia)
- MS CD Sampler • MS Money '98 (Home Finance)
- 3D Movie Maker • MS Golf Version 3 • Flight Simulator '98

HOME ENTERTAINMENT SOFTWARE:
- Bodyworks • Kitchen Gourmet
- Design IT! 3D • The Oregon Trail
- Home Gardener
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MICROSOFT OFFICE SMALL BUSINESS EDITION
- Word '97 • Excel '97
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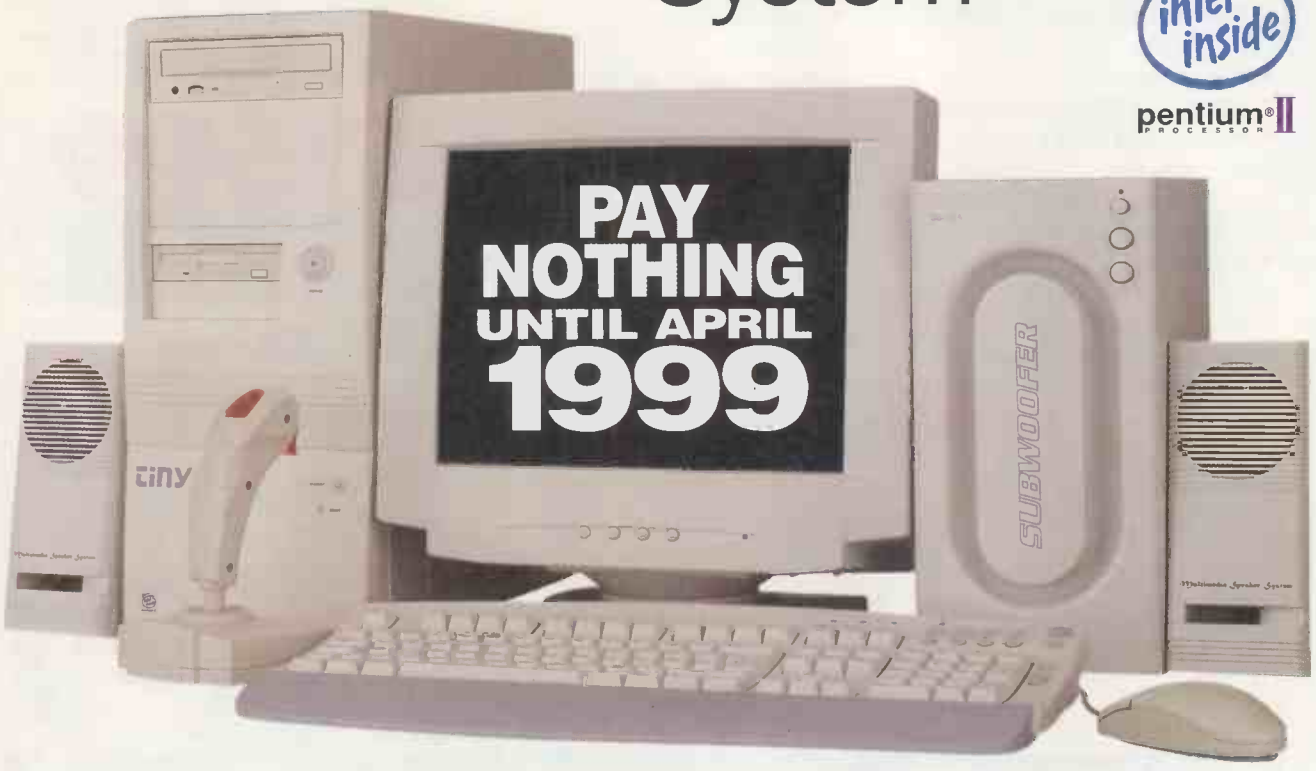

- Midi Tower Case with 3x5.25" & 4x3.5" drivebays
- ATX Form Factor conforming with PC '97
- Intel Pentium® II Processor 266 MHz
- High Performance Intel AL 440 LX Chipset Motherboard with Advanced Graphics Port (7 PCI/ISA slots)
- 512K CPU Cache
- 64MB FAST SD RAM (expandable to 384MB)
- 6.4GB Ultra DMA IDE HDD (2 x Transfer Rate)
- 17" Pin Cushion Control NI Power Management Colour Monitor † (Max resolution 1280 x 1024)
- ATI Xpert @ Work 4MB SG RAM AGP 133 MHz Arcade Quality Graphics with MPEG Software
- DVD ROM Drive
- Soft DVD (Software MPEG 2)
- Wavetable 32 3D Integrated Sound
- 500 Watt PMPO Sub Woofer and 2 Satellite Speakers
- Voice Fax/Modem 56Kbps (56K flex) with *Free* BT LineOne Internet Access
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- Microsoft® Intellimouse™ with "Zoom & Scroll" button
- Windows 95
- Easy to use System Restorer Pack
- Intel Landesk Anti-Virus Protect Software
- Over £300 of Microsoft Family '98 Software
- Dorling Kindersley Educational Software
- Home Entertainment Software
- Arcade Quality Games
- ***'Jumanji' & 'Space Jam' on DVD ROM***
- 12 Months Collect & Return Parts & Labour Warranty

£1399 ex VAT

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SOFTWARE INCLUDED

MICROSOFT FAMILY '98:
- MS Works 4.5 (Spreadsheet, Word Processor, Database)
- MS Encarta '98 (Encyclopaedia) • MS CD Sampler
- MS Money '98 (Home Finance) • 3D Movie Maker
- MS Golf Version 3 • Flight Simulator '98

HOME ENTERTAINMENT SOFTWARE:
- Bodyworks • Kitchen Gourmet • Design IT! 3D
- The Oregon Trail • Home Gardener • Typing Teacher
- Reading Journey • Berlitz French

DORLING KINDERSLEY
- Childrens Encyclopaedia • The Way Things Work 2
- Encyclopaedia of Science 2 • Encyclopaedia of Nature 2
- Childrens Dictionary

AGP GAMES
- G Police • Redline Racer • Jazz Jackrabbit 2

DVD ROM
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0% **PAY NOTHING UNTIL APRIL 1999 - NOT EVEN A DEPOSIT** **26.9%**

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CHELMSFORD
3 Market Road, (opp County Hall)
CHELTENHAM
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CHESTER
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COVENTRY
19 Shelton Square (nr Market Hall)
CRAWLEY
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EALING
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EDINBURGH
Cathedral Mall, St James Centre
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52 Queen Street (beside St George's Sq)
GLOUCESTER
12 Bell Walk, Eastgate Centre
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The Friary Shopping Centre (rear of HMV)
HUDDERSFIELD
14 The Shambles (opp BHS)
HULL
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ILFORD
Mid Level, The Exchange Centre (nr C&A)
IPSWICH
Tower Ramparts Centre (next to Top Man)
KINGSTON
8 Castle Street (off Clarence Street)
LAKESIDE
Lakeside Shopping Centre (opp Midland Bank)
LEEDS
Theatre Walk (Top Floor), The Headrow Centre
LEICESTER
9 Belgrave Gate, (nr Clock Tower) Haymarket Centre
LINCOLN
Waterside Shopping Centre (next to Partners)
LIVERPOOL
71 Bold Street (opp Forbidden Planet)
LONDON W1
Sonic Foto Centre, 256 Tottenham Court Rd
LONDON SW10
300 Fulham Road, Chelsea (nr Finborough Rd)
LONDON EC2
Liverpool Street Arcade, Liverpool Street (opp BR)
MANCHESTER
Piccadilly Plaza (nr Mosley St tram stop)
MANCHESTER
Arndale Centre (Voyager's Walk)
MILTON KEYNES
Silbury Boulevard (next to Games Workshop)
NEWCASTLE
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NORTHAMPTON
42 Princes Walk (near Morrel's Cafe)
NORWICH
15 Westlegate (opp McDonald's)
NOTTINGHAM
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OXFORD
2 King Edward Street (off High Street by Oddbins)
PETERBOROUGH
Rivergate Centre (Rivergate Arcade, nr Asda)
PLYMOUTH
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Broad Street Mall, (Upper Level - opp Food Court)
ROMFORD
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SHEFFIELD
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SHREWSBURY
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Intel PII 266 512k Retail	£235	£276.13
Intel PII 300 512k Retail	£345	£405.38
Intel PII 333 512k Retail	£485	£569.88
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Motherboards

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Gen. TX Pro 512k MMX	£41	£48
Gen. TX Pro 1mb & Sound	£45	£52
Gen. TX Pro 512k, Snd & Vid	£43	£50
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QDI TX 512k	£69	£81
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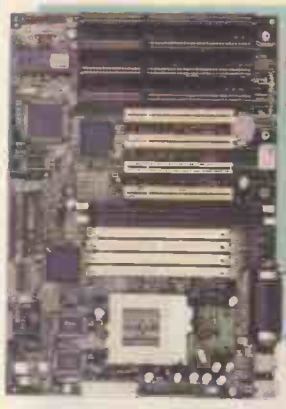

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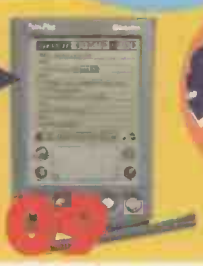

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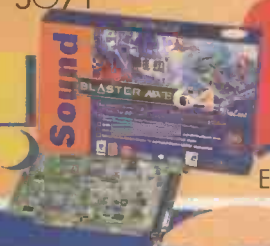

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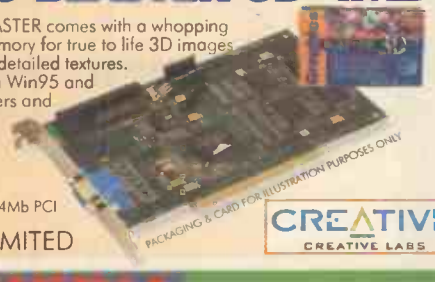

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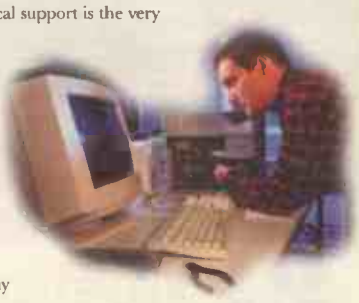

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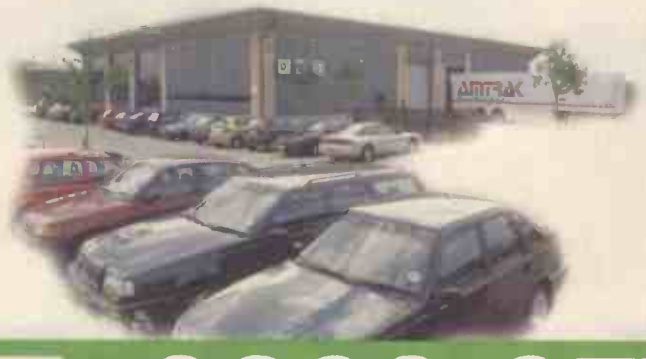

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AST	MEK85	Bravo LC,LP,MS,MS-TP/66-166	KST0987/8	(Kit)	500987-003, 501340-001	£27	£31.73
AST	MEK863	And MT series	KST0987/16	(Mod)	500987-004	£40	£47.00
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AST	MEK903		KST486P/32	(Kit)	501159-004	£87	£102.23
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Dell	MEK321	Optiplex GXPRO series	KTD-GXPRO/32	(Mod)	n/a	£93	£109.28
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IBM	MEK929	Aptiva M30, M31, M40, M41, M50, M51	KTM-APTV/4	(Mod)	92G7539, 070N04Y	£15	£17.63
IBM	MEK930	M53, M55, M60, M61, M62	KTM-APTV/8	(Mod)	92G7541, 070N08Y	£24	£28.20
IBM	MEK931	M70, M71, A12, A50, A90, A92	KTM-APTV/16	(Mod)	92G7543, 070N016Y	£40	£47.00
IBM	MEK932	PC 300 Series Model 350 6581, 6583 Model 330 6571, 6573,6575	KTM-APTV/32	(Mod)	92G7545, 070N32Y	£75	£88.13
Toshiba	MEK933	T2100-T2155 CS/CDS/CDT	KTT2100/8i	(Mod)	PA2027U,NW2027U	£28	£32.90
Toshiba	MEK934		KTT2100/16i	(Mod)	NW2028U	£46	£54.05
Toshiba	MEK935		KTT2100/24i	(Mod)	NW2029U	£64	£75.20
Toshiba	MEK936	Portege 610 CT	KTT610/8i	(Mod)	NW2031U	£42	£49.35
Toshiba	MEK839	Satellite 110CS/CT, 115CS,200DS,205 CDS	KTT610/16i	(Mod)	NW2032U	£59	£69.33
Toshiba	MEK937	Satellite Pro 420/425/430 CDS/CDT,	KTT610/32i	(Mod)	NW2034U	£95	£111.63

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AC510	5.25" LOCKABLE DISK BOX - 50	£5.00	£5.88
AC700	CD RACK - UP TO 16 CD'S	£4.00	£4.70
AC715	CD TOWER HPLDS 20 CD'S	£9.00	£10.58

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AC790	MONITOR & BASE UNIT MED	£7.50	£8.81
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AC70-M	POCKET - ATTACHES TO SIDE OF ANY PC	£2.50	£2.94
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ESS130	BJC600	Magenta x 2	£3.50	£4.11
ESS140	BJC600	Cyan	£3.50	£4.11
ESS150	BJC800	Black	£4.00	£4.70
ESS160	BJC800	Yellow	£4.00	£4.70
ESS170	BJC800	Magenta	£4.00	£4.70
ESS180	BJC800	Cyan	£4.00	£4.70
ESS190	BJC4000	Black	£4.00	£4.70
ESS200	BJC4000	Colour	£6.00	£7.05
ESS210	BJC70	Colour x 3	£10.00	£11.75
ESS220	BJC70	Black x 3	£8.00	£9.40
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ESS245	Colour	Black	£6.00	£7.05
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ESS260	Colour II	Colour	£6.00	£7.05
ESS265	200/500	Black	£5.00	£5.88
ESS270	200/500	Colour	£16.00	£18.80

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T45-F 4MM DAT 120M (DDS-2)	£10.00	£11.75
DDS3F 4MM DAT 125M (DDS-3)	£18.00	£21.15
T43-C 4MM DAT CLEANING	£6.00	£7.05
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T907-P	DANMERE BACKER PARALLEL PORT	£59.00 £69.33
D2		
T540-E	540MB EXT REMOVABLE DRIVE INCLUDES CABLE SOFTWARE AND 1 CARTRIDGE	£209.00 £245.58
T540-M	540MB CARTRIDGE FOR ABOVE	£38.00 £45.83
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T78-E	EAGLE TR-3 TAPE DRIVE 3.2GB	£92.00 £108.10
TEX10	EAGLE TR-4 IDE 8GB TAPE DRIVE	£219.00 £257.33
TEX20	EAGLE NS-8 SCSI 8GB TAPE DRIVE	£249.00 £292.58
EXABYTE IDE NESTS		
TEX40	IDE NEST AND CONTROLLER	£52.00 £61.10
TEX50	EXTERNAL NEST FOR IDE DEVICES	£95.00 £111.63
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TEX70	IDE NEST READY TR-4 TAPE DRIVE	£199.00 £233.83
TEX80	IDE NEST READY ZIP DRIVE	£129.00 £151.58
TEX90	IDE NEST READY LS120 DRIVE	£129.00 £151.58
TEX100	IDE NEST READY 1.4GB HARD DRIVE	£269.00 £316.08
EXABYTE EAGLE NEST TR-3 ONLY PRODUCTS		
TEX30	NEST FOR TR-3 DRIVE (TEX60)	£45.00 £52.88
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TF30	MC3000XL DATA	£12.00 £14.10
TF40	MC3000XL 3010 DATA	£13.00 £15.28
T43-F	4MM DAT TAPE 90M	£4.00 £4.70
T45-F	4MM DAT 120M (DDS-2)	£10.00 £11.75
DDS3F	4MM DAT 125M (DDS-3)	£18.00 £21.15
T43-C	4MM DAT CLEANING	£6.00 £7.05
T44-F	8MM DAT TAPE 112M	£5.00 £5.88
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OP650	650MB 5.25" OPTICAL	£17.50 £20.56
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OP130	1.3GB 5.25" OPTICAL	£23.00 £27.03
OP260	2.6GB 5.25" OPTICAL	£30.00 £35.25
CD165-F	74 MIN CDR	£2.00 £2.35
CDW-30	74 MIN CDRW	£13.00 £15.28
CDA10	AUDIO CD 74 MIN	£4.00 £4.70
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T410	POWER MO 230-II - Mac & SCSI	£189.00 £222.08
OLYMPUS INTERNAL DRIVES - all with 1 Maxell Media		
T430	POWER MO 230 Kit & SCSI card	£229.00 £269.08
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T601	T3000I INTERNAL 3.2GB	£109.00 £128.08
T500-I	INTERNAL 5GB IDE + 1 MEDIA	£127.00 £149.23
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T620	T4I 8GB INTERNAL STREAMER	£217.00 £254.98

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BACKS-UP YOUR PC WHILE YOU'RE OUT TO LUNCH

HEWLETT PACKARD

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Here's a backup solution from HP that won't let you down. The new HP Colorado 5Gb drives combine extraordinarily good performance coupled with very high capacity all at an incredibly low price! Upto 5Gb will fit onto a single data cartridge when using compression and can backup a 2Gb drive in well under an hour.

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T71-I	INTERNAL SCSI ZIP DRIVE (+ 1 MEDIA)	£86.00 £101.05
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T76	ZIP ZOOM CARD	£27.00 £31.73
T72	ZIP MEDIA SINGLE	£7.50 £8.81
T72-6	ZIP MEDIA 6 PACK	£43.00 £50.53
T72-R	10 PACK & FREE RECORDIT S/WARE	£89.00 £104.58
IOMEGA JAZ PRODUCTS		
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OP30	JAZ EXTERNAL 1GB	£227.00 £266.73
OP2	JAZ INTERNAL 2GB	£339.00 £398.32
OP3	JAZ EXTERNAL 2GB	£399.00 £468.82
TAC10	JAZ TRAVELLER SCSI TO P/P Convertor	£38.00 £44.65
OP35	JAZ 1GB DISK SINGLE	£53.00 £62.28
OP35-3	JAZ 1 GB DISK 3 PACK	£150.00 £176.25
OP4	JAZ 2 GB DISK SINGLE	£99.00 £116.33
OP4-3	JAZ 2 GB DISK 3 PACK	£269.00 £316.08
IOMEGA DITTO PRODUCTS		
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TDM30	DITTO MAX PRO 10Gb - INT	£189.00 £222.08
TDM40	DITTO MAX PRO 10Gb - EXT	£189.00 £222.08
TDC10	DITTO MAX 3GB MEDIA	£15.00 £17.63
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T200-E	2GB DITTO EXTERNAL	£86.00 £101.05
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TN160	750Mb Int. SCSI	£152.00 £178.60
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TN180	750Mb Media	£35.00 £41.13
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TS170	Syjet™ 1.5Gb SCSI - Int	£199.00 £233.83
TS180	Syjet™ 1.5Gb EIDE - Int	£199.00 £233.83
TS100	EZFlyer™ 230Mb Parallel Port - Ext	£92.00 £108.10
TS110	EZFlyer™ 230Mb SCSI - Ext	£92.00 £108.10
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TS260	SPARQ 1GB INTERNAL EIDE + 1 MEDIA	£131.00 £153.93
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TS280	SPARQ 1GB MEDIA 3 PACK	£68.00 £79.90
TS290	SPARQ 1GB MEDIA 10 PACK	£195.00 £229.13
TS190	Syjet™ 1.5Gb Cartridge	£51.00 £59.93
TS200	Syjet™ 1.5Gb Cartridge - 3 Pack	£127.00 £149.23
TS130	EZFlyer 230Mb Cartridge	£17.00 £19.98
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T48-4	TR4	£24.00 £28.20
T46-E	VERBATIM TR1 EXTRA 1GB CAP	£19.00 £22.33
T48-E	VERBATIM TR3 EXTRA 4.4GB CAP	£26.00 £30.55
T43-V	VERBATIM 4MM 90MTR DAT TAPE	£5.00 £5.88
T49	QIC3080 4GB	£19.00 £22.33
T40	FORMATTED DC2120	£7.00 £8.23
T41	DC2120XL 350MB	£11.00 £12.93
T42	QIC WIDE 420MB	£12.00 £14.10
T4S	MC3000XL 700MB	£15.00 £17.63
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T70-P	ZIP PLUS SCSI/PARALLEL PORT (+ 1 MEDIA)	£129.00	£151.58
T76	ZIP ZOOM CARD	£27.00	£31.73
T72	ZIP MEDIA SINGLE	£7.50	£8.81
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OP3	JAZ EXTERNAL 2GB	£399.00	£468.82
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TDM20	DITTO MAX 7Gb – EXT	£129.00	£151.58
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TDM40	DITTO MAX PRO 10Gb – EXT	£189.00	£222.08
TDC10	DITTO MAX 3GB MEDIA	£15.00	£17.63
TDC20	DITTO MAX 7GB MEDIA	£18.00	£21.15
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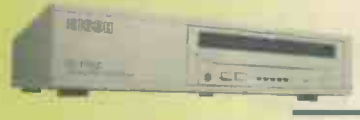

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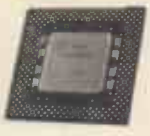

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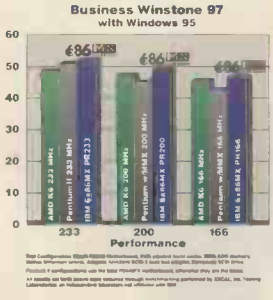

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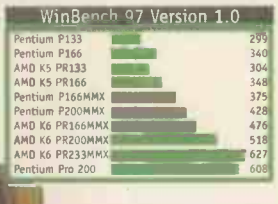

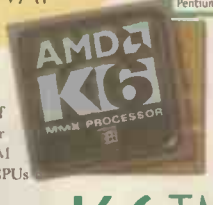

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- Runs both Windows 95 & NT either In 16bit or 32bit Mode at FULL THROTTLE without the hassle.
- Maximises MMX enabled applications.
- Six Issue RISC86® superscalar Microarchitecture.
- Socket 7 Compatible (Pentium)

...they're right. It's called the AMD-K6™MMX Processor

C65	K6X86-PR233	£95.00	£111.63

THE TRUE PENTIUM ALTERNATIVE

AMD-K5™ processors are a true alternative to the Pentium. The AMD-K5 processor family has a broad range of performance options that deliver outstanding value. Proven compatibility with Microsoft® Windows® operating systems and the installed base of x86 software makes AMD-K5 processors a safe, compatible choice for PC users in corporate networked and home computing environments.

AMD

AMD K6 FANTASTIC VALUE BUNDLE

- K6™ MMX AND GIGABYTE TX CHIPSET

CPU	Supports Intel/Cyrix/AMD K5/6 - 90 - 233Mhz
Architecture	Supports Intel MMX™
Cache	4 PCI Slots and 3 ISA Slots
I/O Spec	512K Internal Cache as standard
	Supports: 4 IDE Devices 2 Floppy Disk Drives
	2 x 16650 UART fast serial port
	EPP/ECP high performance parallel port. Supports USB
Memory	Uses 72-pin SIMM modules x 4 auto-banking in multiple configs up to 256Mb. Supports both Fast Page Mode, EDO DRAM and 2 DIMMS
BIOS	Supports Flash ROM, PnP, Green Feature, NCR810 SCSI Bios. Award version 4.5 PG. PNP V1.0A
Size	22cm x 28cm

AMD K6 MMX PROCESSOR

GIGABYTE

GigaByte TX2 Motherboard	£76+VAT
Approved Heat Sink & Fan	£15+VAT
K6-PR233 MMX™ CPU	£95+VAT
Normal Price	£186+VAT
OFFER PRICE	**£180**+VAT

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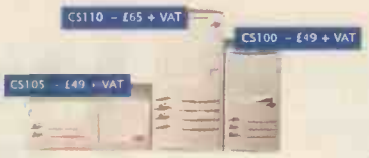

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CS110	D602 MIDI TOWER WITH PSU	£65.00	£76.38
CS600	D707 DESKTOP WITH PSU	£39.00	£45.83
CS601	D702 MIDI TOWER WITH PSU	£55.00	£64.63
CS500	D803 MINI TOWER WITH PSU	£45.00	£52.88
CS501	D807 DESKTOP WITH PSU	£39.00	£45.83
MEDIAFORCE			
CS5	MINI TOWER WITH PSU	£35.00	£41.13
CS10	DESKTOP WITH PSU	£35.00	£41.13
CS16	MIDI TOWER WITH PSU	£39.00	£45.83
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CS17	ATX MIDI TOWER WITH PSU	£60.00	£70.50
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BC60	SINGLE DRIVE 30CM	£21.00	£24.68
BC70	SINGLE DRIVE 60CM	£24.00	£28.20
BC50	2 DRIVE 90CM	£32.00	£37.60
BC80	3 DRIVE 90CM	£39.00	£45.83
BC90	4 DRIVE 100CM	£59.00	£69.33
BC100	SCSI III/SCSI I ADAPTOR MDB68M/50M	£27.00	£31.73
BC110	SCSI III/SCSI I ADAPTOR MDB68F/50F	£23.00	£27.03
EXTERNAL SCSI CABLES AND SCSI TERMINATORS - SCSI I			
BC115	825M/CENT 50M 90CM	£10.00	£11.75
BC120	DB25M/CENT 50M 1.8M	£12.00	£14.10
BC130	CENT 50M/CENT 50M 90CM	£10.00	£11.75
BC125	CENT 50M/CENT 50M 1.8M	£13.00	£15.28
BC135	TERMINATOR SINGLE CENT 50M PASSIVE	£7.00	£8.23
BC140	TERMINATOR SINGLE CENT 50M ACTIVE	£12.00	£14.10
BC145	TERMINATOR IN LINE CENT 50M/CENT 50F PASSIVE	£12.00	£14.10
BC150	TERMINATOR IN LINE CENT 50M/CENT 50F ACTIVE	£20.00	£23.50
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BC155	MICRO DB50M/CENT 50M 1.2M	£19.00	£22.33
BC160	MICRO DB50M/CENT 50M 1.8M	£27.00	£31.73
BC165	MICRO DB50M/CENT 50F ADAPTOR	£15.00	£17.63
BC170	MICRO DB50M/MICRO DB50M 1.2M	£23.00	£27.03
BC175	MICRO DB50M/MICRO DB50M 1.8M	£27.00	£31.73
BC180	MICRO DB50M/DB25M 1.2M	£25.00	£29.38
BC185	MICRO DB50M/DB25M 1.8M	£30.00	£35.25
BC190	TERMINATOR MICRO DB50M SINGLE END PASSIVE	£16.00	£18.80
BC195	TERMINATOR MICRO DB50M SINGLE END ACTIVE	£19.00	£22.33
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BC200	SCSI II/SCSI III HDD868M/MICRO DB50M	£35.00	£41.13
BC205	HDD868M/CENT 50M 1.2M	£35.00	£41.13
BC210	HDD868M/CENT 50M 1.8M	£38.00	£44.65
BC215	DB25M/HDD868M 1.2M	£59.00	£69.33
BC220	TERMINATOR MICRO DB68M SINGLE ENDED ACTIVE	£49.00	£57.58
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BC315	PREMIUM 1.8M BI-DIRECTIONAL	£7.50	£8.81
BC320	PREMIUM 3M BI-DIRECTIONAL	£8.50	£9.98
BC325	PREMIUM 4.5M BI-DIRECTIONAL	£9.50	£11.16
BC330	PREMIUM 6M BI-DIRECTIONAL	£10.50	£12.34
BC340	PREMIUM 7.5M BI-DIRECTIONAL	£11.50	£13.51
BC345	IEEE 1284 1.8M BI-DIRECTIONAL	£11.00	£12.93
BC350	IEEE 1284 3M BI-DIRECTIONAL	£14.50	£17.04
HIGH QUALITY SERIAL PRINTER AND MODEM CABLES			
BC370	IBM PC/LASERJET CABLE 3M	£8.50	£9.98
BC375	IBM AT/LASERJET CABLE 3M	£8.50	£9.98
BC380	IBM PC/HAYES MODEM CABLE 1.8M	£7.50	£8.81
BC385	IBM PC/HAYES MODEM CABLE 3M	£8.50	£9.98
BC390	IBM AT SERIAL ADAPTOR DB9M/DB25F	£4.50	£5.29
BC395	IBM AT SERIAL ADAPTOR DB9F/DB25M	£4.50	£5.29
BC400	IBM AT/HAYES MODEM CABLE 1.8M	£6.00	£7.05
BC410	IBM AT/HAYES MODEM CABLE 3M	£6.00	£7.05
BC420	NULL MODEM ADAPTOR DB25 M/F	£5.00	£5.88
BC425	INTERLINK/LAPLINK UNIVERSAL SERIAL CABLE 3M	£8.00	£9.40
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BC430	LAPTOP KEYBOARD/MOUSE SPLITTER CABLE 6 PIN MINI DIN MALE/2 X 6 PIN MINI DIN FEMALE	£9.00	£10.58
BC435	J/STICK "Y" 1.8M DB15M/2 X DB15 F	£7.50	£8.81
BC440	JOYSTICK EXTENSION DB15 M/F 1.8M	£7.50	£8.81
BC445	IBM PC 5 PIN DIN K/BRD EXT CABLE 1.8M	£6.00	£7.05
BC450	AT/PS2 KEYBOARD CONVERTOR 5 PIN DIN F/6 PIN DIN M	£5.00	£5.88
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BC495	PS2 6 PIN DIN KEYBOARD EXT. 3M	£6.00	£7.05
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BC470	AC POWER CABLE EXTENSION 1.8M	£6.00	£7.05
BC475	AC UK POWER CABLE 1.8M	£6.00	£7.05
BC480	VGA MONITOR EXTENSION CABLE 1.8M	£6.00	£7.05
BC485	VGA MONITOR EXTENSION CABLE 3M	£6.00	£7.05
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BC500	25 PIN MALE TO MALE 1.8M	£6.50	£7.63
BC510	25 PIN MALE TO MALE 3M	£7.50	£8.81
BC515	25 PIN MALE TO MALE 4.5M	£8.50	£9.99
BC520	25 PIN MALE TO FEMALE 1.8M	£6.50	£7.63
BC525	25 PIN MALE TO FEMALE 3M	£7.50	£8.81
GENDER CHANGERS			
BC530	DB25 FEMALE/FEMALE	£4.50	£5.28
BC535	DB25 MALE/MALE	£4.50	£5.28
BC540	DB9 FEMALE/FEMALE	£4.50	£5.28
BC545	DB9 MALE/MALE	£4.50	£5.28
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BC550	IDE DUAL HARD DRIVE CABLE 48CM	£5.00	£5.88
BC555	UNIVERSAL FLOPPY CONTROLLER	£5.50	£6.46
BC560	Y POWER SPLITTER CABLE 5.25" 4 PIN MALE / 2 X FEMALE	£3.50	£4.12
BC570	MPC II CD AUDIO CABLE, UNIVERSAL 3 CONNECTOR	£5.00	£5.88
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BC590	UTP CAT 5 2.1M PATCH	£5.00	£5.88
BC600	UTP CAT 5 4.2M PATCH	£6.00	£7.05
BC610	UTP CAT 5 7.5M PATCH	£8.00	£9.40
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BC805	1.5m White	£2.50	£2.94
BC806	1.5m Yellow	£2.50	£2.94
BC807	3m Grey	£3.50	£4.11
BC808	3m Black	£3.50	£4.11
BC809	3m Blue	£3.50	£4.11
BC810	3m Green	£3.50	£4.11
BC811	3m Red	£3.50	£4.11
BC812	3m White	£3.50	£4.11
BC813	3m Yellow	£3.50	£4.11
BC814	7.6m Grey/Black/Blue/Green/Red	£7.50	£8.81
BC819	7.6m White	£7.50	£8.81
BC820	7.6m Yellow	£7.50	£8.81
BC822	15m Grey/Black/Blue/Green	£12.00	£14.10
BC825	15m Red	£12.00	£14.10
BC826	15m White	£12.00	£14.10
BC827	15m Yellow	£12.00	£14.10
BC828	30m Grey/Black/Blue	£24.00	£28.20
BC828	30m Green	£24.00	£28.20
BC828	30m Red/White/Yellow	£24.00	£28.20
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BC660	36 PIECE TOOL KIT	£37.50	£44.06
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BC710	2 POSITION MANUAL SWITCH KIT WITH ALL CABLES TO CONNECT 1 COMPUTER TO 2 PRINTERS	£27.50	£32.31
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BC720	COMPACT PARALLEL AUTO SWITCH REVERSIBLE 2 POSITION	£25.50	£29.96
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BC740	IEEE 1284 BI-DIRECTIONAL 2 WAY PRINTER SWITCH	£42.50	£49.93
BC745	IEEE 1284 BI-DIRECTIONAL 4 WAY PRINTER SWITCH	£75.00	£88.12
BC910	HP recommended Bitronics Manual reversible 2-1 switch. Incl. IEEE1284 cable		
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BC915	OmniView 2 port (F1D064U)	£139.00	£163.33
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BC930	OmniView AT cable kit (A3X932U)	£10.00	£11.75
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Full bi-directional printer sharing for all IEEE 1284 printers.

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KODAK DC210

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No of Images: Up to 60
Software: PictureEasy
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Trust COMPUTER PRODUCTS

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HD250-S	ST32532A	2.5GB	128K	12MS	4500	UDMA33	£87.00	£102.23
HD320-SS	ST33232A	3.2GB	128K	11MS	4500	UDMA33	£97.00	£113.98
HD430-SS	ST34342A	4.3GB	128K	11MS	4500	UDMA33	£117.00	£137.48

Seagate

HD640-SU
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HD640-SU	ST36451A	6.4GB	512K	9.5MS	5400	UDMA33	£143.00	£168.03
HD641-SU	ST36531A	6.4GB	128K	10.5MS	5400	UDMA33	£151.00	£177.43

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HD860-S	ST38641A	8.6GB	128K	10.5MS	5400	UDMA33	£229.00	£269.08
HD910-S	ST39140A	9.1GB	512K	9.5MS	7200	UDMA33	£CALL	£CALL
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HD430-DM	Diamond Max	4.3GB	256K	<10MS	5200	UDMA 33	£117.00	£137.48
HD520-DM	Diamond Max	5.2GB	256K	<10MS	5200	UDMA 33	£135.00	£158.63
HD640-DM	Diamond Max	6.4GB	256K	<10MS	5200	UDMA 33	£147.00	£172.73
HD840-DM	Diamond Max	8.4GB	256K	<10MS	5200	UDMA 33	£197.00	£231.48
WESTERN DIGITAL CAVIAR BARE DRIVES								
HD200-W	AC22000	2.0GB	256K	11.5MS	5400	UDMA33	£91.00	£106.93
HD320-W	AC23200	3.2GB	256K	11MS	5400	UDMA33	£103.00	£121.03
HD431-W	AC34100	4.3GB	256K	9.5MS	5400	UDMA33	£121.00	£142.18
HD510-W	AC35100	5.1GB	256K	9.5MS	5400	UDMA33	£133.00	£156.28
HD640-W	AC36400	6.4GB	256K	9.5MS	5400	UDMA33	£157.00	£184.48
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HD210-RW	AC32100RTL	2.1GB	128K	10MS	5200		£107.00	£125.73

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£212 £249.10

Quantum BIGFOOT

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HD510-RW	AC51000RTL	5.1GB	256K	11MS	5400		£185.00	£217.38
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QUANTUM FIREBALL ST. ULTRA ATA DRIVES SUPPORT DATA TRANSFERS OF 33MB/SEC								
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HD320-SE	F/BALL SE	3.2GB	128K	9.5MS	5400	UDMA33	£106.00	£124.55
HD430-SE	F/BALL SE	4.3GB	128K	9.5MS	5400	UDMA33	£119.00	£139.83

Western Digital

HD320-W
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HD640-SE	F/BALL SE	6.4GB	128K	9.5MS	5400	UDMA33	£152.00	£178.60
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HD600-TX	BIGFOOT TX	6.0GB	128K	12MS	4000	UDMA33	£149.00	£175.08
HD800-TX	BIGFOOT TX	8.0GB	128K	12MS	4000	UDMA33	£189.00	£222.08
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IC45-U	2940 ULTRA KIT	£139.00	£163.33
IC46	2940 ULTRA WIDE KIT	£162.00	£190.35
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HD210-WW	E/PRISE	2.1GB UW	512K	<8MS	7200		£218.00	£256.15
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HD430-WW	E/PRISE	4.3GB UW	512K	<8MS	7200		£314.00	£368.95

Western Digital

HD430-W
4.3Gb ULTRA
£304 £357.20

HD910-W	E/PRISE	9.1GB U	512K	<8MS	7200	£469.00	£551.08
HD910-WW	E/PRISE	9.1GB UW	512K	<8MS	7200	£479.00	£562.83
HD910-WA	E/PRISE AV	9.1GB UW	1Mb	<8MS	7200	£569.00	£568.58
SEAGATE SCSI HARD DRIVES							
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HD222-S	ST32272W BARRACUDA	2.2GB UW	512k	9MS	7200	£215.00	£252.63
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Seagate

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HD65-5BN	ST19171N BARRACUDA	9.1GB	512k	8MS	7200	£519.00	£609.83
HD65-5BA	ST19171W	9.1GB UW	512K	8MS	7200	£525.00	£616.88
HD460-S	ST34501N CHEETAH	4.5GB USCSI	512K	8MS	10000	£335.00	£393.63
HD461-S	ST34501W CHEETAH	4.5GB UW	512K	8MS	10000	£349.00	£410.08
HD900-S	ST19101N CHEETAH	9.1GB USCSI	512K	8MS	10000	£635.00	£746.13
HD900-SW	ST19101W	9.1GB UW	512K	8MS	10000	£649.00	£762.58
HD230-S	ST423451N ELITE	23GB USCSI	2048K	13MS	5400	£1250.00	£1468.80
HD230-SW	ST423451W ELITE	23GB UW	2048K	13MS	5400	£1250.00	£1468.75
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HD440-F	M2954S AV	4.4GB	512k	8MS	5400	£329.00	£386.58
HD440-FW	M2954Q AV WIDE	4.4GB	512k	8MS	5400	£339.00	£398.33
HD910-F	M2949S AV	9.1GB	512k	8MS	5400	£485.00	£569.88
HD910-FW	M2949S AV WIDE	9.1GB	512k	8MS	5400	£485.00	£569.88
QUANTUM SCSI 3.5" HARD DRIVES							
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HD641-SE	FIREBALL ST ULTRA	6.4GB	128K	9.5MS	5400	£208.00	£244.40
HD841-SE	FIREBALL SE ULTRA	8.4GB	128K	9.5MS	5400	£269.00	£316.08
HD450-Q	ATLAS II	4.5GB	512K	8MS	7200	£319.00	£374.83
HD450-QW	ATLAS II WIDE	4.5GB	512K	8MS	7200	£319.00	£374.83
HD910-Q	ATLAS II	9.1GB	512K	8MS	7200	£439.00	£515.83
HD910-QW	ATLAS II WIDE	9.1GB	512K	8MS	7200	£439.00	£515.83

Quantum
CAPACITY FOR THE EXTRAORDINARY

HD321-SE Fireball 4.3Gb
£137 £160.98

Quantum FIREBALL

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HD451QW	VIKING U/WIDE	4.5GB	512K	8MS	7200	£205.00	£240.88
IBM SCSI 3.5" HARD DRIVES							
HD60-I	IBM USTAR ES	4.3GB	512K	8.5MS	5400	£168.00	£197.40
HD60-IW	IBM USTAR ES W	4.3GB	512K	8.5MS	5400	£168.00	£197.40
HD450-I	IBM ULTRA STAR2 XP	4.5GB	512K	8.5MS	7200	£331.00	£388.93
HD450-IW	IBM ULTRASTAR 2XP WIDE	4.5GB	512K	8.5MS	7200	£331.00	£388.93
HD910-I	IBM ULTRASTAR 2XP	9.1GB	512K	8.5MS	7200	£467.00	£548.73
HD910-IW	IBM ULTRASTAR 2XP WIDE	9.1GB	512K	8.5MS	7200	£477.00	£560.48

FUJITSU

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ICAV30 Advansys 980U £299.00 £351.33

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ADAPTEC 1542 ISA CARDS

For compatibility and ease of use, the AHA-1540 family of ISA-to-Fast SCSI host adapters is the ideal connection for the widest choice in SCSI peripherals. Rigorously tested with more than 300 systems and peripherals from major manufacturers, these adapters are the recognized standard for SCSI compatibility. Fully Windows® 95 and SCSI Plug-and-Play capable, the AHA-1540/1542 host adapters also set the standard for ease of use. Configuration of the adapters is automatic in any Plug-and-Play system.

IC30 1542 ISA FULL KIT £149.00 £175.08

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The AHA-2940 Ultra host adapter delivers UltraSCSI speed for demanding professional applications and high-performance peripherals. With its bus mastering architecture and advanced SCSI features, the AHA-2940 Ultra host adapter improves system performance, especially in multitasking environments. In addition, the AHA-2940 Ultra adapter offers unsurpassed system and peripheral compatibility.

IC45-U 2940 ULTRA KIT £139.00 £163.33
IC46 2940 ULTRA WIDE KIT £162.00 £190.35

AHA-3940 ULTRASCSI PCI HOST ADAPTERS

The Adaptec&3153; AHA-3940 UltraSCSI family of MultiChannel PCI host adapters pulls out all the stops to deliver superior I/O performance. Combining multiple channels and UltraSCSI speed, the AHA-3940 UltraSCSI host adapters move data faster to meet the growing demands of servers and leading-edge applications, such as multimedia production and digital video editing. In fact, the AHA-3940 UltraSCSI family of host adapters transfers data at up to 80 MByte/sec, four times the transfer rate of single- channel SCSI-2 boards.

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FUJITSU- 3.5" IDE HARD DRIVES								
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HD430-F	MPA3043	4.3GB	256K	9MS	5400	UDMA33	£122.00	£143.35
HD520-F	MPA3052U	5.2GB	256K	9MS	5400	UDMA33	£137.00	£160.98
FUJITSU SCSI HARD DRIVES								
HD440-F	M2954S AV	4.4GB	512k	8MS	5400		£329.00	£386.58
HD440-FW	M2954Q AV WIDE	4.4GB	512k	8MS	5400		£339.00	£398.33
HD910-F	M2949S AV	9.1GB	512k	8MS	5400		£485.00	£569.88
HD910-FW	M2949S AV WIDE	9.1GB	512k	8MS	5400		£485.00	£569.88

IBM Storage

Leading drive technology

The Deskstar 5 achieves it's enhanced capacity and performance by taking advantage of IBM's development and implementation experience in advanced disk drive technologies. These technologies include Magneto-Resistive (MR) heads, No-ID sector formatting and the PRML digital channel.

MR heads offer increased areal density, reducing the number of disks and heads required for a given capacity. No-ID sector formatting further increases storage capacity by eliminating the overhead caused by the duplicate storage of each data sector's ID field onto the disk, creating more available disk space for customer data. The PRML digital channel implemented now on IBM's newest desktop drives such as the Deskstar 5 allows for higher areal densities, significantly enhancing the drive's overall performance.

The combination of these three advanced technologies allows the Deskstar 5 drive to achieve its high 1.62 GB per platter capacity, providing exceptional disk drive capacities for performance desktop, small and home office PCs.

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£157.00 £184.48

HD60-IW 4.3Gb SCSI UW
£168.00 £197.40

IBM 3.5" IDE HARD DRIVES								
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HD840-I	DESKSTAR 5	8.4GB	476K	8.5MS	5400	UDMA33	£235.00	£276.13
IBM SCSI 3.5" HARD DRIVES								
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HD60-IW	IBM USTAR ES W	4.3GB	512K	8.5MS	5400		£168.00	£197.40
HD450-I	IBM ULTRA STAR2 XP	4.5GB	512K	8.5MS	7200		£331.00	£388.93
HD450-IW	IBM ULTRASTAR 2XP W	4.5GB	512K	8.5MS	7200		£331.00	£388.93
HD910-I	IBM ULTRASTAR 2XP	9.1GB	512K	8.5MS	7200		£467.00	£548.73
HD910-IW	IBM ULTRASTAR 2XP W	9.1GB	512K	8.5MS	7200		£477.00	£560.48

Seagate

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The award winning Medalist Pro family with capacities up to 6.4 Gbytes, provides an alternative to higher-cost SCSI products offered at these same capacities. With the Fast UDMA 33 interface, that is 100% ATA (IDE) compatible, 5,400 RPM spindle speeds and fast sustained data-transfer rates of up to 33Mbps, Medalist Pro family drives are fully multimedia ready.

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Seagate

9.1Gb OF RAW POWER *barracuda*

The latest member of the award winning Barracuda family is the Barracuda 9 with an impressive 9.1 GB of formatted capacity, 1,000,000 hour MTBF, MR heads, PRML data channel and embedded servo. The Barracuda 9 is available with either the new Ultra SCSI interface capable of burst data transfer rates up to 40 MB/sec or the industry-standard dual port Fibre Channel-Arbitrated Loop (FC-AL) serial interface with a burst data transfer rate of 100 MB/sec per port.

HD65-SBN 9.1Gb
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HIGH CAPACITY PERFORMANCE

The Flip Disk is the most compact high capacity portable data storage device currently available. The unit incorporates industry standard 2.5" hard drives. Data transfer speeds - making the unit ideal for expanding your computers data capacity and as a remarkably fast backup device.

HIGH BUILD QUALITY AND RELIABILITY

The 2.5" hard drives used in the Flip Disk are industry standard and have a proven track record for reliability.

AD280 2.8Gb
£325.00 £381.88

AD420 4.2Gb
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Supplied with a parallel port interface cable, Novadisk backup software (which offers data compression), mains adaptor, stylish carry case, manual and installation software - everything required to plug in and go.

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HD430-DM 4.3GB **£132** +VAT

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CODE	PRODUCT	SIZE	CACHE	SEEK	SPIN SPEED	TYPE	ex VAT	inc VAT
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HD430-DM	Diamond Max	4.3GB	256K	<10MS	5200	UDMA 33	£117.00	£137.48
HD520-DM	Diamond Max	5.2GB	256K	<10MS	5200	UDMA 33	£134.00	£158.63
HD640-DM	Diamond Max	6.4GB	256K	<10MS	5200	UDMA 33	£147.00	£172.73
HD840-DM	Diamond Max	8.4GB	256K	<10MS	5200	UDMA 33	£197.00	£231.48

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QUANTUM FIREBALL ST, ULTRA ATA DRIVES SUPPORT DATA TRANSFERS OF 33MB/SEC

CODE	HD210-SE	HD320-SE	HD430-SE	HD640-SE	HD840-SE
MODEL	F/BALL SE	F/BALL SE	F/BALL SE	F/BALL SE	F/BALL SE
SIZE	2.1GB	3.2GB	4.3GB	6.4GB	8.4GB
CACHE	128K	128K	128K	128K	128K
SEEK	9.5MS	9.5MS	9.5MS	9.5MS	9.5MS
SPIN	5400	5400	5400	5400	5400
INTERFACE	UDMA33	UDMA33	UDMA33	UDMA33	UDMA33
EX VAT					
INC VAT	£96.35	£124.55	£139.83	£178.60	£230.30

Quantum BIGFOOT Quantum FIREBALL

HD840-SE FIREBALL SE8.4GB **£196** +VAT

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CODE	HD400-TX	HD600-TX	HD800-TX	HD1200-TX
MODEL	BIGFOOT	BIGFOOT	BIGFOOT	BIGFOOT
SIZE	TX 4.0GB	TX 6.0GB	TX 8.0GB	TX 12.0GB
CACHE	128K	128K	128K	128K
SEEK	12MS	12MS	12MS	12MS
SPIN	4000	4000	4000	4000
INTERFACE	UDMA33	UDMA33	UDMA33	UDMA33
EX VAT				
INC VAT	£128.08	£175.08	£222.08	£249.10

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HD320-W	AC23200	3.2GB	256K	11MS	5400	UDMA33	£103.00	£121.03
HD431-W	AC34100	4.3GB	256K	9.5MS	5400	UDMA33	£121.00	£142.18
HD510-W	AC35100	5.1GB	256K	9.5MS	5400	UDMA33	£133.00	£156.28
HD640-W	AC36400	6.4GB	256K	9.5MS	5400	UDMA33	£157.00	£184.48

WESTERN DIGITAL IDE RETAIL KITS

- Inc. Software, Mounting Rails, & Installation Guide

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HD310-RW	AC33100RTL	3.1GB	128K	10MS	5200	£121.00	£142.18
HD400-RW	AC4000RTL	4.0GB	128K	10MS	5200	£139.00	£163.33
HD510-RW	AC51000RTL	5.1GB	256K	11MS	5400	£185.00	£217.38

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HD430-W	E/PRISE	4.3GB ULTRA	512K	<8MS	7200	£304.00	£357.20
HD910-W	E/PRISE	9.1GB U	512K	<8MS	7200	£469.00	£551.08

WESTERN DIGITAL ENTERPRISE DRIVES

HD210-WW	E/PRISE	2.1GB UW	512K	<8MS	7200	£218.00	£256.15
HD430-WW	E/PRISE	4.3GB UW	512K	<8MS	7200	£314.00	£368.95
HD910-WW	E/PRISE	9.1GB UW	512K	<8MS	7200	£479.00	£562.83
HD910-WA	E/PRISE AV	9.1GB UW	1Mb	<8MS	7200	£569.00	£668.58

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The drive features a formatted capacity of 9.1 GB in a low-profile form factor with Ultra SCSI host data transfer rates up to 40 MB/s. This device also supports high performance I/O features such as adaptive caching, command queuing, command reordering, active termination, S.M.A.R.T. (Self Monitoring, Analysis, and Reporting Technology), and SCAM (SCSI Configure AutoMagically) that allow for multi-threaded I/O and more intelligent drive reporting. This drive supports 50-pin, 68-pin, and 80-pin (SCA-2) connectors.

In addition, advanced data protection capabilities such as thermal asperity detection and correction in hardware make this hard drive ideal for the mission critical enterprise computing environment.

Also available is the WD Enterprise WDE9100AV, designed specifically for "plug-n-play" audio-video applications. This model supports a 1 MB multi-segmented cache buffer, SerpentineTM seek technology, embedded servo, and Enabled Early Recovery (EER), features designed to ensure accurate and timely delivery of data.

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FD120	IMATION SUPERDISK 120Mb PP	£97.00	£113.98
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UT11	FLOPPY DRIVE MOUNTING FRAME	£3.00	£3.53

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F255-3	33.6 EXT. Voice BABT APPROVED	£45.00	£52.88
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FS6-K	K56 INT. Voice BABT APPROVED	£48.00	£56.40
FS6-E	K56 EXT. Voice BABT APPROVED	£66.00	£77.55

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F420-E	VoiceSURFR 56K EXT.	£95.00	£111.63

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FH750	ACCURA ULTIMATE CHALLENGE	£115.00	£135.13
FH800	ACCURA 56K EXT VOICE/FAX/DATA	£87.00	£102.23
FH810	ACCURA 56K INT VOICE/FAX/DATA	£81.00	£95.18
FH760	ACCURA 336 PCMCIA	£92.00	£108.10
FH770	OPTIMA BUSINESS MODEM	£152.00	£178.60
FH780	OPTIMA 336 GLOBAL PCMCIA MODEM	£135.00	£158.63
FH785	OPTIMA 56K GLOBAL PCMCIA MODEM	£162.00	£190.35
FH781	GLOBAL GSM UPGRADE KIT-NOKIA 2110	£99.00	£116.33
FH782	GLOBAL GSM UPGRADE KIT-NOKIA 8110	£99.00	£116.33
FH830	MSN 56K EXTERNAL INTERNET SOLUTION	£94.00	£110.45
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F520	MICROLIN 33.6 PCMCIA	£129.00	£151.58
F511	56K VOICE INTERNAL	£79.00	£92.83
F521	56K VOICE EXTERNAL	£99.00	£116.33
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FGC20	GCS4020 GSM UPGRADE-NOKIA 2110 RANGE	£119.00	£139.83
FGC30	GCS4021 GSM UPGRADE FOR NOKIA 8110	£119.00	£139.83
FGC40	GCS4022 GSM UPGRADE FOR PANASONIC G350/400/500	£119.00	£139.83

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XIR230	Credit card ethernet 10/100 + S6K modem + GSM CEMS6-100BTX/M	£209.00	£245.58
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XIR310	Upgrade kit for GSM connection to S6k models. Siemens S3/Sony CMD-100, CMD-200 GSMCK-S6SIE-1	£79.00	£92.83
XIR320	Upgrade kit for GSM connection to S6k models. Siemens S4/Sony CMDX-1000 GSMCK-S6SIE-2	£79.00	£92.83

ISDN

XIR330	C/card ISDN adaptor (28+D) CI-EURO/M	£189.00	£222.08
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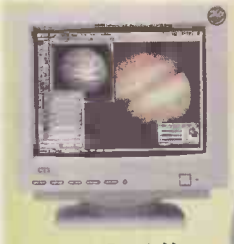

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MO608	2185 XE 21" 1280X1024 0.26DP	£799.00	£938.83
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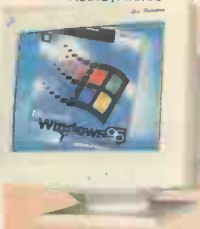
MO305	445XAV21" CRT 0.28DP AUDIO/MIC/SUBS	£1049.00	£1232.58



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15" VFM

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PANASONIC MONITORS

MO700	TXT 1565 15" MONITOR	£175.00	£205.63
MO707	TXT 1562 15" MONITOR	£225.00	£264.38
MO702	TXD 1562F 15" MONITOR	£255.00	£299.63
MO703	TXD 1734 17" MONITOR	£315.00	£370.13
MO705	TXD 1753 17" MONITOR	£409.00	£480.58
MO709	TXD 2162U 21" MONITOR	£850.00	£998.75
MO710	TXD 2171 21" MONITOR	£1000.00	£1175.00

SAMSUNG MONITORS

MO200	SM500s15"	£169.00	£198.58
MO201	SM500b15"	£155.00	£182.33
MO204	SM700s17"	£265.00	£311.38
MO205	SM700p17"	£355.00	£417.13
MO206	SM1000P 21"	£900.00	£1057.50

SONY MONITORS

MO410	CPD 100 EST 15" MONITOR	£179.00	£210.33
MO411	CPD 100 GST 15"	£215.00	£252.63
MO412	CDP 200 EST 17" MONITOR	£319.00	£374.83
MO409	CDP 200 GST 17" MONITOR	£359.00	£421.83
MO404	CDP 300 SFT520" TCO	£709.00	£833.08
MO405	CDP 17 SE2TS 17" TCO 95	£469.00	£551.08

MEDIA FORCE

- 17" Flat Sq.Tube
- 0.28mm dot pitch
- 1024x768 (Flicker Free) NI res.
- 12 Month RTB Guarantee

17" VFM

MO917 **£215** £252.63

MO406 GDM 20 SE2T5 20" TCO 95 £789.00 £927.08
MOW400 EXTEND PACK A 3 YEARS ON SITE 15" £49.00 £57.58
MOW402 EXTEND PACK B 3 YEARS ON SITE 17" £95.00 £111.63
MOW404 EXTEND PACK C 3 YEARS ON SITE 20" £109.00 £128.08

TAXAN MONITORS

MO512	ERGOVISION 430LR LR14"	£113.00	£132.78
MO502	ERGOVISION 530 TCO15"	£199.00	£233.83
MO511	ERGOVISION 550 TCO95 15"	£179.00	£210.33
MO503	ERGOVISION 730 TCO17"	£329.00	£385.58
MO504	ERGOVISION 740 TCO 17"	£399.00	£468.83
MO505	ERGOVISION 750 TCO 95 17" DIAMONDTRON	£449.00	£527.58
MO510	ERGOVISION 2040 TCO 95 20"	£665.00	£781.38
MO508	ERGOVISION 2150 TCO 95 21" DIAMONDTRON	£899.00	£1056.33

SAMSUNG SYNCMASTER

- 17" FST Invar non-glare dynamic focus CRT

17" SM700B

MO205 **£355** £417.13

TRUST MONITORS

MO38-P	PRECISION VIEWER 15"	£125.00	£146.88
MO48-P	PRECISION VIEWER 17"	£225.00	£264.38
MO48-V	VISUALSOUND 17"	£209.00	£245.58
MO56	PRO VISUAL 17"	£309.00	£363.08
MO61	CM 5031 20" MONITOR	£450.00	£528.75

VIEWSONIC MONITORS

MO800	E641 14"	£109.00	£128.08
MO801	E655 15"	£159.00	£186.83
MO33	GRAPHIC 15GS15"	£160.00	£188.00
MO47	GRAPHIC 17GS 17"	£299.00	£351.33
MO48-1	E771 17"	£319.00	£374.83
MO36	MULTIMEDIA 15GA15"	£209.00	£245.58
MO49	MULTIMEDIA 17GA 17"	£369.00	£433.58
MO803	PROFESSIONAL P810 21"	£859.00	£1009.33
MO805	PROFESSIONAL P815 21"	£939.00	£1103.33
MO33-1	G771 17"	£349.00	£410.08
MO810	G773 17"	£389.00	£457.08
MO44-1	P775 17"	£409.00	£480.58
MO809	PT775PRO 17"	£489.00	£574.58
MO808	GT775 17"	£419.00	£492.33
MO49-1	G790 19"	£499.00	£586.33
MO807	G800 20"	£689.00	£809.58
MO806	PT813PRO 21"	£939.00	£1103.33

SAMSUNG SYNCMASTER

- 3 Yr onsite warranty
- On-screen display

17" SM700S

MO204 **£265** £311.38

SYNCMASTER SM500B - 15"

- 15" FST CRT
- 3 Yr onsite warranty

SAMSUNG

MO201 **£155** £182.13

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All iiyama monitors come with a 3 year RTB warranty. An On-site option is also available

THE NEW VISION MASTER™ 350 COLOUR MONITOR MODEL MF8515

- High contrast 15" FST screen with anti-reflect/anti static coating
- 0.28mm dot pitch CRT for a crisp, clear dynamic image
- 1024x768@85Hz Flicker Free
- Powerful microprocessor control
- Win95 Plug n'Play DDC compatible
- VESA DPMS, Energy Star and Nutek powersaving compliance
- All European safety and ergonomic standards

MO105 350 **£183.00** £215.03

THE AWARD WINNING VISION MASTER™PRO 17 COLOUR MONITOR MODEL MT9017

- High contrast 17" Diamondtron screen with anti-reflect/anti static coating
- 0.25mm dot pitch Dual Force CRT for a crisp clear dynamic image
- 1600x1200@72Hz Flicker Free
- Simple to operate 3 button controls
- VESA DPMS, Energy Star and Nutek powersav compliance
- All European safety and ergonomic standard:

MO102 PRO17 **£399.00** £468.83

THE NEW VISION MASTER™450 19" COLOUR MONITOR MODEL S901GT

- High contrast 19" screen with anti-reflect/ anti glare/anti static coating
- 0.28mm dot pitch CRT for a bright, sharp dynamic image
- 1800x1440@75Hz Flicker Free
- On screen display menus for easy set up and use
- Massive 18" VIS
- VESA DPMS, Energy Star and Nutek powersaving compliance
- All European safety and ergonomic standards

MO112 450 **£575.00** £675.63

CTX

AUTHORISED RESELLER

1769MS MO615	**£349**	
	CRT Size/Viewable	17"/15.7"
	Dot Pitch (mm)	0.28
	CRT Type	FST
	Max. Resolution	1280 x 1024
	Horiz. Sync. (KHz)	30-70
	Special Features	Dome Speakers
1769SE MO616	**£299**	
	CRT Size/Viewable	17"/15.7"
	Dot Pitch (mm)	0.28
	CRT Type	FST
	Max. Resolution	1280 x 1024
	Horiz. Sync. (KHz)	30-70
	Special Features	MPRII
1792SE MO613	**£349**	
	CRT Size/Viewable	17"/15.7"
	Dot Pitch (mm)	0.26
	CRT Type	FST
	Max. Resolution	1600 x 1200
	Horiz. Sync. (KHz)	30-92
	Special Features	Made in UK/TCO95
1792UA MO612	**£399**	
	CRT Size/Viewable	17"/16"
	Dot Pitch (mm)	0.25
	CRT Type	Trinitron* CRT
	Max. Resolution	1600 x 1200
	Horiz. Sync. (KHz)	30-92
	Special Features	BNC/TCO95
2195XE MO618	**£899**	
	CRT Size/Viewable	21"/20"
	Dot Pitch (mm)	0.26
	CRT Type	FST
	Max. Resolution	1600 x 1200
	Horiz. Sync. (KHz)	30-95
	Special Features	BNC/TCO95

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Stylish designs and excellent resolutions at unbelievable prices - Trust design to please and Choice are delighted to offer these monitors to our customers.

SPEAKERS NOT INCLUDED

17L VISUAL SOUND

- 17" FST MONITOR
- 0.31mm dot pitch
- 1024x768 - NI res.
- 65Mhz video bandwidth
- 55-90KHz vert. 30-54Hz horz.
- Built in loud speaker & microphone
- CE, TUV, NPR2, UL & VDE/B Appr.
- 12 Month RTB Guarantee

MO48-V 17L **£209.00** £245.58

17" PRECISION VIEWER

- 17" Flat Sq.Tube
- 0.28mm dot pitch
- 1024x768 (Flicker Free) NI res.
- Scan frequency: horiz.
- 30-70KHz vert. 30-66Hz
- Analogue RGB (0.71Vp.p) H/V sep.
- Microprocessor based control
- 12 Month RTB Guarantee

MO48-P 17" FST **£225.00** £264.38

15" PRECISION VIEWER

Looks as MO48 ■ 15" Flat Sq.Tube

MO38-P 15" FST **£125.00** £146.88

PRO VISUAL EXCELLENCE

- 17" FST MONITOR ■ 0.27mm dot pitch
- 1280x1024 - NI res. ■ 110Mhz video band width
- 50-110KHz vert. 30-69Hz horz. ■ CE, TUV, NPR2, UL & VDE/8 Appr.
- On-Screen display ■ 12 Month RTB Guarantee

MO56 17" VFM **£309.00** £363.08

TAXAN THE UK MARKET LEADER

ERGOVISION 430 LR

The Ergovision 430LR is an excellent quality 14" monitor with 13.1" viewable. it features a 0.28mm dot pitch and a non-glare, anti-static screen. With resolutions of up to 1024x768 at 66Hz, image clarity is very good. DDC1/2B support for PnP compatiblity and support for new VESA 85Hz refresh rates. Compatible with IBM and compatibles and Macintosh.

MO512 430LR **£113.00** £132.78

ERGOVISION 550 TCO 95

The Ergovision 550 TCO 95 displays a crisp clear picture with its 15" screen (13.7" viewable). It features a 0.27mm dot pitch and a non-glare, anti-static screen. Resolutions of up to 1280x1024 at 64Hz. DDC1/2B support for PnP compatiblity and support for new VESA 85Hz refresh rates. Meets Energy Star, NUTEK, MPR-II & TCO 95 standards.

MO511 550TCO 95 **£179.00** £210.33

ERGOVISION 750 TCO95

The multiple award winning Ergovision 750 TCO95, features the superb 17" Diamondtron tube for a crisp, clear picture, with 1280x1024 resolution at 80Hz and 0.25 dot pitch, with a laminated anti glare and reflection coating. Digital on screen controls ensure optimum ease of use, while the monitor meets VESA DPMS, NUTEK, MPR-II & TCO 95 standards.

MO505 750 TCO95 **£449.00** £527.58

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DISPLAY EXCELLENCE by ADI MicroScan

JUST 6 OF THE 26 MAJOR MAGAZINE AWARDS WON BY ADI MONITORS SO FAR

NEW - 5GT TRINITRON 17"

A BRIGHT IDEA FROM ADI WITH SUPERB COLOUR AND CRISPNESS OF DISPLAY. HIGH RESOLUTIONS AND EXTENSIVE GRAPHIC FEATURES AT AN INCREDIBLE PRICEPOINT.

- 17" Trinitron CRT 1600 X 1200 @ 75Hz 0.25 aperture grille pitch TCO 95 approval ONLY

MO528 **£349.00** £410.08

MICROSCAN P SERIES

EXCELLENCE IN DISPLAY COMBINED WITH INTEGRAL MICROPHONE, STEREO SPEAKER & USB TECHNOLOGY OPTIONS.

- 15" MicroScan4P (1024 X 768 @ 85Hz)

MO525 **£145.00** £170.38

- 17" MicroScan5P (1024 X 768 @ 85Hz)

MO527 **£239.00** £280.83

- 19" MicroScan6P (1280 X 1024 @ 85Hz)

MO19 **£489.00** £574.58

- SP2000 speakers for all P range monitors

SP2000 **£16.00** £18.80

PROVISTA SERIES

DISPLAY THE BEST OF TODAY'S DEMANDING HOME AND OFFICE APPLICATIONS

- 14" ProVista E30 (800 X 600 @ 85Hz)

MO24E **£102.00** £119.85

- 15" ProVista E40 (1024 x 768 @ 85Hz)

MO34E **£125.00** £146.88

MICROSCAN G SERIES

FOR ULTIMATE DISPLAY PERFORMANCE AT HIGH RESOLUTIONS CHOOSE THE G SERIES.

- 17" MicroScan5G (1600 X 1200 @ 75Hz)

MO522 **£305.00** £358.38

- 17" MicroScan5GT trinitron (1600 X 1200 @ 75Hz)

MO528 **£349.00** £410.08

- 21" MicroScan6G (1600 X 1200 @ 75Hz)

MO524 **£739.00** £868.33

WARRANTY

ALL ADI MICROSCAN MONITORS COME WITH A 3 YEAR ON SITE WARRANTY. PROVISTA MONITORS COME WITH 2 YEARS ON SITE AND A THIRD YEAR RTB. WARRANTY UPGRADES ARE AVAILABLE

First Choice for Performance and Price

In the computer monitor industry it is a rare bird that can distinguish itself from the flock, soaring above the competition in a brilliant display of color and performance. Or bringing high flying technology at down to earth prices, capturing the accolades of industry publications around the globe; keeping both eyes on the horizon while never losing sight of the customers needs. This is the ViewSonic Corporation.

The Economy Series

Quality at Outstanding Value for Money

ViewSonic E655

15" Flat square screen with a maximum non-interlaced res. of 1280 x 1024 & 0.28mm dot pitch. Other features include OnView® controls, Plug & Play+, and a special anti-glare, anti-reflection screen treatment.

MO801 ViewSonic E655 **£159.00** £186.83

ViewSonic E771

17" CRT monitor with maximum non-interlaced resolution of 1280 x 1024 and 0.28mm dot pitch. Additional features include Plug & Play+, built in stereo speakers and a flat square sceen.

MO48-1 ViewSonic E771 **£319.00** £374.83

The Graphics Series

For General Business Applications

ViewSonic 15GS

15" CRT with a maximum non-interlaced res. of 1280 x 1024 & 0.27mm dot pitch. Other features include OnView® control system with ViewMatch® colour tuning, and a special anti-glare, anti-reflection screen treatment.

MO33 ViewSonic 15GS **£160.00** £188.00

ViewSonic 17GA

17" CRT with a maximum non-interlaced res. of 1280 x 1024 & 0.27mm dot pitch. Other features include OnView® controls, a Super Contrast screen & refresh rates of up to 160Hz.

MO49 ViewSonic 17GA **£369.00** £433.58

The Professional Series

ViewSonic P815

21" of Mega Monitor, setting new standards for speed, clarity & colour brilliance. Refresh rates of 1800 x 1440 at 76Hz. The P815 is ideal for high end graphics & CAD/CAM document imaging.

MO805 ViewSonic P815 **£939.00** £1103.33

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MOTHERBOARDS

QUICKVIEW LIST

PC CHIPS MOTHERBOARDS (-S denotes on board 3d sound chip)

M210-S	VX PRO CHIPSET 512K PLB cache baby AT	£36.00	£42.30
M220-S	TX PRO CHIPSET 1Mb PLB cache baby AT	£47.00	£55.23
M300-S	Intel TX CHIPSET 512K PLB cache baby AT	£49.00	£57.58
M101	PENTIUM PRO 440FX	£89.00	£104.58
M230	Intel 440LX PENTIUM II + AGP ATX	£79.00	£92.83

GET A FREE SIMM SAVER WITH EVERY MOTHERBOARD

QDI MOTHERBOARDS

M203	QDI JUMPERLESS LEGEND I - ATX SINGLE PII INTEL LX + AGP - 233-333	£115.00	£135.13
M202	QDI JUMPERLESS TX CHIPSET	£69.00	£81.08

GIGABYTE MOTHERBOARDS

M92-TX	GIGABYTE TX2 512K TX CHIPSET	£76.00	£89.30
M92-TX3	GIGABYTE TX3 512K TX CHIPSET	£79.00	£92.83
M92-ATX	GIGABYTE TX2 512K TX CHIPSET (ATX)	£76.00	£89.30
M92-LX	GIGABYTE GA686LX PENT II LX (ATX)	£99.00	£116.33
M92-BLX	GIGABYTE GA686BLX PENT II LX BABY AT	£99.00	£116.33
M92-DLX	GIGABYTE GA686DLX DUAL PENT II LX ATX	£229.00	£269.00

SEE PAGE 39 FOR LISTINGS OF AGP VIDEO CARDS

ELITE MOTHERBOARDS

M815	PS-SD SIS5591 75/266/512K+AGP Baby AT supports 100Mhz BUS speed	£92.00	£108.10
M810	PS-TX-A 430HX - ATX - 512K	£92.00	£108.10
M820	PS-TX-A Pro 430TX - ATX - 512K	£99.00	£116.33
M897	PSSJA SIS5582 ATX - USB UDMA 33 -512K	£79.00	£92.83
M830	P6KFA PII 440FX - ATX - 512K	£159.00	£186.83
M870	P6LX-A PII Single Slot 440LX - ATX	£119.00	£139.83
M880	P6LX-A UWSCSI PII Single Slot 440LX - ATX	£239.00	£280.83
M890	P6LX-A UWSCSI PII Dual Slot 440LX - ATX	£299.00	£351.33
M840	P5TX-AR 430TX - ATX - 512K	£145.00	£170.38
M850	TX-B-512 430TX - 3/4Baby AT - 512K	£85.00	£99.88
M860	VX-BE-512 430VX - 3/4Baby AT - 512K	£89.00	£104.58
CM2-96	256K CACHE FOR ELITE 256k M/B	£12.00	£14.10
M895	P6LX-A Single Slot Bare Bones System	£239.00	£280.83

MICRONICS WOW! BUNDLE#2

MICRONICS Intel TX motherbd	£85.00
Intel Pentium 233MMX CPU	£125.00
S3 Virge 4Mb Video Card	£35.00
Heavy Duty Heat Sink & Fan	£15.00
Individual Costs	£260.00

SAVE £12.92 — Total Bundle Cost £249 (£292.58)

ASUSTEK MOTHERBOARDS

M400	TX97-E 430TX-512k-Baby AT format	£85.00	£99.88
M410	TX97-E 430TX-512k-ATX	£92.00	£108.10
M415	TX97-XE + Creative Labs sound on board	£99.00	£116.33
M430	P2L-97 - Pentium II LX ATX	£106.00	£124.55
M530-S	P2L-97 - 5 Pentium II LX ATX W/UW SCSI	£159.00	£186.83

MICRONICS MOTHERBOARDS

M505	M7STw Twister TX 512K baby AT	£85.00	£99.88
M510	M7STw Twister TX 512K ATX	£85.00	£99.88
M515	W6-Li-Dual Pentium Pro + Adaptec UW SCSI	£299.00	£351.33
M520	M1 5Fw Stingray Pentium II ATX	£125.00	£146.88
M525	M1 DFd Fortress Dual Pentium II	£199.00	£233.83
M530	M1SLT Tigercat Pentium II ATX 440LX	£133.00	£156.28

PC CHIPS WOW! BUNDLE#1

PCChips TX Pro Motherboard	£47.00
WinChip 180 MMX CPU	£39.00
2Mb MediaForce S3 TrioDX	£18.00
Heat Sink & Fan	£8.00
Individual Costs	£112.00

SAVE £15.27 — Total Bundle Cost £99 (£116.33)

SOYO MOTHERBOARDS

M710	SY-5EDS/M P75-266 ATX 1Mb cache + AGP	£79.00	£92.83
M720	SY-5EDS P75-266 ATX 512K cache + AGP	£73.00	£85.78

SUPERMICRO MOTHERBOARDS

M240	P5MMA98 Intel 430TX P75-233/512K/ATX	£84.00	£98.70
M250	P5MMS98 Intel 430TX P75-233/512K/AT	£87.00	£102.23
M260	P6DNE Dual P-Pro 440FX - Baby AT	£219.00	£257.33
M270	P6DKS Dual PII 200/300 Mhz 440FX/ATX	£299.00	£351.33
M280	P6SLA Single PII 200-300 Mhz 440LX/ATX	£99.00	£116.33
M290	P6DLE Dual PII 200-300 Mhz 440LX/ATX	£189.00	£222.08
M295	P6DLS as above with UW-SCSI onboard	£279.00	£327.83

TYAN MOTHERBOARDS

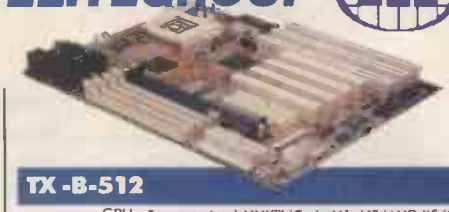
MT100	S1571 TITAN TURBO AT-2 P75-233 512K - INTEL TX	£81.00	£95.18
MT110	S1573 TITAN TURBO ATX-2 P75-233 512K - INTEL TX	£81.00	£95.18
MT120	S1692S TIGER ATX SINGLE PII P75-233 - INTEL LX + AGP	£117.00	£137.48

SUPERMICRO® WOW! BUNDLE#3

SuperMicro P6SLA M/board	£99.00
Intel Pentium PII 300 CPU	£329.00
ATI AGP 4Mb Video Card	£89.00
PII Heat Sink & Fan	£15.00
Individual Costs	£532.00

SAVE £27.02 — Total Bundle Cost £509 (£598.08)

ELITEGROUP ECS



TX-B-512

CPU	Supports Intel MMX™ /Cyrix M1-M2/AMD K5/6 All processors 75 - 233Mhz
Architecture	4 PCI Slots and 3 ISA Slots Intel 430TX Chipset
Cache	512K Cache as Standard
I/O Spec	4 IDE Devices & 2 Floppy D/Drives Supports: PIO Mode 4 & DMA Mode 2 Ultra DMA/33 2xUSB Ports (ready)
Memory	Uses 72-pin SIMM modules x 4 auto-banking In multiple configuration up to 256Mb. Supports both Fast Page Mode & EDO DRAM Two 168 Pin DIMM Sockets (SDRAM)
Features	Advanced configuration power interface (ACPI). PC97 compliant
Size	218mm x 281mm (BABY AT)

M850 **£85.00** £99.88

ELITEGROUP LAUNCH BRAND NEW INTEL 440LX CHIPSET BOARD

P6LX-A

CPU	Supports Intel PII /233-333 (MMX™)
Architecture	Intel 440LX Chipset 5 PCI Slots and 2 ISA Slots 1 AGP Slot (Dedicated Graphics)
I/O Spec	4 IDE Devices & 2 Floppy D/Drives PIO Mode 4 & DMA Mode 2 2xUSB Ports (ready)
Memory	Four 168 Pin DIMM Sockets 512Mb SDRAM (1Gb EDO RAM)
Size	304.4mm x 243.84mm (ATX Dual Height)

P6LX-A SINGLE SLOT

As above

M870 **£119.00** £139.83

P6LX-A SCSI SINGLE SLOT

- Adaptec U/W SCSI with RAID Port
- Intel LANDesk Client Manager
- LM78 Hardware Monitor (temperature regulation & chassis tamper)
- LAN/Modem wake-up feature

M880 **£239.00** £280.83

P6LX-2A SCSI

As above but dual slot

M890 **£299.00** £351.33

P6LX-A BARE BONES SYSTEM

Consists of high quality ATX midi-tower case, floppy drive and motherboard allowing greater choice when building your system

M895 **£239.00** £280.83

QDI JUMPERLESS MOTHERBOARDS

QDI TX JUMPERLESS MOTHERBOARD

Intel 82430TX Chipset

CPU	Supports Intel/Cyrix/AMD K5/6 - P75 - 233Mhz Supports Intel MMX™
Architecture	4 PCI Slots and 3 ISA Slots
Cache	512K Cache as Standard Supports: 4 IDE Devices & 2 Floppy D/Drives PIO Mode 4 & DMA Mode 2 Ultra DMA/33
Memory	Uses 72-pin SIMM modules x 4 auto-banking in multiple configuration up to 256Mb.
BIOS	Supports both Fast Page Mode & EDO DRAM Two 168 Pin DIMM Sockets Supports Flash ROM, PnP, Green Feature, NCR810 SCSI Bios.
Size	22cm x 25cm

M202 **£69.00** £81.08

QDI LEGEND I INTEL 440LX

Intel 440LX Chipset

CPU	Supports Intel Pentium II 233 - 333Mhz
Architecture	4 PCI Slots and 3 ISA Slots
VGA Bus	1 x AGP (Accelerated Graphics Port)
I/O Spec	Supports: 4 IDE Devices & 2 Floppy D/Drives PIO Mode 4 & DMA Mode 2 UDMA 33 2 USB Ports on board PS2 Mouse & Keyboard Connectors
Memory	4 x 168 pin DIMM Supports up to 512Kb SDRAM or 1Gb EDO
Advanced	SpeedEasy for Jumperless CPU upgrade Modem Ring on
Board Size	ATX - 30.5cm x 24.4cm

M203 **£115.00** £135.13

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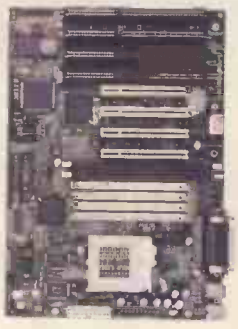

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PC 98 SOLUTION

PC HEALTH MONITORING:
- multiple onboard voltage monitors
- fan status monitors, auto on/off control
- CPU/chassis temperature control
- CPU overheat alarm and control
- chassis intrusion detection
- Intel LANDesk Management support

ACPI/PC 98 FEATURES:
- Remote modem ring-on
- ACPI OnNow standby mode
- Real time clock wake-up alarm
- Main switch override mechanism
- Boot support for USB keyboard

SUPER P5MMA98

POWER & PERFORMANCE FROM THIS ATX BOARD

- ATX format Pentium class motherboard
- Supports high-speed 75MHz bus
- PC98 solution (see box)
- Intel 430TX PCIset
- 512k pipelined burst synchronous cache
- 8MB to 256MB EDO, SDRAM or FPM
- 2 Ultra DMA EIDE, 1 floppy
- 1 ECP/EPP parallel, 2 UART 16550 serial
- 2 USB, 1 infrared port

M240

£84.00 £98.70

SUPER P5MMS98

RELIABILITY & VALUE FROM THIS SUPERB BOARD

- Pentium class motherboard
- Supports high-speed 75MHz bus
- PC98 solution (see box)
- Intel 430TX PCIset
- 512k pipelined burst synchronous cache
- 8MB to 256MB EDO, SDRAM or FPM
- 2 Ultra DMA EIDE, 1 floppy
- 1 ECP/EPP parallel, 2 UART 16550 serial
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M250

£87.00 £102.23

6x86MX PROCESSOR MANUFACTURED BY IBM

6x86MX PROCESSORS BY IBM

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- Advanced superscalar processor architecture
- Technology that rivals Intel Pentium II family
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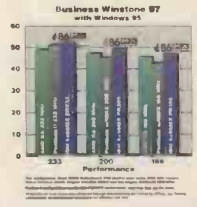

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INTEL 440LX PENTIUM II

CPU	Supports PII - 233MHz - 333MHz Processors. MMX Compatible.
Architecture	3 ISA Slots All 4 PCI slots support Master mode
Cache	Supports 256K or 512K pipelined burst cache in PII processor.
I/O Spec	Supports: 4 IDE devices in 2 channels. Ultra DMA 33Mb p/sec transfer 2 serial Ports with 16550 Fast UARTs 1 parallel port with EPP/ECP capabilities. Floppy Disk Drive interface.
Memory	Uses 3x 168-pin DIMM modules up to 384Mb. Supports both EDO and SDRAM
Graphics	Supports accelerated graphics port v.1.0 (1x and 2x mode)
Form factor	ATX with PS2 keyboard and mouse connectors + USB Interface

£79.00 M230 £92.83

TX PRO CHIPSET - 1MB CACHE

MEGA CACHE

CPU	Supports P90 - 300MHz Pentium, Cyrix AMD K5/K6, WinChip Processors Smart CPU Plug'N'Play MMX Compatible
Architecture	4 PCI Local Bus Slots & 3 x 16 bit ISA Bus Slots All 4 PCI slots support Master mode
Cache	1Mb Pipelined Burst Cache on board
I/O Spec	Supports: 4 IDE devices in 2 channels. Supports UltraDMA. PIO Mode 0 to 4 at 16.67Mb/S. 2 serial Ports with 16550 Fast UARTs 1 parallel port with EPP/ECP capabilities. Floppy Disk Drive interface.
Memory	Uses 72-pin SIMM modules x 4 auto-banking in multiple configuration up to 128Mb. 168-pin DIMM x 3 Supports both Fast Page Mode & EDO DRAM/SDRAM
BIOS	Supports AMIBIOS multisetup function inc WINBIOS and Simple BIOS setup
SIZE	22cm x 26cm Baby AT form factor
SOUND	On board 3d SoundPro meets PC98 spec

DC CHIPS MEGA CACHE

£47.00 M220-S £55.23

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New from PC Chips, this Bare·Bones System

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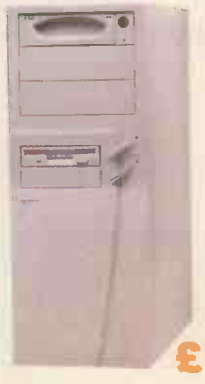
- CE Approval



£119.00 CS-ATX £139.83

VX PRO II CHIPSET - 512K

CPU	Supports P75 - 233MHz Pentium, Cyrix AMD K5/K6 Processors. Zif Socket & Regulator Module MMX Compatible
Architecture	4 PCI Local Bus Slots & 2 x 16 bit ISA Bus Slots All 4 PCI slots support Master mode
Cache	512K Pipelined Burst Cache on board
I/O Spec	Supports: 4 IDE devices in 2 channels. PIO Mode 0 to 4 at 16.67Mb/S. 2 serial Ports with 16550 Fast UARTs 1 parallel port with EPP/ECP capabilities. Floppy Disk Drive interface.
Memory	Uses 72-pin SIMM modules x 4 auto-banking in multiple configuration up to 128Mb. 168-pin DIMM x 2 Supports both Fast Page Mode & EDO DRAM
BIOS	Supports AMIBIOS multisetup function inc WINBIOS and Simple BIOS setup
SIZE	22cm x 26cm Baby AT form factor
SOUND	On board 3d SoundPro meets PC98 spec

DC CHIPS

£36.00 M210-S £42.30

INTEL TX CHIPSET - 512K

CPU	Supports P90 - 300MHz Pentium, Cyrix AMD K5/K6, WinChip Processors Smart CPU Plug'N'Play MMX Compatible
Architecture	4 PCI Local Bus Slots & 3 x 16 bit ISA Bus Slots All 4 PCI slots support Master mode
Cache	512K Pipelined Burst Cache on board
I/O Spec	Supports: 4 IDE devices in 2 channels. Supports UltraDMA. PIO Mode 0 to 4 at 16.67Mb/S. 2 serial Ports with 16550 Fast UARTs 1 parallel port with EPP/ECP capabilities. Floppy Disk Drive interface.
Memory	Uses 72-pin SIMM modules x 4 auto-banking in multiple configuration up to 128Mb. 168-pin DIMM x 2 Supports both Fast Page Mode & EDO DRAM/SDRAM
BIOS	Supports AMIBIOS multisetup function inc WINBIOS and Simple BIOS setup
SIZE	22cm x 26cm Baby AT form factor
SOUND	On board 3d SoundPro meets PC98 spec

DC CHIPS

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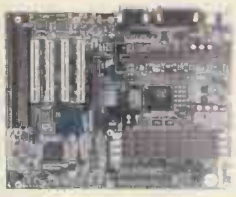
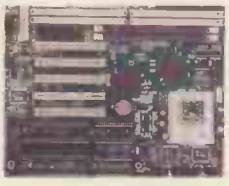


M1-SLT TIGERCAT 440LX

- Supports Intel PII 233-300 Mhz VRM integrated.
- Intel 440LX chipset
- SMC FDC37C68x Ultra I/O Chip
- 4 PCI slots, 2 ISA slots
- 1 AGP Up
- 4x3.3V Unbuffered DIMM EDO or SDRAM
- Supports Ultra DMA 33Mb
- 2 Floppy Disk Drives
- 2 x 16550 compatible serial ports
- Supports USB.
- ATX form factor with PS2 style keyboard/mouse connectors

M530 **£133.00** £156.28



M7-STw 430TX CHIPSET TWISTER

- Supports Intel 75-200mhz, Intel MMX 166-233 (integrated VRM), Cyrix, AMD K5 / K6
- Intel 430TX chipset
- 4 PCI slots, 4 ISA slots
- 512k pipelined burst level 2 cache
- I/O supports Ultra DMA 33mb/sec
- 6 (ATX) 4 (AT) x 72 pin SIMMS, 2 x 3.3v unbuffered DIMMS. Max memory 256Mb
- PS2 style mouse and keyboard connectors (ATX only)
- Available in AT or ATX form factor
- Supports USB

M505 AT **£85.00** £99.88

M1-DFd 440FX CHIPSET FORTRESS

- Supports Dual Intel Pentium PII 233-300Mhz
- Intel 440FX chipset
- Max memory 1024Mb
- 2 Floppy Disk Drives
- 2 x 16550 compatible serial ports
- 4 PCI, 2 ISA slots
- 4 x 3.3v unbuffered DIMM
- PS2 style keyboard and mouse connectors ATX form factor

M525 **£199.00** £233.83

M1-SFW STINGRAY

- Single Intel Slot 1 supports 233/266 MHz Pentium II processor
- Integrated VRM
- Intel 440FX chipset
- 4 PCI, 2 ISA slots
- 4 x 3.3v unbuffered DIMM slots
- PS2 style mouse and keyboard connectors
- Supports USB
- ATX form factor

M520 **£139.00** £163.33

- ETEQ Chipset, 512KB/1MB L2 Cache
- Smart Detect CPU Voltage
- PC97, ACPI, Ultra DMA/33, ECC
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GIGABYTE FANTASTIC VALUE BUNDLE - K6™ MMX AND GIGABYTE TX2 CHIPSET

GIGABYTE

CPU	Supports Intel/Cyrix/AMD K5/6 - 90 - 233Mhz
Architecture	Supports Intel MMX™
Cache	4 PCI Slots and 3 ISA Slots
I/O Spec	512K Internal Cache as standard
	Supports: 4 IDE Devices 2 Floppy Disk Drives
	2 x 16650 UART fast serial port
	EPP/ECP high performance parallel port. Supports USB
Memory	Uses 72-pin SIMM modules x 4 auto-banking in multiple configs up to 256Mb. Supports both Fast Page Mode, EDO DRAM and 2 DIMMS
BIOS	Supports Flash ROM, PnP, Green Feature, NCR810 SCSI Bios. Award version 4.5 PG. PNP V1.0A
Size	22cm x 28cm

GigaByte TX2 Motherboard	£76+VAT
Approved Heat Sink & Fan	£15+VAT
K6-PR233 MMX™ CPU	£95+VAT
Normal Price	£186+VAT
OFFER PRICE	**£180**+VAT

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U-A30 BackUPS Pro 650 **£155.00 + VAT**

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U-A65	SmartUPS 1400i NET - c/w PowerChute Plus	£355	£317.13
U-A70	SmartUPS 2200i NET - c/w PowerChute Plus	£539	£633.33

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- Relevant Cabling

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N159	E/link III 3C509B-TPC ISA RJ45/BNC Card Retail	£46	£54.05
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N154	E/link III 3C509B ISA Combo 5 Pack	£309	£363.08
N104	E/link III 3C900 PCI Combo Bare Card	£79	£92.83
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N158 E/link XL 3C905-TX PCI 10/100 RJ45 **£54.00** + VAT

NR400	Fast E/link ISA 3C515-TX 10/100 RJ45	£95	£111.63
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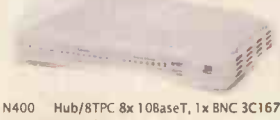

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XIR170	C/Bus 32 bit eth. adaptor 10/100 100BaseTX	£99	£116.33
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XIR310	Upgrade kit for GSM connection to 56k models. Siemens S3/Sony CMD-100, CMD-200 GSMCK-56SIE-1	£79	£92.83
XIR320	Upgrade kit for GSM connection to 56k models. Siemens S4/Sony CMDX-1000 GSMCK-56SIE-2	£79	£92.83

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XIR250	Pocket ethernet adaptor 10BaseT PE3-10BT/GB/E	£169	£198.58
XIR260	Pocket ethernet adaptor 10BaseT/10Base2	£189	£222.08

MEDIA FORCE

N08	ISA PnP Combo card	£12	£14.10

N09	ISA RJ45 only	£11.50	£1351
N40	PCI Combo Card	£14	£16.45

N900	10/100 PnP Network Card	£23	£27.03

N25	PCMCIA combo	£39	£45.83
N20	Pocket Lan adaptor parallel port combo	£55	£64.63
N100	4 Port Hub (4x RJ45)	£29	£34.08
N105	8 Port Hub (8x RJ45 + 1x BNC)	£39	£45.83

N110	16 Port Hub (16x RJ45 +1x BNC)	£79	£92.83

N15	VESA Combi Card	£10	£11.75

NETWORK CABLES AND ACCESSORIES – Cables & Tools.

N55	100M Reel Coax Cable	£21	£24.68
N55-1	1M RG58 BNC Fly Lead	£4	£4.70
N55-2	2M RG58 BNC Fly Lead	£5	£5.88
N55-5	5M RG58 BNC Fly Lead	£7	£8.23
N55-10	10M RG58 BNC Fly Lead	£10	£11.75
N70	BNC Crimp Plug	£1	£1.18
N71	BNC T-Piece	£1	£1.18
N72	BNC In Line Coupling	£1	£1.18

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SWITCHBOARD: 9AM-6PM WEEKDAYS 9AM-4PM SATURDAY 0800 073 1731

N73	BNC Terminator 50Ohm	£1	£1.18
N60	BNC Crimp Tool	£19	£22.33
N65	Coax Stripper Tool	£14	£16.45
N90	1000ft UTP Cat. 5 Cable Easy Pull Box Grey	£60	£70.50
N90-1	1M UTP Patch Cable Cat. 5 Grey	£2	£2.35
N90-2	2M UTP Patch Cable Cat. 5 Grey	£2.50	£2.94
N91	3M UTP Patch Cable Cat. 5 GreY	£3	£3.53
N92	5M UTP Patch Cable Cat. 5 Grey	£4	£4.70
N93	7M UTP Patch Cable Cat. 5 Grey	£5	£5.88
N91-Y	1M UTP Patch Cable Cat. 5 Yellow	£2.50	£2.94
N92-Y	2M UTP Patch Cable Cat. 5 Yellow	£3	£3.53
N93-Y	3M UTP Patch Cable Cat. 5 Yellow	£3.50	£4.12
N95-Y	5M UTP Patch Cable Cat. 5 Yellow	£5	£5.88
N97-Y	7M UTP Patch Cable Cat. 5 Yellow	£6	£7.05
N91-R	1M UTP Patch Cable Cat. 5 Red	£2.50	£2.94
N92-R	2M UTP Patch Cable Cat. 5 Red	£3	£3.53
N93-R	3M UTP Patch Cable Cat. 5 Red	£3.50	£4.12
N95-R	5M UTP Patch Cable Cat. 5 Red	£5	£5.88
N97-R	7M UTP Patch Cable Cat. 5 Red	£6	£7.05
N91-G	1M UTP Patch Cable Cat. 5 Green	£2.50	£2.94
N92-G	2M UTP Patch Cable Cat. 5 Green	£3	£3.53
N93-G	3M UTP Patch Cable Cat. 5 Green	£3.50	£4.12
N95-G	5M UTP Patch Cable Cat. 5 Green	£5	£5.88
N97-G	7M UTP Patch Cable Cat. 5 Green	£6	£7.05
N91-B	1M UTP Patch Cable Cat. 5 Blue	£2.50	£2.94
N92-B	2M UTP Patch Cable Cat. 5 Blue	£3	£3.53
N93-B	3M UTP Patch Cable Cat. 5 Blue	£3.50	£4.12
N95-B	5M UTP Patch Cable Cat. 5 Blue	£5	£5.88
N97-B	7M UTP Patch Cable Cat. 5 Blue	£6	£7.05
INTEL			
N540	E/Express PRO 10+ PCI combo	£68.50	£80.49
N520	E/Express PRO 10+ ISA RJ45	£37	£43.48
N520-S	E/Express PRO 10+ ISA RJ45 5 Pack	£179	£210.33
N500	E/Express PRO 10+ ISA Combo BNC/10BaseT	£54	£63.45
N500-5	E/Express PRO 10+ ISA Combo BNC/10BaseTS Pack	£259	£304.33
N510	E/Express PRO 10+ ISA Combo With AUI	£59	£69.33
N300	E/Express PRO 10/100 PCI	£49	£57.58
N600	Netport Express Pro Multi Protocol Ext Print Server 3 port PCLA2153	£219	£257.33
NI610	N/Express Pro Multi Protocol Int Print Server M10 PCLA3152	£153	£179.78
MAYFLEX /PLANET NETWORKING STARTER KITS			
NM630	8 Port Hub+3xISA PnP NIC BNC & RJ45 NSK0803-I	£79	£92.83
NM640	8 Port Hub+3xPCI NIC BNC & RJ45	£89	£104.58
MAYFLEX /PLANET			
Lan Ethernet Adaptors (E/A)			
NM100	PCI 10/100 E/Ad.10BaseT/100BaseTX ENW-9502	£33	£38.78
NM110	PCI 10/100 E/Ad. 10BaseT/100BaseTX + DEC11240 ENW-9501	£49	£57.58
NM111	PCI 10/100 TX Full Duplex Realtek ENW9503	£29	£34.08
NM120	ISA PNP E/Ad.NE2000 compatible BNC/10BaseT ENW-2400P-1T	£15	£17.63
NM150	Boot Rom for 2400 series	£5	£5.88
NM130	PCI E/Ad. NE2000 compatible BNC/10BaseT ENW-8300-2T	£18	£21.15
NM140	Boot Rom for 8300 series	£5	£5.88
NM160	High Performance 2-in-1 Ethernet Pocket Lan card BNC/10BaseTEN-EPP-CT	£75	£88.13
NM170	2-in-1 E.net PCMCIA card BNC/10BaseT ENW-3500-2T	£65	£76.38
NM171	PCMCIA 10/100 TX Slot II ENW9503	£99	£116.33
SOHO Series Ethernet Hub			
NM180	5 port palm 4x10BaseT/1xBNC, metal EH-500	£35	£41.13
NM190	5 port palm 5x10BaseT, plastic EH-501	£35	£41.13
NM200	8 port mini hub 8x10BaseT/1xBNC EH-800	£45	£52.88
NM210	8 port un-managed hub 8x10BaseT/1xBNC/1xAUI EH-802	£69	£81.08
NM220	16 port mini hub 16x10BaseT/1xBNC/ 1xAUI EH-1600	£89	£104.58
Rack Mountable un-managed 10BaseT Hubs			
NM230	16 port 16x10BaseT/10BaseT uplink x 1/2xBNC/ 2xAUI EH1602R	£115	£135.13
NM240	24 port 24x10BaseT/10BaseT uplink/2xBNC/ 2xAUI EH-2400	£199	£233.83
NM250	32 port 32x10BaseT/10BaseT uplink/2xBNC/ 2xAUI EH-3200	£249	£292.58
Ethernet transceivers			
NM260	AUI to BNC ET506	£18	£21.15
NM270	AUI to 10BaseT ET-507	£18	£21.15
NM280	AUI to ST (fibre) ET-108A	£94	£110.45
NM290	10BaseT to BNC ET-509	£79	£92.83
Coax Repeators			
NM300	2 port 2xAUI/BNC ER-200	£99	£116.33
NM310	4 port rack mountable 4x AUI/BNC ER-400R	£199	£233.83
100BaseTX Fast Ethernet Stackable Standard Hubs			
NM320	5 port palm top stackable FN-500	£159	£186.83
NM330	8 port palm top stackable FN-800	£239	£280.83
NM340	4 port stackable with bridging port FNB-400	£199	£233.83
NM350	8 port stackable with bridging port FNB-800	£299	£351.33
NM360	12 port stackable with bridging port FNB-1200	£465	£546.38
NM370	Fibre-Optic module for FNB series (SC type)	£235	£276.13
NM380	Fibre-optic module for FNB series (ST type)	£235	£276.13
NM390	8 port stackable 10/100 100BaseTX FH-801	£309	£363.08
NM400	16 port stackable 10/100 100BaseTX FH-1601	£609	£715.58
NM410	100BaseFX Fibre-Optic module (ST type)	£259	£304.33
NM420	10BaseT bridging module FH-10T	£179	£210.33
10/100 Ethernet/Fast Ethernet Switching Hubs			
NM430	8 port 10/100BaseTX FNSW-8080	£879	£1032.83
NM440	2 port 10/100BaseTX, 8 port 10BaseT FNSW-1020	£579	£680.33
NM450	2 port 10/100BaseTX, 16 port 10BaseT FNSW-1820	£779	£915.33
NM465	1 port 100BaseTX, 1 port 100BaseFX, 8 port 10BaseT FNSW-1021F	£699	£821.33
NM475	1 port 100BaseTX, 1 port 100BaseFX, 16 port 10BaseT FNSW-1821F	£999	£1173.83
10/100 Desktop Express Switching Hubs			
NM485	4 port 10/100BaseTX FHSW-4040A	£599	£703.83
NM495	8 10/100BaseTX FHSW-8080A	£1049	£1232.58
NM505	2 port 100BaseTX, 8 port 10BaseT FHSW-1020N	£679	£797.83
NM515	10/100 MicroSwitch Hubs 2 port 10/100BaseFx FS-2020A	£549	£645.08
NM525	1 port 10/100BaseTX, 1port 100BaseFX FS-2020AF	£549	£645.08
NM531	Intelligent 10/100 Network solution 32 port e.net 10BaseT SNMP master hub EH-3200M	£749	£880.08
NM540	16 port e.net 10BaseT SNMP master hub EH-1600M	£449	£527.58
NM460	32 port e.net 10BaseT SNMP slave hub EH-3200S	£549	£645.08
NM470	16 port e.net 10BaseT SNMP slave hub EH-1600S	£279	£327.83
NM480	8 port ethernet 10BaseT SNMP slave hub EH-800S	£129	£131.58
NM490	PlanetView Win. based SNMP management S/W	£299	£351.33
NM500	Intelligent 10/100 network solution 12 port 100BaseTX FHSW-1212	£2299	£2701.33
NM510	2 port 100BaseTX, 10 port 10BaseT FHSW-1202	£1219	£1432.33
NM520	2 port 100BaseTX, 24 port 10BaseT In 4 switching cluster FHSW-2602	£999	£1173.83
NM530	1 port 100BaseTX, 24 port 10BaseT with 1 switching module slot FHSW-2602A	£1349	£1585.08
ETHERNET PRINT SERVERS AND INTERNET ROUTER			
NM541	1 port direct attached Print Server (IPX/SPX, NDS, SMB) PS-3N-D	£149	£175.08
NM550	1 port direct attached Print Server (IPX/SPX, TCP.IP, Apple,SMB) PS-SP-D	£185	£217.38
NM560	2 parallel/1 serial Print Server (IPX/SPX, NDS, SMB) PS-3N-M	£229	£269.08
NM565	3 parallel Fast Ethernet Print Server (IPX/SPX, NDS, TCP/IP, Apple, SMB FPS-SP-M	£279	£327.83
NM570	Single port ethernet router with 1xBNC/ 10BaseT, 1port DB-9 RT-101	£239	£280.83
NM575	4 Port Internet sharing hub IH-400	£199	£233.83

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N-SOS Starter Kit

- Complete Network Hardware in a box: 1 single source of hardware support
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N-SO25 PCMCIA

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- Comprehensive drivers ensure guaranteed running
- 6 year warranty

SOHOWARE			
N-SO5	Starter Kit for 2 PCs - 5 Port Hub, Cables, PnP NIC, 16bit ISA, 10Base-T. Uses ND5320 Cards	£69.00	£81.08
N-SO10	5 Port Hub, Palm Sized, Desktop, Wallmount 10Base-T	£34.00	£39.95
N-SO65	1 Port Print Server for Win95/NT	£93.00	£109.28
N-SO70	1 Port Print Server for Novell Netware & WinNT	£129.00	£151.58
N-SO50	FAST ETHERNET HUB, 8 Port, RJ45, Rack Mountable, 100Base TX	£329.00	£386.58
N-SO60	ETHERNET HUB, 8 Port, RJ45 & BNC, Rack Mountable,	£65.00	£76.38
N-SO15	25ft UTP Cable Assembly - 10Base-T	£7.00	£8.23
N-SO20	High performance NIC, Auto Config. 32bit PCI Combo, 10Base-T & COAX	£22.00	£25.85
N-SO25	PCMCIA NE2000 compatible NIC, Self Installing PCMCIA 10Base-T & COAX	£62.00	£72.85
N-SO30	PCMCIA NE2000 compatible NIC, Self Installing PCMCIA 10Base-T	£47.00	£55.23
N-SO35	NE2000 compatible PnP, NIC, Self Installing 16bit ISA, 10Base-T & COAX	£27.00	£31.73
N-SO40	NE2000 compatible PnP, NIC, Self Installing 16bit ISA, 10Base-T	£20.00	£23.50
N-SO45	FAST ETHERNET, NIC, 10/100Mbps autoswitchable self installing, 32bit PCI 10Base-T, 100 Base TX	£39.00	£45.83

ALL PLANET PRODUCTS COME WITH A 1YR SWAP-OUT WARRANTY AND A LIFETIME GUARANTEE AS STANDARD

RACK-MOUNTABLE UNMANAGED 10BASE-T HUBS

19" Rack-mountable 10Base-T Hub with 16, 24 or 32 shielded RJ-45 Ports, plus 2 AUI and 2 BNC of which any combination can be active to provide flexible back-bone connections. LEDs provide diagnostic functions for link activity collisions etc. Supplied with mounting kit & power cord.

Rack Mountable un-managed 10BaseT Hubs

NM230	16 port 16x10BaseT/10BaseT uplink x 1/2xBNC/ 2xAUI EH1602R	£129.00	£151.58
NM240	24 port 24x10BaseT/10BaseT uplink/2xBNC/ 2xAUI EH-2400	£199.00	£233.83
NM250	32 port 32x10BaseT/10BaseT uplink/2xBNC/ 2xAUI EH-3200	£249.00	£292.58

ISA Combo BNC + RJ45 NE2000

16 Bit ISA Plug and Play, one of the fastest Ethernet cards available today! Using patented technology, data transfer is pipelined simultaneously, resulting in greatly reduced packet turnaround time and much higher through put. The Jumperless+Plug and Play design offers maximum flexibility. "Media auto - sensing" switches to the media attached automatically, no matter whether its BNC, AUI or 10BaseT connections, no more configuration is needed. Automatic detection of 8 or 16 bit slot installed. More interrupts (8) and 1/10 address (7) supported than other card, meaning maximum compatibility.

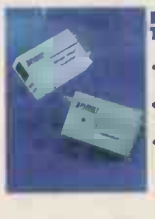
NM120 ISA Combo BNC + RJ45 NE 2000
£15.00 £17.63

10/100Base-TX PCI Card *Approved by Microsoft*

10/100 Base-TX Fast Ethernet Card auto detects Ethernet or Fast Ethernet connections. Full duplex mode supported (FDX) in both 10Base-T & 100Base-T operation. Driver support for Netware 3X & 4X, Windows 95 & NT & NT Advanced Server. Approved by Microsoft for use in an NT Environment.

NM130
10/100Base-TX Card
£18.00 £21.15

PLANET Networking & Communication



PLANET TRANSCEIVERS

- Meets IEEE802.3 Standard
- Optional SQE (heartbeat) function
- Jabber control function

NM260	AUI to BNC	£18.00	£21.15
NM270	AUI to UTP RJ-45	£18.00	£21.15
NM280	AUI to ST (Fibre)	£94.00	£110.45
NM290	10Base-T to BNC	£79.00	£92.83

PLANET REPEATERS

- Meets IEEE802.3 Standard
- Auto-partition
- On-board elasticity buffer, manchester encoder and decoder for preamble regeneration
- ER-200 2-Port Desktop Repeater (2*AUI/BNC)
- ER-400R 4-Port Rack Mountable Repeater (4*AUI/BNC)

NM300 2-Port Desktop Repeater
£99.00 £116.33
NM310 4-Port Rack Mountable Repeater
£199.00 £233.83

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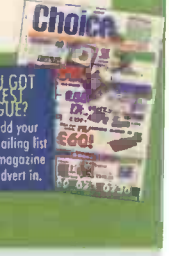

NOTEBOOKS

Due to the high value of these items - please allow upto 3 working days from clearance of payment for delivery.

Manufacturer	Code	Processor	Monitor	RAM	HDD	CD	Modem	Ex.	Inc. VAT
IBM® 380E/ED and 770 Series									
ThinkPad 380ED	LAPIB2	P166 MMX	12.1"DSTN	16	2.1Gb	20X	No	£1209	£1420.58
ThinkPad 380ED	LAPIB3	P166 MMX	12.1"TFT	16	3.3Gb	20X	No	£1649	£1937.58
ThinkPad 380ED	LAPIB4	P166 MMX	12.1"TFT	16	5.0Gb	20X	No	£1819	£2137.33
ThinkPad 380E	LAPIB5	P150 MMX	12.1"DSTN	16	2.1Gb	Optional	No	£989	£1162.08
ThinkPad 560E	LAPIB6	P166 MMX	12.1"TFT	16	2.1Gb	Optional	No	£2049	£2407.58
ThinkPad 560E	LAPIB10	P150 MMX	11.3"DSTN	16	2.1Gb	No	No	£1409	£1655.58
ThinkPad 560X	LAPIB11	P233 MMX	12.1"TFT	32	4.0Gb	No	No	£2519	£2959.83
ThinkPad 760XL	LAPIB12	P166 MMX	12.1"TFT	32	5.1Gb	Optional	No	£2769	£3253.58
ThinkPad 765L	LAPIB8	P166 MMX	13.3"XGA TFT	32	3.0Gb	Optional	No	£3209	£3770.58
ThinkPad 765D	LAPIB9	P166 MMX	13.3"XGA TFT	32	3.0Gb	20X	No	£3499	£4111.33
ThinkPad 770	LAPIB13	P233 MMX	14.1"TFT	32	5.1Gb	Optional	No	£3879	£4557.83
TOSHIBA									
Libretto 100CT	LAPTS25	P166	7.1"TFT	32	2.1Gb	No	No	£Call	£Call
Libretto 70CT	LAPTS13	P120	6.1"TFT	16	1.6Gb	No	No	£1089	£1279.58
Satellite Pro 230CX	LAPTS10	P133 MMX	12.1"DSTN	16	1.44Gb	No	No	£835	£981.13
Satellite Pro 300CDS	LAPTS26	P166 MMX	12.1"DSTN	16	2.0Gb	16X	No	£1089	£1279.58
Satellite Pro 300CDT	LAPTS27	P166 MMX	12.1"TFT	16	2.0Gb	16X	No	£1339	£1573.33
Satellite Pro 310CDS	LAPTS28	P200 MMX	12.1"DSTN	32	2.0Gb	16X	No	£1259	£1479.33
Satellite Pro 310CDT	LAPTS29	P200 MMX	12.1"TFT	32	2.0Gb	16X	No	£1499	£1761.33
Satellite Pro 460CDT	LAPTS5	P166 MMX	12.1"TFT	32	2.1Gb	10X	No	£1675	£1968.13
Satellite Pro 480CDT	LAPTS12	P233 MMX	12.1"TFT	32	4.1Gb	10X	No	£2268	£2664.90
Portege 300CT	LAPTS6	P133 MMX	10.4"TFT	32	4.0Gb	No	No	£1699	£1996.33
Tecra 530CDT	LAPTS8	P166 MMX	12.1"TFT	32	2.1Gb	10X	No	£2179	£2560.33
Tecra 740CDT	LAPTS9	P166 MMX	13.3"TFT	16	3.0Gb	10X	28.8	£2519	£2959.83
Tecra 750DVD	LAPTS14	P233 MMX	13.3"TFT	64	5.1Gb	20X (2xDVD)	No	£3695	£4341.63
COMPAQ									
Armada 160	LAPC25	P166 MMX	12.1"DSTN	16	2.1Gb	No	No	£1149	£1350.08
Armada 1560D	LAPC26	P166 MMX	12.1"DSTN	16	3.2Gb	No	No	£1289	£1514.58
Armada 1590DT	LAPC20	P166 MMX	12.1"TFT	16	2.1Gb	20X	No	£1539	£1808.33
Armada 1592DT	LAPC27	P233 MMX	12.1"TFT	32	3.2Gb	20X	No	£2019	£2372.33
Armada 4210T	LAPC28	P233 MMX	12.1"TFT	32	3.2Gb	No	No	£2209	£2595.58
Armada 7360DMT	LAPC11	P200 MMX	12.1"TFT	32	3.0Gb	20X	33.6	£2339	£2748.33
Armada 7370DMT	LAPC12	P233 MMX	12.1"TFT	32	4.0Gb	20X	33.6	£2689	£3159.58
Armada 7710MT	LAPC13	P150 MMX	12.1"TFT	16	1.6Gb	No	33.6	£1719	£2019.83
Armada 7730MT	LAPC14	P166 MMX	12.1"TFT	32	2.1Gb	No	33.6	£2489	£2924.58
Armada 7750MT	LAPC15	P166 MMX	12.1"TFT	32	2.1Gb	No	33.6	£2739	£3218.33
HEWLETT PACKARD									
Omnibook 2000CT	LAPHP2	P133	12.1"TFT	16	1.44Gb	Optional	No	£1249	£1467.58
Omnibook 2000CT	LAPHP3	P133 MMX	12.1"TFT	16	2.0Gb	Optional	No	£1439	£1690.83
Omnibook 5700CT	LAPHP4	P150 MMX	12.1"TFT	16	2.0Gb	Optional	No	£1299	£1526.33
Omnibook 5700CT	LAPHP5	P166 MMX	12.1"TFT	16	2.0Gb	Optional	No	£1329	£1561.58
Omnibook 5700CTX	LAPHP6	P166 MMX	12.1"TFT	32	3.0Gb	Optional	No	£1749	£2055.08
Omnibook 800CT	LAPHP7	P166	10.4"TFT	16	2.1Gb	Optional	No	£2269	£2666.08
Omnibook 300CTX	LAPHP13	P200 MMX	13.3"TFT	16	2.1Gb	No	No	£1799	£2113.83
TWINHEAD SLIMNOTES									
SL9T-16CZ	LAPTW1	P166 MMX	12.1"DSTN	16	1.4Gb	20X	No	£1019	£1197.33
SL9T-16TZ	LAPTW2	P166 MMX	12.1"TFT	16	1.4Gb	20X	No	£1239	£1455.83
SL9T-16TZ	LAPTW3	P166 MMX	12.1"TFT	32	2.1Gb	20X	No	£1279	£1502.83
SL9T-16TG	LAPTW10	P166 MMX	13.3"TFT	32	2.1Gb	20X	No	£1699	£1996.33
SL9P-20TG	LAPTW11	P200 MMX	13.3"TFT	32	2.1Gb	20X	No	£1969	£2313.58
SL9P-23TG	LAPTW12	P233 MMX	13.3"TFT	32	3.1Gb	20X	No	£2219	£2607.33
SLEX-20TG	LAPTW13	P200 MMO	13.3"TFT	64	2.1Gb	20X	No	£2219	£2607.33
SLEX-23TG	LAPTW14	P233 MMO	13.3"TFT	64	3.1Gb	20X	No	£2479	£2912.83
OLIVETTI									
ECHOS 133DM	LAP10	P133	12.1"CSTN	16	1.4Gb	10X	No	£1069	£1256.08
ECHOS 133EM	LAP15	P133	11.3"TFT	16	1.4Gb	10X	No	£1349	£1585.08
ECHOSPRO 166SM	LAP10	P166	12.1"TFT	16	2.0Gb	10X	No	£1699	£1996.33
OPTI									
Pheonix	OPT10	P166 MMX	12.1"TFT	16	2.1Gb	20X	No	£1849	£2172.58
Titan	OPT15	P233 MMX	13.3"TFT	32	3.2Gb	20X	No	£2599	£3053.83
Titan	OPT65	P266 MMO	13.3"TFT	32	3.2Gb	20X	No	£2799	£3288.83
Talisman	OPT70	P120 MMX	8.4"TFT	24	840Mb	No	No	£1299	£1526.33

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LAPIB13 ThinkPad 770 **£3879.00** ex VAT

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The Satellite Pro family offers the latest features at attractive prices with multimedia throughout. High performance processors including MMX™ technology, hard disk & CD ROM drivers deliver outstanding speed & performance. All products in the family are available with TFT or FastScan (HPD) screens.

In one word the Tecra family means "performance". From the outstanding features & value for money of the Tecra 530CDT to the technologically ground-breaking Tecra 750DVD, the Tecra family epitomises Toshiba's undisputed position as the world leader in portable computing.

LAPTS12 Satellite Pro 480CDT **£2268.00** ex VAT

COMPAQ Armada Series

The fully integrated notebook with all the essentials you need at the great price you want. With the power of Pentium® processor technology, the convenience of an integrated AC adapter, plus simultaneous access to the standard CD-ROM, floppy drive and hard drive, the the Compaq Armada1500 will allow you to quickly and easily get down to business.

Armada 1560D LAPC26 **£1289** ex VAT

Armada 4210T LAPC28 **£2209** ex VAT

Armada 7750MT LAPC15 **£2739** ex VAT

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When you have business travelling to do, your notebook computer is your most important resource. It should be packed with all the features you need. It should be easy to take with you and it should be utterly reliable.

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Go on. Just Jot down the prices of some other top notebook brands. Fact is we don't think you'll find any that compare with Olivetti's Echos Pro! Beautifully designed, simple to use and above all reliable. All Olivetti notebooks combine outstanding service and support with unrivalled value for money.

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Psion Series 5

The Psion Series 5 gives you the computing power that you need without the excess weight. It has a touch type keyboard and full page width touch-sensitive screen, yet weighs less than 13 ounces (or less than 360g), has around 35 hours of battery life and fits into your pocket. The Series 5 handheld computer is compatible with all leading Windows 95/NT4 word processors, spreadsheets and databases, and synchronizes with schedule software on your desktop PC, including Microsoft, Lotus, Corel, WordPerfect and other applications. PsiWin 2 - included as standard - docks your Series 5 to your PC.

PC Style Applications
- Word Processor
- Spreadsheet
- Printing
- Sketch

Organize your life
- Agenda
- Database
- Record
- Calculator
- Time

Talk to the world
- PsiWin PC Docking
- Free Communications
- Memory Disks
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SERIES 5

PS25	Series 5 - 4Mb	£319	£374.83
PS30	Series 5 - 8Mb	£364	£427.70

MEMORY FLASH UPGRADES

PS95	2Mb Card	£79	£92.82
PS100	4Mb Card	£89	£104.57
PS105	6Mb Card	£99	£116.33
PS110	8Mb Card	£125	£146.88
PS115	10Mb Card	£165	£193.88
PS120	15Mb Card	£199	£233.83
PS125	20Mb Card	£235	£276.13

ACCESSORIES

PS130	Leather Case	£24	£28.20
PS135	Mains Adpt.	£15	£17.62
PS140	P/P Cable	£29	£34.07
PS145	PCMCIA Adpt.	£79	£92.83

Series 3c

Keep your business and personal life organised with the Psion agenda and database. Both are easy to use, with the Series 3c's menus and context sensitive help, and yet are fast and flexible enough to cope with loads of information. Write your letters, memos, or keep track of your expenses with the fully featured word processor and spreadsheet - compatible with both PC and Mac applications.

SERIES 3

PS15	Series 3c - 2Mb	£229	£269.07
PS20	as above +Win Bun	£269	£316.07

MEMORY FLASH UPGRADES FOR SERIES 3c & SIENA

PS35	128K Card	£28	£32.90
PS40	256K Card	£44	£51.70
PS50	1Mb Card	£87	£102.22
PS55	2Mb Card	£148	£173.90
PS60	4Mb Card	£255	£299.62

Siena

The Psion Siena packs the power and organising functionality of the award-winning Psion Series 3 range of palmtop computers, into a unit that fits easily into a shirt pocket.

With two memory options (512K and 1MB - enough for over 250 pages of A4 text), it will store all the information you are ever likely to need, and retrieve it in an instant.

SIENA

PS5	Siena 512K	£99	£116.33
PS10	Siena 1Mb	£149	£175.07

ACCESSORIES FOR SERIES 3c AND SIENA

PS80	Leather Case	£19	£22.33
PS85	Mains Adpt.	£12	£14.10
PS140	P/P Cable	£24	£28.20
PS145	PCMCIA Adpt.	£79	£92.83

HP 620LX PalmTop

Building on its leadership position in the handheld industry, HP's newest palmtop PC adds to HP's complete line of palmtop PCs, which are true enterprise companions as they address the needs of today's mobile professionals. It comes with 16MB of RAM and Windows CE 2.0 functionality, allowing users to insert a VGA-out card (sold separately) for on-the-road presentations. It also includes a dedicated storage slot for a CompactFlash card, leaving the PC card slot free for a modem connection, LAN connection or another memory card. This flexibility enables users to choose the type and speed of modem that best suits their needs, protecting their investment.

PTHP11 **£579.00** £680.33

HEWLETT PACKARD

HP 360LX PalmTop

Powerful Palm Top computing with the ease of use of Windows CE

- 8Mb RAM 10Mb ROM (Upgradable)
- 32bit, 60Mhz Processor
- 640 x 240 backlit LCD Display - 16 greys
- Pen, keyborad & touch interface
- 1PC card slot, 1 serial port, 1IrDA serial
- 2AA, 1 lithium back-up, AC/DC supply Support for NiMH batteries
- Sync Cable
- Massive software package on 2 CD ROMs HP & Microsoft including Pocket Mail, BFax, BFind, Internet Explorer, Word, Excel, Powerpoint, World Clock, HP Financial Applications and many more
- Includes cradle, AC Adaptor & Sync Cable

PTHP3 **£429.00** £504.08

HEWLETT PACKARD

PTHP1	HP 300LX 2Mb	£324	£380.70
PTHP2	HP 320LX 4Mb	£379	£445.33
PTHP3	HP 360LX 4Mb	£429	£504.08

HP 300 Series Accessories

PTHP4	AC Adaptor	£19	£22.33
PTHP5	Connectivity Cradle	£25	£29.38
PTHP6	Leather Case	£44	£51.70
PTHP7	Palmtopsync Cable	£10	£11.75
PTHP8	3 Pack - Spare Pens	£6	£7.05
PTHP9	Compact Flash 2Mb and PCMCIA Adaptor	£63	£74.03
PTHP10	Compact Flash 4Mb and PCMCIA Adaptor	£94	£110.45

Philips Velo 1

Just The Beginning

VELO

Run Windows anywhere & everywhere with Philips Velo 1 - the handheld PC that runs applications you know in places you've yet to go.

- 4Mb EDO RAM - Exp to 8Mb
- Voice Memo
- 10 Quick Start Keys
- Back-lit display - 480 x 240
- GSM Connection

PCPH1 **£339.00** £398.33

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USM10 Professional **£228.00** £267.90

USM5 Personal **£109.00** £128.08

PALM PILOT UPGRADES

USM15	1Mb Upgrade	£85.00	£99.87
USM20	Leather Case	£19.00	£22.33

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CREDIT CARD TOKEN RING 10/100+ MODEM33.6
£179.00 £210.33 XIR205

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PC SYSTEMS

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Manufact.	Code	Processor	MON	RAM	HDD	CD	Cache	Graphics	Op. Sys	Ex.	Inc. VAT
IBM® DESKTOPS											
IBM APTIVA LS	PCIB7	Pentium®166 MMX	15"	16	2.1Gb	24X	256K	ATI RAGE 2Mb	Win 95	£809	£950.58
IBM APTIVA LS	PCIB3	Pentium®200 MMX	15"	16	4.2Gb	24X	256K	ATI RAGE 2Mb	Win 95	£1109	£1303.08
IBM APTIVA LS	PCIB4	Pentium®233 MMX	15"	32	4.2Gb	24X	256K	ATI RAGE 2Mb	Win 95	£1249	£1467.58
IBM APTIVA S44	PCIB5	Pentium®II 233	15"	32	4.2Gb	24X	512K	TRIDENT 2Mb	Win 95	£1589	£1876.08
IBM APTIVA S45	PCIB6	Pentium®II 233	17"	32	4.2Gb	24X	512K	ATI RAGE PRO 2Mb	Win 95	£1959	£2301.83
IBM APTIVA S46	PCIB6	Pentium®II 266	17"	32	4.2Gb	DVD	512K	ATI RAGE PRO 2Mb	Win 95	£2209	£2595.58
COMPAQ DESKPRO 2000 DT											
5200xM2100	PCC3	Pentium®200 MMX	NO	16SDRAM	2.1Gb	Optional	256K	S3 VIRGE 1Mb	Win 95	£559	£565.83
5200xM2100	PCC4	Pentium®200 MMX	NO	32SDRAM	2.1Gb	Optional	256K	S3 VIRGE 1Mb	Win 95	£619	£727.33
5233xM32CD	PCC6	Pentium®233 MMX	NO	32SDRAM	3.2Gb	16X	256K	S3 VIRGE 1Mb	Win 95	£859	£1009.33
6233xM2100	PCC7	Pentium®II 233	NO	32SDRAM	2.1Gb	Optional	512K	MATROX 2Mb	Win 95	£809	£950.58
6233xM32CD	PCC8	Pentium®II 233	NO	32SDRAM	3.2Gb	24X	512K	MATROX 2Mb	Win 95	£919	£1079.83
6266xM32CD	PCC9	Pentium®II 266	NO	32SDRAM	3.2Gb	24X	512K	MATROX 2Mb	Win 95	£1049	£1232.58
COMPAQ DESKPRO 4000 DT											
5166xM2400	PCC10	Pentium®166 MMX	NO	16SDRAM	2.4Gb	Optional	512K	S3 VIRGE 2Mb	Win 95	£699	£821.33
5166xM32LS	PCC11	Pentium®166 MMX	NO	32SDRAM	3.2Gb	Optional	512K	S3 VIRGE 2Mb	Win 95	£839	£985.83
5200xM2400	PCC12	Pentium®200 MMX	NO	32SDRAM	2.4Gb	Optional	512K	S3 VIRGE 2Mb	Win 95	£799	£938.83
5200xM32LS	PCC13	Pentium®200 MMX	NO	32SDRAM	3.2Gb	Optional	512K	S3 VIRGE 2Mb	Win 95	£879	£1032.83
5233xM32CDS	PCC14	Pentium®233 MMX	NO	32SDRAM	3.2Gb	24X	512K	S3 VIRGE 2Mb	Win 95	£979	£1150.33
5233xM32CDS	PCC15	Pentium®233 MMX	NO	32SDRAM	3.2Gb	24X	1Mb	S3 VIRGE 2Mb	Win 95	£1009	£1185.58
6233xM2400	PCC15	Pentium®II 233	NO	32SDRAM	2.4Gb	Optional	512K	MATROX 2Mb	Win 95	£939	£1103.33
6233xM32CDS	PCC16	Pentium®II 233	NO	32SDRAM	3.2Gb	24X	512K	MATROX 2Mb	Win 95	£1069	£1256.08
6266xM32CDS	PCC16	Pentium®II 266	NO	32SDRAM	3.2Gb	24X	512K	MATROX 2Mb	Win 95	£1149	£1350.08
6266xM32CDS	PCC17	Pentium®II 266	NO	32SDRAM	3.2Gb	24X	512K	MATROX 4Mb	Win 95	£1249	£1467.58
6300xM32CDS	PCC18	Pentium®II 300	NO	32SDRAM	3.2Gb	24X	512K	MATROX 4Mb	Win 95	£1329	£1561.58
TOSHIBA DESKTOPS											
Equium 5160D	PCTS1	Pentium®II 166 MMX	NO	32	2.1Gb	Optional	256K	ATI 3D RAGE	Win 95	£639	£750.83
Equium 5200D	PCTS2	Pentium®II 200 MMX	NO	32	2.5Gb	12X	256K	ATI 3D RAGE	Win 95	£719	£844.83
Equium 5230D	PCTS3	Pentium®II 233 MMX	NO	32	3.0Gb	24X	256K	ATI 3D RAGE	Win 95	£819	£962.33
Equium 6230D	PCTS4	Pentium®II 233	NO	32	3.0Gb	24X	512K	S3 VIRGE 2Mb	Win NT 4.0	£969	£1138.58
Equium 6260M	PCTS5	Pentium®II 266	NO	32	4.0Gb	16X	512K	ATI 3D RAGE 4Mb	Win NT 4.0	£1149	£1350.08
TOSHIBA MONITORS											
MOTS1 DP566M		15" AUTOSCAN MONITOR								£189	£222.08
MOTS2 DP782M		17" AUTOSCAN MONITOR								£329	£386.58
MOTS3 DC786MF		17" TEKBRIGHT MICROFILTER MONITOR								£389	£457.08
HEWLETT PACKARD DESKTOPS											
HP Brio 8014	PCHP2	Pentium® 200 MMX	NO	16	2.1Gb	Optional	256K	S3 Trio64V2	Win 95	£639	£750.83
HP Brio 8034	PCHP3	Pentium® 200 MMX	NO	32	2.1Gb	16X	256K	S3 Trio64V2	Win 95	£739	£868.33
HP Brio 8017	PCHP4	Pentium® 233 MMX	NO	32	3.2Gb	Optional	256K	S3 Trio64V2	Win 95	£779	£915.33
HP Brio 8017	PCHP25	Pentium® 233 MMX	15"	16	3.2Gb	Optional	256K	S3 Trio64V2	Win 95	£659	£774.33
HP Brio 8172	PCHP6	Pentium® 166 MMX	NO	16	2.1Gb	16X	256K	S3 Trio64V2 + MODEM	Win 95	£839	£985.83
HP Brio 8177	PCHP5	Pentium® 233 MMX	NO	32	4.0Gb	24X	256K	S3 Trio64V2 + MODEM	Win 95	£1179	£1385.33
HP Brio 8336	PCHP26	PentiumII® 233	15"	32	4.0Gb	Optional	256K	S3 Trio64V2	Win 95	£869	£1021.08

BUILD YOUR OWN HEWLETT PACKARD VECTRA PC ON PAGE 31 OF THIS CATALOGUE

HEWLETT PACKARD EXTENDED WARRANTIES

Part No.	Products Covered	Standard Warranty	HP Support Pack	Ex.	Inc. Vat
H5464A	HP Displays, Monitors, Terminals	1 Year Unit Exchange	3Yr on Site - Next Day/ Exchange	£42	£49.35
H5480A	HP Vectra PC (not 500 series)	1 Yr on Site/2 Yr Ret	3Yr on Site - Next Day	£125	£146.87
H5483A	HP Vectra 500 Series	1 Yr on Site/Next Day	3Yr on Site - Next Day	£141	£165.67

NETWORK AND PC OPERATING SYSTEMS SUPPORT PACK

H1452AA	PC Software Assist -	3 Incidents, Extended Coverage - 8am - 8pm Mon to Fri & 10am - 4pm Sat	£75	£88.13
H1453AA	PC Software Assist -	3 Incidents, Standard Coverage - 8am - 8pm Mon to Fri	£59	£69.32
H1455AA	PC Software Assist -	25 Incidents, Standard Coverage - 8am - 8pm Mon to Fri	£475	£558.12
H1456AA	PC Software Assist -	25 Incidents, Extended Coverage - 8am - 8pm Mon to Fri & 10am - 4pm Sat	£599	£703.82
H5570A	HP LAN Support -	5 Incidents - Standard Business Hours	£280	£329.00
H5571A	HP LAN Support -	5 Incidents - 24 Hours/7Days A Week	£390	£458.25
H5572A	HP LAN Support -	10 Incidents - Standard Business Hours	£520	£611.00
H5573A	HP LAN Support -	5 Incidents - 24 Hours/7Days A Week	£730	£857.75

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PCC9	Pentium®II 266	32SDRAM	3.2Gb	£1049.00 ex VAT £1232.58 inc VAT

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B) 10% deposit of £123.26 with 36 monthly payments of £39.80 18.9% APR TOTAL PAYABLE £1556.06

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The perfect balance of affordability and performance

COMPAQ DESKPRO 2000 - ALL COME WITH WINDOWS 95 O/S

PCC1	Pentium®166 MMX	16SDRAM	2.1Gb		256K	£479	£562.83
PCC2	Pentium®166 MMX	32SDRAM	2.1Gb		256K	£549	£645.08
PCC3	Pentium®200 MMX	16SDRAM	2.1Gb		256K	£559	£656.83
PCC4	Pentium®200 MMX	32SDRAM	2.1Gb		256K	£619	£727.33
PCC5	Pentium®200 MMX	32SDRAM	3.2Gb	16X	256K	£759	£819.83
PCC6	Pentium®233 MMX	32SDRAM	3.2Gb	16X	256K	£859	£1009.33
PCC7	Pentium®II 233	32SDRAM	2.1Gb		512K	£809	£950.58
PCC8	Pentium®II 233	32SDRAM	3.2Gb	24X	512K	£919	£1079.83
PCC9	Pentium®II 266	32SDRAM	3.2Gb	24X	512K	£1049	£1232.58

COMPAQ Deskpro 4000 Series

Excellent value for the serious home user or any business with networked environments

COMPAQ DESKPRO 4000 - ALL COME WITH WINDOWS 95 O/S

PCC10	Pentium®166 MMX	16SDRAM	2.4Gb		512K	£699	£821.33
PCC11	Pentium®166 MMX	32SDRAM	3.2Gb		512K	£839	£985.83
PCC12	Pentium®200 MMX	32SDRAM	2.4Gb		512K	£799	£938.83
PCC13	Pentium®200 MMX	32SDRAM	3.2Gb		512K	£879	£1032.83
PCC14	Pentium®233 MMX	32SDRAM	3.2Gb	24X	512K	£979	£1150.33
PCC15	Pentium®233 MMX	32SDRAM	3.2Gb	24X	1Mb	£1009	£1185.58
PCC15	Pentium®II 233	32SDRAM	2.4Gb		512K	£939	£1103.33
PCC16	Pentium®II 233	32SDRAM	3.2Gb	24X	512K	£1069	£1256.08
PCC16	Pentium®II 266	32SDRAM	3.2Gb	24X	512K	£1149	£1350.08
PCC17	Pentium®II 266	32SDRAM	3.2Gb	24X	512K	£1249	£1467.58
PCC18	Pentium®II 300	32SDRAM	3.2Gb	24X	512K	£1329	£1561.58

HEWLETT PACKARD Vectra Series - Built to Order

Have a branded PC built to your own requirements with HP's extended configuration option. Choose your BASE UNIT, which comes complete with motherborad and Windows 95, add your choice of PROCESSOR, MEMORY, HARD DRIVE, NETWORK CARD and UPGRADE, and HP will build it for you. Fill in the blank spaces in the tables below to work out total costings.

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			Choose Base System & Add Up Each Box For Total Price
BASE UNIT			
HPBC100	VECTRA VE4 DESKTOP BASE UNIT	£249 £292.58	
HPBC101	AS ABOVE WITH 24X CD & SOUND	£329 £386.58	
HPBC103	VECTRA VE4 MINITOWER BASE UNIT	£269 £316.08	
HPBC104	AS ABOVE WITH 24X CD & SOUND	£339 £398.33	
PROCESSOR			
HPBC029	Pentium®200 MMX	£89 £104.58	£
HPBC030	Pentium®233 MMX	£149 £175.08	
ORIGINAL HP MEMORY - CAN BE ADDED SINGLY			
HPBC110	16Mb DIMM	£45 £52.88	
HPBC111	32Mb DIMM	£85 £99.88	£
HPBC112	64Mb DIMM	£169 £198.58	
HARD DISK DRIVES			
HPBC071	1Gb	£143 £168.03	
HPBC072	2.1Gb	£175 £205.63	£
HPBC073	3.2Gb	£199 £233.83	
HPBC075	4.0Gb	£209 £245.58	
HPBC074	6.4Gb	£279 £327.83	
NETWORK CARD			
HPBC016	10/100 BASE-T	£49 £57.58	£
OPTIONAL UPGRADES			
HPVD49	24X CD ROM	£65 £76.38	
HPMM05	16Bit Sound Card	£23 £27.03	
HPMMC3	4Mb MILLENIUM	£103 £121.03	£
HPB074	4Mb U/G FOR ABOVE	£53 £62.28	
HPMM07	MM KIT Inc. H/Phones	£129 £151.58	
	GRAND TOTAL		£

Vectra VL7 Series

			Choose Base System & Add Up Each Box For Total Price
BASE UNIT			
HPBC120	VECTRA VL7 DESKTOP 512K, 4Mb VRAM	£269 £316.08	
HPBC121	As above with 24X CD/SOUND/4Mb Matrox	£345 £405.38	
HPBC122	As above but 8Mb VRAM	£469 £551.08	
HPBC123	VECTRA VL7 DESKTOP 512K, 2Mb VRAM	£245 £287.88	
HPBC124	VECTRA VL7 MINITOWER 512K, 4Mb VRAM	£289 £339.58	
PROCESSOR			
HPBC031	Pentium® II 233	£229 £269.08	
HPBC032	Pentium® II 266	£325 £381.88	£
HPBC033	Pentium® II 300	£449 £527.58	
HPBC034	Pentium® II 333	£585 £687.38	
ORIGINAL HP MEMORY - MUST BE ADDED IN PAIRS			
HPB065	8Mb EDO	£23 £27.03	
HPB066	16Mb EDO	£45 £52.88	£
HPB067	32Mb EDO	£85 £99.88	
HARD DISK DRIVES			
HPBC071	1Gb	£143 £168.03	
HPBC072	2.1Gb	£175 £205.63	£
HPBC073	3.2Gb	£199 £233.83	
HPBC075	4.0Gb	£209 £245.58	
HPBC074	6.4Gb	£279 £327.83	
NETWORK CARD			
HPBC016	10/100 BASE-T	£49 £57.58	£
SOFTWARE			
HPBC043	WINDOWS NT	£49 £57.58	£
OPTIONAL UPGRADES			
HPVD49	24X CD ROM	£65 £76.38	
HPMM05	16Bit Sound Card	£23 £27.03	
HPMMC3	4Mb MILLENIUM	£103 £121.03	£
HPB074	4Mb U/G FOR ABOVE	£53 £62.28	
HPMM07	MM KIT Inc. H/Phones	£129 £151.58	
	GRAND TOTAL		£

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PRINTERS

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JP170 - New Lower Price

- Up to 3 PPM
- Refillable Cartridges
- Auto powersave
- 600 x 300 Mono (Col. U/Gradable)

£75.00
£88.13 PR-EXP

QUICKVIEW LIST

BROTHER			
PR279	BROTHER HL-730+ 6PPM LASER 600X600DPI	£199.00	£233.83
PR272	BROTHER HL-760 6PPM LASER 1200X600DPI	£229.00	£269.08
PR272-5	BROTHER HL-760 5MB 6PPM LASER 1200X600DPI	£245.00	£287.88
PR275	1 YR ON SITE WARRANTY FOR 730/760	£29.00	£35.15
PR273	BROTHER HL-1060 10PPM LASER 1200X600DPI	£349.00	£410.08
PR273-6	BROTHER HL-1060 10PPM LASER 6MB 1200X600DPI	£365.00	£428.88
PR270	BROTHER HL1260E 12PPM LASER 1200X600DPI	£599.00	£703.83
PR270-10	BROTHER HL1260E 6MB 12PPM LASER 1200X600DPI	£615.00	£702.63
PR274	BROTHER HL1660 4MB 16PPM LASER 1200X600DPI	£699.00	£821.33
PR274-10	BROTHER HL1660 10MB 16PPM LASER 1200X600DPI	£715.00	£840.13
PR277	BROTHER HL1660EX 4MB 16PPM LASER 1200X600DPI	£1069.00	£1256.08
PR277-10	BROTHER HL1660EX 10MB 16PPM LASER 1200X600DPI	£1076.00	£1264.30
PR276	MC3000 ALL IN ONE PRINT/SCAN - COLOUR INKJET	£499.00	£586.33
PR278	MC9000 ALL IN ONE PRINT/SCAN/FAX - COLOUR LASER	£675.00	£793.13
PR280	MFC700C ALL IN ONE PRINT/SCAN/FAX - COLOUR LASER	£599.00	£703.83
EPSON			
DOT MATRIX			
PR18	LX-300 9PIN 80 COLUMN	£97.00	£113.98
PR190	LX-1050+ 9PIN 136 COLUMN	£200.00	£235.00
PR-E1	FX-880 9PIN 80 COLUMN	£247.00	£290.23
PR192	FX-1170 9PIN 136 COLUMN	£307.00	£360.73
PR-E2	FX-2170 9PIN 136 COLUMN	£395.00	£464.13
PR193	DFX-5000+ 9PIN 136 COLUMN	£1155.00	£1357.13
PR194	DFX-8000 9PIN 136 COLUMN	£1999.00	£2348.83
PR196	LQ-300 24PIN 80 COLUMN	£115.00	£135.13
PR197	LQ-570+ 24PIN 106 COLUMN	£216.00	£253.80
PR-E3	LQ-670+ 24PIN 106 COLUMN	£230.00	£270.25
PR198	LQ-870 24PIN 80 COLUMN	£377.00	£442.98
PR199	LQ-2070 24PIN 136 COLUMN	£330.00	£387.78
PR128	LQ-2170 24PIN 136 COLUMN	£468.00	£549.90
PR201	DLQ-3000 24PIN 136 COLUMN	£795.00	£934.13
STYLUS			
PR129	STYLUS COLOR 300	£99.00	£116.33
PR114	STYLUS COLOR 400	£118.00	£138.65
PR112	STYLUS COLOR 600	£155.00	£182.13
PR113	STYLUS COLOR 800	£207.00	£243.23
PR116	STYLUS PHOTO	£199.00	£233.83
PR130	STYLUS PRO XL+ A3	£446.00	£524.05
PR115	STYLUS COLOR 1520 A2	£510.00	£599.25
PR119	STYLUS COLOR 3000 A2	£1118.00	£1313.65
PR131	STYLUS 1000 MONO	£379.00	£445.33
EPSON LASER PRINTERS			
PR15	EPL-5500W	£215.00	£252.63
PR120A	EPL-5500 1MB	£274.00	£321.95
PR122	EPL-5500/PS POSTSCRIPT	£570.00	£669.75
PR123	EPL-N1200	£593.00	£696.78
PR124	EPL-N1200EN ETHERNET	£791.00	£929.43
PR125	EPL-N1200PS POSTSCRIPT	£986.00	£1158.55
PR126	EPL-N2000 A4/A3	£1278.00	£1501.65
PR127	EPL-N2000PS POSTSCRIPT	£1582.00	£1858.85
GENUINE EPSON CONSUMABLES			
DOTMATRIX RIBBONS BLACK			
CT-E11	FABRIC LX100/10508755P	£4.00	£4.70
CT-E12	FABRIC LX300/FX870 RD8310/8750	£5.00	£5.88
CT-E13	FABRIC OFX5000+/80008766	£14.00	£16.45
CT-E14	FABRIC LQ1007754	£5.00	£5.88

EPSON EPSON EPSON EPSON

EPSON STYLUS COLOR 400

- 720dpi colour or true black printing with Epson MicroDot™
- Photo-Real colour and Laser Sharp Mono printing as standard
- Windows compatible
- 3ppm Colour & 4ppm Mono
- Prints on plain paper with Epson QuickDry ink
- Epson AutoColour function
- Optimised printing of video/digital camera images
- Windows '95 ICM Colour matching
- 1 year RTB
- FREE Epson FUNFACTORY bundle for PC and Macs

PR114 Color 400
£118.00
£138.65

EPSON STYLUS PHOTO EX

NEW FROM 1ST APRIL

- Photo Reproduction Quality Output on media up to A3 in size
- 1440 dpi and smaller Super MicroDot for the highest photo quality output
- Windows 3.1, Windows '95, Windows NT and Macintosh compatible
- EPSON PhotoEnhance 2 - automatically optimises photo output
- Prints on plain paper with EPSON QuickDry Ink
- Prints on a wide range of media
- 1 year RTB warranty as standard
- EPSON CoverPlus 3 year extended warranty service available

PRQ PHOTO REPRODUCTION QUALITY
EPSON Perfect Picture Imaging System

PR-E4 Stylus Photo EX
£308.00
£361.90

EPSON STYLUS PHOTO

- Photo and general purpose printer
- 2 minutes per photo 4"x6")
- Prints enlargements to full A4
- Windows/Mac compatible
- With Free LivePix™ Photo-editing software
- Free Epson bonus paper pack
- 1 year RTB

PR116 Stylus Photo
£199.00
£233.83

EPSON STYLUS COLOR 850

NEW FROM 1ST APRIL

- Ultra-fast Print Speed - up to 9ppm mono and up to 8.5 ppm Colour
- 1440 dpi PhotoReal Colour and Laser-Sharp Black output as standard
- New smaller Super MicroDot delivers unequalled print performance
- Windows 3.1, Windows '95, Windows NT and Macintosh compatible
- Optional network and Postscript capability
- PC and Macintosh support as standard
- High capacity dual ink cartridge system
- New full function status monitor
- 1 year RTB warranty
- EPSON CoverPlus 3 year extended warranty service available

PRQ PHOTO REPRODUCTION QUALITY
EPSON Perfect Picture Imaging System

PR-E6 Color 850
£243.00 £285.53

EPSON STYLUS COLOR 700

- Perfect for photo reproduction, editing and output up to A4
- Windows 3.1, Windows '95, Windows NT and Macintosh compatible
- 1440 dpi and smaller Super MicroDot for the highest photo quality output
- New smaller Super MicroDot delivers unequalled print performance
- EPSON PhotoEnhance 2 - automatically optimises photo output
- Prints on plain paper with EPSON QuickDry Ink
- Prints on wide range of media: Photo Paper, Photo Sticker, Panoramic Photo Paper, Card and Plain Paper
- 1 year RTB warranty as standard
- EPSON CoverPlus 3 year extended warranty service available

PR-E5 Color 700
£Call £Call

PRQ PHOTO REPRODUCTION QUALITY
EPSON Perfect Picture Imaging System

EPSON STYLUS COLOR 1520

1440 DPI | WIDE FORMAT

- 1440dpi colour or true black printing with Epson Super MicroDot™
- Wide format A3+ in size

PR115 Color1520
£510.00
£599.25

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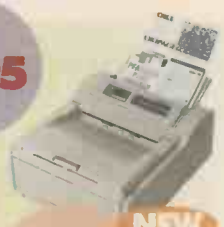
PR-206 OL6E
£195 £229.13

OL6E LASER
- 1Mb RAM
- HP PCL4.5 emulation

OKI



NEW

OL6EX LASER (PICTURED)
- 2Mb RAM
- HP PCL5e emulation
- IBM ProPrinter & Epson FX

PR-222 OL6EX
£239 £280.83

CT-E15FABRIC LQ300/570/8707753	£4.00	£4.70
CT-E35FABRIC LQ2170/2070 5015086	£14.00	£16.45
CT-E16FABRIC DLQ30005015066	£16.00	£18.80
COLOUR		
CT-E17 FABRIC LX3005015073	£13.00	£15.28
CT-E18 FABRIC LQ3005015077	£16.00	£18.80
CT-E19 FABRIC DLQ30005015067	£24.00	£28.20
INKJET CARTRIDGES		
CT-E5 BLACK 200/820/II/IIS5020047	£13.00	£15.28
CT-E6 BLACK 300 5020031		
CT-E15 BLACK 400/500/600/PHOTO 5020093	£14.00	£16.45
CT-E25 BLACK 800/1520S020108	£16.00	£18.80
CT-E19 BLACK PRO/XL+S020034	£10.00	£11.75
CT-E21 BLACK 30005020118		
CT-E40 COLOUR 820/II/IIS5020049	£19.00	£22.33
CT-E9 COLOUR 3005020138		
CT-E10 COLOUR 200/5005020097	£20.00	£23.50
CT-E15 COLOUR 400/500/6005020093	£14.00	£16.45
CT-E20 COLOUR 400/600/800/1520S020089	£14.00	£16.45
CT-E22 COLOUR PRO/PRO XLS020236	£20.00	£23.50
CT-E23 COLOUR PRO XL+ 5020066	£22.00	£25.85
CT-E24 COLOUR PHOTO5020110	£14.00	£16.45

CT-E26 CYAN 30005020130	£40.00	£47.00
CT-E27 MAGENTA 30005020126	£40.00	£47.00
CT-E28 YELLOW 30005020122	£40.00	£47.00
LASER TONERS		
CT-E6 DEVELOPER UNITEPL-S5005050005	£45.00	£52.88
CT-E7 PHOTOCONDUCTOR UNIT EPL-5500 5051029	£45.00	£52.88
CT-E8 IMAGING CARTRIDGE EPL-9000 5051022	£159.00	£186.83
CT-E29 IMAGING CARTEPL-12005051016	£99.00	£116.33
CT-E31 IMAGING CARTEPL-N20005051035	£140.00	£164.50
LEXMARK		
PR-L11 COLOUR JETPRINTER 3000	£125.00	£146.88
PR401 COLOUR JETPRINTER 2050	£179.00	£210.33
PR-L5 OPTRA E+	£279.00	£327.83
PR-L9 OPTRA ES	£339.00	£398.33
PR-L15 OPTRA S 1250	£655.00	£769.63
PR-L20 OPTRA S 1650	£769.00	£903.58
PR-L25 OPTRA 1650 N	£949.00	£1115.00
PR-L30 OPTRA S 2450	£1519.00	£1784.83
PR-L35 OPTRA 2450 N	£1759.00	£2066.83
PR-L40 OPTRA N	£1849.00	£2172.58
PR-L45 OPTRA N PRO	£2149.00	£2525.08
PR-L50 OPTRA SC 1275	£2769.00	£3253.58
PR-L55 OPTRA SC 1275 N	£3079.00	£3617.83
PR-L60 OPTRA C CONTONE	£3399.00	£3993.83
PR-L65 OPTRA C PRO CONTONE	£3699.00	£4346.33

OL810 LASER
- 600x600 Dpi
- Fast 8ppm
- Straight thro. paper path
- HP PCL5e emulation
- Dual Bin U/Grade
- Standard 2 Mbytes memory upgradeable to 34 Mbytes

PR-216 OL810
£389 £457.08

OKI

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OKI 4WPLUS LASER
- Popular LED Personal printer
- Fast, high quality text & graphics output
- Easy on-screen software control from Windows
- 600x600 Dpi
- 4ppm
- NT Compatible
- Through paper path
- Near silent printing
- Environmentally friendly

NEW

PR-228 OKI 4WPlus
£152 £178.60

CANON		
BUBBLEJET		
PR50 BJ30 MONO PORTABLE	£123.00	£144.53
PR61 BJC80 COLOUR PORTABLE	£142.00	£166.85
PR72 BJC250 COLOUR	£89.00	£104.58
PR76 BJC620 COLOUR	£169.00	£198.58
PR73 BJC4300 COLOUR	£125.00	£146.88
PR95 BJC4550 COLOUR	£199.00	£233.83
PR98 BJC5500 COLOUR	£439.00	£515.83
PR69 BJC7000 COLOUR	£225.00	£264.38
PR86 BJC4650 COLOUR	£229.00	£269.08

BJC 250
- 360 x 360dpi with PhotoRealism™
- 720 x 360 dpi mono output
- Up to 3.4 PPM
- 100 built in sheet feeder
- 1 Yr parts & labour return Warranty

Canon
PR-72 BJC 250
£89.00 £104.58

BJC 620 THE A4 DESKTOP PRINTER WITH THE 4 CARTRIDGE SYSTEM
- Colour Desktop Bubble Jet Printer
- 720 x 720 dpi output
- 20 Scalable Bitstream TruType Fonts
- 4 colour cartridge system
- 1 Yr parts & labour return Warranty

Canon
PR-76 BJC 620
£169.00 £198.58

BJC 80 COMPLETE INDEPENDENCE WHEN YOU'RE OUT & ABOUT
- Drop Madulation Technology™ 720 x 360 dpi
- Built in IrDA I/F for cordless communication
- 720 x 360 dpi mono output
- Opt. Colour Scanner Cartridge (IS-12)
- Smudge Proof & fade resistant

Canon
PR-61 BJC 80
£142.00 £166.85

BJC 7000 NEW PROFESSIONAL COLOUR BUBBLE JET PRINTER
- 1200 dpi plain paper output
- True A4 print size
- Print on card up to 550gsm
- Photo printing with BC-62 photo cartridge
- 1 RTB Warranty

PR69 BJC 7000
£225.00 £264.38

BJC 4300
- Drop Modulation Technology™ 720 x 360 dpi
- 720 x 360 dpi mono output
- Opt. Colour Scanner Cartridge (IS-22)
- Smudge Proof & fade resistant
- 1 Yr parts & labour return Warranty

Canon
PR-73 BJC 4300
£125.00 £146.88

BJC 5500 MASSIVE A2 PRINT CAPABILITY
- Prints on paper up to A2 size
- Supports new BC-29F flourescent ink
- Optional serial port
- 7 Pages Per Minute
- 1 Year on-site warranty

Canon
PR-98 BJC 5500
£439.00 £515.83

BJC 4650 UPGRADE THIS NEW PRINTER AND SCAN AS WELL
- Drop Modulation Technology™ 720 x 360 dpi
- 720 x 360 dpi mono output
- Opt. Colour Scanner Cartridge (IS-22)
- Prints up to A3
- 1 Yr parts & labour return Warranty

Canon
PR86 BJC 4650
£229.00 £269.08

LBP 660 COMES WITH ONE FREE TONER CARTRIDGE
- True 600 x 600 dpi
- AIR boosts resolution up to 2400 x 600
- Fast 6 Pages Per Minute printing
- Microsoft® Windows™ Printing System
- 1 Year on-site warranty

Canon
PR-83 LBP 660
£175.00 £205.63

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JP795 - 5 Colour Printing

- 5 Colour Printing
- 600 x 600 dpi
- Image Editing Software
- Includes Photographic Cartridge
- Refillable Printheads
- Simple, flexible paper management
- Up to 6PPM

£145.00 £170.38 PR-OL13

JP170 - New Lower Price
- 600 x 300 Mono (Colour u/grade)
- Up to 3 PPM
- Refillable Cartridges
- Auto powersave

£75.00 £88.13 PR-EXP

JP190 - Quality Printing
- 600 x 300 Mono & Colour
- 128Kb RAM
- With Black & Colour Cartridges

£95.00 £111.63 PR-OL11

JP90 - Portable Power
- 600 x 300 Mono (colour upgradable)
- Refillable Printhead
- Multiple Emulation
- Up to 3 PPM

£119.00 £139.83 PR-OL6

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PR-273
HL1060
£399
£468.83

BROTHER HL1060

The Ultimate workgroup Printer - for exceptional performance, high speed and superb quality output.

LASER			
PR80	LBP460 LASER	£180.00	£211.50
PR81	LBP465 LASER	£175.00	£205.63
PR83	LBP660 LASER	£180.00	£211.50
PR94	LBP1260+ LASER	£610.00	£716.75
PR68	LBP2460 LASER	£1499.00	£1761.33
KYOCERA			
PR-K10	KYOCERA FS-1550+	£599.00	£703.83
PR-K15	KYOCERA FS-1700	£568.00	£667.40
PR-K20	KYOCERA FS-3400+	£785.00	£922.38
PR-K25	KYOCERA FS-3700	£849.00	£997.58
PR-K30	KYOCERA FS-600	£239.00	£280.83
OKI			
PR228	OKI OKIPAGE 4WPLUS LASER PRINTER	£152.00	£178.60
PR206	OKI OL6E LASER	£195.00	£229.13
PR222	OKI OL6EX LASER	£239.00	£280.83
PR-O10	OKI OKIPAGE 10i	£359.00	£421.83
PR-O11	OKI OKIPAGE 10i with serial IF	£395.00	£464.13
PR-O12	OKI OKIPAGE 10i EN	£445.00	£522.88
PR216	OKI OL810 LASER	£389.00	£457.08
PR218	OKI OKIPAGE 16N	£699.00	£821.33
PANASONIC			
PR-P15	PANASONIC KX-P6500	£234.00	£274.95
ALPS			
PR-A5	MD - 2010 MICRO DRY COLOUR	£285.00	£334.88
PR-A10	MD - 4000 MICRO DRY COLOUR & SCANNER	£330.00	£387.75
OLIVETTI			
PR-OL6	OLIVETTI JP 90	£115.00	£135.13
PR-EXP	OLIVETTI JP 170 C	£75.00	£88.13
PR-OL10	OLIVETTI JP 170 S	£90.00	£105.75
PR-OL11	OLIVETTI JP 190	£95.00	£111.63
PR-OL12	OLIVETTI JP 792	£125.00	£146.88
PR-OL13	OLIVETTI JP 795	£145.00	£170.38
PR-OL15	OLIVETTI JP 790	£149.00	£175.08
SHARP			
PR-S25	SHARP JX-9680	£580.00	£681.50
NEC			
PR-N10	SUPERSCRIPT 860 8PPMLASER	£248.00	£291.40
PR-N15	SUPERSCRIPT 1260 12PPM LASER	£524.00	£615.70
HEWLETT PACKARD			
DESKJETS			
PR28 DJ	400L COLOUR	£86.00	£101.05
PR120 DJ	340 COLOUR PORTABLE	£144.00	£169.20
PR66 DJ	340CBI (INFRARED)COLOUR PORTABLE	£159.00	£186.83
PR67 DJ	670C	£115.00	£135.13
PR22 DJ	690C PLUS	£142.00	£166.85
PR47 DJ	820CXI	£153.00	£179.78
PR49 DJ	870CXI	£202.00	£237.35
PR59 DJ	890C	£202.50	£237.35
PR29 DJ	1100C	£247.00	£290.23
PR46 DJ	1600C	£871.00	£1023.43
PR46-CM	DJ 1600CN INCLUDING JETDIRECT +500 SHEETFEEDER	£1110.00	£1304.25

brother

PR-271
HL730Plus
£199
£233.83

BROTHER HL730Plus

A low cost solution to your printing needs, combining flexible, high print quality at an affordable price.

brother

PR-272
HL760
£229
£269.08

BROTHER HL760

Superb quality output from this 6ppm printer, combining excellent graphics and text reproduction for professional work.

PR46-M	DJ 1600CM POSTSCRIPT	£1280.00	£1504.00
PR62	PHOTOSMART PRINTER	£323.00	£379.53
LASERJETS			
PR51	LJ 6L	£232.00	£272.60
PRC51	LJ 6L COMPANION	£78.00	£91.65
PR403	LJ 6P	£464.00	£541.68
PR404	LJ 6MP	£562.00	£660.35
PR411	LJ 4000	£711.00	£835.43
PR412	LJ 4000T	£816.00	£958.80
PR414	LJ 4000N	£914.00	£1073.95
PR413	LJ 4000TN	£1023.00	£1202.03
PR34	LJ 5	£674.00	£791.95
PR38	LJ 5N	£847.00	£995.22
PR39	LJ 5M	£997.00	£1171.48
PR405	LJ 4V	£1184.00	£1391.20
PR406	LJ 4MV	£1724.00	£2025.70
PR40	LJ 5SI	£1649.00	£1937.58
PR41	LJ 5SI MX	£2249.00	£2642.58
PR63	LJ 5SI NX	£1799.00	£2113.83
PR42	COLOUR LJ 5	£2861.00	£3361.68
PR43	COLOUR LJ 5M	£3600.00	£4230.00
PR64	LJ 5SI MOPIER	£4447.00	£5225.23
OFFICEJETS			
PR442	OJ 590 COLOUR	£339.00	£398.33
PR443	OJ 635	£339.00	£398.33

HP PRINTERS

HP DESKJET 1100C

Versatile Business Printer with Wide Format Capability at an affordable price

The Hewlett Packard Deskjet 1100C Professional Series printer is HP's latest wide format printer available only in Europe and Latin America. Boasting all the features of the Deskjet 1000C, the Deskjet 1100C is designed to meet the varied printing needs of your small business.

PR29 DeskJet 1100C
£247.00
£290.23

HP DESKJET 890C

The Premium Colour Inkjet that makes any printing look professional!

PR59 DeskJet 890C
£202.00
£237.35

Enjoy improved black and colour printing on standard office paper from the 890C with improved PhotoREt II, Colour Smart II and Kodak Image Enhancements. Print up to 9ppm black or 5 colour. MMX™ compatible.

HP DESKJET 720C

The Affordable Business Printer for sharper more realistic colour and crisp black text!

The Hewlett Packard Deskjet 720C gets your printing done quickly, at up to 8 ppm in black or 4 in colour, whilst being Windows NT compatible, whilst supporting MMX™ technology for faster colour processing. The business printer that really does it all!

PR58 DeskJet 720C
£172.00
£202.10

HP DESKJET 690C+

Vibrant life-like images and crisp black type.

The versatile HP DeskJet 690C brings professional communications capabilities to the home or the office. Produce reports, brochures, proposals, financial charts and graphs, banners, labels and more.

PR22 DeskJet 690C+
£142.00
£166.85

HP DESKJET 670C

An Incredible Printer at an Unbelievable Price!

Handling up to 100 sheets and printing at 4PPM in black or 1.5PPM in colour the amazing 670C really does offer a total value for money solution for your print needs. 300 x 300 dpi resolution.

PR67 DeskJet 670C
£115.00
£135.12

HP DESKJET 340C

The printer that makes any place your workplace

Whether you're traveling or working at home, the HP DeskJet 340 for the notebook PC and PowerBook* gives you the flexibility to print wherever you need to print. You get crisp, high-quality black plus easy-to-add color with the HP Color Kit. It offers portable, full-featured quality printing.

PR120 DeskJet 340C
£144.00
£169.20

HP LASERJET 6L

THE PERSONAL LASER PRINTER FOR BUSINESS USERS.

Ideal for business users in Microsoft® Windows®, DOS or OS/2 environments who want the convenience & confidentiality of a desktop laser printer. The HP LaserJet 6L printer offers a fast 6 page-per-minute print speed, superior flexibility, optional network capability, & HP's proven laser technology for reliable performance year after year.

PR51 LaserJet 6L **£232.00** £272.60

HP LASERJET 6P & 6MP

GREAT LOOKING DOCUMENTS, ENHANCED PRODUCTIVITY, & ROOM TO GROW

Start with high-resolution laser print quality, versatile paper handling and 8 page-per-minute print speed driven by a fast processor. Add expandability with attractive pricing and what you get is the HP LaserJet 6P printer, delivering outstanding value for individual or shared use from the market leader in laser printingfor the office.

- 6 Pages Per minute
- 18 secs. for first page
- 600 x 600dpi
- MicroFine Toner
- Sharp Text, Crisp Graphics

PR403 LaserJet 6P
£480.00 £564.00

PR404 LaserJet 6MP
£592.00 £695.60

6L/6P/6MP CONSUMABLES

C3906A	6L Toner	£36	£42.30
C3903A	6P/6Mp Toner	£45	£52.87
C3987A	6P P/Script SIMM	£36	£42.30
J2591A	J/Direct EX Plus Combo	£175	£205.62
J2593A	J/Direct EX Plus 3 Combo	£229	£269.07
J2591A	J/Direct EX Plus 3 10/100	£349	£205.62
C3939A	1Mb Upgrade	£39	£45.82
C3938A	2Mb Upgrade	£79	£92.82
C3148A	4Mb Upgrade	£109	£128.07
B1387A	1Mb Flash SIMM	£189	£222.07
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PR-K30
FS600
£239
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KYOCERA FS-600

True 6ppm speed from this robust, low cost printer that's ideal as a personal or shared printer, offering low cost modular upgrade options and a low cost per printed page.

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CT102 HP BLACK 820CXI/850C/87/CXI/160051645A	£18.00	£21.15
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CT103 HP COLOUR 310/320/340/500C/540/ 550/56051625A	£19.00	£22.33
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CT113 HP MAGENTA 1200C/1600C/COPYJET S1640M	£21.00	£24.68
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CT42-M HP MAGENTA TONER BOTTLE C3104A	£24.00	£28.20
CT42-Y HP YELLOW TONER BOTTLE C3103A	£24.00	£28.20
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PRW47 SUPPORTPACK FOR DJ 820CXI	£47.00	£55.23
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CT4 BJ600 BLACK STD	£4.00	£4.70
CT6 BJ600 CYAN STD	£4.50	£5.29
CT8 BJ600 MAGENTA STD	£4.50	£5.29
CT10 BJ600 YELLOW STD	£4.50	£5.29
CT11 BJ30	£4.00	£4.70
CT12 BJC70 BLACK	£4.00	£4.70
CT13 BJC70 COLOUR	£5.00	£5.88
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CT41 LEXMARK 1020/2050 BLACK	£22.00	£25.85
CT44 LEXMARK 2070 BLACK	£24.00	£28.20
CT45 LEXMARK 2070 COLOUR	£26.00	£30.55
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CT-B10 BROTHER TN200 FOR 700 RANGE	£19.00	£22.33
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PS-1700N
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RESOLUTION – 600dpi, 1200dpi with Minolta FineART
FONTS – 45 scaleable
MEMORY – 2MB (Max 18Mb)
A 2nd 250 cassette is available for this printer

PR-M2 PAGEPRO 6
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£286.70

MINOLTA

PAGEPRO 6L

WINDOWS PRINTER

PRINTING SYSTEM
Laser diode, Minolta Super Fine Micro-Toning system
Resolution – 600dpi
Speed – 6 PPM
Drivers – Quick Page drivers for Win 3.x & '95
Fonts – 110 soft fonts
Memory – 256Kb RAM

PR-M1 PAGEPRO 6L
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£215.03

PAGEPRO 12

1250 SHEET INPUT

PRINTING SYSTEM
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Resolution – 600dpi, 1200dpi with Minolta FineART
Speed – 12 PPM
DriversWindows 3.x, Windows 95 & Windows NT
Fonts –96 scaleable, 1 bitmap 35 Intellifonts & 10 TrueType
Memory – 4Mb (Max 36Mb)

PR-M4 PAGEPRO 12
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£658.00

PAGEPRO 20

OVERSIZED A3

PR-M5 PAGEPRO 20
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PRINTING SYSTEM
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Resolution – 600dpi, 1200dpi with Minolta FineART
Speed – 20 PPM

Drivers Windows 3.x, Windows 95 & Windows NT
Fonts –96 scaleable, 1 bitmap
35 Intellifonts & 10 TrueType
Memory – 4Mb (Max 68Mb)

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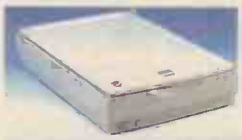

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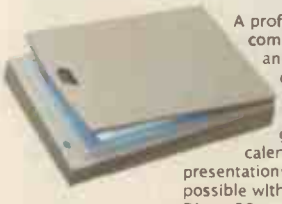

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- Choice of SCSI or parallel interfaces
- VistaScan & Presto! Page Manager

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UMAX ASTRA 1210P

- 600x1200 dpi optical res.
- 9600x9600 dpi maximum resolution
- 30-bit single pass colour CCD
- 1024 greyscale levels
- VistaScan & Presto! PageManager

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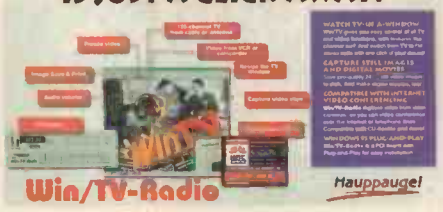

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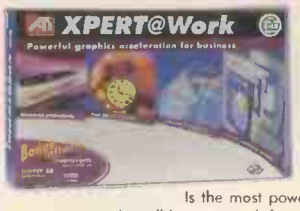

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V302 3DFX **£75.00** £88.13

NEW!NEW!NEW!

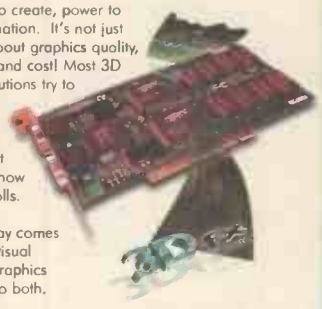
Power3D graphics accelerator

TECHWORKS THE POWER TO PERFORM™

POWERED BY 3DFX VOODOO™ GRAPHICS

Power to play, power to create, power to accelerate your imagination. It's not just about polygons. It's about graphics quality, realism, performance and cost! Most 3D computer graphics solutions try to be all things to all people. But for 3D games and animation, great performance isn't about benchmarks or how fast a spreadsheet scrolls.

Mind-blowing gameplay comes from interactivity and visual realism, and today's graphics hardware has got to do both.



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OVER 300 AWARDS matrox

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MATROX m3D NEW

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- Support for resolutions up to 1024x768.
- Support for a wide number of Direct 3D games.
- 3D features include perspective correct texture mapping, bilinear filtering, MIP mapping, fogging alpha blending/ transparency, 32-bit Z buffer.
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- Supports DirectXTM inc. Direct3DTM

VD-31 3D2000Pro **£39.00** £45.83

VIPER V330

FEATURES
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VD-35 V330 **£95.00** £111.63

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FEATURES
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- Up to 400K textured triangles p/sec
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FEATURES
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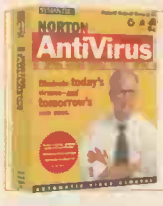

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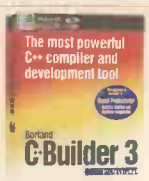

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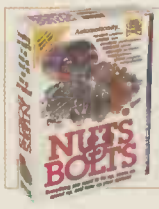

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US Robotics 26
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A: VERY EASY!

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connect INTERNET

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- Unlimited Access - NO hourly charges
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- FREE 5Mb Web Space
- FREE Connection
- FREE Software
- 56k Supported
- Outstanding Customer Care
- Fast Browsing

Benefits of Connect 2 Internet Access

▲ **100% Local Call Rate**
With 100% local rate calls no matter where you are in the UK, the Internet is available to you for just the cost of a local call. If you're a BT customer, add our number to your Friends & Family list for even greater savings!

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▲ **Unlimited e-mail Addresses**
Now your whole family can contact their friends and colleagues at no extra cost.

▲ **FREE 5Mb Web Space**
Promote yourself to the millions of other Internet users across the world with your own Web Site. With 5mb of personal web space you have the room to develop a site that tells the world about yourself!

▲ **FREE Connection**
Your Connect 2 Internet subscription is all you have to pay to get on-line immediately (and the cost of your local telephone call). Unlike many other companies there are no setup charges, installation charges, connection charges or other hidden fees.

▲ **FREE Software**
All you need to get fast Internet access quickly and easily is supplied on the simple to use installation CD.

▲ **56k Supported**
Connect 2 Internet are committed to providing the latest technology available to ensure that your connection is fast and reliable. Already we are supporting the emerging K56 flex standard. With a new 56k modem the speed of your connection will be noticeably faster!

▲ **Outstanding Customer Care**
Committed to providing you with the easiest (yet technically excellent) and quickest connection to the Internet - we are also committed to providing outstanding customer care and service with unlimited technical support.

▲ **Fast Browsing**
Our networks are being constantly monitored to ensure that your connection is not only reliable but fast.

▲ **FREE ACCESS! Introduce a friend for even more benefits.**
There's nothing better than our own subscribers recommending us to their family and friends. Introduce a friend and you get 1 months FREE access.

▲ **Money Back Guarantee***
We are so confident of the quality of our service, subscribe annually and we're offering a 30 day money back guarantee.

Exclusive!

The UK's only ISP with Microsoft FrontPage hosting.

Our FrontPage Hosting Service quite simply allows a business or individual to develop and host a web, quickly, cheaply and efficiently. For a typical business it's all that you will require to get a presence on the Internet and allow your customers to find you!

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- 24 hour unlimited access through FrontPage, Visual InterDev or FTP

- Custom CGI and PERL 5 script support via your own cgi-bin directory.

www.connect2.net/front

Confused by what the other ISP's are offering you?
Compare the great value of Connect 2 Internet with the competition

Company	Local rate call up to 56Kbps	ISDN or modem at the same price	No setup charge	Annual cost based on hours on-line per month		
				6 hours	12 hours	24 hours
AOL	No	No	Yes	£144.00	£179.40	£179.40
BT Internet	No	Yes	Yes	£107.21	£107.21	£107.21
CompuServe	No	Yes	Yes	£99.60	£229.20	£237.60
Easynet	Yes	No	No	£139.40	£139.40	£139.40
Pipex Dial	Yes	Yes	No	£147.10	£147.10	£147.10
VirgIn	Yes	Yes	Yes	£118.70	£118.70	£118.70
Connect 2 Internet	Yes	Yes	Yes	£83.88	£83.88	£83.88

All prices correct as of 18th November 1997. Prices exclude VAT.

Choose from four great value subscription deals, to suit your needs

Subscription Duration	Monthly	Monthly inc VAT	Total	Total inc VAT
Two Year Subscription for Dial-Up Accounts	£5.99	£7.04	£143.76	£168.92
Annual Subscription for Dial-Up Accounts	£6.99	£8.21	£83.88	£98.56
Quarterly Subscription for Dial-Up Accounts	£8.99*	£10.56	£26.97	£31.69
Monthly Subscription for Dial-Up Accounts	£9.99	£11.74	£9.99	£11.74

Just like the rest of Connect 2 Internet our pricing has been set so as to be simple and easy. Basically the longer you subscribe to Connect 2 Internet the cheaper it gets. *Money back guarantee only available with Two Year and Annual Subscriptions.

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ARIES PC's

Aries AWARD WINNING,

MMX intel inside pentium® PROCESSOR

MMX intel inside pentium® II PROCESSOR

"A well thought out machine... lots of software nicely put together" PCW

"The fastest PC on test is also remarkably well rounded, displays on a damned fine monitor driven by the best video card going" Computer Buyer

"A well specified system, at a competitive price" Computer Shopper

"Want a well specified PC for less than £1,000.00 Inc VAT? The Aries Perfecta fits the bill" PC Pro

"The Aries PC... it does leave you wanting for very little, which is no mean feat at this price" PC Pro

"For speed demons, we recommend Watford's Aries Perfecta ELS. The dependable 3Com Etherlink rounds off a fairly impressive server from Watford" PC Advisor

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FROM £499

- Intel Pentium® Processor with MMX™ Technology
- 64 bit SIS advanced graphics using 2Mb system RAM with Microsoft 3D support
- 16Mb EDO RAM expandable to 128Mb
- 512K Pipeline Burst Cache Memory
- Bios is year 2000 compliant
- 1.7Gb 11ms Hard Disk Drive
- 14" SuperVGA Low Radiation 1024x768 0.28mm Digital Colour Monitor (12 months Swap-Out Warranty)
- Multimedia Ready - See below
- **Software Bundle Pack (see details page opposite)**
- 6 YEAR WARRANTY includes 1st year On-Site parts & labour, 5 years return to base labour only (excluding monitors)
- Desktop Case + PSU (CE approved)

Multimedia Specification

- 24X MAX Speed CD ROM Drive
- 16 bit Stereo Sound Card with Enhanced OPL3 Stereo Music Synthesiser and CD Quality Audio
- 25W Mains Powered Speakers

CHOOSE YOUR OWN PROCESSOR

Intel 166MHz Pentium® Processor with MMX™ Technology	Intel 200MHz Pentium® Processor with MMX™ Technology	Intel 233MHz Pentium® Processor with MMX™ Technology
£499.00	£529.00	£579.00
£586.33 inc VAT	£621.58 inc VAT	£680.33 inc VAT
EasyPlan Finance (APR 17.9%) Monthly Payment £21	EasyPlan Finance (APR 17.9%) Monthly Payment £23	EasyPlan Finance (APR 17.9%) Monthly Payment £25

ARIES PROFESSIONAL SE '98

FROM £649

WINNER - VALUE AWARD
PC PRO Labs, July 97!

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- Bios is year 2000 compliant
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- 512K Pipeline Burst Cache Memory
- 3.2Gb 11ms Ultra DMA Hard Disk Drive
- ATI Rage II + 3D Graphics 4Mb Video RAM
- 15" SuperVGA Low Radiation 1280x1024 NI 0.28mm Digital Colour Monitor (12 months Swap-Out Warranty)
- Multimedia Ready - See below
- **Software Bundle Pack (see details page opposite)**
- 6 YEAR WARRANTY includes 1st year On-Site parts & labour, 5 years return to base labour only (excluding monitors)
- Mini Tower Case + PSU (CE approved)

Multimedia Specification

- 24X MAX Speed CD ROM Drive
- 16 bit Stereo Sound Card with Enhanced OPL3 Stereo Music Synthesiser and CD Quality Audio
- 25W Mains Powered Speakers

CHOOSE YOUR OWN PROCESSOR

Intel 166MHz Pentium® Processor with MMX™ Technology	Intel 200MHz Pentium® Processor with MMX™ Technology	Intel 233MHz Pentium® Processor with MMX™ Technology
£649.00	£679.00	£729.00
£762.58 inc VAT	£797.83 inc VAT	£856.58 inc VAT
EasyPlan Finance (APR 17.9%) Monthly Payment £28	EasyPlan Finance (APR 17.9%) Monthly Payment £29	EasyPlan Finance (APR 17.9%) Monthly Payment £31

ARIES PRO MEDIA TX

FROM £709

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- Intel Advanced 430 TX PCI chipset Motherboard
- 32Mb EDO RAM expandable to 128Mb
- 512K Pipeline Burst Cache Memory
- Bios is year 2000 compliant
- 4.3Gb 10.5ms Ultra DMA Hard Disk Drive
- ATI Rage II + 3D Graphics 4Mb Video RAM
- 15" SuperVGA Low Radiation 1024x768 0.28mm Digital Colour Monitor (12 months Swap-Out Warranty)
- Aries K56 56600 VOICE Internal Fax/Modem with 30 days Internet Access
- Multimedia Ready - See below
- **Software Bundle Pack (see details page opposite)**
- 6 YEAR WARRANTY Includes 1st year On-Site parts & labour, 5 years return to base, labour only (excluding monitors)
- Mini Tower Case + PSU (CE approved)

Multimedia Specification

- 24X MAX Twenty Four Speed CD ROM Drive
- Creative Labs SoundBlaster AWE64 sound card with Enhanced OPL3 Stereo Music Synthesiser and CD Quality Audio
- 80W Mains Powered Speakers

CHOOSE YOUR OWN PROCESSOR

Intel 166MHz Pentium® Processor with MMX™ Technology	Intel 200MHz Pentium® Processor with MMX™ Technology	Intel 233MHz Pentium® Processor with MMX™ Technology
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£833.08 inc VAT	£868.33 inc VAT	£927.08 inc VAT
EasyPlan Finance (APR 17.9%) Monthly Payment £30	EasyPlan Finance (APR 17.9%) Monthly Payment £31	EasyPlan Finance (APR 17.9%) Monthly Payment £33

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If you or any of your family (5 years plus) are in full or part-time education you qualify for this money-saving offer. Includes:
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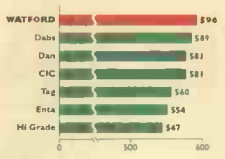

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"If you buy from Watford you won't be disappointed. The Aries flies along; it's the fastest machine in the test"

What PC?

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- Dual Hi-Speed Serial Ports
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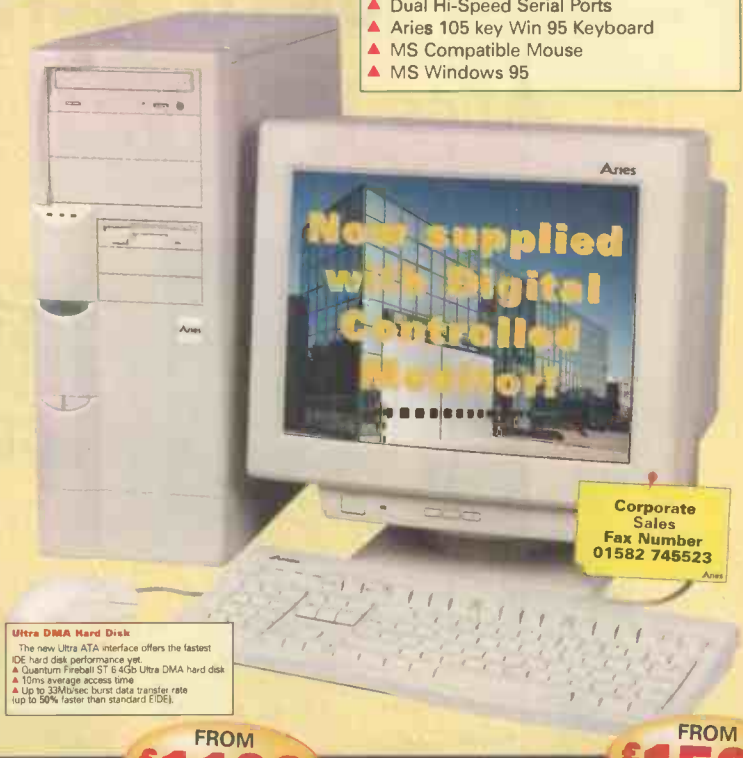

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WINNER - RECOMMENDED AWARD WHAT PC?, Dec 97!

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- NEW - Intel 440 LX AGP chipset motherboard and Intel Slot One for processor upgrades - ATX
- Bios is year 2000 compliant
- 32Mb SDRAM expandable to 384Mb
- 512K Pipeline Burst Cache Memory
- 3.2Gb 11ms Ultra DMA Hard Disk Drive
- ATI Rage II + 3D Graphics 4Mb Video RAM
- 15" SuperVGA Low Radiation 1024x768 0.28mm Digital Colour Monitor
- Multimedia Ready - See below
- **Software Bundle Pack (see details above)**
- 6 YEAR WARRANTY includes 1st year On-Site parts & labour 5 years return to base, labour only (excluding monitors)
- Midi Tower ATX Case + PSU (CE approved)

Multimedia Specification

- 24X MAX Twenty Four Speed CD ROM Drive
- SoundBlaster Compatible 16-bit 3D sound card
- 80W Mains Powered Speakers

CHOOSE YOUR OWN PROCESSOR

Intel 233MHz Pentium® II Processor	Intel 266MHz Pentium® II Processor	Intel 300MHz Pentium® II Processor	Intel 333MHz Pentium® II Processor
£799.00	£839.00	£929.00	£999.00
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- 64Mb SDRAM expandable to 384Mb
- 512K Pipeline Burst Cache Memory
- Bios is year 2000 compliant
- 6.4Gb Ultra DMA 10ms Hard Disk Drive
- AGP graphics card with 8Mb SDRAM
- 17" SuperVGA Low Radiation 1600x1200 0.26mm Digital Colour Monitor
- Aries K56 56600 VOICE Internal Fax/Modem with 30 days Internet Access
- Multimedia Ready - See below
- **Software Bundle Pack (see details above)**
- 6 YEAR WARRANTY includes 1st year On-Site parts & labour, 5 years return to base labour only (excluding monitors)
- Midi Tower ATX Case + PSU (CE approved)

Multimedia Specification

- 24X MAX Twenty Four Speed CD ROM Drive
- SoundBlaster AWE64 sound card with Enhanced OPL3 Stereo Music Synthesiser and CD Quality Audio
- 80W Mains Powered Speakers

CHOOSE YOUR OWN PROCESSOR

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- Bios is year 2000 compliant
- 8.4Gb Ultra DMA Sub 10ms Hard Disk Drive
- AGP graphics card with 8Mb SDRAM
- 19" SuperVGA Low Radiation 1600x1200 0.28mm Digital Colour Monitor
- Aries K56 56600 VOICE Internal Fax/Modem with 30 days Internet Access
- Multimedia Ready - See below
- **Software Bundle Pack (see details above)**
- 6 YEAR WARRANTY includes 1st year On-Site parts & labour, 5 years return to base labour only (excluding monitors)
- Midi Tower ATX Case + PSU (CE approved)

Superb Value!

Multimedia Specification

- 32X MAX Twenty Four Speed CD ROM Drive
- SoundBlaster AWE64 sound card with Enhanced OPL3 Stereo Music Synthesiser and CD Quality Audio
- 80W Mains Powered Speakers

CHOOSE YOUR OWN PROCESSOR

Intel 233MHz Pentium® II Processor	Intel 266MHz Pentium® II Processor	Intel 300MHz Pentium® II Processor	Intel 333MHz Pentium® II Processor
£1599.00	£1639.00	£1729.00	£1799.00
£1878.83	£1925.83	£2031.58	£2113.83
EasyPlan Finance £67	EasyPlan Finance £69	EasyPlan Finance £73	EasyPlan Finance £76

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MMX™ intel inside pentium® PROCESSOR

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Supplied with Black Ink Cartridge
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- Bios is year 2000 compliant
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- 14" SuperVGA Low Radiation 1024 x 768 0.28mm Digital Colour Monitor
- 24X MAX Speed CD ROM Drive
- PC Joystick
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- Desktop Case + PSU (CE approved)
- 1.44Mb 3.5" Drive
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- Microsoft Windows 95
- CD Software Bundle (see details opposite)
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- *FREE Colour Inkjet Printer

*Offer valid while stocks last

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Consisting of:
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Pay the whole amount by credit card/cheque. Total Price **£769** + £20 carriage & VAT = **£927.08**.

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£769.00	£799.00	£949.00
£903.58 inc VAT	£938.33 inc VAT	£997.58 inc VAT

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Aries Networking Solutions

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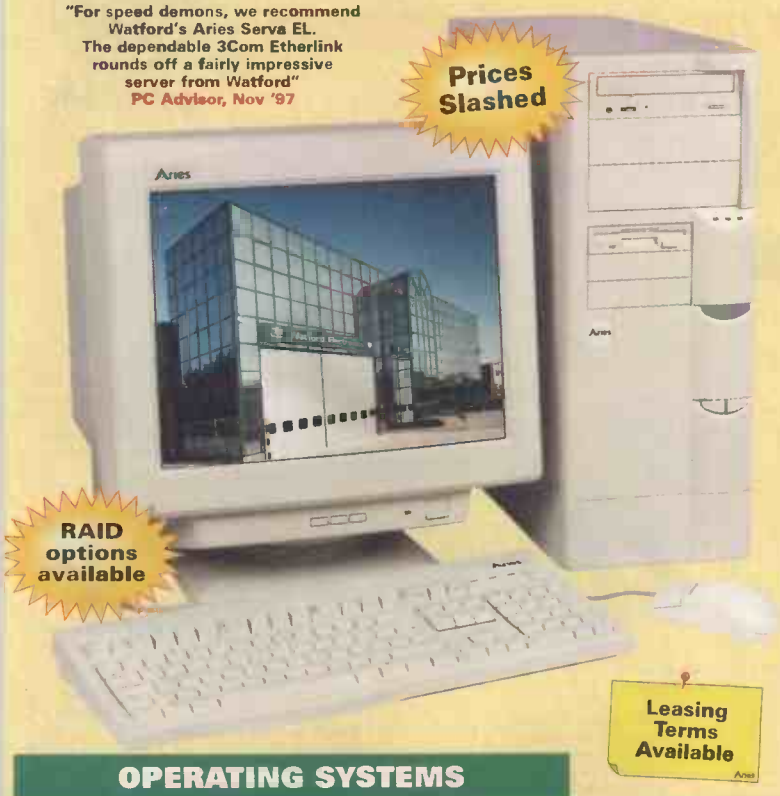
PC Advisor, Nov '97



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From small businesses to large corporations, Watford Electronics has a range of high performance servers designed to withstand the demands of each environment. With twenty-six years experience, Watford Electronics has the resources and expertise to design and implement a networking solution to your specification.

By using the latest technology to guarantee the fastest possible performance and hardware options available such as RAID, all important data will never be lost.

Watford Electronics' servers are specifically designed for Windows NT, Netware and SCO Unix.

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- MS Outlook
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- MS SQL Server v6.5

Product	Code	Price	Inc. VAT
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MS BackOffice Small Business Server + 25 Clients	18797	£1520.00	£1786.00
Additional Client Licences (5 Pack)	18798	£195.00	£229.13

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Novell NetWare is the ideal platform for your business, whether you are just starting out or have hundreds of users. Providing all the features you would expect from a product of this calibre, including level C2 security, fault tolerance, management facilities and lots more. Also included are Multiprotocol Router, WAN extensions, FTP services, NetWare Webserver and Netscape Navigator.

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IntraNetWare 10 User	17799	£839.00	£985.83
IntraNetWare 25 User	17800	£1405.00	£1650.87
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IntraNetWare 100 User	17802	£2820.00	£3313.50
IntraNetWare - Additional 10 Users	17819	£535.00	£628.63
IntraNetWare - Additional 25 Users	17792	£1199.00	£1408.83
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Product	Code	Price	Inc. VAT
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SCO OpenServer v6.0.4 Development Tools	14284	£462.95	£543.97
SCO OpenServer v5.0.4 Additional 10 Users	14571	£296.95	£348.92
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- Integrated Enhanced IDE Controller
- 2Mb PCI Graphics Accelerator
- 3Com 3C509B Combo ISA Ethernet Adapter
- 3.5" 1.44Mb Floppy Disk Drive
- MIDI Tower ATX Case
- 105 key keyboard
- 2 Button Serial PC Mouse
- 14" 0.28mm Super VGA Monitor
- 12 months RTB Parts & Labour warranty

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£875.00
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Business Value Leasing £CALL

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- Sony STD5000 4-8Gb 4mm DAT Backup
- 24X IDE CD ROM Drive
- Integrated Enhanced IDE Controller
- Integrated Adaptec 7880 SCSI controller
- 2Mb PCI Graphics Accelerator
- 3Com 3C509B Combo ISA Ethernet Adapter
- 3.5" 1.44Mb Floppy Disk Drive
- MIDI Tower ATX Case
- 105 key keyboard
- 2 Button Serial PC Mouse
- 14" 0.28mm Super VGA Monitor
- 12 months RTB Parts & Labour warranty

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- 24X IDE CD ROM Drive
- Integrated Enhanced IDE Controller
- Adaptec AAA 133 Ultra Wide RAID Controller
- 2Mb PCI Graphics Accelerator
- 3Com 3C905TX 10\100 Ethernet Adapter
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MMX™ intel inside pentium® PROCESSOR

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- 16Mb RAM on-board expandable to 80Mb
- 256K Level 2 Write-Back Cache, Pipeline Burst SRAM

Storage
- 2.1Gb Removable Hard Disk Drive
- 1.44Mb 3.5" Floppy Drive

Multimedia - CD ROM Drive/Sound System
- 16X Speed CD ROM Drive
- 16 bit Stereo Sound System
- Sound Blaster, Sound Blaster Pro and MS Wavetable Sound System - Windows compatible
- Built-in Microphone
- Built-in Stereo Speakers

Display/Video System
- 12.1" Super VGA 800 x 600 - 65,000 Colours Dual Scan DSTN or Active Matrix TFT LCD Screen
- Supports up to 1024 x 768 - 256 Colours mode on external monitor
- Simultaneous display of both screen & external video
- Windows GUI accelerator
- Full power management
- PCI Bus Colour Graphics Interface with 2Mb Video RAM
- Software MPEG drivers

Pointing Device/Keyboard
- Latest technology TouchPad with ALPS drivers
- Both external PS/2 mouse (optional) and integral TouchPad can work concurrently
- Windows 95 86 Key Keyboard

I/O Ports
- Infra Red Communication Port - IrDA standard
- Built-in TV Port
- MIDI/Game Port
- PCMCIA Slot - 2 x Type II OR 1 x Type II and 1 x Type III
- 16550 UART Hi-Speed Serial Port
- EPP/ECP Hi-Speed Parallel Port
- External auto-sensed PS/2 keyboard/mouse port
- Jacks for Stereo Line In/Line Out & Ext. Microphone

Power Management
- Multiple-mode power management scheme
- APM 1.2 support
- Static Suspend
- Suspend to HDD
- Modem ring and any key triggered resume
- Battery gas gauge support
- Suspend or warning on low battery

Security
- Kensington Security Cable Lock Anchor
- MASTER Password support
- Password protection for Set-Up entry screen

Notebooks Supplied with:
- Carrying case
- AC/DC Adaptor

Optional Operating System
- Microsoft Windows 95 (with manual/CD)
- MS DOS v6.22/Windows v3.11
- MS NT Workstation upgrade

Weight & Dimensions
- 3.2Kg/7lbs approx
- 299(w) x 230(d) x 56(h)mm

Corporate Sales Fax Number 01582 745523

Optional 3 YEAR UNIQUE WARRANTY

16MB RAM 2.1GB HD	MEDIABOOK 753 Intel 166MHz Pentium® Processor with MMX™ Technology		MEDIABOOK 753 Intel 200MHz Pentium® Processor with MMX™ Technology	
DESCRIPTION	PRICE	FINANCE PER WEEK FROM	PRICE	FINANCE PER WEEK FROM
Dual Scan 12.1" Colour Display	£999.00 / £1173.82 inc VAT	£10.58	£1029.00 / £1209.08 inc VAT	£10.89
TFT Active Matrix 12.1" Colour Display	£1199.00 / £1408.83 inc VAT	£12.66	£1229.00 / £1444.08 inc VAT	£12.96

Complete computer insurance cover worldwide from Watford Electronics - Call 01582 745577 for details on a 1, 2 or 3 year policy

Extended Warranty
Peace of Mind for 3 Years - From as little as 18p/day

Parts and labour warranty	Price	Inc VAT
12months to 2 Years Upgrade	£125	£146.88
12months to 3 Years Upgrade	£199	£233.83

UPGRADE OPTIONS

	Price	Inc VAT
16Mb to 32Mb RAM Upgrade	£99	£116.33
16Mb to 48Mb RAM Upgrade	£179	£210.33
16Mb to 80Mb RAM Upgrade	£299	£351.33
Upgrade 2.1Gb to 3.2Gb Hard Disk	£99	£116.33
PCMCIA V34 33,600 Fax/Modem	£69	£81.08
PCMCIA K56 56,000 Fax/Modem	£99	£116.33
PCMCIA GSM Fax/Modem* 33600	£149	£175.08
PCMCIA Ethernet Card (BNC/UTP)	£69	£81.08
Microsoft Windows 95	£56	£65.80
Removable HDD Kit	£35	£41.13
NiMH Battery Pack (spare)	£65	£76.38
Lithium Ion Battery Pack	£144	£169.20
Upgrade NiMH to Lithium Ion Battery	£69	£81.08
Additional Power Charge/Adaptor	£65	£76.38
External Charger Unit	£45	£52.88
Car Lighter Adaptor	£48	£56.40

*Requires telephone adaptor

MediaBook® 800 Aries

BIG Screen 13.3" TFT Notebook Computer

The Aries MediaBook 800 is our most advanced Notebook ever with a host of features which put it well ahead of the crowd. The most appealing of these is it's huge 13.3" Active Matrix display, the biggest of it's kind in the Notebook industry. This revolutionary display offers a maximum resolution of 1024x768, a setting more commonly associated with 17" monitors, (and higher than some standard 14" displays can muster) this means that you see more of your desktop making it easier to work (or play!) with todays demanding applications. To ensure that this large screen is pin sharp and flicker free the MediaBook 800 uses the very latest TFT Active Matrix technology, proven to enhance LCD display performance in all light conditions. If this massive display is not enough to tempt you then the performance certainly will, the MediaBook 800 uses the latest Intel 166MHz Pentium® with MMX™ Technology specially developed for use in Notebooks, coupled this with 256K level 2 cache and 32Mb of DRAM as standard and all your multimedia driven applications will fly!

NEW LOW PRICE

MMX™ intel inside pentium® PROCESSOR

Intel 166MHz Pentium® Processor with MMX™ Technology

£1799.00 / £2113.83 inc VAT

- Intel 166MHz Pentium® Processor with MMX™ Technology
- 32Mb expandable to 128Mb
- 3.1Gb HDD
- 5.25" 12X CD-ROM, 3.5 FDD module swappable x/CD-ROM module
- TFT 13.3" Active Matrix
- 2Mb Video EDO RAM
- Built in 2 stereo speakers & 1 microphone. 16-bit stereo sound blaster compatible 3D Audio & wavetable
- TouchPad pointing device
- Sanyo 18650 battery
- 313 x 260 x 45mm 3.1 - 3.3kgs (7.0 - 7.3lb)
- Optional 33.6Kbps PCMCIA Fax/Modem

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Infrared Adapter for PDA / laptop connection to desktop

ThinkPad PROVEN

- Wirefree connection between portable and desktop
- Receives Infrared signal from your laptop, PDA (PSION etc) or mobile data 'phone (Nokia 9000)
- Connects to Com port on PC
- Compatible with Win 95 & 3.x

NEW

JetEye PC 18002 £69 £81.08 inc. VAT

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Member of Infrared Data Association

Infrared Adapter for PDA / laptop connection to virtually any printer

- Wirefree connection between portable and office printer
- Walk up and print convenience
- Connects to parallel port on your printer
- Supports Win 95 & 3.x

JetEye Printer 18001 £82 £96.35 inc. VAT

NEW

ExtendNet 100s

External Print Server for standard or FAST ethernet networks

- Future Proof - works with both 10Base-T and 100Base-T ethernet
- Supports 2 printers
- Supports Novell NetWare & NDS, TCP/IP, Win NT, LAN Manager, LAN Server, Ether-Talk & Win 95. Banyan VINES available

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All Extended Systems products come with:

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JetEye Net 19693 £265 £311.38 inc. VAT

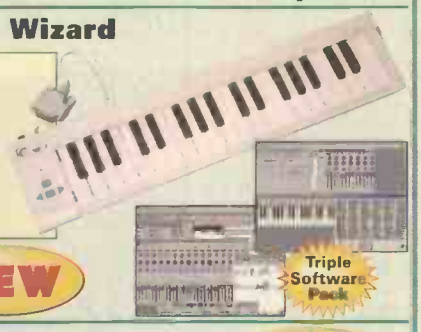
evolution

-The PC Music Solution

...everything you need to make music on your PC

evolution Music Wizard

- 37 mid size keys
- Pitchbend and modulation controls
- Transpose, octave shift, program and bank charge plus other MIDI controls
- Self powered keyboard to soundcard cable fitted



Triple Software Pack

Music Wizard 19461 £29 £34.01 inc. VAT

NEW

evolution Music Creator Pro

NEW

- 49 full size, velocity sensitive keys
- Pitchbend and modulation wheels
- Transpose, octave shift, program and bank charge plus other MIDI controls
- 6 program memories, 3 digit LED dispaly
- Standard MIDI socket, sustain pedal socket
- Self-powered connecting cable

Music Creator Pro 19462 £102 £119.85 inc. VAT

evolution Music Creator Pro 61

NEW

All the features of the Music Creator Pro

VALUE GOLD AWARD

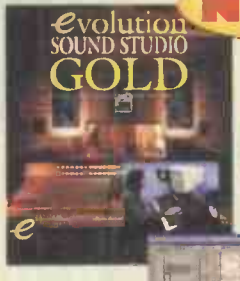
Music Creator Pro 61 19457 £148 £173.90 inc. VAT

- 61 full size, velocity sensitive keys
- Built-in stereo amplifier and speakers
- Mouse mat with GM voice list
- Power Adaptor

evolution Sound Studio Gold

NEW

Sound Studio Gold combines audio, video and MIDI in one easy to use integrated software package that transforms your PC into a recording studio



VALUE

- 16 stereo digital audio tracks
- Record while playback for audio
- Realtime Reverb/Echo/Pan/Volume controls for audio tracks
- Cut, Copy and Paste Audio and MIDI patterns
- 16 Channel multiple port mixer includes faders
- 256 MIDI tracks
- AVI (Video) playback support

Sound Studio Gold 19458 £127 £149.23 inc. VAT

Product	Part Code	Price	Inc. VAT
Evolution Music Creator 49 mid-size keys	19459	£42	£49.35
Evolution Music System Full size music keyboard with PC adaptor pack	19460	£255	£299.63

All keyboards include Evolution Triple Software Pack

For more information on Evolution products **http://www.evolution.co.uk**

Sales Hotline: 01582 745555

FAX: 01582 488588

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MasterCard VISA SWITCH

OPTI Picture MAGIC

Sound and Vision

Opti Picture Magic
19043 £289
£339.58 inc. VAT

The Picture Magic from Opti has made affordable, high resolution photographs possible. Whether for business, Web Site development or entertainment the Picture Magic Digital Camera combines both quality images with sound capture facilities The Opti Focus is supplied complete with the highly acclaimed Adobe PhotoDeluxe

- Hi Res. Camera with Sound Capture Capabilities
- True Colour/Sharper Images (1000x800 Max.)
- Built-In Microphone for 5 seconds Audio per image
- Stores up to 89 (1000x800) or 133 (500x400) images
- RS-232 Port connects directly to your computer
- Bundled with 2MB removable Photo Memory Card

OPTI IMAGE©

Opti Image
19035 £1555
£1826.12 inc. VAT

The Opti Image 13.8" TFT Flat Screen Panel is just one in the new range of space-saving, high resolution innovative monitors from Opti International. In addition to the 13.8" series, Opti have available the ultimate in size and quality, with this amazing 17" monitor. What would be wishful thinking to most busy executives has now been become reality with Opti International.

- 13.8" TFT LCD Screen
- 1024 x 768 High-Quality Resolution
- Sleek, slimline design
- Distortion-free image
- Vivid High-Brightness Colour Image

OPTI FREEDOM

No Strings Attached!

Not just a clever name! The Opti 'Freedom' allows true freedom in two respects. Firstly, giving you the opportunity to work away from your desk (up to 23ft away!) in true comfort and secondly freeing space on your desk. No more troublesome wires, mouse and mouse pad. Fully compliant with Windows95 - a true multimedia accessory with integrated controls for all your multimedia needs.

Opti Freedom
19034 £49
£57.58 inc. VAT

- Infrared Wireless Keyboard
- Operates from up to 23ft away
- 14 Programmable Function Keys
- I-Point™ Stick and Click Buttons built-in

HIGH SPEED COMPACT SOLUTIONS FOR NOTEBOOKS

Iomega Zip100 compatible (100Mb)
Win 95 ' Plug n Play '
High speed data transfer (3.3Mb / s)
Micro design (17mm X 104mm X 154mm)
Patented power management system

nova Max

ZIP 100
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£233.83 inc. VAT

Ultraslim & Lightweight 20 speed (450g)
Powered via PCMCIA slot (no AC required)
Audio CD player function
Win 95 ' Plug n Play '
Regulated low power consumption

nova Max

20X CD
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RINGDALE

100base T Ethernet Hubs

The 100base TX range of Fast Ethernet hubs can be used to create power workgroups and provide interconnection to centrally located servers.

4 Port Hub 18722 £159 £186.83 inc. VAT

8 Port Hub 18723 £299 £351.33 inc. VAT

16 Port Hub 18724 £569 £668.58 inc. VAT

- 4, 8 or 16 UTP ports
- Compact size (16port model fits 19" rack)
- LED indicators for link and activity status
- Mains powered
- Standard RJ45 ports supporting Cat 5 cable

PeripheralVision®

PeripheralVision® enables the user to design and manage their network in a total graphical solution. It will 'discover' any device on a TCP/IP network and construct a map of the LAN.

PeripheralVision 18767 £159 £186.83 inc. VAT

- Ping any device on the network
- Graphically map out & manage the whole LAN
- Supports Windows 95 and Windows NT
- Analyses status of hubs, servers, PCs etc
- Requires MS TCP/IP

PrintPro '97 Pocket Printserver

The PrintPro '97 is a pocket size printserver offering the most compact 3rd generation printer to LAN connectivity. A single 10baseT connection is provided and the unit simply plugs into the parallel port on the printer.

PrintPro '97 18248 £125 £146.88 inc. VAT

- 10baseT RJ45 network connection
- Novell, WFWG, Win95, Unix support
- Supports most popular LAN protocols
- LED indicators for data traffic signals
- Windows Printing System software included
- Mains power supply unit

Product	Code No.	Price	Inc. VAT
Ethernet Printservers			
FastPort 10/100 Pocket TP	18247	£199.00	£233.83
RP21 Inline BNC/TP 10Mbs	15631	£145.00	£170.38
Printserv3 BNC/TP - 2P,1S	18720	£199.00	£233.83
FastJet 10/100 MIO TP only	18721	£225.00	£264.38
PrintProFL Fibre Optic - 1P	18793	£549.00	£645.08
ISDN Routers			
10base2/T Ethernet Router	18793	£225.00	£264.38

OPTI Networking Card

100 Base-T Ethernet

- Complies to IEEE802.310 Base-TX and IEEE802.3U 100 Base TX and PCMCIA 1995 PC Card Standards
- 10/100Mbps Auto-sensing
- PCMCIA Type II, 15pin flat connector to media coupler
- Link active, Transmit/Receive LED Indicators
- Software configurable

100 Base-T Ethernet 19396 £149 £175.08 inc. VAT

Genius

10MBS ETHERNET ADAPTERS

11456	GE2000 III ISA BNC/TP	£19.95
12123	GE2500 II PCI BNC/TP	£24.95
13355	E3000 II Parallel BNC/TP	£39.95
11638	ME3000 II PCMCIA BNC/TP	£49.95

100MBS ETHERNET ADAPTERS

12116	GF100TX PCI TP only	£47.95

10MBS ETHERNET HUBS

12168	GH4080 Mini 8pt,1xBNC	£43.95
12199	GH4160 Mini 16pt,1xBNC,1xAUI	£94.95
14186	GH4160/R 19" Rack 16pt,1xBNC,1xAUI	£128.95

100MBS FAST ETHERNET HUBS

15627	GF4080TX 19" Rack 8pt	£379.95
15628	GF4120TX 19" Rack 12pt	£514.95

ETHERNET PRINTSERVERS

12430	GPS300 Pocket NetWare only - 1xPar	£73.95
17856	GPS300 Pocket M/Protocol - 1xPar	£112.95

intel

The industry standard for Fast Ethernet. The Pro/100 is the first and rapidly emerging standard for Fast Ethernet. With its dual speed operation the Pro/100 will run in 10Mb mode and automatically switch to 100Mb when the network is upgraded. Intel provide the complete solution - network adapters for both workstations and severs, hubs, switches and printservers.

10MBS ETHERNET ADAPTERS

12115	EtherExpress Pro/10+ ISA BNC/TP	£49.95
16319	EtherExpress Pro/10+ PCI BNC/TP	£71.95

100MBS FAST ETHERNET ADAPTERS

15624	EtherExpress Pro/100+ PCI TP only	£47.95
18713	EtherExpress Pro/100 PCI Server Adaptor	£302.95
18213	EtherExpress Pro/100 EISA TP only	£152.95
18655	EtherExpress Pro/100 Mobile 16bit PC Card	£88.95
18654	EtherExpress Pro/100 Mobile 32bit Cardbus	£98.95

10/100MBS ETHERNET HUBS

18717	Express 100 Standalone 8pt	£274.95
17306	Express 10/100 12pt	£648.95
18718	Express 10/100 24pt	£1,030.95

10/100MBS ETHERNET SWITCHES

18719	Express 10/100 8pt	£1,344.95

ETHERNET PRINTSERVERS

17330	NetPort Express Pro Ext BNC/TP 2xPar,1xSer	£239.95
18236	NetPortExpress Pro/100 Ext - 1x Par	£161.95
18071	NetPortExpress Pro/100 Ext - 2xPar,1xSer	£217.95

3Com

The Fast Etherlink 10/100 adapters sets the Industry standard for performance. With 3Com's exclusive Parallel Tasking technology, you can get maximum speeds at both 10Mbs and 100Mbs. Installation is simplicity - the adapter autosenses the LAN speed, making upgrading easy. The perfect compliment is the range of OfficeConnect hubs and switches giving you a complete system from a name you can trust.

10MBS ETHERNET ADAPTERS

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11446	3C509B ISA BNC/TP *	£41.95
16703	3C592B EISA BNC/TP	£121.95
17288	3C589D 16bit PC Card TP only	£78.95
11479	3C589D 16bit PC Card BNC/TP	£103.95
17345	3C900 PCI TP only *	£56.95
11438	3C900 PCI BNC/TP *	£74.95
17857	3C563 16bit PC Card BNC/TP & 33.6 Modem	£186.95

100MBS ETHERNET ADAPTERS

16763	3C905 10/100 PCI TP only *	£53.95
17638	3C597TX EISA TP only	£89.95
18210	3C575TX 16bit PC Card *	£86.95
19009	3C574TX 32bit CardBus TP only*	£93.95
19407	3C515TX 10/100 ISA TP Only	£98.95

* = 5 and 20 packs available call for latest pricing

OFFICECONNECT ETHERNET HUBS

17295	3C16700 OfficeConnect 8/TP0 8pt 10Mb	£46.95
18701	3C16702 OfficeConnect TP16C 16pt 10Mb	£121.95
18702	3C16722 OfficeConnect TP800 8pt 100Mb	£212.95
18703	3C16721 OfficeConnect TP1200 12pt 100Mb	£CALL

SUPERSTACK II ETHERNET HUBS

18704	3C16590 SuperStack 10/100 12pt	£723.95
18706	3C250ATX SuperStack 100 12port	£CALL

10/100MBS ETHERNET SWITCHES

18707	3C16730 OfficeConnect 140 4x10/1x100	£410.95

D-Link

DLink provides complete solutions to cover all networking requirements. From small work-groups to large corporate installations spanning multiple sites, you can be rest assured that using Dlink will give you the solution you want.

10MBS ETHERNET ADAPTERS

18201	DE220PCT ISA BNC/TP	£16.95
12121	DE530CT PCI BNC/TP	£19.95
18202	DE660CT 16bit Cardbus BNC/TP	£42.95

100MBS ETHERNET ADAPTERS

18072	DFE500TX 10/100 PCI TP only	£28.95
18203	DFE650TX 10/100 16bit Cardbus	Call

10MBS ETHERNET HUBS

18214	DE805TP Mini 5pt	£25.95
18215	DE809TP Mini 8pt + link	£46.95
18216	DE816TAC Mini 16pt,1xBNC,1xAUI	£114.95
18217	DE812TP 19" Rack 12pt,1xBNC,1xAUI	£92.95
18218	DE816TP 19" Rack 16pt,1xBNC,1xAUI	£88.95
18219	DE824TP 19" Rack 24pt,1xBNC,1xAUI	£139.95

10MBS MANAGED ETHERNET HUBS

18220	DE1812i 19" Rack 12pt,1xAUI Master	£568.95
18221	DE1824i 19" Rack 24pt,1xAUI Master	£464.95
18222	DE1812 19" Rack 12pt,1xAUI Client	£197.95
18223	DE1824 19" RAck 24pt,1xAUI Client	£304.95

100MBS ETHERNET HUBS

18224	DFE808TX Mini 8pt	£324.95
18225	DFE812TX+ 19" Rack 12pt Stackable	£419.95
18226	DFE161ZTX 19" Rack 16pt Managed Master	£1,194.95
18227	DFE1212TX 19" Rack 12pt Managed Client	£672.95

10/100MB ETHERNET SWITCHES

18708	DES1008 8x10/100	£786.95

ETHERNET PRINTSERVERS

18234	DP300 10/100 Ext 2xPar,1xSer	£327.95

Ethernet Cabling & Accessories

	1m	2m	3m	5m	10m	20m	30m	50m	100m	300m
RG58 Thin Ethernet Cable	12010 £0.99	12063 £1.15	12012 £1.65	12014 £2.50	12016 £4.95	12019 £7.50	12053 £9.95	12056 £12.95	12029 £23.95	— —
Category 5 UTP Cable	12040 £0.95	12043 £1.20	12045 £1.85	12047 £2.35	12049 £4.50	12051 £7.35	12060 £11.95	12058 £15.95	— —	17327 £89.95

SOCKETS & OUTLETS

12089	BNC Outlet - Single Flush Mount	£2.10
12090	BNC Outlet - Dual Flush Mount	£2.95
15379	RJ45 Outlet - Single Flush Mount	£7.95
12088	RJ45 Outlet - Dual Flush Mount	£11.95
17328	EAD Outlet - Dual Flush Mount	£19.95
16534	Pattress Box for above outlets	£1.20
17347	12port 19" Patch Panel	£79.95
15197	24port 19" Patch Panel	£89.95

CONNECTORS

12140	BNC Male Crimp Plug	£0.65
12143	BNC Female Barrel Connector	£0.99
12141	BNC T Connector	£1.20
12142	BNC 50ohm Terminator	£0.95
12144	BNC 50ohm Terminator & Earth	£1.35
12748	RJ45 8P8C Crimp Plug	£0.25

TOOLS

11760	Thin Ethernet Crimp Tool	£10.95
11763	Thin Ethernet Cable Stripper	£6.95
12084	RJ45 Crimp Tool	£11.95
15073	Round UTP Cable Stripper	£10.95
15217	Krone IDC Crimp Tool	£19.95

Bulk discounts available Call for prices

HEWLETT PACKARD

The AdvanceStack range of hubs and switches offer seamless integration of your networks. Together with the range of high performance printservers and ethernet cards, you will quickly have the total network solution.

100MBS ETHERNET ADAPTERS

18211	J3171A 10/100TX PCI TP only	£47.95

10MBS ETHERNET HUBS

15634	J2610B AdvanceStack 8U 8pt	£124.95
17346	J3200A AdvanceStack 12R 12pt	£266.95
18709	J3202A AdvanceStack 24R 24pt	£489.95

100MBS ETHERNET HUBS

18228	J3235A AdvanceStack 8TXE 8pt	£381.95
18710	J3234A AdvanceStack 12TX 12pt	£544.95

10/100MBS ETHERNET SWITCHES

18711	J3175A AdvanceStack 208T 8x10/1x100	£654.95
18712	J3245A AdvanceStack 800T 4x100	£789.95

ETHERNET PRINTSERVERS

15716	J2552B JetDirect MIO - BNC/TP	£223.95
18235	J2556B JetDirect MIO - 10/100 TP	£247.95
14384	J2591A JetDirect EX+ BNC/TP - 1xPar	£179.95
17329	J2593A JetDirect EX+3 BNC/TP - 3xPar	£234.95

APC

With APC's range of UPS solutions, you get total protection from power failure, spikes and surges, thus ensuring that all your valuable data remains intact.

BACKUPS PRO - DESKTOP PROTECTION

14156	BackUPS Pro 280 PnP - 280VA	£83.95
15273	BackUPS Pro 420 PnP - 420VA	£114.95
14149	BackUPS Pro 650 PnP - 650VA	£154.95

SMARTUPS - SERVER PROTECTION

18725	SmartUPS v/s 420 - 420VA	£118.95
14588	SmartUPS v/s 650 - 650VA	£153.95
14589	SmartUPS v/s 1000 - 1000VA	£239.95
14590	SmartUPS v/s 1400 - 1400VA	£358.95

MATRIX UPS - SERVER PROTECTION

12249	Matrix 3000 - 3kVA	£1297.95
18831	Matrix 3000 + SmartCell Pack	£1975.95
12250	Matrix 5000 - 3kVA	£1722.95
18832	Matrix 5000 + SmartCell Pack	£1998.95

Sales Hotline: 01582 745555

FAX: 01582 488588

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Nikon COOLSCAN II

NEW LOW PRICE

Now, high-quality scanning is not only affordable, its exceptionally fast too!

The Coolscan II can deliver publication quality, full colour scans at 2,700dpi in about 80 seconds! So, if you're on a tight schedule, you won't have to sacrifice a thing.

While the diminutive external 15-20E is rugged and reliable on and off the road, the IS-20i, the internally mountable version of the Coolscan II, will fit into any available half-height drive bay, giving you back valuable desk space.

Specifications	
Film Type	Light source
35mm film (positive or negative, colour or monochrome)	RGB LED array
Optical resolution	Film holder
2,700 dpi	No holder needed for mounted slides
Colour depth 24 bit	Strip film holder for up to six frames

COOLSCAN II (external) with Nikon Scan — CoolScan II — 17182 — £499 — £586.33 inc. VAT

COOLSCAN II (external) with Silver Fast and Photoshop LE — CoolScan II — 19463 — £599 — £703.83 inc. VAT

COOLSCAN II (internal) — Internal — 17183 — £413 — £485.28 inc. VAT

MGI PhotoSuite

Take PC Photography To The Next Level!

- Edit and retouch your photos.
- Fix red-eye, remove blemishes, crop, rotate, brighten, adjust colours and much more!
- Make photo greeting cards.
- Create posters and calendars.
- Have fun with faces using special effects.
- Send and create photos for the Internet.

INCLUDES HUNDREDS OF PHOTO TEMPLATES AND A MULTIMEDIA TUTORIAL.

Windows Magazine Recommended ★★★★★

HOME OFFICE ★★★★

PHOTOSUITE — 16385 — £32 — £37.60 inc. VAT

EPSON

EPSON PhotoPC 600

- XGA Resolution up to 1024 x 768, 24 bit colour images
- Prints directly to the EPSON Sylus Photo
- Displays presentations directly through video output
- High quality built-in 2" LCD colour viewfinder
- 4MB internal memory and external CompactFlash card (option 4MB, 15MB) for flexible image storage
- PAL TV/Video output for excellent large screen viewing
- Digital zoom, panoramic, B&W and Macro image capture modes
- Multi-frame mode (captures nine sequential shots of the same basic image in one frame)
- PictureWorks HotShots, PhotoEnhancer & NetCard, Presto! PhotoAlbum! and EPSON Photo! Suite software packages for Windows 95

New low Price

PhotoPC 600 — 18589 — £455 — £534.63 Inc. VAT

OPTIONS

- AC Adapter
- CompactFlash PCMCIA card adapter
- 4MB and 15MB CompactFlash Memory Cards
- Direct Print Kit Software and Cable

Call For Pricing

StylusPhoto Printer and PC600 Digital Camera solution — Stylus Photo + PC600 — 18874 — £595 — £699.13 inc. VAT

JVC

NEW

GR-DVL9000

Digital Video Camera

- 560 Lines Vertical Resolution with Progressive Scan CCD and Complementary Colour Filter
- 500 Lines Horizontal Resolution with New Luminance Processor
- JLIP Video Capture Software (Ver.2), JLIP Video Producer Software and Paint Software provided (MGI PhotoSuite™ SE)
- F1.2 Lens (The brightest in the Industry)
- 4" Screen with hi-crystaline (High quality)
- Direct PC Connection (RS-232C type)
- Pin point zoom on screen
- Adjustments to picture on screen
- DV terminal (DV out)
- Built-in capture facility

GR-DVL9000 — 19666 — £1347 — £1582.73 inc. VAT

Offers 560 lines of Vertical Resolution - highest in the industry!

GC-S1

Digital Still Camera

10x Optical Zoom

- Progressive scan
- F1.6 Lens - Brightest amongst digital cameras
- Built-in 1,8 LCD monitor
- 2-Step 10x Optical Zoom with AF
- 9 Positions can be taken from each shot
- IrDA (IrTran-P compliant) interface for wireless transfer of pictures
- Compact Flash storage
- Software, JLIP
- Picture Navigator & MGI Photosuite™ SE
- PC Terminal
- Compact Flash

GC-S1 — 19667 — £299 — £351.33 inc. VAT

F1.6 - Brightest amongst digital cameras!

For Windows PC only. Windows® 3.1 and Windows® 95 Compatible

Relisys 2000 Camera

"Simple to use, Easy for Fun"

Silver Fox Camera — 18693 — £99 — £116.33 inc. VAT

- No films needed: unlimited image storage
- Shoot and store
- Easily connect to your computer
- Enhancing, editing, and organising images
- Extend your creativity for business or fun
- Display, print or communicate via Internet

Features

- High quality 24 bit images up to 16.88 million colours
- Standard resolution (320x240 pixels)
- Fine resolution (640x480 pixels)
- Unlimited storage expandable with RFM cards (Replaceable Flash Memory cards)
- Focus free from 0.4m
- Built-in auto flash light

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ESTABLISHED 1972

Aries THE MONITOR SPECIALISTS

14" EnergyPro

- 14" CRT
- 0.28mm dot pitch (anti-static, anti-glare)
- 30-50KHz Horizontal freq.
- 50-100Hz Vertical freq.
- 1024 x 768 Max Resolution
- Vertical/Horizontal, position, size, brightness, contrast
- 7 User Programmable Modes

3 YEAR UNIQUE WARRANTY

'1st Year On-Site Swap-Out'

14" EnergyPro 10073 £85 £99.88 inc. VAT

15" EnergyPro

- 15" CRT
- 0.28mm dot pitch (anti-glare, anti static)
- 30 - 66kHz Horizontal frequency
- 50 - 100Hz vertical frequency
- 1280 x 1024 Max Resolution
- Digital control
- 7 User Programmable Modes

'1st Year On-Site Swap-Out'

3 YEAR UNIQUE WARRANTY

15" Trinitron 18929 £179 £210.33 inc. VAT

15" EnergyPro 10075 £117 £137.48 inc. VAT

17" 8000s EnergyPro+

PC Magazine - Highly Recommended

"Sharp image and vibrant colours. Very good value for money."

- 17" High Res Screen
- 0.26mm Aperture Grille
- Antistatic, anti reflection screen
- 30 - 85kHz horizontal
- 50 - 120Hz vertical freq.
- 1600x1200 NI Max Res
- On screen display
- TCO Compliance
- Plug and Play

3 YEAR UNIQUE WARRANTY

'1st Year On-Site Swap-Out'

17" EnergyPro+ 15857 £329 £386.58 inc. VAT

17" Trinitron 18930 £359 £421.83 inc. VAT

17" Energy Pro

This 17" diagonal flat square technology CRT monitor provides an entry level solution for those wishing to use business, small office / home office, home education / entertainment, general graphics and windows applications.

- 17" CRT
- 0.28mm dot pitch (anti-glare, anti static)
- 30 - 65kHz horizontal freq.
- 50 - 120Hz vertical freq.
- 1280 x 1024 Max Resolution
- Digital control
- Windows Plug & Play
- EPA, MPRII, CE

3 YEAR UNIQUE WARRANTY

'1st Year On-Site Swap-Out'

17" EnergyPro 10074 £235 £276.13 inc. VAT

21" EnergyPro

- 21" CRT
- 0.26mm dot pitch (anti-static, anti-glare)
- 50-120KHz Horizontal freq.
- 50-120Hz Vertical freq.
- 1200 x 1024 max resolution
- Vertical/Horizontal, position, size, brightness, contrast, tilt, Plug & Play
- 7 User Programmable Modes

3 YEAR UNIQUE WARRANTY

'1st Year On-Site Swap-Out'

21" EnergyPro 17706 £749 £880.08inc. VAT

TAXAN

LEADERS IN ENVIRONMENTAL EXCELLENCE

Introducing the new Ergovision 760 series - the TCO 95 and TCO 95-S - 17" monitors occupying the same desk space as traditional 14" displays with no price penalty!
Now you can use a large screen display without detriment to your finances or upgrading your desk!

'Another first from Taxan'

Easy One-Touch Control

760 TCO 95-S 19363 £349 £410.08 inc. VAT

Ergovision 760 TCO 95

- 17" 'Zen Tan' FST Tube
- Footprint equivalent to a 14" monitor
- AGRAS Face treatment
- 0.27mm dot pitch
- 30-70kHz Horizontal Scan Frequency
- 1024 x 768 up to 86Hz Display Resolution
- Fully TCO 95 compliant
- Easy One-Touch Control

760 TCO 95 19362 £339 £398.33 inc. VAT

Ergovision 760 TCO 95-S

- 17" 'Zen Tan' FST Tube
- Footprint equivalent to a 14" monitor
- AGRAS Face treatment
- 0.27mm dot pitch
- 30-70kHz Horizontal Scan Frequency
- 1024 x 768 up to 86Hz Display Resolution
- Fully TCO 95 compliant
- Easy One-Touch Control
- Built in 4W Dome Stereo Speakers

430 LR 19014 £113 £132.78 inc. VAT

Introducing three Ergovision Monitors from Taxan

Ergovision 430 LR

- 14" (13.1" Viewable)
- 0.28mm Dot Pitch
- 270mm x 200mm Display Area (Max)
- 30-54kHz (Horizontal Scan Freq.)
- 50-110Hz (Vertical Scan Freq.)
- 1024 x 768 up to 66Hz Display Resolution

PC Pro 'A' list, PCW Highly Commended May '97

550 TCO 95 19358 £179 £210.33 inc. VAT

Ergovision 550 TCO 95

- 15" FST (13.7" Viewable)
- 0.27mm Dot Pitch (Aperture Grille)
- 30-69kHz (Multiscan)
- Fully TCO 95 Compliant
- 1280 x 1024 up to 64Hz Display Area
- Windows 95 Plug & Play

18.4" Viewable

975 TCO 95 £549 £645.08 inc. VAT

Ergovision 975 TCO 95

- 19" FST Tube
- ARASC Face Treatment
- 0.26mm dot pitch
- 30-95kHz (Horizontal Scan Frequency)
- 1600 x 1200 @ 75Hz
- Fully TCO 95 Compliant
- BRAND NEW FROM TAXAN!!

Sales Hotline: 01582 745555

FAX: 01582 488588

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Products

HP DeskJet 670C

Incredible printer at an incredible price!

Easy to use
Achieving great quality with affordable costs has never been easier: the HP DeskJet 670C has two built-in cartridges - one for colour and one for black - which means there is no need to switch cartridges.

Great results, even on plain paper
The HP DeskJet 670C comes with HP's RealLife Imaging system for true-to-life images. Your printed documents are given maximum appeal with crisp black text and photo-quality colour: professional-standard printing - on plain paper! And you can use HP's exclusive built-in ColorSmart technology to produce spectacular colour - automatically.

- Print technology: Plain paper drop-on-demand thermal inkjet printing.
- Black print speed: Microsoft® Windows® EconoFast mode 4 pages per minute: Normal mode 2.5 pages per minute.
- Colour print speed: Microsoft® Windows® EconoFast mode 1.5 pages per minute.
- Warranty: One Year

DeskJet 670C
£115
17716
£135.13 inc. VAT

HP DeskJet 690C and EasyPhoto reader

For an extra £18 + VAT you can have the EasyPhoto reader with your HP Deskjet 690C! The ultimate in colour print quality and printer versatility for the family and the small office environment.

DeskJet 690C
£142
17745
£166.85 inc. VAT

The EasyPhoto reader is a scanner made by Storm and is featured in PC Advisor. It is designed as a photo scanner, but also has a few extra tricks, like a detachable scan head which you can use like a hand-held scanner to scan pages from books and magazines. The easy to set up software supports MMX and includes Adobe Photo Deluxe. Scan speed is very respectable (600dpi) and overall accuracy is excellent.

- Black Resolution: Best mode 600 x 600 dpi, Normal mode 600 x 300 dpi, EconoFast 300 x 300 dpi
- Colour Resolution for Standard Pen Set: 300 x 300 dpi on plain paper, 600 x 300 dpi black and colour on HP Premium Paper and HP DeskJet Photo Paper
- Colour Resolution for Photo Pen Set: 600 x 300 dpi with 6 inks on all paper types with Photo Resolution Enhancement technology (Photo-REt)
- MS Windows® compatible, OS/2 and an extensive range of DOS software programs
- One year warranty

HP DeskJet 890C Professional Series

- Outstanding print quality: The HP DeskJet 890C Professional Series printer incorporates PhotoREt II, HP's latest technological innovation, to deliver photo-quality output, even on plain paper.
- Professional printing without the waiting: Prints at up to 9 pages per minute in crisp, sharp black and up to 5 pages per minute in vibrant colour.
- Business connectivity:Can be used with Win 95, Win NT 4.0, Win 3.x or DOS systems.
- Print Technology: Plain paper drop-on-demand thermal inkjet printing
- Warranty: One Year

Outstanding print quality at unrivalled speed

DeskJet 890C
£202
18476
£237.35 inc. VAT

HP DeskJet 720C

Show your true colours - outstanding photo-quality colour and performance on any paper

Looking for a photo-quality printer that gives you sharper, more realistic colour for everything you print at home?The HP DeskJet 720C is your choice. With outstanding photo-quality colour and performance on any paper.

Outstanding photo quality printing on any paper. From plain to premium papers, transparencies, cards, envelopes, labels or even banners and iron-on transfers - PhotoREt II, HP's latest technological innovation, delivers photo-quality colour and crisp black text.

- Outstanding photo-quality printing on any paper.
- Fast results for enhanced productivity
- 4 pages per minute
- Convenient and reliable
- Warranty: One Year

DeskJet 720C
£172
19347
£202.10 inc. VAT

ALL IN ONE

HP OfficeJet 590

All-in-One • Colour Printer • Fax • Copier • Scanner

- All-in-One: Printing, Faxing, Copying, Scanning in one product

Colour Printer
- Print Resolution: Black 600 x 600 dpi, Colour 600 x 300 dpi
- Print Speed: 4ppm Black, 1ppm Colour

Fax
- Paper Type: Plain
- Memory: 65 pages
- Send Resolution: Standard, Fine, 300 dpi, Photo
- Speed Dialling - Compatibility: 100 numbers - CCITT/ITU Group 3
- Phone Line: Able to share line with telephone & answering machine; automatic fax/answering machine switching

Copier
- Copy Resolution: 600 x 300 dpi text, 300 x 300 dpi image resolution
- Number of Copies: Up to 99
- Copy Speed: 50 seconds per page

Scanner
- Scanner Resolution: 600 dpi enhanced, 300 dpi optical
- Interface: TWAIN
- Optical Character Recognition:Includes OmniPage LImited Edition™ software from Caere

General
- Warranty: One Year

OfficeJet 590
£296
14553
£347.80 inc. VAT

HP OfficeJet 635

Printer, Copy, Scan in Colour • Fax

NEW LOW PRICE

Print
- 600 x 600 dpi black with Resolution Enhancement technology (REt)
- 600 x 300 dpi colour with HP ColorSmart technology
- Up to 5ppm black and 2ppm colour

Fax
- Plain paper and PC faxing
- 100 speed dials
- 65 page memory[1]
- 14.4 Kbps transmission speed
- Fine, standard, 300dpi & photo transmission resolutions

Copy
- 600 x 300 colour[2] & black/white
- Up to 99 copies from original
- Digital zoom from 50% to 200%[2]

Scan
- Up to 1200 dpi enhanced (300 dpi optical)
- 24-bit colour (millions of colours)
- 8-bit grayscale (256 levels of gray)
- Caere® Omnipage® Ltd. Ed. OCR software included
- TWAIN interface

General
- Warranty: One Year

OfficeJet 635
£339
19386
£398.33 inc. VAT

HP LaserJet 3100

Printer • Fax • Copier • Scanner

The HP LaserJet 3100 Printer • Fax • Copier • Scanner efficiently delivers professional documents for business communications

NEW

Print
- 6ppm - first page out in 18 seconds
- 600 x 600 dpi
- Paper sizes A4, B5, C5 & DL

Fax
- 6 seconds per page
- 175 programmable speed dials
- Photo mode resolution 300 x 300 dpi

Copy
- 6ppm, 1-99 copies with automatic collation
- Photo mode 300 x 300 dpi
- Reduce to 50%, enlarge to 200%

Scan
- Twain 1.6
- 300 x 300 dpi optical (600 x 600 enhanced)
- Up to 6ppm

General
- Warranty - one year

LaserJet 3100
£495
19553
£581.63 inc. VAT

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RETAIL STORE: 250 LOWER HIGH STREET, WATFORD WD1 2AN

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PRINT LEXMARK — Advancing the Art of Printing with the Lexmark InkJet Printer Range...

ColorJet 1000 & Disney Print Studio

All the family prints...in the most colourful way!

- Single cartridge design
- 600 x 600 dpi resolution
- Up to 3ppm mono and 1ppm colour
- Compact design
- Optional Super Sharp Waterproof black ink
- ColorFine 2 software for superior colour balancing
- Instant on for ease of use
- Colour sort feature for improved document quality
- Banner printing feature
- Verbal messages and visual feedback
- Ink level information
- Bi-directional printing
- Fully compatible with Win 3.1x, Win 95 & DOS applications running under Windows
- 1 year warranty

1000 + Disney Studio
18571 £88
£103.40 inc. VAT

ColorJet 5000

Breakthrough technology for high quality printing.

NEW

"Now you can print darker & sharper black text & true to life colours - use the optional photo cartridge for Photo - realistic 6 colour printing!"

Colour Jet 5000
17723 £127
£149.22 inc. VAT

- New design
- 1200 x 600 dpi
- Up to 5ppm in black
- Up to 2ppm in colour
- Dual cartridge design
- Photo capability with optional photo cartridge
- Laser crafted printheads
- EX2 technology
- Laser sharp black text
- ColorFine software
- Very quiet operation
- Value for money
- Superior paper handling
- Windows 3.1x, 95 and Windows NT 4.0

Specifications	1000	5000	5700	7200
Resolution	600 x 600	1200 x 600	1200 x 1200	1200 x 1200
Print - Mono	3ppm	5ppm	8ppm	8ppm
Speeds - Colour	1ppm	2ppm	4ppm	3ppm
Cartridges - Arrangement	Single	Dual	Dual	Dual
- Technology	Standard	Excimer	Excimer	Excimer
Photo Capability	No	Capable	Capable	Capable
Windows 3.1x, 95	Yes	Yes	Yes	Yes
Windows NT 4.0	No	Yes	Yes	Yes
Paper Input	30	100	100	150
ColorFine Driver	Yes	Yes	Yes	Yes

ColorJet 5700

Designed to meet all professional users needs.

NEW

NEW ROBUST DESIGN!

ColourJet 5700
14456 £189
£222.08 inc. VAT

- New robust design
- 1200 x 1200 dpi
- Up to 8ppm in black
- Up to 4ppm in colour
- Dual cartridge design
- Photo capability with optional photo cartridge
- Laser crafted printheads
- EX2 Technology
- Laser sharp black text
- ColorFine software
- Very quiet operation
- Value for money
- Superior paper handling
- Windows 3.1x, 95 and Windows NT 4.0

ColorJet 7200

NEW

ColourJet 7200
19480 £216
£253.80 inc. VAT

SIX COLOUR PRINTING

For the sophisticated home and office user

The Lexmark 7200 Color Jetprinter introduces Lexmark EX2 technology. This new technology combines six colour printing, advanced colour science and high quality mechanical design to deliver Lexmark's best print quality ever.

- 1200 x 1200 dpi
- Ultimate text quality and detail
- Waterproof sharp black printing
- Six colour printing
- Printhead design allows laser printer speed & performance
- Patented fast drying, fade resistant inks
- High intensity colour, even on plain paper
- Double width print swath for faster printing

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Personal Computer Products

Hewlett Packard

HP Laserjet 5000

NEW

The A3 Network Printer for small to medium-sized workgroups

More paper and printing flexibility
- Support from postcard size up to full bleed A3
- Up to 1100 sheet input from 4 different size trays
- Duplexing capability

Greater network performance/ expandability & manageability
- 2 new, fast EIO interface
- FastRes 1200
- Optional Disk for Transmit Once/MOPY functionality, fonts and forms printing
- JetSend enabled

Greater Performance
- 100 MHz processor
- Instant-on Fuser for first page out in less than 13 seconds

Enhanced print quality
- FastRes 1200 for best quality business documents and drafts prints
- ProRes 1200 for best quality graphic intensive documents
- New 10K page UltraPrecise cartridge and toner formulation for crisp and sharp output
- 220 levels of grey

LaserJet 5000
19567 £929
£1091.58 inc. VAT

LaserJet 5000N
19570 £1334
£1567.45 inc. VAT

LaserJet 5000GN
19573 £1649
£1937.58 inc. VAT

SPECIFICATIONS	HP LaserJet 5000	HP LJ 5000N	HP LJ 5000GN
Speed	16ppm	dito	dito
Technology	Laser (dry type electrophotography)	dito	dito
Processor	100 Mhz RISC	dito	dito
Resolution	600 x 1200 dpi FastRes (1200 dpi quality at full engine speed) ProRes (true 1200 at half engine speed)	dito	dito
Memory (max. 100Mb)	4Mb 3 DIMM slots	8Mb 2 DIMM slots	12Mb > 1Gbyte EIO disk drive 2 DIMM slots
Paper Handing IN (max. 1100)	1 x 100 multi-purpose tray 1 x 250 sheet tray	1 x 100 1 x 250 sheet 1 x 500 sheet	1 x 100 1 x 250 1 x 500

HP Laserjet 4000/N/T/TN

The printer you spend less time with!

HP's LaserJet 4000. The new standard for workgroup printing.

The HP LaserJet 4000 represents HP's biggest advance yet in the network workgroup printing. The HP LaserJet 4000 saves you time, produces great output, requires less interaction from users and administrators and delivers a lower overall cost of ownership.

NEW

FROM £711 + VAT

- 16ppm
- 600dpi, FastRes 1200dpi
- 80 scalable TrueType® Fonts built in

Product	Description	Code No.	Price	Inc. VAT
4000	Input capacity 1 x 500, 1 x 100 (Add JetDirect for Network capabilities)	18802	£711.00	£835.43
4000T	Input capacity 2 x 250, 1 x 100 (Add JetDirect for Network capabilities)	18809	£816.00	£958.80
4000N	Input capacity 1 x 500, 1 x 100 (Network ready)	18810	£914.00	£1073.95
4000TN	Input capacity 2 x 250, 1 x 100 (Network ready)	19671	£1023.00	£1202.03

For more information on any of the Hewlett Packard range, call our Sales Specialists on 01582 745555

Sales Hotline: 01582 745555

FAX: 01582 488588

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brother

More than just features

HL-730 PLUS

The award winning, low-cost printing solution.

The ideal desktop printer, providing the 'best of both worlds' by allowing you to print directly from Windows and DOS.

- Windows and direct DOS printing
- True 600dpi print resolution
- 6 pages per minute print speed
- Straight paper path technology
- Easy to set up and use
- Low running costs
- Microfine toner included
- 200 sheet adjustable paper tray

HL-730 £205 (14133) £240.88 inc. VAT

TONER FOR ABOVE £19 (14222) £22.32 inc. VAT

HL-760

The professional printing solution

The high quality, affordable lase printer offering superb output - up to 1200dpi, network connectivity options and multi-emulations for professional documentation.

- Windows and direct DOS printing
- True 1200dpi print resolution
- 6 pages per minute print speed
- Straight paper path technology
- Auto interface/emulation switching
- 200 sheet adjustable paper tray
- PCL 5e compatible
- Multiple emulations
- Low running costs

HL-760 £229 (15366) £269.08 inc. VAT

MC-3000

The NEW three-in-one colour printer, copier and scanner

NEW LOW PRICE

Printer
- 720x720dpi resolution
- 2.5 colour or 5 monochrome pages per minute
- 200 sheet capacity

Copier
- Reproduce colour documents direct from your desk
- 720x720dpi A4 copy
- Automatic colour matching software

Scanner
- 24bit technology
- 1200dpi final resolution
- Software includes - Xerox OCR 'Textbridge', Visioneer 'PaperPort' and Unleaded Systems iPhotoExpress'

3 in 1

MC-3000 £449 (15518) £527.58 inc. VAT

HL-1060

High quality print at a surprisingly low price

A laser printer that makes high quality, high speed and high capacity highly affordable.

- Up to 1200 x 600 dpi printing
- 10 pages per minute print speed
- Dual bin as standard
- Straight paper path
- Multiple emulations
- Auto interface switching
- Network connectivity option
- 2Mb RAM

HL-1060 £349 (14239) £410.08 inc. VAT

TONER £20 (17645) £23.50 inc. VAT

HL-2400c

With a resolution of up to 2400dpi the new colour laser printer from Brother provides the high quality output demanded by professionals

- Up to 2400dpi
- Up to 8ppm colour
- Up to 16ppm mono
- 24Mb memory upgradable to 112Mb
- Semi automatic manual duplex
- Low running costs
- Automatic e-mail printing
- Intelligent sleep mode

ALSO AVAILABLE

HL-2400cn

The HL-2400cn is a network ready version, having all the features of the HL-2400c with the addition of:

- 40Mb memory as standard
- Advanced Network Functionality
- 10 baseT & 10 Base2 connectors with automatic detection

HL-2400c £2349 (19503) £2760.08 inc. VAT

HL-2400cn £2685 (19680) £3154.88 inc. VAT

What is Straight Paper Path Technology?

- Reduces annoying jams and curls
- Prints envelopes reliably
- Prints on a wide variety of stocks and sizes
- Less paper path distance, faster throughput
- Multiple emulations
- Auto interface switching
- Network connectivity option

Hewlett Packard

The Ultimate in Affordable Quality wherever you are!

Authorised Reseller Personal Computer Products

HP DeskJet 1120C Professional Series

Whats New
- HP PhotoRet II for Photo Quality print outs
- enhanced driver: preview and settings summary functions
- better network connectivity and performance

Professional performance enhances professional Image
- Smart Software features for document / paper handling versatility via driver
- paper sizes from A6 to A3 oversize
- colour printing on plain paper
- HP PhotoRet II for photo realistic printouts

Versatile Connectivity
- comes with Windows 3.1, Windows 95 and Windows 95 and Windows NT 4.0 drivers
- network upgradable via HP JetDirect EX boxes
- optional MAC connection via InfoWave products

Hewlett-Packard's versatile business printer with photo quality and wide format capabilities at an affordable price.

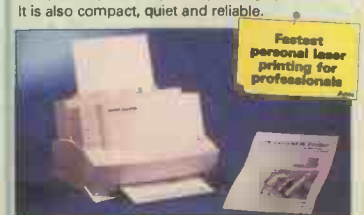
NEW

Deskjet 1120C £285 (19552) £334.88 inc. VAT

SPECIFICATIONS					
Print speed (up to) and throughput	Document Type	A4	A3	Resolution	black: 600*600 dpi colour: HP PhotoRet II for Photo Quality output
	black text	8.5ppm	4ppm		
	black text with colour highlights	6ppm	4ppm	Typeface capabilities	26 built-in scalable fonts
	mixed text with colour graphics	4.5ppm	3ppm	Memory	2MBytes ROM, 2 MBytes RAM standard memory
	full page colour	2ppm	1.5ppm		

The Laserjet 6L

The HP LaserJet 6L printer is just right for the individual business user working at home or at the office. It offers high print speed, great output quality, exceptional media versatility and compatibility with popular operating systems. It is also compact, quiet and reliable.



Laserjet 6L £232 (17628) £272.60 inc. VAT

- Fast and efficient personal laser printing. A 6-page-per-minute engine and 18 seconds for first-page-out ensure rapid results. A patented instant-on fuser eliminates the delays associated with slow warm-up. Improved I/O handling means even faster return-to-application.
- Ideal for the individual user. Space-saving and affordable, the HP LaserJet 6L printer puts out fast, high-quality laser printing well within the reach of the individual user in any size office.
- Rapid results with 6-ppm engine
- Razor sharp text and crisp graphics thanks to a true 600x600 dpi, HP REt and microfine toner
- Able to print on envelopes, labels, postcards and transparencies
- Compatible with major IT platforms
- Compact, affordable and reliable

The NEW HP Laserjet Companion

The NEW HP LaserJet companion HP's small personal LaserJet printer accessory adding copy, fax, file and read capabilities.

- Expands the functionality of your personal HP LaserJet printer, allowing you to
  - Copy. Convenience copies at the touch of a button, even with the PC switched off.
  - File. Storage of many types of documents on PC.
  - Read. Conversion of hardcopy documents to editable text.
  - Fax. Send faxes in conjunction with a PC fax modem.
- Easy to use thanks to intuitive 2-button control and auto-launch software with drag-and-drop functions
- Light-weight & compact, fits between your PC & printer
- Can be employed with any HP LaserJet 4,5 or 6 Series printer
- 4 additional functions for just one low price
- 4 high-quality functions, one low price. The HP LaserJet companion is great value for money, providing 4 extremely useful functions at exceptionally low cost. It makes an ideal addition to any personal HP LaserJet printer, taking up the minimum of desk space.

HP Laserjet Comp. £79 (17629) £92.83 inc. VAT

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ESTABLISHED 1972

EPSON

Leading the way with THREE exciting NEW Printers - ALL 1440dpi!

EPSON Stylus Photo 700

The new EPSON Stylus Photo 700 is designed to provide the home user with an unequalled combination of the highest photographic quality and excellent general purpose printing. Based on the unique EPSON PerfectPicture Imaging System with the addition of Normal & Light Colour QuickDry Inks, the EPSON Stylus Photo 700 prints high quality documents or photos images on all types of media including plain paper.

SIX COLOUR

NEW

- Perfect for photo reproduction, editing and output up to A4
- Windows 3.1, Windows '95, Windows NT 4.0 and Macintosh compatible
- 1440 dpi and Super MicroDot for the highest photo quality output
- New smaller Super MicroDot delivers unequalled print performance
- EPSON PhotoEnhance 2 - automatically optimises photo output
- Prints on a wide range of media: Photo Paper, Photo Sticker, Panoramic Photo Paper, Card and Plain Paper
- 1 year RTB warranty as standard
- EPSON CoverPlus 3 year extended warranty service available

Stylus Color 700 £CALL 19628

EPSON COVER plus £65

EPSON Stylus Color 850

The EPSON Stylus Color 850 is the new flagship A4 format printer in the Stylus Color range. Combining ultra-fast true-black and colour print performance, with superb print quality from its enhanced 1440 dpi print technology and the EPSON PerfectPicture Imaging System, the EPSON Stylus Color 850 is the ideal printer for individual power-users at home or in the office, and for work groups of networked users.

1440 dpi PhotoReal Output

NEW

- Ultra-fast Print Speed - up to 9 ppm mono and up to 8.5 ppm colour
- 1440 dpi PhotoReal Colour and Laser-sharp Black output as standard
- New smaller Super MicroDot delivers unequalled print performance
- Windows 3.1, Windows '95, Windows NT and Macintosh compatible
- Optional network and Postscript compatibility
- PC and Macintosh support as standard
- High capacity dual ink cartridge system
- New full function status monitor
- 1 year RTB warranty as standard
- EPSON CoverPlus 3 year extended warranty service available

EPSON PerfectPicture Imaging System™ Technology

Stylus Color 850 £243 19631 £285.53 inc. VAT

EPSON COVER plus £65

EPSON Stylus Photo EX

The EPSON Stylus Photo Ex provides the professional photographer with the ultimate for photographic reproduction and enlargements on media up to A3 in size. The EPSON Stylus Photo Ex is based on the unique EPSON PerfectPicture Imaging System with the addition of Normal & Light Colour QuickDry Inks which enable it to print the highest quality photographic images.

A3 Colour Images 1440 dpi

NEW

- Photo Reproduction Quality Output on media up to A3 in size
- 1440 dpi and smaller Super Microdot for the highest photo quality output
- Windows 3.1, Windows '95, Windows NT and Macintosh compatible
- EPSON PhotoEnhance 2 - automatically optimises photo output
- Prints on plain paper with EPSON QuickDry Ink
- Prints on a wide range of media
- 1 year RTB warranty as standard
- EPSON CoverPlus 3 year extended warranty service available

Stylus Photo EX £308 19629 £361.90 inc. VAT

EPSON COVER plus £65

EPSON Stylus Color 400

Low cost easy to use advanced 720 dpi colour printer. PhotoReal output as standard

- 720 dpi printing in colour & mono with Epson MicroDot™
- Photo Real Colour & Laser Sharp Mono Printing as standard
- Up to 3ppm Colour, 4ppm Mono printing on plain paper
- 1 year RTB warranty with optional 3 year on-site warranty
- Epson CoverPlus 3 year extended warranty service available

Stylus Color 400 £118 14294 £138.65 inc. VAT

EPSON COVER plus £65

EPSON Stylus Photo

The EPSON Stylus Photo has been designed for photo, general and business printing requirements

PRQ PHOTO REPRODUCTION QUALITY

- Photo Reproduction Quality output (PRQ)
- Prints text, graphics and all general print requirements
- Optimised for photo reproduction (can also print text as usual)
- Prints 4" x 6" format and enlargements to A4 size
- Normal and light colour QuickDry Inks (6 colour printer)
- Up to 720 x 720 dpi resolution
- From 2 minutes per 4" x 6" photo size print
- Windows and Macintosh Compatible
- Comes bundled with Software including LivePix for Windows 95 and Macintosh

Stylus Photo £199 17918 £233.83 inc. VAT

EPSON COVER plus £65

EPSON Stylus Color 1520

Wide format and PhotoReal colour at 1440 dpi

No matter how demanding the job, you'll be able to present your work more effectively. Graphics professionals requiring PostScript*, can convert this highly adaptable machine by simply installing an optional EPSON PostScript* RIP.

- Stunning 1440dpi print quality
- Fast print speed: Mono. 6ppm Colour 6ppm
- Over A3 print area for printing full A3 pages with bleeds and crop marks
- PC and Macintosh compatible as standard
- 'Look Your Best Colour Pack'
- Optional PostScript RIP software
- Optional Network connectivity

— So easy to operate and maintain.
— Affordable wide-format printing starts here.
— Dual ink cartridge system.
— BONUS 'Look Your Best' Color Pak - creative colour software, featuring powerful retouching tools, a library of fun fonts, and clip art images - all supplied on CD-ROM.

Stylus Color 1520 £510 14295 £599.25 inc. VAT

EPSON COVER plus £65

EPSON Stylus Color 300

£99 18197 £116.33 inc. VAT

EPSON COVER plus £65

EPSON Stylus Color 600

£155 16402 £182.13 inc. VAT

EPSON COVER plus £65

EPSON Stylus Color 800

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SCSI EPSON FilmScan 200

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FOR ORDERING INFORMATION SEE PAGE 2

Prices exclude carriage & VAT @ 17.5% except where shown.

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Aries Scan-it Pro® 4830P

With 4830 dpi, captures colour in all its detail!

- Parallel connector - Scan-it Pro doesn't require an interface, the computer doesn't need to be opened so it's very easy to install and your printer connects to the scanner
- Colour, single pass scanner at 4800 dpi
- Copy function - press a button on the scanner and the image will be sent direct to your printer
- Fax function - press a button on the scanner and the software supplied allows you to dial the number and the image is sent direct
- OCR function - press a button on the scanner and the OCR supplied software will read the text straight into your chosen word processing software
- EPP Card may be required

ONLY £65 inc. VAT £76.38

Over 10,000 sold

see page 35 for scanner listings

Value For Money ○○○○○○
"The Watford scanner is a commendable Value winner"
PC PRO March 1998

Scan-it Pro 4830P £65 17654 £76.38 inc. VAT

"The Scan-it Pro is a fantastic tool... a very snazzy compact scanner... easy to set up... the software is excellent"

Aries Optic Pro® 9630P

9600dpi & a billion colours in one clean sweep!

The OpticPro 9630P colour flatbed scanner is a feature-packed product at a very affordable price. Not only does it share the specifications of many high-end scanners - such as single-pass scanning, a cold-cathode lamp and up to 9600dpi resolution - it also installs in minutes without any additional hardware or tools. Add to that a unique collection of software offered only by Plustek! Software for Optical Character Recognition (OCR), image editing and multifunction document processing like faxing and copying. You've never seen so much scanning power in such a simple package: the OpticPro 9630P.

- Optic Pro Resolution 9600dpi
- Optical Resolution 600dpi
- 30 Bit colour
- Easy "Plug In" installation
- TWAIN compatible
- Includes: OCR and Image Editing software
- Works with your parallel port Specifications as above
- EPP Card may be required

£99 inc. VAT £116.33

9630P £99 18141 £116.33 inc. VAT

Aries Optic Pro® A3-P

The ideal solution for anyone who requires a low cost A3 colour scanner

The latest edition to the Aries range of scanners - The Aries Optic Pro A3-P provides top of the range image processing power allowing you to produce superior documents and presentations of outstanding quality within minutes of pressing a button - all at a price you can afford.

- 297 x 431.8mm Scanning Area
- Optic Pro Resolution 6,400 dpi
- Optical Resolution 400 x 800 dpi
- 30 Bit colour
- Easy "Plug In" installation
- TWAIN compatible
- Windows 3.x and Windows 95 compatible
- EPP Card may be required

A3-P £335 18380 £393.63 inc. VAT

Aries Relisys Scorpio

SCSI Bargain !!!

£89 inc. VAT £104.58

Scorpio Scanner £89 14555 £104.58 inc. VAT

Aries Relisys SCORPIO	
Scanner Type	Flatbed, single pass colour image scanner
Subscanning Mode	Movement of the scanning head
Light Source	Xenon glow lamp using cold scan technology
Effective Scanning Area	8.5" x 14" (216mm x 356mm), A4
Scanning Resolution	Optical: 300 x 1200 dpi in increments. Maximum: 4800 x4800 dpi by software interpolation (The horizontal and vertical resolution can be changed independently)
Image Data	Colour: 30 bits per pixel, 1 billion colours. Gray Scale: 10 bitsper pixel, 1024 levels. Bi-Tone: 1 bit per pixel
Raw Scanning Speed	40 seconds for A4 size document (300 dpi, colour)
Interface and Platform	SCSI-2 for PC, Macintosh. Includes SCSI Card.

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Personal Computer Products

THE HP Scanjet Family

EASY TO USE SCANNERS FOR EVERY OFFICE SITUATION
The Intelligent Scanning Solution

HP 3 year support pack from £65 + VAT

ScanJet 6100c

- Type: Flatbed, Colour
- Resolution: 600 dpi, Enhanced 2400 dpi
- Interfaces: SCSI
- Compatibility: Windows & Macintosh

ScanJet 6100c £449 14508 £527.58 inc. VAT

Transparency Adaptor £367 14506 £431.23 inc. VAT

Auto Document Feeder £257 14507 £301.98 inc. VAT

ScanJet 5100C

Finally, a scanner that delivers the quality results you expect on the FIRST scan - with no experience required!

Professionals working in small or home businesses who need the scan to be right the first time without having to work on it.

- With other scanners it can take hours to re-create a document; the HP Scanjet 5100C with its Intelligent Scanning Technology does it in minutes with the push of a button
- Reproduction of black & white logos and line art to original quality, perfect for scaling to any size without jagged edges
- Complete scanning solution: includes software for desktop copying, text recognition, image editing & document management

ScanJet 5100C £149 19385 £175.08 inc. VAT

HP Support Pack £65 14241 £76.37 inc. VAT

TAKE COVER Buy HP SupportPack

The HP Scanjet Family are a range of affordable colour flatbed scanners. Compact in design, you can conserve precious desk space. HP have built in energy-saving features that will significantly reduce the amount of power the scanners consume, minimising cost of ownership and impact on the environment. The HP Scanjet family provides an easy and convenient way to scan your images and text, enabling you to change the look of your documents, Streamline communications and eliminate time - consuming typing.

Warranty: 1 year HP Express Exchange (most of Europe), 1 year Technical support.
Options: HP SupportPack for 2 years additional coverage. HP First - Fax information Retrieval System by phone

Watford Electronics

www.watford.co.uk - Order On-Line

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RETAIL STORE: 250 LOWER HIGH STREET, WATFORD WD1 2AN

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EPSON

3 years on-site warranty Epson CoverPlus £65 15180

Epson quality colour scanning. Made easy, Made affordable

GTX-5000 SCANNER

In addition to advanced features like Epson Text Enhancement Technology, a maximum resolution of 2400dpi* - and specially developed user interface the Epson GT-5000 comes complete with dedicated software for PC users. Applications that will enable you to take on a wide range of everyday and more demanding DTP tasks. You can scan everything from photos to magazine cuttings, typed manuscripts to A4 business documents - in colour or high speed mono and with Epson flatbed precision.

* Interpolated

Parallel 13374 £154 £180.95 inc. VAT

SCSI 13375 £246 £289.05 inc. VAT

GT-5500 SCANNER

Compact 400 dpi, 30 bit colour scanner for business and home use

- Small footprint
- Single pass, full 30 bit colour scanning
- TET (Text Enhancement Technology) for higher OCR accuracy
- AAS (Auto Area Segmentation) for accurate copying and faxing
- Complete, easy-to-use package including both hardware and software

"Epson GT-9500 also available call for latest pricing"

GT 5500 18661 £209 £245.58 inc. VAT

The Complete Solution...

PhotoSmart

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The HP PhotoSmart Photo Scanner

The only home scanner that scans negatives, slides and prints.

- scans a variety of sizes and objects, slides, negatives and prints up to 13 x 18cm for highest possible picture quality
- fast - preview scans in 10 seconds, final scans in 40 seconds
- includes HP PhotoSmart Scanning Software so you can control exposure, colour, brightness and make multiple copies

PhotoSmart Scanner 19655 £318 £373.65 inc. VAT

- **Capture** Scans any image into your PC
- **Create** Edit your images as you please
- **Share** Our scan is ready to print or send electronically in minutes

Specifications:
Optical Resolution: 300 dpi prints, 2400 dpi slides and negatives, 30 bit color depth
Time to scans: 10 second preview, 40 second final scan (typical)
Media Type supported: Photographic prints up to 13 x 18cm, 35mm negatives and 35mm slides
Maximum scannable photo size: Prints - Up to 13 x 18cm Negatives - 6 exposure strip
Interface: SCSI II (card and cable included)
File Formats: BMP, TIF, JPG, FPX

Product Warranty One year Standard Unit Exchange. HP Support Pack available at time of purchase.

The HP PhotoSmart Photo Printer

Print real photos worth framing

The HP PhotoSmart Photo Printer lets you print real photos with your home PC.

PhotoSmart

A photo printer for all your photo projects

- reprint, enlarge, crop and enhance you photos
- save time and money by printing right from you home PC
- has the look and feel of real photos for framing or photo albums
- 6 inks designed for photographic prints

PhotoSmart Printer 14604 £262 £307.85 inc. VAT

- **Capture** Your favourite images
- **Create** Makes multiple reprints and enlargements
- **Share** Personalised photos, cards and calendars can be shared with family and friends

Specifications:
Resolution: Photographic
Imaging Technology: Multi-dye load thermal inkjet printing
Pen Set: Two tri-chamber photo cartridges
Memory: RAM: 1MB ROM: 512KB
I/O Interface: IEEE-1284 bi-directional parallel Interface; ECP level 1, MLC
Language: HP IPCL (Imaging Printing Control Language)
Media Sizes: A4, note cards, postcard, 10 x 15 cm, greeting card, calender kit
Media Types: Glossy Photographic Paper, Project Paper, Matte Photographic Paper, Plain Paper

Product Warranty One year Standard Unit Exchange. HP Support Pack available at time of purchase.

UMAX The Astra 610 and 1210 Series

The Affordable 30-bit Desktop Scanner and High Quality Scanner for the Office

FEATURES

- Single pass, colour CCD
- 30-bit, over one billion colours
- Optical resolution: 300 x 600 dpi
- Maximum resolution: 4,800 x 4,800 dpi
- Choice of SCSI (610S) or Parallel (610P) computer interfaces
- "Bit Enhancement Technology" to optimise your scanned image
- Scan area up to 8.5" x 11.7"
- Software:
  Vista Scan - easy to use scanner control software
  PhotoDeluxe - photo editing software from Adobe
  PrestoPageManager - all-in-one scanning solution
  UMAX Copy Utility - turns your printer into a copy machine

Includes KODAK

Astra 610P Parallel 17929 £69 £81.08 inc. VAT

Astra 610S SCSI 19007 £99 £116.32 inc. VAT

Adobe Photoshop 4.0 for £130 +VAT when purchased with any scanner

FEATURES

- Single pass, colour CCD
- 30-bit, over one billion colours
- Optical resolution 1200S: 600 x 1200 dpi
- Optical resolution 1210P: 600 x 600 dpi
- Maximum resolution: 9,600 x 9,600 dpi
- Scan area up to 8.5" x 11.7"
- "Bit Enhancement Technology" to optimise your scanned image
- Choice of SCSI (1200S) or Parallel (1210P) computer interfaces
- Software:
  PhotoDeluxe - photo editing software from Adobe
  PrestoPageManager - all-in-one scanning solution
  UMAX Copy Utility - turns your printer into a copy machine
  Vista Scan - (Not included with 1210P) easy to use scanner control software

Astra 1210P Parallel 18623 £109 £128.08 inc. VAT

Astra 1210S SCSI 19006 £229 £269.08 inc. VAT

EXTENDED WARRANTY £29.95 +VAT

The Next Generation in Prepress Scanning Power

With a true optical resolution of 600 x 1200dpi (achieving a maximum resolution of 9600 x 9600dpi via software interpolation) the PowerLook II leads the field with a dynamic range of 3.3D. MagicScan intelligent scanner control software and MagicMatch (which incorporates Kodak's colour management software) ensures consistent high quality results and increased productivity.

- A4 Size — Large scan area for accommodating A4-size or multiple originals
- 3.3D High Dynamic Range — Captures more details for professional scans
- Adjustable Lamp Intensity — Yields high image quality scans for all types of images.
- Smart Frame Holders — For high productivity, automatic scans in the multiple and batch scanning modes
- Direct CMYK Scans — For increased productivity

From £749 inc. VAT £880.07

Product	Code No.	Price	Inc. VAT
Scanner Including Adobe Photoshop FE	17998	£899.00	£1056.32
Powerbook Colour Studio 11	17997	£749.00	£880.07
Transparency Adaptor	14439	£250.00	£218.74

*Includes MagicScan & MagicMatch

Sales Hotline: 01582 745555

FAX: 01582 488588

FOR ORDERING INFORMATION SEE PAGE 2

Prices exclude carriage & VAT @ 17.5% except where shown.

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Removable Storage Made Easy

Insuring your data has never been easier

Everything a Zip drive has...Plus more!

ZipPlus™ drive is the easiest and most economical way to expand your hard drive, move files and backup plus:

Simple PC recording software

The easiest way to record music and audio on your computer - and mix, match and edit it!

- New: Fast - up to 50 times faster than a floppy drive
- New: One drive fits all - only one version for SCSI and parallel port interfaces
- New: Lightweight universal power supply
- New: Great Multimedia Software

ZipPlus 18434 £125 £146.88 inc. VAT

Complete package, everything you need to getstarted on a PC or a Macintosh is included.

- ZipPlus drive
- AutoDetect™ cable for SCSI or parallel port, PC or Macintosh
- One multilingual Zip tools disk and one installation floppy
- Iomega CD-ROM containing Zip Tools & other third party software
- Adobe® PhotoDeluxe™ CD-ROM (PC & MAC)
- Owner's Manual
- Multimedia software guide

recordit. software

- Records up to: 100 hours on a 1GB Jazz® disk (30 hours stereo) 10 hours on 100MB Zip disk (2 hours stereo)

Zip 100 drives and media

Product	Part Code	Price	Inc. VAT
Zip 100 PC Parallel	10787	£86	£101.05
Zip 100 SCSI Ext.	10800	£86	£101.05
Zip 100 SCSI Int.	15883	£86	£101.05

Product	Part Code	Price	Inc. VAT
Zip 100 EIDE	18166	£69	£81.08
Zip 6 pack disks	14001	£47	£55.22
Zip disk	13983	£9	£10.58

Ditto Max™ and Ditto Max™ Professional

- powerful desktop storage and tape backup in one simple device.

Ditto Max 7GB Ext 18430 £129 £151.58 inc. VAT

Ditto Max 7GB Int 18431 £99 £116.33 inc. VAT

Ditto Max Pro 18432 £174 £210.33 inc. VAT

- Up to 10GB* for all your stuff
- Range of available cartridges: 3.7GB*, 5GB*, 7GB* & 10GB*
- 5 second average access time for up to 125MB with FlashFile™
- Back-up and restore at up to 2GB* per hour - 4 times faster than Ditto 2GB
- 1-Step™ easy backup & FullBack™ system recovery software.

Jaz® is the super fast, extremely vast personal storage drive!

2GB Jaz Disk 19422 £99 £116.33 inc. VAT

- Transfers faster than many hard drives - works as fast as you do!
- Provides 2GB of disk space on each compact cartridge - enough to back up your 4GB hard drive (with 2:1 compression)
- Portable - jaz goes where you go, makes transporting information easier!

Jaz 2GB Ext 19212 £399 £468.83 inc. VAT

Jaz 2GB Int 19211 £339 £398.33 inc. VAT

AMACOM

Flip disk

NEW

The Flip Disk is a revolutionary, new portable data storage device that is smaller, faster and offers greater capacity than anything else on the market

- Powered directly from your Notebook or PC
- No need for external power supplies or batteries
- No interface cable required
- Up to 6.4GB of data storage capacity (using data compression)
- 2.5" industry standard hard drives used
- MTBF rating of 300,000 power-on-hours
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Key Features

Connects via PCMCIA/Parallel Ports
Unique Design
High Build Quality & Reliability
Includes 'Novadisk' Backup Software

2.8GB	4.2GB	6.4GB
18574 £335 £393.63 inc. VAT	18575 £433 £508.78 inc. VAT	18576 £549 £645.08 inc. VAT

EZCD PLUS

Portable 8 & 20 speed PCMCIA CD-Rom & Mobile CD PLAYER

- Connects to PCMCIA equipped portables & desktops
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- Draws power from the PC
- Fully hot swappable

Microsoft Windows'95

- Maximum performance - 1.2 MB sustained data transfer rate
- Small, lightweight & very attractive design
- Easy to install software driver included
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Product	Code No.	Price	Inc. VAT
PCMCIA 8X	16585	£145	£170.38
PCMCIA 16X	19451	£155	£182.13
PCMCIA 8X Plus Audio	17770	£169	£198.58
PCMCIA 24X	19452	£170	£199.75
PCMCIA 20X Plus Audio	19453	£199	£233.83
Parallel 8X	15763	£125	£146.88
Parallel 16X	14509	£140	£164.50
Parallel 24X	19454	£155	£182.13
Parallel & Sound 8X	15762	£170	£199.75
Parallel & Sound 16X	14510	£185	£217.38
Parallel & Sound 24X	19455	£199	£233.83

EZCD PLUS FROM £169 + VAT

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HP Colorado 5GB External & Internal

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Breakthrough performance for full system protection

Looking for a PC backup solution that won't keep you waiting? The new HP Colorado 5GB internal & external models deliver extremely high performance and high capacity at an astonishingly low price.

Microsoft Windows'95

All models provide an impressive capacity of up to 5GB on a single data cartridge and store data at a rate of up to 2GB in well under an hour. Weighing in at less than a kilo, the external model makes an ideal companion for your portable PC.

Product	Code	Price	Inc. VAT
HP Colorado 5GB (inc. tape) Internal	19183	£127.00	£149.23
HP Colorado 5GB (inc. tape) External	19184	£160.00	£188.00
HP Colorado 5GB (no tape) Internal	18425	£118.00	£138.65
HP Colorado 5GB (no tape) External	18426	£152.00	£178.60

- Disaster recovery for Windows 95 with full system protection
- 2.5GB native capacity, up to 5GB compressed
- Backup up to 2GB in less than an hour
- Includes Colorado Backup by Cheyenne for Windows 95, Windows and DOS
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Hardware
- MP6200S SCSI internal CD-R/RW drive
- 1 CD-ReWritable blank disc
- 5 CD-Recordable blank discs
- Audio Cable
- Jumper pins, mounting screws
- User's manual (English, German, French, Italian and Spanish)

Software
- DirectCD (Packet write file system)
- GEAR Windows (CD Mastering software)
- Trial sample software (time locked version) GEAR WebGrabber, GEAR Audio, GEAR Replicator

RICOH DIGITAL SOLUTIONS

MP6200S/DP

DirectCD
Packet Write file system
OS - Windows 95, Windows NT4.0 (Service Pack 2) or later
Media - CD-R (Sequential Writing) / CD-RW (Random access writing)
Features - Makes CD recording as easy as using a floppy disk drive. Random write / erase is possible with CD-RW discs. Write data directly from application
UDF (Universal Disk Format Version 1.5) supported. Packet Writing supported. Fully localized in English, French, German, Italian, Spanish
Applications - Data backup, Regular back up of HDD

GEAR.TM
CD Mastering software
OS - Windows 95 / Windows NT4.0
Features - Windows 95/NT versions in English, German, French and Spanish. GEAR can create CDs in ISO 9660 level 3, Multi-Session, Mixed-Mode, CD-XA, Game and more formats. Disc At Once recording for perfect Digital Audio CD.
Applications - Data distribution. Creating your own CD ROM and Audio CD
Media - CD-R/RW

MP6200S Internal Kit: £275 (17844) £323.13 inc. VAT
CDRW Media: £13 (16016) £15.28 inc. VAT

RICOH DIGITAL SOLUTIONS

MP6200A/DP

DirectCD
Packet Write file system
OS - Windows 95, Windows NT4.0 (Service Pack 2) or later
Media - CD-R (Sequential Writing) / CD-RW (Random access writing)

Hardware
- MP6200A E-IDE(ATAPI) internal CD-R/RW drive
- 1 CD-ReWritable blank disc
- 5 CD-Recordable blank discs
- Audio Cable
- Jumper pins, mounting screws
- User's manual (English, German, French, Italian and Spanish)

Software
- DirectCD (Packet write file system)

Features - Makes CD recording as easy as using a floppy disk drive. Random write / erase is possible with CD-RW discs. Write data directly from application. UDF (Universal Disk. Format Version 1.5) supported. Packet Writing supported. Fully localized in English, French, German, Italian, Spanish
Applications - Data backup. Regular back up of HDD

MP6200A/DP: £229 (19743) £269.08 inc. VAT

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ADVANSYS ABP5140 BUS MASTERING ISA CARD

The highest performance I/O you can buy. Multi-tasking/Multi-threaded SCSI Bus Mastering. Advansys developed mainframe I/O technology.

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- Windows 95 Ready • Full Plug & Play compatibility
- Easy to Install • SCAM support
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- AdvanceWare Automated Installation for Plug & Play systems
- DOS/Windows drivers - autoload program
- AdvanceWare menu driven configuration program

ABP5140: £89 (19751) £104.58 inc. VAT

ADVANSYS ABP940 ULTRA & ULTRAWIDE CARDS

The AdvanSCSI PCI940 Ultra Wide Host Adapter is a latest entry into solving the I/O bottleneck. Increased power, connectivity and flexibility make the 940-UW the superior choice for interfacing host computers with any combination of SCSI devices. The power of the 940-UW lies in its proprietary RISC processor. Bus Master technology allows large blocks of data to be processed with minimum CPU utilisation. The PCI Bus provides connection to system memory at full processor bandwidth.

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- Up to 15 devices supported
- Up to 40Mb p/s transfer
- Plug n Play
- Supports external expansion ROM or flash up to 64KB

ABP940 Ultrawide: £129 (19750) £151.57 inc. VAT

ABP940 Ultra: £99 (19752) £116.33 inc. VAT

ABP980U ULTRA 4 PORT SCSI CONTROLLER

High-performance workstation and server applications require the impressive performance of the PCI Bus and its ability to handle data bursts of up to 133 Mbytes/sec. The imposed limitation to gain necessary bandwidth is the numbers of add in boards that can be supported. This product is made possible by using a PCI to PCI bridge. The bridge circuit provides a single load to the bus while allowing multiple SCSI channels to be attached to the bridge.

- 4 Independent SCSI Channels
- Up to 28 devices supported
- Up to 80Mb p/s transfer
- Plug n Play
- True multitasking SCSI b/master
- Supports most common O/S

ABP980U: £299 (19753) £351.33 inc. VAT

SONY

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CDR Media: £1.29 (11966) £1.52 inc. VAT

CDR Media 10 pack: £12 (14458) £14.10 inc. VAT

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WHITE LABELS 50K: £6.95 (17251) £8.16 inc. VAT

Easy CD Creator™

Software to make your own CDs!

Easy CD Creator: £55 (19189) £64.63 inc. VAT

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- Save your presentations and graphics
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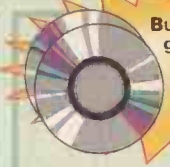

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Win 95 and Win NT 4.0 Compatible

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Software suite: Adaptec DirectCD and mastering software, HP Simple Trax, Norton AntiVirus, Corel Print House Magic, Adobe Photo Deluxe, Documagix Papermaster Live, Digital Now Photo Album.

7200 Internal

Internal rewritable IDE drive; IDE cable with 3 connectors; package of screws; software CD and software guide; one HP CD-RW and one HP CD-R media with jewel case; installation manual; UDF and installation software; Install Assistant and online manuals and registration.

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External rewritable drive; power cord and universal power supply, audio cable, parallel data cable; software CD and software guide: one HP CD-RW and one HP CD-R media with jewel case; installation manual; Installation floppy; UDF and installation software; online manuals and registration.

Pack 450 floppy disks onto one CD!

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  - ✔ Norton Anti-Virus
  - ✔ DocuMagix PaperMaster Live
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  - ✔ Digital Now Photo Album
  - ✔ Corel PrintHouse Magic
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32-speed TRAY

The PX-32TSi/TSe CD-ROM drive with easy-to-use tray-loading mechanism is state-of-the-art.
The ULTRA-SCSI interface offers you a higher reliability of the multimedia applications. Combined with a quick random access time of 85ms, it will increase multi-user and multi-tasking performance.

Max. Data Transfer Rate:	4.800 KB/sec
Random Access Time:	85 ms
Random Seek Time:	80 ms
Data Buffer:	512 KB
Spindle Motor:	Brushless
Interface:	UltraSCSI
Error rate:	Mode 1 : 1 Block/ 10^{12} bits Mode 2 : 1 Block/ 10^{8} bits
Usable Formats:	CD-DA, CD-ROM Mode 1, CD-I, CD-ROM XA Mode 2 (Form 1&2), Photo CD Multisession, Video-CD, CD Extra, CD+G, CD-RW (Max.8x)
Lights (LED):	ON/BUSY, DISC IN
Audio Play button:	CD-Play, SKIP, Forward
MTBF:	100.000 POH (duty 7 %)
Tray Loading:	30.000 times
Warranty:	2 years

PX-32TSi-Internal
19907 £125
£146.88 inc. VAT

PX-32TSe-External
19637 £165
£193.88 inc. VAT

NOMAI 680.RW
CD-Recordable/Rewritable Compact Disc Drive

3 DRIVES IN ONE

Unique multi-function concept combining 6X CD-ROM reader, 2X CD-Recorder and the world's first 2X CD-ReWritable drive! The NOMAI 680.RW is a 6X CD reader which play any CD type (CD-ROM, CD-AUDIO, CD-VIDEO,...). In addition to recording information on low cost CD-Recordable (CD-R) media, the NOMAI 680.RW is also the first drive on the market to write and rewrite newly standardised CD-Rewritable (CD-RW) discs.

Free CD Labelled Software Supplied

- Drag and drop your files (UDF standard file management) and create your own CD
- Easy to use and carry
- Easy to install

Product	Code	Price	Inc. VAT
Internal E-IDE retail Kit	17897	£269.00	£316.08
Internal SCSI Kit	17896	£274.00	£321.95
External SCSI Kit	19686	£299.00	£351.33
External SCSI Kit (with SCSI board)	17894	£339.00	£398.33
External Parallel Port Kit	17893	£339.00	£398.33
NOMAI CD-R	11966	£1.60	£1.88
NOMAI CD-RW	18016	£12.00	£14.10

Endless high capacity mobile storage at a very attractive price:
Use CD-Recordable or CD-ReWritable, depending on the task at hand.

- CD-R media offers the advantages of low cost and worldwide compatibility with the installed base of CD equipment.
- CD-RW media means disc space can be re-used over and over again thereby bringing down cost of disc ownership. The CD-RW media is also suited for the new MultiRead compatible CD-ROM drives, plus MultiRead DVD-ROM drives.

Specifications:	
Capacity:	680 MBytes
Average access time (1)	290 msec
Max. access time (1)	550 msec
Transfer rate (mode 2) (Zoned 6 speed)	1146 KB/sec (read only)
Transfer rate (mode 2) (Double speed)	352.6 KB/sec (reading or writing)
Transfer rate (mode 2) (Single speed)	176.4 KB/sec (reading or writing)
Form factor	5.25" half height built-in
Dimensions (internal drive):	
Height 41.5 mm	Width 146 mm Depth 206 mm
1 Year warranty on all drives and media	

Generic Media Supplied

CD-R
11966 £1.60
£1.88 inc. VAT

CD-RW
18016 £12
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NOMAI

PLEXWRITER
4x write • 12x read CADDY

PLEXTOR

The Plextor CD-Recorder writes at 4-speed that maximises the ability of a high speed backup.
By 12-speed reading, the access time is 190ms, which is one of the highest performances among CD-R drives. Due to a massive buffer of 2MB, a stable writing can be secured.

NEW

PX-R412CI internal
19420 £349
£410.08 inc. VAT

PX-R412Ce external
19419 £389
£457.08 inc. VAT

- Max Data Transfer Rate: 600 KB/sec Write 1.870 KB/sec Read
- Burst 5.0 MB/sec
- Read: 8x-12x; 1,2 -1,87 MB/sec PCAV (Mode 1, Mode 2 form 1)
- Write: 4x: 600 KB/sec (Mode 1, Mode 2 Form 1)
- Random Access Time: 190 ms
- Data Buffer: 2 MB
- Error rate: Less than 10^{12} bits
- Usable Formats: CD-DA, CD-ROM, CD-ROM+CD-DA, CD-ROM XA, CD-I, PHOTO-CD, VIDEO-CD
- Lights (LED): POWER/ON, DISC IN, READ, WRITE
- MTBF: 60.000 POH
- Caddy Loading: 200.000 times
- Warranty: 1 year

TEAC
12X Read, 4X Write CD Recorder CD-R55S, Fast SCSI-2

NEW

12X Read, 4X Write

The new CD-R55S from TEAC offers all of the advantages of true 4X write performance. It takes just fifteen minutes to create a typical 650MB CD - only half the time of a 2X writer. And with its 12X read capability and 165ms average access time, no other CD Recorder reads CDs faster.

Accurate, Reliable, Efficient

The TEAC 4X CD Recorder is engineered for high reliability. Its 1MB buffer virtually eliminates those dreaded buffer-underruns and insures that you'll burn discs successfully every time with 100% data accuracy. The TEAC 4X CD Recorder supports packet writing for low data overheads and can also record onto part of the disc or track the entire disc at once.

Perfect Data Distribution

Whether you're distributing software development content, sending presentation updates from the home office, or simply archiving your most valuable data, the TEAC CD Recorder fits the bill.

Affordable Integration

The CD-R55S supports all of the leading PC and Macintosh based authoring programs & its internal design, caddyless power tray, easy integration and affordable price make sense for solution providers looking for an affordable, reliable and high performance drive.

Teac Drive: Supplied with Adaptec Easy CD Creator standard software
BARE DRIVE
19755 £240
£282.00 inc. VAT

Teac Drive: Adaptec Easy CD Creator standard software: Controller Card
External SCSI Kit
19757 £330
£387.75 inc. VAT

Teac Drive: Adaptec Easy CD Creator standard software: Controller Card
Internal SCSI Kit
19756 £299
£351.33 inc. VAT

SPECIFICATIONS	
Model:	CD-R55S
Interface:	Fast SCSI-2
Transfer Rate:	Read: 12X (1800KBps) Write: 4X (600Kbps)
Access Time:	165msec (1/3 Stroke)
Buffer Size:	1MB
Formats:	Track At Once; Disk At Once;
Multi-Session:	Incremental
Write Verification:	Automatic Optimum Power Control to dynamically adjust laser write power
Logical Recording Format:	ISO 9660, UDF & CDR-FS Packet Write (Fixed & Variable)
Disc Type:	8cm/12cm Disc; Audio CD; CD-ROM Mode-1; Mode-2 (Form1, Form2); XA ready; Video CD; CDI; Multi-Session Photo CD; Enhanced CD
Disc Loading:	Power Tray (Caddy not required)
	MTBF:50,000 Power On Hours
Dimensions:	5.75"(W) x 1.6"(H) x 7.56"(D)
Weight:	1.9 lbs

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MediaSolutions drawers are the perfect answer to today different storage needs at an affordable price. Units can store virtually everything from ZIP disks to CD-ROM to TRAVAN cartridges. Manufactured with high impact recyclable plastic material, MediaSolutions drawers have a new and attractive Italian design. The coloured ergonomic handle incorporates a latch mechanism that prevents drawer from opening accidently.

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Designed and styled for use with most ink jet and smaller style laser printers.

Space saving

Maximises space used in the working environment; height adjustable, sliding trays make access to all consumables easy.

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CD-ROM library CDB 030

Store your CD-ROMs within easy reach with the Exponent CD-ROM Library. Made of high impact plastic material, each unit holds up to 30 CD-ROMs. The inside rack keeps your CD-ROMs neatly in place and the two acrylic front doors allow easy identification of the titled.

CD-ROM Libraries 19760 £19.95 £23.44 inc. VAT

- High Storage capacity module
- Stackable Vertically or horizontally
- Easy-to-open transparent doors
- Stylish design
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Practical storage boxes that guarantee security by the built-in metal lock & key. The acrylic front cover permits easy viewing of the contents and the internal dividers allow a neat organisation of your diskettes and 3.5" format media.

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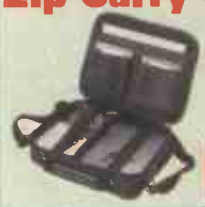

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3DFx Voodoo Card

The Aries 3DFX Voodoo card is one of the finest graphics accelerator cards money can buy. If you are a PC games enthusiast then this product should be top of your PC upgrade list!

Voodoo Card
£99
£116.33 inc. VAT

The new Aries 3DFx Voodoo Card is a hardware 3D graphics accelerator card that utilises the renowned 3DFx Voodoo Card chipset. The MM100PC3D works transparently in conjunction with an existing 2D or 2D/3D graphics adapter or accelerators via analogue pass through.

With its 128-bit "dedicated texture memory" architecture, the MM100PC3D has over 800 megabytes per second of memory bandwidth to deliver:

- Expanded texture and frame buffer memory
- Dedicated acceleration
- Will allow your PC to display images quicker
- More detail - better clarity
- Smooth, speedy and seamless gaming experience
- 45M pixels/sec sustained fill rate for bi-linear or tri-linear filtered textures
- 550K Textured triangles/sec polygon performance

The Aries 3DFX Voodoo card is the perfect companion for the Games Enthusiasts Video Card!

3D Features
- Perspective correct textures
- Bi-linear and tri-linear filtering with detail
- Level of detail (LOD) MIP mapping
- Sub-pixel correction
- Polygon-based Gouraud shading and texture modulation
- 24-bit internal, 16-bit dithered RGB frame buffer
- Multiple format texture buffer (8-Bit and 16-Bit)
- 2 Mbyte of frame buffer memory
- 2 Mbyte of texture memory

System Requirements: Pentium processor 100 MHz (Recommended 133MHz), PCI 2D graphics card

ADDITIONAL FEATURES
- Anti-aliasing
- Depth buffering (16 bit)
- Alpha blending
- Per pixel special effects: fog, transparency, translucency
- Texture morphing, compositing, animation
- Linear frame buffer access

COMPATIBILITY
- Support for full-screen games under Windows 95, MS-DOS and Windows 3.1 using 3D APIs including Microsoft Direct 3D, Intel 3DR, Criterion Renderware, Argonaut bRender and more

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Now you can have both PC and T V for a fraction of the cost of both and have lots more fun - the new Aries TV Teletext Card gives you true TV performance (in full screen or 'window' mode) and lets you capture screen shots of your favourite programmes and vide os, even from your camcorder! Imagine having you favourite PC program and favourite TV gameshow running simultaneously on your screen then calling up Teletext for Information on tomorrow's weather - the possibilities are endless.

Then, if you want to save a picture to disk, you can do what you want with it and create truly impressive stuff. The card even allows you to capture Teletext pages, including sub-titles, so you can drop the information straight into the document - handy for school projects, business reports, monitoring stock market shares etc.

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Lets You Watch TV While You Are Working On Your PC

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Direct-Draw Interface driver for VGA card, Windows-95

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Watch your favourite TV programmes on a sizeable, removable window. Keep up with current events by tuning into your FM radio stations and teletext. Capture still pictures or full motion clips for video email and multimedia presentation. You can video conference and watch movies from your VCR, DVD or camcorder. You can even play SEGA, nintendo and Play Station on your PCI

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- Support many standard file formats, e.g. TIFF, BMP, Photoshop
- Exciting bundled software - Ulead's iPhotoExpress, VDOphone for video conferencing & PhotoVista which allows you to create panoramic virtual pictures
- Windows 95, Pentium 90, 8 MB RAM minimum requirement

GrabIT Pro
19400
£119
£139.83 VAT

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GrabIT

Affordable, fun and easy to use! Plugs into your PC's parallel port and with AIMS unique 6 frame interface to choose from at any one time, there is no frustration from getting the right image. Comes bundled with exciting softwares to create your very own personal albums, posters, greeting cards, newsletters, screen-savers and many more!

- Captures in 16.8m stunning colours & broadcast quality images
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Sonic Storm

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Sonic Storm Press Awards to date

- PC Guide - Best Buy, March 98
- PC Format - Gold Award, Jan 98

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Apocalypse 3Dx

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Dedicated 3D accelerator for arcade-level performance

- Advanced 3D realism & improved 3D image quality with bilinear texture filtering
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- New games bundle: Nightmare Creatures; FIFA Soccer 98 - Road to the World Cup; Ultimate Race
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- NEC/VideoLogic PCX2 PowerVR 3D processor
- 4MB of high performance SDRAM texture memory on board
- Optimal platform P166 with 32MB RAM or above; min requirement P133 with 32MB RAM; 2MB or above graphics accelerator

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Apocalypse 3Dx Press Awards to date

- PC Answers - Platinum Award, July 97
- PC Games (Germany) - Recommended Award, July 97
- Boot (US) - Kick Ass Award, May 97
- PC Guide - Best Buy, July 97
- What PC? - Five Star Award, July 97
- Games Mansion - Five Star Award, July 97
- PC Plus - Best Value Award, Oct 97
- PC Fun (France) - Recommended Award

ORCHID
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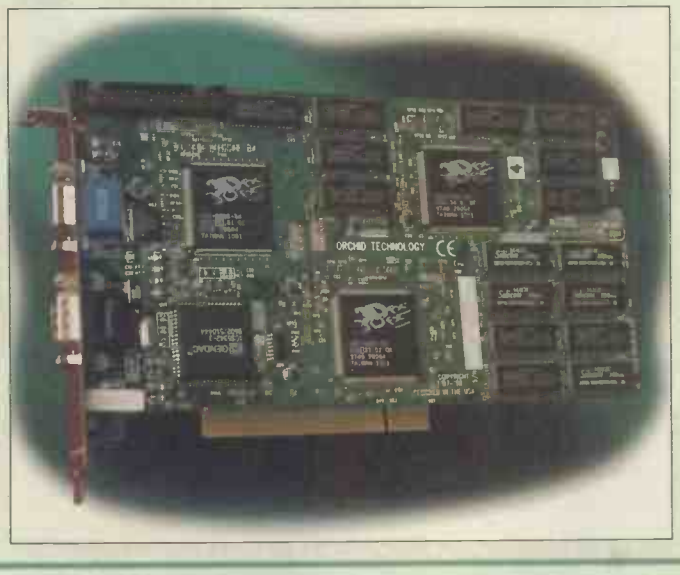
Righteous 3D II™ Graphics Card

Unparalleled 3D Performance - Righteous 3D II™ does not disappoint!

NEW

Compatible with a large variety of popular software titles, Righteous 3D IITM delivers awesome graphics you've come to expect from the Righteous name but with enhancements in the areas of frame rate performance - The Righteous 3D IITM is configured with a total of 8 megs of EDO memory, offering up to 4MB EDO DRAM texture memory, which makes for smoother transitions between consecutive images and texture mapping units. R3D II also offers up to 4MB EDO DRAM frame buffer memory which enables higher resolution and improved image quality n the games that support it. Additional improvements include advanced Anti-aliasing, tri-linear filtering and Alpha blending along with multi-textured special effects that superbly animate normally lifeless environments.



Features:
- Based on 3Dfx Interactive's new Voodoo 2 chipset
- 8Mb of high performance graphics memory
- Works with your existing graphics card to give you the fastest game-play ever

Advanced Features:
- Full hardware triangle setup (independent, strips & fans)
- Anti-aliasing
- Depth buffer (16-bit linear, 22-bit effective)
- Alpha-bending
- Per-pixel special effects: fog, transparency, translucency
- Texture compositing, morphing, animation
- Linear frame buffer access
- Single-pass, tri-linear filtering
- Single-pass, dual textures per pixel

Compatibility:
- PCI bus 2.1 compliant, 33/66MHz
- Operating systems supports: Microsoft Windows®95, Windows NT 4.0, MS-DOS®, Apple Mac™OS
- Full software compatibility with Voodoo Graphics, Voodoo Rush

Righteous 3D II™
19687 £169
£196.08 inc. VAT

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- Auto-Dial: Tone dialling, Auto-senses speed of called modem
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SPRING SPECIAL While stocks last

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- Free Luckmans Best of Web and Luckmans Web Edit Pro HTML editing software worth £45!
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US Robotics

3Com®

The Intelligent Choice in Information Access

Sportster® MessagePlus®

NEW LOW PRICE

Faxmodem with Independent Messaging Facilities

One complete feature-rich communications package for the home or office. The Sportster MessagePlus can be left to store incoming fax and voice messages even when your computer is switched off.

MessagePlus £125 19182 £146.88 inc. VAT

- x2 technology - allows users to download from the Internet at speeds up to 56Kbps
- Supports 33,600bps and other Modem speeds
- Store up to 35 Voice Messages and 25 faxes
- Flash ROM Memory for future upgrades
- Internet ready (On-line trials included)
- Call discrimination
- Full Duplex Speakerphone for hands free conversations
- Personal VoiceMail with quick & easy access
- Remote 24hour Voice message Retrieval
- Send & receive faxes E-mails including remote access and fax on demand
- Windows™ 95 Plug & Play - configuration disk included
- BABT approved - FREE LIFETIME TECHNICAL SUPPORT

Data Speeds	Fax Speeds	Error Correction & Data Compression
x2 Technology	Group III EIA Class 1 & 2.0	V.42 & MNP levels 2-4
V.34 at 33,600bps	V.17 at 14,400bps	V.42bis and MNP5
V.34 at 28,800bps	V.29 at 9600bps	Asynchronous
V.32bis at 14,400bps	V.27ter at 4800bps	---

SPORTSTER WINMODEM PC CARD

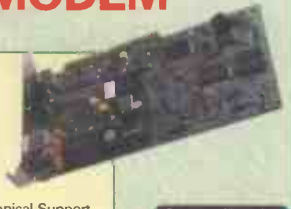
Winmodem PC Card £75 19128 £88.13inc. VAT

- x2 Upgradeable
- Supports data speeds of up to 33,600bps
- Includes Pan European internal DATA (line interface)
- Internet Ready
- Call Discrimination
- Personal Voice Messaging
- Remote Voice Message Retrieval
- Sends & Receives Faxes
- Fax on Demand
- Software Upgradeable
- Windows Plug & Play
- Voice/Fax/Data Software

SPORTSTER WINMODEM

33.6 Internal Faxmodem for Windows

- Internal and PCMCIA versions available
- Internet Ready and compatible at up to 33,600bps
- Full Duplex Speakerphone*
- Personal Voice Mail - Mailbox Voice Mail*
- Send and receive faxes directly from your PC
- Call discrimination: voice/data/fax
- Remote Fax Retrieval
- Software Upgradeable**
- Fax-On-Demand - Faxes stored for distribution
- Remote Voice Message Retrieval*
- Voice/data/ fax software
- Windows Plug and Play Support
- Free Lifetime Technical Support
- 5 Year Warranty
- BABT approved



Sportster Winmodem £68 14265 £79.90 inc. VAT

SPORTSTER FLASH

56Kbps Ready External Faxmodem with Personal Voice Mail

Sportster Flash £99 11264 £116.33 inc. VAT

Download from the Internet at an amazing 56kbps with the New Sportster Flash faxmodem - the first x2 ready product from U.S. Robotics. Nearly 100% faster than the 28.8kbps speed currently available over ordinary telephone lines, Sportster Flash users will be able to flash upgrade their modem to x2 at no extra charge, simply by dialling into the U.S. Robotics Bulletin Board*.

*A SOUNDCARD (WITH AUDIO CABLE), EXTERNAL SPEAKER OR HEADSET IS REQUIRED TO UTILISE ALL VOICE FEATURES INCLUDING THE HANDS FREE TELEPHONE FUNCTION

Watford Electronics

www.watford.co.uk - Order On-Line

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RETAIL STORE: 250 LOWER HIGH STREET, WATFORD WD1 2AN

ESTABLISHED 1972

PK Electronics

BLACKOUTBUSTER™

ISO9002 INTERNATIONAL QUALITY ASSURANCE STANDARD

UNINTERRUPTIBLE POWER SUPPLY

All you need for complete power protection in one single package.

Designed for SOHO (Small Office Home Office) applications, BlackoutBuster is the most cost-effective and reliable 500VA Uninterruptible Power Supply. BlackoutBuster protects your computer and peripherals against all power disruptions, preventing the loss of valuable work and files. BlackoutBuster is supplied with an emergency backup battery, full-time voltage protection, power surge guard, modem or Internet line protection, and a 2-year warranty and is upgradable to meet the expansion of your system.

BUSTER 19320 £114 £133.95 Inc. VAT

CE 2 YEAR Warranty

Specification		
Model	BlackoutBuster	with one PowerPack
Applications	Network PC	Network Server
UPS type	Line-interactive	Line-interactive
Output VA	500VA	1000VA
Dimensions(mm) (WxHxD)		96x217x2152
Weight(kg)	5.5	11

TYPICAL EMERGENCY BATTERY RUNTIME		
Model	BlackoutBuster (500VA)	with one PowerPack (1000VA)
IBM Aptiva Pentium 166	14 minutes	28 minutes
HP Vectra Pentium 166	15 minutes	30 minutes
Compaq Deskpro Pentium 133	19 minutes	38 minutes
Acermate Pentium 100	16 minutes	32 minutes
Most Other Pentium PCs	15-20 minutes	30-50 minutes
IBM PC Server 520		25 minutes
HP NetServer 5/166LS		20 minutes
Compaq Prosignia web Server		32 minutes
Most Pentium servers		20-30 minutes

PowerPack™

Enables you to obtain longer backup time or increase the capacity to 1000 VA.

POWERPACK 19321 £89 £104.58 Inc. VAT

SmartPack™

Enables simple unattended shutdown of your PC or server, and gives you sophisticated diagnostics and control of the power to your system. Available for all major operating systems.

SMARTPACK 19322 £48 £56.40 inc. VAT

MicroPack™

This is an attachement for automatic shutdown of Windows 3.11, Windows 95, Windows NT, OS/2 and Novell NetWare operating systems.

MICROPACK 19323 £16 £18.80 inc. VAT

ELSA

Plug & Play

The Elsa Range

- Plug & Play
- Unique 6 YEARS Hardware Warranty!
- Windows 95 & NT support
- Low cost ISDN PC solution
- "Quality German Engineering & Development"

Elsa Quickstep 1000

- First in a new generation of ISDN PC boards from Elsa Windows 95pc transformed into an ISDN terminal with fax.
- ISDN Communication at 64Kbps
- Fax Group 3
- Comprehensive Windows 95 Software
- Virtual Com port
- Full CE approvals and technical support

Quickstep 1000 17660 £119 £139.83 inc. VAT

Elsa Microlink ISDN TL V.34

- External ISDN adaptor and V.34 28.8 modem for simple PC connection
- V.42 Data compression for transfer up to 230,499 BPS
- Automatic Inbound detection for ISDN, Modem,fax and Voice
- Personal voicemail
- Group 3 Fax

ISDN TL V.34 17661 £319 £374.83 inc. VAT

Elsa Microlink ISDN TI Pro

- External ISDN adaptor, as Microlink TL V.34 but excluding modem capability

ISDN TI Pro 17663 £219 £257.33 inc. VAT

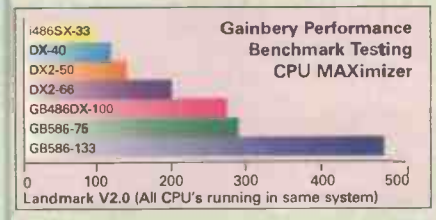
DO YOU HATE TO WAIT?

Convert your 486 System into a CPU MAXimiser Upgrade

Maximizer 586 Plug and Play module

- Delivers increased CPU performance
- Fifth-generation architecture
- 16K Byte write/back cache
- 168 pin PGA
- Minimum power consumption
- Branch prediction, data forwarding, decoupled low/store unit
- 3 year warranty
- Technical support

Maximizer 586 15620 £85 £99.88 inc. VAT



Choose the 586 CPU Maximizer that fits your system

CPU PRICE	PROCESSOR MAXimiser	YOUR CURRENT SYSTEM	EXT. CLOCK RATE
GB586-133	586-133 SX2-66, DX2-66, DX4-100	486SX-33, DX-33,	all 25MHz & 33MHz

Easy Installation:
1. Power down your machine, and yourself to the metal frame
2. Remove your old CPU, (using a CPU puller provided if necessary)
3. Align pin 1 on the board and CPU MAXimiser, plug it in firmly
4. Close the case, plug in your machine and that's it

Sales Hotline: 01582 745555

FAX: 01582 488588

FOR ORDERING INFORMATION SEE PAGE 2

Prices exclude carriage & VAT @ 17.5% except where shown.

MasterCard VISA

2.5" IDE HARD DISK DRIVES

HITACHI

16885 DK225A21 2.1Gb 12ms 4464RPM 128K Cache £122
17530 DK226A32 3.2Gb 12ms 128k cache £189
19405 DK237A32 3.2Gb 12ms 512k Cache £225
19406 DK227A41 4.1Gb 12ms 512k Cache £295
19407 DK227A50 5.0Gb 12ms 512k Cache ..... Call

IBM

19602 73H7673 2.1Gb IDE 13ms 128k Cache 12.5mm High £115
19601 00K0381 3.2Gb IDE 13ms 512k Cache 12.5mm High £185
19600 09J1195 4.0Gb IDE 13ms 512k Cache 12.5mm High £282
19599 46H6144 3.0Gb IDE 12ms 128k Cache 17mm High £268
19598 00K0366 5.1Gb IDE 12ms 128k Cache 17mm High £372

TOSHIBA

17586 MK2103MAV 2.16Gb IDE Hard Disk £145
19605 MK3205MAV 3.2Gb IDE Hard Disk 12.5mm High £215
19604 MK4006MAV 4.0Gb IDE Hard Drive 12.5mm High £299

3.5" EXCEL DISKETTES

LIFE TIME WARRANTY

11956 10x DSHD 1.44Mb 135tpi Black £4
11957 10x DSHD 1.44Mb 135tpi Coloured £5
17353 Virgin 3.5" Unformatted HD Floppy Disks 10 Pk £2.40
17356 Virgin 3.5" High Density Floppy Disks 10 Pk £2.40

3.5" IDE HARD DISK DRIVES

WATFORD SPECIAL PRICED IDE HARD DRIVES

19209 AR1700MB 1.7Gb £75
15741 AR2000MB 2.1Gb £89
17260 AR3200MB 3.2GB £95
18945 AR4300MB 4.3Gb £120
18946 AR6400MB 6.4Gb £149

FUJITSU - Covered By 3 Year Warranty

16464 MPB3021AT 2.1Gb ATA3 10ms 5400RPM 128K Cache £92
17064 MPB3043AT 4.3Gb ATA3 10ms 5400RPM 128K Cache £122
19223 MPB3064AT 6.4Gb ATA3 10ms 5400RPM 128k Cache £162

IBM - Covered By 3 Years Warranty

18948 09J0308 6.4Gb EIDE/Ultra ATA 9ms £169
18949 00K0394 8.4Gb EIDE/Ultra ATA 9ms £232

MAXTOR - Covered By 3 Year Warranty

Diamond MAX Range

18952 83240D4 3.2 Gb EIDE/Ultra DMA ATA 10MS .. £115
18953 84320D4 4.3 Gb EIDE/Ultra DMA ATA 10ms .. £127
18954 85250D6 5.2Gb EIDE/Ulta DMA ATA 10ms .. £156
19224 88400D8 8.4Gb Ultra DMA ATA 12ms £219

QUANTUM - Covered By 2 Year Warranty

Ultra ATA Range

19225 Fireball SE 2.1 Gb 10ms Ultra DMA £82
19226 Fireball SE 3.2 Gb 10ms Ultra DMA £105
19227 Fireball SE 4.3 GB 10ms Ultra DMA £115
19228 Fireball SE 6.4 Gb 10ms Ultra DMA £152
19229 Fireball SE 8.4 Gb 10ms Ultra DMA £195
18165 Pioneer 2.1Gb 11ms Eide £109

SEAGATE - Covered By 3 Year Limited Warranty

18449 ST31722A Medalist 1.7Gb Ultra ATA 12ms 4500RPM £72
16063 ST323531A Medalist Pro 2.5Gb 12ms 5400RPM 128K Cache £85
16281 ST34342A 4.3Gb Ultra ATA 12ms 4500RPM £115
18282 ST36451A 6.4GB 10ms 512K cache £152
19230 ST38641A 8.0GB 12ms 512K Cache £325

WESTERN DIGITAL - Covered By 3 Year Warranty

10341 AC22100 2.1Gb Ultra ATA 12ms 5200RPM .. £94
15358 AC33200 3.2Gb 12ms 5200RPM £112
18561 AC34300 4.3Gb Ultra ATA 12ms 5200RPM .. £132
18560 AC35100 5.1Gb Ultra ATA 12ms 5200RPM .. £145
18559 AC36400 6.4Gb Ultra ATA 12ms 5200RPM .. £165

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16100 M2952SY 2.2Gb 10ms 7200RPM 512K Cache Ultra £289
16487 M2952QA 2.2Gb 10ms 7200RPM 512K Cache Ultra Wide £299
16101 M2954SY 4.3Gb 10ms 7200RPM 512K Cache Ultra £389
16488 M2954QA 4.3Gb 10ms 7200RPM 512K Cache Ultra Wide £395
16102 M2949SY 9.1Gb 10ms 7200RPM 512K Cache Ultra £622
16489 M2949QA 9.1Gb 10ms 7200RPM 512K Cache Ultra Wide £635

QUANTUM - Covered By 2 Year Warranty

16491 Fireball Stratus 2.1Gb 10ms SCSI £125
14484 Fireball Stratus 3.2Gb 11ms SCSI £152
14485 Fireball Stratus 4.3Gb 10.5ms SCSI £175
14486 Fireball Stratus 6.4Gb 10ms SCSI £219
10334 Atlas II 4.5Gb 8ms SCSI Narrow £298
16490 Atlas 9.1Gb 8ms SCSI Narrow £485

SEAGATE - Above 1.2Gb = 5 Year Warranty

18641 ST32272N Barracuda 2.1GB ULTRA 9ms 7200RPM 512K Cache £215
18642 ST32272W Barracuda 2.1GB ULTRA Wide 10ms 5400RPM 256K Cache £225
18643 ST34572N Barracuda 4.5Gb ULTRA 9ms 7200RPM 512K Cache £309
18644 ST34572W Barracuda 4.5Gb ULTRA WIDE 9ms 7200RPM 512K Cache £322
16505 ST19101N Barracuda 9.1Gb ULTRA 9ms 7200RPM 512K Cache £452
16506 ST19101W Barracuda 9.1Gb ULTRA WIDE 9ms 7200RPM 512K Cache £465
17538 ST34501N Cheetah 4.5Gb Ultra 8ms 10000RPM £372

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16109 4.3Gb 8ms 7200RPM 512K Cache Ultra £302
19609 E9100 9.1Gb 8ms 1" High 7200RPM 512k Cache Ultra £498
19607 E9100 9.1Gb 8ms 1" High 7200RPM 512k Cache Ultra Wide £514

9 PIN MATRIX PRINTERS

EPSON - Covered by 1 year warranty

10026 Epson FX870 80col £247
18977 Epson FX880 ..... £247
13379 Epson FX2170 132col £395
13372 Epson LX300 80col £97
10036 Epson LX1050+ 132col £200
19707 Epson DFX 5000+ £1,226
19708 Epson DFX 8000 ..... £1,911

OKI - dot matrix printers

19652 Oki ML 320 ..... £299
19653 Oki ML 520 ..... £329
19656 Oki ML 3410 ..... £805
19657 Oki ML 280 ..... £182
19658 Oki ML 321 ..... £359
19659 Oki ML 3320 ..... £315
19661 Oki ML 3321 ..... £369
19662 Oki ML 521 ..... £389

PANASONIC - Covered by 1 year warranty

13367 Panasonic KXP1150 80col £87
16873 Panasonic KXP3200 80col £169
10010 Panasonic KXP3696 132col (1 year onsite) .. £255

24 PIN MATRIX PRINTERS

CITIZEN - Covered by 1 year warranty

17493 Citizen ProDot 450 L 106col £599
17494 Citizen ProDot 810 X 136col £853

EPSON - Covered by 1 year warranty

13658 Epson DLQ3000 132col £831
10035 Epson LQ300 80col £115
10049 Epson LQ570+ 80col £216
14418 Epson LQ670 ..... £230
13378 Epson LQ870 ..... £377
14072 Epson LQ2070 132col £330
10048 Epson LQ2170 132col £468

PANASONIC - Covered by 1 year warranty

13363 Panasonic KXP2023 80col £108
10053 Panasonic KXP3626 132col (1year onsite) ... £255

DKI - dot matrix printers

19654 Oki ML 590 ..... £405
19660 Oki ML 3390 ..... £335
19663 Oki ML 591 ..... £499
19664 Oki ML 395 Mono £630
19665 Oki ML 395 Colour £715

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17165 Extra Long 5 Head Floppy Cable £7
10924 Standard 5 Head Floppy Cable £5
12006 Single 40w - 40w IDE Internal Cable £6
12020 Dual 40w - 40w IDE Internal Cable £8
12005 Single 50w - 50w SCSI Internal Cable £8
12026 Dual 50w - 50w SCSI Internal Cable £9
12133 Triple 50w - 50w SCSI Internal Cable £15
12009 External 50w - 50w SCSI Cable £16
12008 External 25w - 50w SCSI Cable £16
12069 External 50w HD - 50w SCSI 2 Cable £25
10927 Centronics 50 to 25 Pin M £18
12009 Centronics 50 to Centronics 50 ..... £16

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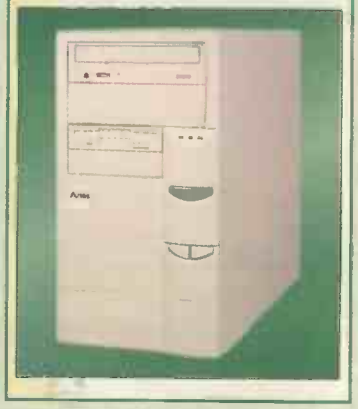
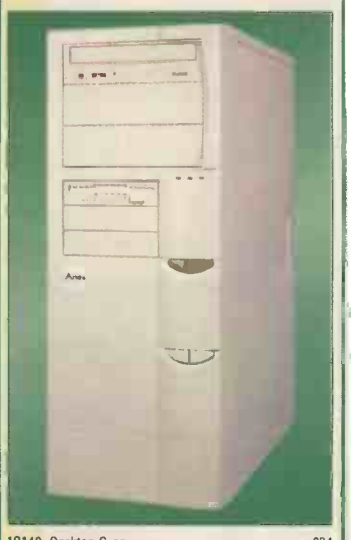
11966 Writeable Blank CD Media (CD-R Disks) ... £1.19
14458 Writeable Blank CD Media (CD-R Disks) 10 Pack £11
14459 Writeable Blank CD Media (CD-R Disks) 50 Pack £50
18016 ReWriteable Blank CDRW Media £14
16348 Traxdata Press-it CD Labelling Kit £20
17247 CD Cleaning Kit - Polish, Lens Cleaner, Cloth etc. £20
18343 Traxdata Audio Accessories Recording Kit ... £49
17251 Traxdata Press itPack of 50 White Labels £11
17252 Traxdata Press It Pack of 50 Blue Labels £13
17253 Traxdata Press it Pack of 50 Yellow Labels ... £13
17254 Traxdata Press it Pack of 50 Red Labels £13
17255 Traxdata Press it Pack of 50 Gold Labels £13
17256 Traxdata Press it Pack of 50 Silver Labels £13
17257 Traxdata Press it Pack of 50 Clear Labels (Laser Printer) £22
17258 Traxdata Press it Pack of 50 Clear Labels (Inkjet Printer) £22

COMPUTER CASES WITH PSU

10147 Mini Tower Case £31



15114 Midi Tower Case £42



10149 Desktop Case £34

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10150 Slimline Desktop Case £35
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10348 AT Multi I/O - 2S/P/G £10
10351 AT Multi I/O - IDE/FDD/2S/P/G £15
10392 AT Multi I/O - 2S(16550)/P £18
10349 2xIDE/2xFDD Controller £10
17217 Promise EIDEmax 4EIDE (LBA Interface for up to 8.4Gb Drives) £24
14775 Promise EIDEpro 4 EIDE 2S/1P (16550 LBA .. £35
13870 Single RS232 (16550) Serial Card £15

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10389 VL Multi I/O - IDE/FDD/2S/P £9
10385 VL Multi I/O - IDE/FDD/2S(16550)/P £26
17219 Promise EIDE 2300Plus 4HDD/2FDD 2S (16550), 1P, 1G £35
10354 Promise EIDE 4030Plus 4HDD/2FDD 2S (16550), 1P, 1G - 0K Cache £39

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10384 Enhanced IDE Controller £16
17223 Promise DC5030 4HDD IDE (Bus Master) 0K Cache £105
18035 Promise Ultra ATA PCI 4ATA/IDE £45

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15491 Epson LQ570, 870, FX870, C806382 ..... £38
11158 Epson LQ1170 Hi-Cap C806471 ..... £49
11178 Epson SQ870 Hi-Cap CSF C806481 ..... £89

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AMACOM

16962 2/4Gb External DAT Parallel & SCSI £699
16963 4/8Gb External DAT Parallel & SCSI £899
16964 4/8Gb External TR-4 Parallel & SCSI £469

BACKPACK

16966 8000T TR-4 (4Gb) £415
16965 800TD TR-1 (800Mb) £99

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19121 Danmere Backer Win/Win95 Parallel Port £55

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15715 Travan 3.2Gb Internal (T3000) £109
19183 Travan 5Gb Internal (C4354A) IDE £127
15345 Travan 8Gb Internal SCSI (T4000s) £217

HP COLORADO (EXTERNAL)

15735 Travan 8Gb External SCSI (T4000es) £279
19184 Travan 5Gb External (C4361A) Parallel £160

HEWLETT PACKARD (INTERNAL)

16969 HP C1533 4/8Gb DAT OEM Internal £525
16967 HP C1534 2Gb DAT OEM Internal £339
16968 HP C1536 2/4Gb DAT OEM Internal £375

HEWLETT PACKARD (EXTERNAL)

16972 HP C1533/E 4/8Gb DAT OEM External £659
16970 HP C1534/E 2Gb DAT OEM External £452
16971 HP C1536/E 2/4Gb DAT OEM External £475

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15190 SureStore 2000e 2.0Gb External SCSI £519
15189 SureStore 2000i 2.0Gb Internal SCSI £455
15237 SureStore 5000e 5.0Gb External SCSI £542
10782 SureStore 5000i 5.0Gb Internal SCSI £475
15186 SureStore DAT 8e 8.0Gb External SCSI £669
10815 SureStore DAT 8i 8.0Gb Internal SCSI £597
17814 SureStore DAT 8eU 8.0Gb External SCSI £689
19415 SureStore DAT 24x6e 24Gb Autoloader DAT Internal SCSI £795
16913 SureStore DAT 24x6e 24Gb Autoloader DAT External SCSI £879
15736 Surestore DLT30E 30Gb External SCSI £1,749
15737 Surestore DLT40E 40Gb External SCSI £2,830
18635 Surestore DLT71E 70Gb External SCSI £4,399
16434 SureStore T4i 8Gb Internal SCSI £249

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16973 DATpack HP Surestore 5000i /Arcarda NT ... £669
16974 DATpack HP Surestore 5000i /Arcserve Netware £815
16975 DATpack HP Surestore 5000e/ Arcada NT ... £729
16976 DATpack HP Surestore 5000e/ Arcserve Netware £885

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16977 Support Pack for Surestore 12000 Dat Drives £118
16978 Support Pack for Surestore 6000 Dat Drives .. £66
16979 Support Pack for Surestore 2000/5000 Dat Drives £47
16981 Support Pack for Surestore T4i Tape Drives ... £40
16982 Support Pack for Surestore DLT30e Drives .. £140
16983 Support Pack for Surestore DLT40e Drives .. £192

ACCESSORIES

15194 HP Colorado ISA External Kit (KE10) £59
10366 HP Colorado ISA Fast Tape Controller (FC20) .. £44
13449 HP Colorado ISA Fast Tape & H/W Comp. (TC15) £109
11995 HP Colorado Windows Backup Software (SK7) £39

IOMEGA STORAGE SOLUTIONS

18564 BUZ- Multimedia £149
18653 Ditto 2GbExternal Parallel Port Bundle (c/cas+3xMedia+Software) £125
15560 Ditto 2GbExternal Parallel Port Tape Drive £86
15559 Ditto 2GB Internal Tape Drive £59
18431 Ditto MAX 7Gb Internal Tape Drive £99

18430 Ditto MAX 7Gb External Tape Drive £129
18433 Ditto Max Pro 10Gb Internal Tape Drive £189
18432 Ditto Max Pro 10Gb External £189
15651 2Gb Ditto Tape £13
15878 2Gb Ditto Tape 3Pk £36
19432 3Gb Ditto MAX Tape £15
19430 3Gb Ditto MAX Tape 3PK £39
19427 5Gb Ditto MAX Tape £19
18799 7Gb Ditto MAX Tape £24
18800 10Gb Ditto MAX Pro Tape £27
16985 Ditto Dash 2Mb/Sec Controller £35

MEMORY TECHNOLOGY - SCSI / Parallel

16994 DATshuttle 4000 2GB/4GB, 20MB/min parallel, 35MB/min SCSI £655
16995 DATshuttle 8000 4GB/8GB, 20MB/min parallel, 40MB/min SCSI £855

MEMORY TECHNOLOGY - Parallel

16993 TapeShuttle 3200MC - 1.6GB/3.2GB TR-3, 9MB/min parallel £315

EXABYTE

17130 Eagle TR-3 Internal Floppy Tape Backup Soloution (Up to 4.4Gb) £95

SEAGATE TAPESTOR - Internal

10809 3.2Gb Travan Internal (TST3200) TR3 ..... £110
15562 8000 INT SCSI TST8000R-SBET (TR4) £199
15564 8Gb TR-4 Falcon Internal IDE TST8000 ..... £189

SEAGATE TAPESTOR - External

15563 8000 EXT SCSI TST8000ES-SBET - TR4 .... £269
17134 3.2Gb Travan Parallel Port (TST3200) TR3 ... £112

SEAGATE DAT

17135 4Gb DAT Drive External SCSI (DDS-DC) £429
17136 8Gb DAT Drive External SCSI (DDS-2) £529
17131 2Gb DAT Drive Internal SCSI (DDS-1) £329
17132 4Gb DAT Drive Internal SCSI (DDS-DC) £345
17133 8GB DAT Drive Internal SCSI (DDS-2) £455

SONY

17137 TSL-7000 DDS Auto Loader Internal £1,399
17138 TSL-7000 DDS Auto Loader External £1,425
17139 SDT-5000 4Gb- 8Gb DSS2 Internal £445

TANDBERG DATA (Internal)

17140 TDC-3660 250Mb Bare Drive £261
17149 TDC-3820 525Mb Bare Drive £320
17142 TDC-4120 1.2Gb Bare Drive £325
17143 TDC-4220 2.5Gb Bare Drive £455
17144 TDC-4222 5.0Gb Bare Drive £459
17145 Panther 5540 2.0Gb Internal Kit £339
17146 Panther 6528 4.6Gb Internal Kit £389

TANDBERG DATA (External)

17147 Panther 8884 250Mb Kit £382
17148 Panther 8885 525Mb Kit £455
17149 Panther 9934 1.2Gb Kit £539
17150 Panther 5098 2.5Gb Kit £595
17151 Panther 5519 5.0Gb Kit £620
17152 Panther 5541 2.0Gb Kit £445
17153 Panther 6528 4.6Gb Kit £500

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11941 4mm DAT 2.0Gb 5pk £39
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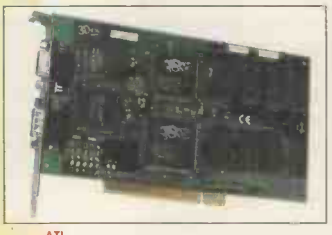

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16470 Pioneer DRM-624X Quad Speed 6 Disk Jukebox 150ms 1800KB/s £369
19222 Teac 8x 6 disc ATAPI / EIDE Changer Kit £89

KEYBOARDS

ARIES

13071 ERGONOMIC WIN 95 ..... £27
10169 105 Key Windows 95 Keyboard £12
13878 ADVANCE Windows 95 Keyboard £22

CHERRY

17206 G80-3000 Click Action £35
17250 G80-3700HAU External Notebook Numeric Keypad £59
17205 G81-3000 Soft Touch WIN95 ..... £17
17207 G83-6105 Click WIN95 ..... £18
10152 G83-6105LAMGB Membrane £19
17209 G84-4400 Trackball Notebook Keyboard £199

MICROSOFT

10155 Natural Keyboard £42

OPTI

19034 Opti Freedom Infrared Wireless Keyboard £49

KEYBOARD ADAPTORS

10920 PS/2 (Male) - AT (Female) £5
16366 AT (Male) - PS/2 (Female) £5

LABELS

11480 70mm x 37mm A4 Laser Labels - 2400 ..... £15
11317 89mm x 36mm Single Row Fanfold Labels - 1000 ..... £5
11318 89mm x 36mm Twin Row Fanfold Labels - 1000 ..... £5
11320 102mm x 36mm Twin Row Fanfold Labels - 1000 ..... £5

LASER ACCESSORIES

14471 Brother HL1060 Serail I/F RS100M £79
14419 Brother HL1660 Second Duplex Unit £380
15716 HP LaserJet 4 JetDirect Ethernet Card £235
10946 HP LaserJet 4 Lower Paper Cassette £199
17502 HP LaserJet 5 Colour Postscript SIMM £339
14379 Kyocera FS3700/FS1700 Duplex Unit £345
14382 Kyocera FS3700/FS1700 Output Stacker - 500 sht £105
11431 Panasonic KXP4420 Dzone Filter £9
11326 Panasonic KXP4450/4455 Dzone Filter £20
18484 QMS 2060 A4 Paper Cassette NEW £100
18483 QMS 2060 Letter Paper Cassette NEW £100
18498 QMS Magicolor CX/EX Fuser & Oil Cleaning Pad NEW £30
18497 QMS Magicolor CX/EX DPC Belt Cartridge NEW £250
18488 QMS Magicolor CX/EX Paper Cassette NEW £105
18499 QMS Magicolor CX/EX Waste Toner Kit NEW £10

LASER CONSUMABLES

11416 Brother HL600 Series Drum £99
11415 Brother HL600 Series Toner £19
14222 Brother HL730/760 Series Toner £19
17645 Brother HL1060 - TN300 Toner £14
11307 Canon LBP4/Star LP4/ HP IIP Plus/ HP IIIP Toner £45
11308 Canon LBP8/ HPII/ HPIID/ HPIII/ HPIIID Toner £50
19649 Canon LBP 1260/1260+ (EPE) Toner Cartridge £60
15468 Epson EPL3000 Toner £73
19692 Epson EPL 3000 Imaging Cartridge £75
11593 Epson EPL4000/4100/4300 Drum £112
11573 Epson EPL4000/4100/4300 Toner £86
11304 Epson EPL5000/5200 Toner £92
15163 Epson EPL5500 Drum £42
11653 Epson EPL5500 Toner £30
11529 Epson EPL5600 Toner £78
19694 Epson EPL 5600 / NI 200 Imaging Cartridge £99
11614 Epson EPL7100/7500/8100 Toner £131
18463 Epson EPL9000/PS Imaging Cartridge NEW £151
18464 Epson EPLN2000 Imaging Cartridge NEW £140
11430 Epson GQ5000/3500 Toner £16
19695 Epson Photo Conductor Unit for EPL 5500 ..... Call
11216 HP 4L/4ML/4P/4MP Toner £39
11418 HP 4V/4MV Toner £84
11537 HP 5L Toner £36
11526 HP 5P/5MP/6P/6MP Toner £45
11426 HP 5Si Toner £95
15192 HP IIISi/4Si Toner £62

Sales Hotline: 01582 745555

FAX: 01582 488588

FOR ORDERING INFORMATION SEE PAGE 2

Prices exclude carriage & VAT @ 17.5% except where shown.

MasterCard VISA

14606 HP PhotoSmart Cartridge - Orange Star NEW ..£24
14605 HP PhotoSmart Cartridge - Purple Moon NEW ..£24
11308 HP LaserJet II/IIO/IIi/IIIO Toner Cartridge £45
11307 HP LaserJet IIP Plus / IIIP Toner Cartridge £45
11477 HP LaserJet 4/4M/5/5M/5N Toner Cartridge ..£54
19696 HP Black Toner Bottle £5
19697 HP Cyan Toner Bottle £24
19698 HP Magneta Toner Bottle £24
19699 HP Yellow Toner Bottle £24
14234 Kyocera 800 Toner TK6 ....£25
15927 Kyocera Toner 1550/1600/3400/3600/6500 ..£36
15927 Kyocera 3400/6500/1550 Toner £36
11540 Kyocera FS400 Toner TK11 ....£13
18471 Kyocera FS1700/3700 Toner Kit NEW £40
16659 Lexmark Optra C Black Toner £73
16674 Lexmark Optra C Cyan Toner £85
16676 Lexmark Optra C Magenta Toner £85
16675 Lexmark Optra C Yellow Toner £85
19703 Lexmark 150C Cartridge Black £22
19704 Lexmark 150C Cartridge Colour £27
19705 Lexmark Winwriter 400 Toner £21
19706 Lexmark Winwriter 4600 Toner £21
11621 NEC 610/660/660i EP Toner £75
15060 NEC S60/S62/S90 Toner £117
14196 Oki 4W Toner £18
13561 Oki OL400/410/800/810/830/840/
850/870 Orum £149
11429 Oki OL400/410/800/810/830/840/
850/870 Toner £20
15248 Oki OL400E/OL400W/410E/410EX/
600EX/610EX/810EX Orum £129
11482 Oki OL400E/OL400W/410E/410EX/
600EX/610EX/810EX Toner (4851) £15
11390 Panasonic KXP4400/5400 Orum £55
13501 Panasonic KXP4400/5400 Toner £10
11389 Panasonic KXP4410/4430/4440 Oeveloper ..£98
11388 Panasonic KXP4410/4430/4440
Orum & Ozone £98
11577 Panasonic KXP4410/4430/4440 Toner £28
11127 Panasonic KXP4420 Oeveloper £57
11333 Panasonic KXP4420 Orum £57
11447 Panasonic KXP4420 Toner £27
11219 Panasonic KXP4450/4450i/4451/4455
Oeveloper £60
15065 Panasonic KXP4450/4450i/4451/4455 Orum ..£75
11214 Panasonic KXP4450/4450i/4451/4455 Toner ..£20
11425 Panasonic KXP6100/6150 Toner £12
11679 Panasonic KXP6300/6500 Toner £12
18485 QMS 2060 Toner NEW £165
18481 QMS Oesklaser 600 Toner NEW £65
18493 QMS Magicolor CX/EX Oeveloper
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18494 QMS Magicolor CX/EX Oeveloper
- Cyan NEW £145
18495 QMS Magicolor CX/EX Oeveloper
- Magenta NEW £145
18496 QMS Magicolor CX/EX Oeveloper
- Yellow NEW £145
18489 QMS Magicolor CX/EX Microfine Toner
- Black NEW £45
18491 QMS Magicolor CX/EX Microfine Toner
- Cyan NEW £110
18490 QMS Magicolor CX/EX Microfine Toner
- Magenta NEW £110
18492 QMS Magicolor CX/EX Microfine Toner
- Yellow NEW £110
11332 Qume Crystalprint Toner Orum £149
16613 Qume Crystalprint Toner Toner £108
16615 Sharp Toner 9200/9210 (92BC) Orum £51
16678 Sharp Toner 9660/9680 (96OC) Orum £99
16677 Sharp Toner 9660/9680 (96OC) Toner £95
11589 Star LS5 Toner £68
11562 Star WinType 4000 Toner £68

LASER PRINTERS

BROTHER - Covered by 1 year warranty

14133 Brother HL730 6ppm £205
15366 Brother HL760 6ppm £229
14470 Brother HL760 (5Mb) 6ppm £245
14239 Brother HL1060 10ppm (1year onsite) £349
15121 Brother HL1260E 2mb 12ppm (1year onsite) £599
16648 Brother HL1260E 6Mb 12ppm(1 year onsite) .£615
14268 Brother HL1660 4MB 16ppm(1year onsite) ..£699
16650 Brother HL1660 10MB 16ppm(1 year onsite) £715
14415 Brother HL1660 EX 4Mb 16ppm £909
14416 Brother HL1660 EX 8Mb 16ppm £925
19503 Brother HL2400cC £2,349

CANON - Covered by 1 year warranty

17859 Canon LBP660 6ppm £184
15658 Canon LBP1260+ 12ppm £614
19689 Cannon LBP 2460 24ppm £1,468

EPSON - Covered by 1 year warranty

14233 Epson EPL5500 PS 5Mb 5ppm £570
17901 Epson EPL-N1200 12ppm £593
17902 Epson EPL-N1200EN 12ppm £791
17903 Epson EPL-N1200PS 12ppm £986
17904 Epson EPL-N2000 20ppm £1,278
17905 Epson EPL-N2000PS 20ppm £1,582

HP - Covered by 1 year warranty

10003 HP LaserJet 5 Colour 10ppm
(1 year on site) £2,861
10004 HP LaserJet 5M Colour 10ppm
(1 year on site) £3,600
10002 HP LaserJet 5N 12ppm £847
14607 HP LaserJet 5N Colour (1 year onsite) £3,142
14134 HP LaserJet 5Si 24ppm (1 year onsite) ...£1,604
16652 HP LaserJet 5Si MX 24ppm
(1 year on site) £2,249
17628 HP LaserJet 6L 6ppm £232
14169 HP Laserjet 6MP 8ppm £562
15368 HP Laserjet 6P 8ppm £461
19553 HP LaserJet 3100 Printer/Fax/
Copier/Scanner £499
18802 HP Laserjet 4000 ....£711
18809 HP Laserjet 4000T £816
18810 HP Laserjet 4000N £914
19671 HP Laserjet 4000TN £1,073
19567 HP Laserjet 5000 ....£929
19570 HP Laserjet 5000N £1,334
19573 HP Lasrjet 5000GN £1,649
17629 HP LaserJet Companion £79
14604 HP PhotoSmart Photo £319
19670 HP LaserJet 5si Mopier £4,199
19671 HP LaserJet 4007N 8MB £1,023

KYOCERA - Covered by 1 year warranty

14464 Kyocera FS600 6ppm £223
14273 Kyocera Ecosys FS1700 12ppm £572
15894 Kyocera Ecosys FS3400+ 18ppm £785
17517 Kyocera Ecosys FS3700 18ppm £862
16608 Kyocera Ecosys FS6500 13ppm A3 ....£1,175
19672 Kyocera Ecosys FS-1550+ 10ppm £565
19673 Kyocera Ecosys FS-1700N
Network Ready 12ppm £725
19674 Kyocera Ecosys FS-3700N
Network Ready 18ppm £1,135
14492 Kyocera Ecosys FS-7000 28ppm A4/A3 ...£1,784

LEXMARK - Covered by 1 year on-site warranty

10012 Lexmark Optra C (8Mb, 600dpi) 12ppm ...£4,554
10013 Lexmark Optra E Model A 6ppm £279
18753 Lexmark Optra S 1250 (100dpi 4Mb) 16ppm .£655
18749 Lexmark Optra S 1650 (1200dpi 4Mb) 16ppm £769
18748 Lexmark Optra S 1650N £949
18747 Lexmark Optra S 2450 N £1,759

NEC

14075 NEC SuperScript 860 8ppm £246
19675 NEC SuperScript 1260 12ppm £525

OKI - Covered by 1 year on-site warranty

14235 Oki OKIPAGE 16N 16ppm £635
14573 Oki 4W+ £149
14560 Oki OL6e 6ppm £195
10037 Oki OL6ex 6ppm £239
10038 Oki OL810ex (600dpi) 8ppm £399

PANASONIC - Covered by 1 year on-site warranty

14040 Panasonic KXP6300 6ppm £172
14407 Panasonic KXP7200 20ppm £1,175
19677 Panasonic KXP 6500 6ppm £234

QMS - Covered by 1 year warranty

18506 QMS 2060EX A4/A3 (48Mb) 20ppm £3,599
18500 QMS 2060GX A4/A3 (16Mb) 20ppm £2,249
18482 QMS 2060BX A4/A3 (8Mb) 20ppm £2,244
18480 QMS Oesklaser 600 6ppm 1 year RTB £159
16587 QMS Magicolor CX 8Mb Colour 2ppm £2,699
18501 QMS Magicolor CX EX Ethernet Printer ...£3,499
19679 QMS Office Laser 6P CF £539
19681 QMS Oesk Laser 2000 20ppm £899
19682 QMS Oesk Laser 1400P £655

SHARP - Covered by 1 year warranty

16612 Sharp JX9680 12PPM £580
19690 Sharp JX-9685 ....£799
19691 Sharp JX-9865N £899

XEROX

19641 Xerox OocuPrint C55 Colour Laser
600 x 600 dpi £2,439
19642 Xerox OocuPrint C55MP Colour Laser
600 x 600 dip £3,139
19643 Xerox OocuPrint C55 MPV Colour Laser
600 x 600 dpi £3,999
19644 Xerox OocuPrint 4508 8ppm Laser £394
19645 Xerox OocuPrint 4512 12ppm Laser £709
19646 Xerox DocuPrint 4512N 12ppm Laser
(Network Ready) £791
19647 Xerox OocuPrint 4517 17ppm Laser £712
19648 Xerox OocuPrint N24 24ppm Laser £1,565

LASER RAM UPGRADES

12480 1Mb Oki OL400e £89
12482 1Mb Panasonic KXP4400 - PEM3 ....£45
13783 1Mb Panasonic KXP4410/4430 (Add On
Chip to Ram Card - 13777) - P445 ....£99
13777 1Mb Panasonic KXP4410/4430
(Ram Card with 1Mb) - P444 ....£99
16717 2Mb Oki OL400e £118
12481 2Mb Panasonic KXP4400/5400 ....£89
14089 2Mb Panasonic KXP4410/4430 ....£99
12470 4Mb HP LaserJet 4/4M/4Si/4SiMX £35
15471 4Mb HP LaserJet 4P/4MP/5/5M/5MP/
6P/6MP £35
13809 4Mb HP LaserJet 5L/6L £39
16716 4Mb Panasonic KXP4400/5400 - PEM2 ....£139
16432 8Mb HP LaserJet 4P/4MP/4+/4M+/5P/5MP/
6P/6MP/5/5M/5N £45

MEMORY

10607 1M x 9, 30pin 3chip £5
10609 4M x 9, 30pin 3chip £8
13316 1M x 32, 4Mb 72pin £9
10620 2M x 32, 8Mb 72pin £10
10622 4M x 32, 16Mb 72pin £22
13604 8M x 32, 32Mb 72pin £44
10614 1M x 36, 4Mb 72pin £11
10617 2M x 36, 8Mb 72pin £18
10613 4M x 36, 16Mb 72pin £26
13621 8M x 36, 32Mb 72pin £52
10625 1M x 32, 4Mb EDO £6
10626 2M x 32, 8Mb EOO £9
10627 4M x 32, 16Mb EOO £19
10644 8M x 32, 32Mb EOO £39
18270 16M x 32, 64Mb EDO £175

DIMMS

15909 8Mb 168 Pin (1 x 64) 3.3v £22
15911 16Mb 168 Pin (2 x 64) 3.3v £22
15912 32Mb 168 Pin (4 x 64) 3.3v £44
17632 64Mb 168 Pin (8 x 64) 3.3v £119
15908 8Mb 168 Pin (1 x 64) 5v £22
15950 16Mb 168 Pin (2 x 64) 5v £29
15907 32Mb 168 Pin (4 x 64) 5v £44
18956 64Mb 168 Pin (8 x 64) 5v £115
18271 8Mb 168 Pin (1 x 64) SORAM 3.3v £35
18272 16Mb 168 Pin (2 x 64) SORAM 3.3v £22
18273 32Mb 168 Pin (4 x 64) SORAM 3.3v £42
17632 64Mb 168Pin (8 x 64) SORAM 3.3v £96
19086 128Mb 168Pin (16 x 64) SDRAM 3.3v £199

MICE

EXCEL

10126 Excel III 3 Button Serial Mouse £6

GENIUS

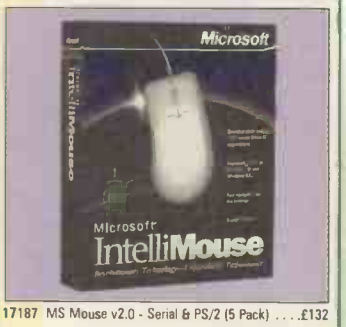
10163 EasyMouse 2B Serial £5
10215 EasyScroll 3B Serial £19
10139 HiMouse 2B Serial £17
10161 Mouse 3 + ...£10
16110 Mouse Oear Serial or PS2 ....£9
10124 MouseOne 2B - PS/2 ....£9
16111 MyMouse Colour 3 Button Serial
(Specify Colour) £11
17475 Net Mouse - with Scroll Button £15

LOGITECH

18627 MouseMan £24
10210 MouseMan - Bus £35
18628 MouseMan Plus 3B - Serial & PS/2 ....£25
15699 MouseMan Cordless Pro - Serial & PS/2 ....£35
18926 MouseMan Notebook £28
10131 Pilot Mouse - Serial or PS/2 ....£15
18629 Pilot Mouse Plus - Serial or PS/2 ....£16

MICROSOFT

10154 MS Home Mouse £15
15800 MS Intellimouse Serial & PS/2 ....£35
17188 MS Intellimouse (5 Pack) £135
10153 MS Mouse v2.0 - Serial & PS/2 ....£26



17187 MS Mouse v2.0 - Serial & PS/2 (5 Pack) £132

MODEM ADAPTER KITS

15868 Avro Pacific International Kit £39
15871 Avro Pacific Six Piece Kit £25
15873 Avro Pacific Fax Friend Auto Switch £45
16757 Pace International Modem Adaptor Pack £25

MODEM CONNECTING CABLES

12360 25 Male - 25 Female 2m £7
13724 25 Male - 9 Female 2m £8

MONITORS

ARIES

3 Yr Warranty incl. 1st Year On-Site Swap Out

10073 14" EnergyPro LR 0.28mm SuperVGA £85
10075 15" EnergyPro LR 0.28mm 1280x1024 NI ...£117
18929 15" EnergyPro LR Trinitron NEW £179
10074 17" EnergyPro LR 0.28mm 1280x1024 NI ...£235
15857 17" 8000S EnergyPro + 0.26mm
1600x1200 NI £329
18930 17" 8500T EnergyPro Trinitron
1600x1200 NI £359
18844 21" 9000s EnergyPro 0.26+C417mm
1600x1200 NI £749

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BELINEA

3 Yr Warranty

19434 104010 14" 0.28mm Digital 1024 x 768 NI ..£99
19435 105035 15" 0.28mm Digital 1280 x 1024 NI ..£129
19733 105076 15" 0.27 1280 x 1024 & speakers ..£165
19734 105586 17" 0.27 1280 x 1024 & speakers ..£339
19735 107030 17" 0.27 1600 x 1200 and speakers ..£349
19736 105596 17" 0.26 1600 x 1200 and speakers ..£359
19436 107020 17" 0.28 mm 1280 x 1024 NI £259
19437 107050 17" 0.25mm TCO95 1600 x 1200 NI ..£369
19438 106090 19" 0.26mm TCO95 1600 x 1200 NI ..£499
19439 108095 21" 0.25mm TCO95 1600 x 1200 NI ..£749
19737 108010 21" 0.25 1600 x 1200 .....£929

CTX

3 Yr Warranty incl. 1st Year On-Site Swap Out

10082 1451ELR 14" Colour Monitor £109
15434 1569SE 15" Colour Monitor £169
15437 1569MS 15" MultiMedia Colour Monitor £179
18931 1569UA 15" Trinitron Colour Monitor £219
10090 1769SE 17" Colour Monitor £299
18683 1792SE 17" Colour Monitor £349
17704 1769MS 17" Multimedia Colour Monitor £349
17705 1785XE 17" Colour Monitor £369
15678 1785XA 17" Colour Monitor £429
18686 1792UA 17" Trinitron Colour Monitor £375
15436 2085XE 20" Colour Monitor £699
17706 2185XE 21" Colour Monitor £899

IIYAMA - covered by 3 yr warranty

13447 MF8515G 15" Colour Monitor £183
14435 MF8617T 17" Colour Monitor £369
16431 MF8617ES 17" Colour Monitor with Speakers £399
17445 MT9017T PRO 17" Colour Monitor £399
14436 MF9017E 17" Colour Monitor £439
19337 S901GT 19" Colour Monitor £575
17524 MF8721T 21" Colour Monitor £799
18579 MT9221T 21" Colour Monitor £826
17707 LP-1014P 13.8" LCD Colour Monitor £949
19016 LP-1014A 13.8" LCD Analouge monitor £949
19616 TXA-360IGT 14.1" TFT LCD £1,149

IIYAMA - extended warranty

14252 15" 3 year on-site maintenance £15
14253 17" 3 year on-site maintenance £39
14254 21" 3 year on-site maintenance £49

MITSUBISHI - covered by 3 yr warranty

16367 Diamondscan 15VX 15" 0.28dp Monitor £225
16371 Diamondpro 67TXV 17" Diamontron Monitor . £395
16368 Diamondscan 17HX 17" 0.26dp Monitor £355
14240 Diamondpro 87TXM 17" Diamontron Monitor . £435
16369 Diamondpro 91TXM 21" Diamontron Monitor . £995
18932 17" 3 Years On-Site Maintenance £45
18933 21" 3 Years On-Site Maintenance £50

NEC MULTISYNC - covered by 3yr warranty

19589 LCD 400V 14" Flat Panel £1,695
19588 LCD 400 14" Flat Panel £2,215
14535 A500 15" Color Monitor £178
14536 E500 15" Colour Monitor £213
13191 M500 15" Colour Monitor £254
14537 A700 17" Colour Monitor £323
14542 E700 17" CRT Colour Monitor £399
15154 M700 17" Colour Monitor £425
14327 P750 17" Colour Monitor £485
17721 E1100 21" Colour Monitor £824
17722 P1150 21" Colour Monitor £1,123
19587 LCD 2000 20" Flat Panel £5,100
15733 XM29 29" Multimedia Colour Monitor £1,789
15734 XM37 37" Multimedia Colour Monitor £4,741

NOKIA - covered by 2 years warranty

19592 300Xa 13.3" STFT .....Call
17708 449XA 15" Colour Monitor with Speakers ..£259
17576 447XI 17" Trinitron Colour Monitor £435
17709 447XAV 17" Monitor with Speakers, Sub Woofer & Mic £549
17710 447XAVC 17" Monitor with Speakers, Sub Woofer & Mic & Camera £999
15503 417TV 17" Colour Monitor with Speakers & Built In TV £535
19593 447ZA 17" FST Monitor With speakers, mic ..£375
19591 447X Pro 17" Trinitron TC095 PnP £435
19590 446X Pro 19" FST Monitor £585
17711 445XAV 21" Monitor with Speakers, Sub Woofer & Mic £995
17712 445XAVC 21" Monitor with Speakers, Sub Woofer & Mic & Camera £1,280

OPTI

19035 Opti Image 13.8" TFT Colour Monitor £1,555

PANASONIC - covered by 2 years warranty

16944 Panaview 530 9.4" TFT £1,599
16945 Panaview 550 10.4" TFT £1,799
15954 TXD1562FU 15" Multimedia £227
15952 TXD1563 15" Pro 4G £222
15951 TXD1565U 15" Panasync 4 .....£179
10095 TXD735 17" 5G £260
15872 TXD1734FU 17" Multimedia £378
15953 TXD1753 17" Pro 5G £419
19594 PanaFlat PF70 17" £488
19632 TXD 1734 5G £349
15360 TXD2162 21" Pro 7G £884

PHILIPS - covered by 3years warranty

16946 14" Mono 14M £69
16948 15" High Resolution Autoscan 105B £170
16949 17" Autoscan Colour Brilliance 107S £256
16950 17" Brilliance Colour 107B £296
18935 21" Colour 201B £779
18936 21" Brilliance Colour 201 .....£989
18937 21" Brilliance Colour 201CS £1,175

SAMSUNG - covered by 3 years warranty

19597 Syncmaster SM500b 15" Colour Monitor ...£175
19596 Syncmaster SM500S 15" Colour Monitor ...£179
18689 Syncmaster SM700S 17" Colour Monitor ...£329
19595 Syncmaster SM700P 17" Colour Monitor ...£435
10107 Syncmaster 17GLSI 17" Colour Monitor £455

SONY - covered by 1 year warranty

19464 CPD100ES 15" Colour Monitor £187
19465 CPD100GST 15" Colour Monitor £224
17492 CPD200EST 17" Colour Monitor £345
17739 GDM17SE2T5 17" Colour Monitor £486
14331 CPD300SFT5 20" Colour Monitor £769
17587 GDM20SE2T5 20" Colour Monitor £834
17589 GDMW900 24" Colour Monitor £1,839

TAXAN - covered by 3 years warranty

19014 EV430LR 14" Colour Monitor £113
19358 550TCO 15" Colour Monitor £179
19362 760TC095 17" Colour Monitor £339
19363 760TC095S 17" Colour Monitor £349
14202 740TCO 17" Colour Monitor £399
14203 740TC095-S 17" Multimedia Colour Monitor . £400
14368 750TC095-S 17" Colour Monitor £461
18371 2040 TC092 20" Colour Monitor £664
14437 2150TC095 21" Colour Monitor £899
18939 Crystalvision 600 TFT Colour Monitor with Speakers £899
18940 Crystalvision 620 TFT Colour Monitor with Speakers £1,099
18941 Crystalvision 650 TFT Colour Monitor with Speakers £1,519

VIEWSONIC - covered by 3 years warranty

10113 14" 14E641 1024 x 768 .....£118
10114 15" 15E655 1024 x 768 .....£169
10116 15" 15GS 1280 x 1024 .....£185
10117 15" 15GA 1280 X 1024 with Speakers £219
10118 17" 17EA 1280 x 1024 0.27 with Speakers ..£395
10119 17" 17GS 1280 x 1024 0.27 .....£350
10120 17" 17GA 1280 x 1024 0.27 with Speakers ..£389
10121 17" 17PS Professional 1600 x 1200 0.25 ...£449
16958 17" PT770 Pro. 1600 x 1280 0.25 .....£459
17743 17" PT775 Pro. 1600x1200 @ 77Hz 0.25 ...£489
10084 20" G800 1600 x 1200 0.28 .....£699
16959 21" P810 Professional 1600 x 1200 0.25 ....£869
16960 21" P815 Professional 1800 x 1440 0.25 ....£949

MOTHERBOARDS

ABIT

18274 Pentiumn TX P75- MMX 512k cache £59
18275 Pentium II Motherboard £86
17750 Pentium Pro Motherboard £99

ASUS

17909 Pentium TX Chipset 512K Cache Motherboard £75
18677 Pentium TX Chipset 512K Cache Motherboard ATX format £79
17940 KN97X Pentium II Motherboard £105
18310 Intel 440 LX chip set Pentium II £139
18992 Intel 440LX chip set Dual PII Socket £245

GIGABYTE

17913 TX Chipset 512K Cache Motherboard £59
18995 Pentiumn II LX ATX £85
18993 Dual Pentiumn II ATX £175

TYAN

17732 TX Pentium P75-MMX K6 5xPCI 4xISA (ATX Format) £85
17731 TX Pentium P75-MMX K6 5xPCI 4xISA (AT Format) £79

OTHERS

15916 Simtech Pentium VX P75-MMX 512K £79
15935 TMC Pentium P75-MMX 512K, Triton, PCI & I/O£89

M/BOARDS, CPU & MEMORY

18958 Pentium M/Board Cyrix M2 200 + FAN + 16Mb EDO £155
18650 Pentium M/Board (512K Cache) + P200 MMX+ FAN + 16Mb EDO £165
18681 Pentium M/Board (512K Cache) + P200 MMX+ FAN + 32Mb EDO £185

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17644 KTX Work & Play 12X Multimedia Kit £99
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16806 Diamond Ultrakit 12000 12x Multimedia Kit .£195

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16617 Grab-it I Video Capture £99
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15866 TV Tuner / Video 4Mb Capture Card £95

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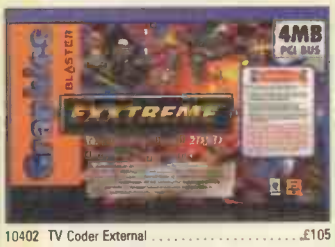
16090 3D Blaster 4Mb PCI £87



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17687 miroMedia PCTV £49
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16984 Video Director Studio 200 .....£189

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10372 Captivator Pro ISA £145
17688 Captivator PCI £49
18256 Videologic Captivator PCI/VC £145

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14357 Tecra 740CDT £2,579
14387 Satellite 220CS £855
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14395 Satellite Pro 440CDT £1,630
14396 Satellite Pro 460CDT £1,789
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15760 Amacom EZCD 4x with Sound £155
15763 Amacom EZCD 8x £135
15762 Amacom EZCD 8x Sound £175
14509 Amacom EZCD x16 ..... £149
14510 Amacom EZCD x16 with Sound £185
15555 Backpack 8S £179
15556 Backpack 8S - with Sound £183
16831 CD Shuttle P - 8X CD Rom £229

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14509 Amacom EZCD x16 - Sixteen Speed £159
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16936 Panasonic Travelspin KXL-783A - Eight Speed £244
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11649 HP DeskJet 600 Colour Kit (C4534A) £28
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14267 HP Infra Red Adaptor for 310/320/340 ..... £29

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12356 1.8m 25 Male 'D' to 25 Male 'D' £4
12340 1.8m Centronics Male to Centronics Male £7

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12343 5m 18wire PC Parallel £8
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12365 5m 25 Male 'D' to 25 Female 'D' £8
12370 5m 25 Male 'D' to 25 Male 'D' £8
12375 5m Centronics Male to Centronics Male £8

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12384 10m 25wire PC Parallel Enhanced EPP £15
12368 10m 25 Male 'D' to 25 Female 'D' £12
12372 10m 25 Male 'D' to 25 Male 'D' £12
12378 10m Centronics Male to Centronics Male £11

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11321 Citizen 120D+ £6
17495 Citizen ProDot 450 L Black Ribbon £7
17497 Citizen ProDot 810 X Black Ribbon £22
17498 Citizen ProDot 810 X Colour Ribbon £40
11338 Citizen Swift 24/200/240/ABC Black Ribbon £5
13653 Citizen Swift 24/200/240/ABC Colour Ribbon £11
11378 Citizen Swift 24X Black Ribbon £7
11377 Citizen Swift 24X Colour Ribbon £13
18456 Epson DFX5000+/8000 Black Ribbon £13
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11408 Epson DLQ3000 Black Ribbon £15
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11322 Epson EX800/1000 Black Ribbon £5
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18454 Epson FX/LQ2170/LQ2070 Black Ribbon £14
13733 Epson LQ100 Black Ribbon £5
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11544 Epson LQ300 Colour Ribbon £16
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11323 Epson LQ1000/1050/1070/1170 Black Ribbon £12
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11331 Star LC10/LC20/LC100 Colour Ribbon £6
11349 Star LC200 Black Ribbon £5
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12404 2in/1out OK £29
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12462 4in/1out OK £45
12454 4in/2out OK £69
12424 4in/2out 256K £109
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AUTO SERIAL Printer Sharer Buffers

12406 2in/1out OK £27
12444 2in/2out 256K £124
12463 4in/1out OK £44
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13818 256K Serial Plotter Buffer £99

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12451 IEEE488 to Centronics Converter £19
12452 Parallel Line Extender £29
12448 Serial to Parallel Converter £49
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16336 Pentium P200 MMX NEW £75
17985 Pentium P233 MMX NEW £99
17906 Pentium II 233MHZ £159
17907 Pentium II 266MHZ £199
18572 Pentium II 300MHZ £299
18640 Pentium II 333MHZ £495
19398 Pentium II 350MHZ £599
19399 Pentium II 400MHZ £699

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18239 Cyrix M2 - PR200 ..... £56
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13565 SGS 486DX2-66 ..... £19
10591 SGS 486DX2-80 ..... £19
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10661 486 to Pentium 83 ..... £115
16934 Pentium P100,133 to P166 with MMX £95
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10588 486DX Fan and Heat Sink £4
18051 AMD K6 Fan and Heat Sink £8
17635 Cyrix 6x86 Fan and Heat Sink £8
10596 Pentium Fan and Heat Sink £10
15899 Pentium Pro Fan and Heat Sink £10
19394 Pentium II Fan and Heatsink £15

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CHUNTEX

17945 CTX EzPro 500 Projector £2,235

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17364 EMP-5100 Multimedia Projector £3,969
19440 EMP-7100 Multimedia Projector £6,650

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19441 VLP-5500 Projector £4,500
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For illustrative purposes only

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16794 CR2800 CD-Recorder 8x Read, 2x Write E-IDE £189

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17893 680.RW External Parallel 6x Read, 2x Write £319
17894 680.RW External SCSI Incl. Card 6x R, 2x W £299
17895 680.RW Internal SCSI Incl. Card 6x R, 2x W £264
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10776 CDD3610 Internal EIDE 6x 2x 2x £249

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17700 CDR480I-S1 Internal 8xR 4xW £299
17701 CDR480I-S1-PC Int 4x W, 8x R Adaptec I/F £355
17702 CDR480E-S1 - External 4X Write 8X Read £405
17703 CDR480E-S1-PC - Ext 4x W/8x R inc Adaptec I/F £469

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19420 PX-R412CI 12xR 4xW Internal Kit £349
19419 PX-R412CE 12xR 4xW External Kit £389

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17808 MP6200 CD-RW/CD-R Int 6x Read 2x W BARE £275
17844 MP6200 CD-RW/CD-R Int 6x Read 2x W KIT £325
17845 MP6200 CD-RW/CD-R External 6x Read 2x Write £385

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17846 CD-Rom Writer Int (CDU-928E) 8xR, 2xW EIDE £221
17847 CD-Rom SCSI Writer Int (CDU-926S) Bare +SW £289
17848 CD-Rom SCSI Writer Kit Int (CDU-926S) Kit £345

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16821 Teac CD-R504S 4xWrite CD-Writer £345

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19298 CDRW2260 Plus 6x 2x 2x Internal IDE £243
19299 CDRW2260EL Plus 6x 2x 2x Internal IDE Entry Level £299
19300 CDRW2260 Plus 6x 2x 2x External IDE £299
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19296 CDR4120EL Pro 4x 12x Internal Entry Level £245
19295 CDR4120 Pro 4x 12x Internal Incl. SCSI Card £275
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13657 CDR400C 4X Int FULL KIT Caddy Loading £299
17809 CDR40DTX 4X External Tray Loading + Software £335
18928 CRW4001T 4x 2X 6x Internal IDE Tray load + software £399
18634 CDRW4001 4x 6x Internal EIDE Kit £309
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18636 EZFlyer 230Mb Internal IDE £91
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19232 SparQ 1.0Gb Internal EIDE £114
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11974 135Mb Cartridge £13
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17849 PD Drive E IDE 8x / Optical (LF-1196) £195
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11918 External SCSI Hard Drive case £99
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17654 SCANIT PRO 4830P £65
18141 SCANIT PRO 9630P £99
18380 SCANIT PRO A3P £335

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16508 SnapScan Colour 310 ..... £129
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16511 Studio Star Colour £519
19731 SnapScan 300 ..... £179
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14275 CanoScan 300 ..... £129
14276 CanoScan 300 + SCSI £259
14278 CanoScan 600 ..... £454
14279 CanoScan 600 + SCSI £515
18619 Film Adaptor fro CanoScan 600 ..... £355

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18661 GT-5500 SCSI £187
10218 GTX8500 Flatbed Scanner - Parallel £369
10219 GTX8500 Flatbed Scanner - SCSI AT I/F £392
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18238 ScanJet 4C Graphics Pro £445
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15693 ScanMan Colour 2000 ..... £75
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19424 Phantom 330 Parellel Scanner £85
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17997 Powerlook Colour Studio II Scanner £749

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17226 2940AU PCI Ultra SCSI Bare £125

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17232 BT 930C PCI ULTRA SCSI (Card Only) £95
17233 KT 950C PCI ULTRA WIDE SCSI Adaptor Kit £154
17234 BT 948 PCI SCSI Adaptor £135
17235 KT 445C VLB 32 Bit SCSI Adaptor £95
17236 KT 545C ISA 16 Bit SCSI Adaptor £129

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17735 SYM8150S SCSI Card £75
17736 SYM8251S Wide SCSI Card £105
17737 SYM8750SP Ultra SCSI Card £95
17738 SYM8751SP Ultra Wide SCSI Card £95

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14480 Promise SCSI Plus 7 x SCSI Devices PCI £69
14481 Promise SCSI Max 15 x SCSI Devices PCI Fast/Wide £95
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THRITY TWO SPEED

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19093 Toshiba XM6201B 32x SCSI CD ROM Drive £69

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11922 DisKey 1 - 3.5" Disk Drive Lock £25
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SOUND/MIDI DEVICES

ARIES

13920 16 Bit 3D PnP Sound Card (SB Compatible) £29

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10446 Sound Galaxy Waverider Pro 32 3D (I) PnP £34

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10675 Sound Blaster 16 Value PnP £32
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17213 Trackman Marble £42
18630 TrackMan £69
10172 TrackMan Portable Serial & PS/2 ..... £32
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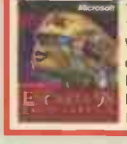

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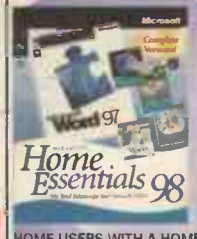

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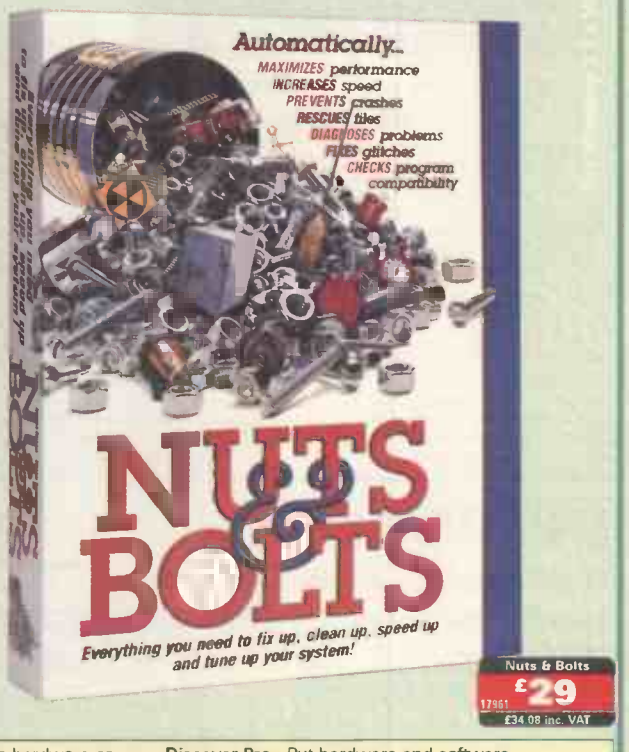

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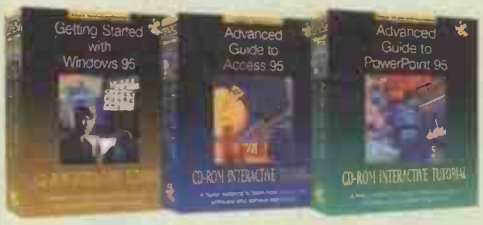

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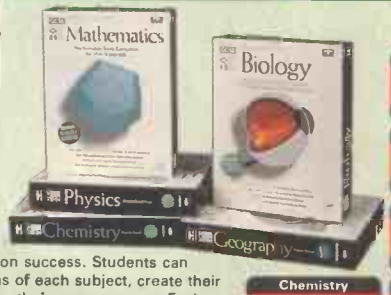

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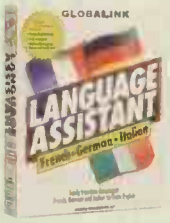

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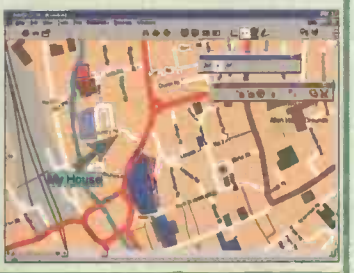

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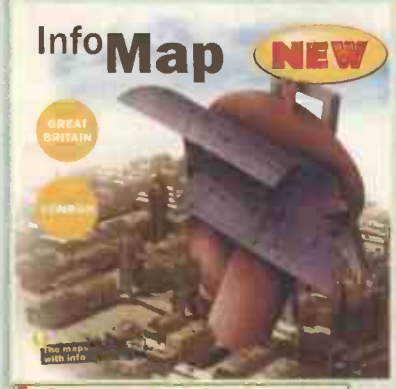

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- distance
- area
- radius
- bearing

Move around
- Zoom in and out
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- Centralise a point on the screen
- Go to co-ordinates

Legend
Floating menu for ease of operation

Search
- circular
- annular
- nearest
- polygonal
- any word or pattern

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- whole window
- section of a window

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Underground journey planner
calculate journey with fewest interchanges from several departure and destination points, print an itinerary, display route on the map and print it

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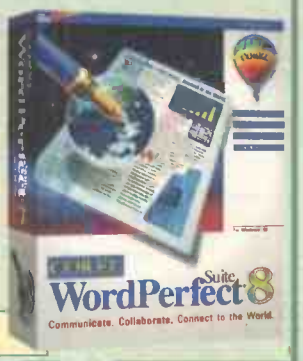
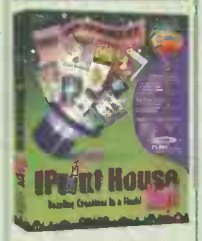


*This is a Competitive Upgrade Price - available if you have a competitive application to ANY of the 10 products in Corel WordPerfect Suite - we don't need proof... we trust our customers!

Corel Print House Magic



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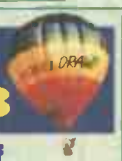
Corel Print House Magic - the all-in-one graphics package that lets you express yourself!

Print House Magic — 18565 — £29 — £34.08 inc. VAT

Corel DRAW 8



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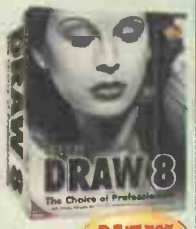
CorelDRAW 8 is a comprehensive 32-bit graphics suite designed for Windows® 95 and Windows NT® 4.0.
Building on the strength of its award-winning predecessors, CorelDRAW 8 is feature rich and streamlined for optimum performance.



Applications
- CorelDRAW™ 8
- Corel PHOTO-PAINT™ 8
- CorelDREAM 3D 8

Utilities
- Corel OCR-TRACE™ 8
- Corel TEXTURE™
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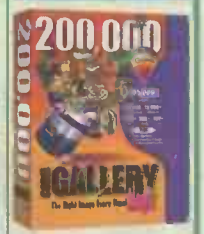

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Corel WordPerfect 6.2 for DOS	18192	£25.00	£29.38
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Design CAD
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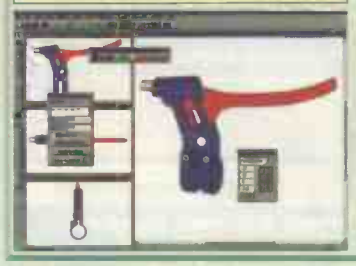

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Davi-Music 98: A must for every music fan from pop to classic!

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- Import information from the general database into your own personal music collection.
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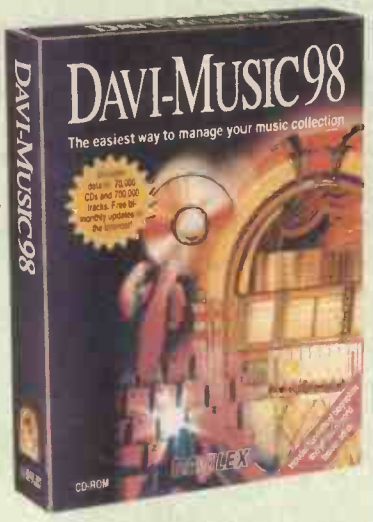

The ideal way to manage your music collection.

Includes database of 100,000 of world's most popular album titles and a Pop Encyclopedia with information on famous artists and bands.

Windows 3.1x, 95 & NT

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- Intelligent level design and an intuitive control system
- Over 200 game arenas utilising more than 500 game play elements
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- Multi-channel surround sound for incredible 3D effects

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The F-15 Eagle is an all-weather, extremely manoeuvrable, tactical fighter designed to gain and maintain air superiority. Whether your mission is intercepting bandits or stamping a tank convoy, F-15 pack enough punch to handle every situation.

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- Enhanced fantasy battle engine with superior A.I. and tactics
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- True 3D targeting/projectile system
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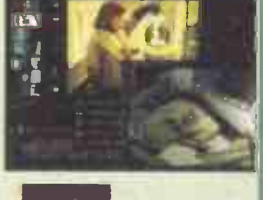

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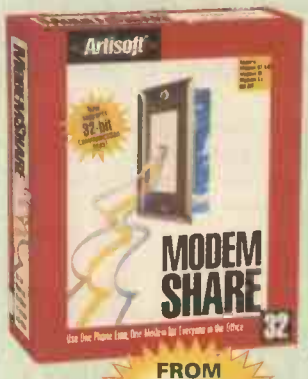

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ModemShare 32 enables business with Windows NT 4.0 and Windows 95 PCs to share phone lines and modems across a local area network, eliminating the need to buy a dedicated phone line and modem for each user. What's more, your new NT and Win 95 PCs can even share a modem and phone line with Windows 3.x and DOS PCs! (Windows 3x and DOS PCs require installation of ModemShare 7.0, included with ModemShare 32 at no extra cost).

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- Improves Productivity
- Easy To Use
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- Makes Communications Management Easy

Product	Code	Price	Inc. VAT
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4 Modem, unlimited users	19558	£260.00	£305.50
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Now everyone on your network can access the internet

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- Proven Performance - i.Share has been successfully tested with many of today's most popular Winsock internet applications.

Product	Code	Price	Inc. VAT
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i.share 2.5 32 Concurrent Users	18586	£139.00	£163.33
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E-mail that makes your business look bigger, run smarter and faster!

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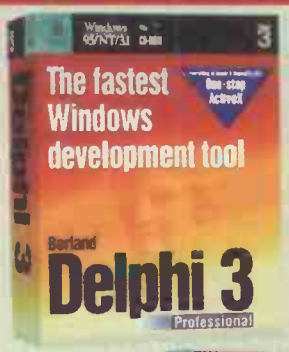

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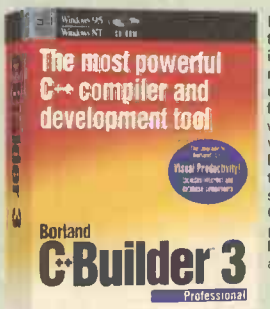

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Product	Code No.	Price	Inc. VAT
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C++ Builder 3 Prof. Upgr. CD	19374	£219.00	£257.33
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Product	Code No.	Price	Inc. VAT
J Builder Pro	18182	£349.00	£410.08
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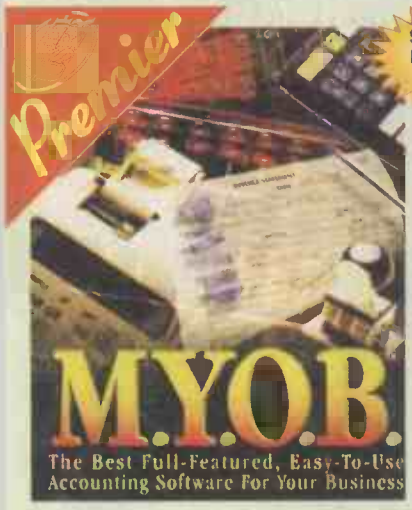

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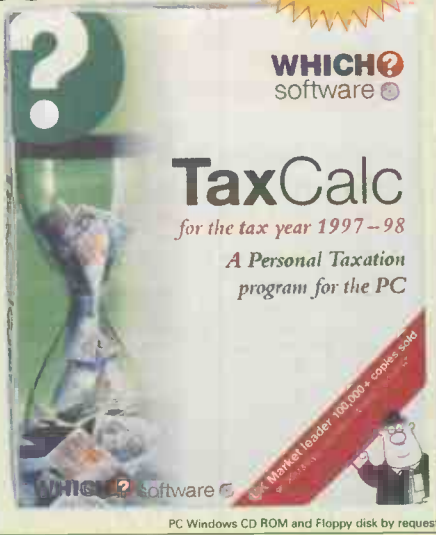

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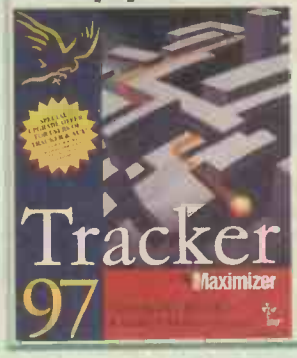

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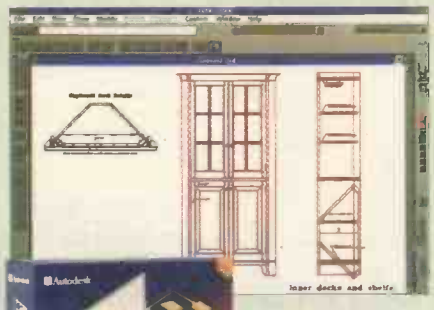

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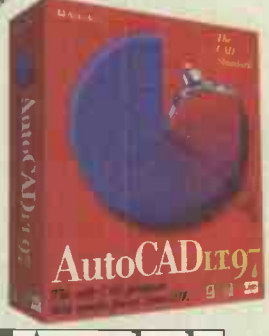

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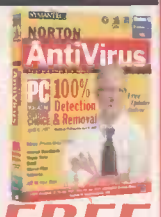

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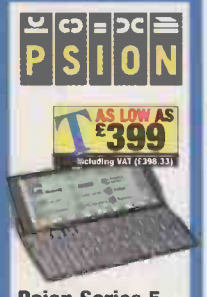

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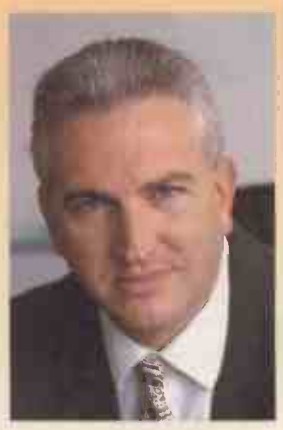

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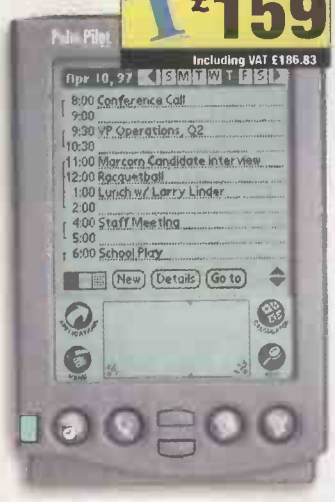

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- ✓ 3-Year Intl Warranty

CP6316	Satellite Pro 460CDX	£1259	(£1479.33)
CP4996	Satellite Pro 460CDT	£1679	(£1972.83)
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CP6705	Portege 300CT	£1679	(£1972.83)

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CP6692	Libretto 70CT	£1089	(£1279.58)
CP6904	Libretto 100CT	£Call	(£Call)

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Code•	CPU	RAM	HDD/CD	LAN	OS	Price Inc VAT
CP7212	PII 233	16MB	2.1GB	No	W95	£Please Call
CP7211 / CP7210	PII 233	32MB	2.1GB	No	W95/NT	£Please Call
CP7209	PII 233	16MB	2.1GB	Yes	W95	£Please Call
CP7213 / CP7214	PII 233	32MB	2.1GB	Yes	W95/NT	£Please Call
CP7216 / CP7215	PII 266	32MB	2.1GB	Yes	W95/NT	£Please Call
CP7217 / CP7218	PII 266	32MB	4.3GB/24x	Yes	W95/NT	£Please Call

• The first code represents the W95 model and the second code represents the NT model

Equium 7000D

Code•	CPU	RAM	HDD/CD	LAN	OS	
CP7219 / CP7220	PII 233	32MB	2.1GB	No	W95/NT	£Please Call
CP7225 / CP7226	PII 233	32MB	4.3GB/24x	No	W95/NT	£Please Call
CP7223 / CP7224	PII 233	32MB	2.1GB	Yes	W95/NT	£Please Call
CP7227 / CP7228	PII 233	32MB	4.3GB/24x	Yes	W95/NT	£Please Call
CP7229 / CP7230	PII 266	32MB	4.3GB/24x	Yes	W95/NT	£Please Call
CP7231 / CP7232	PII 266	64MB	4.3GB/24x	Yes	W95/NT	£Please Call
CP7233 / CP7234	PII 300	32MB	4.3GB/24x	Yes	W95/NT	£Please Call
CP7235 / CP7236	PII 300	64MB	6.3GB/24x	Yes	W95/NT	£Please Call

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Multimedia

Power

Communications

Memory

Storage

Desk Based Connectivity

Memory

Code	Description	Models Supported	Price	Inc. VAT
MY6255	16MB Memory Expansion	230,300,310,460,480,540, 750	£95.00	(£111.63)
MY7164	16MB Memory Expansion	70	£95.00	(£111.63)
MY7152	16MB Memory Expansion	300	£95.00	(£111.63)
224378	16MB Memory Expansion	740	£95.00	(£111.63)
MY6387	32MB Memory Expansion	220,460,480	£220.00	(£258.50)
MY7153	32MB Memory Expansion	300	£220.00	(£258.50)
MY6251	32MB Memory Expansion	300,310,540,740,750	£220.00	(£258.50)

Power

Code	Description	Models Supported	Price	Inc. VAT
201020	Battery Pack (Li-Ion)	230,300,310,460.480	£195.00	(£229.13)
AC24121	Battery Pack (Li-Ion)	70	£115.00	(£135.13)
AC22236	Battery Pack (Li-Ion)	540	£195.00	(£229.13)
AC22740	Battery Pack (Li-Ion)	300	£115.00	(£135.13)
AC23693	Battery Pack (Li-Ion)	750	£195.00	(£229.13)
224382	Battery Charger	230,300,310,460,480	£195.00	(£229.13)
AC22231	Battery Charger	50,70	£195.00	(£229.13)
AC22232	Battery Charger	300	£195.00	(£229.13)
EX7992	Battery Charger	540	£195.00	(£229.13)
AC23696	Battery Charger	750	£195.00	(£229.13)

Deskbased Connectivity

Code	Description	Models Supported	Price	Inc. VAT
AC22273	Mini CardStation	50,70	£175.00	(£205.63)
AC22237	CardStation III	230,460,480	£275.00	(£323.13)
AC20054	CardStation II	540,740	£325.00	(£381.88)
AC23700	CardStation II	750	£325.00	(£381.88)
EURAC3664	DeskStation V Plus	540,740,750	£660.00	(£775.50)

Multimedia

Code	Description	Models Supported	Price	Inc. VAT
AC23697	DVD-ROM Drive	750	£295.00	(£346.63)
DR7383	20 Speed CD-ROM	750	£185.00	(£217.38)
DR6613	10 Speed CD-ROM	230	£155.00	(£182.13)
AC22282	CD Docker	300	£295.00	(£346.63)

Storage

Code	Description	Models Supported	Price	Inc. VAT
DR6616	2.02GB HDD Expansion	230,460,480,540.	£695.00	(£816.63)
DR6143	3.8GB HDD Expansion	740,750	£695.00	(£816.63)
DR7404	3.8GB HDD Expansion	740,750	£995.00	(£1169.13)
224397	Additional External FDD	230,460,480,300,540,740,750	£150.00	(£176.25)
AC23437	External FDD	50,70	£150.00	(£176.25)
AC22301	FDD Cable & Enclosure	230	£35.00	(£41.13)

Communications

Code	Description	Models Supported	Price	Inc. VAT
207666	Advanced Global V.34 Data/Fax	All models	£185.00	(£217.38)
DMD2851	33.6Kbps DAA Module	230,460,480	£145.00	(£170.38)
DMD3391	33.6Kbps DAA Module	750 CDT	£145.00	(£170.38)
DMD3432	33.6Kbps DAA Module	750DVD	£145.00	(£170.38)

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ThinkPad 310... The least expensive way to think

- ✓ Intel Pentium 166MHz processor with MMX Technology
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The affordable solution for mobile life-style. Designed to appeal to those who purchase the most processor power they can afford and want an upgrade path that will protect their investment. The ThinkPad combines portability performance and exciting multimedia features with the ability to upgrade as you require.

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CODE	MODEL	CPU	RAM/MAX	HDD/CD	SCREEN	PRICE	Incl. VAT
CP7051	ThinkPad 310E Model A00	Pentium 166MHz	16MB/64MB	2.1GB	12.1" DSTN	£1025	(£1204.38)
CP7052	ThinkPad 310ED Model B00	Pentium 166MHz	32MB/64MB	2.1GB/20X	12.1" DSTN	£1205	(£1415.88)
CP7053	ThinkPad 310E Model C00	Pentium 166MHz	16MB/64MB	2.1GB	12.1" TFT	£1425	(£1674.38)

The All-in-One ThinkPad 380 Series from IBM

The new ThinkPad 380 from IBM can be described as integrated convenience with power and usability. It has an excellent combination of performance and price, plus the all-in-one convenience of integrated floppy, CD and hard disk drives. You will no longer need to swap your floppy drive with the CD drive because IBM's new "Three-Spindle" Integration enables you to have all three devices in the notebook at the same time.

Lease for as Low as £Call Per Month Including VAT (£Call)

- ✓ Intel Pentium 233MHz or 266MHz with MMX Technology
- ✓ 32MB Ram (expandable to 96MB)
- ✓ 3.2GB, 4.0GB or 5.1GB Hard Drives
- ✓ 12.1" FRSTN or TFT Colour display
- ✓ 10X to 24X CD-ROM

Sku	Model	CPU	Ram/Max	HDD/CD	Screen	Price	Inc. VAT
CP7047	ThinkPad 380X Model 8A0	Pentium 233MHz MMX	32MB/96MB	3.2GB/24XCD	12.1" FRSTN	£Call	(£Call)
CP7048	ThinkPad 380X Model 9A0	Pentium 233MHz MMX	32MB/96MB	4.0GB/24XCD	12.1" TFT	£Call	(£Call)
CP7049	ThinkPad 380X Model AA0	Pentium 266MHz MMX	32MB/96MB	5.1GB/24XCD	12.1" TFT	£Call	(£Call)

560: Ultraportability Without Compromise

The IBM ThinkPad 560E is the award winning ultraportable that doesn't sacrifice function for size. With the fast 200MHz and 233MHz Intel Pentium processor, a choice of large displays, roomy hard disk drives combined with a full size keyboard and integrated palm rest for increased working comfort. All of this weighs in at just over 1.8Kg and fits in any case just 31mm thin, making it both easy to use and comfortable to carry anywhere, without leaving performance behind.

- ✓ Intel Pentium 200Mhz or 233Mhz with MMX Technology
- ✓ 32MB RAM (expandable to 96MB)
- ✓ 2.1GB or 4.0GB Hard Drive
- ✓ 12.1" FRSTN or TFT Colour Display

Lease for as Low as £63.39 Per Month Including VAT (£74.84)

Sku	Model	CPU	Ram/Max	HDD/CD	Screen	Price	Inc. VAT
CP7050	ThinkPad 560X Model 600	Pentium 200MHz MMX	32MB/96MB	2.1GB	11.3" FRSTN	£1879	(£2207.83)
CP6469	ThinkPad 560X Model 700	Pentium 233MHz MMX	32MB/96MB	4.0GB	12.1" TFT	£2529	(£2971.58)

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CODE	MODEL	Price	Inc VAT
CP6268	Fujitsu Multimedia PC	£599.00	(£703.83)

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Code	Description	CPU	RAM/MAX	HDD/CD	Display	Price	Inc Vat
CP5552	Armada 1530D	Pentium 133MHz MMX	16MB/80MB	1.4GB/10X	12.1" DSTN	£1075	(£1263.13)
CP6772	Armada 1560	Pentium 166MHz MMX	16MB/80MB	2.1GB	12.1" DSTN	£1199	(£1408.83)
CP6773	Armada 1560D	Pentium 166MHz MMX	16MB/80MB	3.2GB	12.1" DSTN	£1249	(£1467.58)
CP4830	Armada 1550T	Pentium 133MHz	16MB/80MB	1.4GB	12.1" TFT	£1295	(£1521.63)
CP6006	Armada 1590DT	Pentium 166MHz MMX	16MB/80MB	2.1GB/20X	12.1" TFT	£1515	(£1780.13)

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MY6590	2MB X 64	16MB	£32.95	£38.72
MY6589	4MB X 64	32MB	£44.95	£52.82
MY7504	8MB X 64	64MB	£139.00	£163.33
MY8004	16MB X 64	128MB	£299.00	£351.33

EDO SIMMS				
EURMY1336	1MB X 32-60NS (4MB EDO)	4MB	£8.95	£10.52
EURMY1332	2MB X 32-60NS (8MB EDO)	8MB	£12.95	£15.22
EURMY1555	4MB X 32-60NS (16MB EDO)	16MB	£24.95	£29.32
EURMY1643	8MB X 32-60NS (32MB EDO)	32MB	£49.95	£58.69
MY6995	16MB X 32-60NS (64MB EDO)	64MB	£159.00	£186.83

72PIN 32B SIMMS				
EURMY1244	1MB X 32-60NS 72PIN	4MB	£9.95	£11.69
EURMY1245	1MB X 32-70NS 72PIN	4MB	£9.95	£11.69
EURMY1250	2MB X 32-60NS 72PIN	8MB	£12.95	£15.22
EURMY1249	2MB X 32-70NS 72PIN	8MB	£12.95	£15.22
EURMY1253	4MB X 32-60NS 72PIN	16MB	£25.95	£30.49
EURMY1252	4MB X 32-70NS 72PIN	16MB	£25.95	£30.49
EURMY1293	8MB X 32-60NS 72PIN	32MB	£49.95	£58.69
EURMY1254	8MB X 32-70NS 72PIN	32MB	£49.95	£58.69

72PIN 36B SIMMS				
EURMY0416	1MB X 36-60NS 72PIN	4MB	£16.95	£19.92
EURMY1235	1MB X 36-70NS 72PIN	4MB	£16.95	£19.92
EURMY1561	2MB X 36-60NS 72PIN	8MB	£26.95	£31.67
EURMY1237	2MB X 36-70NS 72PIN	8MB	£26.95	£31.67
EURMY1238	4MB X 36-60NS 72PIN	16MB	£39.95	£46.94
EURMY1239	4MB X 36-70NS 72PIN	16MB	£39.95	£46.94
EURMY1241	8MB X 36-70NS 72PIN	32MB	£69.95	£82.19
MY8001	16MB X 36-60NS 72PIN	64MB	£199.00	£233.83

30 PIN SIMMS				
EURMY1218	1MB X 9-60NS (9 CHIP)	1MB	£12.95	£15.22
EURMY1219	1MB X 9-60NS (3 CHIP)	1MB	£7.95	£9.34
EURMY1221	1MB X 9-70NS (9 CHIP)	1MB	£8.95	£10.52
EURMY1222	1MB X 9-70NS (3 CHIP)	1MB	£5.95	£6.99
EURMY1229	4MB X 9-60NS	4MB	£18.95	£22.27
EURMY0405	4MB X 9-70NS (9CHIP)	4MB	£18.95	£22.27
EURMY1230	4MB X 9-70NS (3 CHIP)	4MB	£15.95	£18.74

NOTEBOOKS

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ASCENTIA 800N,810N	4MB	EURMY1333	£39.95	£46.94
	8MB	EURMY1334	£69.95	£82.19
	16MB	EURMY1339	£89.95	£105.69
ASCENTIA 900N,910N	4MB	EURMY1501	£34.95	£41.07
	8MB	EURMY1502	£49.95	£58.69
	16MB	EURMY1503	£79.95	£93.94
ASCENTIA 950N	8MB	EURMY1631	£59.95	£70.44
	16MB	EURMY1630	£59.95	£70.44
ASCENTIA P SERIES	8MB	EURMY1674	£44.95	£52.82
	16MB	EURMY1675	£59.95	£70.44
	32MB	EURMY1672	£119.00	£139.83
ASCENTIA J SERIES	8MB	EURMY1677	£49.95	£58.69
	16MB	EURMY1676	£59.95	£70.44
	32MB	EURMY1673	£119.00	£139.83
ASCENTIA A & M Series	8MB	MY7018	£39.95	£46.94
	16MB	MY7075	£79.95	£93.94
	32MB	MY7509	£129.00	£151.58
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THINKPAD 760C, 760CD 760L, 760LD	8MB	EURMY1570	£49.95	£58.69
	16MB	EURMY1571	£89.95	£105.69
	32MB	EURMY1572	£109.00	£128.08
THINKPAD 760E,760ED, 760EL, 760ELD,760EX THINKPAD 365X, XD,560, 535	8MB	MY6360	£49.95	£58.69
	16MB	MY6361	£79.95	£93.94
	32MB	MY6363	£119.00	£139.83
THINKPAD 700,700C, 720,720C750,750C, 750Ce,/750Cs,750P755, PS/2 CL575X,370	8MB	EURMY1018	£49.95	£58.69
	16MB	EURMY1637	£89.95	£105.69
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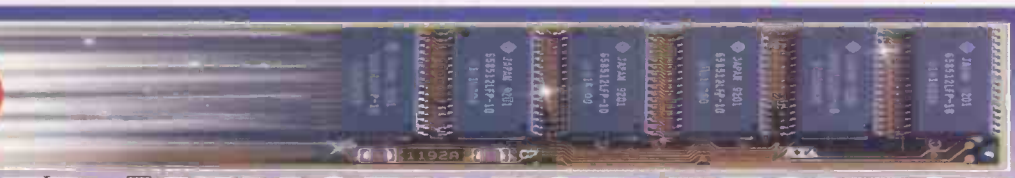

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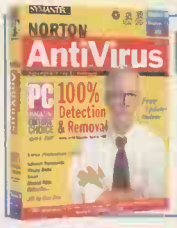

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PR12038	HP LaserJet 5SiMX Mopier	£4199.00	(£4933.83)
PR12116	HP LaserJet 5SiNX	£1734.00	(£2037.45)
C3909A	Toner HP LaserJet 5SI/5SiMX	£109.95	(£129.19)

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PR12969	HP Colour LaserJet 5N	£3142.00	(£3691.85)
C3105A	HP Toner Black	£5.90	(£6.93)
Toner:	Colour (specify C, M or Y)	£26.95	(£31.67)

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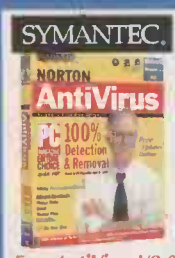

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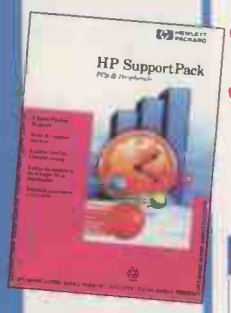

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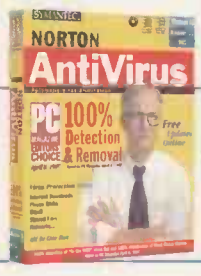

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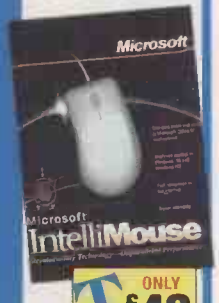

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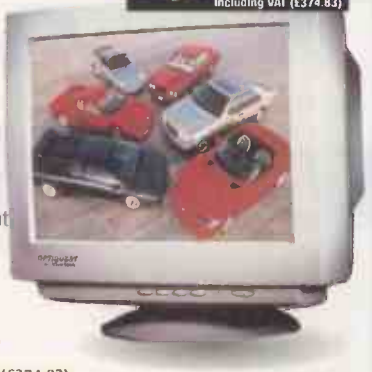

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MT1899	Sony Multiscan 200GST 17"	£389	(£457.08)
MT1856	Sony Multiscan 220AS 17"	£469	(£551.08)
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EPSON

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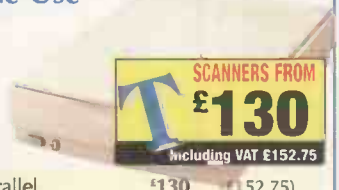

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- ✓ Dual input
- ✓ Short Neck tube

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MT1887

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HP SCANNERS

HP ScanJet 5100C Scanner

HEWLETT PACKARD

The ScanJet 5100C desktop scanner delivers the high-quality results you expect, even if you've never used a scanner. Great results the first time - and every time you scan

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- ✓ High quality colour, black & white and greyscale scanning
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IN6791	Astra 610S SCSI and Full Photoshop V4	£195.00	(£229.13)
IN6326	Astra 1200S SCSI	£229.00	(£269.08)
INP1214	Astra 1200S SCSI and Photoshop LE	£259.00	(£304.33)
IN6327	Astra 1200S SCSI and Full Photoshop V4	£339.00	(£398.33)
IN6697	Astra 1210P Parallel	£109.00	(£128.08)
IN6747	Astra 1210P Parallel and Photoshop LE	£139.00	(£163.33)
IN6748	Astra 1210P Parallel and Full Photoshop V4	£219.00	(£257.33)

Plustek OpticPro Scanners

Plustek OpticPro FB III

Plustek — The Ultimate in Office Scanning

The FB III scans an A4 document, full colour, in a single pass. It comes complete with easy to use image and OCR software. It's high resolution produces excellent image quality. With it's original "One touch key" function it makes it the friendliest scanner to use.

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- ✓ Optical resolution 300 x 600dpi
- ✓ Maximum resolution 4800 x 4800 dpi

ONLY £79 Including VAT £92.83

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ONLY £335 Including VAT £393.63

- ✓ 30-bit colour A3 scanner
- ✓ Optical resolution 400 x 800dpi
- ✓ Parallel port connection with pass through port
- ✓ Scanning area 11.69" x 16.90"

IN6718	Plustek FB III Scanner	£79.00	(£92.83)
IN6716	Plustek A3I Scanner	£335.00	(£393.63)

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ULTRA Slate

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UltraSlate works with popular graphics software to turn an unprecedented 512 levels of pen pressure and angle into finished art. The cordless pen is perfectly balanced. It's fumble free, pen point crashing feature can edit or create special effects with the flick of a button.

The tablet surface is not slippery or rough, but has a paper like feel to it, so it's just like working on traditional media.

Features :

- ✓ Macintosh and PC-compatible models
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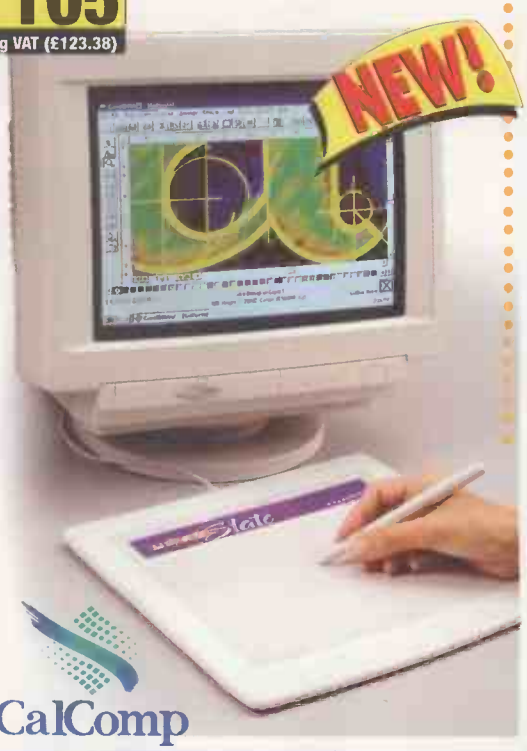
- ✓ Comfortable, lightweight batteryless pen
- ✓ Custom pressure sensitivity, adjustable to your style
- ✓ Recordable Hot Key toolboxes, that pop up where you want them
- ✓ Selectable view scale, to work on whole image or zoom in on a detail
- ✓ Dynamic windowing for switching between software applications
- ✓ TabletWorks software package



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Buz Multimedia Editor

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- ✓ Personalise or edit it using the easiest software around

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- **Off-line Web Browsing** Web Buddy
- **Audio recording** Recordit
- **Multimedia e-mail** Netcard

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DR7039	Jaz 2GB External	£399	(£468.83)

Zip Drives			
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224426	Zip Classic Parallel	£86	(£101.05)
224425	Zip Classic SCSI	£86	(£101.05)
EURDR4672	Zip SCSI Internal	£86	(£101.05)
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ME7028	6-Pack of disks & FREE Caddy	£49.00	(£57.58)
ME7460	10-Pack of disks & RecordIt software	£89.00	(£104.58)
BN4383	50-Pack of disks	£415	(£487.63)
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2005002	Jaz 1GB External SCSI	£199	(£233.83)
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* Capacities reflect sizes after compression

dittoMax

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- ✓ Flash!File™ 5 second average access time
- ✓ FullBack™ system recovery software

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DR6065	Ditto 2GB External Parallel	£88	(£103.40)
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The Zip Plus is up to 50 times faster than a floppy drive when using a SCSI connection under Windows 95

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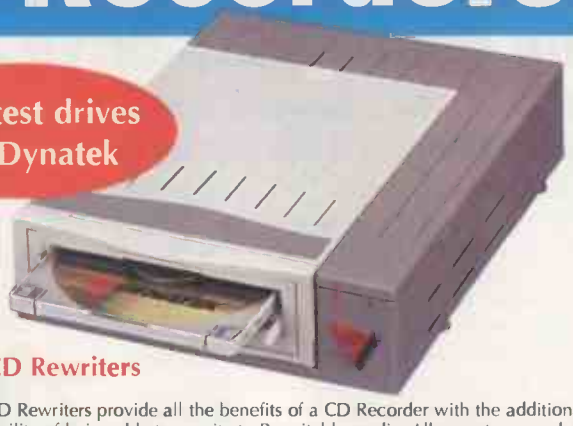

CD Recorders

All Dynatek CD Recorders are SCSI devices with the option of Internal or External mounting. CD recorders allow you to master your own CD's using friendly drag and drop software. A blank CD holds approximately 650Mb of data or 74 minutes of audio.

CDM460
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Item	Description	Price	Inc VAT
DR5804	Internal SCSI	£269.00	(£316.08)
DR5805	External SCSI	£319.00	(£378.83)

CDM4120
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Item	Description	Price	Inc VAT
DR7391	Internal SCSI	£289.00	(£339.58)
DR7393	External SCSI	£309.00	(£363.08)

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Quad-Speed write, Six-Speed read and Two Speed rewrite IDE CD-RW. Includes software for Windows 3.11, Windows 95 & NT, Internal IDE Cable, Audio Cable, 1 blank CD-R media, 1 blank CD-RW media and documentation.

Item	Description	Price	Inc VAT
DR7396	Internal IDE only	£289.00	(£339.58)

CDRW-426
Quad-Speed write, Six-Speed read and Two Speed rewrite SCSI CD-RW. Includes software for Windows 3.11, Windows 95 & NT, Internal IDE Cable, Audio Cable, 1 blank CD-R media, 1 blank CD-RW media and documentation.

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DR7779	14- Drive 32X CD-Server	£1699.00	(£1996.33)
DR7776	7- Drive CD-Server configuration kit	£519.00	(£609.83)
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EZCD Creator 3.0 adaptec

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236129	AHA-2940UW PCI Ultra Wide SCSI	£169.00	(£198.58)
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236131	AHA-3940UW PCI Wide Multichannel	£255.00	(£299.63)

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- ✔ Supports up to 7 SCSI devices
- ✔ Device Protocol: SCSI-2
- ✔ Full Plug and Play compatibility

ADVANSYS

EX8743	ABP5140 ISA SCSI Host Adaper	£75.00	(£88.13)
EX8745	ABP940U Ultra SCSI PCI	£85.00	(£99.88)
EX8746	ABP940UW Ultra Wide SCSI PCI	£115.00	(£135.13)

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CREATIVE
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With Creative's PC-DVD Encore Dxr2, you get technologies and experiences totally unprecendented on your PC today, such as vibrant digital imagery of MPEG-2 video that's uniquely enhanced for high definition and smoothness, the sparkling clarity and room shaking thunder of Dolby® Digital (AC-3™) audio with cinema-like surround-sound, and massive high-speed storage. It's as if the future is already here.

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AMACOM

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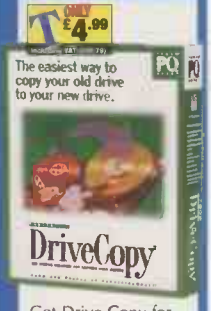

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Orpheus-Multiple Storage Drive Cases

Benefits

- ✔ Increase the portability of your drives
- ✔ Transport SCSI hard drives between PC's and Macintosh systems
- ✔ Ideal for adding extra devices when your desktop PC has no more bays
- ✔ Sharing devices between machines becomes much easier
- ✔ Save space by using the multiple bay models

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AC23458	Standard	1	3.5"	SCSI-2	50W	£52.95	£62.22
AC23459	Standard	1	3.5"	SCSI-3	50W	£56.95	£66.92
AC23495	Premier	2	3.5"	SCSI	80W	£52.95	£62.22
AC22196	Premier	2	5.25"	SCSI	80W	£52.95	£62.22
AC22596	Premier	2	5.25"	SCSI-3	80W	£85.00	£99.88
AC22199	Premier	4	5.25"	SCSI	200W	£70.95	£83.37
AC22200	Premier	8	5.25"	SCSI	250W	£106.95	£125.67
AC22473	Deluxe	8	5.25"	SCSI	250W & 2 Fans	£122.00	£143.35
AC23475	Deluxe	8	5.25"	SCSI-2	250W & 2 Fans	£145.00	£170.38
AC23476	Deluxe	8	5.25"	SCSI-3	250W & 2 Fans	£165.00	£193.88
IDE Cases							
NEW	CD-ROM	1	5.25"	IDE	25W	£48.95	£57.52
NEW	Standard	1	3.5"	IDE	50W	£58.95	£69.27
NEW	Standard	2	5.25"	IDE	80W	£77.95	£91.59
Accessories							
AC22201	Just Cooler Heat Terminator					£15.95	£18.74
NEW	Mobile HDD Rack					£26.95	£31.67

Hard Drive Warehouse

Ultra ATA

Item	Capacity	Manufacturer	Model	Part number	Price	Inc. VAT
EX8304	2.1GB	Seagate	Medalist	ST32122A	£95.00	£111.63
DR7415	2.1GB	Quantum	Fireball SE	QM32100SE-A	£105.00	£123.38
DR5595	2.1GB	Western Digital	Caviar	AC12100	£109.00	£128.08
New	2.1GB	Seagate	Medalist	ST32110A	£97.00	£113.98
New	2.5GB	Seagate	Medalist	ST32532A	£99.00	£116.33
DR7414	3.2GB	Quantum	Fireball SE	QM33200SE-A	£119.00	£139.83
EX8305	3.2GB	Seagate	Medalist	ST33232A	£115.00	£135.13
DR7313	3.2GB	Western Digital	Caviar	AC23200	£135.00	£158.63
DR7432	4GB	Quantum	Bigfoot TX	QM504000TX-A	£135.00	£158.63
DR7412	4.3GB	Quantum	Fireball SE	QM34300SE-A	£149.00	£175.08
DR6976	4.3GB	Western Digital	Caviar	AC34300	£169.00	£198.58
DR7252	4.3GB	Seagate	Medalist	ST34342A	£149.00	£175.08
New	4.3GB	Seagate	Medalist Pro	ST34321A	£155.00	£182.13
New	4.5GB	Seagate	Medalist Pro	ST34520A	£165.00	£193.88
DR6912	5.1GB	Western Digital	Caviar	AC35100	£179.00	£210.33
New	5.1GB	Seagate	Medalist	ST35130A	£185.00	£217.38
DR7433	6GB	Quantum	Bigfoot TX	QM506000TX-A	£189.00	£222.08
DR7411	6.4GB	Quantum	Fireball SE	QM36400SE-A	£209.00	£245.58
New	6.4GB	IBM	Deskstar 5	09J0308	£209.00	£245.58
New	6.5GB	Seagate	Medalist	ST36540A	£199.00	£233.83
New	6.5GB	Seagate	Medalist	ST36531A	£205.00	£240.88
DR7049	6.4GB	Western Digital	Caviar	AC36400	£209.00	£245.58
New	6.5GB	Seagate	Medalist Pro	ST36451A	£219.00	£257.33
DR7434	8GB	Quantum	Bigfoot TX	QM508000TX-A	£249.00	£292.58
New	8.4GB	IBM	Deskstar 8	00K0394	£295.00	£346.63
DR7410	8.4GB	Quantum	Fireball SE	QM38400SE-A	£259.00	£304.33
New	8.6GB	Seagate	Medalist	ST38641A	£275.00	£323.13
New	9.1GB	Seagate	Medalist Pro	ST39140A	£295.00	£346.63
DR7413	12GB	Quantum	Bigfoot TX	QM512000TX-A	£309.00	£363.08

Ultra SCSI

Item	Capacity	Manufacturer	Model	Part number	Price	Inc. VAT
DR7409	2.1GB	Quantum	Fireball SE	QM32100SE-S	£135.00	£158.63
New	2.1GB	IBM	UltraStar 2ES	09J1034	£129.00	£151.58
DR6719	2.2GB	Seagate	Barracuda	ST32272N	£245.00	£287.88
DR7417	3.2GB	Quantum	Fireball SE	QM33200SE-S	£165.00	£193.88
DR6106	4.3GB	Western Digital	Enterprise	WDE4360-0003	£339.00	£398.33
New	4.3GB	IBM	UltraStar 2ES	09J1035	£205.00	£240.88
DR5832	4.5GB	Quantum	Atlas II	QM34550AL-S	£385.00	£452.38
DR6586	4.5GB	Seagate	Barracuda	ST34572N	£399.00	£468.83
DR7454	4.55GB	Seagate	Hawk	ST34555N	£229.00	£269.08
DR7435	6.4GB	Quantum	Fireball SE	QM36400SE-S	£265.00	£311.38
DR7431	8.4GB	Quantum	Fireball SE	QM38400SE-S	£335.00	£393.63
DR5537	9.1GB	Seagate	Barracuda	ST19171N	£565.00	£663.88
DR5830	9.1GB	Quantum	Atlas II	QM39100AL-S	£599.00	£703.83
New	9.1GB	Western Digital			£565.00	£663.88

Ultra Wide SCSI

Item	Capacity	Manufacturer	Model	Part number	Price	Inc. VAT
DR6107	2.1GB	Western Digital	Enterprise	WDE2170-0007	£245.00	£287.88
DR7041	2.1GB	IBM	UltraStar 2ES	09J1036	£135.00	£158.63
DR6110	2.2GB	Seagate	Barracuda	ST32272W	£259.00	£304.33
New	4.3GB	IBM	UltraStar 2ES	09J1037	£215.00	£252.63
DR7042	4.5GB	Seagate	Barracuda	ST34572W	£419.00	£492.33
DR5831	4.5GB	Quantum	Atlas II	QM34550AL-SW	£429.00	£504.08
New	4.5GB	IBM	UltraStar 2XP	VD27H1772	£429.00	£504.08
DR7453	4.55GB	Seagate	Hawk	ST34555W	£245.00	£287.88
DR6155	4.55GB	Seagate	Cheetah	ST34501W	£469.00	£551.08
DR5637	9.1GB	Seagate	Barracuda	ST19171W	£589.00	£692.08
DR6100	9.1GB	Quantum	Atlas II	QM39100AL-SW	£599.00	£703.83
DR7075	9.1GB	Seagate	Cheetah	ST19101W	£785.00	£922.38
DR8038	9.1GB	Seagate		ST39173W	£635.00	£746.13

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FOR 2000i £445 Including VAT (£522.88)

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- ✔ Reliable, high capacity backup for networks
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HP Colorado 5GB & 8GB

Breakthrough performance for full system protection

Looking for a PC backup solution that won't keep you waiting? The new HP Colorado drives deliver extremely high performance and high capacity at an astonishingly low price. Allowing you to store 8GB on a single data cartridge* and store data at a rate of up to 3GB in well under an hour**

Includes your first Tape

- ✔ Disaster recovery for Windows 95 with full system protection
- ✔ Up to 8GB Compressed (4GB Native)
- ✔ Includes Colorado Backup by Cheyenne for Windows 95, Windows and DOS
- ✔ Supports Windows NT 4.0 backup utility

Store up to 8GB*

DR7994	7200 Plus Internal	£235	(£276.13)
DR7995	7200 Plus Parallel	£289	(£339.58)
DR7151	2000i Int SCSI	£445	(£522.88)
DR7152	2000e Ext SCSI	£515	(£605.13)
DR7153	5000i Int SCSI	£469	(£551.08)
DR7154	5000e Ext SCSI	£545	(£640.38)
DR7155	DAT8i Int SCSI	£579	(£680.33)
DR7156	DAT8e Ext SCSI	£669	(£786.08)
DR7428	DAT24i Int SCSI	£795	(£934.13)
DR7427	DAT24e Ext SCSI	£875	(£1028.13)
DR7034	5GB Internal	£127	(£149.23)
DR7035	5GB Parallel	£155	(£182.13)
New	8GB Internal	£169	(£198.58)
New	8GB Parallel	£199	(£233.83)

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DEC2432
3C563D-TP
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Unbelievable !!
Receive and store faxes and messages when your computer is switched off !!

- ✓ Unique: The first modem that can receive and stores faxes and voice messages with or without a computer
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- ✓ Smart: Automatically recognises voice or fax calls

Code	Description	Price	Inc VAT
DMD2923	SelfMemory 56K	£109.00	(£128.08)
DMD2787	SpeedVoice 56K	£99.00	(£116.33)
DMD2351	SelfMemory 336	£89.00	(£104.58)
DMD2350	SpeedVoice 336	£75.00	(£88.13)

Gold Card Global 56K

Europe's No.1 PC Card!

ISDN Upgrade available shortly

- ✓ K56flex technology
- ✓ Upgradeable via 2MB flash memory
- ✓ Globally approved
- ✓ Compatible with telephone networks worldwide
- ✓ Ready for GSM Fax & Data
- ✓ Onboard DAA with country switching software
- ✓ Lifetime Warranty

DMD2964	Gold Card Global 56K+Fax	£199.00	(£233.83)
DMD2578	Gold Card Global V.34+Fax	£155.00	(£182.13)
DMD2583	GSM Nokia 2110 Upgrade	£99.00	(£116.33)
DMD2585	GSM Nokia 8110 Upgrade	£99.00	(£116.33)
DMD2581	GSM Panasonic Upgrade	£99.00	(£116.33)

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Xircom

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- ✓ Full-duplex operation
- ✓ K56Flex technology
- ✓ GlobalACCESS - one card for worldwide use.
- ✓ Includes Delrina Winfax Lite and WinComm lite software.

DMD2808 CreditCard Ethernet 10/100 + Modem 56 RJ45 £234 (£274.95)

CreditCard Modem 56

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- ✓ 56Kbps performance for faster communications with K56flex technology, upgradable free of charge to final ITU standard
- ✓ Digital Shield safeguards the modem from high-current PBX's
- ✓ GSM upgradable with an optional GSM Connection Kit

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CreditCard GSM Adapter Global Access

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- ✓ ETSI approved wtih lifetime warrenty
- ✓ Model DEC2471 bundled with award winning RVS-COM software

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DEC2882	CreditCard GSM Adapter for Siemens S3 Family, Sony CMD-100, CMD-200 and compatibles handsets	£149	(£175.08)

For comprehensive list of supported phones please call

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The Desktop Solution

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3C509B Combo EtherLink III Combo	DEC1477 £66.95 (£78.67)	DEC1478 £297.95 (£350.09)	DEC1479 £1095 (£1286.63)
3C509BTPC EtherLink III BNC/UTP	DEC2425 £38.95 (£45.77)	DEC2426 £187.95 (£220.84)	DEC2427 £714.99 (£840.11)
3C900-TPO EtherLink III XL PCI UTP only	DEC2235 £58.99 (£69.31)	DEC2236 £269.95 (£317.13)	DEC2237 £899.95 (£1057.44)
3C900 Combo EtherLink XL Combo	DEC2234 £70.95 (£83.37)	DEC2233 £341.95 (£401.79)	DEC2232 £1269.95 (£1492.19)
3C592 Combo EtherLink III Combo 32-bit EISA	DEC1115 £119.95 (£140.94)	DEC1179 £459.95 (£540.44)	-
3C905-TX FastEtherLink 10/100 PCI	DEC2338 £52.95 (£62.22)	DEC2340 £247.95 (£291.34)	DEC2339 £929 (£1091.58)
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- ✓ GSM Ready: The ultimate solution for mobile communications via your mobile phone. Accessory kits are available for a wide variety of phones

ACCURA 336 PC CARD

- ✓ Throughput up to 115,200 bit/s
- ✓ Data & Fax Call discrimination
- ✓ Flash upgradeable
- ✓ Slimline connector

Hayes MSN 56K Modem

- ✓ Internet download speeds of up to 56,000bit/s from compatible ISPs•
- ✓ One month free access to MSN and the Internet*
- ✓ Send and Receive faxes. Voice answer phone facility
- ✓ Built in speakerphone
- ✓ v.90 Compatible

* Excludes telephone charges

Hayes™

Order No.	Description	Price	Inc VAT
DMD3098	MSN 56K Internal	£85.00	(£99.88)
DMD2424	Accura 56K Internal	£79.00	(£92.83)
DMD3099	MSN 56K External	£89.00	(£104.58)
DMD2425	Accura 56K External	£85.00	(£99.88)
DMD2531	Accura 336 PC Card	£99.00	(£116.33)
DMD3281	Optima 56K PC Card	£169.00	(£198.58)
AC24394	Nokia 2110 GSM kit	£99.00	(£116.33)
MM4018	Optima 336 Business Ext	£159.00	(£186.83)
MM4051	Accura ISDN TA	£175.00	(£205.63)

• Varying line conditions may result in lower speeds

US Robotics From the leader in Networking

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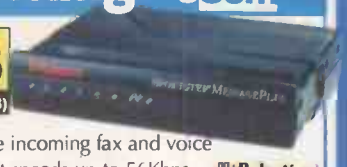
Sportster MessagePlus

56K Faxmodem with Independent Messaging Facilities

£125 INCLUDING VAT (£146.88)



One complete feature-rich communication package for the home or office. The MessagePlus can be left to store incoming fax and voice messages even when your computer is switched off. x2 Technology allows you to download from the internet at speeds up to 56Kbps.

Sportster Flash

56K External Faxmodem with Personal Voice mail

£99 INCLUDING VAT (£116.33)

The Sportster Flash provides fax, e-mail and personal voice mail facilities all in one compact unit. Multiple voice mailboxes (up to 1000) allow each person in your home or office to retrieve and listen to messages and even access them remotely.

Sportster Winmodem *336 PC Card*

Designed exclusively for Windows™ 95, the Sportster PC Card utilises the processing capabilities of your own computer and functionality of Windows to provide a complete communications device for the home, office and travelling user. Features include Pan European approvals, world-wide Internet access at 33,600bps, Fax, E-mail and Personal Voice Mail.

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Sportster Winmodem

33,600 Internal Faxmodem for Windows with Personal Voice mail

DMD3014	Sportster MessagePlus 56K External	£125.00	(£146.88)
MM4049	Sportster Flash 33.6 External	£99.00	(£116.33)
DMD3151	Sportster WinModem PC Card 33.6	£75.00	(£88.13)
MM4047	Sportster WinModem Internal (Windows only)	£75.00	(£88.13)
DMD3129	Sportster ISDN TA	£99.00	(£116.33)
234937-5	Courier V34 33.6 External	£195.00	(£229.13)
DMD1316	Courier V34 33.6 Internal	£195.00	(£229.13)
MM3994	Courier-I ISDN/V34 External	£239.00	(£280.83)
MM3993	Courier-I ISDN/V34 Internal	£239.00	(£280.83)

£75 INCLUDING VAT (£88.13)

Designed exclusively for Windows™environment, the Winmodem utilises the processing capabilities of your own computer and functionality of Windows to give you a fully featured fax modem, that will soon be upgradeable to x2.

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PRINTERS
HEWLETT PACKARD

LaserJet

EURPR1643	Colour LaserJet 5	£2,861.00	£3,361.68
EURPR1642	Colour LaserJet 5M	£3,600.00	£4,230.00
PR12969	Colour LaserJet 5N	£3,142.00	£3,691.85
236158	LaserJet 5SI	£1,649.00	£1,937.58
PR12116	LaserJet 5SI NX	£1,799.00	£2,113.83
236292	LaserJet 5SI MX	£2,249.00	£2,642.58
PR12038	LaserJet 5SI MX MOPIER	£4,326.00	£5,083.05
PR12987	LaserJet 4000	£711.00	£835.43
PR12978	LaserJet 4000TN	£1,023.00	£1,202.03
PR12975	LaserJet 4000N	£914.00	£1,073.95
PR12976	LaserJet 4000TN	£1,023.00	£1,202.03
PR11827	LaserJet 6P	£480.00	£564.00
INP0975	LaserJet 6MP	£592.00	£695.60
PR12230	LaserJet 6L	£232.00	£272.60
PR13328	Remarketed LaserJet 6L	£199.00	£233.83
PR12232	LaserJet Companion	£79.00	£92.83
PR13320	LaserJet 3100C	£471.00	£553.43
PR13442	LaserJet 5000	£929.00	£1,091.58
PR13443	LaserJet 5000N	£1,334.00	£1,567.45
PR13446	LaserJet 5000GN	£1,649.00	£1,937.58

InkJet

234090	DeskJet 1600C	£871.00	£1,023.43
234082	DeskJet 1600CM	£1,299.00	£1,526.33
PR11919	DeskJet 1600CN	£1,110.00	£1,304.25
PR12804	DeskJet 890C	£255.00	£299.63
PR12740	DeskJet 690C Plus Photo reader	£209.00	£245.58
PR12348	DeskJet 690C Plus	£150.00	£176.25
PR13088	DeskJet 720C	£172.00	£202.10
PR12315	DeskJet 670C	£115.00	£135.13
224340	DeskJet 340C	£144.00	£169.20
PR11832	DeskJet 340CBI	£166.00	£195.05
PR12741	DeskJet 400L	£86.00	£101.05
PR12805	DeskJet 1100C	£247.00	£290.23

OfficeJet

PR12187	OfficeJet Pro 1150C	£491.25	£577.22
PR12623	OfficeJet 590	£341.25	£400.97
PR13279	OfficeJet 635	£339.00	£398.33

CANON

Laser

PR12944	LBP-2460	£1,495.00	£1,756.63
PR11992	LBP-1260+	£615.00	£722.63
PR12274	LBP-660	£184.00	£216.20
PR12100	LBP-465	£225.00	£264.38

InkJet

R12935	BJC-7000	£252.00	£296.10
PR12101	BJC-5500	£419.00	£492.33
PR12938	BJC-4650	£198.00	£232.65
PR11899	BJC-4550	£195.00	£229.13
PR11932	BJC-620	£169.00	£198.58
PR12936	BJC-4300	£129.00	£151.58
PR12040	BJC-4200	£99.00	£116.33
PR12856	BJC-250	£95.00	£111.63
PR12890	BJC-80	£142.00	£166.85
PR12947	BJC-80 + Scanner	£185.00	£217.38
234340	BJ-30	£124.00	£145.70

EPSON

Laser

PR11954	EPL-N2000	£1,275.00	£1,498.13
PR11953	EPL-N2000PS	£1,582.00	£1,858.85
PR11952	EPL-N1200	£593.00	£696.78
PR11956	EPL-N1200EN	£791.00	£929.43
PR11955	EPL-N1200PS	£985.00	£1,157.38

InkJet

PR12407	Stylus Color 3000	£1,115.00	£1,310.13
PR12124	Stylus Color 1520	£510.00	£599.25
236241	Stylus Color Pro XL+ A3	£429.00	£504.08
PR12059	Stylus Color 800	£207.00	£243.23
PR12058	Stylus Color 600	£155.00	£182.13
PR12103	Stylus Color 400	£118.00	£138.65
PR12592	Stylus Color 300	£106.00	£124.55
PR12406	Stylus Photo	£199.00	£233.83
CALL	Stylus Photo 700	CALL	CALL
PR13449	Stylus Color 850	£243.00	£285.53
PR13448	Stylus Photo EX	£308.00	£361.90

Dot Matrix

PR12990	DLQ-3000+ 24 Pin	£791.00	£929.43
EURPR1617	LQ-2170 24 Pin	£468.00	£549.90
PR11855	LQ-2070 24 Pin	£330.00	£387.75
96595	LQ870 24 Pin	£377.00	£442.98
PR12408	LQ-670 24 Pin	£220.00	£258.50
PR4480	LQ570+ 24 Pin	£200.00	£235.00
234460	LQ300 24 Pin	£115.00	£135.13
EURPR1102	DFX-8000 9 Pin	£1,911.00	£2,245.43
EURPR0226	DFX-5000+ 9 Pin	£1,185.00	£1,392.38
EURPR1608	FX-2170 9 Pin	£369.00	£433.58
97485	FX-1170 9 Pin	£295.00	£346.63
PR13065	FX-880 9 Pin	£247.00	£290.23
234459	LX1050+ 9 Pin	£200.00	£235.00
201457	LX300 9 Pin	£97.00	£113.98

NEC

PR11494	SuperScript 860 PRO	£249.00	£292.58
PR12349	SuperScript 1260	£525.00	£616.88
EURPR1277	Pinwriter P2X	£95.00	£111.63

Panasonic

Lasers

PR13298	KX-P8410	£2,465.00	£2,896.38
PR12487	KX-P7200	£1,175.00	£1,380.63
EURPR1298	KX-P4430	£455.00	£534.63
236455	KX-P6500	£235.00	£235.00
224026	KX-P6150	£279.00	£327.83
EURPR1689	KX-P6300	£172.00	£202.10

Dot Matrix

EURPR1432	KX-P3626 24 Pin	£255.00	£299.63
PR11944	KX-P2124 24 Pin	£189.00	£222.08
PR4440	KX-P2023 24 Pin	£109.00	£128.08
224028	KX-P3696 9 Pin	£255.00	£299.63
PR12165	KX-P3200 9 Pin	£169.00	£198.58
EURPR1690	KX-P1150 9 Pin	£87.00	£102.23

BROTHER

Lasers

PR11845	HL-1660 4MB	£699.00	£821.33
PR12164	HL-1660 10MB	£715.00	£840.13
PR6517	HL-1660EX 4Mb	£909.00	£1,068.08
PR12400	HL-1660EX 10Mb	£925.00	£1,086.88
207556	HL-1260E 2MB	£599.00	£703.83
PR11844	HL-1260E 6MB	£615.00	£722.63
PR12138	HL-1260EEX 2MB	£805.00	£945.88
PR12971	HL-1260EEX 6MB	£815.00	£957.63
PR11850	HL-1060 2MB	£349.00	£410.08
PR12970	HL-1060 6MB	£365.00	£428.88
PR11843	HL-760 1Mb	£229.00	£269.08
PR12797	HL-760 5MB	£245.00	£287.88
PR12163	HL-730 Plus	£199.00	£233.83

LEXMARK

EURPR1624	Optra C	£4,795.00	£5,634.13
PR11928	Optra C Pro	£4,065.00	£4,776.38
PR13159	Optra ES	£359.00	£421.83
PR11697	Optra N PRO	£2,055.00	£2,414.63
PR12109	Optra N Pro	£2,509.00	£2,948.08
PR13156	Optra S 1250	£689.00	£809.58
PR13155	Optra S 1650	£799.00	£938.83
PR12951	Optra S 1650N	£1,099.00	£1,291.33
PR13154	Optra S 1650T	£935.00	£1,098.63
PR13153	Optra S 2450	£1,635.00	£1,921.13
PR12932	Optra S 2450N	£1,759.00	£2,066.83
PR13152	Optra SC 1275	£2,789.00	£3,277.08
PR12477	Optra SC 1275N	£3,079.00	£3,617.83

KYOCERA

Lasers

PR13135	FS 7000	£1,749.00	£2,055.08
EURPR1680	FS-6500 PLUS	£1,179.00	£1,385.33
PR12021	FS-3700	£849.00	£997.58
PR12695	FS-1700N	£795.00	£934.13
EURPR1685	FS-3400 PLUS	£785.00	£922.38
PR12020	FS-1700	£569.00	£668.58
EURPR1682	FS-1550+	£565.00	£663.88
224415	FS-400	£305.00	£358.38
PR12696	FS-600	£239.00	£280.83

SEIKOSHA

PR13047	Smart Label 220	£199.00	£233.83
PR13046	Smart Label 210	£159.00	£186.83
91702	Smart Label EZ30	£99.00	£116.33
IN5572	Smart Business Card Reader	£169.00	£198.58
UT7035	Smart Disk Labeller S/W	£20.00	£23.50
PR12170	OP-1200 Laser Printer	£579.00	£680.33

OKI

PR12873	4W Plus	£155.00	£182.13
PR12876	6E	£195.00	£229.13
PR12875	6EX	£239.00	£280.83
PR13352	10I	£359.00	£421.83
PR13353	10IS	£395.00	£464.13
PR13354	10IEN	£445.00	£522.88
PR12369	810EX	£395.00	£464.13
PR11890	16N	£629.00	£739.08
PR12368	16PS	£1049.00	£1,232.58
PR12367	16EN	£1039.00	£1,220.83
PR13357	20N	£729.00	£856.58
PR13358	20EN	£889.00	£1,044.58
PR13274	ML590	£435.00	£511.13
PR11789	ML320	£379.00	£445.33
PR13340	ML520	£369.00	£433.58
PR13342	ML3410 BO	£895.00	£1,051.63

TEKTRONIX

PR13350	Phaser 350	£2,295.00	£2,696.63
PR13343	Phaser 360	£3,295.00	£3,871.63

QMS

PR12279	Desklaser 2000	£939.00	£1,103.33
INP1120	2060BX	£2,499.00	£2,936.33
INP1151	2060EX	£4,299.00	£5,051.33
INP1046	2060GX	£2,699.00	£3,171.33

FAXES
BROTHER

FX0935	1030	£339.00	£398.33
FX0936	1020	£255.00	£299.63
FX0928	520DT	£195.00	£229.13
FX0919	510	£153.00	£179.78

Oki

FX0932	OF4100	£489.00	£574.58
FX0933	OF740	£339.00	£398.33
FX0934	OF740MF	£349.00	£410.08
FX0938	OF5500	£899.00	£1,056.33
FX0937	OF5200	£799.00	£938.83

SAMSUNG

FX0943	SF-100	£135.00	£158.63
FX0947	SF-110T	£135.00	£158.63
FX0949	SF-910	£185.00	£217.38
FX0948	SF-1600	£155.00	£182.13
FX0950	SF-2900M	£195.00	£229.13
FX0946	SF-4000	£325.00	£381.88
FX0945	SF-4100	£349.00	£410.08
FX0944	SF-4200	£459.00	£539.33
FX0941	SF-5500	£489.00	£574.58
FX0942	SF-5600	£629.00	£739.08

Canon

FX0964	L300	£895.00	£1,051.63
234338	B320	£724.00	£850.70
234339	B340	£899.00	£1,056.33

Panasonic

FX0965	UF332	£430.00	£505.25
FX0957	UF550	£795.00	£934.13

MULTI-FUNCTION
Brother

MM4000	MFC-9000	£662.00	£777.85
MM4001	8000P	£510.00	£599.25
MM4125	MC3000	£499.00	£586.33

Canon

PR13048	MP10	£345.00	£405.38
PR13347	MP20	£315.00	£370.13
PR13349	MP30	£335.00	£393.63

PLOTTERS
Hewlett Packard

PR11994	DesignJet 750C Plus A1	£3,055.00	£3,589.63
PR11995	DesignJet 750C Plus A0	£3,729.00	£4,381.58
PR12596	DesignJet 350C A1	£1,489.00	£1,749.58
PR12967	DesignJet 350C A0	£1,935.00	£2,273.63
PR11996	DesignJet 700 A1	£2,255.00	£2,649.63
PR11993	DesignJet 700 A0	£2,689.00	£3,159.58
PR12964	DesignJet 430 A1	£1,042.00	£1,224.35
PR12965	DesignJet 430 A0	£1,642.00	£1,929.35

MONITORS
IIYAMA

MT1501	21" Vision Master Pro MT-9221"	£829.00	£974.08
MT1387	21" Vision Master 500 MT-8721"	£799.00	£938.83
MT1744	19"" Vision Master 450"	£575.00	£675.63
MT1613	17" Vision Master MF-9017T"	£399.00	£468.83
MT1186	17" Vision Master 175S MF-8617ES	£435.00	£511.13
MT1611	17"" Vision MF-8617T	£369.00	£433.58
MT1277	15" Vision Master MF-8515G"	£183.00	£215.03
MT1905	13.8"" TFT LCD"	£1,149.00	£1,350.08
MT1906	13.8"" TFT LCD Ditgital"	£1,149.00	£1,350.08

MITSUBISHI

MON0442	21"" Diamond Pro 91TXM"	£929.00	£1,091.58
MON0439	17"" Diamond Pro 87TXM"	£429.00	£504.08
MON0461	17"" Diamond Pro 67TXV"	£395.00	£464.13
MT1561	17"" Diamond Scan 17HX"	£365.00	£428.88
MON0423	15"" Diamond Scan 15HX"	£229.00	£269.08

NEC

MT1217	21"" P1150"	£1099.00	£1,291.33
MT1388	21"" E1100"	£845.00	£992.88
MT1117	17"" M700	£425.00	£499.38
MT1270	17"" P750"	£485.00	£569.88
EURMT0526	15"" M500	£249.00	£292.58
MT1584	15"" A500"	£169.00	£198.58
MT1582	17"" A700"	£305.00	£358.38
MT1589	15"" E500"	£209.00	£245.58

OPTIQUEST

MT1621	V115 21"	£759.00	£891.83
MT1620	V95 19"	£559.00	£656.83
MT1401	V775 17"	£349.00	£410.08
MT1405	Q71 17"	£269.00	£316.08
MT1653	Q51 15"	£129.00	£151.58
MT1398	V655 15""	£149.00	£175.08
MT1674	Q41 14""	£99.00	£116.33
MT1946	V115T	£859.00	£1,008.33

PANASONIC

MT1319	21"" Panasync Pro 7GX"	£1,099.00	£1,298.38
224033	21"" Panasync Pro 7G	£875.00	£1,028.13
MT1979	17"" Panasync S70	£339.00	£398.33
MT1980	17"" Panasync P70	£489.00	£574.58
MT1981	17"" Panasync SM70	£439.00	£515.83
MT1982	17"" Panasync PF70	£555.00	£652.13
MT1983	21"" Panasync S100	£1,095.00	£1,286.63
2000087	17"" Panasync PRO 5G	£419.00	£492.33
MT1181	17"" Panasync 17MM	£369.00	£433.58
2000086	17"" Panasync 5G	£349.00	£410.08
MT1976	15"" Panasync S50	£205.00	£240.88
MT1977	15"" Panasync P50	£249.00	£292.58
MT1978	15"" Panasync SM50	£185.00	£217.38
MT1159	15"" Panasync 15MM	£235.00	£276.13
224029	15"" Panasync 4G	£225.00	£264.38
MT1285	15"" Panasync 4	£175.00	£205.63

SONY

MT1456	W900 24""	£1,779.00	£2,090.33
EURMT0247	20"" SE2	£915.00	£1,075.13
MT1343	17"" 300SF	£769.00	£903.58
MT1342	17"" 200SF	£389.00	£457.08
MT1340	17"" 200SX	£359.00	£421.83
MT1341	15"" 100SF	£224.00	£263.20
MON0419	15"" 100SX"	£199.00	£233.83
MT1896	15"" 100ES"	£195.00	£229.13
MT1897	15"" 100GST"	£219.00	£257.33
MT1898	17"" 200EST"	£359.00	£421.83
MT1899	17"" 200GST"	£389.00	£457.08
MT1888	21"" 500PST"	£1,149.00	£1,350.08

TAXAN

MT1318	21"" EV-2150 TCO 95"	£899.00	£1,056.33
MT1369	20"" EV-2040 TCO"	£685.00	£804.88
MT1688	20"" EV-2040 TCO 95"	£683.00	£802.53
MT1887	19"" EV-975 TCO 95"	£549.00	£645.08
MT1274	17"" EV-730 TCO FST"	£398.00	£467.65
EURMT0472	17"" EV-730 TCO-S FST"	£328.00	£385.40
MT1276	17"" EV-730 TCO 95-S FST"	£339.00	£398.33
MT1275	17"" EV-740 TCO FST"	£399.00	£468.83
MT1239	17"" EV-740 TCO 95-S FST"	£408.00	£479.40
MT1317	17"" EV-750 TCO 95"	£449.00	£527.58
MT1887	19"" EV-975 TCO 95"	£549.00	£645.08
MT1273	15"" EV-530TCO FST"	£227.00	£266.73
MT1238	15"" EV-540 TCO 95-S FST"	£271.00	£318.43
MT1680	15"" EV 550 TCO 95"	£179.00	£210.33
MT1681	15"" EV 550 TCO 95 MM"	£189.00	£222.08
MT1679	14"" EV 430LR"	£113.00	£132.78
MT1171	10.4"" Crystalvision 600	£899.00	£1,056.33
MT1169	12.1"" Crystalvision 620	£1,099.00	£1,291.33
MT1170	14.5"" Crystalvision 650	£1,518.00	£1,783.65

VIEW SONIC

MT1158	Professional P810 21""	£749.00	£880.08
MON0472	Professional PT813 21""	£849.00	£997.58
MT1492	Graphics G800 21""	£789.00	£927.08
MT1248	Professional P815 21""	£989.00	£1,162.08
MT1448	Graphics 17GS 17""	£379.00	£445.33
MT1450	Graphics 17GA 17""	£399.00	£468.83
MT1522	Graphics G770 17""	£359.00	£421.83
3777PL	Professional 17PS 17""	£489.00	£574.58
MON0471	Professional PT775 17""	£519.00	£609.83
MT1123	Economy 17EA 17""	£375.00	£440.63
EURMT0497	Graphics 15GS 15""	£259.00	£304.33
MT1449	Graphics 15GA 15""	£225.00	£264.38
MT1447	Economy E655 15""	£179.00	£210.33
MT1310	Economy E641 14""	£159.00	£186.83
MT1726	E771	£325.00	£381.88
MT2005	GT771	£409.00	£480.58
MT1579	P775	£419.00	£492.33
MT1714	G790	£579.00	£680.33

TECHNOVISION

EURMT0282	Technovision 17""	£285.00	£334.88
MT1708	Technovision 15""	£169.00	£198.58

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EURMT0280	Technovision 14""	£109.00	£128.08

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MT1660	15"" DJ530"	£169.00	£198.58
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MT1665	15"" DJ700"	£365.00	£428.88
MT0575	19"" DJ800"	£555.00	£652.13
MT1662	21"" DJ920"	£815.00	£957.63
MT1664	15"" 1595V"	£155.00	£182.13
MT1668	17"" DJ707"	£325.00	£381.88

LG ELECTRONICS

MT1729	14"" SW44I"	£115.00	£135.13
MT1990	14"" 44M"	£129.00	£151.58
MT1453	15"" SW5D"	£185.00	£217.38
MT1119	15"" 56I	£135.00	£158.63
MT1991	15"" 55I"	£135.00	£158.63
MT1992	15"" 56M"	£165.00	£193.88
MT1993	17"" 77I"	£275.00	£323.13
MT1994	17"" 7D"	£325.00	£381.88
MT1995	17"" 78M"	£369.00	£433.58
MT1996	17"" 78T	£369.00	£433.58
MT1307	17"" 74M"	£215.00	£252.63
MT1120	17"" 76I	£375.00	£440.63
MT1373	17"" 78D"	£445.00	£522.88
MT1121	17"" 78I	£369.00	£433.58
MT1997	19"" 99T"	£545.00	£640.38
MT1122	20"" 20I	£655.00	£769.63
MT1438	21"" 28I"	£865.00	£1,016.38

SAMSUNG

MT1591	3NE 14""	£115.00	£135.13
MT1595	SM500S 15""	£179.00	£210.33
MT1600	SM500MS 15""	£205.00	£240.88
MT1594	SM500B 15""	£219.00	£257.33
MT1593	SM700S 17""	£379.00	£445.33
MT1592	SM700MS 17""	£409.00	£480.58
MT1598	SM 700P 17""	£485.00	£569.88
MT1599	SM1000P 21""	£1,125.00	£1,321.88
MT1845	SM400B	£125.00	£146.88

PHILIPS

MT1260	14"" Colour Monitor 104S	£140.00	£164.50
MT1251	15"" Colour Monitor 105S	£229.00	£269.08
MT1259	17"" 107B"	£375.00	£440.63
MT1252	21"" 201BR"	£1,775.00	£2,085.63
MT1412	17"" 107S"	£305.00	£358.38

INPUT DEVICES

MICROSOFT

207210	Natural Keyboard	£42.00	£49.35
IN5945	Intellimouse Serial & PS/2	£35.00	£41.13
IN5950	Intellimouse and Serial & PS/2 5 PACK	£165.00	£193.88
207069	Home Mouse	£15.00	£17.63
207066	Mouse 2 & PS/2 Intellipoint	£25.00	£29.38
IN5976	Easy Ball	£25.00	£29.38
IN6561	Intellimouse Trackball	£42.00	£49.35
IN6622	Sidewinder Force Feedback Pro	£79.00	£92.83
IN6623	Sidewinder Precision Pro	£39.00	£45.83
IN5485	Sidewinder 3D Pro	£39.00	£45.83
IN5979	Slidewinder 3D Pro + Hellbend	£45.00	£52.88
IN5953	Sidewinder Gamepad	£25.00	£29.38

LOGITECH

EURAC2977	Trackman Marble Mouse	£42.00	£49.35
EURIN0077	Pilot Mouse PS/2	£15.00	£17.63
EURIN0002	Pilot Mouse Serial	£15.00	£17.63
EURIN1199	Mouseman Cordless Combo	£35.00	£41.13
EURIN1200	MouseMan Bus Cordless	£40.00	£47.00
201207	Pilot TrackMan Serial	£27.00	£31.73
EURIN1204	Trackman Portable Combo	£32.00	£37.60
IN5872	MouseMan Cordless Pro	£35.00	£41.13
IN6111	Surfman	£45.00	£52.88
IN6501	Trackman	£25.00	£29.38
IN6438	Mouseman +	£29.00	£34.08
IN6440	Pilot Mouse Plus	£16.45	£19.33
IN6260	MouseMan for Notebooks	£35.00	£41.13

ZYE TECHNOLOGY

IN6376	3 Button Mouse	£6.99	£8.21
IN6374	Point Mouse PS/2	£12.99	£15.26
IN6378	Point Mouse Serial	£14.99	£17.61
IN6377	Dolphin Mouse PS/2	£19.99	£23.49
IN6375	Dolphin Mouse Serial	£24.99	£29.36

IN6372	Track Point	£29.99	£35.24
IN6371	Key Stik	£7.99	£9.39
IN6370	Mouse/Mat Bundle	£12.99	£15.26
IN6369	WIN 95 KEYBOARD PS/2	£19.99	£23.49
IN6373	WIN 95 KEYBOARD PS/2	£19.99	£23.49

WACOM

EURIN1546	Ultrapad A3	£525.00	£616.88
EURIN1547	Ultrapad A4	£329.00	£386.58
EURIN1548	Ultrapad Din A5	£225.00	£264.38
EURIN1538	Artpad II 4 X 5 Dabbler Bundle CD ROM	£99.00	£116.33
IN6758	Ultrapad A2	£1,145.00	£1,345.38
IN6766	Pen Partner	£75.00	£88.13
INP0524	Artpad II	£115.00	£135.13
INP1176	Ultrapad A5 & Painter	£299.00	£351.33
INP1175	Ultrapad A4 & Painter	£399.00	£468.83

DIGITAL CAMERAS

CASIO

IN6216	QV-11	£189.00	£222.08
IN6575	QV-70	£225.00	£264.38
IN6576	QV-200	£289.00	£339.33
IN6577	QV-700	£349.00	£339.58

KODAK

INP0890	DC-20	£115.00	£135.13
IN5974	DC-25	£155.00	£182.13
INP0647	DC-50	£269.00	£316.08
IN6267	DC-120	£649.00	£762.58
IN6713	DC-210	£589.00	£692.08
IN6826	DCV-300	£129.00	£151.58

AGFA

IN5994	E-Photo 307	£209.00	£245.58
IN6850	E-Photo 1280	£549.00	£645.08

Polaroid

IN5914	2000-40	£1,100.00	£1,292.50
IN5915	2000-60	£1,499.00	£1,761.33

FUJI

IN6136	DS-7	£355.00	£417.13
IN6412	DX-5	£279.00	£327.83
IN6207	NC-3D Printer	£250.00	£293.75

CANON

IN6061	Powershot 600	£529.00	£621.58
IN6515	Powershot 350	£379.00	£445.33

EPSON

IN6016	Photo PC-500	£295.00	£346.63
IN6527	Photo PC-600	£529.00	£621.58

CONNECTIX

IN5435	QuickCam	£65.00	£76.38
IN5829	QuickCam Colour	£129.00	£151.58
IN6682	QuickCam VC Parallel	£89.00	£104.58
IN6683	QuickCam VC USB	£89.00	£104.58
BS11330	Digital Radar	£25.00	£29.38
AC23776	Family Antics	£34.00	£39.95

SONY

INP1211	DK-1	£675.00	£793.13
IN6191	DSC-F1	£435.00	£511.13
IN6346	Mavica FD5	£369.00	£433.58
IN6403	Mavica FD7	£489.00	£574.58

PANASONIC

IN6515	KXL-600A	£255.00	£299.63

OLYMPUS

IN6513	C410L	£459.00	£539.33
IN6512	C-400	£425.00	£499.38
PR12835	P150E Printer	£329.00	£386.58
IN6511	ES-10 Scanner	£355.00	£417.13
IN6592	A-10 adapter for ES-10	£136.00	£159.80
IN6514	820L	£699.00	£821.33
IN6591	420L	£425.00	£499.38
IN6517	C1400L	£1,105.00	£1,298.38
PR12833	P300E Printer	£499.00	£586.33

MINOLTA

IN6899	DIMAGE V	£489.00	£574.58

Ricoh

IN6588	RDC2L	£575.00	£675.63
IN6851	RDC-2E	£425.00	£499.38

INTEL

INP1473	Pro Share Video System 2000	£989.00	£1,162.08
CSR2867	Video Conferencing	£749.00	£880.08

SANYO

IN6604	VPC-G200 DIGICAM	£429.00	£504.08
IN5882	VPC-G1 IMAGE CAMERA	£295.00	£346.63

SPEAKERS

SONY

MUS0462	SRS-PC51 2 X 2.5W Amplifiers	£45.00	£52.88
MUS0452	SRS-PC21 2 X 2W Amplifiers	£25.00	£29.38
MUS0451	SRS-PC41 2 X 3W Amplifiers	£35.00	£41.13
MUS0450	SRS-PC91 2 X 10W Amplifiers	£95.00	£111.63

TYPHOON

EURAC3668	Typhoon 25 Watt	£15.00	£17.63
EURAC3666	Typhoon 12D Watt	£25.00	£29.38
EURAC3223	Typhoon 260Watt	£35.00	£41.13

PDA

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GRAPHICS CARDS

ATI

EX8054	Xpert @ Work 4MB	£109.00	£128.08
EX8647	Xpert @ Work 8MB	£129.00	£151.58
EX8055	Xpert @ Play 4MB	£119.00	£139.83
EX8057	Xpert @ Play 8MB	£139.00	£163.33
EX7738	All-in-Wonder 4MB	£185.00	£217.38
NEW	All-in-Wonder 8MB	£219.00	£257.33

CREATIVE

EX8380	G/Blaster Extreme 4MB	£ 69.00	£81.08

DIAMOND

EX8266	Stealth S220 3D 4MB	£65.00	£76.38
EX7673	Monster 3D 4MB	£96.00	£112.80
EX8265	Viper V330 4MB TVOut	£109.00	£128.08

ELSA

EX7627	Winner2000 2MB Virge	£136.00	£159.80
EX7633	Winner2000 4MB Virge	£174.00	£204.45
EX8254	Winner2000/Office 4MB	£145.00	£170.38
EX8255	Winner2000/Office 8MB	£225.00	£264.38
EX8574	Victory Erazor 4MB	£145.00	£170.38

HERCULES

EX7903	Stingray 128/3D 6MB	£155.00	£182.13
EX8575	Stingray 128/3D 8MB	£175.00	£205.63
EX8576	Thriller 3D PCI 4MB	£85.00	£99.88
EX8577	Thriller 3D PCI 8MB	£159.00	£186.83
EX8578	Thriller 3D AGP 4MB	£85.00	£99.88
EX8742	Thriller 3D AGP 8MB	£159.00	£186.83
EX8579	Dynamite 3D PCI 4MB	£129.00	£151.58
EX8580	Dynamite 3D PCI 8MB	£165.00	£193.88
EX8581	Dynamite 3D AGP 4MB	£129.00	£151.58
EX8582	Dynamite 3D AGP 8MB	£165.00	£193.88
EX8583	Terminator 3D DX 2MB	£52.00	£61.10
EX8584	Terminator 3D DX 4MB	£59.00	£69.33

MATROX

EX8074	Millennium II 4MB	£107.00	£125.73
EX8075	Millennium II 8MB	£159.00	£186.83
EX8077	Mystique 220 4MB	£79.00	£92.83
EX8267	M3D Accelerator	£55.00	£64.63
EX7758	Rainbow Runner/Mystique	£115.00	£135.13
EX8724	Rainbow Runner/Millennium	£139.00	£163.33

NUMBER NINE

EX8585	Revolution 4MB AGP	£159.00	£186.83
EX8586	Revolution 8MB AGP	£219.00	£257.33
EX8120	Revolution 4MB PCI	£159.00	£186.83
EX8119	Revolution 8MB PCI	£219.00	£257.33
EX8587	4MB WRAM Upgrade	£79.00	£92.83
EX8588	8MB WRAM Upgrade	£139.00	£163.33

ORCHID

EX7428	Righteous 3D 4MB PCI	£108.00	£126.90

STB

EX8589	Velocity 4MB PCI	£115.00	£135.13
EX8590	Velocity 4MB AGP	£115.00	£135.13
EX8591	Nitro 3D 2MB PCI	£52.00	£61.10
EX8592	Nitro 3D 4MB PCI	£65.00	£76.38
EX8593	Nitro 64 1MB ISA	£43.00	£50.53
EX8594	Nitro 64 2MB ISA	£54.00	£63.45

VIDEOLOGIC

EX8101	Apocalypse 3Dx	£66.00	£77.55
EX8747	Apocalypse 5D	£125.00	£146.88

SOUND CARDS

AZTECH

EX8758	SoundGalaxy 16 ISA	£12.95	£15.22
EX8760	WaveRider 32 ISA	£39.95	£46.94
EX8759	Wave 3D 128 Bit PCI	£75.95	£89.24

CREATIVE

EX7337	16 Value	£32.95	£38.72
EX8111	AWE64 Value	£58.95	£69.27
EX7695	AWE64 Gold	£111.95	£131.54

SCSI CONTROLLER CARDS

ADAPTEC

EUREX2748	PCI AHA2920	£89.00	£104.58
EUREX2476	PCI AHA3940U	£245.00	£287.88
EX6529	PCI RAID AHA3985	£499.00	£586.33
EX7250	PCI AHA2940AU	£149.00	£175.08
236129	PCI WIDE AHA2940UW	£169.00	£198.58
EX8565	PCI WIDE AHA2940U2W	£259.00	£304.33
EX7649	PCI WIDE AHA2944W	£259.00	£304.33
236131	PCI WIDE AHA3940UW	£255.00	£299.63
EX7657	PCMCIA APA1450A	£69.00	£81.08
EX8263	PCMCIA APA1460A-2	£99.00	£116.33
EX8385	PCMCIA APA1480A	£149.00	£175.08

ADVANSYS

EX8743	ISA ABP5140	£75.00	£88.13
EX8745	PCI ABP940UM	£85.00	£99.88
EX8746	PCI WIDE ABP940UW	£115.00	£135.13

DPT

EX8738	ISA WIDE PM2041FW	£145.00	£170.38
EX8739	PCI PM2044U	£179.00	£210.33
EX8740	PCI WIDE PM2044UW	£215.00	£252.63

PROCESSOR UPGRADES

EVERGREEN

EX7194	486 to 586/133MHz	£99.00	£116.33
EX8294	P75 to 180MHz MMX	£125.00	£146.88
EX8213	P75 to 200MHz MMX	£155.00	£182.13

INTEL

EX7704	P100/133 to 166MHz MMX	£105.00	£123.38
EX8115	P90 to 180MHz MMX	£129.00	£151.58
EX8114	P133 to 200MHz MMX	£155.00	£182.13

PROCESSORS

INTEL

EX8391	Pentium 200MHz MMX	£99.00	£116.33
EX8452	Pentium 233MHz MMX	£155.00	£182.13
EX8456	Pentium II 233MHz	£219.00	£257.33
EX8455	Pentium II 266MHz	£299.00	£351.33
EX8393	Pentium II 300MHz	£419.00	£492.33

MOTHERBOARDS

GIGABYTE

EX8779	GA-686BLX for Pentium II 233+	£99.00	£116.33
EX8781	GA-686LX for Pentium II 233+	£99.00	£116.33
EX8782	GA-686SLX for Pentium II 233+	£169.00	£198.58
EX8780	GA-686DLX for Dual Pentium II	£215.00	£252.63

INTEL

EX8435	Atlanta 440LX	£135.00	£158.63
EX8783	Atlanta 440LX No Audio	£125.00	£146.88
EX8566	DK 440LX	£395.00	£464.13
EX8784	Redwood 440LX	£439.00	£515.83

INTERNAL CD-ROM DRIVES

EX7967	Creative 24X IDE	£55.00	£64.63
EX8139	Creative 24X Discovery	£99.00	£116.33
DR6540	Samsung 24X IDE	£43.00	£50.53
DR7501	Toshiba 32X IDE	£62.00	£72.85
DR7500	Toshiba 32X SCSI	£69.00	£81.08
DR7917	Plextor 32X SCSI (Tray)	£119.00	£139.83
DR7916	Plextor 32X SCSI (Caddy)	£139.00	£163.33
DR7947	LG Electronics 32X IDE	£59.00	£69.33
DR7993	Teac 32X IDE	£65.00	£76.38
DR7992	Teac 32X SCSI	£72.00	£84.60
DR6055	Teac 8X 6 Disc IDE	£95.00	£111.63
DR6789	Nakamichi 16X 5 Disc IDE	£89.00	£104.58

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DR6780	Nakamichi 16X 5 Disc SCSI	£119.00	£139.83

DVD DRIVES

DR6307	Creative DVD Encore Kit	£169.00	£198.58
DR7915	Hitachi DVD IDE Bare	£145.00	£170.38
DR5854	Toshiba DVD IDE Bare	£299.00	£351.33
DR5855	Toshiba DVD IDE Kit	£369.00	£433.58

EXTERNAL CD-ROM DRIVES
AMACOM

DR5483	EZCD 8X Ext Par	£119.00	£139.83
DR7029	EZCD 16X Ext Par	£135.00	£158.63
DR7921	EZCD 24X Ext Par	£145.00	£170.38
DR5484	EZCD 8X Par & Sound	£165.00	£193.88
DR7032	EZCD 16X Par & sound	£179.00	£210.33
DR7920	EZCD 24X Par & sound	£195.00	£229.13
DR5485	EZCD 8X Ext PCMCIA	£135.00	£158.63
DR7033	EZCD 16X Ext PCMCIA	£139.00	£163.33
DR7919	EZCD 24X Ext PCMCIA	£155.00	£182.13
DR6680	EZCD 8X PCMCIA/Audio	£165.00	£193.88
DR7918	EZCD 20X PCMCIA/Audio	£199.00	£233.83

COMPUTER CONNECTIONS

DR6244	16X Ext Parallel	£129.00	£151.58
DR6855	24X Ext Parallel	£149.00	£175.08
DR6771	16X Ext PAR&SCSI	£159.00	£186.83
DR7010	24X Ext PAR&SCSI	£179.00	£210.33

MICROSOLUTIONS

DR5196	8X Parallel	£135.00	£158.63
DR5195	8X Parallel & Sound	£159.00	£186.83
DR6886	8X Parallel Slimline	£149.00	£175.08
DR6887	8X Par & Sound Slim	£179.00	£210.33

CD-R DRIVES
COMPUTER CONNECTIONS

EX7938	2X/6X Ext PAR&SCSI	£299.00	£351.33
EX7939	4X/6X Ext PAR&SCSI	£359.00	£421.83

DYNATEK

DR5804	4X/6X Int SCSI	£269.00	£316.08
DR5805	4X/6X Ext SCSI	£319.00	£374.83
DR7391	4X/12X Int SCSI	£289.00	£339.58
DR7393	4X/12X Ext SCSI	£329.00	£386.58
DR7960	4X CD-R & 2GB HDD	£699.00	£821.33
DR7962	4X CD-R & 4GB HDD	£819.00	£962.33
DR7963	4X CD-R & 9GB HDD	£1,059.00	£1,244.33

TEAC

DR7499	4X/12X Int SCSI	£289.00	£339.58

CD-RW DRIVES
COMPUTER CONNECTIONS

DR7143	2X/2X/6X Ext PAR&SCSI	£329.00	£386.58

DYNATEK

DR7396	2X/2X/6X Int EIDE	£349.00	£410.08
DR7451	2X/2X/6X Int SCSI	£339.00	£398.33
DR7784	2X/2X/6X Ext SCSI	£379.00	£445.33

HEWLETT PACKARD

DR7994	2X/2X/6X Int EIDE	£235.00	£276.13
DR7995	2X/2X/6X Ext Parallel	£289.00	£339.58

RICOH

DR6298	2X/2X/6X Int SCSI	£325.00	£381.88
DR651D	2X/2X/6X Ext SCSI	£399.00	£468.83

VERBATIM

DR7498	2X/2X/6X Int SCSI	£265.00	£311.38
DR7366	2X/2X/6X Int SCSI Kit	£359.00	£421.83
DR7368	2X/2X/6X Ext SCSI	£399.00	£468.83

YAMAHA

DR7439	4X/2X/6X Int EIDE	£289.00	£339.58
DR7465	4X/2X/6X Int SCSI	£299.00	£351.33
DR7467	4X/2X/6X Ext SCSI	£315.00	£370.13

CD SERVERS
DYNATEK

DR7777	7-Drive 32X	£739.00	£868.33
DR7776	7-Drive Config Kit	£519.00	£609.83
DR7779	14-Drive 32X	£1,699.00	£1,996.33
DR7774	14-Drive Config Kit	£869.00	£1,021.08

TAPE DRIVES
AMACOM

DR5900	2/4GB DAT PAR&SCSI	£655.00	£769.63
DR5901	4/8GB DAT PAR&SCSI	£869.00	£1,021.08
DR7507	12/24GB DAT PAR&SCSI	£1,169.00	£1,373.58
DR5899	4/8GB TR-4 PARSCSI	£469.00	£551.08

COLORADO

DR7763	3.2GB Int SCSI T3000i	£107.00	£125.73
DR7034	5GB Internal IDE	£127.00	£149.23
DR7035	5GB Ext Parallel	£155.00	£182.13

COMPUTER CONNECTIONS

DR7631	2GB DAT PAR&SCSI	£499.00	£586.33
DR7632	2/4GB* DAT PAR&SCSI	£529.00	£621.58
DR7633	4/8GB* DAT PAR&SCSI	£639.00	£750.83
DR7634	12/24GB* DAT PAR&SCSI	£899.00	£1,056.33

DYNATEK

DR7768	2GB DAT Int SCSI	£359.00	£421.83
DR7781	2GB DAT Ext SCSI	£409.00	£480.58
DR7771	2/8GB DAT Int SCSI	£389.00	£457.08
DR7772	2/8GB DAT Ext SCSI	£429.00	£504.08
DR7773	4/16GB DAT Int SCSI	£509.00	£598.08
DR7769	4/16GB DAT Ext SCSI	£549.00	£645.08
DR7767	12/24GB DAT Int SCSI	£699.00	£821.33
DR7766	12/24GB DAT Ext SCSI	£739.00	£868.33
DR7765	15/30GB Ext SCSI	£1,849.00	£2,172.58
DR7786	20/40GB DLT Ext SCSI	£2,099.00	£2,466.33
DR7782	35/70GB DLT DLT Ext SCSI	£4,299.00	£5,051.33

HEWLETT PACKARD

DR7151	2000i 2GB* Int SCSI	£445.00	£522.88
DR7152	2000e 2GB* Ext SCSI	£515.00	£605.13
DR7153	5000i 4GB* Int SCSI	£469.00	£551.08
DR7154	5000e 4GB* Ext SCSI	£545.00	£640.38
DR7155	DAT8i 8GB* Int SCSI	£579.00	£680.33
DR7156	DAT8e 8GB* Ext SCSI	£669.00	£786.08
DR7428	DAT24i 24GB* Int SCSI	£795.00	£934.13
DR7427	DAT24e 24GB* Ext SCSI	£875.00	£1,028.13
DR5721	DLT 20/40GB* Ext SCSI	£2,795.00	£3,284.17
DR7450	DLT 35/70GB* Ext SCSI	£4,395.00	£5,164.13

IOMEGA

DR6064	Ditto 2GB IDE	£56.00	£65.80
DR6065	Ditto 2GB Parallel	£88.00	£103.40
DR6868	DittoMax 7GB IDE	£99.00	£116.33
DR6867	DittoMax 7GB Par	£129.00	£151.58
DR6985	DittoMaxPro 10GB IDE	£189.00	£222.08
DR6984	DittoMaxPro 10GB Par	£189.00	£222.08
DR4719	Ditto Dash card	£35.00	£41.13
ACC1816	Large case	£25.50	£29.96
ME6953	Single 2GB tape	£14.00	£16.45
ME6954	3-Pack 2GB tapes	£39.00	£45.83
ME7454	Single 3GB tape	£15.00	£17.63
ME7455	3-Pack 3GB tapes	£42.00	£49.35
ME7456	Single 5GB tape	£18.00	£21.15
ME7458	Single 7GB tape	£21.00	£24.68
ME7533	Single 10GB tape	£24.00	£28.20

MICROSOLUTIONS

DR5205	4/8GB TR-4 Parallel	£319.00	£374.83

SEAGATE

DR6552	2/4GB DAT Int SCSI	£345.00	£405.38
DR6553	2/4GB DAT Ext SCSI	£415.00	£487.63
DR7689	4/8GB DAT Int SCSI	£445.00	£522.88
DR7688	4/8GB DAT Ext SCSI	£515.00	£605.13
DR7690	12/24GB DAT Int SCSI	£609.00	£715.58
DR7691	12/24GB DAT Ext SCSI	£709.00	£833.08

SONY

DR6911	2/4GB DAT Int SCSI	£319.00	£374.83
DR8033	2/4GB DAT Ext SCSI	£455.00	£534.63
DR6013	4/8GB Int SCSI	£435.00	£511.13
DR8034	4/8GB Ext SCSI	£525.00	£616.88
DR6017	12/24GB Int SCSI	£579.00	£680.33
DR8035	12/24GB Ext SCSI	£695.00	£816.63

REMOVABLE DRIVES
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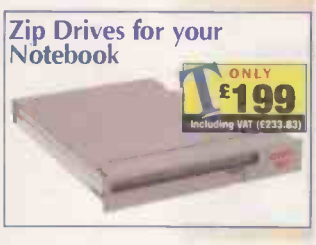

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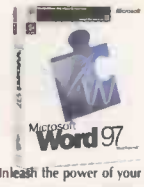

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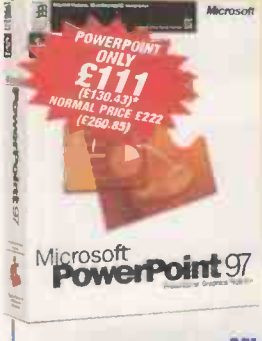

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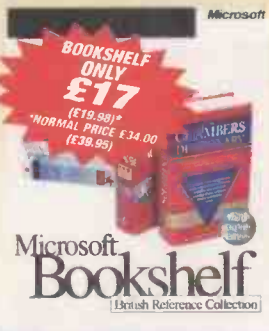

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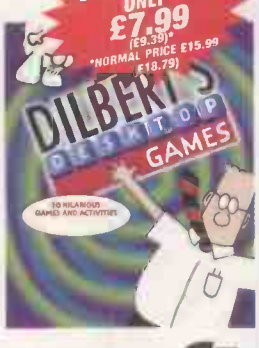

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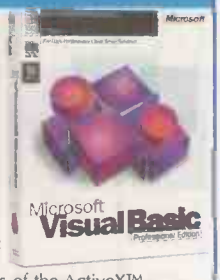

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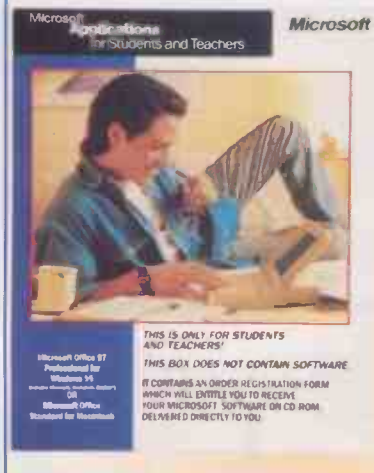

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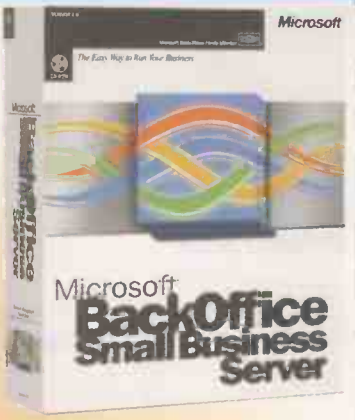

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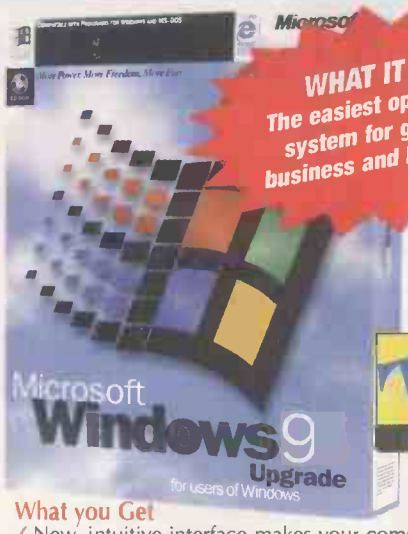

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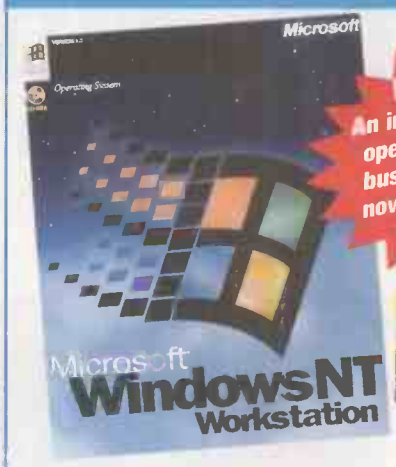
MS Windows NT Workstation 4.0



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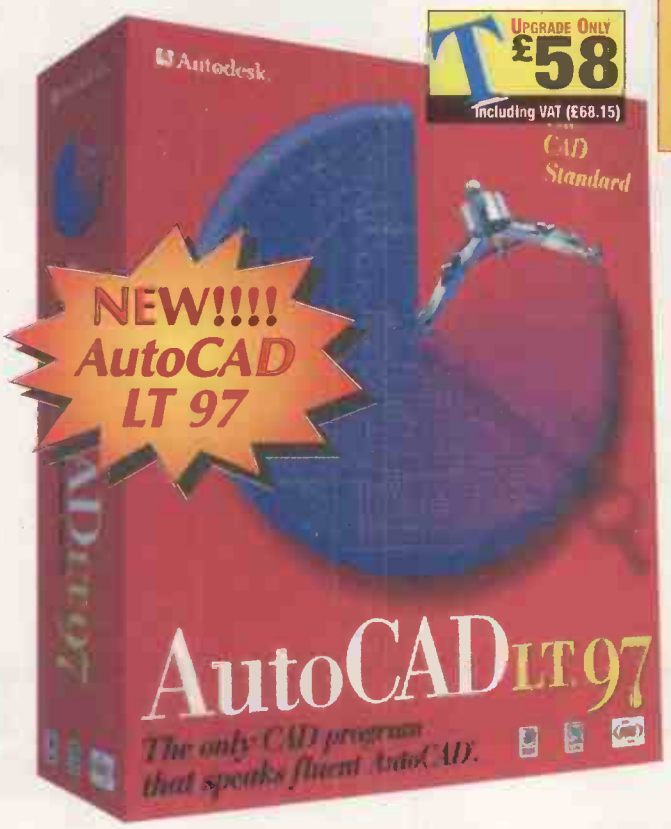

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Feature	Description	Benefit
Application Wizard	Unique tool that customizes the drawing environment for the type of drawing created. Helps user by getting the drawing started for them. Changes include symbol libraries that are specific to drawing type as well as application-specific toolsets	Get started fast. Even first time users can create drawings the first time they try. The new Wizards automatically set options to match the kind of drawing you want to create. For example, symbol libraries, scale and drawing tools are selected based on whether your drawing is a floor plan, process flow diagram or mechanical part.
Symbol Explorer	Tool for previewing symbols by library. The display is formatted using the familiar Microsoft Windows Explorer	Complete visual identification of what symbols are where. Even reorganize symbols into custom collections that match your unique design
Office 97 Logo Compliant	Follows the standards required for Office 97 logo compliance	If you are one of the tens of millions who use Microsoft Office software then you already know the basic interface for using AutoSketch. Easily integrate, link and annotate your AutoSketch drawings with details in Word or Excel.
Hyperlinks	Links can be embedded in drawings that point to other drawings, Web sites, and Microsoft Office documents.	Any object or text in a new AutoSketch drawing can be a hot link to another AutoSketch drawing file or to a Microsoft Office Word or Excel file or take the viewer of your drawing out to a web page URL anywhere on the Internet.
DWF file support	DWF file export. 2D Vector format for publishing CAD data on the Web.	Now you can easily publish your drawings on the World Wide Web so that anyone, anywhere with the free DWF browser plug-in can view your drawings.
CAD Edit Bar	Displays the geometric properties of a selected entity. Also displays settings for drawing, editing tools and inquire tools.	Provides unparalleled ease of editing with instant access to changing coordinates, lengths, angles and other parameters.
Customizable Grids	Grids can be set to Rectangular, Circular and Isometric. Also can be modified with offset and double offset grids.	The background drawing grid can be any size or shape, even circular or isometric, and you can combine grids in a single drawing file to speed creation of your unique design.
Automatic Snap	Input assistant that automatically positions the cursor based on selected input mode	We have enhanced the ability to force new lines and other entities to snap to a pre-determined point.
AutoPoint Indicators	Coloured circles that provide visual feedback to the user during coordinate input so that the user will know what point will actually by chosen when combining input snap modes and lock modifiers	Now you have even more visual cues to simplify the drawing process. Indicators give combined visual cues for coordinate input

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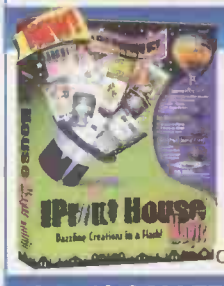

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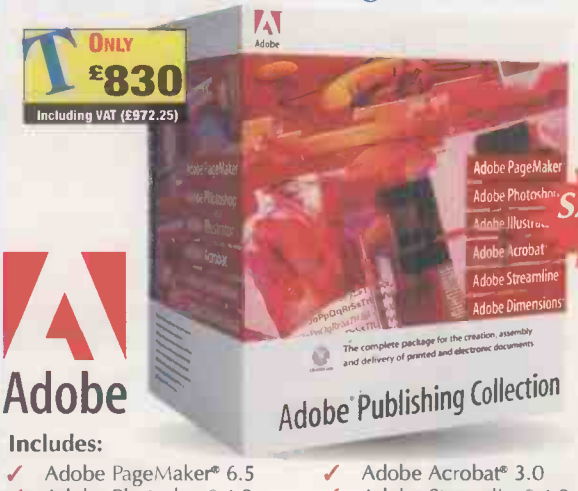

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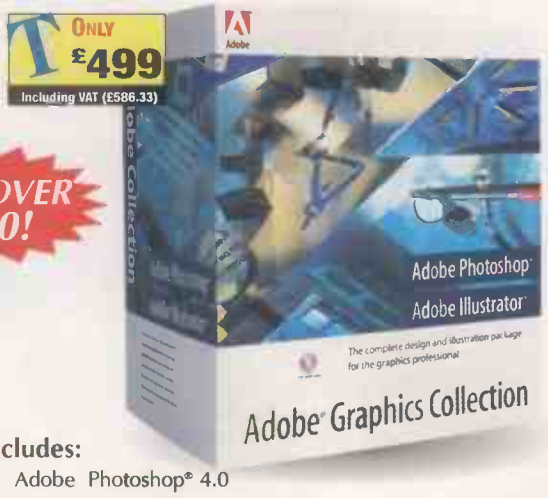

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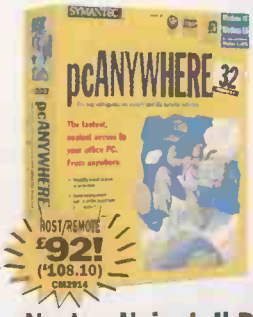

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Lotus

System Requirements
TCP/IP - Supported by browsers and Lotus Notes Client-Server OS and Memory: CPU Intel Pentium, MS Win NT 3.51 & 4.0- Min 32MB RAM, 548MB 'RAM recom. 300 MB disk space. Client & Browser Requirements Pentium or 486, MS Win3.51 &4.0-Min 16MB, 20MB recom.

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CLARIS

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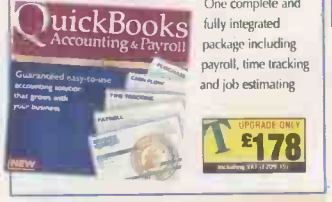

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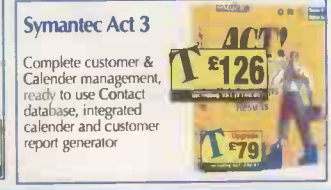
PM0343	Symantec Act V2.0 Win 3.5	£129.00	(£151.58)
PM0833	Symantec Act V3.0 W95 / NT 3.5/CD	£126.00	(£148.05)
UP3656	Symantec Act V3.0 Upg W95 / NT CD	£79.00	(£92.83)
PM0875	Ecco Pro V4.01 Win/ Win 95/NT CD	£99.00	(£116.33)
PM0939	LOTUS ORGANIZER V2.1 WIN 20 USER LP	£548.00	£643.90



CM2391	TRACKER V2.2 WIN / WIN 95 / NT SINGLE USER 3.5'	£149.00	£175.08
CM2392	TRACKER V2.2 WIN / WIN 95 / NT 1 ADDIT NETWORK LIC	£114.00	£133.95
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CM2394	TRACKER V2.2 WIN / WIN 95 / NT 10 USER NETWORK 3.5	£1,080.00	£1,269.00
CM3131	TRACKER 97 CONTACT MANAGER WIN 95 / NT4 CD	£153.00	£179.78
PM0931	TRACKER 97 WIN 95 / NT4 UPG	£99.00	£116.33

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DB0773	Filemaker Pro V4.0 Win/ Win 95/NT CD	£165.00	(£193.88)
DB0772	Filemaker Pro V4 Win/ Win 95 Upg CD	£99.00	(£116.32)
NT8036	Filemaker Pro V3.0 Server NT	£799.00	(£938.83)
DB0751	Lotus Approach Win 95/ NT Single Lic PK	£42.00	(£49.35)
DB0752	Lotus Approach 97 Win 95/NT 3.5	£42.00	(£49.35)
201399	Lotus Approach V3 Win 3.5"	£89.00	(£104.57)
DB0720	MS Access 97 W95 CD	£224.00	(£263.20)
SI2444	MS Access 97 W95 Comp Upg CD	£88.00	(£103.40)
EURDB0045	MS Access V2 Developers Kit 3.5"	£225.00	(£264.38)
DB0360	MS Access V2 Win 1 MLP	£195.00	(£229.13)
DB0293	MS Access V2 Win 3.5"	£224.00	(£263.20)
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DB0707	MS V/Foxpro Pro 5.0 W95/ NT Upg CD	£199.00	(£233.83)

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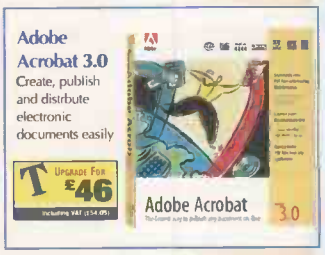
CM2439	Acrobat V3.0 Win / W95 / NT / Upg CD	£46.00	(£54.05)



GR10126	Adobe Framemaker 5.5 Win 95/NT 4.0 CD	£445.00	(£522.87)
GR9772	Pagemaker V6.5 W95 / NT CD	£365.00	(£428.87)

GR9773	Pagemaker V6.5 W95 / NT Upg CD	£89.00	(£104.57)
GR10056	Adobe Publishing Col V3 W95 CD	£830.00	(£975.25)

GR9749	Corel Ventura V7 W95 CD	£350.00	(£411.25)
UP3658	Corel Ventura V7 W95 Comp/Upg CD	£139.00	(£163.33)
GR9746	MS Publisher 97 W95 CD	£66.00	(£77.55)
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GR9941	Serif Page Plus Home Office Edition Win 95 CD	£29.00	(£34.08)
GR9940	Serif Draw Plus 3 Home Office Win 95 CD	£29.00	(£34.08)
GR9943	Serif Publishing Power Suite Win/Win 95 CD	£49.00	(£57.58)

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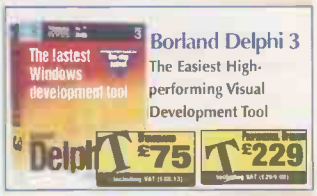

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CM2435	BORLAND INTRABUILDER CLIENT SERVER WIN 95 / NT CD	£1,135.00	£1,333.63
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EURDB0003	PARADOX V4.5 DOS RUNTIME 3.5'	£138.00	£162.15
EURDB1010	BORLAND VISUAL DBASE V5.5 CLIENT SERVER WIN CD	£299.00	£351.33
EURDB1020	PARADOX V7 WIN 95 / WIN NT 3.5'	£69.00	£81.08
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LN3559	BORLAND C++ BUILDER C/S SUITE WIN 95 / NT CD	£1,299.00	£1,526.33
LN3560	BORLAND C++ BUILDER PRO WIN 95 / NT CD	£350.00	£411.25
LN3561	EDU BORLAND C++ BUILDER PRO WIN 95 / NT CD	£95.00	£111.63
LN3562	BORLAND C++ BUILDER WIN 95 / NT CD	£69.00	£81.08
LN3605	DELPHI 3 STANDARD WIN / WIN 95 / NT CD	£75.00	£88.13
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LN3649	BORLAND JBUILDER PRO V1 WIN95 / NT UPG CD	£229.00	£269.08
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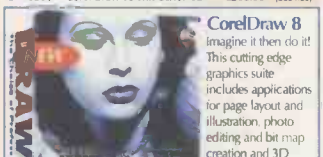
EURUT1403	Imsi Graphics Converter Gold For Win 3.5	£27.00	(£31.73)
EURGR1727	Clans Draw V1.0 Win / W95 3.5'	£99.00	(£116.33)
GR10231	Corel Draw V8 Win 95/NT CD	£259.00	(£304.33)



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GR10232	Corel Draw V8 Upg Win 95/NT CD	£145.00	(£170.38)
GR8280	Corel Draw V4 Win CD	£42.00	(£49.35)
EURGR0056	Corel Draw V4—>V5 Win Upg CD	£75.00	(£88.13)
GR8580	Corel Draw V5 Win CD	£129.00	(£151.58)
GR9766	Corel Printhouse V1.1 Win/W95 CD	£25.00	(£29.38)
GR9833	Corel Printhouse Magic Win/W95 CD	£29.00	(£34.08)
GR9904	Corel Print & Photohouse W95/NT 4 CD	£29.99	(£35.24)
234618	Coreldraw V6 W95 CD	£82.00	(£96.35)
GR9814	Coreldraw V7 W95 / NT4 CD	£259.00	(£304.33)
GR9813	Coreldraw V7 W95/ NT Upg CD	£139.00	(£163.33)
GR9963	Corel Photo Paint Plus V7 WIN 95/NT CD	£209.00	(£245.58)
GR9964	Corel Photo Paint Plus V7 UpgWIN 95/NT CD	£69.00	(£81.08)
GR10303	Freehand V8 Win 95/NT CD	£279.00	(£327.82)
GR10304	Freehand V8 Win 95/NT Upg CD	£110.00	(£129.25)
GR9878	MGFX Graphics Suite For Windows 95 CD	£199.00	(£233.83)
UP3785	MGFX Graphics Suite W95 Upg/Comp CD	£118.00	(£138.65)
GR9908	MGFXSimply 3D V2 Win 95/NT CD	£55.00	(£64.63)
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GR10240	Micrografx Draw V6.0 W95 / NT CD	£38.00	(£44.65)
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GR9860	Photoshop V4.0 Upg From Mac CD	£149.00	(£175.08)
GR9774	Photoshop V4.0 Win/W95/NT CD	£369.00	(£433.57)
GR9775	Photoshop V4.0 Win/W95/ NT Upg CD	£139.00	(£163.33)
GR9691	Paintshop Pro Deluxe V4.0 W95 / NT4 CD	£48.00	(£56.40)
GR9689	Paintshop Pro Std V4.0 Win 95/NT4 3.5"	£38.00	(£44.65)
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GR10304	MACROMEDIA FREEHAND V8 WIN95 / NT UPG CD	£110.00	£129.25
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EURUP2042	Toolbook V4 Upg Win/ W95/NT 3.5' + CD	£69.00	(£81.08)

EURLN0226	Toolbook V4 Win / W95 / NT 3.5'+ CD	£97.00	(£113.98)
GR9724	Illuminatus V3.0 Win / W95 3.5 + CD	£98.00	(£115.15)
GR9967	Director 6 Win 95/NT CD	£725.00	(£851.88)
GR9968	Director 6 Win 95/NT Upg CD	£299.00	(£351.33)
GR9969	Director 6 Multimedia Studio Win 95/NT CD	£795.00	(£934.13)
UP3870	Director 6 Multimedia Studio Win 95/NT Upg CD	£399.00	(£468.83)
GR9676	Click And Create Win /Win95/NT CD	£299.00	(£351.33)
UP3602	Click And Create Comp Upg CD	£159.00	(£186.63)
UT7108	Videotrope V1 Win 95/ NT 4 3.5	£30.50	(£35.83)

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GR9997	Lotus Freelance Graphics 97 Win 95/NT 3.5	£42.00	(£49.35)
GR9853	MS Powerpoint 97 W95 CD	£222.00	(£260.85)
SI2449	MS Powerpoint 97 W95 Comp Upg CD	£89.00	(£104.58)
WP2730	SPC ASAP Wordpower V1.95 Win/Win 95/NT 3.5	£69.95	(£82.19)
GR9713	Corel Presentations V7 Win 95 CD	£45.00	(£52.88)

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EURUP2065	Adobe Premiere V4.2 Upg CD	£99.00	(£116.33)
EURGR1841	Asymetrix Digital Video Producer CD	£69.00	(£81.08)

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CM2559	Web Printer v2 Win/Win 95 CD	£21.00	(£24.68)
CM2664	Webseeker V3.0 Win 95/NT CD	£37.00	(£43.48)
CM2665	Webwhacker V3.0 Win 95/NT CD	£37.00	(£43.48)
GR9776	Adobe Pagemill V2.0 W95 / NT 3.5'	£63.00	(£74.02)
DCS3443	Artisoft I-Share V2	£140.00	(£164.50)
DCS3444	Artisoft Xtramail V1 NT	£270.00	(£317.25)
DCS3442	Artisoft Xtramail V1 Win95	£170.00	(£199.75)

CM2435	Intra Builder Client / Server W95 /NT CD	£1,135.00	(£1,333.63)
DB0697	Intra Builder Pro W95 /NT CD	£289.00	(£339.58)
UP3826	Intrabuilder Pro Win 95/ NT Upg CD	£229.00	(£269.08)
DB0696	Intra Builder W95 /NT CD	£59.00	(£69.33)
CM3230	Claris Home Page V3 W95/NT CD	£68.00	(£79.90)
CM3230	Claris Home Page V3 W95/NT Upg CD	£46.00	(£54.05)
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CM2466	Sidekick Internet W95 CD	£29.00	(£34.08)
CM2515	Starfish Internet Utilities W95 3.5	£29.00	(£34.08)
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CM2790	SoftQuad HotMetal Pro 4 Win95/NT CD	£75.00	(£88.13)
CM2662	Softquad Hotmetal Intranet Publisher Win95/NT CD	£249.00	(£292.58)
CM2620	Softquad Netmailer 1.01 Win/Win 95 CD & 3.5	£22.99	(£27.01)
UT6886	Symantec Internet Fast Find 3.5'	£32.00	(£37.60)
UT7008	Travelling Software Webex	£29.95	(£35.19)
GR9992	Macromedia Flash V2 Win 95/NT CD	£159.00	(£278.25)
UP3915	Macromedia Flash V2 Win 95/NT/CD Upg	£92.95	(£109.21)
EURUT1626	Cybersitter V1.2 Win 3.5"	£29.00	(£34.08)
CM2621	Tierra Highlights V2.0 Win 95/NT 3.5	£25.00	(£29.38)
CM2777	Rated PG Win 95 3.5	£29.00	(£34.08)
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ED7974	GLOBALINK LANG ASSIS FRENCH V1.0 DSK CS/WIN 3.1 95	£23.00	(£27.02)
ED7975	GLOBALINK LANG ASSIS GERMAN V1.0 DSK CD/WIN 3.1 95	£23.00	(£27.02)
ED7976	GLOBALINK LANG ASSIS V2 FRE GER ITALY CD/WIN 95	£42.00	(£49.35)
ED7977	GLOBALINK LANG ASSIS V2 SPAN PORTUGUESE CD/WIN 95	£42.00	(£49.35)
ED7629	LANGUAGE ASSISTANT DELUXE ITALIAN WIN / WIN 95 CD	£23.00	(£27.03)
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GR10023	Route 66 Europe Win/Win 95 CD	£29.99	(£35.23)
GR9729	Route 66 Ultimate Travel Bundle Win Win 95 CD	£64.00	(£75.20)
BS11304	AA Milemaster Britain	£28.99	(£34.06)

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CM3118	Lotus Domino Server V4.6 Single Processor CD	£1022.00	(£1200.85)
CM2792	Lotus Intranet Starter pack W/W95/NT CD	£749.00	(£880.00)
DCS3217	Intranetware 5 User	£459.00	(£539.33)
DCS3219	Intranetware 10 User	£845.00	(£992.88)
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DCS3221	Intranetware 50 User	£1,989.00	(£2,337.07)
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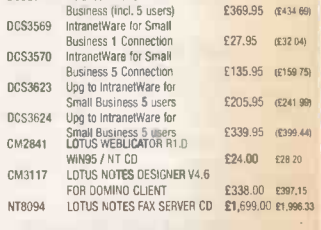

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ED7875	AA Interactive Britain & Ireland	£28.99	(£34.06)
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ED7871	AA Driving Test First Time	£16.00	(£18.80)
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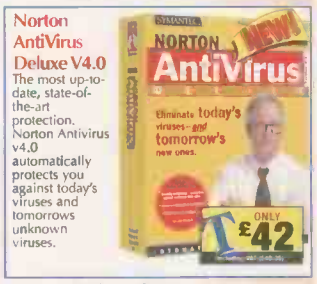
BK1609	MS OFFICE PRO - 6 BOOKS IN ONE STEP BY STEP GUIDE	£35.00	£41.13

UTILITIES–ANTIVIRUS

UP3955	Norton Antivirus Deluxe 4 Upg Dos/Win/W95/NT CD	£25.00	(£29.38)



UT7468	Norton Antivirus Deluxe 4 DOS/Win/W95/NT CD	£42.00	(£49.35)
UT7514	NORTON ANTIVIRUS 4 DOS/ WIN/WIN 95/NT 5 USER CD	£199.00	£233.83
UT7513	NORTON ANTIVIRUS 4 DOS/ WIN/WIN 95/NT 10 USER CD	£359.00	£421.83
EURUT1644	NORTON ANTIVIRUS V2 NETWARE NLM 10 USER 3.5	£386.00	£453.55
UT7571	NORTON ANTIVIRUS V4 NT SERVER EDITION CD	£355.00	£417.13
UT7689	NORTON ANTIVIRUS V4 NT SERVER EDITION 5 USER CD	£400.00	£470.00
UT7725	NORTON ANTIVIRUS V4 SERVER EDITION 10 USER CD	£520.00	£611.00
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UT7624	MCAFEE NETSHIELD 3 NT / NETWARE 10 USER CD	£85.00	£99.88
UT7057	Cheyenne Antivirus CD	£39.00	(£45.83)
UT7305	IBM AntiVirus Desktop Edition	£36.00	(£42.30)
UT7304	IBM AntiVirus 25 User Enterprise Edition	£447.00	(£525.23)

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DCS2940	Cheyenne Arcserve Win/NT Enterprise Edition	£519.00	(£609.82)

DCS3106	Cheyenne Arcserve Backup Agent for MS Exchange	£419.00	(£442.32)
UT7097	Datasafe V1.0 Win 95/NT 3.5	£34.00	(£39.95)

UTILITIES–DIAGNOSTICS

UT7015	Connectix Agent 97	£49.00	(£57.58)

UT6823	QD Win Probe95 V5 W95 CD	£30.00	(£32.25)
EURUT1757	Checkit Diagnostic Kit 3.5	£82.00	(£96.35)
UT7109	First Aid 3.1 Win 3.5	£22.00	(£25.85)
EURUT1664	Winchecklt V4 Win / W95 3.5	£26.35	(£30.96)
UT6974	Symantec Pc Handyman W95 CD	£30.00	(£35.25)
EURUT1476	Dr Solomons Audit V2.5 5 User Starter Pack 3.5"	£295.00	(£346.63)
EURUT1648	Dr Solomons Audit V2.5 10 User Starter Pack 3.5"	£325.00	(£381.88)
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GR9751	Inso Imagestream Win/Win 95 CD	£38.00	(£44.65)
UT6985	Partition Magic V3 CD	£42.00	(£49.35)
UT6848	System Commander V3.0 3.5"	£61.00	(£71.68)
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UT4623	Norton Utilities V8 Win / Dos 3.5	£83.00	(£97.53)
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UT7613	Norton Utilities V3 Win 95/NT CD	£59.00	(£69.33)
UP3985	Norton Utilities V3 Upg Win 95/NT CD	£37.00	(£43.48)
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UT7775	Lotus ScreenCam 97 Win 95/NT CD	£68.99	(£81.06)
UT776	Lotus ScreenCam 97 Win 95/NT UPG CD	£59.99	(£59.91)
GR10008	Colour Copier Win/Win 95 CD	£25.00	(£29.38)
UT7281	Uninstaller 4.5 Win95 NT4 CD	£22.00	(£25.85)
UT7282	Dll Change Win95 CD	£22.00	(£25.85)
UT7293	PrintScreen 2 Win/Win95/NT 3.5	£23.00	(£27.03)
UT7294	Automate 96 Win/Win 95/NT 3.5	£46.00	(£54.05)
UT7295	Automate Pro Win/Win 95/NT 3.5	£89.00	(£104.58)
UT7376	SYMANTEC NORTON CRASH GUARD WIN 95 / NT 4.0 CD	£19.99	£23.49
UT7625	CRASH GUARD DELUXE DOS/ WIN/WIN 95/NT CD	£35.00	£41.13

UT7558	SYMANTEC NORTON UNINSTALL DELUXE WIN 95/NT CD	£25.00	£29.38
UT7344	RMG UTILITY BELT WIN / WIN 95 CD	£31.75	£37.31
UT7728	MICROSCOPE DIAGNOSTICS V6.5 CD	£599.00	£703.83

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UT6233	Ram Doubler V1.0 Win 3.5""	£30.00	(£32.25)
UT6810	QD Magnaram 97 V3.0 Win / W95 CD	£18.00	(£21.15)
UT6715	Max Ram 95 V8.01 DosWin/Win 95 3.5	£29.00	(£34.08)

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UT6818	Inso In Words V1.5 Win / W95 CD	£16.00	(£18.80)
WP2698	Lotus Wordpro 96 Win 3.1 3.5"	£79.00	(£92.83)
WP2965	MS Word 97 W95 CD	£220.00	(£258.50)
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DEC2235	3C900-TPO XL	£66.95	£78.67
DEC2234	3C900 -COMBO XL	£58.99	£69.31
DEC2338	3C905-TX 10/100	£52.95	£0001
DEC2340	3C905-TX 5 PACK 10/100	£247.95	£291.34

Allied Telesyn

DEC1490	AT-2000T PNP RJ45	£11.95	£14.04
DEC1805	AT2000T 5 & 1 FREE!	£59.75	£70.20
DEC1491	AT-2000U COMBO	£16.45	£19.92
DBN0280	AT2000U 5 & 1 FREE	£84.75	£99.58
DEC2970	AT-2500TX 10/100	£29.95	£35.19

D -Link

EURDEC1091	DE220PCT RJ45/BNC	£15.99	£18.79
EURDEC1109	DFE-500TX 10/100	£29.95	£35.19

SMC

DEC2955	RJ45 SMC1660T	£18.50	£21.74
DEC2957	RJ45/BNC SMC1660BT	£20.50	£24.09
DEC2652	10/100 SMC9432TX	£42.95	£50.47

Intel

DEC2968	PILA8460 Pro/100+	£47.95	£56.34
DEC2976	PILA8460-5PK Pro/100+	£229.00	£269.08

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DEC1483	LAN COMBO 3C589	£99.95	£117.44
DEC2432	LAN/33.6 3C563C-TP	£159.95	£187.94

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TDK

EURDEC1141	GCS2210 RJ45	£89.95	£105.69
DEC2579	GC3410 33.6/RJ45	£174.00	£204.45
DEC2380	GC3412 33.6/RJ45,BNC	£199.00	£233.83
DEC2453	NF100 TX RJ45	£109.00	£128.08
EURDEC1094	GCS2220 RJ45/BNC	£104.95	£123.32
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DMD3314	DFI3600 ISDN Modem	£279.00	£328.99

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D-LINK

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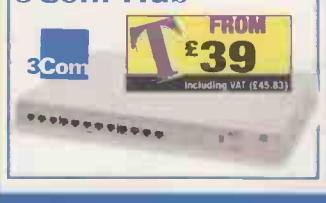
DEC2633	PRO/100 MBLA1600	£89.00	£104.58
DEC2632	PRO/100 MBLA3200	£129.95	£152.69

HUBS

3Com Hub



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DEH1721	OC 8 PORT 3C16700	£75.95	£89.24
DEH2431	SS 12 PORT 3C16440	£159.00	£186.83
DEH1961	SS 12 PORT 3C16670A	£269.00	£316.08
DEH1954	SS PS 40 12 3C16405	£219.00	£257.33
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DEH2968	100BTX 4 AT-MR904TX	£89.95	£105.69
DEH2969	100BTX 8 AT-MR908TX	149.00	£175.08

SMC

DEH1598	5 PORT SMC3605T	£39.99	£46.99
DEH1599	8 & 1BNC SMC3608TC	£55.99	£65.79
DEH2127	100BTX,8 SMC5208TX	£299.00	£351.33

Netgear

DEH2408	100BTX,4 FE104	£94.95	£111.57
DEH2409	100BTX,8 FE108	£159.00	£186.83

HP

DEH1725	10BT,8 J3128A	£89.00	£104.58

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EURDEH1004	10BT,8 10B2,1 DE-809TC	£49.95	£58.69
NT7983	100BTX,8 DFE808TX	£239.99	£281.99
DEH2973	100BTX,16 DFE-816TX	£429.99	£447.49

Intel

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DEH505	Inbusiness 8 port hub	£59.99	£70.49
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DEH2546	100BTX ,12 EE110TX12	£659.00	£774.33

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3Com

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DEH1968	SS 1000 3C16900A	£999.00	£1173.83

Netgear

DSD1715	10/100,2 FS102	£189.00	£222.08
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SMC

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DEB1846	CISCO 1603	£888.95	£1,044.52
DEB2067	CISCO 1605-R	£899.95	£1,057.44

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DEC3071	DIVA PRO 2.0 PCI	£289.00	£339.58
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DEC2627	NetE Pro/100,1 PCLA4453	£163.99	£192.69
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DEP1606	DP-300	£165.00	£193.88

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2000262	JetD rj45/bnc J2591A	£189.00	£222.08
234886	JetD +3 rj45/bnc J2593A	£229.00	£269.08

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DEP1144	NETPRINT 10	£149.00	£175.08
DEP1106	NETPRINT 1000	£379.95	£446.44

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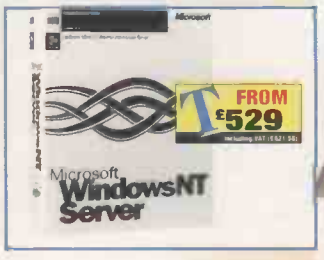
91143	DUETTE KVM	£299.00	£351.33
DVI1268	QUARTETTE KVM	£489.00	£574.58
DSD1798	SWITCHVIEW 2 PT.	£149.00	£175.08
DSD1799	SWITCHVIEW 4 PT.	£199.00	£233.83
EURDVI1004	Dakota 2 PCs KVM	£49.95	£58.69
EURDVI1005	Dakota 4 PCs KVM	£69.95	£82.19
DVI1000	Dakota VGA SPLIT 4 PT.	£149.95	£176.19
811615	2:1 port parallel	£49.00	£57.58
811635	4:1 port parallel	£55.00	£64.63
DSD1385	4:1 parallel Bitronics	£129.00	£151.58

Network Operating Software



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Microsoft

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OCS2949	NT WRKSTN V4 CD	£212.00	£249.10
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DCS3219	INTRANETWARE 10	£839.00	£985.83
DCS3220	INTRANETWARE 25	£1,449.00	£1,702.58
DCS3571	I'WARE FSB SRVR	£369.95	£434.69
DCS3569	I'WARE FSB 1 CDN	£27.95	£32.84

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Cheyenne

DCS4787	ANTI VIRUS WIN95	£29.95	£36.37
DCS3292	INOCULAN 4 NT 1 SRVR	£369.00	£433.58
DCS4377	ARCSV NT 1 SRVR V6.5	£249.00	£266.50

Intel

DCS4294	Virus Prot v5 1 SRVR	£639.00	£750.83

Lansource

DCS2844	FAXPORT V6 10 LIC	£354.00	£415.95

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APC

BACK-UPS 300 ONLY £59.95 Including VAT (£70.44)

DUP1016A	BACK UPS 300	£59.95	£70.44
DUP1018A	BACK UPS 650	£129.00	£151.58
DUP1165	BACK UPS PRO 280	£89.00	£151.58
DUP1713	SMART UPS 450 INET	£159.00	£186.83
DUP1683	SMART UPS 1000 INET	£279.00	£327.83
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DUP1897	B'BUSTER 500VA B10E	£109.00	£128.08
DUP1899	SMARTPK S/W SP10E	£49.00	£57.58
DUP1898	PWRPK 500VA B10PE	£86.99	£104.49

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DUP1929	UPSTN GXT 700VA MT	£309.00	£363.08
DUP1930	UPSN GXT 1000VA MT	£459.00	£539.33

MGE

DUP1844	PULSAR EL2 220VA	£69.99	£82.24
DUP1845	PULSAR ES2+ 220VA	£99.00	£116.33

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DET1014	SL W/BNC/AUI AT-MX10S	£17.49	£20.55
DET1016	SL W/RJ45/AUI AT-210TS	£14.95	£17.57
DET1015	RJ45 AT-210T	£17.49	£20.55
DBN0417	AT-210T 5+1 FREE	£87.45	£102.75
DET1472	RJ45 TO AUI ATMC12T	£59.95	£70.44

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D-Link

DET1563	AUI/BNC TCVR	DE-851	£14.95	£17.57
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DCA2607	1.5m CAT5 p. cable Grey	£4.39	£5.16
DCA2697	3.0m CAT5 p.cable Grey	£5.49	£6.45
DCA2232	0.6m CAT5 snagless Grey	£4.49	£5.28
DCA2237	"1.5m " "	£4.99	£5.86
DCA2240	"3.0m " "	£5.99	£7.04

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AC20383	Bidi Printer Cable 3.0m	£9.95	£11.69
DCA2550	Shld DB9F/DB25M 1.8M	£22.75	£26.73
DCA2539	Shld DB9F/DB25M 3.6M	£26.00	£30.55
DCA2534	Shld DB25F/DB25M 1.8M	£22.75	£26.73
DCA2533	Shld DB25F/DB25M 3.6M	£26.00	£30.55

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DCA3923	IEC-Mains Cable 2m	£2.09	£2.46
DCA8897	IEC-Mains Cable 3m	£3.29	£3.87
DCA8898	IEC-Mains Cable 6m	£6.59	£7.74

IEC M-F MAINS CABLES

DCA2900	IEC M-F 2m	£2.09	£2.46
DCA8899	IEC M-F 3m	£3.29	£3.87
DCA8900	IEC M-F 6m	£6.59	£7.74

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DA4445	w/4 x IDC 50s-45cm	£2.79	£3.28
DA4446	w/5 x IDC 50s-45cm	£3.95	£4.64
DA4447	w/6 x IDC 50s-45cm	£4.99	£5.86
DCA2317	Single Term. passive	£5.99	£7.04
DCA2139	Single Term. active	£15.99	£18.79

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DA4457	w/4 x MD68P-60cm	24.95	£29.32
DA4458	w/5 x MD68P-75cm	£29.95	£35.19
DA4459	w/6 x MD68P-90cm	£34.95	£41.07
DA4461	w/7 x MD68P-105cm	£39.95	£46.94
DC01882	Active MD68S Term.	£29.95	£35.19

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DA6668	IDC 50 socket-MD68P	£17.95	£21.09

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DCA2325	Cable for 3.5"" Floppy	£1.29	£1.52
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DCA2183	Extension Cable	£1.29	£1.52

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51625A	HP InkJet Cartridge, colour for DJ 500C - 560C, DJ Portable 310/320/340	£15.95	(£18.74)
51629A	HP InkJet Cartridge, black for DJ 600/660C/670C/690C/694C	£16.75	(£19.68)
51649A	HP InkJet Cartridge, colour for DJ 00/660C/670C/690C/694C	£18.90	(£22.21)
51633M	HP InkJet Cartridge, black for DJ Portable 310/320/340	£13.95	(£16.39)
51640A	HP InkJet Cartridge, black for DJ 1200C/CopyJet	£15.75	(£18.51)
51640C	HP InkJet Cartridge, cyan, for DJ 1200C/1600C/CopyJet	£18.75	(£22.03)
51640M	HP InkJet Cartridge, magenta for DJ 1200C/1600C/CopyJet	£1875	(£22.03)
51640Y	HP InkJet Cartridge, yellow for DJ 1200C/1600C/CopyJet	£18.75	(£22.03)
51645A	HP InkJet Cartridge, black for DJ 720C/850C/820cxi/870cxi/890cxi/1100C/1600C/OfficeJet Pro	£16.95	(£19.92)
51641A	HP InkJet Cartridge, colour for DJ 850C/820cxi/870cxi/OfficeJet Pro	£18.45	(£21.68)
C1823A	HP InkJet Cartridge, colour for DJ 720C/890C	£24.45	(£28.73)
C4534A	HP Colour Set for DJ 600	£27.95	(£32.84)

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C3831A	HP Premium Glossy Paper, A4, 10 sheets	£7.85	(£9.22)
C3837A	HP Premium Glossy Paper, A4, 50 sheets	£31.90	(£37.48)
C3835A	HP Transparancy Film, A4, 50 sheets	£26.95	(£31.66)
51630R	HP Z-Fold CX Jet Series for paintjet, 250 sheets	£15.75	(£18.51)
51630Z	HP CX Jet Series, A4, 200 sheets	£12 20	(£14.34)
C6042A	HP Greeting Card Paper A4, 20 sheets/20 Envelopes	£5.45	(£6.40)

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C4127A	Toner Cartridge for LJ4000	£54.95	(£64.56)
C4127X	High Capacity Cartridge for LJ4000	£76.96	(£90.41)
92274A	Toner Cartridge for LJ 4L/4ML 4P/4MP	£38.95	(£45.77)
92275A	Toner Cartridge for LJ IIP/IIP+, IIIP	£47.70	(£56.05)
92291A	Toner Cartridge for LJ IIISi/4Si, 4SiMX	£63.95	(£75.14)

HP LaserJet Cartridges

92295A	Toner Cartridge for LJ II/IID, IIP/IIID	£39.50	(£46.41)
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92298A	Toner Cartridge for LJ 4/4M, 4+/4M+, 5/5N/5M	£51.95	(£64.57)
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C3903A	Toner Cartridge for LJ 5P/5MP, 6P/6MP	£45.95	(£53.99)
C3906A	Toner Cartridge for LJ 5L.	£33.95	(£39.89)
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C5995A	HP PhotoSmart ,Mat Photo Paper 10x15cm, 20 sheets	£3.95	(£4.64)
C5999A	HP PhotoSmart ,Photo Project Paper A4, 20 sheets	£4.95	(£5.82)
C6003A	HP PhotoSmart Photo Post Cards 10x15cm, 20 sheets	£3.95	(£4.64)
C6007A	HP PhotoSmart ,Photo Greeting Cards A4, 20 sheets	£8.95	(£10.52)
C6011A	HP PhotoSmart , Photo Greeting Cards A5, 20 sheets	£4.95	(£5.82)
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51650C	HP DesignJet Cartridge, cyan 650C 250C 455CA	£22.55	(£26.50)
51650M	HP DesignJet Cartridge, magenta 650C 250C	£22.55	(£26.50)
51650Y	HP DesignJet Cartridge, yellow 650C 250C	£22.55	(£26.50)
51645AE	HP DesignJet Cartridge, black 700/750C/C+/755	£16.95	(£19.92)
51644CE	HP DesignJet Cartridge, cyan 750C/C+/755 350C 430/450C/450A	£26.45	(£31.08)
51644ME	HP DesignJet Cartridge magenta 750C/C+/755 350C 430/450C/450A	£26.45	(£31.08)
51644YE	HP DesignJet Cartridge, yellow 750C/C+/755 350C 30/450C/450A	£26.45	(£31.08)
51626AE	HP Cartridge, black 600 200/220	£14.65	(£17.21)

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ACC2878	Epson Stylus Colour Pro XL+ Photo Cart SO20110	£14.95	(£17.57)
ACC2845	Epson Stylus 3000 Blk SO20118	£49.95	(£58.69)
ACC2843	Epson Stylus 3000 Cyan	£47.95	(£57.34)
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ACC2847	Epson Stylus 3000 Magenta	£47.95	(£57.34)
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PA0414	Epson Stylus Colour 400/600/800/1520 SO20089 Colour	£14.85	(£17.44)
PA0415	Epson Stylus Colour 800/1520 SO20108 Black	£13.95	(£16.39)
PR12076	Epson Stylus 1500 SO20062 Black	£27.95	(£32.84)
PA0205	Epson Stylus 500/200 SO20097 Colour	£18.65	(£21.91)
220372	Epson Stylus Colour/Pro/Pro XL SO20034 Black	£9.35	(£10.99)
220373	Epson Stylus Colour/Pro/Pro XL SO20036 Colour	£22.95	(£26.97)
223212	Epson Stylus Colour II/IIS/820/200 SO20047 Black	£13.45	(£15.80)
223213	Epson Stylus Colour II/IIS/820/200 SO20049 Colour	£18.95	(£22.27)
AC20726	NEW Epson EPL-N1200 Imaging Cartridge	£89.95	(£105.69)
AC20727	NEW Epson EPL-N2000 Imaging Cartridge	£148.95	(£175.02)
6303	Epson GQ3500/5000 Toner Cartridge	£14.95	(£17.56)
91904	Epson EPL4000/4100/4300/LP1200 Toner Cartridge	£83.95	(£98.64)
63169	Epson EPL7100/7500/8100 Toner Cartridge	£135.95	(£159.74)
99202	Epson EPL5000/5200/5200+ Imaging Cartridge	£96.95	(£113.92)
220378	Epson EPL3000 Imaging Cartridge	£66.95	(£78.67)
206768	Epson EPL5600 Toner Cartridge	£78.95	(£92.77)
236591	Epson EPL5500 Toner Cartridge	£44.95	(£52.82)
236592	Epson EPL5500 Drum Kit	£49.95	(£58.69)

Epson Cartridges

EPSON CONSUMABLES

Order No	Description	Man. Ref	Price	Inc VAT
ACC2550	A4 paper 360dpi (100 sheets)	S041059	£8.95	£10.52
EURPR1112	A3 paper 360dpi (100 sheets)	S041065	£18.95	£22.27
PR12955	4x6" Photo paper (20 sheets)	S041134	£4.95	£5.82
PA0416	A4 Glossy Photo paper (20 sheets)	S041126	£7.50	£8.82
EURZ1043	A4 Colour Glossy paper (15 sheets)	S041071	£20.00	£23.50
ACC2551	A4 Photo paper 1440dpi (100 sheets)	S041061	£9.95	£11.70
EURPR1110	A3 Super Photo paper (100 sheets)	S041069	£30.95	£36.37
PA0877	8x10" photo quality card	S041122	£12.79	£15.03
PA0876	5x8" photo quality card	S041121	£5.10	£5.99

CANON Consumables

Order No	Description		Price	Inc VAT
220555	Canon BJC-4000 colour	BCI-21C	£11.95	(£14.04)
220552	Canon BJC-4000 Blk	BC-20	£21.95	(£25.79)
AC23861	Canon BJC-7000 Blk	BC-60	£29.95	(£35.19)
PR13084	Canon BJC-7000 Colour	BC-61	£22.95	(£26.97)
PR13086	Canon BJC-7000 Photo Cartridge	BC-62	£33.95	(£39.89)
67206	Canon BJ-10e/EX/SX/BJ-20	BC-01 Black	£11.95	(£14.04)
220825	Canon BJ-30 (pack of 3)	BC1-10 Black	£8.95	(£10.52)

Canon Consumables

54844	Canon BJ-200/230 BC-02	Black	£12.45	(£14.62)
22451	Canon BJ-300/330 BJ/1-642	Black	£8.95	(£10.52)
220716	Canon BJC 600/600e/610/620 BJ1201BKHC	Black	£4.35	(£5.11)
553903	Canon BJC 600/600e/610/620 BJ1201C	Cyan	£4.65	(£5.46)
553904	Canon BJC 600/600e/610/620 BJ1201M	Magenta	£4.65	(£5.46)
553905	Canon BJC 600/600e/610/620 BJ1201Y	Yellow	£4.65	(£5.46)
53568	Canon BJC-800/820/880 BJ/1-643Bk	Black	£11.95	(£14.04)
53569	Canon BJC-800/820/880 BJ/1-643C	Cyan	£15.45	(£18.15)
53570	Canon BJC-800/820/880 BJ/1-643Y	Yellow	£15.45	(£18.15)
53571	Canon BJC-800/820/880 BJ/1-643M	Magenta	£15.45	(£18.15)
220554	Canon BJC4000 BC1-21Bk	Black	£4.35	(£5.11)
220555	Canon BJC4000 BC1-21C	Colour	£11.95	(£14.04)
6301	Canon LPB-8 A1/A2 (Series 1) EPToner Cartridge		£58.55	(£68.80)
6302	Canon LBP-8, II, III, LBP8 IIIR/IIIT Series II EPSToner Cartridge		£39.95	(£46.94)
53846	Canon LBP4/4+/LBP4 Lite EPL Toner Cartridge		£49.95	(£58.69)
555082	Canon EPE/Brother HL 1260 6000 pages Toner Cartridge		£79.95	(£93.94)
206251	Canon LPB 4U/4I EPP Toner Cartridge		£51.95	(£61.04)
236508	Canon LPB-460 EPA Toner Cartridge		£35.95	(£42.24)

Avery Labels

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AVERY InkJet Labels

Order No.	Avery Ref.	labels/ Sheets	Label Colour	Label Size	Label pack	Price	Inc VAT
223932	J8651	65	Mini Addressing	38.1 x 21.2	1625	£8.95	(£10.52)
223933	J8560	21	Address - Clear	63.5 x 38.1	840	£11.95	(£14.04)
220159	J8165M	8	Parcelling - White	99.1 x 67.7	320	£8.95	(£10.52)
220160	J8163M	14	Addressing - White	99.1 x 38.1	560	£8.95	(£10.52)
220161	J8162M	16	Addressing - White	98.1 x 34.0	640	£8.95	(£10.52)
220162	J8160M	21	Addressing - White	63.5 x 38.1	840	£8.95	(£10.52)
PR11787	J8161M	18	Addressing - White	63.5 x 46.6	720	£8.95	(£10.52)
220630	J8666	10	3.5" disk - face only	70 x 52	250	£8.95	(£10.52)

AVERY LASER LABELS

Order No.	Avery Ref.	labels/ sheets	Label Colour	Label Size	Label pack	Price	Inc VAT
PR11984	L7660	2	White/CD	114.5Dia	50	£19.25	(£22.62)
99411	L7160	21	White Addressing	63.5 x 38.1mm	2100	£16.95	(£19.92)
99412	L7161	18	White Addressing	63.5 x 46.6mm	1800	£16.95	(£19.92)
99413	L7162	16	White Addressing	99.1 x 34mm	1600	£16.95	(£19.92)
99414	L7163	14	White Addressing	99.1 x 38.1mm	1400	£16.95	(£19.92)
99416	L7165	8	White Parcelling	99.1 x 67.7mm	800	£16.95	(£19.92)
99419	L7651	65	White Mini address	38.1 x 21.2mm	1625	£7.25	(£8.52)
99421	L7664	8	White/3.5" Disk	70 x 71.9mm	200	£8.25	(£9.69)
223934	L7666	10	White/3.5" Disk Face	70 x 52mm	250	£8.25	(£9.69)
220876	L7671	12	White/Video Face	76.2 x 46.4mm	300	£8.25	(£9.69)
223935	L7413	10	White/Business Cards	90 x 50.8mm	250	£12.95	(£15.22)
PR12878	L7567-15	1	Clear Laser Label	A4	15	£18.95	(£22.27)
PR12879	L7568-15	2	Clear Laser Label	A5	15	£18.95	(£22.27)

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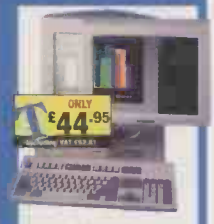

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InkJet Paper and Transparencies

Order No	Description	Paper Size	Wt.	Sheets per pack	Prices	Inc VAT
	INKJET PAPER					
220867		A4	200	90gsm	£3.95	(£4.64)
220869		A4	200	100gsm	£12.95	(£15.22)
	INKJET GLOSSY					
220870		A4	50		£23.95	(£28.14)
	INKJET TRANSPARENCY					
220872	Paper Backed	A4	50		£19.75	(£23.21)
220871	Short Edged	A4	50		£20.95	(£24.62)
223953	Removable Strip film	A4	50		£21.95	(£24.62)
220873	Short Edged BubbleJet	A4	50		£22.95	(£26.97)

Laser Paper and Transparencies

Order No.	Description	Sheets per ream	Prices	Inc VAT
AC23156	Standard A4 Paper, White 80g	500	£2.95	(£3.47)
45625	Premium A4 Paper. White 80g	500	£3.95	(£4.64)
63387	Premium A4 Paper, White 90g	500	£4.95	(£5.82)
45631	Premium A4 Paper, White 100g	500	£5.95	(£6.99)
4557	Transparency Film	50	£6.95	(£8.17)
223121	Plotter Paper, Matt A4, 100g	50	£4.95	(£5.82)
223122	Plotter Paper, Matt A3, 100g	50	£6.95	(£8.17)

Branded Diskettes

IMATION

Order No	Description	Price	IncVAT
88445	3.5" DS/HD Formatted 1.44 Mb	£2.70	(£3.17)
ME7250	3.5" DS/HD Formatted 1.44 Mb 50pk	£11.95	(£14.04)
94659	3.5" DS/HD Mac Formatted 1.44 Mb	£2.95	(£3.47)
ME7513	3.5" LS120 3Pk	£28.95	(£34.02)
ME7514	3.5" LS120 5Pk	£47.95	(£56.34)
ME7410	3.5" LS120 10pk	£84.95	(£99.82)

SONY.

88024	3.5" HD Dos Formatted 1.44Mb	£2.35	(£2.76)
6005109	3.5" HD Dos Business Pack. 20 Pk 1.44Mb	£4.90	(£5.76)
ME7408	3.5" DS/HD Formatted 1.44 Mb 50pk	£10.95	(£12.87)
ME6992	3.5" HD Mac Formatted 1.44 Mb	£2.95	(£3.47)

maxell

89572	3.5" DS/HD Formatted 1.44Mb	£2.55	(£2.99)
220155	3.5" DS/HD Business Pack. 20Pk. 1.44Mb	£5.00	(£5.88)
ME7280	3.5" LS-120 (1PK)	£8.95	(£10.51)

TDK.

ME7393	3.5" DS/HD Formatted 1.44Mb	£2.45	(£2.88)
ME7394	3.5" DS/HD Formatted 1.44Mb 20Pk	£4.75	(£5.58)
ME6462	3.5" DS/HD Formatted 1.44Mb 50Pk	£11.45	(£13.45)
ME6315	3.5" DS/HD Mac Formatted 1.44Mb	£2.75	(£3.23)

Branded Data Tapes

IMATION

94663	4mm 60M 1.3Gb	£4.10	(£4.82)
94664	4mm 90M 2.0Gb	£3.45	(£4.05)
206295	4mm 120M 4.0Gb	£8.95	(£10.52)
94678	8mm 54M 1.0Gb	£5.45	(£6.40)
72131	8mm 112M 2.5/5.0Gb	£3.65	(£4.29)
ME7061	8mm 160M 3.5/7.0Gb	£7.95	(£9.34)

fuji

ME7074	4mm 60M 1.3GB	£3.25	(£3.82)
ME7065	4mm 90M 2.0GB	£3.60	(£4.23)
ME7076	4mm 120M 4.0GB	£9.95	(£11.69)
ME7130	4mm 125M 12GB	£22.95	(£26.97)
ME7077	8mm 112M 2.5/5.0GB	£3.25	(£3.82)
ME7078	8mm 160M 7.0GB	£6.95	(£8.17)

SONY.

72223	4mm 60M 1.3Gb	£4.80	(£5.64)
72221	4mm 90M 2.0Gb	£3.40	(£4.00)
99353	4mm 120M 4.0Gb	£8.95	(£10.52)
ME7409	4mm 125M 4.0Gb	£26.95	(£31.67)
7229	8mm 112M 2.5/5.0Gb	£3.65	(£4.29)
72257	8mm 160M 3.5/7.0Gb	£7.45	(£8.75)

maxell

72227	4mm 60M 1.3Gb	£2.85	(£3.35)
64361	4mm 90M 2.0Gb	£3.10	(£3.64)
206297	4mm 120M 4.0Gb	£7.95	(£9.34)
ME7407	4mm 125M 12Gb	£24.95	(£29.32)
72081	8mm 112M 2.5/5.0Gb	£3.95	(£2.73)

TDK.

ME7389	4mm 60M 1.3Gb	£3.55	(£4.17)
ME7390	4mm 90M 2.0Gb	£3.35	(£3.94)
ME6310	4mm 120M 4.0Gb	£7.95	(£9.34)
ME7391	8mm 112M 2.3Gb	£3.75	(£4.41)

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99445	4mm 60M 1.3Gb 5 Pack	£32.50	(£38.19)
99456	4mm 90M 2.0Gb 5 Pack	£22.95	(£26.96)
99457	4mm 120M 4.0Gb 5 Pack	£51.95	(£61.04)
ME7062	4mm 125M 12GB 5Pk	£99.95	(£117.44)

BRANDED DLT TAPES

maxell

ME7419	DLT III 10/20GB	£34.95	(£41.07)
ME7591	DLT III XT 15/30GB	£35.95	(£42.24)

fuji

ME7080	DLT IV 40/70GB	£63.95	(£75.14)

HEWLETT PACKARD

ME7020	DLT IIIXT 15/30GB	£34.99	(£41.11)
ME7021	DLT IV 40/70GB	£75.95	(£89.24)

BRANDED TRAVAN CARTRIDGES

IMATION

220920	Travan-1 400MB	£12.45	(£14.63)
223295	Travan-2 800MB	£21.95	(£25.79)
223296	Travan-3 1.6GB	£18.95	(£22.27)
236682	Travan-4 4.0GB	£20.95	(£24.62)
ME7701	Travan-5 5.0GB	£22.30	(£26.20)

SONY.

236597	QTR-1 (QIC80/Travan 1) 400/800MB	£11.45	(£13.45)
ME6601	QTR-3 Travan 3 3.2GB	£16.95	(£19.92)
ME6936	QTR-4 Travan 4 8.0GB	£19.95	(£23.44)

BRANDED OPTICAL DISKS

maxell

54360	"3.5"" 128MB "	£6.55	(£7.70)
ME4830	"3.5"" 230MB"	£6.95	(£8.17)
ME6419	"3.5"" 230MB (MAC FORMAT)"	£7.95	(£9.34)
ME7225	"3.5"" 640MB "	£21.95	(£25.79)
ME7356	"5.25"" PD650MB"	£22.95	(£26.97)

Verbatim

73045	"3.5"" 128MB"	£5.95	(£6.99)
72292	"3.5"" 128MB Mac Format"	£7.45	(£8.75)
ME6327	"3.5"" 230MB"	£6.95	(£8.17)
MED0162	"3.5"" 230MB Mac Format"	£8.25	(£9.69)
236685	"3.5"" 640MB"	£20.95	(£24.62)
ME6816	"3.5"" 640MB Mac Format"	£26.95	(£31.67)
72288	"5.25"" 1.2GB"	£24.95	(£29.32)
206294	"5.25"" 1.3GB"	£24.95	(£29.32)

SONY.

54359	"3.5"" 128MB"	£5.95	(£6.99)
ME6998	"3.5"" 230MB"	£7.95	(£9.34)
ME6978	"3.5"" 640MB"	£23.95	(£28.14)
206291	"5.25"" 1.3GB"	£27.95	(£32.84)
ME6583	"5.25"" 2.3GB"	£49.95	(£58.69)
ME6582	"5.25"" 2.6GB"	£49.95	(£58.69)

IMATION

223269	"3.5"" 230MB"	£8.75	(£10.28)
72289	"5.25"" 1.2GB"	£28.95	(£34.02)
206292	"5.25"" 1.3GB"	£28.95	(£34.02)

Branded CDR

6005043	Verbatim Datalife Plus 74 Min 650Mb	£1.55	(£1.82)
220720	Maxell 74min 650Mb	£1.85	(£2.17)
220845	Imation 74min 650Mb	£2.25	(£2.64)
ME7399	TDK 74min 650Mb	£1.85	(£2.17)
ME6399	Sony 74min 650Mb	£1.75	(£2.06)
ME7079	Fuji 74min 650Mb	£1.95	(£2.29)
MED0487	Philips 74min 650Mb	£1.85	(£2.17)
ME7493	Traxdata 74min 650Mb	£1.95	(£2.29)
236511	Kodak 74min 650Mb	£2.95	(£3.47)

BRANDED CDR REWRITABLES

MED0486	Philips 74min 650MB	£14.95	(£17.57)
ME7350	Verbatim Datalife plus 74min 650MB	£13.95	(£16.39)
ME7627	Fuji 74min 650MB	£12.95	(£15.22)
ME7437	HP Surestore 74min 650MB 3Pk	£45.95	(£53.99)
ME7497	HP Surestore 74min 650MB 25Pk	£375.95	(£441.74)
ME7661	TDK Reflex 74min 650MB	£14.95	(£17.57)
ME7723	Sony 74min 650MB	£14.95	(£17.57)
ME7724	Maxell 74min 650MB	£13.95	(£16.39)

MEDIA STORAGE

MED0486	Philips Rewritable CD-R	£14.95	(£17.57)
90043	4mm Data Tape box (holds 12)	£11.95	(£14.04)
90042	8mm Data Tape box (holds 10)	£11.45	(£13.45)
220134	"3.5" Optical Disk Box (holds 8)"	£13.95	(£16.39)
220135	"5.25"" Optical Disk Box (holds 10)"	£24.95	(£29.32)
AC21153	Travan Cartridge Box	£13.95	(£16.39)
220903	Fellowes CD Tower (holds 20)	£13.95	(£16.39)
AC23771	Fellowes Zip Disk Rack (holds 12)	£5.75	(£6.76)
AC23772	Fellowes Zip Disk Case (holds 3)	£2.95	(£3.47)
AC2242	Zip Disk Wallet (Holds 6)	£5.95	(£6.99)
2362	"3.5"" Disk Box (holds 40)"	£4.25	(£4.99)
2685	"3.5"" Disk Box (holds 80)"	£5.95	(£6.99)

AF CLEANING PRODUCTS

93945	Foamclene Antistatic Foam Cleaner 300ml	£1.95	(£2.29)
93949	Safeclens anti-static Screen/glare cleaner 100pk	£8.55	(£10.05)
93951	Screenclens Wet/Dry screen wipes 20pk	£4.25	(£4.99)
92954	Multipurpose cleaning kit	£15.95	(£18.74)
AC22870	Notebook cleaning kit	£11.95	(£14.04)
206703	Laser Printer & fax Cleaning kit	£8.95	(£10.52)
PR11983	TonerClene	£3.95	(£4.64)
6005023	Inkjet Printer cleaning kit	£5.95	(£6.99)
93944-1	Sprayduster 125ml	£3.95	(£4.64)
PR11980	Sprayduster 200mb	£5.45	(£6.40)
93948	SafeWipes 100 cotton cloths	£16.75	(£19.68)
99356	"Floppiclene 3.5""	£12.95	(£15.22)
220143	Driveclene 8mm	£10.45	(£12.28)
220144	Driveclene 4mm	£7.95	(£9.34)
AC20773	CD Disk Cleaner	£4.95	(£5.82)
AC20772	CD Lens Cleaner (Disk Drive)	£6.95	(£8.17)

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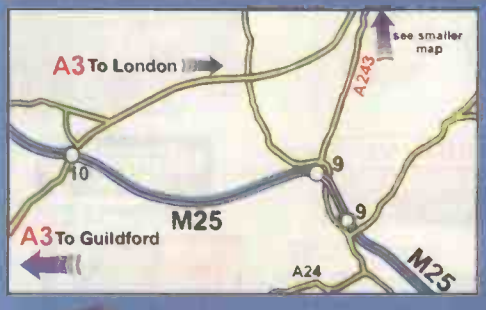

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Our collection counter on the ground floor is open 9am - 8pm Mon - Fri, 9am - 5pm on Saturday and 10.30am - 4.30pm on Sundays. Simply call our sales team to check availability and price, we will then allocate and hold the stock for you for 48 hours. We will also give you a sales order reference to speed up the collection.

Corporate sales

Our Corporate sales team are the best in the business . We have dedicated product specialists across the range who are happy to quote on all your IT requirements. We can often arrange demonstrations on specialist items such as projectors, flat panel displays and high end scanners. Our buying power means we can usually locate items in short supply - just call and try us!

Reasons to choose Tech Direct:-

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- Faxed quotes on your desk in under 2 minutes
- Next day Mainland UK delivery for just £9.95 + vat
- Credit accounts available subject to status
- No credit card surcharges

Sales & Collections Hours:

9am - 8pm Monday - Friday
9am - 5pm Saturdays
10.30am - 4.30pm Sundays

2 Portables & Accessories
7 Projectors
9 Printers, Faxes & Copiers
14 Scanners & Cameras
16 Monitors & Graphics cards
19 Memory
20 PC Components
23 Systems & Components
24 Hard Drives & Backup
26 CD Devices
29 Modems & Internet
30 Software

General sales 0181 286 2222 Technical Support 0181 286 2288
Corporate Sales 0181 286 2277 Fax line 0181 286 0000
Customer Services 0181 286 2286 Pricematch policy across the range

SALES - Please call our knowledgeable sales staff for advice and to check availability. In stock items ordered before 5pm will be despatched for next working day delivery (£9.95 plus vat). We can even offer same day delivery within the M25 – please call before midday. Due to volatile markets prices negotiated at time of purchase are final. Please check suitability with manufacturers before purchase. Goods are not supplied on a trial basis and are subject to our standard conditions of sale. Errors and omissions excepted. We are delighted to fax or send Pro-forma invoices.
PAYMENT ...e is made for credit card payments. Please allow six working days for cheque clearance. Bank transfers Bankers Drafts Building Society cheques normally clear instantly – please call to confirm. Credit accounts are available subject to status.
WARRANTY - All goods except consumables come with a minimum 12 month warranty, this will in some cases require dealing directly with the manufacturers. On receipt please check that your goods are correct and in working order, any defects or errors must be reported within 7 days. Non-defective returns must be made within 7 days and will be subject to a re-stocking fee of 15%, software packages can only be returned unopened.

Document Done

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The World Leader in Portable Computing

WHY TOSHIBA?

- The No.1 notebook manufacturer
- Worldwide warranties
- Highest quality components
- Specialist notebook manufacturer

NEW - SATELLITE 230CX

- Intel Pentium 133MHz MMX with 16Mb Ram (upgrade to 144Mb)
- 12.1" Fastscan screen
- 84 full size keys with Mousepoint & 12 function keys
- 1.4Gb Hard Disk and internal 3.5" floppy drive
- Removable, rechargeable lithium ion battery
- One year worldwide warranty

TOSHIBA 230CX
£831 ex vat
£976.43 inc vat

8 out of 10 for TOSHIBA

In the notebook world, Toshiba hold EIGHT out of the UK's top 10 best selling notebooks.

SATELLITE PRO 460CDT

- P166 MMX
- 32Mb EDO RAM
- 2.1Mb HDD
- 12.1" TFT
- 3 Year International Warranty

Satellite

intel inside pentium

TOSHIBA 460CDT
£1659 ex vat
£1949.33 inc vat

TECRA 750DVD

- Intel Pentium P233MMX
- 13.3" XGA TFT screen
- 5.1Gb Hard Drive
- DVD installed
- Video Conferencing ready

TOSHIBA 750DVD
£365 ex vat
£4298.15 inc vat

Personal Computer World Recommended

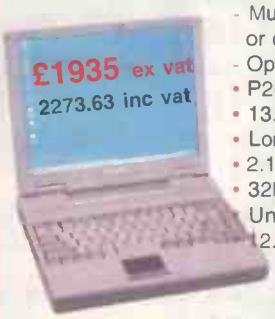
Sat Pro 460CDT	£1659	1949.33
Sat Pro 480CDT	£2245	2637.88
Libretto 70CT NEW	£1079	1267.82
Libretto 50CT	£699	821.33
Tecra 740CDT	£2509	2948.08
Tecra 520CDT	£1995	2344.13
Tecra 540CDT	£2749	3230.08
Tecra 750DVD	£3658	4298.15

SHARP

INTELLIGENT THINKING

Sharp Electronics are world leaders in mobile computing, producing the finest quality TFT technology notebooks for worldwide corporate users. Their latest range of M-series notebooks are now available in the UK, boasting brilliant 13.3" TFT screens up to 40% brighter than conventional models. This technology, combined with powerful processing, high-speed communications and docking capabilities, makes the M-series a powerful alternative for desktop systems in the corporate environment.

SHARP M200



- Flexible 3-Bay Design
- CD Bay: High speed CD-ROM (max.20x)
- Multipurpose Expansion Bay: FD drive, or optional Zip drive and 2nd Li-ion battery
- Optional 10 Base-T network adaptor
- P200Mhz MMX and 512KB L2 cache
- 13.3" Super Bright TFT Colour XGA
- Long lasting Li-ion battery
- 2.16Gb HD
- 32Mb RAM standard (max.128MB)
- Universal Serial Bus and Infra red port
- 12.1" TFT model available £2149 + vat

SHARP 9820T

- P233Mhz MMX and 512KB L2 cache
- 13.3" Super Bright TFT Colour XGA
- Long lasting Li-ion battery
- 3Gb HD
- 32Mb RAM plus 4Mb video RAM
- Universal Serial Bus and Infra red port
- Swappable 14x CD-ROM

SHARP 9820T
£2369 ex vat
£2783.58 inc vat

Colour LCD Windows CE 2.0 from SHARP

SHARP HC-4500A

WINDOWS CE 2.0 OPERATING SYSTEM

- Connect and synchronize to PCs running Microsoft Office 95 or 97 for Windows 95
- Features pocket Word, Pocket Excel, Pocket PowerPoint, as well as Mail, Browser and PIM software

USER ORIENTED DESIGN

- Wide key spacing (14.1mm) makes typing easy
- One touch Application Keys give quick direct access to applications
- Wide (640 x 240 dot) 256 colour touch screen LCD
- Stylish and compact for ultimate portability

ADVANCED PRODUCTIVITY

- capture images with optional Digital camera Card
- image Editor allows you to draw and edit images
- voice recorder function quickly records personal memos
- Send faxes

- 16Mb RAM
- 6.5" Colour screen
- 410g weight
- 1 Type II PCMCIA slot
- Touch screen with pen
- NiMH battery

SHARP HC-4500A
£599 ex vat
£703.82 inc vat

SHARP HC-4100A

- 8Mb RAM
- 6.5" mono backlit LCD touch screen
- 410g weight
- 1 Type II PCMCIA slot
- Touch screen with pen
- 1 year warranty
- 4Mb model available £329 + vat

SHARP HC-4100A
£399 ex vat
£468.82 inc vat

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Lines open: 9am - 6pm Weekdays

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LOW COST UPGRADES AND ACCESSORIES ARE AVAILABLE ON ALL NOTEBOOKS

ANR Electron P150MMX	
Build quality	★ ★ ★ ★
Features	★ ★ ★ ★ ★
Performance	★ ★ ★ ★ ★
Value for money	★ ★ ★ ★ ★
Overall	★ ★ ★

WHY BUY FROM ANR?

- We fit the INTEL Mobile processor. Beware of inferior notebooks using normal desktop processors as these can overheat and use considerably more battery power.
- Design and construction. ANR notebooks are built to the highest standards, this is why we can confidently offer a 14 day no quibble money back guarantee.
- Smart Lithium Ion Battery. These batteries are at the cutting edge of technology. We do not use the older, less efficient NIMH batteries.
- Dedicated Technical Support. Simply call our support hotline on 01753 685008 should you need assistance after your purchase.
- International warranty now offered as standard on all ANR notebooks.
- TOSHIBA Hard drives fitted as standard.

WHAT PC?

Our Best Buy award has to go to the ANR electron. It's one of the smallest and lightest notebooks on test, yet manages to fit both floppy and CD ROM drives into its diminutive case. It's convenience is unrivalled here, and when this is coupled with good performance and a competitive price it's a worthy winner.

"The ANR ELECTRON is an impressive machine... didn't disappoint in the slightest... especially as it comes with the protection of a 14 day money back guarantee". (Feb '98' issue)

NEUTRON MMX

FREE CREDIT AVAILABLE 6 MONTHS INTEREST

- 13.3" XGA (1024 x 768) or TFT Display
- Intel 233Mhz Mobile Module Processor with MMX Technology
- Intel Mobile Triton 82430 TX chipset • PCI Bus
- Support Intel MMO (upgradeable)
- 32Mb SDRAM standard expandable to 144 Mb
- 512Kb Level 2 Cache
- NeoMagic 2160 128bit Graphics Accelerator
- Toshiba 2.1 Gb E-IDE hard drive 4200RPM, 128Kcache, 7.14ms
- 20xCD-ROM, 1.44 Floppy Drive
- Cardbus Ready
- Lithium Ion 45W Battery
- Intel P11X4 EIDE Ultra DMA Controller (33Mb p s).
- USB port • Dimensions 303 x 234 x 51.5mm
- 16 Bit Crystal CS4237b WaveTable Audio Chip with SRS 3D Stereo Sound with Speakers Mic and MIDI • Synaptic Touchpad
- 86/87 Key Keyboard with Microsoft WIN95 Keys
- 2 PCMCIA Type II or type III slots
- 256KB Level 2 Cache (on P200) or 512KB (on P233)
- Parallel (EPP/ECP), Serial (16650) & Infra Red, VGA, Docking Connector and PS/2 port
- International adaptor
- Deluxe carry case

From £1759+VAT

NEUTRON MMO MODELS WITH 48Mb, 2.1Gb, 20xCD

	12.1"TFT Screen		13.3"TFT Screen	
	ex vat	inc vat	ex vat	inc vat
P200MMX	£1629	1914.08	£1759	2066.83
P233MMX	£1725	2026.88	£1855	2179.63
P266MMX	£1795	2109.13	£1925	2261.88

WORLDWIDE WARRANTY OPTIONS
1 Year worldwide warranty now as standard(we collect & return).
2 Year extended worldwide warranty £125+VAT.
2nd & 3rd Year extended worldwide warranty £230+VAT

ELECTRON MMX

- 12.1" SVGA (800 x 600) DSTN or TFT Display
- Intel MMX Mobile Pentium Processors
- Intel 82430MX Chipset • PCI Bus
- 32 Mb EDO RAM (upgradeable to80Mb)
- NeoMagic 128BIT Graphics Accelerator
- 2.1Gb Toshiba Hard Drive (Upgradeable)
- Combo 12xCD-ROM & 1.44" Floppy Drive
- 16 BSS 1878 wavetable Stereo Sound with speakers and MIDI
- Synaptic Touchpad
- 85 Key Keyboard with Microsoft WIN95 Keys
- 2 PCMCIA Type II or type III slots
- 256Kb Level 2 Cache
- Parallel (EPP/ECP), Serial (16650) & Infra Red, VGA, Docking Connector and PS/2 port
- International AC Adapter
- International adaptor
- Deluxe carry case

From £1245+VAT

ELECTRON MMX WITH 32Mb, 2.1Gb, 12xCD

	12.1" DSTN Screen		12.1" TFT Screen	
	ex vat	inc vat	ex vat	inc vat
P166 MMX	£1245	1462.88	£1520	1786.00

CREDIT EXAMPLE:
Electron P166 MMX £1462.88 - £146.29 deposit. Then after 6 months pay £1316.59 & no interest or choose to repay by 36 payments of £51.72 Total repayable £2008.21 A.P.R.26.9% Finance subject to status written quotation available on request.

OTHER FINANCE SCHEMES AVAILABLE WRITTEN DETAILS ON REQUEST.

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Finance Available see page 5 for full details.

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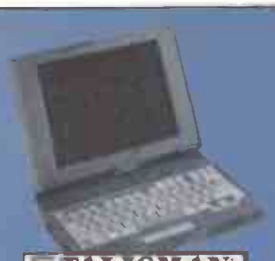
Technical Support: 0181 286 2236
Lines open: 9am - 6pm Weekdays



OPTI TALISMAN
£1099 ex vat
£1291.33 inc vat

OPTI TALISMAN MINI NOTEBOOK

- P120Mhz MMX Intel Processor
- 24Mb EDO RAM
- 810Mb Hard Drive
- Brilliant 8.4" XGA TFT Display
- Optional 16X CD ROM drive
- x1 type II or x2 type III PC Card slots
- Weight only 980g
- Zoom Video (ZV) Port
- Windows 95 , year 2000 compliant

OPTI TITAN
£2399 ex vat
£2818.83 inc vat

OPTI TITAN

- P266Mhz MMX Intel CPU, Upgradable to PII 300 Mhz
- Large 13.3" XGA TFT Display
- 3.2GB Ultra DMA Hard Disk Drive
- 64Mb fast SDRAM
- *NEW* 3D 128-bit Graphics + Surround Sound
- 20X CD ROM (DVD Upgradeable)
- x2 type II or x1 type III PC Card slots
- Li-ion battery included
- USB, Zoom Video (ZV), TV Output Port
- Windows 95, year 2000 compliant

OPTI phoenix
£1899 ex vat
£2231.33 inc vat

OPTI phoenix

- P233Mhz MMX Intel Processor (Tillamook technology)
- 13.3" clear TFT display
- 2.1GB Ultra Fast Hard Disk Drive
- 32Mb EDO RAM
- 24X CD ROM and co-exist floppy drive
- x2 type II or x1 type III PC Card slots
- Li-ion battery included
- Pro-Logic Surround Sound System
- ONLY 34mm THICK - Ultra-slim
- Weight Only 2.5kg (with CD-ROM)
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- USB and Zoom Video (ZV) Port
- Windows 95 and year 2000 compliant

Opti INTERNATIONAL

OPTI IMAGE

New 17" Colour LCD DSTN Display monitor

- 17" (17.0" Diagonal Viewable) DSTN Display
- 1280 x 1024 resolution typical - High colour
- Physical Dimensions,440W x 435H x 210mmD
- Weight 8.1kg

OPTI IMAGE 17"
£1699 ex vat
£1996.33 inc vat

OPTI FREEDOM

OPTI FREEDOM
£49 ex vat
£57.58 inc vat

Wireless computer intergrated multimedia device
89-key notebook size keyboard designed for Win 95
14 extra programmable function keys
Full range mouse control (click and drag capabilities)
Infrared transmitting technology
Up to 23 ft (7 metres) operating distance
FCC, UL and CE compliant

AMAZING VALUE FROM

TEXAS INSTRUMENTS
Extensa™ TravelMate™
ACER products developed by TI

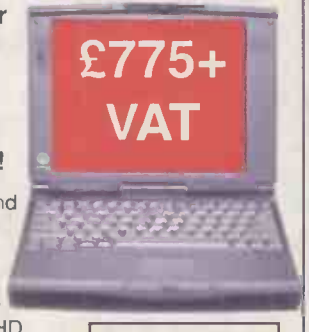
ACER

ACER EXTENSA 355M NOTEBOOK

Another incredible value for money notebook offer from

tech direct

Check the features and call for your own Star of Texas!!



£775+ VAT

- Intel Pentium 150MMX processor and 66Mhz host bus
- 11.3" DualScan Colour LCD display (800 x 600)
- 1.44Mb 3.5" built-in floppy disk drive
- 2.1Gb enhanced-IDE upgradeable HD
- 1Mb EDO Video Ram, 32-bit PCI bus
- 16Mb EDO Ram expandable to 48Mb
- PCI Local Bus with video accelerator
- NiMH battery, International AC Adaptor
- 2 x Type II PCMCIA slots, serial port, EPP/ECP parallel port
- Windows 95 keyboard and built-in touchpad
- Includes Microsoft Windows 95 pre-loaded
- One year worldwide limited warranty

Extensa 355M
£775 ex vat
£910.63 inc vat

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Extensa 390C P166MMX, 16Mb, 2.1Gb, DS12.1"	£1075	1263.13
Extensa 390CX P166MMX, 16Mb, 2.1Gb, TFT12.1"	£1289	1514.58
Extensa 390C P133MMX, 16Mb, 1.6Gb, DS 11.3"	£946	1111.55
Extensa 390CX P133MMX, 16Mb, 1.6Gb, TFT 11.3"	£1159	1361.83
SPECIAL OFFER SPECIAL OFFER		
Extensa TM7100		
P200MMX, 32Mb, 3.0Gb, TFT 12.1"	£1599	1878.83

Panasonic

CF-25 FJF4

- Pentium 166MMX
- 32Mb EDO RAM
- 2Gb Hard Disk
- 10x speed CD option
- 12.1" TFT Display
- Int SuperDisk option
- Windows 95

£2799 ex vat
£3288.82 inc vat

CF-25

CF25 LGC4	£1959 + vat
CF25 LJF8	£2799 + vat
CF35 KJF4	£1869 + vat

CF-63 LYJ8

- Pentium 166MMX
- 32Mb EDO RAM(96Mbmax)
- 3.24Gb Hard Disk
- Integrated DVD
- 20x speed CD-ROM
- 13.3" XGA TFT Display
- Int 1.44Mb FDD
- MPEG-1 and full MPEG-2 via Full Motion Video (FMV)
- Windows 95

£3399 ex vat
£3993.83 inc vat

CF-61 KXF4

- Pentium 150MMX
- 16Mb EDO RAM
- 2Gb Hard Drive
- 8x speed CD option
- 12.1" XGA TFT Display
- Int / Ext 1.44Mb FDD
- MPEG-1 and full MPEG-2 via Full Motion Video (FMV)
- Windows 95

£2199 ex vat
£2583.83 inc vat

IBM ThinkPad

- Pentium 120MHz
- 12.1" TFT
- 8MB - 40MB SO DIMM
- Super-slim and lightweight
- Standard I/O plus floppy,audio
- 85-key, palm rest, TrackPoint III
- Windows 95
- Lotus SmartSuite on CD included FREE
- 1 year warranty with international service
- 60 days preinstalled operating system software support
- Free 24 hour telephone hardware support

LIMITED OFFER
£799+VAT

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PSION SERIES 5

4MB	
£320	376.00
8MB	
£379	445.32

Take your office wherever you go. The PSION SERIES 5 gives you the computing power you need without the excess weight. With a fully featured, built in time manager, contact database, voice recorder and drawing package, the SERIES 5 is as valuable personally as it is professionally.

HEWLETT PACKARD

Options:

3 Year next-day exchange warranty	£65	76.38
Pack of 3 spare pens	£6	7.05
Leather case	£45	52.88
Compact Flash 2Mb inc adapter	£59	69.33
Compact Flash 4Mb inc adapter	£89	104.58

HP 320LX Palmtop PC	£299	351.33
HP 360LX Palmtop PC	£349	410.08
HP 620LX Palmtop PC	£545	640.38

VELO 1 PHILIPS

The Award Winning Philips Velo 1 packs everything you need from your desktop into a small 17 cm case for the road. It's built for Windows CE, the pocket version of Windows 95. But it also has Pocket Word, Pocket Excel, Pocket Internet explorer...along with software for corporate e-mail, a database, voice recording and scheduling.

- Integrated Voice recorder
- Integrated 19-2 Kbps data / fax modem
- Backlightable display
- GSM Connection

	ex vat	inc vat
Philips VELO1	£249	292.58

14.1" TFT IS HERE FROM digital

HI-NOTE ULTRA 2000

The truly revolutionary DIGITAL HiNote 2000 notebook will change the way you look at notebooks forever. It's the first premium notebook to offer a 14.1" XGA TFT display, and sizzling performance in a thin and light form factor.

- 14.1" XGA TFT Screen
- 166MHz Pentium processor with MMX technology, 512K L2 cache
- Outstanding graphics with 2MB VRAM
- 3.2 GB storage; user-removable hard disk drive
- Long life Lithium Ion battery
- Only 33mm thin and weighing only 3.0 kilos
- Windows95 and Windows NT Workstation 4.0 configurations available
- 32MB EDO RAM (max configuration 144MB)
- Three year limited international warranty

HINote Ultra 2000	166MMX,32Mb,14.1TFT 3.2Gb,20xCD,33.6modem	£2299	2701.32
HiNote Ultra 2000	233MMX,32Mb,14.1TFT,4Gb,20xCD,56Kmodem	£3125	3671.87
HINote Ultra 2000	266MMX,32Mb,14.1TFT,4Gb,20xCD,56Kmodem	£3399	3993.82

SIEMENS NIXDORF

The Siemens Nixdorf SCENIC Mobile 700 and 710 models provide the ultimate high end multimedia notebook solution. Unique Pro view models come with detachable screens allowing you to deliver professional presentations in conjunction with an OHP display unit. You simply remove the 12.1" TFT SVGA display, place it on the projector and start your presentation. The projector in combination with Full screen/Full motion MPEG video playback and stereo audio function gets your message across in a big way!!

ProView Models:-

P166MMX	2.1Gb	12.1" Removable	32Mb 192Mb	20x	£3499	4111.33
P166MMX	3.0Gb	12.1" Removable	32Mb 192Mb	20x	£3699	4346.33
P233MMX	3.0Gb	12.1" Removable	32Mb 192Mb	20x	£3999	4698.83

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Fast Upgrade For Compaq, IBM And Toshiba Notebooks

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- 1.00Gb, 2.1Gb And 3.0Gb Available
- Micro-Code Software Ensuring Compatability
- Removable And Replacement options
- Full Step by Step instructions.
- Disk Management software Included.
- Free Technical Support all Backed By 3 Year Manufacturers Warranty

	1.4GB		2.1GB		3.0GB
Replacement	£159	186.53	£189	222.08	351.33
Removable	£199	233.83	£239	280.33	£339 398.33

The Nova MicroMate external drive solution is available for use with all notebooks using the PCMCIA socket for power & data transfer, offering an increase in capacity & performance In a true mobile solution.

The MicroMate true capacity drives are available in up to 5Gb capacity making use of plug & play embedded support to allow simple set up & usage, the MicroMate can be used as a single machine capacity increase or can be used as a shared large capacity storage device. A rugged enclosure guarantees the MicroMate as a notebook device that can safely be used on the move, with power & drive access indicators for easy diagnostics, a standard type II PCMCIA interface ensures compatibility with a vast range of leading brand notebooks.
NOVA offer free technical support on all NOVA MicroMate storage products as well as a full 3 year manufacturers warranty.

1.4GB PCMCIA	2.1GB PCMCIA	3.0GB PCMCIA
£219 257.33	£269 316.08	£349 410.08

AMACOM

FLIP DISK MOBILE DATA STORAGE

2.8GB	£329	£386.57
4.2GB	£429	£504.07
6.4GB	£539	£633.32

- Unique flip PCMCIA card feature
- Unique, compact and light - weight design (weighs 188GR) - no need for cables
- Unique PCMCIA and Parallel interfaces for ultimate flexibility
- Ability to draw power from PC or notebook - use it anywhere
- High capacity - up to 6.4GB
- Access times and data transfer rates as fast as Internal hard drives
- Incorporates industry standard, very reliable 2.5" Hard Drives
- Built in shock absorbers for extra reliability
- Includes software which offers a comprehensive backup and restore utility as well as data compression software
- Extremely low cost
- Compatible with DOS, win 3.x, win 95, win NT, OS/2, UNIX, Apple Macs

AMACOM CD ROM DRIVES

External Parallel Port CD-ROM Drives

8 speed CD-ROM	£129	151.58	24 speed CD-ROM	£149	175.08
16 speed CD-ROM	£144	169.20			

External Parallel Port CD-ROM Drives with Sound

8 X CD-ROM sound	£175	205.63	24 X CD-ROM sound	£194	227.95
16 X CD-ROM sound	£189	222.08			

External PCMCIA based CD-ROM Drives

8 speed CD-ROM	£139	163.33	24 speed CD-ROM	£159	186.83
16 speed CD-ROM	£159	186.83			

AMACOM EZCD PLUS - External PCMCIA CD-ROM & Audio CD Player

EZCD PLUS x8 - Eight speed CD-ROM/Audio CD Player	£165	193.88
EZCD PLUS x20 - Twenty speed CD-ROM/Audio CD Player	£164	192.70

56k PC Card Modem

The Xircom Global ACCESS family of 56k PC Card Modem products provide versatile communication solutions for accessing information from any locations , anywhere in the world. Whether in the office, home or travelling Internationally, the Xircom GlobalACCESS 56k PC Card Modem provides the versatility, performance, and ease-of-use that make it the ideal solution for all your mobile connectivity needs.

Xircom 56k PC Card Modem
£114 ex vat £133.95 inc vat

CreditCard Ethernet 10/100+Modem 56

The CreditCard Ethernet 10/100+ Modem 56TM Global ACCESS is the ideal multi-function solution for portable PC users. A member of Xircom's award winning family of the Fast Ethernet products, it combines a 10/100Mbps Ethernet adapter, a high-speed 56K modem and GSM capabilities in a single PC Card.

Xircom 10/100+Modem 56
£225 ex vat £264.37 inc vat

CreditCard Ethernet Adapter 10/100

Portable PC users can now connect to both 10Mbps Ethernet and 100Mbps Fast Ethernet networks with this high performance PC Card. Autonegotiation of 10Mbps or 100Mbps speeds provides a seemless connection in both network environments. Fast ethernet is the natural migration path for over-burdened 10Mbps Ethernet networks.

Xircom Adapter 10/100
£98 ex vat £115.15 inc vat

CreditCard GSM

The Global ACCESS CreditCard GSM provides notebook users with data and fax communications over GSM (Global Systems for Mobile Communications) networks worldwide. Connect your GSM handset to the Xircom CreditCard GSM PC Card and turn your notebook into a mobile office.

Xircom CreditCard GSM
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Panasonic

MATCHED MEMORY FOR NOTEBOOKS

LOOK AFTER YOUR NOTEBOOK! OPTIMISE PERFORMANCE! BUY QUALITY PANASONIC 'TAB' MEMORY AND AVOID THE RISK OF DAMAGING YOUR MEMORY WHILST INSTALLING IT!

SECURITY CODED TAB | LIFE LIFETIME WARRANTY | MEM check 01264 356991 | PERFORMANCE CHECK

Notebook Memory	4Mb	8Mb	16Mb	32Mb
COMPAQ				
LTE Lite 4/25C, /33C, /25E, /25SL Mono Notebk	●	●	●	
LTE Lite 4/40C, /50E, /40CX, /50CX, /75CX	●	●	●	
LTE 5000 Series 5000 P75, 5100 P90, 5200 P120		●	●	●
Concerto 4/25, 4/33	●	●	●	
Contura 4/25, 4/25c, 4/25cx	●	●	●	
Contura 400C, 400CX, 410, 410C, 410CX	●	●	●	
Contura 420Dx4/75, 430 DX4/100	●	●	●	
Contura Aero 4/25, 4/33C		●	●	
Armada 1100,1120,1130, 1500, 4100 series		●	●	●
Presario 1010, 1020, 1030, 1060, 1070, 1080		●	●	
DELL				
Latitude 425, 433, 433c, 433cx, 450c, 450cx	●	●	●	
Latitude XP 450c, 475c, 4100c, 4100cx, XPi	●	●	●	
Latitude MX, MC, LX4100c	●	●	●	
Latitude XPi 100, 133	●	●	●	
Latitude LM P133ST, M166ST, LM CD P150ST		●	●	●
IBM				
Thinkpad 701, 230C, 230CS	●	●	●	
Thinkpad 700, 700C, 720, 720C	●	●		
Thinkpad 730T, 730TE, 345C, 345CS, 355, 360	●	●	●	●
Thinkpad 750, 755, 370C		●	●	●
Thinkpad 760C, 760CD, 760L, 760LD		●	●	●
Thinkpad 760EX, 760ED, 760EL, 365X, 365XD, 560, 535		●	●	●
Panasonic				
CF21P, CF41mkII, mkIII, Pentium	●	●	●	●
TEXAS INSTRUMENTS				
Extensa 450, 455, 455T, 550, 555CD, 560, 565	●	●	●	●
Extensa 510		●	●	
Extensa 600, 650, Travelmate, 6020, 6030, 6050		●	●	
Travelmate 5000, 5300			●	●
TOSHIBA				
Portege 610, 620 series	●	●	●	●
Satellite Pro 400, 410, 415, 420, 425, 430 Series		●	●	●
Satellite Pro 100, 105, 110, 115, 200, 210 Series		●	●	●
Dynabook Satellite Pro 430, 110, 200 Series		●	●	●
Dynabook Satellite 220, 440		●	●	●
Tecra T500, 510, Portege 650, 660		●	●	●
Tecra T700CS, T700CT		●	●	●
Tecra T710CS, T710CT, T720CS, T720CT, T730		●	●	
T2000, T2000SX, T2000SXe, T2200SX;	●	●	●	
T1000LE, T1800, T1850, T1850C Notebook	●	●		
T2100/CS/CT, T2105/CS/CT;		●	●	
T2150CDT, T2150CDS, T2155CDT, T2155CDS;		●	●	●
T2110, T2115, T2130, T2135		●	●	
T4400, T6400, T6600 Notebook (ALL)		●	●	
T4500, T4600, T4700, T4800, T4850CT;		●	●	
T1900, T1910, T1950, 1960 (ALL), T4900CT;		●	●	●
T2400, T2450, T3400, T3600		●	●	

Notebook Memory Price Crash!

All models below: 16MB **£53 ex vat** 62.27 inc vat
32MB **£78 ex vat** 91.65 inc vat

Acer
Acernote 370/372/373/3744/970/971/972
Acernote Light 372/373/374/370c/cx
Acernote Nuovo 971/972

Compaq
Armada 7730MT/7750MT/7710MT/1585DMT/1520DM1550DMT/ 1580DMT/1530DM/ 1510DMT/1130/1130T/1590DT/1560D

Digital
Hinote CSS VP575/CSS VP5100/CTS VP5100 (32Mb upgrade not available)

Fujitsu
Lifebook 520/520D/520T/530T/555T/635T Milan notebook/ Monte Carlo notebook/ Montego

IBM
Thinkpad 365X/365XD/560 50A/760E/560EOA/760ED/760EL/ 380/760 B293ELD/760XL/ 760XD

Olivetti
Echos Pentium Pro P133D/P133F/P133S/P150S/P150T/P150X

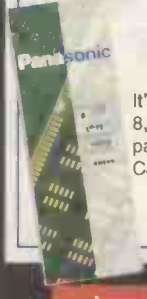
Panasonic CF-25/CF-35/CF-61/CF-621

Siemens Nixdorf Scenic Mobile 320/510/710

Texas Instruments Extensa 355

Toshiba
Satellite 220/220C/220CS, Satallite Pro 240/440CDT/460, Tecra 500CS/500CDT/510CDS/ 510CDT/440CDX/750, Portege 510CDS/510CDT/620CT/650C/660CDT

Memory Size	4Mb	8Mb	16Mb	32Mb	
Panasonic Chip 1	£40	£48	£64	£99	ex VAT
	£47.00	£56.40	£75.20	£116.32	inc VAT
Panasonic Chip 2	£36	£46	£68	£139	ex VAT
	£42.30	£54.05	£79.90	£163.33	inc VAT
Panasonic Chip 3	£39	£60	£95	£140	ex VAT
	£45.83	£70.50	£111.63	£164.50	inc VAT
Panasonic Chip 4	£43	£57	£95	£190	ex VAT
	£50.53	£66.98	£111.63	£223.25	inc VAT
Panasonic Chip 5	£49	£80	£150	£280	ex VAT
	£57.58	£94.00	£176.25	£329.00	inc VAT



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EPSON EMP7100

- Ultra Compact multimedia projector
- True XGA (1024 x 768) Resolution
- Supports SXGA, SVGA and VGA
- 650 ANSI Lumens
- Stereo Speakers with Surround Sound
- Multiple Input Sources with Auto Recognition
- Presentation Enhancement Software
- Rear and Ceiling Projection
- Auto Set Up buttons for faster use
- Workstation Connectivity with optional cables
- Remote Control Operation up to 10 metres
- Projection Distance from 1 to 10 metres

The largest top of the range multimedia projector from Epson, the EMP-7100. is capable of displaying XGA 1,024 x 768 suitable for CAD presentations at distances of up to 10m. giving an image size of 300in. An auto-sync feature means that setting up is a simple connection job. All in all. the EMP-7100 offers an excellent set of features suitable for professional presentations at CAD resolutions.

EPSON EMP 7100
£5649 ex vat
£6637.58 inc vat

EPSON EMP5100

- Ultra compact portable projector
- True SVGA (800 x 600) Resolution
- 750 ANSI Lumens
- Stereo Speakers with Surround Sound
- Multiple Input Sources with Auto Recognition
- Presentation Enhancement Software
- Remote Control Operation up to 10 metres

The EMP-5100 is reminiscent of a slide projector, with the zoom lens at the front and a carrying handle at the side. Images are displayed at a top resolution of 800 x 600, with the full range of 16.7 million colours on offer. Buttons mounted on the top of the projector provide access to an on screen menu with features including, position, tracking, brightness, contrast, synchronisation and colour.

EPSON EMP 5100
£3799 ex vat
£4463.83 inc vat

PROJECTORS FOR HIRE BY TECH DIRECT

	VGA	SVGA	XGA
Per day	£125 ex vat	£150 ex vat	£225 ex vat
	146.87 inc vat	176.25 inc vat	264.37inc vat
Per week	£375 ex vat	£450 ex vat	£675 ex vat
	440.62 inc vat	528.75 inc vat	793.12 inc vat

EPSON

CTX

CALL FOR A FREE DEMO

The EzPro 500/550 is the premiere personal projector for professionals who take to the road with business presentations. Made by CTX, the EzPro 500/550 establishes a new standard in projection brightness, portability and affordability. The EzPro 500/550 provides 270/250 ANSI lumens to project images brilliantly onto walls or screens - without dimming the lights

EZPRO 500/550

- Compact design for portability
- High power, low cost 400W EVD halogen lamp
- Less than half the weight of most LCD projectors
- Pop-up lens folds into projector for extra durability
- Will play from PC, MAC or video source

CTX EZPRO 500
£1195 ex vat
£1404.13 inc vat

CTX EZPRO 550
£1849 ex vat
£2172.58 inc vat

Boasting probably the strangest design of any projector the EzPro 550 comes with a top resolution of 300 x 600, with 16.7 million colours provided. On top of the unit, next to the lens mechanism, are the image control buttons. These are used to bring up the on screen menu for image adjustment, from where a limited range of sub menus provide access to features like contrast, source selection, tracking frequency and VGA text/graphics mode. A keystone correction facility is present. The infra red remote control handset duplicates the functions of most of these buttons and can also be used to zoom into and out of the screen.

EZPRO 600

CTX projector at only 12lbs, is one of the smallest and most lightweight on the market today. With the latest 3-panel Polysilicon Technology, EzPro is positioned as a perfect personal projector. Featuring true 800x600 SVGA resolution and an ultra bright 550 ANSI lumens, it's the excellent traveling companion for all your lights on, multimedia mobile presentations.

- 550 ANSI lumens
- 800 x 600 SVGA resolution
- 1024 x 768 XGA (compressed)
- 16.7 million colours
- Weight 12lbs

PROJECTORS FOR HIRE BY TECH DIRECT

	VGA	SVGA	XGA
Per day	£125 ex vat	£150 ex vat	£225 ex vat
	146.87 inc vat	176.25 inc vat	264.37inc vat
Per week	£375 ex vat	£450 ex vat	£675 ex vat
	440.62 inc vat	528.75 inc vat	793.12 inc vat

CTX EZPRO 550M
£2299 ex vat
£2701.33 inc vat

CTX EZPRO 600
£2799 ex vat
£3288.83 inc vat

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Projectors

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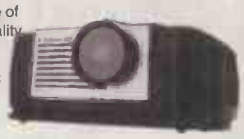
PHILIPS

ProScreen 4000

The Philips ProScreen 4000 multimedia projector is Ideal for a wide variety of presentation situations. It combines ease of use and long term reliability with crisp, brilliant picture quality for perfect presentations.



- Philips LIMESCO: unique and future-proof PC and MAC compatibility (SXGA, XGA, SVGA and VGA)
- Cost effective performance
- UHP lamp: up to 2000 hour lamp life with constant light output
- Intuitive controls put you confidently in control
- Keystone correction
- High reliability backed by professional service

PHILIPS 4000
£2999 ex vat
£3523.82 Inc vat

ProScreen 4100

The Philips ProScreen 4100 multimedia projector is an advanced SVGA LCD projector with the versatility to make light work of the most demanding presentation situation. The ProScreen 4100 gives you high edge-to-edge perceived picture brightness and colour accuracy that remain constant.

- Philips LIMESCO: unique and future-proof PC and MAC compatibility (SXGA, XGA, SVGA and VGA)
- Cost effective performance
- UHP lamp: up to 2000 hour lamp life with constant light output
- Intuitive controls put you confidently in control
- Keystone correction
- High reliability backed by professional service

PHILIPS 4100
£3749 ex vat
£4405.07 inc vat

ProScreen 4600

Philips offers two versions of its award winning ProScreen 4600 multimedia projector, each designed for different applications. Both feature the unique UHP lamp offering constant brightness.

The ProScreen 4600 **Impact** gives 30% brighter output (650 ANSI Lumen) for the ultimate performance for travelling presenters.
The ProScreen 4600 **Endurance** is perfect for intensive everyday use - and a lamp life of 8,000 hours is four times longer than the nearest competitive product.

PHILIPS Impact
£4995 ex vat
£5869.12 inc vat

PHILIPS Endurance
£4995 ex vat
£5869.12 inc vat

NEC

CALL FOR A FREE DEMO

MT810

- LCD Panel 800 x 600 TFT
- Image Size: Min 48.3cm Max 118.1cm
- Projection Distance: Min 3.3Ft Max 39.4Ft
- 600 ANSI Lumens
- Video Compatibility: NTSC/PAL/SECAM
- 16.7 Million RGB
- 640 x 480, 800 x 600, 1024 x 768

NEC MT 810
£4902 ex vat
£5759.85 inc vat

MultiSync Projectors

MT1000

- LCD Panel 1024x768 TFT
- Image Size: Min 48.3cm Max 118.1cm
- Projection Distance: Min 3.3Ft Max 39.4Ft
- 550 ANSI Lumens
- 16.7 Million RGB
- Video Compatibility: NTSC/PAL/SECAM
- PC Compatibility: 800 x 600, 1024 x 768, 1280x1024

NEC MT 1000
£6352 ex vat
£7464.60 inc vat

HITACHI

- True resolution 800 x 600
- Compressed resolution 1024 x 768
- 700 ANSI Lumens
- Remote mouse pointer
- 2w Stereo Speakers
- 16.7 million colours
- Remote control

The CPL850 (800x600 resolution) Hitachi Video data projector has stunning brightness with 700 ANSI lumens, the display on both models is incredible in bright rooms. With Polysilicon technologyn the projectors will astound and add to every corporate presentation and training session. The other unique feature about this model is that it includes 2 video and 2 VGA outputs.

HITACHI CPL850
£2989 ex vat
£3512.08 inc vat

PROJECTORS FOR HIRE BY TECH DIRECT

	VGA	SVGA	XGA
Per day	£125 ex vat	£150 ex vat	£225 ex vat
	146.87 inc vat	176.25 inc vat	264.37inc vat
Per week	£375 ex vat	£450 ex vat	£675 ex vat
	440.62 inc vat	528.75 inc vat	793.12 inc vat

PROXIMA®

MULTIMEDIA PROJECTORS

CALL FOR A FREE DEMO

Successful presentations don't just happen. They're the result of a little sweat, a lot of practice and, of course the right presentation equipment. that's where Proxima makes a difference. For more than a decade we've brought award-winning presentation solutions to boardrooms, meeting rooms, and classrooms all over the globe.
We didn't just enter the market, we helped create it.

Desktop Projector 9200

- 500 ANSI Lumens
- True XGA resolution for amazing images
- Bright enough to use virtually anywhere - even with lights on
- Motorized 1.6:1 precision Canon lens offers the widest range of zoom settings
- Extra long lasting metal halide lamp keeps maintenance costs down

PROXIMA 9200
£5469 ex vat
£6426.07 inc vat

Desktop Projector 5900

- 700 ANSI Lumens
- Laser F/X remote control
- Lightweight 6.4kg, easy to travel with
- SVGA 832 x 624 resolution, XGA 1024 x 768 to VGA 640 x 480 compatibility supports full-screen images from any notebook
- extra long lasting UHP metal halide lamp keeps changes to a minimum
- Projects images big enough for large training rooms or small auditoriums

PROXIMA 5900
£3995 ex vat
£4694.12 inc vat

PROXIMA LB201
£1999 ex vat
£2348.82 inc vat

PROJECTORS FOR HIRE BY TECH DIRECT

	VGA	SVGA	XGA
Per day	£125 ex vat	£150 ex vat	£225 ex vat
	146.87 inc vat	176.25 inc vat	264.37inc vat
Per week	£375 ex vat	£450 ex vat	£675 ex vat
	440.62 inc vat	528.75 inc vat	793.12 inc vat

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Canon		
BJC80	£139	163.32
BJC80 + scanner	£181	212.68
BJC250	£85	99.88
BJC4300	£124	145.70
BJC4300 + scanner	£149	175.08
BJC4650	£195	229.12
BJC7000	£209	245.58
BJC5500	£399	468.82
BJC4550	£185	217.37
EPSON		
Stylus 300 Colour	£99	116.32
Stylus 400 Colour	£118	138.65
Stylus 600 Colour	£155	182.12
Stylus 800 Colour	£207	243.22
Stylus Photo	£199	233.82
Stylus 1000	£292	343.10
Stylus 1520 Colour	£510	599.25
Stylus Colour 3000	£1118	1313.65
Postscript RIP	£89	104.57
HEWLETT PACKARD		
Deskjet 340C	£129	151.58
Deskjet 340CBI	£155	182.13
Deskjet 400L Colour	£85	99.88
Deskjet 670C	£109	128.08
Deskjet 690C+	£139	163.33
Deskjet 720	£165	193.88
Deskjet 820Cxi	£153	179.78
Deskjet 890C	£195	229.13
Deskjet 1600C	£839	985.83
Deskjet 1600CN	£1059	1244.33
Deskjet 1600CM	£1245	1462.88
Deskjet 1100C	£239	280.83
Officejet 590	£289	339.58
Officejet Pro 1150C	£479	562.83
LEXMARK		
Colour Jetprinter 1000	£85	99.87
Colour Jetprinter 5000	£139	163.33
Colour Jetprinter 5700	£185	217.38
Colour Jetprinter 7200	£209	245.58

INKJET CARTRIDGES

Canon
CALL FOR EXCELLENT PRICES

EPSON

Stylus 800/1000 Black	£9	10.57
Stylus 1500 Black	£28	32.90
Stylus 820/II/IIs/200 Black	£14	16.45
Stylus II/IIs/200 Black	£18	21.15
Stylus 400/500/600 Black	£14	16.45
Stylus 200/500 Colour	£18	21.15
Stylus 800/1520 Black	£18	21.15
Stylus Photo 5 Colour	£14	16.45
Stylus 3000 Black	£38	44.65
Stylus 3000 Colours	£38	44.65
Stylus 4/6/800/1520 Colour	£14	16.45
Stylus Colour/Pro Black	£10	11.75
Stylus Colour/Pro Colour	£22	25.85
Stylus Pro XL+ Colour	£22	25.85

HEWLETT PACKARD

DJ 500 Black	£15	17.62
DJ 500 Colour	£16	18.80
DJ 600/660/690	£16	18.80
DJ 600/660/690	£16	18.80
DJ 820/850/870/1600Black	£16	18.80
DJ 820/850/870 Colour	£18	21.15
DJ 690 PhotoRealistic	£23	27.02
DJ 690 PhotoRealistic Kit	£29	34.07
DJ Port/310/320/340	£14	16.45

LEXMARK

WinWriter 150 Black	£19	22.32
WinWriter 150 Colour	£26	30.55
ColourJet 1020	£20	23.50
ColourJet 2070 Black	£24	28.20
ColourJet 2070 Colour	£26	30.55
ColourJet 2050 Black	£19	22.32
ColourJet 2050 Colour	£26	30.55

FAX / MULTIFUNCTION

brother		
Brother Fax 1030	£289	339.58
Brother MFC 9000	£519	609.83
Brother FAX 510	£135	158.63
Brother FAX 1020	£215	252.63
Brother 520DT	£175	205.63
Brother FAX 8000P	£465	546.38
HEWLETT PACKARD		
OfficeJet 590 Multifunction	£341	400.67
OfficeJet 350 Multifunction	£416	488.80
GOLDSTAR		
GF 3010 TAM	£159	186.83
LGF 1000	£219	257.33
LGF 2000	£239	280.83
OKI		
OKI Fax 4100	£479	562.82
OKI Fax 740	£339	398.32
OKI Fax 740MF	£349	410.08
SAMSUNG		
SF 1600	£155	182.13
SF 910 TAM	£179	210.33
SF 2900M TAM	£194	227.95
SF 4100 Multifunction	£299	351.33
SF 4200 Multifunction	£389	457.08
SF 5600	£629	739.08
SHARP		
FO-1460W	£199	233.82
FO-1450	£215	252.63
FO-2600	£445	522.88
FO-2700M	£479	562.83
FO-4850	£Call	
UX-70	£129	151.58
UX-75	£145	170.38
UX-81	£159	186.83
UX-85	£180	211.50

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XEROX have a history of excellence in document management - With products installed in many leading corporates worldwide. Now, as they focus on the direct channel, Tech Direct are proud to be able to supply their products. Their feature rich, price competitive products are already winning awards.

DOCUPRINT 4512

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XEROX 4512
£699 ex vat
£821.33 inc vat

Let the DocuPrint 4512 show you a new side of productivity. Xerox have included many features in this model as standard that are expensive options on printers from some other manufacturers: Duplex printing, 2 x 250 sheet paper input bins and a one year on site "swap out" warranty to name but a few.

- 600 x 600 dpi laser technology
- Up to 12ppm print speed
- Duplex standard - two sided printing
- Two built-in 250 sheet universal trays
- Long-life recyclable cartridges

XEROX 4512N
£889 ex vat
£1044.58 inc vat

XEROX 4512MP
£999 ex vat
£1173.83 inc vat

NEW DOCUPRINT XJ4C

The XJ4C makes an excellent debut in the inkjet market for Xerox. Not only does it provide excellent value for money at £129 but its 4 colour head technology ensures running costs are kept low. Plus, the optional high capacity black turbo cartridge lets you print laser like quality at an incredible 6ppm. For superior colour documents, the XJ4C also utilises "SmartPrint" automatic image enhancement. If that's not enough, the XJ4C also provides "on screen feedback" to let you know when your ink is running low. No more "DOWN TIME " for your print jobs!.

- 4 ink print head system
- On screen prompt for low ink
- Prints up to 6 ppm Mono 1.5 ppm Colour
- Suitable for both DOS and Windows Printers
- Free image software enhancement

XEROX XJ4C
£129 ex vat
£151.58 inc vat

DOCUPRINT C55

The No1 colour laser in the U.K here's why -

CALL FOR A FREE DEMO

XEROX C55
£2249 ex vat
£2642.58 inc vat

PC Plus Gold

For colour laser technology that meets the demands of busy workgroups and high quality documents you expect from laser printing look to the most fully featured desktop colour laser printer for the price - the DocuPrint C55.

PC Plus, Editors Choice beating Lexmark, HP and QMS
"Xerox has come through with a stonking little colour laser printer, which offers a lot at a low price."

Network World, Recommended against HP 5Si mopier, Lexmark Optra S 2450n, QMS 2425Ex Print System
"Yes, even against the cream of monochrome printers, the C55 more than holds its own - it beats them!"

- 600 x 600 dpi colour and mono resolution
- Upto 12 pages per minute performance
- 30Mb standard memory - upgradable
- Multiple media versatility
- PCL 5C emulation, Adobe PostScript L2

NEW HOMECENTRE

Colour printer, Colour Copier, Detachable Colour Scanner ALL IN ONE!

The Ultra compact, affordable Homecentre from Xerox only takes up the space of a typical printer, but is also a high quality full colour scanner and colour copier! The Homecentre comes bundled with scanning, creative & image enhancement software which allows you to get up and running immediately.

- Scanning, creative and image enhancement software
- High quality colour and monochrome output
- Copying uo to 99 pages
- Up to 6ppm mono and 1ppm colour

XEROX HomeCentre
£339 ex vat
£398.33 inc vat

XEROX PRINTER RANGE

4508	£389	457.07	4517	£789	927.08	4520 MP	£2799	3288.82
510	£795	934.12	4517 D	£999	1173.82	N24	£1599	1878.83
4510MP	£1149	1350.07	4517 MP	£999	1173.82	N32	£1749	2055.08
			4520	£1899	2231.33			

LASER PRINTERS

	ex vat	inc vat
brother		
HL 730+	£205	240.88
HL 760	£229	269.08
HL 760 5Mb	£245	287.88
HL 1060	£349	410.08
HL 1260e 6Mb	£615	722.63
HL 1660	£659	774.33
HL 1660	£675	793.13
Canon		
LBP 660	£179	210.33
LBP 1260+	£594	697.95
EPSON		
EPL 5500 1Mb	£274	321.95
EPL 5500 2Mb	£319	374.82
EPL 5500 PS	£570	669.75
EPL 9000	£580	681.50
EPL 9000 PS	£982	1153.85
EPL N1200	£593	696.77
EPL N1200 EN	£791	929.42
EPL N1200 PS	£986	1158.55
EPL N2000	£1278	1501.65
EPL N2000	£1582	1858.85
HEWLETT PACKARD		
Laserjet 6L	£225	264.38
Laserjet 6P	£449	527.58
Laserjet 6MP	£549	645.08
Laserjet 4000	£695	816.63
Laserjet 4000T	£799	938.83
Laserjet 4000N	£891	1046.93
Laserjet 4000TN	£999	1173.83
Laserjet 5Si	£1579	1855.33
Laserjet 5SiNX	£1759	2066.83
Laserjet 5SiMX	£2159	2536.83
Laserjet 5Si Mopier	£4089	4804.58
Laserjet 5 Colour	£2789	3277.08
Laserjet 5M Colour	£3499	4111.33
Laserjet 5N Colour	£3099	3641.33
KYOCERA		
FS 600	£239	280.82
FS 1550	£568	667.40
FS 3400	£769	903.58
FS 1700	£568	667.40
FS 1700T	£724	850.70
FS 1700MPS	£2478	2911.65
FS 1700N	£744	874.20
FS 3700	£849	997.58
FS 6500	£1169	1373.58
FS 7000	£1749	2055.08
LEXMARK		
Optra S1250	£649	762.57
Optra S1650	£699	821.33
Optra S1650N	£939	1103.32
Optra S2450	£1449	1702.58
Optra S2450N	£1739	2043.32
Optra SC1275 Colour	£2739	3218.32
Optra SC1275N Colour	£3029	3559.07
OKI		
OKIPAGE 10IEN	£445	522.87
OKIPAGE 10iS	£395	464.12
OKIPAGE 10i	£359	421.82
OKIPAGE 4W *Plus*	£152	178.60
OKIPAGE 6e	£195	229.13
OKIPAGE 6ex	£229	269.08
OKIPAGE 810ex	£392	460.60
OKIPAGE 16N	£579	680.32
OKIPAGE 16NPS	£699	821.32
OKIPAGE 16EN	£749	880.07
OKIPAGE 16ENPS	£869	1021.07
OKIPAGE 20N	£729	856.57
OKIPAGE 20EN	£889	1044.57
OKIPAGE 20NPS	£899	1056.32
OKIPAGE 20NDX	£909	1068.07
OKIPAGE 20ENPS	£1039	1220.82
OKIPAGE 20ENDX	£1069	1256.07
Panasonic		
KX P6300	£172	202.10
KX P6500	£232	272.60
KX P7200	£1175	1380.63

LASER TONERS

brother		
HL 630/631/660	£19	22.32
HL 730/760	£19	22.32
HL 1060/1660	£19	22.32
HL 1260	£70	82.25
Canon		
LBP 460	£40	47.00
LBP 1260	£63	74.02
EPSON		
EPL 5000/5200	£92	108.10
EPL 5500	£39	45.82
HEWLETT PACKARD		
LaserJet IIP/IIP	£46	54.05
LaserJet II/III	£42	49.35
Laserjet 4/4+/5	£54	63.45
LaserJet 4L/4P	£39	45.82
LaserJet 4V	£84	98.70
LaserJet 5P/6P	£45	52.87
Laserjet 5L	£36	42.30
LaserJet 5SI	£95	111.62
KYOCERA		
FS 400	£15	17.62
FS 600	£26	30.55
FS 1550/1600/3400/3600	£44	51.70
FS 1700/3700	£39	45.82
FS 1700/3700 HiCap	£49	57.57
OKI		
OL 1200ex/Okipage 16n	£35	41.12
Okipage 4w	£18	21.15
Panasonic		
KX P4410/4430/4400	£28	32.90
KX P4400/4401/5400	£10	11.75
KX P6100/6150	£12	14.10
KX P6300/6500	£12	14.10

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- 600dpi resolution
- Photo REt II
- HP ColourSmart II automatically adjusts colour settings, sharpens and enhances low res images
- Includes Kodak Image Enhancements
- 1 year unit exchange warranty

£165 ex vat £193.88 inc vat

HP DESKJET 890c
- Up to 9ppm mono, 5ppm colour
- 600dpi resolution
- Photo REt II
- Handles up to 150 sheets
- Compatible with DOS, Windows 3.1x, Windows 95 and NT 4
- 1 year unit exchange warranty

£195 ex vat £229.13 inc vat

HP DESKJET 1100c
- Wide format A3 colour printer
- Up to 6.5ppm mono, 4ppm colour
- REt for crisp black 600 x 600dpi
- C-REt and ColourSmart II for brilliant colour at 600 x 600dpi
- Supports Win NT 4.0, Win 95, Win 3.1x and MS-DOS
- 1 year unit exchange warranty

£239 ex vat £280.83 inc vat

NEW!!

HP OFFICEJET 635
- Print, Copy, Scan in colour and a plain-paper fax all in one product
- Great colour images and black text printing
- Colour scanning to incorporate photographs into documents
- Print: 600x600dpi,
Fax: Standard, fine, 300dpi, Photo
Copier: 600x300dpi colour
Scanner: 1200dpi enhanced, 300dpi optical resolution

£329 ex vat £386.58 inc vat

HP OFFICEJET 1150c
- Print, Copy, Scan in colour all in one product
- Great colour images and black text printing
- 24-bit colour scanning, includes Adobe PhotoDeluxe image software
- Print: 600x600dpi black, 600x300dpi colour
Copier: Up to 7ppm black, 3ppm colour
Scanner: 1200dpi enhanced, 300dpi optical resolution

£479 ex vat £562.83 inc vat

HP LASERJET 6L
- Up to 6ppm print speed
- 600x600dpi resolution plus REt and Microfine toner
- Up to 100 sheets
- Multi-platform compatible
- 1 year return to HP warranty, extendible to 3 year next day, on-site with HP SupportPack

£225 ex vat £264.38 inc vat

HP LASERJET 6P
- Up to 8ppm print speed
- 600x600dpi resolution plus REt and Microfine toner
- Two paper trays holding 350 pages total
- 1 year return to HP warranty, extendible to 3 year next day, on-site with HP SupportPack

£449 ex vat £527.58 inc vat

NEW!!

HP LASERJET 3100
- LASER printer, Fax, Copier & Scanner all in one!
- Up to 6ppm print speed
- 600x600dpi resolution plus REt and Microfine toner
- Up to 100 sheets
- Multi-platform compatible
- 1 year return to HP warranty

£485 ex vat £569.88 inc vat

HP LASERJET 4000
- First page out in 15secs
- Up to 16ppm print speed
- 1200dpi resolution
- 500 sheet tray
- Upto 5 input bins (1,100 sheets)
- 1 year return to HP warranty

£695 ex vat £816.63 inc vat

NEW!!

HP LASERJET 5000
- A3 printing, first page out in 13secs
- Up to 16ppm engine
- Capable of 1200dpi resolution plus REt and Microfine toner
- Up to four input bins with a total capacity of 1100 sheets
- 1 year return to HP warranty

£899 ex vat £1056.33 inc vat

	ex vat	inc vat	with 3 year HP SupportPack	
HP LASERJET 6L	£225	264.38	£300	352.50
HP LASERJET 6P	£449	527.58	£588	690.90
HP LASERJET 6MP	£549	645.08	£688	808.40
HP LASERJET COMPANION	£79	92.83	Call	
HP LASERJET 5SI	£1579	1855.33	£2099	2466.33
HP LASERJET 5SIMX	£2159	2536.83	£2261	2656.68
HP LASERJET 5SINX	£1759	2066.83	£2288	2688.40
HP LASERJET 5SIMOPIER	£4089	4804.58	£4818	5661.15

	ex vat	inc vat	with 3 year HP SupportPack	
HP LASERJET 4000	£695	816.63	£885	1039.88
HP LASERJET 4000T	£799	938.83	£979	1150.33
HP LASERJET 4000N	£891	1046.93	£1071	1258.43
HP LASERJET 4000TN	£999	1173.83	£1179	1385.33
HP LASERJET 5 COLOUR	£2789	3277.08	£3028	3557.90
HP LASERJET 5M COLOUR	£3499	4111.33	£4438	5214.65
HP LASERJET 5N COLOUR	£3099	3641.33	£3338	3922.15

HP OFFICEJET 590	£289	339.58	£4	415.95
HP DESKJET 340 Colour	£129	151.58	£168	197.40
HP DESKJET 340 CBI	£155	182.13	£194	227.95
HP DESKJET 400 L Colour	£85	99.88	£124	145.70
HP DESKJET 670 Colour	£109	128.08	£148	173.90
HP DESKJET 690C+	£139	163.33	£179	210.33
HP DESKJET 720 *New!!*	£165	193.88	call	
HP DESKJET 890c *New!!*	£195	229.13	£260	305.50
HP DESKJET 1100c *New!!*	£239	280.83	£278	326.65
HP DESKJET 1600 C	£839	985.83	£944	1109.20
HP DESKJET 1600 CM	£1245	1462.88	£1350	1586.25
HP DESKJET 1600 CN	£1059	1244.33	£1164	1367.70

LEXMARK

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LEXMARK 7200
- 1200 x 1200dpi
- 8ppm / 3ppm
- Windows 3.1x, 95 & NT
- Dual ink cartridges with super-sharp waterproof black ink
- Optimised for plain paper printing
- Comes with LivePix software

LEXMARK 7200 **£209** ex vat £245.58 inc vat

LEXMARK 1000 & Disney's print Studio
- 600 x 600dpi
- 3ppm / 1ppm
- Windows 3.1x, 95
- Head Swapper

LEXMARK 1000 **£85** ex vat £99.87 inc vat

LEXMARK 5700
- New EX2 technology. Laser crafted print cartridgees deliver true 1200 x 1200dpi printing
- Up to 8ppm black, 4ppm colour printing
- Upgradeable to 6-colour photographic printing
- Whisper-quiet printing and Accu-Feed perfect paper alignment
- Optimised for plain paper printing

LEXMARK 5700 **£185** ex vat £217.38 inc vat

LEXMARK 5000
- New EX2 technology. Laser crafted print cartridgees deliver true 1200 x 600dpi printing
- Up to 5 ppm black, 2 ppm colour printing
- Upgradeable to 6-colour photographic printing
- Whisper-quiet printing and Accu-Feed perfect paper alignment
- Optimised for plain paper printing

LEXMARK 5000 **£139** ex vat £163.33 inc vat

LEXMARK LASERJET RANGE.

LEXMARK Optra S 1250	LEXMARK Optra S 1650	LEXMARK Optra S 2450
£649 ex vat	£699 ex vat	£1449 ex vat
£762.57 inc vat	£821.33 inc vat	£1702.58 inc vat

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BROTHER HL-730PLUS

The NEW HL-730 Plus replaces the HL-730, voted the 1997 ' Best Budget Laser Printer ' by Personal Computer World. It offers all the features of the HL-730 plus lots more for the same price.

- 6ppm print speed
- True 600dpi print resolution
- 1Mb standard memory
- Straight paper path technology
- Windows and direct DOS printing
- Automatic e-mail printing software
- Intelligent sleep mode
- 200 sheet adjustable paper tray

brother HL-730+ **£205** ex vat £240.88 inc vat

BROTHER HL-1060 LASER PRINTER
- Up to 1200 x 600dpi resolution
- 10ppm print speed
- Dual Bin as standard
- Choice of 2MB & 6MB standard memory
- Multiple emulations
- High resolution packs

brother HL-1060 **£349** ex vat £410.08 inc vat

OTHER BROTHER PRINTERS/LASERS

HL-1060 2MB printer	£349	410.08
HL-1060 6MB printer	£365	428.88
HL-730 Plus laser	£205	240.88
HL-760 1MB laser	£229	269.08
HL-760 5MB laser	£245	287.88
HL-1260E 2Mb Laser	£599	703.83
HL-1660E 4Mb Laser	£615	722.63
Multifunction MFC-9000	£499	586.33
HL-2400c Colour Laser	£2795	3284.13

BROTHER accessories

HL-1060 Toner Cartridge	£19.95	23.44
HL-730/760 Toner Cartridge	£19.95	23.44
HL-1060 Drum Unit	£109	128.08

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BJC - 4650

- 720 x 360dpi
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- Increased media support
- Up to 4.8ppm mono
- Image optimiser technology
- 100 sheet ASF
- Optional colour image scanner cartridge
- 3 year return to Canon warranty

Canon BJC-4650
£195 ex vat 229.13 inc vat

BJC - 7000

- 1200dpi unrivalled plain paper output
- New P-POP printing technology
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- Prints on card up to 550gsm
- Image Optimiser technology
- New large capacity cartridges
- A4+ size paper support gives full A4 bleed
- 1 year return to Canon warranty

Canon BJC-7000
£209 ex vat 245.58 inc vat

BJC - 250

- 720 x 360dpi (mono), 360 x 360dpi colour
- Optional Photorealism cartridge
- FREE BC-02 ink cartridge while stocks last (£19.99RRP)
- FREE Thomas Cook voucher worth £140 (while stocks last, please check availability)
- 1 year return to canon warranty

Canon BJC-250
£85 ex vat 99.88 inc vat

BJC - 4300

- 720 x 360dpi
- Drop Modulation Technology at 360 x 360dpi
- 4.5ppm mono, 0.23ppm colour
- Image Optimiser technology
- FREE Thomas Cook voucher worth £200 (while stocks last, please check availability)
- 1 year return to canon warranty
- BJC 4300+Scan head £149+vat

Canon BJC-4300
£124 ex vat 145.70 inc vat

BJC - 80

- 720 x 360dpi
- 4.5ppm mono, 1.9ppm colour
- Image Optimiser technology
- 30 sheet auto sheet feeder
- Built-in IrDA infra-red sensor
- 1 year return to canon warranty
- BJC 80+Scan head £181+vat

Canon BJC-80
£139 ex vat 163.33 inc vat

LBP - 660

- 720 x 360dpi
- 4.5ppm mono, 1.9ppm colour
- Image Optimiser technology
- 30 sheet auto sheet feeder
- Built-in IrDA infra-red sensor (Win95 only)
- 1 year return to canon warranty

Canon LBP-660
£179 ex vat 210.33 inc vat

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Tech Direct Exclusive Offer!!
When you purchase any EPSON inkjet get HYPERBLADE (RRP £29.99) FREE!!
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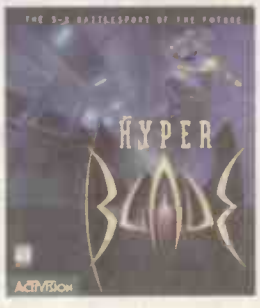

EPSON STYLUS PHOTO

The Epson Stylus Photo is the ultimate color photo and text printer for homes, buslnesses and professlonals.

- Photo Reproduction Quality output
- Prints 4" x 6" format and enlargements to A4
- Optimised for photo reproduction
- Up to 720 x 720 dpi resolution
- Free LivePix software for Win95/MAC
- 3 Year Extended Warranty £65 + VAT

£199 ex vat
£233.82 inc vat

EPSON STYLUS PHOTO EX

NEW!!

The EPSON Stylus Photo EX provides the professional photographer with the ultimate for photographic reproduction and enlargements on media up to A3 in size

- Photo Reproduction Quality output, up to A3 in size
- 1440dpi and smaller MicroDot for highest photo quality output
- Win 3.1, Win 95, Win NT and Mac compatiable
- EPSON PhotEnhance 2 - automatically optimises photo output
- Prints on plain paper with EPSON QuickDry Ink
- Prints on a wide range of media
- 1 year RTB warranty as standard
- EPSON CoverPlus 3 year extended warranty service available

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EPSON STYLUS COLOR 850

- Ultra-fast Print Speed up to 9ppm mono , 8.5ppm Colour
- 1440dpi PhotoReal colour, Laser-sharp Black output standard
- Win 3.1, Win 95, Win NT and Mac compatiable
- High capacity dual Ink cartridge system
- New full function status monitor
- 1 year RTB warranty as standard
- EPSON CoverPlus 3 year extended warranty service available

NEW!!

£243 ex vat
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EPSON STYLUS PHOTO 700

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EPSON TOP SELLING STYLUS COLOR 600

The EPSON Stylus Color 600 produces high-definition 1440 dpi PhotoReal color printing at an affordable price, making it ideal for any application demanding the ultimate results.

- 1440 dpi PhotoReal color inkjet
- Up to 4 ppm color, Up to 6 ppm black
- Advanced dual ink cartridge system
- Fully Windows or Mac compatible
- Easy to use with in-built online help
- 3 Year Extended Warranty £65 + VAT

£155 ex vat
£182.12 inc vat

	ex vat	inc vat		ex vat	inc vat
StylusColor 300	£99	116.32	PhotoPC 600	£455	534.63
StylusColor 400	£118	138.65	EPL-N1200	£593	696.77
StylusColor 800	£207	243.22	EPL-N1200EN	£791	929.42
StylusColor 1000	£292	343.10	EPL-N1200PS	£986	1158.55
StylusColor 1520	£510	599.25	EPL-N2000	£1278	1501.65
StylusColor 3000	£1118	1313.65	EPL-N2000PS	£1582	1858.85

EPSON DOT-MATRIX RANGE

	ex vat	inc vat		ex vat	inc vat
LX 300	£97	113.97	LQ 300	£115	135.12
LX 1050+	£200	235.00	LQ 570+	£216	253.80
FX 870	£247	290.22	LQ 670	£230	270.25
NEW FX 880	Call		LQ 870	£377	442.97
FX 1170	£307	360.72	LQ 2070	£330	387.75
FX 2170	£395	464.12	LQ 2170	£468	549.90
DFX 5000+	£1226	1440.55	DLQ 3000	£831	976.42
DFX 8000+	£1911	2245.42	NEW DLQ 3000+	Call	

EPSON STYLUS Photo PC 600

£455 ex vat £534.63 inc vat

EPSON FILMSCAN 200

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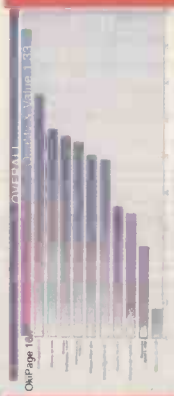
PC PRO VALUE

PC PRO QUALITY

OKIPAGE 16N



A super-fast printer which offers top-quality output. The ideal choice for demanding office environments, and a double award winner in the latest review.

QUALITY AND VALUE WINNER - PC PRO NOVEMBER '97

6 out of 6 for the OKIPAGE 16N

PC PRO VALUE

PERFORMANCE
QUALITY
VALUE FOR MONEY
OVERALL

PC PRO QUALITY

- 16 pages per minute at 600 x 600 dpi
- Network and Postscript cards installable
- PCL5e (HP LaserJet 4 compatible)
- 6 Mb as standard (up to 66 Mb)
- 45 scalable fonts x 3 bitmap fonts
- High capacity 500 sheet tray

OKI OKIPAGE 16N
£579 ex vat £680.32 inc vat

OKIPAGE 4W PLUS

- *New* LED 4ppm personal page printer from OKI
- Excellent alternative to a network laser
- Fast high quality text and graphics output
- Improved paper guide system and cover latch
- 600 dpi class with MicroRes 600
- Improved Windows 3.x/95 driver
- New Windows NT 4.0 driver

OKI 4W PLUS
£152 ex vat £178.60 inc vat

OKIPAGE 20N

- LED 20ppm page printer (PCL6)
- 1200dpi class printing
- Optional AdobePostScript Level II
- R3000 RISC processor
- Standard 8 Mb memory - upgradable to 68 Mb
- OKIVIEW network management software
- Bi-directional parallel interface and serial interface

OKI OKIPAGE 20N
£729 ex vat £856.57 inc vat

OKIPAGE 10i

- LED 10ppm (PCL6)
- 600 x 1200dpi (600 dpi printhead)
- Optional AdobePostScript Level II
- Standard 2 Mb memory - upgradable to 35 Mb
- Upgrade path to full network capabilities

OKI OKIPAGE 10i
£359 ex vat £421.82 inc vat

THE RANGE OF OKI PRINTERS

OKIPAGE 6e - 600dpi, 6ppm, PCL5e	£195	229.13
OKIPAGE 6ex - 1200dpi, 6ppm, PCL5e, 2Mb	£229	269.08
OKIPAGE 810ex - 600dpi, 8ppm, PCL5e, 2Mb	£392	460.60
OKIPAGE 16NPS - Postscript Printer	£699	821.32
OKIPAGE 16EN - Ethernet Printer	£749	880.07
OKIPAGE 16ENPS - EthternetPostscript	£869	1021.07
OKIPAGE 10iS - with Serial I/F	£395	464.12
OKIPAGE 10iEN - Ethernet Printer	£445	522.87
OKIPAGE 20EN - Ethernet Printer	£889	1044.57
OKIPAGE 20NPS - Postscript Printer	£899	1056.32
OKIPAGE 20NDX - Duplex Printer	£909	1068.07
OKIPAGE 20ENPS - Ethernet Postscript	£1039	1220.82
OKIPAGE 20ENDX - Duplex Ethernet	£1069	1256.07

OKI DOT-MATRIX RANGE

ML280	£179	210.33	ML3320	£309	363.08
ML320P	£295	346.63	ML3390	£329	386.58
ML321P	£355	417.13	ML3321	£365	428.88
ML380P	£209	245.58	ML3391	£379	445.33
ML385	£319	374.83	ML521P	£385	452.38
ML395M	£629	739.08	ML590P	£429	504.08
ML395C	£715	840.13	ML591P	£495	581.63
ML520P	£325	381.88	ML3410	£795	934.13

OKIFAX 4100

The OKIFAX 4100 is a high-quality, high performance desktop LED facsimile, perfect for use in small and home offices and for personal desktop use.

OKI 4100
£479 ex vat
£562.82 inc vat

- Fast 14.4k modem speed
- 100 sheet paper capacity
- Memory expandable to 75 pages
- Seperate toner and drum
- Advanced dialling features
- Power save mode
- Energy saving system

OKIFAX 740

The OKIFAX 740 is ideal for the small office, workgroup or business, offering all the convenience of plain paper faxes with the quality and economy of inkjet printing.

OKI 740
£339 ex vat
£398.32 inc vat

- 150 page plain paper handling
- Telephone/facsimile auto switch
- Error correction mode (ECM)
- 512Kb memory (upgradeable to 1.5Mb)
- 18 secs per A4 sheet
- 10 one touch numbers
- 50 autodial numbers

OKIFAX 740MF

The OKIFAX 740MF is now offered at this incredible price for a limited period, offering 2 in 1 functionality for plain paper faxing and inkjet printing in mono or full colour!!

OKI 740MF
£349 ex vat
£410.08 inc vat

- Print speeds up to 3 ppm mono
- 600 dpi mono/300dpi colour printing
- Autodial: 10 one-touch/50 speed-dial
- 18 secs/page transmission speed
- Compact and space saving design
- Windows 3.11 and 95
- 150 sheet paper tray

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ALL YOU NEED FROM A PRINTER IN BLACK & WHITE

KYOCERA FS-600 LASER PRINTER

The PC Direct Verdict (Jan '98) on the FS-600 was as follows:
With a price of just £239, the FS-600 is great value for money. It easily attains its quoted speed of 6ppm, and has a very low time-to-first-page. Paper handling is a cut above most of its rivals thanks to an optional second cassette and print quality is also on a par with any 600dpi machine. The FS-600 is an excellent choice for personal use or to share among a small workgroup particularly in view of its highly competitive price.

- 600dpi, 6ppm laser printer
- Cartridge - free technology
- 50MHz PowerPC processor
- Internal 150 - sheet cassette
- Ethernet/serial interface options

CHECK THE SPEC!! Fantastic value for money new model!

KYOCERA FS-600	
£239 ex vat	£280.82 inc vat

Upgrade Options:

Paper feeder	£119	139.82
Serial Interface	£26	30.55
Ethernet I/F	£99	116.32
Toner refill	£26	30.55

Warranty Options:

1-year on-site	£49	57.57
3-year on-site	£99	116.32

Ecosys FS-1550 10ppm	£568	667.40
Ecosys FS-3400+ 18ppm	£769	903.58
Ecosys FS-6500+ 13ppm A3 printer	£1169	1373.58
Ecosys FS-7000 28ppm	£1749	2055.08

KYOCERA OFFICE LASER PRINTERS

Easy-to-install and setup, Kyocera's two office laser printers, the FS-1700 and the FS-3700 provide a superb office printing solution. At just 0.4 pence per page they provide an ultra low cost of ownership. With intelligent features such as the ability to overlay fonts, forms and logos and with clear upgrade paths via modular paper handling options the FS-1700 and FS-3700 prove excellent all round office printers.

- 12ppm and 18ppm network laser printers
- Optional multi-protocol Ethernet interface
- 2Mb Pre-installed Memory
- Fully SNMP compliant/Windows plug & play
- High speed parallel and serial interfaces
- Supported by Kyocera PrintMonitor management utility
- 250 sheet standard cassette plus 100 sheet multi-purpose feed

PC Direct RECOMMENDED BEST BUY

Upgrade Options:	ex vat	inc vat
500 sheet cassette	£190	223.25
Compact cassette	£190	223.25
Duplex upgrade	£490	575.75
15-bin sorter/stacker	£1155	1357.13
1500 sheet bulk stacker	£615	722.63
Regular toner refill	£39	45.82
High capacity refill	£49	57.57
Warranty Options:		
1-year on-site	£99	116.32
3-year on-site	£199	233.82

KYOCERA FS-3700	KYOCERA FS-1700	KYOCERA FS-1700N	KYOCERA FS-1700T
£849 ex vat	£568 ex vat	£744 ex vat	£724 ex vat
£997.58 inc vat	£667.40 inc vat	£874.20 inc vat	£850.70 inc vat

MINOLTA

Minolta enters the exciting colour production market with a superb, easy-to-use and versatile laser printer. Ideal as a day to day monochrome office printer but also perfectly capable of instant high quality 600 dpi colour production. Before you consider purchasing another monochrome laser, why not upgrade yourself to colour capability today!

MINOLTA COLOR PAGE PRO LASERPRINTER

- 3 pages per minute full-colour laser printer
- 12 ppm high speed monochrome printing
- Intel 33MHz RISC processor & high speed parallel port
- 4MB standard memory (upgradeable to 68MB)
- 150 sheet multipurpose tray & 250 sheet A4 cassette
- Optional 2nd 250 sheet paper cassette
- Optional Ethernet or Token Ring cards
- Upgradeable to Postscript Level 2
- Handles up to 157g/m² light card
- Simple to change consumables
- True 600 dpi colour resolution

Color PagePro	£1849	2172.58

MINOLTA PAGE PRO 6E LASERPRINTER

- Minolta Super Fine Micro-Toning System
- 600 dots per inch resolution
- 2Mb standard memory (max 34Mb)
- Energy save and Toner save functions
- Multipurpose 150 sheet tray
- 6 pages per minute
- Two parallel ports
- INFRA - RED port

PagePro 20	£899	1056.33
PagePro 12	£595	699.13
PagePro 6E	£299	351.32
PagePro 6, 6ppm, 110fonts, PCL5e emulation	£259	304.32
PagePro 6L 6ppm, enhanced 1200dpi, 45 scalable fonts	£195	229.13

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AGFA

ePHOTO 307 DIGITAL CAMERA

Now you can quickly and easily create digital photos and transfer them to your PC. The new Agfa ePhoto 307 is ideal for both business and home use. Not only is the ePhoto 307 efficient and economical, but it's also fun!

- Stores 36 high or 72 standard resolution images
- 640 x 480 or 320 x 240 pixels
- High quality 24-bit colour images
- Built-in auto flash from 3-10 feet

AGFA ePHOTO
£169 ex vat
£198.58 inc vat

DUOSCAN

Agfa have developed a unique method of scanning transparancies and reflective materials within a single, integrated unit. DuoScan sets the future standards for professional , compact scanners.

- True optical resolution of 2000 x 1000 ppi
- Interpolated resolution of 4000 ppi
- Built in scanning bed for transparansies
- Batch slide holders: 35mm framed slide holder, 35mm strip slide holder, 6cm slide holder

AGFA DUOSCAN
£2569 ex vat
£3018.57 inc vat

NEW - SNAPSCAN 310 - NEW

Personal Computer World Editors Choice

SnapScan is designed for use with every desktop PC or Macintosh, at home or office. It's a low cost, A4 flatbed scanner, which automatically captures images of outstanding quality within seconds.

- Desktop, CCD flatbed, single pass colour scanner
- 300 x 600 ppi optical resolution
- 4800 x 4800 ppi through interpolation
- 30 bit colour depth, 10 ms/line scan speed
- FotoLook and FotoSnap 2.09 software

AGFA SnapScan 310
£119 ex vat
£139.83 inc vat

Improved version of the award winning SnapScan

NEW - SNAPSCAN 600 - NEW

Low cost scanning is raised to superb quality levels by the SnapScan 600. It's an outright winner in the personal, A4 flatbed scanner market. Razor-sharp images are captured on PC.

AGFA SnapScan 600
£219 ex vat
£257.33 inc vat

- The ultimate low-cost A4 flatbed scanner
- 600 x 1200 ppi resolution, 30 bit colour depth
- Interpolated resolution up to 4800 ppi
- FotoLook, FotoSnap + FotoFlavor software
- OmniPage LE OCR software

NEW - E1280 £495 581.63

AGFA PAPER

Agfa Jet

	ex vat	inc vat
Ink Jet Paper A4 200 Sheets	£16.13	18.95
Ink Jet Photographic Paper 20 Sheets	£14.85	17.45
Ink Jet Multi Pack	£8.47	9.95

(5 sheets Photographic -5 sheets Transparency Film - 10 Hi Res Paper)

UMAX

The Award Winning UMAX scanners

ASTRA 610S AND 610P INCLUDE ADOBE PHOTO DELUXE SOFTWARE - FREE!!

ASTRA 610P

PARALLEL & SCSI VERSIONS

The parallel version of the Astra 610 flatbed scanner features a through parallel port for printer connection, plus all the superb features of the Astra 610S SCSI version at a super low price!!

Personal Computer World Highly Commended

- Single pass colour scanner
- 30-bit, over one billion colours
- 600 x 300 dpi optical resolution
- Easy-to-fit user friendly model
- Presto file management software inc

UMAX Astra 610P
£64 ex vat
£75.20 inc vat

UMAX 610S SCSI
£99 ex vat
£116.32 inc vat

ASTRA 1200S FLATBED SCANNER

PC PRO QUALITY

Umax continues its run of PC Pro awards with the Astra 1200S. With a high 600x1200 optical resolution the Astra delivers the best quality scans of any of the devices on test. Detail was sharp, colour accurate and contrast realistic. Using a 30-bit sample, the Astra achieves a better tonal range than scanners with 24-bit processes.

At £229, the Umax is reasonably priced and is one of the better value scanners on test. But no corners have been cut in build quality, with solid, stylish chassis sporting extendable lid hinges which rise when a thick magazine or book is being scanned. You can also remove the lid for scanning very large objects.

In all, the Umax Astra 1200S is an amazing quality scanner at a very reasonable price, making it a worthy Quality winner.

- 1200S SCSI scanner
- 600 x 1200 dpi optical resolution
- New 30-Bit model
- Free Umax VistaScan software
- Easy-to-fit user friendly model
- Adobe Photoshop LE £30 + vat

PC PRO
QUALITY
SPEED
VALUE FOR MONEY
OVERALL

UMAX Astra 1200S
£219 ex vat
£257.33 inc vat

Astra 1200S Flatbed Scanner	£229	269.07
Astra 1200S with PhotoShop 4.0	£339	398.32
With PhotoShop & Transparency Adapter	£548	643.90
2nd year extended warranty for ASTRAS	£29.95	35.25
Powerlook ColourStudio 2LE	£749	880.08
Powerlook III	£1995	2344.12
Mirage II Pro	£5999	7048.82

ASTRA 1210P FLATBED SCANNER

Amazing low price 30 bit scanner

- 1200P Parallel scanner
- 600 x 1200 dpi optical resolution
- New 30-Bit model
- Free Umax VistaScan software
- Easy-to-fit user friendly model
- Adobe Photoshop LE £30 + vat

UMAX Astra 1210P
£99 ex vat
£116.32 inc vat

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GR-DVX DIGITAL VIDEO CAMERA

- 2.5" Polycrystalline Sllicon TFT LCD monitor
- High-resolution Digital Image Stabilizer
- 10x Pinpoint Digital Zoom during playback
- 100x Super Digital Zoom
- Snapshot and Motor Drive modes
- High picture and sound quality

JVC GR-DVX EK
£1249ex vat 1467.58inc vat

JVC DIGITAL PRODUCTS

GR-DVX pack	Digital Video Camera	£1399	1643.83
GR-DVJ70	Digital Video Camera	£749	880.08
GV-DS2	Docking Station	£199	233.82
GV-PT2	Digital Video Printer	£379	445.33

JVC GC-S1 Digital Still Camera

- 9 Point zoom from each shot
- Built-in 1.8" LCD monitor
- IrDA (infra red) interface
- Compact flash storage
- Comprehensive software bundle
- Optical 10X zoom F1.6 lens

JVC GC-S1EK
£299 ex vat 351.33 inc vat

JVC GR-DVL9000 Digital Video Camera

- F1.2 lens
- 4" high quality screen
- Direct PC connection
- Pln point zoom on screen
- Built-in capture facility
- DV terminal (DV out)

JVC GR-DVL9000
£1399ex vat 1643.83 inc vat

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FLASH CARD STORAGE FOR DIGITAL CAMERAS

FOR OUR FULL RANGE OF CAMERA COMPATIBILITY SEE THE FLASH CONFIGURATOR ONLINE AT www.simpletech.com

SMART MEDIA CARD	4Mb	8Mb
	£21 24.68	£48 56.40
	2Mb	Adapter
	£18 21.15	£19 22.32

MINIATURE CARD		
2Mb	4Mb	8Mb
£49 57.57	81.07	£119 139.82

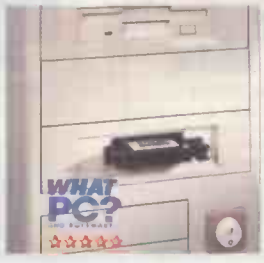
COMPACT FLASH CARDS		
8Mb	24Mb	
£59 69.33	£129 151.58	
12Mb	32Mb	
£75 88.13	£175 205.63	
4Mb	16Mb	Adapter
48.18	£99 116.32	£19 22.32

ATA FLASH CARDS		
		40Mb £199 233.83
4Mb	16Mb	64Mb
£50 58.75	£97 113.98	
8Mb	20Mb	80Mb
£65 76.38	£113 132.78	
12Mb	32Mb	Adapter
£82 96.33	£159 186.83	£19

CROSS REFERENCE WITH DIGITAL CAMERAS

- A full flash card family
- Compatible with the majority of digital cameras
- Ultrasonically welded for durability (including, against vibration, shock and dust)
- 5 year warranty on all flash cards
- Technical support from within the UK
- Pocket size portability

SimpleStation



- Convenient access to PC cards from your desktop.

PC PhotoReader

- Fast access for laptops and desktops to all data on CompactFlash cards

SCANNERS

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EPSON		
FilmScan 200	£303	356.03
GT 5000 PC Parallel	£154	180.95
GT 5000 PC SCSI	£246	289.05
GT 8500	£300	352.50
GT 8500 PC Parallel	£369	433.58
GT 8500 PC SCSI	£392	460.60
GT 8500 PC SCSI	£469	551.08
GT 9500	£383	450.03
GT 9500 PC Parallel	£446	524.05
GT 9500 PC SCSI	£469	551.08
GT 9500 PC SCSI	£538	632.15
NEW GT 12000	£1315	1545.12
NEW Colourpage EP	£74	86.95
NEW HR5 Flatbed Scanner (Genius)	£149	175.07
HEWLETT PACKARD		
HP Scanjet 5s	£134	157.45
HP Scanjet 5100C	£149	175.75
HP Scanjet 6100C	£449	527.57
HP Scanjet 5 Ethernet	£1605	1885.87
Freescan (Logitech)	£98	115.15
PageScan Colour parallel	£76	86.30
Nikon		
Coolscan 35mm ext	£494	580.45
Coolscan 35mm int	£499	586.32
Supercoolscan	£1149	1350.05
OLYMPUS		
ES-10 Scanner		448.85

		ex vat	inc vat
visioneer	Paperport 3000	£99	116.32
	Paperport 6000	£169	198.57
	Paperport Strobe	£139	163.32
	Paperport mx	£69	81.07
	Paperport ix	£69	81.07

ALL VISIONEER PRICES ARE QUOTED AFTER £30 REBATE - LIMITED OFFER

CAMERAS

	ex vat	inc vat
CASIO		
QV-300	£299	351.33
QV-100	£199	233.83
QV-700	£319	374.82
DP8000 PhotoPrinter	£259	304.32
Canon		
Powershot 600	£499	586.33
Powershot 350	£375	440.62
EPSON		
PHOTO PC 600	£454	534.63
FUJIFILM		
FUJI DX-7	£198	232.65
FUJI DX-5	£169	198.58
NEW DJ300	£1399	1643.83
RICOH		
RDC - 300	£279	327.82
RDC - 2E	£389	457.08
RDC - 2L	£489	574.58
SANYO		
DIGICAM X300e	£499	586.33
DIGICAM G200	£315	370.13

Kodak	DC120	£425	499.38
	DC210 ZOOM	£529	621.58
	DCS 520	call	call
OLYMPUS			
	C420L • 640 x 480 resolution • Smartmedia panorama memory card inc • 2" Colour screen & optical viewfinder • Auto focus lens • PAL video output	£289	339.57
	C-800L • 1024x768 resolution • 8Mb memory • 30 high quality, images120 standard • 4.5cm TFT screen • Auto focus lens	£445	522.87
	P 300e • 300dpi dye sublimation colour printer • 6" x 4" output • Connects direct to Olympus digital cameras and to PC	£365	428.87
	C-820L	£499	586.32
	C-1400L	£949	1115.08
	PCMCIA Adapter 4 Smart media	£69	81.07
Vivitar	VIVICAM 3000 1000x800	£249	292.57

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- High brightness, high contrast flat panel Liquid Crystal Display
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- 262,144 displayable colours
- No geometric display distortion, misfocus or misconvergence
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- No radiation, unaffected by external magnetic fields

iiyama LP-1014P
£1089 ex vat
£1279.58 inc vat

MF-8617T

- 17" 0.26mm FST
- Up to 1280x1024 NI@80Hz
- On-Screen Display Menu
- Colour Balance Control

iiyama MF-8617T
£339 ex vat
£398.33 inc vat

MF-9017T

- 17" 0.25mm DiamondTron
- Up to 1600x1200 NI@72Hz
- On-Screen Display Menu
- Colour Balance Control

iiyama MF-9017T
£378 ex vat
£444.15 inc vat

MF-8721

- 21" 0.27mm A-EADF
- 1800x1400 @75Hz or 1600x1200 @85Hz
- On-Screen Display Menu

iiyama MF-8721T
£745 x vat
£875.38 inc vat

MF-8515G

- Digital control and on screen display for full picture geometry and colour balance control

iiyama MF-8515G
£174 ex vat
£204.45 inc vat

MF-9221

- 21" 0.28mm DiamondTron
- Up to 1800x1400 @75Hz
- New 'P-NX' Gun technology for enhanced focus

iiyama MF-9221
£759 ex vat
£891.83 inc vat

S901GT

- Available January 1998
- 19" 0.26mm FST
- Up to 1280x1024 @100Hz NI
- On-Screen Display Menu

iiyama S901GT
£544 x vat
£639.20 inc vat

ADI

15" ProVista E40 (13.8"V)

- Use a resolution of 1024x768 flicker free @85Hz
- Brilliant FST tube with 13.8" viewable area
- 0.28mm professional dot pitch
- Microprocessor Intelligent for easy controls
- 3 Year Warranty (2 Year On Site, 3rd Year RTB)

ADI 15" ProVista
£119 ex vat | 139.83 inc vat | E30 | £99 | 116.32

17" MicroScan 5G (16"V)

- Use 1280x1024 & 1600x1200 resolutions flicker free
- 0.26mm dot pitch for sharp focus
- On screen display and colour adjustment
- TCO 95 approval as standard
- 3 Year On Site (Next day exchange) Warranty

ADI 17" MicroScan
£299 ex vat | 351.33 inc vat | 5GT | £345 | 405.38 | 6G | £729 | 856.58

19" MicroScan 6P (18"V)

- 1600x1200 @75Hz or 1280x1024 @85Hz
- 0.26mm dot pitch (0.21 Horizontal mask pitch)
- On screen display and colour adjustment
- Built-in microphone, stereo speaker option
- In built USB hub (4 downstream, 1 upstream port)
- TCO 95 approval as standard
- 3 Year On Site (Next day exchange) Warranty

ADI 19" MicroScan
£484 ex vat | 568.70 inc vat | 4P | £139 | 163.33 | 5P | £234 | 274.95

TAXAN

ON DEMONSTRATION

Ergovision 760TCO95-S

Taxan's reputation, quality, standards and, to be frank, our sales results, have always been the highest. Now we have prices that match some of the lowest.

- 17" ZenTan FST
- 15.5" Viewable Size
- 0.27mm dot pitch
- 1280 x 1024 @ 65Hz
- On-screen display
- Plug & Play compatible
- Energy Star compliant
- MPRII, TCO 92 & 95, CE

TAXAN 760 TCO95-S
£349 ex vat | £410.07 inc vat

Crystalvision 650

- 14.5" TFT
- 1024 x 768 resolution
- On-screen display
- Plug & Play compatible
- Energy Star compliant
- TCO 92, MPRII, CE
- Built -in stereo speakers

"Taxan's Crystalvision 650 offers unrivalled performance" PCW
"Looks to kill for, very sexy indeed, love at first sight" PC Format
"The first sight of the Taxan Crystalvision 650 tends to trigger the "I want one" response" PC Magazine
"With a 2.5in thin display, all round good looks, 14.5in colour TFT screen and a superb flicker free image, the Crystalvision 650 is an excellent choice for style-conscious users who are short on space" Business Computer World

TAXAN Crystalvision 650
£1519 ex vat | £1784.82 inc vat

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1769MS £349

CRT Size/Viewable	17"/15.7"
Dot Pitch (mm)	0.28
CRT Type	FST
Max. Resolution	1280 x 1024
Horiz. Sync. (KHz)	30-70
Special Features	Dome Speakers

1769SE £299

CRT Size/Viewable	17"/15.7"
Dot Pitch (mm)	0.28
CRT Type	FST
Max. Resolution	1280 x 1024
Horiz. Sync. (KHz)	30-70
Special Features	MPRII

1792SE £349

CRT Size/Viewable	17"/15.7"
Dot Pitch (mm)	0.26
CRT Type	FST
Max. Resolution	1600 x 1200
Horiz. Sync. (KHz)	30-92
Special Features	Made in UK/TCO95

1792UA £399

CRT Size/Viewable	17"/16"
Dot Pitch (mm)	0.25
CRT Type	Trinitron® CRT
Max. Resolution	1600 x 1200
Horiz. Sync. (KHz)	30-92
Special Features	BNC/TCO95

2185XE £899

CRT Size/Viewable	21"/20"
Dot Pitch (mm)	0.26
CRT Type	FST
Max. Resolution	1600 x 1200
Horiz. Sync. (KHz)	30-85
Special Features	BNC/TCO92

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viewpoint®

- 14" Monitor
- Viewable screen 13.2"
- Anti-static coating
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- Recommended resolution 800 x 600 @85HZ
- Plug & Play, Win 95 compatible
- 3 year warranty

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£89 ex vat | 104.58 inc vat

viewpoint 15" Monitor
£115 ex vat | 135.13 inc vat

- 17" Monitor
- Viewable screen 16.1"
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- Max resolution 1600 x 1200 @60Hz
- Recommended resolution 1024 x 768 @85HZ
- Plug & Play, Win 95 compatible
- 3 year warranty

viewpoint 17" Monitor
£235 ex vat | 276.13 inc vat

- 19" Monitor
- Viewable screen 18"
- Anti-static coating, Anti-reflective coating
- Max resolution 1600 x 1200 @60Hz
- Recommended resolution 1280 x 1024 @85HZ
- Plug & Play, Win 95 compatible
- 3 year warranty

viewpoint 19" Monitor
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XPERT@Work

XPERT@Work is the most powerful graphics accelerator for corporate and small business, with fast 2D and 3D performance, three times that of previous boards and the best video acceleration for the price on the market. Designed as the ideal accelerator for business applications, the XPERT@Work provides levels of visual display not previously available to the business user in a mainstream priced board.

- The fastest performance for greater productivity in Windows NT and Win 95
- Up to 8MB of ultra fast SGRAM for high resolution and true colour acceleration
- A huge 230 Mhz RAMDAC
- Optimised for the best performance on Pentium II/PRO systems
- Flicker-free images at up to 200Hz refresh rate to eliminate eye strain
- Rock solid stability and worry free compatibility with ATI's Microsoft certified drivers
- Available in 2MB and 4MB upgradeable or 8MB memory configurations

4MB		£135.12 inc vat	8MB		
OEM 4MB		£115.15 i	OEM 8MB		£145.70 inc vat

XPERT@Play

XPERT@Play sets a new standard for 3D gaming, multimedia and entertainment applications. "Best of Breed" design uses a single card/slot solution to provide high powered, fully featured 3D performance for intense gaming.

- A huge 230 Mhz RAMDAC
- 4KB on-chip texture cache
- Microsoft certified drivers
- High performance 3D, 2D and video acceleration with TV-out display
- Brute force 3D acceleration with over 1 million triangles per second with setup engine, texture cache and more
- DVD quality full screen, full motion video
- Floating point set up engine, up to 1.2 million triangles per second
- Superior 3D quality with bilinear filtering, alpha blending and special effects
- Great gaming in Windows 95 (Direct 3D, DirectDraw) and DOS
- Connect to a large screen TV for truly engrossing game play, or record your stratospheric scores on a VCR
- Includes the hottest games - Formula 1, Terracide and WIRL

4MB	£125 ex vat	£146.87 inc vat	8MB	£155 ex vat	£182.12 inc vat
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3D Blaster Voodoo 2 12Mb	£159	186.83
DIAMOND		
Stealth 3D 2240	£35	41.12
Stealth 3D 2400	£45	52.87
Stealth 3D 2240Pro	£39	45.82
Stealth 3D 2400Pro	£48	56.40
Stealth 3D 2240 Pro TVout	£55	64.62
Monster 3D	£95	111.62
Viper V330	£99	116.32
Fire GL 1800Pro	£115	135.12
HERCULES		
Terminator 3D/DX	£56	65.80
Terminator 3D/DX	£64	75.20
Thriller 3D 4Mb PCI	£119	139.82
Thriller 3D 8Mb PCI	£165	193.87
Thriller 3D 4Mb AGP	£129	151.57
Thriller 3D 8Mb AGP	£179	210.32
Dynamite 3D/GL 4Mb PCI	£129	151.57
Dynamite 3D/GL 8Mb PCI	£169	198.57
Dynamite 3D/GL 4Mb AGP	£139	163.32
Dynamite 3D/GL 8Mb AGP	£179	210.32
Stingray 128/3D	£149	175.07
Stingray 128/3D + TV out	£179	210.32
MATROX - SEE PAGE 17		
Mystique 220 4Mb PCI Retail	£59	69.33
Mystique 220 4Mb PCI OEM	£54	63.45
Millennium II 4Mb PCI Retail	£99	116.32
Millennium II 8Mb PCI Retail	£134	157.45
Millennium II 4Mb AGP Retail	£109	128.08
Millennium II 8Mb AGP Retail	£139	163.33
m3D Accelerator	£38	44.65
Rainbow Runner Studio	£104	122.20
Rainbow Runner TV	£67	78.73
ORCHID		
Righteous 3D	£104	122.20
VIDEOLOGIC - SEE PAGE 1		

FLOPPY DRIVES

1.44Mb 3.5" floppy drive	£15	17.62
Panasonic Int LS-120	£59	69.33
Nexus Int LS-120	£59	69.33
Mitsubishi Int LS-120	£59	69.33
Imation Ext SuperDisk	£99	116.32

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MICRONICS

Tech Direct are delighted to offer the full range of Micronics high quality motherboards. These boards offer a comprehensive choice right up to the top-of-the-range "Duel Fortress". Your motherboard is the very heart of your system so ensure you choose the best on the market - MICRONICS!!

POWERED BY Micronics

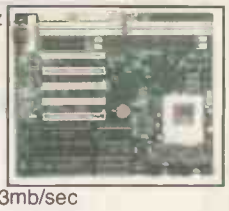
TIGERCAT

£134 ex vat | £157.45 inc vat

- Supports Intel PII 233-300 Mhz VRM integrated
- Intel 440LX chipset
- 4 PCI slots, 2 ISA slots
- 1 AGP Up
- Supports USB
- Supports Ultra DMA 33Mb
- 2 Floppy Disk Drives
- 4x3.3V Unbuffered DIMM EDO or SDRAM
- 2 x 16550 compatible serial ports
- SMC FDC37C68x Ultra I/O chip
- ATX form factor with PS2 style keyboard/mouse connectors

TWISTER AT | TWISTER ATX

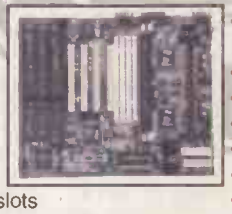
TWISTER AT	TWISTER ATX
£69 ex vat	£69 ex vat
£81.07 inc vat	£81.07 inc vat



- Supports Intel 75 200mhz Intel MMX 166-233 (integrated VRM), Cyrix, AMD K5 / K6
- Intel 440TX chipset
- 4 PCI slots, 4 ISA slots
- Supports USB
- I/O supports Ultra DMA 33mb/sec
- 6 (ATX) 4 (AT) x 72 pin SIMMS, 2 x 3.3v unbuffered DIMMS. Max memory 256Mb
- PS2 style mouse and keyboard connectors (ATX only)
- Available in AT or ATX form factor
- 2k pipelined burst level 2 cache

STINGRAY PENTIUM II

£125 ex vat | £146.88 inc vat



- Single Intel Slot 1 supports 233/266 MHz Pentium II processors
- Integrated VRM
- Intel 440FX chipset
- 4 PCI, 2 ISA slots
- Supports USB
- 4 x 3.3v unbuffered DIMM slots
- PS2 style keyboard and mouse connectors
- ATX form factor

SPITFIRE EX

£375 ex vat | £440.63 inc vat

- Supports Dual Intel PII 233-300 Mhz
- Intel 440LX chipset
- 1 AGP Slot
- Supports Ultra DMA 3Mb
- 4 PCI, 2 ISA slots
- 4 x 3.3v unbuffered DIMM
- Sound Blaster compatiable 16-bit stereo
- 1Gb max memory

QDI

Legend IV

£299 ex vat | £351.32 inc vat

Legend IV Motherboard

- Dual PII processor up to 333MHz
- AGP, onboard Adaptec SCSI, onboard Intel LAN
- Supports IrDA, USB, ACPI
- Intelligent monitoring system for system voltage, temperature, chassis intrusion and fan speed (optional)
- DMI compliance and built-in NCR 53C810 BIOS support
- Supports Win 95 software Power-Down

Legend III Motherboard

- Intel PII processor up to 333MHz
- Onboard ATI Rage Pro AGP and 3D Audio
- Supports IrDA, USB, ACPI
- Intelligent monitoring system for system voltage, temperature, chassis intrusion and fan speed (optional)
- DMI compliance and built-in NCR 53C810 BIOS support
- SpeedEasy for jumperless CPU upgrade or jumper emulation mode
- Supports Win 95 software Power-Down

Legend III

£198.57 inc vat

Titanium II Motherboard

- Supports Intel Pentium/Pentium MMX, AMD K5/K6 and Cyrix processors up to 233MHz
- 2X DIMM sockets, 4X SIMM sockets
- Supports IrDA, USB, ACPI
- Intelligent monitoring system for system voltage, temperature, chassis intrusion and fan speed (optional)
- 4X PCI slots 4X ISA slots
- SpeedEasy for jumperless CPU upgrade or jumper emulation mode
- Supports Win 95 software Power-Down
- ATX form factor

Titanium II

£69 ex vat | £81.07 inc vat

P6I440LX/AV Legend III (PII)	£169 198.57
P6I440LX/DP Legend IV (Dual PII)	£299 351.32
P6I440LX Legend V (PII)	£89 104.57
P5I430TX-250 Titanium IB (PMMX)	£64 75.20
P5I430TX/ATXB Titanium IIB (PMMX)	£69 81.07

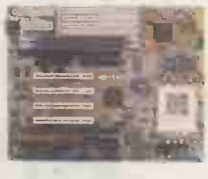
ABIT

LX 6 Motherboard

- Jumperless Pentium II 440LX chipset motherboard
- 4X DIMM sockets, 4X PCI slots, 3X ISA slots
- Supports Ultra DMA/33 and AGP
- 512Mb max onboard memory
- ATX form factor

LX 6

£89 ex vat | £104.58 inc vat



TX 5 Motherboard

- Jumperless Pentium and Pentium MMX
- Intel 430 TX chipset
- 2X DIMM sockets, 4X SIMM sockets, 4X PCI slots, 3X ISA slots
- Supports Ultra DMA/33 and ACPI
- 256Mb max onboard memory
- Baby AT form factor

TX 5

£69.33 inc vat

PX 5 Motherboard

- Jumperless Pentium and Pentium MMX
- Intel 430 TX chipset
- 2X DIMM sockets, 2X SIMM sockets, 4X PCI slots, 4X ISA slots
- Supports Ultra DMA/33 and ACPI
- 256Mb max onboard memory
- Baby AT form factor

PX 5

£69.32 inc vat

PX5 Pentium MMX	£59 69.32
TX5 Pentium MMX	£59 69.32
LX6 Pentium II	£89 104.58
AX5 Pentium MMX	£62 72.85
IT5P Pentium MMX (VIA Apollo VP3 chipset)	CALL
PL5N Pentium MMX (SIS 5582 chipset)	CALL
PD5N Pentium MMX (SIS 5598 chipset)	CALL
TX5N Pentium MMX (non-jumperless)	CALL

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Finance Available see page 5 for full details.

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We will usually match or beat any price lower than our own

tech direct

Based on our top selling DTEC bare bones system (full details below) we are delighted to present our own tech direct systems. At any point in time there will be a system specification that offers the perfect compromise between price, performance and upgradeability. At tech direct we have done your homework for you and calculated the best all round machine for your money. All you need to do is decide on any upgrades or extras and then sit back and relax - confident that you are buying the right machine for todays market.

- Intel Pentium II 233MHz processor with MMX technology
- 32Mb SDRAM memory
- Quantum 4.3Gb Ultra DMA hard drive (10ms)
- 16 bit 3D Surround Sound Plug 'n' Play card, Soundblaster Pro compatible, Yamaha Chipset
- 4Mb ATI AGP 3D Graphics card
- Viewpoint 15" monitor with 3 year on-site warranty
- 56k Internal voice/fax modem
- 24 x speed CD-ROM Drive
- Cherry 105 key Windows 95 keyboard
- Microsoft IntelliMouse (with scroll wheel)
- USB ports for all the latest perlpherals
- Typhoon 120 watt active stereo speakers
- Microsoft Windows 95 V2.1
- Symantec Norton Anti Virus V2
- 3 year labour Warranty
- 1 year collect and return parts & labour Warranty
- HYPERBLADE Action Game (LIMITED OFFER)

tech direct PII 233
£999 ex vat 1173.82 inc vat

Optional upgrades:

PII 266	£89	104.58
PII 300	£195	229.13
PII 333	£339	398.33
Upgrade to 64Mb SDRAM	£39	45.83
Quantum 6.4Gb HDD	£39	45.83
Quantum 8.4Gb HDD	£89	104.58
Internal LS-120 (instead of 1.44Mb)	£49	57.57
Creative AWE 64 Gold Sound Card	£105	123.38
Creative Voodoo 2 3D accelerator	£45	52.88
USR Sportster Winmodem	£68	79.90
HP SureStore 7200 Int CDR-W	£228	267.90
DTEC TV Tuner with Teletext	£49	57.57

Why don't we offer a lower specification model?
If you see a lower specification system suitable for your needs at the right price then buy it! We have calculated many factors and designed the tech direct system to offer the best value for money in the current market place. Based on the latest prices and your future demands we see 4.3Gb Hard Drives, Pentium II processors and 15" monitors as minimum specs.

What if I have a perfectly good monitor, keyboard and mouse?
Fine. Simply deduct £130 plus vat from the main system price shown.

Do you offer interest free credit?
For private customers we can offer 6 months interest free on all systems. Please call for full written details.

Are your systems Year 2000 compliant?
ALL tech direct systems are fully Year 2000 certified which means you won't have any headaches come January 1st Year 2000. Beware of other suppliers trying to sell you systems which will be useless in 18 months time.

What warranty do you offer?
Again we have done our homework. All systems are offered with a 1 year collect and return warranty. Our courier will collect your machine from anywhere in the mainland UK and return it to your door, fully fixed and tested. On-site agreements sound great in theory but often involve the use of 3rd party engineers and a lengthy delay whilst parts are ordered from stock. Our collect and return warranty means your machine is serviced by the same team that built it originally!

What if I need a system in a hurry?
Just call us. If we have all the components you want in stock we can normally deliver to your door within 5 working days - sometimes even quicker!

Can I see one running?
We always have at least one tech direct system up and running on the ground floor of our premises in Surbiton, Surrey. Just pop in during our normal working hours, but of course you will still need to wait for us to build your own system!

What about other peripherals?
At tech direct we have built our reputation on being the best in the UK for all system peripherals. We are happy to fit and test any scanner, printer or other accessory you might want with your system - free of charge!

All tech direct systems undergo a rigorous 24-hour 'burn-in' procedure to ensure that each and every individual component is running perfectly and at maximum speed, thus ensuring that you end up with the fastest possible system for the price.

DTEC

BUILD YOUR OWN SYSTEM!

ATX BARE BONE SPECIFICATION

DTEC P5 ATX
- Award flash BIOS
- Intel 82430TX two-chip PCI set
- Processor Support: one Socket 7
  supporting: Intel Pentium up to 233MMX
  CYRIX 6x86MX proccessors
  AMD K6 200MMX
- Expansion Slots: 4 x 32 bit PCI, 4 x 16 bit ISA
  (one PCI/ISA shared)
- Memory: 2x Dimm Sockets (256Mb)
  4x Simm Sockets (256Mb)
- Cache: 512Kb pipelined Burst SRAM
- I/O Ports: 2x 16550 UART high speed serial, 1x ECP/EPP Parallel Port, USB ports, PS/2 Kbd & Mouse
- On Board Support for: 4x UDMA 33 Drive/IDE, 2x FDD
- Midi Tower ATX case with: 4x5.25" Bays
  2x3.5" Bays
  233 Watt ATX PSU
- 3.5" 1.44Mb FDD (LS-120: £49)
- 12 Months Swap Out Warranty

DTEC PII ATX
Similiar spec to the P5 ATX but with the following differences:
- Supports Intel Pentium II proccessor up to 333MHz
- Intel 440LX Chipset
- Expansion slots: 4PCI, 2ISA, 1AGP for lightning fast graphics
- Internal 24X CD-ROM Drive

DTEC PII ATX Miditower
£249 ex vat 292.57 inc vat

DTEC P5 ATX Miditower
£169 ex vat 198.57 inc vat

Simply choose between the P5 ATX (Miditower or desktop), or the PII ATX with CD-ROM, and select any Hard Drive, Processor, Memory, Graphics and Sound system from our extensive range. These units are year 2000 certified and CE approved.

All DTEC Bare Bone systems are CE approved and Year 2000 certified

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tech direct

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Sales & Collections 9am - 8pm Weekdays 9am - 5pm Saturdays 10.30 - 4.30pm Sundays

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Fujitsu is the world's second largest IT company, with a turnover in excess of $36bn, and operating on a global basis. The company has been operating for over 60 years, during which time it has become a market leader in desktop and mobile computing as well as in the areas of computer memory, display devices and software. The enviable position has resulted from its continued investment in R & D, (currently running at 10% of revenues) which has ensured the consistant production of reliable, leading edge products designed to meet the needs of the end user.

0% Interest Free Credit Available on all FUJITSU systems

P200 MMX SYSTEM

- Fujitsu minitower case
- 200 MMX
- 32 Mb RAM
- 2GB Hard Disk Drive
- 24x Speed CD ROM
- 2 Mb ATI graphics card
- 16 bit souncard
- 3.5" FDD
- Keyboard/Mouse
- 3.5" FDD
- Windows 95
- Microsoft Works V4.0 & Word V7
- 3 yr RTB warranty

FUJITSU P200 MMX
~~£499 ex vat~~ £586.32 inc vat

CHOOSE YOUR OWN MONITOR

	ex vat	inc vat
14" Monitor	£100	£117.50
15" Monitor	£119	£139.82
17" Monitor	£239	£280.82

PII 233 SYSTEM

- Fujitsu minitower ATX case
- Intel PII 233MHz processor
- 32 Mb SD RAM
- 2GB UDMA Hard Disk Drive
- 24x Speed CD ROM
- 4 Mb graphics card
- 16 bit souncard
- 3.5" FDD
- Keyboard/Mouse
- Windows95
- Microsoft Works V4.0 & Word V7
- 1 yr on site warranty

FUJITSU PII 233
£715 ex vat £840.12 inc vat

CHOOSE YOUR OWN MONITOR

	ex vat	inc vat
14" Monitor	£100	£117.50
15" Monitor	£119	£139.82
17" Monitor	£239	£280.82

Credit Example

Fujitsu P200 MMX with 14" Monitor £703.82 - £70.38 deposit. Then after 6 months pay £633.44 & no interest or choose to repay by 36 payments of £24.88 Total repayable £966.06 A.P.R.26.9% Finance subject to status written quotation available on request.

NETWORK CARDS

3COM	ex vat	inc vat
3C-509B RJ45 ISA bare card	£39	45.82
3C-509B Combo ISA bare card	£49	57.57
3C-900TPO RJ45 PCI bare card	£45	52.87
3C-900 Combo PCI bare card	£59	69.32
3C-905 10/100 PCI bare card	£45	52.87
3C-509B RJ45 ISA	£69	81.07
3C-509B Combo ISA	£79	92.85
3C-509B RJ45 PCI	£65	76.37
3C-900 Combo PCI	£79	92.85
3C-905 10/100 PCI	£65	76.37
3C-575TX 10/100 PCMCIA cardBus	£89	104.57
3C-589 RJ45 PCMCIA	£79	92.85
3C-589 Combo PCMCIA	£105	123.37
3C-592 Combo EISA	£135	158.62
3C-597TX 10/100 EISA	£159	186.82
3C-563 RJ45 & 33k6 Modem PCMCIA	£199	233.82
3C-563 Combo & 33k6 Modem PCMCIA	£225	264.37
TECH DIRECT		
Combo ISA PnP	£12	14.10
Combo PCI	£16	18.80
10/100 PCI	£26	30.55
Combo PCMCIA	£48	56.40
DLINK		
DE-220PCT Combo ISA PnP	£19	22.32
DE-530CT Combo PCI	£24	28.20
DFE-500TX 100Mb PCI	£36	42.30
DE-660CT Combo PCMCIA	£46	54.05
DE-620CT Combo Parallel	£71	83.43
GENIUS		
16bit Combo PnP	£20	23.50
32bitCombo PCI	£25	29.37
10/100 PCI	£55	64.62
Pocket Parallel	£46	54.05
Combo PCMCIA	£55	64.62
GREYCELL		
RJ45 PCMCIA	£89	104.57
Combo PCMCIA	£105	123.37
RJ45 Ethernet & 33k6 Modem PCMCIA	£219	257.32
Combo Ethernet, 33k6 Modem PCMCIA	£249	292.57
INTEL		
Ether Express Pro 10+ Combo	£65	76.37
Ether Express Pro 10+ Combo Flash	£68	79.90
Ether Express Pro 10+ Combo PCI	£69	81.07
Ether Express Pro 100 ISA	£109	128.07
Ether Express Pro 100 PCI	£49	57.57
Ether Express Pro 100 EISA	£165	193.87
PSION DACOM		
GoldCard Combo PCMCIA	£85	99.87
GoldCard Combo,V34 Modem PCMCIA	£204	239.70
SMC		
8416BT EtherEZ Combo ISA PnP	£48	56.40
8432BT EtherPower Combo PCI	£49	57.57
9332BDT EtherPower 10/100 PCI	£55	64.62
8020T EtherEZ RJ45 PCMCIA	£79	92.82
8020BT EtherEZ Combo PCMCIA	£108	126.90
XIRCOM		
RJ45 Parallel	£162	190.35
BNC Parallel	£165	193.87
Combo Parallel	£189	222.07
RJ45 PCMCIA (10/100 upgradeable)	£87	102.22
Combo PCMCIA (10/100 upgradeable)	£107	125.77
10/100 PCMCIA	£99	116.32
10/100 PCMCIA CardBus	£128	150.47
RJ45 Ethernet &36k6 Modem PCMCIA	£181	212.67
Combo Ethernet, 36k6 Modem PCMCIA	£209	245.57
RJ45 10/100 & 56k Modem PCMCIA	£229	269.07

NETWORK HUBS

3COM	ex vat	Inc va
Office connect		
3C16700 8TPO 8port	£59	63.32
3C16701 8TPC 8port	£78	91.65
3C16710 8TPM 8port	£233	273.77
3C16720 8TP100 8port 100TX	£389	457.07
3C16702 16TPC 16port	£147	172.72
SuperStack ii		
3C16590 Dual Speed 12port	£739	868.32
3C16591 Dual Speed 24port	£1169	1373.57
3C16670A 12port	£275	323.12
3C16671A 24port	£475	558.12
3C250TX 12port 100TX	£1075	1263.12
BAY NETWORKS NETGEAR		
EN104UK 4port	£55	64.62
EN108UK 8port & AUI	£69	81.07
EN116UK 16port & AUI	£139	163.32
EN308UK 8port & BNC & AUI	£99	116.32
EN316UK 16port & BNC & AUI	£159	186.82
FE104UK 4port 100Mb	£149	175.07
GENIUS		
GH4080 8port	£59	69.32
GH4160 16port	£99	116.32
GH4080R 8port 100TX	£399	468.82
GH4120R 12port 100TX	£585	687.37
FE108UK 8port 100Mb	£289	339.57
FE508UK 8port 100baseTX	£529	621.57
FE516UK 16port 100baseTX	£899	1056.32
TECH DIRECT		
5port	£33	38.77
8port	£45	52.87
16port	£95	111.62
8port 100TX	£279	327.82
DLINK		
DE805TP 5port	£40	47.00
DE905 2 User starter kit	£79	92.82
DE809TC 8port & BNC	£49	57.57
DE809TP 8port	£49	57.57
DE812TP+ 12port	£99	116.32
DE816TP16port	£155	182.12
DE824TP 24port	£165	193.87
DE1812 12port	£214	251.45
DE1824 24port	£324	380.70
DFE808TX 8port 100TX	£249	292.57
DFE812TX 12port 100TX	£425	499.37
DFE816 16port 100TX	£559	656.82
SMC		
3605-EZ EtherEZ 5T 5port	£52	61.10
3608TC-EZ EtherEZ 8TC 8port	£79	92.82
3616TC-EZ EtherEZ 16TC 16port	£173	203.27
5208TX-EZ EtherEZ 8port 100TX	£392	460.60
FMS II 12port	£379	445.32
FMS II 24port	£670	787.25

NETWORK SWITCHES

3COM		
3C16405 Port Switch 12port	£215	252.62
3C16406 Port Switch 24port	£384	451.20
3C16901A Switch 1000 12port	£949	1115.07
3C16900A Switch 1000 24port	£1379	1620.32
3C16941A Switch 3000TX 18port	£1635	1921.12
3C16942A Switch 3000TX 12port	£1969	2313.57
BAY NETWORKS NETGEAR		
SW502UK 2port 10/100	£359	421.82
SW507UK 7port 10/100	£689	809.57
DLINK		
DES802 2port 10/100	£205	240.87
DES805 5port 10/100	£388	455.90
DES810 10port 10/100	£635	746.12
DES1004 4port N-Way	£489	574.57
DES1008 8port N-Way	£869	1021.07
DES2205 5port 10/100	£545	640.37
DES2208 8port 10/100	£859	1009.32
DES3208 8port 10/100	£1145	1345.37

APC

SMART-UPS

APC's Smart-UPS are the perfect uninterruptible power supply (UPS) for file servers, minicomputers, UNIX CPUs, internet hubs, telecommunications systems and other mission critical applications. If downtime has immediate effects on your business, you need an APC Smart-UPS. Protect your data, protect your hardware, increase your productivity with APC.

- Lightning and Surge Protection shields hardware
- Network-grade Line Conditioning prevents glitches
- SmartBoost automatically corrects brownout conditions
- SmartTrim automatically corrects overvoltage conditions
- Sine Wave Output suits sensitive loads

SmartUPS 450i	£159	186.83	SmartUPS 1400i	£373	438.27
SmartUPS 700i	£228	267.90	SmartUPS 2200i	£539	633.32
SmartUPS 1000i	£259	304.33	SmartUPS 3000i	£1079	1267.82

BACK-UPS PRO

- Correction of power failures and electrical interferences
- Automatic regulation of undervoltages and overvoltages
- Quick battery recharging system
- Serial port for automatic OS shutdown
- Supplied with the PowerChute Pro UPS management software (for Win 95, Win 3.1 Win NT and OS/2)
- Plug & Play installation for Win 95
- Protection against overvoltages and power surges
- Built - in 10 Base-T network card surge protection for maximum system integrity
- Automatic and programmable testing and diagnostics
- User - replaceable batteries
- Optimised battery life

BackUPS 300 MI	£79	92.83	B/UPS Pro 420i	£139	163.33
BackUPS 500 MI	£99	116.32	B/UPS Pro 650i	£175	205.63
BackUPS 650 MI	£149	175.08	B/UPS Pro 1000i	£259	304.33
B/UPS Pro 280i	£95	111.62	B/UPS Pro 1400i	£349	410.08

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Hard Drives & Backup

The 100Mb Power Diskette

Zip is 20 times as fast and offers 70 times the space of a traditional floppy.

- 100Mb and 25Mb capacity
- Affordable personal storage and backup
- Fast, Easy, Worry-free back-up
- Zip Tools software included
- Move your work easily to any location

Zip Drive Int/Ext	£79	92.83	Zip Zoom Card	£25	29.37
Zip Drive OEM	£55	64.63	Zip 100Mb Disk	£7.49	8.80
Zip Drive SCSI	£79	92.83	Zip Disk 6 Pack	£45	52.88

The 100Mb ZipPlus Drive

ZipPlus drive is the easiest way and most economical way to expand your hard drive, move your files and backup

- Fast - up to 50 times faster than a floppy drive
- one drive fits all - only one version for SCSI and parallel port interfaces
- Lightweight universal power supply
- Great media software

Zip Plus	£108	126.90
Zip 10 pack multicoloured with Recordit software	£69	81.08

Ditto 2GB

Ditto 2Gb Int	£55	64.62
Ditto 2Gb Ext	£85	99.87

- Int version fits any standard 5.25" bay
- 2Gb with data compression
- Win 3.1, 95, NT and OS/2 Compatible
- Ext version sits horizontally or vertically

Ditto 2Gb Bundle consists of:

- One Ditto 2Gb tape drive - inc usual software etc.
- One large Ditto carry case. FREE!
- Three Ditto 2Gb pieces of media
- One Ditto NT driver. FREE!

Ditto 2Gb Bundle £114 133.95

Ditto Max and Ditto Max Pro

Powerful desktop storage and tape backup in one simple device

- Customise capacity with 3.5Gb, 5Gb, 7Gb and 10* cartridges
- Back up while you work
- Easy 1-step software
- FlashIFile - 5 second average access time
- FullBack system recovery software

Ditto Max Int	£87	102.23	Ditto Max Pro Ext (10Gb)	£164	192.70
Ditto Max Ext	£112	131.60	Ditto Max Pro Int (10Gb)	£164	192.70

The 1Gb Removable

Jaz has no limits. With 1Gb capacity per disk Jaz is revolutionising storage technolgy

- 1Gb per disk, from less than 6p per MB
- 10-12 millisecond access time, faster than most HD
- Available as an Ext drive for Max portability
- Jaz Tools utility software

Internal	£158	185.65
External	£174	204.45
1Gb Jaz Cart	£52	61.10

The 2Gb Removable

The Super-Fast, Extremely Vast personal storage Drive that gives you a whopping 2Gb per disk

- 2Gb of storage space on each Jaz cartridge
- Fast - 7.35Mb/s average transfer rate
- Ideal as a HD backup. Provides 4Gb capacity with 2.1 compression
- Complete set of software
- Packaged to suit you

Jaz 2Gb Int	£298	350.15
Jaz 2Gb Ext	£354	415.95

Quantum™ HARD DRIVES

FireBall SE - *The choice for power users!*

This range is the first to use the Quantum Pioneered Ultra ATA interface to double the burst rate from 16.6Mb/sec to 33Mb/sec. For SCSI-3 based systems, the Fireball SE is available with the ultra SCSI-3 interface for burst data transfer rates of up to 20Mb per second.

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
Fireball Stratus 2160	2.1Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£74	86095
Fireball Stratus 3240	3.2Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£104	122.20
Fireball Stratus 4320	4.3Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£114	133.95
Fireball Stratus 6480	6.4Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£149	175.08
Fireball Stratus 8400	8.4Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£189	222.08
Fireball Stratus 2110	2.1Gb	UltraSCSI	9.5ms	5400	£119	139.83
Fireball Stratus 3220	3.2Gb	UltraSCSI	9.5ms	5400	£134	157.45
Fireball Stratus 4320	4.3Gb	UltraSCSI	9.5ms	5400	£149	175.08
Fireball Stratus 6480	6.4Gb	UltraSCSI	9.5ms	5400	£194	227.95

Atlas II - *ideal for workstation and high-end users*

The Atlas II range of drives offer high capacity and feature the most advanced technolgy for exceptional performance and higher a real density making these drives outstanding mass storage solutions.

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
Atlas II 3455OS	4.5Gb	UltraSCSI	8ms	7200	£294	345.45
Atlas II 3455OSW	4.5Gb	UltraWideSCSI	8ms	7200	£309	363.08
Atlas II 39100S	9.1Gb	UltraSCSI	8ms	7200	£479	562.83
Atlas II 39100SW	9.1Gb	UltraWideSCSI	8ms	7200	£499	586.33

Bigfoot T-REX - *For the personal computer user!*

The Quantum Bigfoot drives meet the increased demand for storage by combining advanced recording techniques with the increased data area of 5.25" disks.

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
Bigfoot TX	4.0Gb	EIDE/Ultra DMA 33	12ms	4000	£114	133.95
Bigfoot TX	6.0Gb	EIDE/Ultra DMA 33	12ms	4000	£128	150.40
Bigfoot TX	8.0Gb	EIDE/Ultra DMA 33	12ms	4000	£158	185.65
Bigfoot TX	12Gb	EIDE/Ultra DMA 33	12ms	4000	£238	279.65

Seagate HARD DRIVES

Medalist Family Hard Drives

- 100% IDE compatible
- Seek times as fast as 10msec and spindle speeds of up to 5,400 RPM

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
Medalist ST32122A	2.1Gb	EIDE/Ultra ATA3	12.5ms	4500	£74	86.95
Medalist ST32531A	2.5Gb	EIDE	12ms	4500	£79	92.83
Medalist ST33232A	3.2Gb	EIDE/Ultra ATA3	10.5ms	4500	£94	110.45
Medalist ST34342A	4.3Gb	EIDE/Ultra ATA3	14ms	4500	£109	128.08
Medalist Pro ST36451A	6.4Gb	EIDE/Ultra ATA3	10.5ms	5400	£144	169.20
ST38641A	8.0Gb	EIDE/Ultra ATA3		5400	call	call

Cheetah Family Hard Drives

- High performance Ultra SCSI
- Average seek times as fast as 7.5 msec.
- Industry's highest performance 10,000 RPM 3.5" disc drives

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
Cheetah ST34501N	4.5Gb	UltraSCSI	8ms	10000	£374	439.45
Cheetah ST34501W	4.5Gb	UltraWideSCSI	8ms	10000	£374	439.45
Cheetah ST19101N	9.0Gb	UltraSCSI	8ms	10000	£639	750.83
Cheetah ST19101W	9.0Gb	UltraWideSCSI	8ms	10000	£639	750.83

Barracuda Family Hard Drives

- Standard Ultra SCSI
- Up to 1,000,000 hour MTBF
- 7,200 RPM spindle speed

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
Barracuda ST32272N	2.2Gb	UltraSCSI	9ms	7200	£199	233.83
Barracuda ST32272W	2.2Gb	UltraWideSCSI	9ms	7200	£218	256.15
Barracuda ST34572N	4.5Gb	UltraSCSI	9ms	7200	£308	361.90
Barracuda ST34572W	4.5Gb	UltraWideSCSI	9ms	7200	£322	378.35
Barracuda ST19171N	9.0Gb	UltraSCSI	9ms	7200	£452	531.10
Barracuda ST19171W	9.0Gb	UltraWideSCSI	9ms	7200	£464	545.20

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Sales & Collections 9am - 8pm Weekdays 9am - 5pm Saturdays 10.30 - 4.30pm Sundays

IBM

The Deskstar range of solutions offers advanced access to information and superior performance drives. With the introduction of the "Deskstar 8" providing 8.4Gb of storage capacity to the IBM range, IBM has again shown its leadership capability by setting new standards in the evolving high performance desktop and entry-level server and workstation applications.

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
Deskstar 4	4.33Gb	ULTRA DMA	8.5ms	5400	£149	175.07
Deskstar 6	6.4Gb	ULTRA DMA	8.5ms	5400	£174	204.45
Deskstar 8	8.45Gb	ULTRA DMA	8.5ms	5400	£234	274.95

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Editors Choice Deskstar 5 August 1997

Best value Deskstar 4 August 1997

Editors Choice Deskstar 8 September 1997

Deskstar 4 & Deskstar 5 August 1997

April 1997

Maxtor

Maxtor's DiamondMax EIDE hard drives have a reputation for outstanding performance and reliability. The new DiamondMax 2160 series is no exception. These drives sport 8.4Gb of formatted capacity and a sub-9.7 ms seek time. The DiamondMax 2160 family also features Formula 4 HDA and DSP - based electronics architecture, making it one of the best performing drives in the industry. As always, every Maxtor drive is backed by unparalleled service and support, including our No Quibble service guarantee. When only the best will do, look to the DiamondMax 2160 series of drives from Maxtor.

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
DiamondMax 2160 Series ULTRA DMA33						
88400D8	8.4Gb	ULTRA DMA	9ms	5200	£194	227.95
87000D8	7.0Gb	ULTRA DMA	9ms	5200	£168	197.40
86480D6	6.48Gb	ULTRA DMA	9ms	5200	£149	175.08
84320D4	4.32Gb	ULTRA DMA	9ms	5200	£109	128.08
82160D2	2.16Gb	ULTRA DMA	9ms	5200	£79	92.83

HEWLETT PACKARD

HP COLORADO	ex vat	inc vat
T3000I Internal 3.2GB	£99	116.32
T4000S Internal 8GB	£219	257.32
T4000ES External 8GB	£278	326.65
T4I 8GB Internal Streamer	£244	286.70
HP SURESTORE DAT PRODUCTS		
HP SURESTORE 2000I	£438	514.65
HP SURESTORE 2000E	£515	605.12
HP SURESTORE 5000I	£459	539.32
HP SURESTORE 5000E	£528	620.40
HP SURESTORE DAT 8i	£558	655.65
HP SURESTORE DAT 8E	£638	749.65

All Tapestor products come with one free tape except Tapestor 3200ext parallel

Seagate

Seagate Tape Products	ex vat	inc vat
Tapestor 3200 INT TR3	£98	115.15
Tapestor 3200 EXT Parallel	£109	128.07
Tapestor 8000 INT SCSI	£209	245.57
Tapestor 8000 INT IDE	£198	232.65
Tapestor 8000 EXT SCSI	£265	311.37
Scorpion STD 2400N 4GB	£344	404.20
Scorpion STD 2800N 8GB	£454	533.45

SyQuest

	ex vat	inc vat
SyJet 1.5Gb Parallel Port - Ext	£189	222.07
SyJet 1.5Gb SCSI - Ext	£189	222.07
SyJet 1.5Gb SCSI - Int	£184	216.20
SyJet 1.5Gb EIDE - Int	£184	216.20
EZFlyer 230Mb Parallel Port - Ext	£89	104.57
EZFlyer 230Mb SCSI - Ext	£89	104.57
EZFlyer 230Mb EIDE - Int	£114	133.95
SYQUEST MEDIA		
SyJet 1.5Gb Cartridge	£71	83.43
SyJet 1.5Gb Cartridge - 3 pack	£168	197.40
EZFlyer 230Mb Cartridge	£14.95	17.57
EZFlyer 230Mb Cartridge - 5 pack	£75	88.12

MITSUBISHI ELECTRIC

LS-120 Disk Drive

- Compatible with existing 3.5" diskettes
- Reads/writes LS-120 diskettes
- Reads/writes standard 3.5" diskettes
- Compatible with today's computers
- Replaces 1.44MB drive
- Supported by DOS, Win95, WinNT
- Supported by all major BIOS providers
- Same form factor as 3.5": FFD's
- Fits virtually any computer chassis
- High performance
- Five times faster than standard 1.44Mb drives when using LS-120 diskettes
- Three times faster than standard drives when using existing 1.44Mb diskettes
- Interchange
- 120Mb interchange among LS-120 users
- Data interchange operations identical to existing diskettes - 120Mb/1.44Mb/720Kb
- Functions as standard Drive A
- Can act as a Boot drive
- Viewed as Drive A for any diskette

£59 ex vat £69.32 inc vat

HARD DRIVES AT A GLANCE

EIDE HARD DRIVES

Models	Capacity	Interface	Access time	Speed	ex vat	inc vat
IBM						
00K0400	4.33Gb	EIDE/Ultra DMA/33	9.5ms	5400	£149	175.07
09J0308	6.4Gb	EIDE/Ultra DMA/33	9.5ms	5400	£174	204.45
00K0394	8.4Gb	EIDE/Ultra DMA/33	9.5ms	5400	£234	274.95
Maxtor						
82160D2 Diamond Max	2.1Gb	Ultra DMA	10ms	5200	£79	92.83
84320D4 Diamond Max	4.3Gb	Ultra DMA	10ms	5200	£109	128.08
86480D6 Diamond Max	6.4Gb	Ultra DMA	10ms	5200	£149	175.08
87000D8 Diamond Max	7.0Gb	Ultra DMA	10ms	5200	£168	197.40
88400D8 Diamond Max	8.4Gb	Ultra DMA	10ms	5200	£194	227.95
FUJITSU						
MPB3021	2.1Gb	Ultra DMA	10ms	5400	£85	99.87
MPB3032	3.2Gb	Ultra DMA	10ms	5400	£99	116.32
MPB3043	4.3Gb	Ultra DMA	10ms	5400	£119	139.83
MPB3052	5.2Gb	Ultra DMA	10ms	5400	£139	163.33
MPB3064	6.4Gb	Ultra DMA	10ms	5400	£159	186.83
Quantum						
Fireball Stratus 2160	2.1Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£74	86.95
Fireball Stratus 3240	3.2Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£104	122.20
Fireball Stratus 4320	4.3Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£114	133.95
Fireball Stratus 6480	6.4Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£149	175.08
Fireball Stratus 8400	8.4Gb	EIDE/Ultra DMA ATA	9.5ms	5400	£189	222.08
Bigfoot CY 2111	2.1Gb	EIDE/Ultra DMA ATA	12ms	3600	£78	91.65
Bigfoot CY 4335	4.3Gb	EIDE/Ultra DMA ATA	12ms	3600	£102	119.85
Bigfoot CY 6510	6.4Gb	EIDE/Ultra DMA ATA	12ms	3600	£109	128.08
Bigfoot TX	4.0Gb	EIDE/Ultra DMA ATA	12ms	4000	£114	133.95
Bigfoot TX	6.0Gb	EIDE/Ultra DMA ATA	12ms	4000	£128	150.40
Bigfoot TX	8.0Gb	EIDE/Ultra DMA ATA	12ms	4000	£158	185.65
Seagate						
Medalist ST32122A	2.1Gb	EIDE/Ultra ATA3	12.5ms	4500	£74	86.95
Medalist ST32531A	2.5Gb	EIDE	12ms	4500	£79	92.83
Medalist ST33232A	3.2Gb	EIDE/Ultra ATA3	10.5ms	4500	£94	110.45
Medalist ST34342A	4.3Gb	EIDE/Ultra ATA3	14ms	4500	£109	128.08
Medalist Pro ST36451A	6.4Gb	EIDE/Ultra ATA3	10.5ms	5400	£144	169.20
ST38641A	8.0Gb	EIDE/Ultra ATA3		5400	CALL	
WESTERN DIGITAL						
AC22100-UD	2.1Gb	EIDE/Ultra DMA/33	12ms	5400	£85	99.88
AC22500-UD	2.5Gb	EIDE/Ultra DMA/33	12ms	5400	£89	104.58
AC33200-UD	3.2Gb	EIDE/Ultra DMA/33	12ms	5400	£99	116.33
AC34000-UD	4.0Gb	EIDE/Ultra DMA/33	12ms	5400	£114	133.95
AC35000-UD	5.1Gb	EIDE/Ultra DMA/33	12ms	5400	£134	157.45
AC36400-UD	6.4Gb	EIDE/Ultra DMA/33	12ms	5400	£158	185.65

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Internal 4x2x6 Re-Writer
- CD Recording Software
- UDF Recording Software (Win 95)
- 2 CD-R Discs & Marker pen
- Int Power & SCSI Cables
- Label Design templates

• CDRW 4260EL Pro no SCSI
£274 ex vat £321.95 inc vat

CDR4120EL PRO
Internal 4x12 Recorder with:
- CD Recording Software
- UDF Recording Software (Win 95)
- 2 CD-R Discs & Marker pen
- Int Power & SCSI Cables
- Label Design templates

• CDR4120EL Pro no SCSI
£245 ex vat £287.87 inc vat

• Int version inc SCSI card
£275 ex vat £323.12 inc vat

• External (CDE 4120) no SCSI
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YAMAHA 4x2x6

The World's first & fastest 4x2x6 CD-ReWritable drive from Yamaha.

Yamaha presents the CDR4000, the newest & most advanced in the CD EXPERT series. It merges the proven technology of the award-winning CDR400 with a host of powerful new features. It boasts the ability to write at 4X & read at 6X. It has a 2MB buffer for stabilized recording, & supports variable and fixed packet writing.

- 4x2x6 CD Re-Writer
- 1 piece of CDR media included
- Retail packaged with full fitting instructions and manuals
- Win on CD software V3.5
- SCSI card not included
- Adaptec 1505 SCSI card £29 + vat

YAMAHA 4260T
£269 ex vat 316.08 inc vat

OTHER YAMAHA CDRW MODELS

		ex vat	inc vat
CRW4260TX	External version of CRW 4260T(no SCSI)	£319	374.82
CRW4110T	Internal IDE 4x2x6 retail boxed CDRW	£285	334.88
CRW2260T	Internal SCSI 2x2x6 retail CDRW (no SCSI)	£225	364.38
CRW2260TX	External SCSI 2x2x6 retail CDRW (no SCSI)	£259	304.33

8 speed, 6 disk. internal

- IDE ATAPI interface
- 8x playback performance
- 3.6MBps data transfer rate
- 190ms average access time

TEAC 8x6 DISC IDE
£89 ex vat 104.58 inc vat

The 24 speed CD-524E drive offers a combination of speed and multiple enhancement such as advanced noise/vibration control.

- ATAPI interface for high speed data transfer 16.6Mbps
- Motorised tray loading mechanism for trouble - free operation with either vertical or horizontal mounting
- High loading durability
- 4 speed audio performance for high - quality sound reproduction
- Intelligent media handling

32X IDE CD-ROM FULL RETAIL KIT
- Drive
- Cable set
- Device driver
- Hardware & Software installation manuals

TEAC 32X
SCSI retail £69 ex vat 81.08 inc vat
IDE retail £55 ex vat 64.63 inc vat

4X12 SCSI CD-R DRIVE FULL RETAIL KIT
- 4x write / 12x read CD recorder
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- SCSI card not included

TEAC 24x CD-R Bare
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Mitsumis award winning CR - 2600TE comes bundled with the "Mitsumi music centre" (including the original Magix Software for producing your own music) Also included is TO GO! V4.0 CD writer Software. At only £189 + vat, it's hardly surprising that this is our best selling CD writer.

Important note: Unlike CD-RW media self-written audio CD's can be played on any audio CD player in any CD-ROM drive.

MITSUMI CR 2600TE
£159 ex vat £186.82 inc vat

Mitsumi's new CR-2600TE is the world's first ATAPI CD-recordable drive. It lets you easily create custom CD's holding up to 650Mb of data or 74 minutes of audio - in around 30 minutes!

NEW 2x writer 8x reader

MITSUMI CR 2801TE
£169 ex vat £198.57 inc vat

- Combines a 2x writer and 6x reader
- Write up to 650Mb of data per disk
- Easy installation
- Unique dust-proof design reduces the possibility of writing errors, increases reliability
- 1Mb buffer cuts underruns and gives high data accuracy
- ATAPI Enhanced IDE interface
- Windows 95 Compatible.
- Includes ToGo! CeQuadrat 4.0, Magix Music Maker & Magix Music Editor software, audio cable, IDE data cable, instruction manual, 3 recordable CD's and a blank media

Models	Interface	Speed	Int/Ext	ex vat	inc vat
MITSUMI					
FX-240	IDE	24	Int	£39	45.83
FX-320	IDE	32	Int	£49	57.58
Panasonic					
CR-585	IDE	24	Int	£38	44.65
CR-586	IDE	32	Int	£54	63.45
PLEXTOR					
PX-20TSI Tray Loading	SCSI	20	Int	£98	115.15
PX-20TSE Tray Loading	SCSI	20	Ext	£138	162.15
	SCSI	32	Int	£118	138.65
	SCSI	32	Ext	£155	182.12
SAMSUNG					
SCR 2340	IDE	24	Int	£34	39.95

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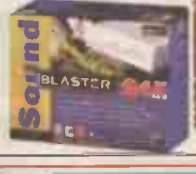
CREATIVE LABS

	ex vat	inc vat
AWE 64 GOLD Buy the AWE 64 Gold and get £24 Cashback	£102	119.85
AWE 64 4Mb Memory Upgrade	£25	29.37
AWE 64 8Mb Memory Upgrade	£45	52.88
AWE 64 12Mb Memory Upgrade	£75	88.13
AWE 64 24Mb Memory Upgrade	£124	145.70
AWE 64 Value Buy the AWE 64 Value and get £12 Cashback	£54	63.45
SB16 NON IDE	£27	31.72
Blaster CD 24X	£54	63.45
Discovery 24X Kit	£88	103.40
Creative 'Encore' DVD Kit (inc DXR2 Card)	£149	175.08
CS 120 Speakers	£9	10.57
TV Coder External	£109	128.08
WebCam	£99	116.33
VideoBlaster PCI	£89	104.58
VideoBlaster RT300	£198	232.65



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- 74 minutes / 650Mb storage
- Pure gold reflective layer
- "HardCoat" surface gives protection from scratches
- Excellent resistance to UV light
- Guaranteed life of 70 years
- Complete with jewel case

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SONY CDR MEDIA £1.49 1.75

HEWLETT PACKARD
CD - Writer Plus 7200

HEWLETT PACKARD 7200 Internal
£225 ex vat £264.38 inc vat

HEWLETT PACKARD 7200 External
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Simple as a floppy with the qualities of a CD!

For business professionals at work and at home who want to store and share information, the HP SureStore CD-Writer Plus 7200 is a complete, CD-RW solution that provides easy to use, reliable and secure management of stored information

- Write, update and rewrite CD's
- Save and distribute up to 650Mb of information
- Easy to use 'drag and drop' functionality
- Create CD's for CD-ROM drives and audio players
- Included Software:

Adaptec DirectCD and mastering software
HP Simple trax
Norton AntiVirus
DocuMagix PaperMaster Live
Adobe Photo Deluxe
Digital Now Photo Album
Coral PrintHouse Magic
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	ex vat	inc vat
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SureStore CD-Writer PLUS 7200 internal	£225	264.38
HP Rewritable CD	£19	22.32
HP Rewritable CD X3	£39	45.82

HEWLETT PACKARD

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- Save and distribute up to 650Mb of information
- Easy to use 'drag and drop' functionality
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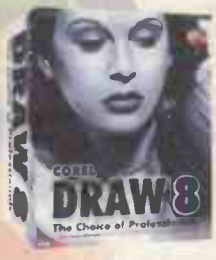

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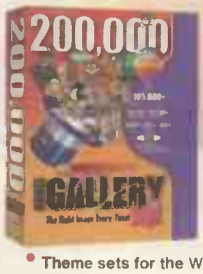

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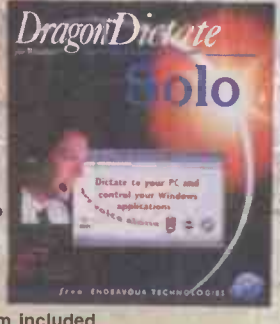
- Tells your mouse to move to a precise spot on the screen
- Creates accurate documents by dictating to your PC
- Spells correctly every time
- Reduces repetitive keyboard and mouse motions
- Fast enrolment and Quick Training program included



£36 ex vat £42.30 inc vat

DRAGON NATURALLY SPEAKING

- True Continuous Speech
- Speak Without Having to pause
- Highly Accurate
- 30,000 word active vocabulary
- Words can be added
- Natural Spelling

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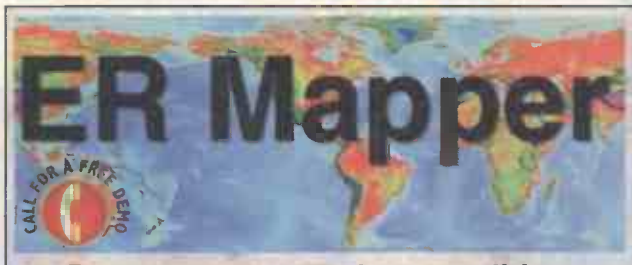
Microsoft

Microsoft
MS Exchange Svr v5 + 5Clt
£715 ex vat £840.13 inc vat

Microsoft
MS Office Pro 97 Upgrade
£204 ex vat £239.70 inc vat

	Full		Upgrade		Licence	
Word 97	£224	263.20	£88	103.40	£208	244.40
Excel 97	£224	263.20	£88	103.40	£208	244.40
Access 97	£224	263.20	£88	103.40	£208	244.40
Power Point 97	£224	263.20	£88	103.40	£208	244.40
Office Std 97	£317	372.48	£147	172.73	£308	361.90
Office Pro 97	£417	489.98	£204	239.70	£398	467.65
Office Devel 97	£514	603.95	£194	227.95	-	-
Office 97 SBE	£324	380.70	£147	172.73	£314	368.95
Home Essent 98	£74	86.95	-	-	-	-
Project 98	£297	348.98	£114	133.95	£274	321.95
Visual Basic 5	£60	70.50	£34	39.95	£34	39.95
Visual Basic Pro 5	£318	373.65	£164	192.70	£294	345.45
Visual Basic Ent 5	£794	932.95	£454	533.45	£724	850.70
Visual C++ 5	£60	70.50	£34	39.95	£34	39.95
Visual C++ Pro 5	£318	373.65	£164	192.70	£294	345.45
Visual C++ Ent 5	£794	932.95	£454	533.45	£724	850.70
Visual InterDev 97	£324	380.70	£178	209.15	£294	345.45
Visual J++ 1.1	£60	70.50	£34	39.95	-	-
Vis. Studio Pro 97	£657	771.98	£334	392.45	£608	714.40
Vis. Studio Ent 97	£958	1125.65	£674	791.95	£888	1043.40
Vis. Foxpro Pro 5	£318	373.65	£194	227.95	£294	345.45

ER Mapper



Does your current image editing software struggle with large files?

YOU NEED ER MAPPER!!

Display and manipulate graphics files with ease.

- Handles Massive images from 20Mb to 3Gb and beyond!!
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- Windows 95 or Windows NT versions
- Demo disk available - please call
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The world's most advanced satellite mapping software is now available for all professional image users!!

Ideal for:-
Satellite Mapping, urban planning, map production, 3D presentations and plotting, petroleum exploration, mineral exploration and any application needing rapid manipulation of large graphics files.

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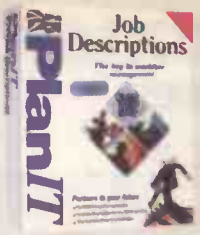

JOB DESCRIPTIONS

The foundation of staff management

- Save time with over 20,000 job titles
- A requirement for quality management (inc. ISO 9000)
- The first step of any personnel policy

PlanIT £64 75.20

MARKETING PLAN

Maximise your business

Your company needs a marketing plan to develope.

- Identify your strengths and weaknesses

PlanIT £65 76.38

SALES LETTERS

Maximise your sales with a letter for every situation

- Expertly written examples for every occasion.
- Effective communication is the key to success

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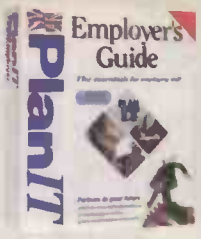

EMPLOYER'S GUIDE

Fulfil your legal reqirements

- Covers all your basic legal obligations
- Pre-written contracts and policies

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Professional limited company formation without the cost

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- Save £100's on formation agents fees
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- Raise money

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A letter for every situation

- Adopt the right tone or phrase
- Save time with 100's of letters
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- Save time, make money
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DynaTek's award winning DAT Drive is on offer to customers who require high performance, value for money and reliability. The DynaTek DAT drives ensure data integrity through three levels of error correction and conform to DDS standards, which are the world-wide standards of excellence.

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	ex vat	inc vat
External DAT2000 2Gb DDS DAT Bundle	£495	581.62
Internal DAT2000 2Gb DDS DAT Bundle	£459	539.32
External DAT4000 2-4Gb DDS DAT Bundle	£505	593.37
Internal DAT4000 2-4Gb DDS DAT Bundle	£475	558.12
External DAT8000 4-16Gb DDS-2 DAT Bundle	£665	781.37
Internal DAT8000 4-16Gb DDS-2 DAT Bundle	£599	703.82
External DAT12000 12-24Gb DDS-3 DAT Bundle	£849	997.57
Internal DAT12000 12-24Gb DDS-3 DAT Bundle	£814	956.45
External DAC144000 144Gb DDS-3 DAT Autoloader Bundle	£2395	2814.12

VISIO

Diagram your information systems and business processes.

Visio Professional 5.0 is the ideal tool for creating physical or logical network diagrams, mapping Web sites, planning software development, designing databases, analyzing your business processes, and more. Work with 980 network and telecom shapes, including more than 600 manufacturer-specific shapes. Even create custom solutions with built-in Microsoft Visual Basic for Applications (VBA).

£195ex vat 229.13 inc vat

Create and share 2D technical drawings more efficiently

Visio® Technical 5.0 spans the needs of 2D technical drawing professionals. It's the ideal tool for space plans, HVAC designs, electrical schematics, process plant designs, mechanical drawings, and more. Create drawings by dragging and dropping intelligent SmartShapes® symbols that behave like the bolts, stairs, and other real-world objects they represent.

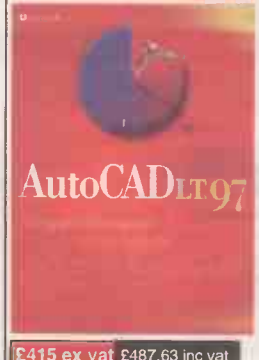
£195ex vat 229.13 inc vat

Create smart business diagrams quickly.

Visio Standard 5.0 helps you diagram and track your workflow, communicate your department's reporting structure, or enhance your presentations with complete ease. It's the ideal tool for flowcharts, organization charts, project timelines, marketing visuals, and more. Plus, Visio Standard shares a common interface with your Microsoft Office tools for smooth integration with your desktop.

£89ex vat 104.58 inc vat

Autodesk



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Auto CAD LT 97

Introducing AutoCAD LT® 97. The only CAD program that speaks 100 percent fluent AutoCAD®. AutoCAD LT® 97 is loaded with powerful 2D drawing and editing tools plus several new features that increase your productivity. There's a office-like Object Property toolbar that lets you determine the layer, colour, or linetype of an object and change it with a single mouse click. A drag & drop Content Explorer that makes it easy to manage and re-use symbols. Plus precision drawing tools like Autosnap and PolarSnap that speed up your drawing process. With AutoCAD LT97, you can even share drawings on the Internet.

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MAY 1998 EDITION | ISSUE 35

DABS DIRECT PRODUCT NEWS & PRICE GUIDE

DIRECT focus

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Personal Computer World HIGHLY COMMENDED

Atlantis MMX Home Office

Only £850

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see page 5 for details

NEW! Creative 3D Blaster Voodoo2

see page 12

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Excellent Quality . Superior Service . Unbeatable Value

DABS DIRECT

Nokia 5.1

free phone†

Dabs Direct sell Orange

- 96% UK population coverage
- 12 months 'FREE' insurance
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- Caller ID
- 14 day money back guarantee

Nokia nk502 & Cellular Data Suite Bundle only ††
£110
(£129.25 inc VAT)

nk502

mr501

mr601

mr701

Orange Communicator

	Nokia 5.1*	nk502*	mr501	mr601	mr701	Communicator
Weight	235g	151g	125g	211g	110g	397g
Talktime**	80 minutes	120 minutes	110 minutes	180 minutes	202 minutes	180 minutes
Standby**	22 hours	70 hours	45 hours	80 hours	85 hours	35 hours
Display	3 lines	Dynamic	Dynamic	Dynamic	Dynamic	Dynamic
Size	149 x 56 x 27	141 x 48 x 25	96 x 52 x 27	130 x 59 x 23	96 x 52 x 27	173 x 64 x 38
Vibrating Battery	option	no	no	standard	option	no
Dual Band	no	no	no	yes	no	no
Price ex VAT†† (Price Inc VAT)††	£FREE (£Free)	£CALL (£Call)	£CALL (£Call)	£CALL (£Call)	£CALL (£Call)	£CALL (£Call)

** optimum conditions

†† subject to signing a 12 month contract

'FREE' Carriage on Orange phones from Dabs Direct
'*FREE' In car charger and leather case when connecting to Talk 60
'†FREE' Nokia 5.1 on request, subject to signing a 12 month contract

Accessories

mr20 & mr30 & mr601

Manufactured by ORA Electronics	
Battery 1200mAH NICAD Hi-Capacity	£19 (£22.32)
Battery 650mAH NICAD Slimline	£35 (£41.12)
In-Car Charger	£12 (£14.10)
Leather Case (mr20 & mr30 only)	£7 (£8.22)
Starter Pack -1200mAH NICAD, case & car charger	£35 (£41.12)
Travel Pack - leather case & car charger	£19 (£22.32)

Nokia 2140/5.1

Manufactured by ORA Electronics	
Battery 700mAH NICAD	£19 (£22.32)
Battery 550mAH NIMH Slimline	£35 (£41.12)
Battery 1100mAH NIMH Extended	£27 (£31.72)
In-Car Charger	£12 (£14.10)

Nokia 2140/5.1 continued

In-Car Charging Cradle	£25 (£29.37)
Leather Case	£7 (£8.22)
Simple Hands Free Car Kit with Earpiece	£39 (£45.82)
Simple Hands Free Car Kit with Speaker	£49 (£57.57)
Starter Pack - 700mAH battery, case & car charger	£29 (£34.07)
Travel Pack - leather case & car charger	£19 (£22.32)
Manufactured by Nokia	
Portable Antenna	£49 (£57.57)
Car Kit Headset	£39 (£45.82)
Desktop Charging Stand	£49 (£57.57
Travel Charger	£29 (£34.07)
In-Car Cradle	£12 (£14.10)
Hands Free Car Kit exc Installation	£129 (£151.57)
Hands Free Car Kit + Handset exc Installation	£179 (£210.32)
Simple Antenna Kit	£45 (£52.87)

Nokia nk502

Manufactured by Nokia	
Battery 400mAH Li Ion Standard	£49 (£57.57)
Battery 900mAH Li Ion Extended	£55 (£64.62)
Replacement Charger	£18 (£21.15)
Desktop Charger	£29 (£34.07)
In-Car Charger	£16 (£18.80)
Phone Holder	£8 (£9.40)
Headset Kit	£33 (£38.77)
Complete Car Kit	£99 (£116.32)
Deluxe Car Kit	£149 (£175.07)
Cellular Data Suite	£75 (£88.12)

Orange Communicator

Please call for Orange Communicator accessories

orange™

hutchison telecom

Tarifs

talk plan name	standard monthly charge	standard talk time included (per month)	Handsets allowed	standard call charges (per minute after standard talk time) 7am-7pm Mon-Fri peak	off peak	orange to orange
talk 15	£15.00	15 minutes	1 (no sharing)	25p	12.5p	12.5p
talk 60	£25.00	60 minutes	1 - 2	20p	10p	10p
talk 200	£50.00	200 minutes	1 - 3	18p	9p	9p
talk 360	£75.00	360 minutes	1 - 4	16p	8p	8p
talk 540	£100.00	540 minutes	1 - 5	14p	7p	7p
talk 1000	£180.00	1000 minutes	1 - 10	14p	7p	7p
talk 2500	£425.00	2500 minutes	1 - 25	12p	6p	6p
talk 5000	£800.00	5000 minutes	1 - 50	12p	6p	6p

One-off connection charge: £30.00

All prices exclude VAT (except: Prices shown in brackets are inclusive of VAT)

talkshare

- Free connection for additional phones - saving £30 each phone
- Each additional handset is charged at £12.50 per month
- All phones share the inclusive minutes

- ✔ Serving you since 1987
- ✔ Over £50m annual turnover
- ✔ Over 200,000 satisfied customers
- ✔ Highly trained specialist staff
- ✔ Repair & upgrade services

DABS DIRECT

PERSONAL COMPUTER SYSTEMS

Corporate 01942 794300 Sales fax 01942 797979 Web Site www.dabs.com Email sales@dabs.com

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INTRODUCTION

Welcome again to Direct Focus. By the time you read this we will have moved into our new £1.5m building which can house up to 300 staff. We have today vacancies in all areas, but particularly in telesales and tech support. Please write or email me if you want a career with us.

I am getting a lot of emails about customer service problems. Please see page 23 and contact the department direct on cs@dabs.com for admin problems, and ts@dabs.com for technical support. If you do email us with a post-sales problem, please include your account number, Dabs order reference or postcode.

David Atherton, Managing Director, Dabs Direct PLC
da@dabs.com

FEBRUARY 1998 OPENING TIMES

	GENERAL SALES	COUNTER	OTHER DEPTS
Monday	08.00 - 19.00	09.00 - 17.00	09.00 - 17.00
Tuesday	08.00 - 19.00	09.00 - 17.00	09.00 - 17.00
Wednesday	08.00 - 19.00	09.00 - 17.00	09.00 - 17.00
Thursday	08.00 - 19.00	09.00 - 17.00	09.00 - 17.00
Friday	08.00 - 17.00	09.00 - 17.00	09.00 - 17.00
Saturday	09.00 - 15.00	10.00 - 15.00	Closed
Sunday	Closed	Closed	Closed

PAYMENT TERMS

INSTANT CREDIT - 14 day credit terms available to public sector & quoted PLC's.

NEW ACCOUNT OPENING - Please call our sales team to arrange to open a credit account now (subject to status)

PERSONAL FINANCE - Competitive interest rates for individual purchasers, with a range of payment plans (subject to status)

BUSINESS LEASING - We can offer very competitive rates on Business Leasing (subject to status) for companies.

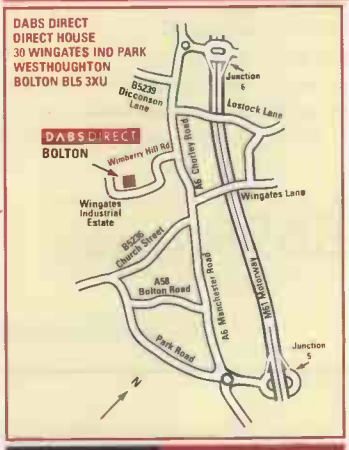
CREDIT CARD PAYMENTS - We can also accept payment by all major credit cards including AMEX, VISA & Mastercard

TERMS

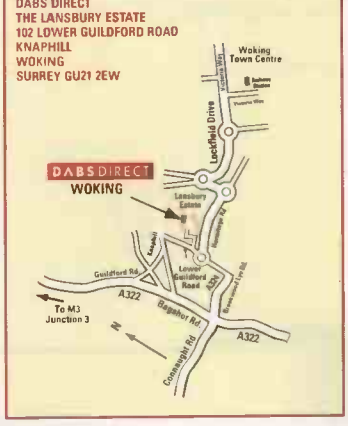
Please see page 48 for Terms & Conditions. Full Terms and Conditions available on request. Prices valid from 1st to 30th April 1998. E&OE [03.03.98].

HOW TO FIND US

DABS DIRECT
DIRECT HOUSE
30 WINGATES IND PARK
WESTHOUGHTON
BOLTON BL5 3XU



DABS DIRECT
THE LANSBURY ESTATE
102 LOWER GUILDFORD ROAD
KNAPHILL
WOKING
SURREY GU21 2EW



DIRECT *focus*

DABS DIRECT PRODUCT NEWS & PRICE GUIDE

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Designed and produced by
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30 Wingates Industrial Park
Westhoughton
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BL5 3XU

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PERSONAL COMPUTER SYSTEMS

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If you have any comments or suggestions about Direct Focus please write to me at the Bolton address or email me on: dwilson@dabs.com

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IMPORTANT NUMBERS

EDINBURGH Sales	0131-556 4114
LONDON Sales	0171-582 4777
BOLTON General Sales	01942 794000
Fax	01942 797979
Apple & MacOS Sales	01942 794040
Fax	01942 797979
Corporate Sales	01942 794300
Fax	01942 798081
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Atlantis MMX Workstation

Network Ready Desktop PC

- Intel Pentium 200MHz Processor with MMX technology
- Intel 430TX Chipset Motherboard
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- 2.1Gb UltraDMA Hard Disk Drive
- 24x EIDE CD Drive
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- 1.44Mb Floppy Disk Drive
- Belinea 14" Digital SVGA Monitor
- 105 Key Windows 95 Keyboard
- Serial Mouse
- 16bit ISA RJ45/BNC Network Card
- Microsoft Windows 95
- Lotus SmartSuite 97
- Multimedia upgrade option (Sound Card & Speakers) add £39 (£45.82)
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)

£559 (£656.82)

Network Ready

Atlantis MMX Value

Multimedia Internet Ready Mini Tower PC with MMX technology

- Intel Pentium 233MHz Processor with MMX technology
- Intel 430TX Chipset Motherboard
- 512Kb Pipeline Burst Cache Memory
- 16Mb SDRAM Memory (Expandable to 128Mb)
- 2.1Gb UltraDMA Hard Disk Drive
- 24x EIDE CD Drive
- Internal 33.6Kbps Voice/Date/Fax Modem (including 1 months free Internet Access)
- 2Mb PCI Graphics Card
- 16bit 3D Sound Card
- 1.44Mb Floppy Disk Drive
- Belinea 14" Digital SVGA Monitor
- 105 Key Windows 95 Keyboard
- Serial Mouse
- 20w Speakers
- Microsoft Windows 95
- Lotus SmartSuite 97
- Dabs Multimedia Software Bundle (14 titles)
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)

£629 (£739.07)

Internet Ready Multimedia Ready

Prices shown in brackets are inclusive of VAT

Dabs PC Systems

This month I am delighted to say that the commitment to quality and performance offered by Dabs to both our home and business PC users has been recognised by awards from both Computer Buyer and Personal Computer World (April issues).

The Atlantis Home Office, reviewed in Personal Computer World, is awarded 'Highly Recommended' in a round-up of machines for £999 inc VAT. Our policy of providing the customer with the best specification and value for money is affirmed by the reviewer who writes *"Dabs Direct put together a machine that qualifies as The Most Generous Package We Received"*

and

"Excellent value for money backed up by performance"

From our Professional range of machines (pages 6 and 7), the Navigator PII AGP is awarded Computer Buyer 'Top 50 Best Buys' for machines under £1000. The reviewer summarises *"This is a terrific PC from an established name. It performed very well in benchmark... the PC is an excellent buy and comes Highly Recommended"*

Our highly trained staff will be happy to give informed advice on these award winning models.

Karen Lucas
PC Business Manager
klucas@dabs.com

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- ✔ Highly trained specialist staff
- ✔ Repair & upgrade services

DABS DIRECT

PERSONAL COMPUTER SYSTEMS

Corporate 01942 794300 Sales fax 01942 797979 Web Site www.dabs.com Email sales@dabs.com

Atlantis MMX Family

Multimedia Internet & Games Ready Mini Tower PC with MMX technology

- Intel Pentium 233MHz Processor with MMX technology
- Intel 430TX Chipset Motherboard
- 512Kb Pipeline Burst Cache Memory
- 16Mb SDRAM Memory (Expandable to 128Mb)
- 3.2Gb UltraDMA Hard Disk Drive
- 24x EIDE CD Drive
- Internal 33.6Kbps Voice/Date/Fax Modem (including 1 months free Internet Access)
- 4Mb PCI Graphics Card
- Schubert 3D Pro Sound Card
- 1.44Mb Floppy Disk Drive
- Belinea 15" Digital SVGA Monitor
- 105 Key Windows 95 Keyboard
- Serial Mouse
- Joystick
- 30w Active Speakers with built-in Amplifier
- Microsoft Windows 95
- Lotus SmartSuite 97
- Dabs Multimedia Software Bundle (14 titles)
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)

£779 (£915.32)

Internet Ready Multimedia Ready Games Ready

Atlantis MMX Home Office

Home Office Mini Tower PC with Printer

- Intel Pentium 233MHz Processor with MMX technology
- Intel 430TX Chipset Motherboard
- 512Kb Pipeline Burst Cache Memory
- 32Mb SDRAM Memory (Expandable to 128Mb)
- 2.1Gb UltraDMA Hard Disk Drive
- 24x EIDE CD Drive
- Internal 33.6Kbps Voice/Date/Fax Modem including (1 months free Internet Access)
- 4Mb PCI Graphics Card
- SoundBlaster 16 Vibra Sound Card
- 1.44Mb Floppy Disk Drive
- Belinea 15" Digital SVGA Monitor
- 105 Key Windows 95 Keyboard & Serial Mouse
- Joystick
- 30w Active Speakers with built in Amplifier
- Microsoft Windows 95
- Lotus SmartSuite 97
- Dabs Multimedia Software Bundle (14 titles)
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)
- Canon BJC-250 Colour Inkjet Printer

£850 (£998.75)

Internet Ready Multimedia Ready

3D Accelerator/Power VR upgrade

Videologic Apocalypse 3Dx plus 7 Power VR games titles:

- Fifa 98
- Ultimate Race
- Terracide
- Wipe out 2097
- Nightmare Creatures
- Mech Warrior II
- Tomb Raider

only £69 (£81.07)

PCA MEMBER

Dabs Direct are a responsible member of the industry's trade association. We were a founder member of the "Personal Computer Association", and abide by their terms & conditions.

PC Cases may change design without prior notice
All software boxes are shown for illustrative purposes only - Bundled software may not come with full retail packaging
Prices shown in brackets are inclusive of VAT

Atlantis Value/WS

Monitor Upgrades

* ADI ProVista E30 14"	£19	(£22.32)
* Belinea 15"	£29	(£34.07)
* ADI ProVista E40 15"	£49	(£57.57)

Removable Drive Upgrades

* Iomega Zip Drive Internal	£79	(£92.82)
* LS120 Drive Internal	£68	(£79.90)

Atlantis Family/HO

Monitor Upgrades

* ADI ProVista E40 15"	£29	(£34.07)
* Belinea 17"	£89	(£104.57)
* ADI MicroScan 5P 17"	£139	(£163.32)

Removable Drive Upgrades

* Iomega Zip Drive Internal	£79	(£92.82)
* LS120 Drive Internal	£68	(£79.90)

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DABS PC SYSTEM 14-DAY NO-QUIBBLE GUARANTEE

If for any reason you are not completely satisfied with your Dabs PC, you may return it for a full refund up to 14 days after delivery. You do not have to give a reason for the return, simply call our customer service department (01942 794020) and ask for a returns number under the 14-day guarantee.

1. The guarantee applies to the PC, monitor, keyboard and any bundled software offered as standard, and not to any printer, other software or other items ordered at the same time.
2. The PC and monitor must be returned correctly and securely packed in the original packing as delivered. It must be undamaged, and all parts (manuals, bags etc.) must be included
3. You are responsible for the return freight and delivery. We can arrange collection which will cost £10+VAT.

General Sales Hotline OPEN 8am - 7pm Mon to Thu . 8am - 5pm Fri . 10am - 3pm Sat

freephone 0800 558866

PRICE MATCHING
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Challenger AMD K6™ ATX

High Performance AMD K6™ with MMX Technology

- Midi Tower ATX case
- AMD K6 233MHz Processor with MMX technology
- Intel 430TX Chipset Motherboard
- 512Kb Pipeline Burst Cache Memory
- 64Mb SDRAM Memory
- 6.4Gb EIDE Ultra DMA Hard Disk Drive
- 24x EIDE CD Drive
- Internal 56Kbps Voice/Date/Fax Modem including 1 months free Internet Access
- 4Mb Matrox Mystique 220 Graphics Card
- Creative Labs SoundBlaster AWE-64 Value Sound Card
- 1.44Mb Floppy Disk Drive
- ADI 15" E40 Digital Monitor
- PS/2 105 Key Windows 95 Keyboard
- PS/2 Mouse
- Labtec LCS-1020 10w Speakers
- Microsoft Windows 95
- Lotus SmartSuite 97
- Dabs Multimedia Software Bundle (14 titles)
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)

£939 (£1103.32)

Internet Ready Multimedia Ready

Navigator PII AGP

Multimedia & Internet Ready PC with MMX Technology

- Midi Tower ATX case
- Intel Pentium II 233MHz Processor with MMX technology
- Intel 440LX Chipset Motherboard
- 512Kb Pipeline Burst Cache Memory
- 32Mb SDRAM Memory
- 3.2Gb EIDE Ultra DMA Hard Disk Drive
- 24x EIDE CD Drive
- Internal 56Kbps Voice/Date/Fax Modem including 1 months free Internet Access
- 4Mb Matrox Mystique 220 Graphics Card
- Creative Labs SoundBlaster AWE-64 Value Sound Card
- 1.44Mb Floppy Disk Drive
- ADI 15" E40 Digital Monitor
- PS/2 105 Key Windows 95 Keyboard
- PS/2 Mouse
- Labtec LCS-1020 10w Speakers
- Microsoft Windows 95
- Lotus SmartSuite 97
- Corel Draw! V4.0
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)

£999 (£1173.82)

Internet Ready Multimedia Ready

Challenger

Hard Disk Drive Upgrades

* 6.4Gb EIDE Ultra DMA	£49	(£57.57)
* 8.4Gb EIDE Ultra DMA	£99	(£116.32)

SCSI Drive Options also available

Monitor Upgrades

* Belinea 17"	£89	(£104.57)
* ADI 5P 17"	£132	(£155.10)
* ADI 6G 21"	£625	(£734.37)

Removable Drive Upgrades

* Iomega Zip Drive Int	£59	(£69.32)
* LS120 Drive Internal	£69	(£81.07)

• Consumer Credit Available • Consumer Credit Available •

Example	Cash Price (Inc VAT)	Deposit (10%)	12 Months (Shown per week)*	24 Months (Shown per week)*	36 Months (Shown per week)*
Atlantis Workstation	£668.57	£66.57	£12.73	£6.95	£5.01
Atlantis Value	£750.57	£75.82	£14.28	£7.79	£5.62
Atlantis Family	£927.07	£92.07	£17.66	£9.63	£6.96
Atlantis Home Office	£1010.50	£101.50	£19.23	£10.49	£7.57
APR (Flat Rate 10%)			19.5%	19.7%	19.4%

*Weekly rate shown for illustrative purposes only - Payment is by monthly direct debit
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Navigator

Hard Disk Drive Upgrades

* 6.4Gb EIDE Ultra DMA	£49	(£57.57)
* 8.4Gb EIDE Ultra DMA	£99	(£116.32)

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Discovery II AGP ATX

Multimedia Pentium II® ATX PC with MMX Technology

- Midi or Full Tower ATX case
- Intel Pentium II 266MHz Processor with MMX technology
- Intel 440LX Chipset Motherboard with AGP
- 512Kb on chip Cache Memory
- 64Mb SDRAM Memory
- 8.4Gb EIDE Ultra DMA Hard Disk Drive
- Iomega Internal Zip Drive 100Mb
- 32x EIDE CD Drive
- Internal 56Kbps Voice/Date/Fax Modem including 1 months free Internet Access
- 4Mb Matrox Millennium II AGP Graphics Card
- Creative Labs SoundBlaster AWE-64 Value Sound Card
- 1.44Mb Floppy Disk Drive
- ADI 15" E40 Digital Monitor
- PS/2 105 Key Windows 95 Keyboard & PS/2 Mouse
- Joystick
- Labtec LCS-1020 10w Speakers
- Microsoft Windows 95
- Lotus SmartSuite 97
- Dabs Multimedia Software Bundle (14 titles)
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)

£1299 (£1526.32)

Internet Ready Multimedia Ready Games Ready

Voyager II AGP ATX

Ultimate Pentium II® ATX PC with MMX Technology

- Midi or Full Tower ATX case
- Intel Pentium II 333MHz Processor with MMX technology
- Intel 440LX Chipset Motherboard with AGP
- 512Kb on chip Cache Memory
- 64Mb SDRAM Memory
- 8.4Gb EIDE Ultra DMA Hard Disk Drive
- Syquest SparQ Internal Drive 1Gb
- Internal 56Kbps Voice/Date/Fax Modem including 1 months free Internet Access
- Creative DVD Drive
- 8Mb XPERT@Work AGP Graphics Card
- Creative Labs SoundBlaster AWE-64 Value Sound Card
- 1.44Mb Floppy Disk Drive
- ADI 17" 5P Digital Monitor
- PS/2 105 Key Windows 95 Keyboard
- PS/2 Mouse
- Labtec LCS-2612 20w RMS Speakers & 3D Subwoofer
- Microsoft Windows 95
- Microsoft Office Small Business Edition
- Dabs Multimedia Software Bundle (14 titles)
- 1 Year On-Site Warranty (hardware only)
- 5 Year Labour Warranty (excluding monitor & software)

£1799 (£2113.82)

Internet Ready Multimedia Ready

Discovery

Intel Processor Upgrades

* Pentium II 300MHz	£99	(£116.32)
* Pentium II 333MHz	£149	(£175.07)

Hard Disk Drive Upgrades

* 6.4Gb EIDE Ultra DMA	£75	(£88.12)

SCSI Drive Options also available, please call for details

Monitor Upgrades

* Belinea 17"	£69	(£81.07)
* ADI MicroScan 5P 17"	£115	(£135.12)
* ADI MicroScan 6G 21"	£589	(£692.07)

Removable Drive Upgrades

*Creative DVD-Rom Internal	£75	(£88.12)
*Syquest SparQ 1Gb Internal	£115	(£135.12)

PLATINUM CARE

DABS PC's are custom built by our trained engineers to your specification using only the very best components. This is why every DABS PC comes with a 5 year limited warranty and during the first year we will send an engineer out to your location to find and fix the fault swiftly and efficiently, over 90% of reported faults are fixed the next working day of them being reported.For complete peace of mind you can upgrade to either a 3 or 5 year on-site warranty at the extremely competitive price of £149/£175.07 for 3 years or £229/£269.07 for 5 years. This can work out at less than £1 per week for a complete On-Site Parts and Labour Warranty with service second to none.

Monitor Upgrades

* ADI MicroScan 5G 17"	£69	(£81.07)
* ADI MicroScan 6G 21"	£479	(£562.82)

CUSTOM BUILT PC DIVISION

Everyone has different needs for their PC and we try to cater for as many as possible with our Atlantis & Professional range of PC's. However if you have a specific specification and would like us to quote or help you find a PC solution for you call our Custom Built PC Division on 01942 794000 or fax your request to 01942 798081 for a quote. (email pcsales@dabs.com)

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See page 5 for details.

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Belinea MGA POWER GRAPHICS iomega. CREATIVE ADI Systems UK Canon

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PRICE MATCHING
We can usually match competitors prices, please call for details.

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OTHER BRANDED PC'S

COMPAQ DESKPRO 2000	ex VAT	inc VAT
5166x P166MMX 16/2100	489	574.57
5166x P166MMX 32/2100	555	652.12
5200x P200MMX 16/2100	565	663.87
5200x P200MMX 32/2100	629	739.07
5200x P200MMX 32/3200CDS	769	903.07
5233x P233MMX 32/3200CDS	869	1021.07
6233x PII 233 32/2100	815	957.62
6233x PII 233 32/3200CDS	935	1098.62
6266x PII 266 32/3200CDS	1065	1251.37

PORTABLES

ACER / TEXAS Instruments	ex VAT	inc VAT
Extensa 355MMX P150MMX 16/1400	799	938.82
Extensa 390C P133MMX 16/1600CD	969	1138.57
Extensa 390C P166MMX 16/2100CD	1059	1244.32
Extensa 390CX P133MMX 16/1600CD	1199	1408.82
Extensa 390CX P166MMX 16/2100CD	1329	1561.57
ACER / TEXAS Instruments TravelMate		
7100 P200MMX 32/3000CD TFT	2299	2701.82
7123 P233MMX 32/4000CD TFT	2299	2701.32
7126 P266MMX 32/4000CD TFT	2699	3171.32
COMPAQ ARMADA		
1530 P133MMX 16/1400 DSTN	959	1126.82
1530D P133MMX 16/1400CD DSTN	1115	1310.12
1560 P166MMX 16/3200 DSTN	1165	1368.87
1560D P166MMX 16/3200CD DSTN	1299	1526.32
1580DT P150MMX 16/2100CD TFT	1485	1744.87
1590DT P166MMX 16/2000CD TFT	1579	1855.32
1592DT P233MMX 32/3200CD TFT	2049	2407.57
4150 P150MMX 16/1600 DSTN	1199	1408.82
4150T P150MMX 16/1600 TFT	1489	1749.57
4160T P166MMX 16/2000 TFT	1675	1968.12
4210T P233MMX 32/3000 TFT	2235	2626.12
4220T P233MMX 32/4000 TFT	2515	2955.12
7710MT P150MMX 16/1600CD TFT	1749	2055.07
7730T P150MMX 16/2100CD TFT	1665	1956.37
7350MT P166MMX 32/2100CD TFT	1839	2160.82
7360DMT P200MMX 32/3000CD TFT	2365	2778.87
7370DMT P233MMX 32/4000CD TFT	2715	3190.12
7380DMT P266MMX 32/4000CD TFT	2935	3448.62
7730MT P166MMX 32/2100CD TFT	1929	2266.57
7750MT P166MMX 32/2100CD TFT	2189	2572.07
7770DMT P233MMX 32/3000CD TFT	2539	2983.32
7790DMT P233MMX 32/5000CD TFT	2979	3500.32
7792DMT P266MMX 32/5000CD TFT	3245	3812.87
CTX CYBERNOTE		
P120 16/1440CD DSTN	899	1056.32
P166MMX 16/1440CD DSTN	949	1115.07
P166MMX 24/2100CD TFT	1449	1702.57
P166 MMX 72/3200CD TFT	1799	2113.82
HEWLETT PACKARD OMNIBOOK		
800ct P166MMX 16/1440	2265	2661.37
2000cs P133 16/1440	999	1173.82
2000cs P166MMX 16/2000 DSTN	1205	1415.87
2000ct P133 16/1440	1245	1462.87
2000ct P133MMX 16/2000	1435	1686.12
3000ctx P200 16/2100	1945	2285.37
3000ctx P233 16/4000	2335	2743.62
3000ctx P266 16/4000 TFT	2859	3359.32
5700ct P150MMX 16/2000	1300	1527.50
5700ct P166MMX 16/2000	1440	1692.00
5700ct P166MMX 32/3000	1890	2220.75
5700ctx P166MMX 16/2000	1485	1744.87
5700ctx P166MMX 32/3000 TFT	1899	2231.32
TOSHIBA		
Libreto 50CT P75 16/810	675	793.12
Libreto 70CT P120 16/1600	1099	1291.32
Satellite 220CS P133 16/1400	845	922.87
Satellite 230CX P133MMX 16/1550	930	1092.75
Satellite 300CDS P166MMX 16/1440CD	1099	1291.32
Satellite 300CDT P166MMX 16/1440CD	1355	1592.12
Satellite 310CDS P200MMX 32/2020CD	1269	1491.07
Satellite 310CDT P200MMX 32/2020CD	1525	1791.87
Sat Pro 460CDX P166MMX 32/2100CD	1270	1492.25
Sat Pro 460CDT P166MMX 32/2100CD	1695	1991.62
Sat Pro 480CDT P233MMX 32/4100CD	2290	2690.75
Portégé 300CT P133MMX 32/1440	1610	1891.75
Tecra 520CDT P166MMX 32/2168CD	2035	2391.12
Tecra 540CDT P233MMX 32/4100CD	2799	3288.82
Tecra 740CDT P166MMX 16/3000CD	2545	2990.37
Tecra 750CDT P233MMX 32/5100CD	3395	3989.12
Tecra 750DVD P233MMX 364/5125CD	3735	4388.62
TWINHEAD SLIMNOTE		
9T P166MMX 16/1400CD DSTN	1049	1232.57
9T P166MMX 16/1400CD TFT	1259	1479.32
9T P166MMX 32/2100CD TFT	1299	1526.32
9P P166MMX 32/2100CD TFT	1559	1831.82
9P P200MMX 32/2100CD TFT	1999	2348.82
9P P233MMX 32/3100CD TFT	2249	2642.57
9EX P200MMO 32/2100CD TFT	1869	2196.07
9EX P233MMO 64/3100CD TFT	2169	2548.57
9EX P266MMO 64/4000CD TFT	2399	2818.82

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- 640x240 Backlit Display
- 8Mb RAM
- IrDA, PCMCIA & CompactFlash slots
- Windows CE v2.0
- MS Pocket Word
- MS Pocket Excel
- MS Pocket Internet Explorer

£399
(£468.82 inc VAT)

Bundled software:

- bFAX Professional
- QuickNotes
- IntelliMigrate
- Financial Consultant Calculator
- Tetris
- Casio QV-LINK
- Casio Sound-Vega
- Casio Paint-Atlas
- Casio Hyper-Memo
- Casio Voice Applications...
  - smART Command
  - smART Contact
  - smART Memo

Libretto 50CT £675 (£793.12)

- Intel Pentium 75MHz
- 16MB EDO RAM (expandable to 32MB)
- 810MB Hard Drive
- 6.1" TFT Display (640x480) up to 16.7 million colours
- SoundBlaster Pro compatible sound system
- 1x 16bit PC Card slot
- IrDA compliant infrared interface

Satellite 300CDS £1099 (£1291.32) NEW!

- Intel Pentium 166MHz with MMX
- 16MB EDO RAM (expandable to 144MB)
- 2GB Hard Drive
- 16xSpeed CD-ROM
- 12.1" DSTN ColourDisplay
- SoundBlaster Pro compatible sound system
- 2x 32bit CardBus PC Card slots with ZV port

Satellite 300CDT £1355 (£1592.12) NEW!

As Satellite 300CDS, except...
- 12.1" TFT ColourDisplay

Satellite 310CDS £1269 (£1491.07) NEW!

- Intel Pentium 200MHz with MMX
- 32MB EDO RAM (expandable to 160MB)
- 2GB Hard Drive
- 16xSpeed CD-ROM
- 12.1" DSTN ColourDisplay
- SoundBlaster Pro compatible sound system
- 2x 32bit CardBus PC Card slots with ZV port

Satellite 310CDT £1525 (£1791.87) NEW!

As Satellite 310CDS, except...
- 12.1" TFT ColourDisplay

Satellite Pro 460CDX £1270 (£1492.25)

- Intel Pentium 166MHz with MMX
- 32MB EDO RAM (expandable to 160MB)
- 2.1GB Hard Drive
- Swappable 10xSpeed CD-ROM
- 12.1" Advanced FastScan (HPD) Display (800x600) up to 65536 colours

Satellite Pro 460CDT £1695 (£1991.62)

As Satellite Pro 460CDX, except...
- 12.1" TFT Display (800x600) up to 16.7 million colours

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Targus, the market innovator introduce the latest technology in notebook computer protection - the Air Protection System (APS)

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- The APS system surrounds your notebook with a layer of shock absorbing pressurised air (shown in blue).
- Accommodates a notebook, printer and accessories.
- Scientifically proven to be the most protective notebook computer carry case solution available.
- Includes exclusively sealed air padded shoulder strap.

** Also available in standard Universal Notebook*

Please see Carry Case line listing for the full Targus range

HANDHELDS

CASIO	ex VAT	inc VAT
Cassiopeia Windows CE v2.0	379	445.32
HEWLETT PACKARD		
320LX 4Mb Windows CE	335	393.62
360LX 8Mb Windows CE v2.0	359	421.82
620LX Colour Windows CE v2.0	549	645.07
Accessories		
320LX AC Adaptor	25	29.37
320LX Windows CE v2.0 Upgrade	89	104.57
320LX Leather Case	49	57.57
320LX/360LX/620LX Li-Ion Battery	49	57.57
360LX AC Adaptor	29	34.07
620LX AC Adaptor	25	29.37
620LX Video Output	79	92.82
PHILIPS		
Velo 1 4Mb Windows CE	249	292.57
PSION		
Siena 512k	99	116.32
Siena 1Mb	149	175.07
Series 3c 2Mb Backlit	215	252.62
Series 3c 2Mb Backlit & PsiWin Bundle	255	299.62
Series 5 4Mb	319	274.82
Series 5 8Mb	359	421.82
Series 3/Siena Accessories		
1MB Flash SSD	55	64.62
2MB Flash SSD	79	92.82
1MB RAM SSD	119	139.82
Desk Stand	14	16.45
Leather Case	20	23.50
Mains Adaptor	12	14.10
Parallel Cable	25	29.37
PCMCIA Modem adaptor	79	92.82
PsiWin Comms Link	59	69.32
Siena SSD Drive	64	75.20
Series 5 Accessories		
Leather Case	25	29.37
Mains Adaptor	15	17.62
Parallel Cable	29	34.07
PCMCIA Modem Adaptor	79	92.82
4MB Compact Flash	49	57.57
8MB Compact Flash	59	69.32
12MB Compact Flash	85	99.87
16MB Compact Flash	99	116.32
20MB Compact Flash	169	198.57
32MB Compact Flash	199	233.82
Software *Call for details & prices for all Psion software*		
US ROBOTICS/3COM		
PalmPilot Personal	159	186.82
PalmPilot Professional	228	267.90
Accessories		
14k4 Data/Modem	69	81.07
1Mb RAM card	85	99.87
Option GSM Adaptor	89	104.57
Leather case	19	22.32
Pilot Mac Pack	15	17.62

CARRY CASES

TARGUS	ex VAT	inc VAT
Notepac	26	30.55
FolioPac 3	35	41.12
Convertable Backpack	45	52.87
Notepac Plus	49	57.57
Universal Notebook	49	57.57
Universal ABS	69	81.07
Universal Deluxe	69	81.07
Leather Notebook	69	81.07
Air Universal	70	82.25
Pilot	85	99.87
Premier Leather	107	125.72
Business Traveller	129	151.57

UPS

APC	ex VAT	inc VAT
BackUPS 300MI	55	64.62
BackUPS 500MI	85	99.87
BackUPS 600MI	121	142.17
BackUPS Pro 280i PnP	82	96.35
BackUPS Pro 420i PnP	115	135.12
BackUPS Pro 650i PnP	155	182.12
BackUPS Pro 1000i	249	292.57
BackUPS Pro 1400i	319	374.82
SmartUPS 450VA & PowerChute	149	175.07
SmartUPS 700VA & PowerChute	235	276.12
SmartUPS 1000VA & PowerChute	259	304.32
SmartUPS 1400VA & PowerChute	375	440.62
SmartUPS 2200VA & PowerChute	539	633.32
SmartUPS 3000VA & PowerChute	899	1056.32
LIEBERT		
Powersure 250VA	85	99.87
Powersure 400VA	115	135.12
Powersure 600VA	159	186.82
Powersure 700VA	209	245.57
Powersure 1000VA	289	339.57
Powersure 1400VA	439	515.82

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Excellent Quality • Superior Service • Unbeatable Value

- ✔ Serving you since 1987
- ✔ Over £50m annual turnover
- ✔ Over 200,000 satisfied customers
- ✔ Highly trained specialist staff
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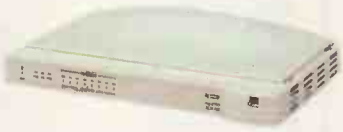
3Com



OfficeConnect Ethernet Hubs
TP4, TP4Combo, 8/TPO, 8/TPC, TP16C

Ethernet hubs for small businesses or offices

No office should be an island. With 3Coms™ family of products, you can enjoy the same seamless access to information and computer resources provided to larger organisations, but at a price and convenience designed for smaller offices and workgroups. OfficeConnect hubs provide a central point of connection that makes resource sharing possible. OfficeConnect hubs offer a range of features and costs to meet the needs of any small but growing organisation, from an economical basic unit to a full-function model with network monitoring and management capabilities.

3C16704	Hub TP4	£42	(£49.35 inc VAT)
3C16703	Hub TP4 Combo	£62	(£72.85 inc VAT)
3C16700	Hub 8/TPO	£69	(£81.07 inc VAT)
3C16701	Hub 8/TPC	£78	(£91.65 inc VAT)
3C16702	Hub TP16C	£147	(£172.72 inc VAT)

OfficeConnect Network Starter Kit £Call (£Call inc VAT)

The most reliable way to build your network

3Com™ understands the importance of a reliable, compatible, and affordable network. Sharing information and peripherals is what makes your office more productive and your business more successful. The OfficeConnect Networking Kit was designed with these needs in mind. Whether you are networking your office for the first time or expanding your existing network, the OfficeConnect Networking Kit is the right connection for you.

- For 10BASE-T Ethernet networks
- 3 EtherLink® III ISA Network Interface Cards
- 1 OfficeConnect 8-Port Ethernet Hub
- Connecting Cabling & Instructions

Network Interface Cards

Ever since local area networking began, 3Com™ network interface cards (NIC's) have set the standard for excellence. Broad compatibility, reliability, superior performance, and value make 3Com™ NIC's the most popular LAN Network Interface Cards in the world.

EtherLink® III			
3C509B-TP	16-bit ISA 10BASE-T	£69	(£81.07 inc VAT)
3C509B-COMBO	16-bit ISA Combo	£79	(£92.82 inc VAT)
EtherLink® XL			
3C900-TP	10BASE-T PCI	£65	(£76.37 inc VAT)
3C900-COMBO	BNC & 10BASE-T PCI	£79	(£92.82 inc VAT)
EtherLink® III LAN PC Card			
3C589D-TP	LAN PC Card 10BASE-T	£79	(£92.82 inc VAT)
3C589D-COMBO	LAN PC Card BNC and 10BASE-T	£105	(£123.37 inc VAT)
3C563D-TP	LAN+33.6 Modem PC Card 10BASE-T	£179	(£210.32 inc VAT)
3C563D-COMBO	LAN+33.6 Modem PC Card BNC & 10BASE-T	£199	(£233.82 inc VAT)
Fast EtherLink® XL			
3C905-TX	10/100BASE-TX PCI	£65	(£76.37 inc VAT)
3C575-TX	10/100BASE-TX PC Card CardBus	£95	(£111.62 inc VAT)
Fast EtherLink®			
3C574-TX	10/100BASE-TX PC Card	£89	(£104.57 inc VAT)

Please call for multi-pack pricing.

PalmPilot

The connected organiser

It Fits

In your shirt, in your hand, and in your schedule. The PalmPilot connected organiser is replete with personal information management applications. It's everything you need to get organised and stay connected.

Download the PalmPilot White Paper *now* from http://www.usr.com/palm/503.html to find out more about this award winning product. The white paper is in a pdf format, you will need Adobe Acrobat Reader to view the document. Download Adobe Acrobat Reader *now* from http://adobe.com

3Com

Features

- Shirt pocket size
- One-touch synchronisation
- Fast, compact user interface
- Modular design
- High value
- Auto back-up with HotSync button
- 3rd Party applications and support

Benefits

- Lets the user carry personal data anywhere
- Makes PalmPilot a mobile extension of the desktop
- Provides instant data access, ease of use and long battery life
- Lets the user upgrade software, memory or add peripherals
- Gives the user a complete solution at an affordable price

Specifications

PalmPilot Personal
- Backlight display
- Instantly syncs data with your PC
- Data book, address book, memo pad, to do list, calculator
- Easy expense tracking
- Stores thousands of entries
- User upgradeable to Professional edition

PalmPilot Professional
All PalmPilot Personal features plus:
- *E-mail functionality
- Internet ready (TCP/IP support)
- Twice the memory

Prices

Personal £159 (£186.82)

Professional £228 (£267.90)

Prices shown in brackets are inclusive of VAT

MEMORY

30pin parity SIMM

1Mb x 9 (1MB) 3chip	£3	(3.52)
4Mb x 9 (4MB) 3chip	£7	(8.22)

72pin FPM or EDO SIMM

1Mb x 32 (4MB) 60ns	£6	(7.05)
2Mb x 32 (8MB) 60ns	£10	(11.75)
4Mb x 32 (16MB) 60ns	£22	(25.85)
8Mb x 32 (32MB) 60ns	£44	(51.70)
16Mb x 32 (64MB) 60ns	£158	(185.65)
32Mb x 32 (128MB) 60ns	£555	(652.12)

72pin FPM parity SIMM

1Mb x 36 (4MB) 60ns	£10	(11.75)
2Mb x 36 (8MB) 60ns	£18	(21.15)
4Mb x 36 (16MB) 60ns	£28	(32.90)
8Mb x 36 (32MB) 60ns	£52	(61.10)
16Mb x 36 (64MB) 60ns	£176	(206.80)
32Mb x 36 (128MB) 60ns	£Call	(Call)

168pin FPM or EDO DIMM 5v

1Mb x 64 (8MB) 60ns	£14	(16.45)
2Mb x 64 (16MB) 60ns	£22	(25.85)
4Mb x 64 (32MB) 60ns	£49	(57.57)

168pin FPM or EDO continued

8Mb x 64 (64MB) 60ns	£82	(96.35)
16Mb x 64 (128MB) 60ns	£Call	(Call)

168pin EDO DIMM 3.3v

1Mb x 64 (8MB) 60ns	£22	(25.85)
2Mb x 64 (16MB) 60ns	£29	(34.07)
4Mb x 64 (32MB) 60ns	£44	(51.70)
8Mb x 64 (64MB) 60ns	£119	(139.82)

168pin SDRAM DIMM 3.3v

2Mb x 64 (16MB) 10ns	£22	(25.85)
4Mb x 64 (32MB) 10ns	£42	(49.35)
8Mb x 64 (64MB) 10ns	£92	(108.10)
16Mb x 64 (128MB) 10ns	£199	(233.82)

72pin SODIMM EDO 3.3v

8MB 60ns	£29	(34.07)
16MB 60ns	£64	(75.20)
32MB 60ns	£169	(198.57)

144pin SODIMM EDO 3.3v

8MB 60ns	£20	(23.50)
16MB 60ns	£29	(34.07)
32MB 60ns	£84	(98.70)

**** The price of memory is very volatile, please call to confirm prices ****

General Sales Hotline OPEN 8am - 7pm Mon to Thu . 8am - 5pm Fri . 10am - 3pm Sat

freephone 0800 558866

PRICE MATCHING
We can usually match competitors prices, please call for details.

Bolton 01942 794000 Edinburgh 0131 556 4114 London 0171 582 4777 Woking 01483 797474

NETWORK CARDS

	ex VAT	inc VAT
3COM		
3C-509TPO RJ45 ISA bare card	39	45.82
3C-509B Combo ISA bare card	49	57.57
3C-900TPO RJ45 PCI bare card	39	45.82
3C-900 Combo PCI bare card	59	69.32
3C-905TX 10/100 PCI bare card	45	52.87
3C-509TPO RJ45 ISA	65	76.37
3C-509B Combo ISA	79	92.85
3C-900TPO RJ45 PCI	65	76.37
3C-900 Combo PCI	79	92.85
3C-905 10/100 PCI	59	69.32
3C-515TX 10/100 ISA	95	111.62
3C-575TX 10/100 CardBus PCMCIA	95	111.62
3C-589TP RJ45 PCMCIA	79	92.82
3C-589 Combo PCMCIA	105	123.37
3C-574 10/100 PCMCIA	89	104.57
3C-563 RJ45 & 33k6 Modem PCMCIA	179	210.32
3C-563 Combo & 33k6 Modem PCMCIA	199	232.82
DABS		
Combo ISA PnP	12	14.10
Combo PCI	15	17.62
10/100 PCI	26	30.55
Combo PCMCIA	45	52.87
DLINK		
DE-220PCT Combo ISA PnP	22	25.85
DE-530CT Combo PCI	25	29.37
DFE-500TX 100MHz PCI	29	34.07
DE-660CT Combo PCMCIA	42	49.35
DE-620CT Combo Parallel	72	84.60
GENIUS		
16bit Combo PnP	20	23.50
32bit Combo PCI	25	29.37
10/100 PCI	35	41.12
Pocket Parallel	45	52.87
Combo PCMCIA	55	64.62
GREYCELL		
GCS-2210 RJ45 PCMCIA	89	104.57
GCS-2220 Combo PCMCIA	105	123.75
INTEL		
Ether Express Pro 10+ Combo	65	76.37
Ether Express Pro 10+ Combo PCI	69	81.07
Ether Express Pro 100 ISA	109	128.07
Ether Express Pro 100+ PCI	49	57.57
Ether Express Pro 100 Mobile PCMCIA	89	104.57
Ether Express Pro 100 Mobile CardBus	99	116.32
PSION DACOM		
GoldCard Combo PCMCIA	85	99.87
GoldCard Combo & V34 Modem PCMCIA	159	186.82
TDK		
DF-3410 RJ45 Ethernet & 33k6 PCMCIA	199	233.82
DF-3412 Combo Ethernet & 33k6 PCMCIA	209	245.57
SMC		
1660T EZ Card 10 RJ45 ISA	19	22.32
1660BT EZ Card 10 Combo ISA	22	25.85
1208T EZ Card 10 RJ45 PCI	19	22.32
1208BT EZ Card 10 Combo ISA	22	25.85
8416BT EtherEZ Combo ISA PnP	39	45.82
8432BT EtherPower Combo PCI	49	57.57
9432BT EtherPower II 10/100 PCI	45	52.87
8020T EtherEZ RJ45 PCMCIA	79	92.82
8020BT EtherEZ Combo PCMCIA	105	123.37
XIRCOM		
RJ45 PCMCIA (10/100 upgradeable)	85	99.87
Combo PCMCIA (10/100 upgradeable)	105	123.37
10/100 PCMCIA	95	111.62
10/100 PCMCIA CardBus	99	116.32
RJ45 Ethernet & 33k6 Modem PCMCIA	169	198.57
Combo Ethernet & 33k6 Modem PCMCIA	195	229.12
RJ45 10/100 & 56K Modem PCMCIA	215	252.62
10/100 Upgrade Kit	59	69.32

NETWORK ROUTERS

	ex VAT	inc VAT
3COM		
Officeconnect		
3C410002 Remote 511S Data	349	410.07
3C410007 Remote 521S Data/Voice	449	527.57
3C410010 Remote 530S Data/Voice/WAN	689	809.57
3C410011 Gateway 535	899	1056.32
AccessBuilder		
3C400000 Remote Office 600 1port	1499	1761.32
3C400010 Remote Office 600 2port	1995	2344.12
3C400000 Remote Office 700	1699	1996.32
CISCO		
CPA761	339	398.32
CPA2501	1319	1549.82
CPA2503	1749	2055.07
CPA2520	1949	2290.07
DLINK		
DI-1132P-11 IP Data	279	327.82
DI-1133PX-11 IP/IPX Data	399	468.82
DI-1133PX-11/V IP/IPX Data/Voice	459	539.32
INTEL		
Internet Station	245	287.87

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Fastest total system performance for networked clients and servers.

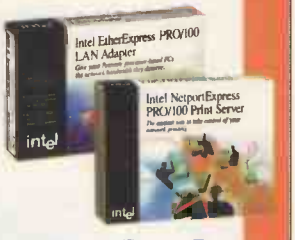
Ether Express Pro 100+ PCI	£49 (£57.57 inc VAT)
Ether Express Pro 100+ PCI 5 pack	£235 (£276.12 inc VAT)
Ether Express Pro 100 Mobile PCMCIA	£89 (£104.57 inc VAT)
Ether Express Pro 100 Mobile CardBus	£99 (£116.32 inc VAT)

NetportExpress™ Pro/100
The only print server you will ever need at 10 or 100Mbps.

Netport Express Pro/100 Single port	£189 (£222.07 inc VAT)
Netport Express Pro/100 3 port	£229 (£269.07 inc VAT)

In Business™
Designed specifically for small networks.

InBusiness 5-Port Hub	£39 (£45.82 inc VAT)
InBusiness 8-Port Hub	£55 (£64.62 inc VAT)
InBusiness 4-Port Fast Hub	£119 (£139.82 inc VAT)
InBusiness 8-Port Fast Hub	£219 (£257.32 inc VAT)
InBusiness 8-Port Fast Hub Plus	£429 (£504.07 inc VAT)
InBusiness 8-Port Switch	£309 (£363.07 inc VAT)
InBusiness 8-Port Switch Plus	£449 (£527.57 inc VAT)
InBusiness Internet Station	£245 (£287.87 inc VAT)



intel
www.intel.com/network

Xircom
The Mobile Networking Experts

100
Only Xircom's Ethernet PC Card takes you from 10 to 100 Mbps for 0 extra.

CEM56-100BTX £215 (£252.62)
The ultimate combo card without any compromises! A 10/100 Ethernet adaptor with all the features of the CE3-100BTX card, and a 33k6 modem with K56 Flex and onboard DAA shipped as standard. AND ...the card is also GSM upgradeable for most GSM phones.

CE3-100BTX £95 (£111.62)
Do you connect to both 10Mbit and 100Mbit networks? This gives both standards AUTOSENSING at the same price as the 10Mbit card!

CM56 £139 (£163.32)
All the modem features of the new combo card above, K56 Flex compression NOW - this is flash memory so if X2 becomes the ITU standard you will be cross-graded free of charge, also the card has spare flash memory to accommodate a GSM upgrade

NETWORK HUBS

	ex VAT	inc VAT
3COM		
Officeconnect		
3C16700 8TPO 8port	58	68.15
3C16701 8TPC 8port	69	81.07
3C16702 16TPC 16port	129	151.57
3C16703 TP4 Combo 4port	58	68.15
3C16704 TP4 4port	39	45.82
3C16710 8TPM 8port	95	111.62
3C16721 TP1200 12port 100TX	329	386.57
3C16722 TP800 8port 100TX	229	269.07
3C16723 TP400 4port 100TX	129	151.57
SuperStack II		
3C16405 Port Switch 12port	215	252.62
3C16406 Port Switch 24port	379	445.32
3C16440 Entry Hub 12port	139	163.32
3C16441 Entry Hub 24port	219	257.32
3C16460 Switch 320 12port	599	703.82
3C16590 Dual Speed 12port	739	868.32
3C16591 Dual Speed 24port	1169	1373.57
3C16670A 12port	275	323.12
3C16671A 24port	475	558.12
3C250TX 12port 100TX	719	844.82
DABS		
5port	30	35.25
8port	45	52.87
16port	85	99.87
8port 100TX	179	210.32
DLINK		
DE805TP 5port	29	34.07
DE905 2 user starter kit	59	69.32
DE809TC 8port & BNC	39	45.82
DE809TP 8port	49	57.57
DE812TP+ 12port	75	88.12
DE816TP 16port	89	104.57
DE824TP 24port	129	151.57
DE1812 12port	175	205.62
DE1824 24port	175	205.62
DFE808TX 8port 100TX	219	257.32
DFE812TX 12port 100TX	415	487.62
DFE816 16port 100TX	399	468.82
GENIUS		
8port & BNC	49	57.57
16port & BNC	89	104.57
8port 100TX	159	186.82
HEWLETT PACKARD		
AdvanceStack Hub 8U 8port	129	151.57
AdvanceStack Hub 16U 16 port	269	316.07
AdvanceStack Hub 24T 24port	569	668.57
AdvanceStack 100T Hub 8TXE 8port	389	457.07
INTEL		
Express 8port	275	323.12
Express 10/100 12port	649	762.57
Express 10/100 12port Workgroup	979	1150.32
Express 10/100 24port	999	1173.82
INTEL INBUSINESS		
SH10T5 5port	39	45.82
SH10T8B 8port & BNC	55	64.62
SH100TX4 4port 100TX	119	139.82
SH100TX8 8port 100TX	219	257.32
SH100TX8 8port 100TX Plus	429	504.07

NETWORK SWITCHES

	ex VAT	inc VAT
3COM		
Officeconnect		
3C16730 140 4x10MB, 1X100MB	449	527.57
3C16731 140M 4x10MB, 1X100MB	599	703.82
SuperStack II		
3C16901A 1000 12x10MB	979	1150.32
3C16900A 1000 24x10MB	1379	1620.32
3C16942A 3000TX 12x10/100MB	1419	1667.32
3C16951A 1100 12x10MB, 2x10/100MB	649	762.57
3C16950A 1100 24x10MB, 2x10/100MB	849	997.57
3C16980A 3300 24x10/100MB, 2x10/100	1799	2113.82
DLINK		
DES802 1x10MB, 1x10/100MB	149	175.07
DES805 4x10MB, 1x10/100MB	245	287.87
DES810 8x10MB, 2x10/100MB	279	327.82
DES1004 N-Way 4x10/100MB	295	346.62
DES1008 N-Way 8x10/100MB	495	581.62
DES2208 6x10MB, 2x10/100MB	845	992.87
DES3208 8x10/100MB	1035	1216.12
INTEL		
Express 10 Switch	1199	1408.82
Express 10/100 Switch 8port	1350	1586.25
Express 10/100 Switch 24port	1895	2226.62
INTEL INBUSINESS		
SH10T8 8port	309	363.07
SH110TX8 8x10MB, 2x10/100MB	449	527.57

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The Medalist family of drives

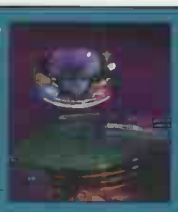
Seagate continues to lead the market with high-capacity, high-performance ATA disc drives for midrange and high-end desktop PCs.

Medalist ST32122A	2.1Gb	EIDE/Ultra ATA3	12ms	4500	81	(£95.17)
Medalist ST32520A	2.5Gb	EIDE/Ultra ATA3	12ms	5400	89	(£104.57)
Medalist ST32532A	2.5Gb	EIDE/Ultra ATA3	12ms	4500	85	(£99.87)
Medalist ST33232A	3.2Gb	EIDE/Ultra ATA3	12ms	4500	99	(£116.32)
Medalist ST34342A	4.3Gb	EIDE/Ultra ATA3	12ms	4500	112	(£131.60)
Medalist ST34321A	4.3Gb	EIDE/Ultra ATA3	10.5/11.5ms	5400	Call	(£Call)
Medalist Pro ST36451A	6.4Gb	EIDE/Ultra ATA3	9.5ms	5400	147	(£172.72)
ST36530A	6.5Gb	EIDE/Ultra ATA3	9.5/10.5ms	7200	Call	(£Call)
ST38641A	8.0Gb	EIDE/Ultra ATA3	10.5/11.5ms	5400	Call	(£Call)
ST39140A	9.1Gb	EIDE/Ultra ATA3	9.5/10.5ms	7200	Call	(£Call)

Prices shown in brackets are inclusive of VAT

The Medalist family of drives are backed by a 3 year limited warranty

Maxtor DiamondMax™



High performance Ultra DMA

Model	Capacity	Interface	Access Time	Speed	Exc Vat	Inc Vat
82160D2	2.1Gb	EIDE/Ultra DMA	10ms	5200	£82	(£99.35)
84320D4	4.3Gb	EIDE/Ultra DMA	10ms	5200	£123	(£144.52)
86480D6	6.4Gb	EIDE/Ultra DMA	10ms	5200	£149	(£175.07)
88400D8	8.4GB	EIDE/Ultra DMA	10ms	5200	£209	(£245.57)

No Quibble 3 Year Warranty - Ask for details

HARD DISCS

SCSI HARD DISCS

Model	Capacity	Interface	Access Time	Speed	Exc Vat	Inc Vat
IBM						
Ultrastar 2ES	4.3Gb	UltraSCSI	8.5ms	5400	163	191.52
Ultrastar 2ES	4.3Gb	UltraWideSCSI	8.5ms	5400	168	197.40
Ultrastar 9ES 1"	4.5Gb	UltraSCSI	7.5ms	7200	279	327.82
Ultrastar 9ES 1"	4.5Gb	UltraWideSCSI	7.5ms	7200	286	336.05
Ultrastar 9ES 1"	4.5Gb	UltraWide SCSI SCA	7.5ms	7200	306	359.55
Ultrastar 9ES 1"	9.1Gb	UltraSCSI	7.5ms	7200	447	525.22
Ultrastar 9ES 1"	9.1Gb	UltraWide SCSI	7.5ms	7200	453	532.27
Ultrastar 9ES 1"	9.1Gb	UltraWide SCSI SCA	7.5ms	7200	482	566.35
Ultrastar 9LP 1"	9.0Gb	UltraSCSI	6.5ms	7200	632	742.60
Ultrastar 9LP 1"	9.0Gb	UltraWideSCSI	6.5ms	7200	632	742.60
Ultrastar 9LP 1"	9.0Gb	UltraWideSCSI SCA	6.5ms	7200	653	767.27
Ultrastar 9ZX 1.6"	9.0Gb	UltraWideSCSI	6.3ms	10020	653	767.27
Ultrastar 9ZX 1.6"	9.0Gb	UltraWideSCSI SCA	6.3ms	10020	691	811.92
Ultrastar 18XP 1.6"	18Gb	UltraSCSI	7.5ms	7200	1127	1324.22
Ultrastar 18XP 1.6"	18Gb	UltraWideSCSI	7.5ms	7200	1133	1331.27
Ultrastar 18XP 1.6"	18Gb	UltraWide SCSI SCA	7.5ms	7200	1151	1352.42
QUANTUM						
Fireball SE 2100S	2.1Gb	UltraSCSI	9.5ms	5400	125	146.87
Fireball SE 3200S	3.2Gb	UltraSCSI	9.5ms	5400	148	173.90
Fireball SE 4300S	4.3Gb	UltraSCSI	9.5ms	5400	168	197.40
Fireball SE 6400S	6.4Gb	UltraSCSI	9.5ms	5400	213	250.27
Fireball SE 8400S	8.4Gb	UltraSCSI	9.5ms	5400	278	326.65
Atlas II 34550S	4.5Gb	UltraSCSI	8ms	7200	271	318.42
Atlas II 34550SW	4.5Gb	UltraWideSCSI	8ms	7200	271	318.42
Atlas II 39100S	9.1Gb	UltraSCSI	8ms	7200	457	536.97
Atlas II 39100SW	9.1Gb	UltraWideSCSI	8ms	7200	457	536.97
Viking	4.5Gb	UltraSCSI	8ms	7200	215	252.62
Viking	4.5Gb	UltraWideSCSI	8ms	7200	215	252.62
SEAGATE						
Barracuda ST32272N	2.2Gb	UltraSCSI	9ms	7200	217	254.97
Barracuda ST32272W	2.2Gb	UltraWideSCSI	9ms	7200	238	279.65
Hawk ST34555N	4.5Gb	UltraSCSI	9ms	7200	189	222.07
Hawk ST34555W	4.5Gb	UltraSCSIWide	9ms	7200	203	238.52
Barracuda ST34572N	4.5Gb	UltraSCSI	9ms	7200	305	358.37
Barracuda ST34572W	4.5Gb	UltraWideSCSI	9ms	7200	321	377.17
Barracuda ST19171N	9.0Gb	UltraSCSI	9ms	7200	474	556.95
Barracuda ST19171W	9.0Gb	UltraWideSCSI	9ms	7200	477	560.47
Barracuda ST19171WC	9.0Gb	UltraWideSCSI SCA	9ms	7200	493	579.27
Cheetah ST34501N	4.5Gb	UltraSCSI	8ms	10000	355	417.12
Cheetah ST34501W	4.5Gb	UltraWideSCSI	8ms	10000	377	442.97
Cheetah ST34501WC	4.5Gb	UltraWideSCSI SCA	8ms	10000	377	442.97
Cheetah ST19101N	9.0Gb	UltraSCSI	8ms	10000	568	667.40
Cheetah ST19101W	9.0Gb	UltraWideSCSI	8ms	10000	568	667.40
Cheetah ST19101WC	9.0Gb	UltraWideSCSI SCA	8ms	10000	600	705.00
Barracuda ST319173LC	9.1Gb	LVD SCA	7ms	7200	592	695.60
Barracuda ST319173LW	9.1Gb	LVD	7ms	7200	592	695.60
WESTERN DIGITAL						
Enterprise E2170	2.1Gb	UltraSCSI	8ms	7200	212	249.10
Enterprise E2170	2.1Gb	UltraWideSCSI	8ms	7200	215	252.62
Enterprise E4360	4.3Gb	UltraSCSI	8ms	7200	302	354.85
Enterprise E4360	4.3Gb	UltraWideSCSI	8ms	7200	319	374.82
Enterprise E9100	9.1Gb	UltraSCSI	8ms	7200	465	546.37
Enterprise E9100	9.1Gb	UltraWideSCSI	8ms	7200	489	574.57

EIDE HARD DISCS

Model	Capacity	Interface	Access Time	Speed	Exc Vat	Inc Vat
IBM						
09J0308	6.4Gb	EIDE/Ultra DMA/33	9.5ms	5400	151	177.42
00K0394	8.4Gb	EIDE/Ultra DMA/33	9.5ms	5400	198	232.65
MAXTOR						
82160D2 Diamond Max	2.1Gb	EIDE/Ultra DMA/33	10ms	5200	82	96.35
84320D4 Diamond Max	4.3Gb	EIDE/Ultra DMA/33	10ms	5200	123	144.52
86480D6 Diamond Max	6.4Gb	EIDE/Ultra DMA/33	10ms	5200	149	175.07
88400D8 Diamond Max	8.4GB	EIDE/Ultra DMA/33	10ms	5200	209	245.57
QUANTUM						
Fireball SE 2100AT	2.1Gb	EIDE/Ultra DMA ATA	9.5ms	5400	80	94.00
Fireball SE 3200AT	3.2Gb	EIDE/Ultra DMA ATA	9.5ms	5400	111	130.42
Fireball SE 4300AT	4.3Gb	EIDE/Ultra DMA ATA	9.5ms	5400	116	136.30
Fireball SE 6400AT	6.4Gb	EIDE/Ultra DMA ATA	9.5ms	5400	155	182.12
Fireball SE 8400AT	8.4Gb	EIDE/Ultra DMA ATA	9.5ms	5400	202	237.35
Bigfoot TX	4.0Gb	EIDE/Ultra DMA 33	12ms	4000	110	129.25
Bigfoot TX	6.0Gb	EIDE/Ultra DMA 33	12ms	4000	151	177.42
Bigfoot TX	8.0Gb	EIDE/Ultra DMA 33	12ms	4000	155	182.12
Bigfoot TX	12.0Gb	EIDE/Ultra DMA 33	12ms	4000	220	258.50
SEAGATE						
Medalist ST31722A	1.7Gb	EIDE/Ultra ATA3 DMA	12ms	4500	75	88.12
Medalist ST32122A	2.1Gb	EIDE/Ultra ATA3 DMA	12ms	4500	81	95.17
Medalist ST32520A	2.5Gb	EIDE/Ultra ATA3 DMA	12ms	5400	89	104.57
Medalist ST32532A	2.5Gb	EIDE/Ultra ATA3 DMA	12ms	4500	85	99.87
Medalist ST33232A	3.2Gb	EIDE/Ultra ATA3 DMA	12ms	4500	99	116.32
Medalist ST34342A	4.3Gb	EIDE/Ultra ATA3 DMA	12ms	4500	112	131.60
Medalist ST34321A	4.3Gb	EIDE/Ultra ATA3 DMA	10.5ms	5400	Call	Call
Medalist Pro ST36451A	6.4Gb	EIDE/Ultra ATA3 DMA	9.5ms	5400	147	172.72
ST36530A	6.5Gb	EIDE/Ultra ATA3 DMA	9.5ms	7200	Call	Call
ST38641A	8.0Gb	EIDE/Ultra ATA3 DMA	10.5ms	5400	Call	Call
ST39140A	9.1Gb	EIDE/Ultra ATA3 DMA	9.5ms	7200	Call	Call
WESTERN DIGITAL						
AC22000-UD	2.0Gb	EIDE/Ultra DMA/33	11ms	5400	92	108.10
AC22500-UD	2.5Gb	EIDE/Ultra DMA/33	11ms	5400	92	108.10
AC33200-UD	3.2Gb	EIDE/Ultra DMA/33	11ms	5400	103	121.02
AC34300-UD	4.3Gb	EIDE/Ultra DMA/33	11ms	5400	121	142.17
AC35000-UD	5.1Gb	EIDE/Ultra DMA/33	11ms	5400	138	162.15
AC36400-UD	6.4Gb	EIDE/Ultra DMA/33	11ms	5400	163	191.52

2.5" EIDE HARD DISCS

Model	Capacity	Interface	Access Time	Speed	Exc Vat	Inc Vat
HITACHI						
DK225A-14 12.7mm	1.4Gb	EIDE	12ms	4500	108	126.90
DK226A-21U 12.7mm	2.1Gb	EIDE/Ultra DMA/33	12ms	4500	115	135.12
DK226A-32U 12.7mm	3.2Gb	EIDE/Ultra DMA/33	12ms	4500	172	202.10
DK227A-41U 12.7mm	4.1Gb	EIDE/Ultra DMA/33	12ms	4500	280	329.00
IBM						
Travelstar VP 9.5mm	1.62Gb	EIDE	13ms	4000	108	126.90
Travelstar 4LP 12.5mm	2.16Gb	EIDE	13ms	4000	116	136.30
Travelstar 3XP 17mm	3.08Gb	EIDE	12ms	4900	192	225.60
Travelstar 4GT 12.5mm	4.0Gb	EIDE/Ultra DMA/33	13ms	4000	284	333.70
Travelstar 5GS 17mm	5.1Gb	EIDE/Ultra DMA/33	12ms	4900	355	417.12
TOSHIBA						
MK2103 LP 12.7mm	2.1Gb	EIDE	13ms	4200	123	144.52
MK3205 LP 12.7mm	3.2Gb	EIDE	13ms	4200	189	222.07
MK4006 LP 12.7mm	4.0Gb	EIDE	13ms	4200	263	309.02

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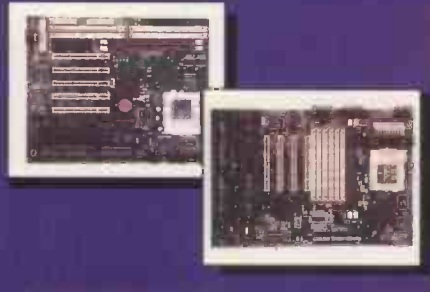

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- Sound Blaster™ compatible 16-bit stereo
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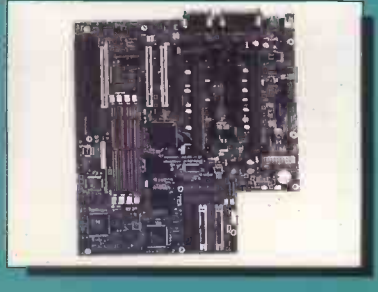

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M1-SLT Intel 440LX Chipset

- Supports Dual Intel PII 233-333MHz
- Intel 440LX chipset
- 1 AGP slot
- 4x 3.3v Unbuffered DIMM
- 1Gb maximum memory
- Supports Ultra DMA 33Mb
- Sound Blaster™ compatible 16-bit stereo
- Supports USB
- 4 PCI slots, 2 ISA slots
- ACPI, DMI BIOS
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Pentium MMX 233MHz	127	149.22
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- Supports Pentium®II 233 – 300 MHz processor cartridge

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- Supports Ultra DMA/33 IDE protocol
- Supports Advanced Configuration and Power Management Interface (ACPI)
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Memory
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- ECC support

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Chipset
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L2 Cache Memory
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- Award Plug and Play BIOS Supports APM, DMI, and ACPI
- Built-in SOFT MENU™ sets all CPU parameters

Multi I/O Functions
- Two floppy disk drive connectors support up 2.88MB
- Two IDE channels(PIO mode 0-4 and Bus Master)
- One Standard/EPP/ECP parallel port and two 16650 compatible serial ports
- USB connector for two optional USB port

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PRODUCT		ex VAT	inc VAT
CDR-4120Pro	12x4w Internal with SCSI card	£275	£323.12
CDR-4120ELPro	12x4w Internal SCSI	£245	£287.87
CDE-4120ELPro	12x4w External SCSI	£275	£323.12
CDRW-2260	6x2w2rw Internal with SCSI card	£245	£287.87
CDRW-2260EL	6x2w2rw Internal SCSI	£229	£269.07
CDRW-2260EL	6x2w2rw Internal IDE	£Call	£Call
CDRW-4260	6x4w2rw Internal SCSI	£369	£433.57

PRODUCT		ex VAT	inc VAT
CDRW-4260	6x4w2rw Internal IDE	£Call	£Call
ACC002	PCI Bus Mastering SCSI Card	£65	£76.37
ACC004	Just Audio Recording Studio	£49	£57.57
PRESSIT	CD Labeller	£20	£23.50
CD-R disc	74 Minute/650MB	£1.99	£2.33
TXRW0074	CD-Rewritable media	£16	£18.80

CD. DVD. CD-R. CD-RW

CD-ROM & DVD-ROM DRIVES

AMACOM	Interface	Speed	Int/Ext	Exc Vat	Inc Vat
EZCD x4	Parallel	Quad	Ext	119	139.82
EZCD x8	Parallel	Eight	Ext	135	158.62
EZCD x16	Parallel	Sixteen	Ext	149	175.07
EZCD Sound x4	Parallel	Quad	Ext	179	210.32
EZCD Sound x8	Parallel	Eight	Ext	195	229.12
EZCD Sound x16	Parallel	Sixteen	Ext	215	252.62
EZCD Card x4	PCMCIA	Quad	Ext	129	151.57
EZCD Card x8	PCMCIA	Eight	Ext	145	170.37
EZCD Card x16	PCMCIA	Sixteen	Ext	165	193.87
EZCD Plus x8	PCMCIA	Eight	Ext	169	198.57
EZCD Plus x20	PCMCIA	Twenty	Ext	199	233.82
COMPUTER CONNECTIONS					
Connect 16	Parallel/IDE	Sixteen	Ext	129	151.57
Connect 24	Parallel/IDE	Twenty Four	Ext	149	175.07
Connect 16	Parallel/SCSI	Sixteen	Ext	149	175.07
Connect 24	Parallel/SCSI	Twenty Four	Ext	169	198.57
CREATIVE LABS					
CR-585B	IDE	Twenty Four	Int	39	45.82
BlasterCD 24x	IDE	Twenty Four	Int	59	69.32
Performance Gold DVD	IDE		Int	155	182.12
PC-DVD Encore DXR2	IDE		Int	199	233.82
Discovery 64 Kit	IDE	Twenty Four	Int	99	116.32
DABS					
24x Speed IDE	IDE	Twenty Four	Int	37	43.47
32x Speed IDE	IDE	Thirty Two	Int	45	52.87
MITSUMI					
FX-240	IDE	Twenty Four	Int	38	44.65
FX-320	IDE	Thirty Two	Int	46	54.05
PANASONIC					
CR-587	IDE	Twenty Four	Int	38	44.65
CR-586	IDE	Thirty Two	Int	52	61.10
CR-508	SCSI	Twenty Four	Int	77	90.47
PIONEER					
DRA-24x	IDE	Twenty Four	Int	38	44.65
DRA-32x	IDE	Thirty Two	Int	51	59.92
DRU-24x	SCSI	Twenty Four	Int	79	92.82
PLEXTOR					
PX-32TS UltraPlex Tray Loading	SCSI	Thirty Two	Int	115	135.12
PX-32TS UltraPlex Tray Loading	SCSI	Thirty Two	Ext	112	131.60
SAMSUNG					
SCR-2340	IDE	Twenty Four	Int	45	52.87
SCR-3230	IDE	Thirty Two	Int	52	61.10

CD-ROM & DVD-ROM DRIVES continued

TEAC	Interface	Speed	Int/Ext	Exc Vat	Inc Vat
CD-524E	IDE	Twenty Four	Int	40	47.00
CD-532E	IDE	Thirty Two	Int	56	65.80
CD-532S	SCSI	Thirty Two	Int	64	75.20
TOSHIBA					
XM6102B	IDE	Twenty Four	Int	41	48.17
XM6202B	IDE	Thirty Two	Int	50	58.75
XM6201B	SCSI	Thirty Two	Int	61	71.67

CD RECORDABLE & CD REWRITEABLE

Model	Interface	Read/Write Speed	Int/Ext	Bare Drive	inc vat	Software only	inc vat	S/W & SCSI card	inc vat
COMPUTER CONNECTIONS									
Satellite CD-R	SCSI	6x/2x	Ext	-	-	279	327.82	-	
Connect CD-R	Parallel	6x/2x	Ext	-	-	299	351.32	-	
Connect CD-R	Parallel	8x/4x	Ext	-	-	329	386.57	-	
Satellite CD-RW	SCSI	6x/2x/2x	Ext	-	-	319	374.82	-	
Connect CD-RW	Parallel	6x/2x/2x	Ext	-	-	319	374.82	-	
HEWLETT PACKARD									
SureStore 7200i CD-RW	IDE	6x/2x/2x	Int	-	-	234	274.95	-	
SureStore 7200e CD-RW	Parallel	6x/2x/2x	Ext	-	-	288	338.40	-	
MITSUMI									
CR2800TE	IDE	8x/2x	Int	-	-	169	198.57	-	
NOMAI									
CD-RW	IDE	6x/2x/2x	Int	225	264.37	249	292.57	-	
CD-RW	SCSI	6x/2x/2x	Int	259	304.32	259	304.32	299	351.32
CD-RW	SCSI	6x/2x/2x	Ext	279	327.82	285	334.87	325	381.87
CD-RW	Parallel	6x/2x/2x	Ext	-	-	325	381.87	-	
PHILIPS									
CDD-3610 CD-RW	IDE	6x/2x/2x	Int	235	276.12	-	-	-	
CDD-3600 CD-RW	SCSI	6x/2x/2x	Int	259	304.32	289	339.57	323	379.52
RICOH									
MP-6200A CD-RW	IDE	6x/2x/2x	Int	-	-	245	287.87	319	374.82
MP-6200S CD-RW	SCSI	6x/2x/2x	Int	225	264.37	-	-	285	334.87
MP-6200S CD-RW	SCSI	6x/2x/2x	Ext	269	316.07	-	-	319	374.82
TRAXDATA									
CDRW 2260	SCSI	6x/2x/2x	Int	-	-	229	269.07	249	292.57
CDRW 4260	SCSI	6x/2x/2x	Int	-	-	369	433.57	389	457.07
CDRW 4120Pro	SCSI	12x/4x	Int	-	-	245	287.87	275	323.12
YAMAHA									
CDR-401T	EIDE	6x/4x	Int	-	-	255	299.62	-	
CRW-4001 CD-RW	EIDE	6x/4x	Int	-	-	309	363.07	-	
CRW-2260 CD-RW	SCSI	6x/2x/2x	Int	205	240.87	215	252.62	245	287.87
CRW-2260TX CD-RW	SCSI	6x/2x/2x	Ext	229	269.07	239	280.82	269	316.07
CRW-4260 CD-RW	SCSI	6x/4x/2x	Int	279	327.82	289	339.57	319	374.82
CRW-4260TX CD-RW	SCSI	6x/4x/2x	Ext	309	363.07	319	374.82	349	410.07

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SparQ 1.0 GB Drives	Price	(inc VAT)
SparQ 1.0 GB Internal EIDE Drive	£131	(£153.92)
SparQ 1.0 GB External Parallel Port Drive	£131	(£153.92)

SyJet 1.5 GB Drives	Price	(inc VAT)
SyJet Internal EIDE Drive	£199	(£233.82)
SyJet Internal SCSI Drive	£199	(£233.82)
SyJet External Parallel Port Drive	£199	(£233.82)
SyJet External SCSI Drive	£199	(£233.82)

SyQuest Removable Cartridges	Price	(inc VAT)
SparQ 1.0 GB Cartridge - Single	£28	(£32.90)
SparQ 1.0 GB Cartridge - 3-Pack	£68	(£79.90)
SparQ 1.0 GB Cartridge - 10-Pack	£195	(£229.12)
SyJet 1.5 GB Cartridge – Single	£51	(£59.92)
SyJet 1.5 GB Cartridge – 3-pack	£127	(£149.22)
44 MB Cartridge – Single	£25	(£29.37)
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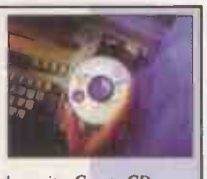

The HP SureStore CD-Writer 7200 allows you to write, update and rewrite. Create CDs for CD ROM and audio players. Save and share up to 650MB of information worldwide

A complete solution in the box - contains industry leading software for business and home

- *Adaptec DirectCD and mastering software*
- *HP's SimpleTrax software for file tracking and efficient file management*
- *DocuMagix PaperMaster Live acquire data from scanners, the www and desktop and store in 'filing cabinets' on CD*
- *Use Corel PrintHouse Magic and Multimedia Content to make an impact with your presentations*
- *Adobe Photo Deluxe for exciting photographic projects and screen savers*
- *Adaptec's Audio CD for creating audio CD's*
- *Digital Now: Photo Album for cataloguing pictures and photos*
- *Includes Norton AntiVirus, which provides virus-free CD creation and distribution*

HEWLETT PACKARD

Internal EIDE £234 (£274.95 inc VAT)
External Parallel £288 (£338.40 inc VAT)

CD-WRITERS

CD-R CONNECT®

- World's first CD-Recorder over the parallel port
- Connects to any fast Pentium PC via the EPP port
- Ideal for software duplication and distribution
- Interfaces: parallel, SCSI and PCMCIA (optional)
- Inc Adaptec Easy CD-PRO recording software

CD-R CONNECT®		
10812 2w/6r, parallel & SCSI, inc 2 x CD-R disk	£299	(£351.32)
11181 4w/6r, parallel & SCSI, inc 2 x CD-R disk	£349	(£410.07)
10816 Satellite, 2w/6r, SCSI, inc 2 x CD-R disk	£279	(£327.82)
10789 PCMCIA > Connect adaptor	£39	(£45.82)

CD-RW CONNECT®

CONNECT®

- The world's first truly portable CD ReWritable recorder!
- One CD-RW Connect can read, burn and REWRITE CD's
- Ideal for archiving and backups (with direct access retrieval)
- Perfect for on-line removable disk storage
- One CD-RW for multiple users
- Works on every PC with a parallel port
- Comes complete with Easy CD Creator and Direct CD software

CD-RW CONNECT®		
11625 2w/6r, parallel & IDE, inc 1 x CD-RW disk	£319	(£374.82)
11626 2w/6r, parallel & SCSI, inc 1 x CD-RW disk	£329	(£386.57)
11987 Satellite, 2w/6r, SCSI, inc 1 x CD-RW disk	£319	(£374.82)
11988 Satellite, 4w/6r, SCSI, inc 1 x CD-RW disk	£395	(£464.12)
11334 PCMCIA > SCSI adaptor	£80	(£94.00)

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NOMAI 680.RW

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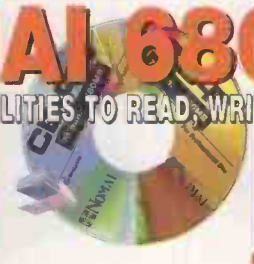

- **3 Drives in 1:** Unique multi-function concept combining 6x CD-ROM reader, 2x CD-Recorder and the world's first 2x CD-ReWritable drive!

The NOMAI 680.RW is a 6x CD reader which will play any CD type (CD-ROM, CD-Audio, CD-Video)

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Internal EIDE Retail Kit	£249	(£292.57 inc VAT)
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External Parallel Port Kit	£325	(£381.87 inc VAT)

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- Make your own audio compilations
- Make backup copies of your CD's
- Each CD-RW replaces 450 floppy disks

650Mb/74 min CD-Recordable Disc	£1.60	(£1.88 inc VAT)
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3.5-INCH 120MB SUPERDISK™ FLOPPY DISK DRIVE

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Norton Utilties V2.0

- 80 times the capacity of 1.44MB floppy drives
- 5 times the speed of 1.44MB floppy drives
- Up to 120MB formatted capacity using LS-120 media
- Reads and writes 1.4MB HD and 720KB
- 1-inch high, 3.5-inch form factor
- 565KB/sec data transfer rate
- Industry standard ATAPI IDE interface

The award winning internal SuperDISK™ drive from Nexus Peripherals looks like a conventional floppy, yet is faster, smarter and more reliable.

At 120MB, you get the capacity needed for today's multimedia environments - yet maintain read/write compatibility with 720KB and 1.44MB floppy diskettes; protecting your investment in the world's most popular removable media.

Because the internal SuperDISK™ drive uses an industry standard ATAPI IDE interface, integration in to your PC is simplicity itself.

Just think. No more messing with compression software. No storing files on multiple disks and no sacrificing access to data stored on existing floppies. Just a tremendous jump in capacity and speed.

In short, it's the storage upgrade you've been waiting for, made possible by advanced technology that's so familiar you already know how to use it.

nexus

PD

650 MB OPTICAL DISK & CD-ROM Drive

An easy-to-use, 650MB rewritable, removable optical disk and eight speed CD ROM drive

Features

- Full retail kit includes software, manual cables
- Enhanced IDE ATAPI interface, access time 88ms, 512KB buffer
- Supports DOS/ Win 3.1, 95, NT 3.5/5.0
- Includes Seagate Backup Exec software for unattended and scheduled backups
- PD Media compatible with DVD RAM

£199
(£233.82 inc VAT)

Panasonic

REMOVABLE DRIVES & STREAMERS

REMOVABLE DRIVES

IOMEGA	Capacity	Interface	Internal	inc vat	External	inc vat
Zip	100Mb	EIDE	69	81.07	-	-
Zip	100Mb	SCSI	86	101.05	86	101.05
Zip	100Mb	Parallel	-	-	86	101.05
Zip Plus	100Mb	Parallel/SCSI	-	-	129	151.57
Jaz 1Gb	1Gb	SCSI	162	190.35	175	205.62
Jaz 2Gb	2Gb	SCSI	339	398.32	399	468.82
NOMAI	*Capacity*	*Interface*	*Internal*	*inc vat*	*External*	*inc vat*
750Mb kit	750Mb	Parallel	-	-	205	240.87
750Mb kit	750Mb	SCSI	155	182.12	179	210.32
SUPERDISK	*Capacity*	*Interface*	*Internal*	*inc vat*		
LS-120 bare	120Mb	IDE	68	79.90		
LS-120 kit	120Mb	IDE	79	92.82		
LS-120 kit	120Mb	Parallel	109	128.07		
PANASONIC	*Capacity*	*Interface*	*Internal*	*inc vat*		
PD Drive	650Mb	IDE	199	233.82		
SYQUEST	*Capacity*	*Interface*	*Internal*	*inc vat*	*External*	*inc vat*
EZFlyer	230Mb	Parallel	-	-	95	111.62
EZFlyer	230Mb	SCSI	-	-	95	111.62
Syjet	1.5Gb	Parallel	-	-	199	233.82
Syjet	1.5Gb	IDE	199	233.82		
Syjet	1.5Gb	SCSI	199	233.82	199	233.82
SparQ	1Gb	IDE	131	153.92	-	-
SparQ	1Gb	Parallel	-	-	131	153.92

STREAMERS

HEWLETT PACKARD	Capacity	Interface	Internal	inc vat	External	inc vat	Parallel	inc vat
Colorado T3000	1.6/3.2Gb	Floppy	108	126.90	-	-	-	-
Colorado 5Gb	2.5/5Gb	Floppy	127	149.22	-	-	158	185.65
Colorado T4000s	4/8Gb	SCSI	225	264.37	279	327.82	-	-
Colorado T4	4/8Gb	SCSI	275	323.12	292	343.10	-	-
C1534A	2Gb	SCSI	335	393.62	-	-	-	-
C1536A	2/4Gb	SCSI	355	417.12	-	-	-	-
C1599A	4/8Gb	SCSI	525	616.87	-	-	-	-
C1554A	12/24Gb	SCSI	789	927.07	-	-	-	-
SureStore 2000	2Gb	SCSI	455	534.62	519	609.82	-	-
SureStore 5000	2/4Gb	SCSI	475	558.12	545	640.37	-	-
SureStore 8	4/8Gb	SCSI	609	715.57	669	786.07	-	-
SureStore 24	12/24Gb	SCSI	799	938.82	879	1032.82	-	-
SureStore DLT30e	15/30Gb	SCSI	-	-	1985	2332.00	-	-
SureStore DLT40e	20/40Gb	SCSI	-	-	2855	3354.62	-	-
IOMEGA	*Capacity*	*Interface*	*Internal*	*inc vat*	*External*	*inc vat*	*Parallel*	*inc vat*
Ditto 2000	1/2Gb	Floppy	56	65.80	-	-	86	101.05
Ditto Max	3/7Gb	IDE	99	116.32	-	-	129	151.57
Ditto Max Pro	3/10Gb	IDE	189	222.07	-	-	189	222.07
QUANTUM	*Capacity*	*Interface*	*Internal*	*inc vat*	*External*	*inc vat*	*Parallel*	*inc vat*
DLT 4000	20/40Gb	SCSI	2000	2350.00	2195	2579.12	-	-
DLT 7000	35/70Gb	SCSI	4755	5587.12	5075	5963.12	-	-
SEAGATE	*Capacity*	*Interface*	*Internal*	*inc vat*	*External*	*inc vat*	*Parallel*	*inc vat*
Tapestor 3200	1.6/3.2Gb	Floppy	89	104.57	-	-	110	129.25
Tapestor 8000I	4/8Gb	IDE	169	198.57	-	-	-	-
Tapestor 8000S	4/8Gb	SCSI	195	229.12	265	311.37	-	-
SEAGATE DAT	*Capacity*	*Interface*	*Internal*	*inc vat*	*External*	*inc vat*		
STD22000N	2Gb	SCSI	329	386.57	399	468.82		
STD24000N	2/4Gb	SCSI	345	405.37	429	504.07		
STD22400N	12/24Gb	SCSI	710	834.25	-	-		
STD28000N	4/8Gb	SCSI	455	534.62	529	621.57		
STD62400N	12/24Gb	SCSI	-	-	805	945.87		
SONY	*Capacity*	*Interface*	*Internal*	*inc vat*	*External*	*inc vat*		
SDT-5200	2/4Gb	SCSI	375	440.62	449	527.57		
SDT-5000	4/8Gb	SCSI	445	522.87	519	609.82		
SDT-7000	4/8Gb	SCSI	485	569.87	559	656.82		
SDT-9000	12/24Gb	SCSI	625	734.37	699	821.32		
TSL-7000 Autoloader	4/8Gb	SCSI	1459	1714.32	1659	1949.32		

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The 100Mb Power Diskette

zip 100

Zip is 20 times as fast and offers 70 times the space of a traditional floppy. Its light weight and small size make it ideal for mobile users, and low cost of media allow you to archive huge multimedia huge projects with ease.

- 100MB capacity uncompressed, 200MB capacity compressed
- Transfer rate up to 1.4MB per second
- 29ms seek time

Zip Parallel	£86	(£101.05)
Zip SCSI	£86	(£101.05)
Zip 100MB disk	£9	(£10.57)
Zip 6 disk pack	£48	(£56.40)

The 100Mb ZipPlus Drive

zip Plus 100 SCSI / parallel port

ZipPlus drive is the easiest way and most economical way to expand your hard drive, move your files and backup

- Fast - up to 50 times faster than a floppy drive
- One drive fits all - only one version for SCSI and parallel port interfaces
- Lightweight universal power supply
- Great media software

Zip Plus	£129	(£151.57)
Zip 10 pk multicoloured with Recordit software	£89	(£104.57)

Ditto 2GB

ditto 2GB

- Internal version fits any standard 5.25" bay
- 5 minute install guides
- 1-Step backup software
- Customised routines to allow you to backup while working
- 2GB with data compression
- Windows 3.1, 95, NT and OS/2 compatible
- External version sits horizontally or vertically

Ditto 2GB Internal	£56	(£65.80)
Ditto 2GB External	£86	(£101.05)

Ditto 2GB Bundle consists of:

- One Ditto 2GB tape drive-including usual software,starter pack etc.
- One large Ditto carry case.**FREE!**
- Three Ditto 2GB pieces of media
- One Ditto NT driver.**FREE!**

Ditto 2GB Bundle £125 (£146.87)

Ditto Max and Ditto Max Pro

ditto Max

Powerful desktop storage and tape backup in one simple device

- Customise capacity with 3.5GB, 5GB, 7GB and 10* cartridges
- Back up while you work
- Easy 1-Step software
- Flash!File - 5 second average access time
- FullBack system recovery software

Ditto Max Internal	£99 (£116.32)
Ditto Max External	£129 (£151.57)
Ditto Max Pro External (10GB)	£189 (£222.07)
Ditto Max Pro External (10GB)	£189 (£222.07)

* Ditto Max Pro only

The 1GB Removable

jaz 1GB

Jaz has no limits. With 1GB capacity per disk Jaz is revolutionising storage technology.

- 1GB per disk, from less than 6p per megabyte
- 10-12 millisecond access time, faster than most hard drives
- Weighs only 2lb
- Available as an external drive for maximum portability
- Transport huge files for multimedia projects, outputting high resolution images at bureaux, perform backups, capture video to disk and much more
- Jaz Tools™ utility software

Internal	£162	(£190.35)
External	£175	(£205.62)
1GB Jaz Cart	£55	(£64.62)

Prices shown in brackets are inclusive of VAT

The 2GB Removable

jaz 2GB

The Super-Fast, Extremely Vast Personal Storage Drive that gives you a whopping 2GB per disk

- 2GB of storage space on each compact Jaz cartridge
- Fast - 7.35MB/s average transfer rate
- Ideal as a hard drive backup. Provides 4GB capacity with 2.1 compression
- Share data between PCs or from Mac to a PC
- Complete set of software utilities and tools make Jaz versatile and easy to use
- Packaged to suit you

Jaz 2GB Internal	£339	(£398.32)
Jaz 2GB External	£399	(£468.82)

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- 4MB EDO DRAM with dual 64bit memory architecture
- 45 million pixels per second fill rate
- 2 million triangles rendering per second
- Perspective correct texture mapping
- Bi-linear & advanced texture filtering

£97 (£113.97)

Monster Sound

Next Generation DirectSound™ 3D Acceleration

- Windows® 95, DirectSound™ support
- Easy Plug & Play installation
- Special effects supported (Reverb, Chorus, Pitch Shift)
- Multi-stream support for interactive real-time mixing of up to 24 different audio streams
- Advanced speaker configuration tool (stereo, quad speaker, headphones etc.)
- Virtual Sound Blaster™, FM, MIDI and Joystick support (for Windows® 95)
- 4 speakers support to provide true 3D positional sound effects

£85 (£99.87)

Prices shown in brackets are inclusive of VAT.
Retail boxes shown for illustrative purposes only.

Stealth 3D 2000 Pro

First class graphics and 3D performance

- High-performance 64 bit graphics accelerator with maximum 4MB EDO DRAM
- TrueColour acceleration up to 1280 x 1024 @ 120Hz
- Flicker-free refresh up to 120Mhz
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- Supports DirectX™ and Direct3D™

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Viper V330

Break Your Limits in 3D

- True 128-bit graphics for high-end, no compromise 2D & 3D
- Resolutions up to max. 1600 x 1200
- Refresh rates up to 200 Hz max
- Drivers for Windows 95, Windows NT™ 3.51 and Windows NT™ 4.0
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Fire GL 1000 Pro

Ultimate 2D and 3D Graphics for Windows NT™

- High-speed 2D & 3D rendering processor with intergrated setup processor
- Up to 1 million texture mapped polygons/sec
- Refresh rate up to 120Hz
- Resolution up to 1920 x 1200
- TrueColor up to 1600 x 1200
- Includes AutoCAD productivity tools

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VIDEO CARDS

ATI	Memory/Type	Chipset	RAMDAC	Ex VAT PCI	Inc VAT PCI	Ex VAT AGP	Inc VAT AGP
XPERT@Work OEM	4Mb SGRAM	Rage Pro	230MHz	75	88.12	79	92.82
XPERT@Work OEM	8Mb SGRAM	Rage Pro	230MHz	99	116.32	105	123.37
XPERT@Play OEM	4Mb SGRAM	Rage Pro	230MHz	85	99.87	89	104.57
XPERT@Play OEM	8Mb SGRAM	Rage Pro	230MHz	109	128.07	115	135.12
All In Wonder Pro OEM	4Mb SGRAM	Rage Pro	230MHz	145	170.37	149	175.07
All In Wonder Pro OEM	8Mb SGRAM	Rage Pro	230MHz	165	193.87	169	198.57
XPERT@Work	4Mb SGRAM	Rage Pro	230MHz	99	116.32	-	-
XPERT@Work	8Mb SGRAM	Rage Pro	230MHz	119	139.82	-	-
XPERT@Play	4Mb SGRAM	Rage Pro	230MHz	109	128.07	-	-
XPERT@Play	8Mb SGRAM	Rage Pro	230MHz	129	151.57	-	-
All In Wonder Pro	4Mb SGRAM	Rage Pro	230MHz	169	198.57	-	-
All In Wonder Pro	8Mb SGRAM	Rage Pro	230MHz	199	233.82	-	-
CREATIVE LABS							
GraphicsBlaster Extreme	SGRAM	3DLabs Permedia 2	230MHz	70	82.25	-	-
3D Blaster Voodoo2	EDO DRAM	3DFX Voodoo2	-	129	151.57	-	-
3D Blaster Voodoo2	EDO DRAM	3DFX Voodoo2	-	152	178.60	-	-
DIAMOND							
Stealth 3D 2240	2Mb EDO DRAM	S3 Virge	135MHz	36	42.30	-	-
Stealth 3D 4200	2Mb SGRAM	S3 Virge GX2	-	-	-	37	43.47
Stealth 3D 2400	4Mb EDO DRAM	S3 Virge	135MHz	45	52.87	-	-
Stealth 3D 2240 Pro	2Mb EDO DRAM	S3 Virge DX	170MHz	40	47.00	-	-
Stealth 3D 4400	4Mb SGRAM	S3 Virge GX2	-	-	-	47	55.22
Stealth 3D 2400 Pro	4Mb EDO DRAM	S3 Virge DX	170MHz	48	56.40	-	-
Stealth 3D 2240 Pro TVout	2Mb EDO DRAM	S3 Virge DX	170MHz	55	64.62	-	-
Stealth II S220	4Mb			65	76.37	-	-
Viper V330	4Mb SGRAM	NVidia Riva 128	230MHz	108	126.90	108	126.90
Fire GL 1800 Pro	8Mb SGRAM	3DLabs Permedia 2	230MHz	129	151.57	129	151.57
Monster 3D	4Mb EDO DRAM	3DFX Voodoo 3D		97	113.97	-	-
Monster 3D II	8Mb EDO DRAM	3DFX Voodoo2		129	151.57	-	-
HERCULES							
Thriller 3D	4Mb			85	99.87	85	99.87
Thriller 3D	8Mb			159	186.62	159	186.82
Dynamite 3D/GL	4Mb SGRAM	3DLabs Permedia 2	250MHz	129	151.57	129	151.57
Dynamite 3D/GL	8Mb SGRAM	3DLabs Permedia 2	250MHz	165	193.87	165	193.87
Stingray 128/3D + TV out	8Mb EDODRAM	AT3D/Voodoo Rush	-	169	198.57	-	-

MATROX	Memory/Type	Chipset	RAMDAC	Ex VAT PCI	Inc VAT PCI	Ex VAT AGP	Inc VAT AGP
m3D	4Mb SDRAM	NEC PowerVR2	-	55	64.62	-	-
Mystique 220 OEM	4Mb SGRAM	MGA 1064SG	220MHz	56	65.80	-	-
Millennium II OEM	4Mb WRAM	MGA 2164W	250MHz	89	104.57	-	-
Millennium II OEM	8Mb WRAM	MGA 2164W	250MHz	125	146.87	125	146.87
Mystique 220 Home	4Mb SGRAM	MGA 1064SG	220MHz	65	76.37	-	-
Millennium II	4Mb WRAM	MGA 2164W	250MHz	99	116.32	109	128.07
Millennium II	8Mb WRAM	MGA 2164W	250MHz	139	163.32	149	175.07
NUMBER 9							
Revolution 3D	4Mb	Ticket 2 Ride	-	209	245.57	209	245.57
Revolution 3D	8Mb	Ticket 2 Ride	-	275	323.12	275	323.12
ORCHID							
Righteous 3D	4Mb EDO DRAM	3DFX Voodoo 3D	-	105	123.37	-	-
Righteous 3D II	8Mb EDO DRAM	3DFX Voodoo2	-	159	186.82	-	-
PINE							
S3 Trio64V+765	1Mb EDO DRAM	S3Trio64V+	135MHz	16	18.79	-	-
S3 Trio64V+765	2Mb EDO DRAM	S3Trio64V+	135MHz	20	23.49	-	-
Mega 3D	2Mb EDO DRAM	Cirrus Logic Laguna	-	55	64.62	-	-
Mega 3D	4Mb EDO DRAM	Cirrus Logic Laguna	-	65	76.37	-	-
STB							
Nitro 3D OEM	2Mb VRAM	S3 Virge GX	135MHz	49	57.57	-	-
Nitro 3D OEM	4Mb VRAM	S3 Virge GX	135MHz	64	75.20	-	-
Velocity 128	4Mb SGRAM	NVidia Riva 128	230MHz	98	115.15	98	115.15
VIDEOLOGIC							
GrafixStar 410	2Mb EDO DRAM	S3 Trio64V2	135MHz	39	45.82	-	-
GrafixStar 450 Pro	2Mb EDO DRAM	S3 Virge DX	170MHz	45	52.87	-	-
GrafixStar 560	4Mb EDO DRAM	Cirrus Logic Laguna	-	59	69.32	59	69.32
GrafixStar 600 Pro	2Mb MDRAM	Tseng Labs ET6000	135MHz	48	56.40	-	-
Apocalypse 3D	4Mb SDRAM	NEC PowerVR	-	39	45.82	-	-
Apocalypse 3Dx Value Pac	4Mb SDRAM	NEC PowerVR2	-	49	57.57	-	-
Apocalypse 3Dx	4Mb SDRAM	NEC PowerVR2	-	69	81.07	-	-
Apocalypse 5D	6Mb	ET6100 + PowerVR2	-	125	146.87	-	-
Apocalypse 5D	8Mb	ET6100 + PowerVR2	-	145	170.37	-	-
Apocalypse 5D Sonic	6Mb	ET6100 + PowerVR2 + Sound		159	186.82	-	-
Apocalypse 5D Sonic	8Mb	ET6100 + PowerVR2 + Sound		179	210.32	-	-

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- High performance 3D, 2D and video acceleration with big screen TV-out display
- Superior 3D quality with bilinear filtering, alpha blending and special effects
- Brute force 3D acceleration with over 1 million triangles per second with set-up engine, texture cache and more
- Great gaming in Windows 95 (Direct3D, DirectDraw) and DOS
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ATI TV Tuner Upgrade your Xpert card with an ATI TV Tuner - see page 18 for details.

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The Complete Windows, 3D and Video Accelerator

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- Works with your existing graphics card
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Apocalypse 3DX

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Dedicated 3D accelerator for arcade-level performance

- Advanced 3D realism & improved 3D image quality with bilinear texture filtering
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- Works with any Windows 95 Accelerator card via Microsoft DirectX 3.0
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- 4MB of high performance SDRAM texture memory on board
- Optimal platform P166 with 32MB RAM or above.
- Minimum requirement: P133 with 32MB RAM, 2MB or above graphics accelerator **£69** (£81.07 inc VAT)
- PowerVR titles available on www.powervrdirect.com

Apocalypse 3DX	*Value Pack (no full games)*	**£49**	(£57.57 inc VAT)
GrafixStar 560	4Mb	**£59**	(£69.32 inc VAT)
GrafixStar 600 Pro	2Mb	**£48**	(£56.40 inc VAT)
SonicStorm PCI	*Wavetable Sound Card*	**£49**	(£57.57 inc VAT)

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PRINCETON® GRAPHIC SYSTEMS

EO40 £109 (£128.07 Inc VAT)
- 14" Invar Shadow Mask CRT for crisp, clear images
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- Flicker-free (75Hz) @ up to 800 x 600 / Maximum Resolution: 1024 x 768 NI
- Energy Star™ compliant for power-saving
- Max. Horizontal Frequency: 48 kHz

EO50 £159 (£186.82 Inc VAT)
- 15" Invar Shadow Mask CRT for crisp, clear Images
- Dot Pitch: 0.28mm (0.24mm h) for fine image resolution
- Flicker-free (75Hz) @ up to 1152 x 864 / Maximum Resolution: 1280 x 1024 NI
- PreVu™ On-Screen Display and Coloright™ Controls
- Max. Horizontal Frequency: 70 kHz

EO17 £299 (£351.32 Inc VAT)
- 17" Invar Shadow Mask CRT for crisp, clear images
- 0.26mm (0.22mm h) dot pitch for excellent image definition
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- PreVu™ On-Screen Display and Coloright™ Controls
- Max. Horizontal Frequency: 70 kHz

EO75 £399 (£468.82 Inc VAT)
- 17" High Contrast CRT for perfect contrast, brightness & focus
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EO90 £529 (£621.57 Inc VAT)
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- PreVu™ On-Screen Display and Coloright™ Controls
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- 29" Entertainment Monitor (27" visible diagonal)
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Microscan 5P 17"	239	280.82
Microscan 5G 17"	305	358.37
Microscan 5GT 17" Trinitron	349	410.07
MicroScan 6P 19"	489	574.57
MicroScan 6G 21"	739	868.32
SP2000 Speakers (4P/5P/6P)	16	18.80
US8 Hub (4P/5P/6P)	20	23.50
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10 40 10 14" 0.28 1024 x 768	97	113.97
10 50 35 15" 0.28 1280 x 1024	119	139.82
10 50 76 15" 0.27 1280 x 1024 & spkrs	165	193.87
10 70 20 17" 0.28 1280 x 1024	215	252.62
10 70 15 17" 0.27 1280 x 1024	309	363.07
10 55 86 17" 0.27 1280 x 1024 & spkrs	339	398.32
10 70 30 17" 0.27 1600 x 1200 & spkrs	349	410.07
10 55 96 17" 0.26 1600 x 1200 & spkrs	359	421.82
10 70 50 17" 0.25 1600 x 1200	339	398.32
10 60 90 19" 0.28 1600 x 1200	445	522.87
10 80 95 21" 0.25 1600 x 1200	635	746.12
10 80 10 21" 0.25 1600 x 1200	929	1091.57
CTX		
1451ELR 14"	109	128.07
1569SE 15"	149	175.07
1569MS 15" & Speakers	189	222.07
1569UA Trinitron 15"	199	233.82
1769MS 17" & Speakers	349	410.07
1792SE 17"	349	410.07
1792UA 17" Trinitron	399	468.82
1785XE 17"	399	468.82
2085XE 20"	699	821.32
2185XE 21"	899	1056.32
HITACHI		
CM500ET 15"	159	186.82
CM500ES 15" & Speakers	185	217.37
CM620ET 17"	265	311.37
CM630ET 17"	345	405.37
CM641ET 17"	345	405.37
CM611ET 17"	385	452.37
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CM752ET 19"	539	633.32
CM802ET 21"	759	891.82
CM803ET 21"	939	1103.32
DT3130 13.3" Super TFT LCD	1159	1361.82
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MF-8515G 15"	169	198.57
MF-8617T 17"	325	381.87
MF-8617ES 17" & Speakers	375	440.62
MT-9017T 17" DiamondTron	365	428.87
S901GT 19"	529	621.57
MF-8721 21"	765	898.87
MT-9221T 21" DiamondTron	799	938.82
LP-1014 13.8" TFT LCD	1099	1291.32
TXA-3601GT 14.1" TFT LCD	899	1056.32
TS15G 15" Touchscreen	699	821.32
TS17T 17" Touchscreen	999	1173.82
TS21T 21" Touchscreen	1499	1761.32
Warranty		
15" 2 year On-Site-Maintenance	15	17.62
17" 2 year On-Site-Maintenance	25	29.37
21" 2 year On-Site-Maintenance	35	41.12
MICROVITEC		
ProScan 17SX	335	393.62
MITSUBISHI		
DiamondPro 67TXV 17" DiamondTron	339	398.32
DiamondPro 87TXM 17" DiamondTron	389	457.07
DiamondPro 700 17" DiamondTron	435	511.12
DiamondPro 91TXM 21" DiamondTron	859	1009.32
DiamondPro 1000 21" DiamondTron	1019	1197.32
Warranty		
17" 3 year On-Site-Maintenance	43	50.52
21" 3 year On-Site-Maintenance	50	58.75
NEC		
Multisync A500 15"	172	202.10
Multisync E500 15"	213	250.27
Multisync M500 15"	254	298.45
Multisync A700 17"	312	366.60
Multisync E700 17"	414	486.45
Multisync M700 17"	428	502.90
Multisync P750 17"	485	569.87
Multisync E1100 21"	824	968.20
Multisync P1150 21"	1112	1306.60
NOKIA		
449Xi Plus 15" Trinitron	200	235.00
449Xa Plus 15" & Speakers	210	246.75
447Za 17"	320	376.00
447Xi 17" Trinitron	439	515.82
447X Pro 17" Trinitron	430	505.25
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445X Pro 21"	925	1086.87
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- up to 1280 x 1024 NI
- 800 x 600 @ 85Hz
- Digital Electronics
- MPRII Compliant

£119 (£139.82)

Belinea 10 70 20
- 17" FST 0.28mm
- up to 1280 x 1024 NI
- 1024 x 768 @ 85Hz
- On-Screen Display
- TCO 95

£215 (£252.62)

Belinea 10 70 50
- 17" FST 0.25mm DiamondTron CRT
- up to 1600 x 1200 NI
- 1024 x 768 @ 100Hz
- On-Screen Display
- TCO 95

£339 (£398.32)

Belinea 10 60 90
- 19" FST 0.26mm
- up to 1600 x 1200 NI
- 1280 x 1024 @ 88Hz
- Professional On-Screen Display
- TCO 95

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Belinea 10 80 95
- 21" FST 0.25mm
- up to 1600 x 1200 NI
- 1600 x 1200 @ 75Hz
- On-Screen Display
- TCO 95

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- Colour Balance Control

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- Up to 1600x1200 NI@72Hz
- On-Screen Display Menu
- Colour Balance Control

MT-8721 £765 (£898.87)
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- 1800x1400 @75Hz or 1600x1200 @ 85Hz
- On-Screen Display Menu

MF-8515G £169 (£198.57)
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MT-9221 £799 (£938.82)
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- Up to 1800x1440 @75Hz
- New 'P-NX' Gun technology for enhanced focus

S901GT £529 (£621.57)
- 19" 0.26mm FST
- Up to 1280 x 1024 @100Hz NI
- On-Screen Display Menu
- All CE Ergonomic, safety and enviromental approvals

All *iiyama* monitors are with a 3yr warranty, 1st yr On-Site, 2nd, 3rd RTB or upgrade to our VisionCare warranty, 3 yr On-Site

Prices shown in brackets are inclusive of VAT

MONITORS continued

	ex VAT	inc VAT
PANASONIC		
PanaSync 4 15"	179	210.32
PanaSync 4G 15"	219	257.32
Panasync 15MM 15" & Speakers	235	276.12
PanaSync S70 17"	285	334.87
PanaSync Pro 5G 17"	419	492.32
PanaFlat PF70 17"	495	581.62
PanaSync Pro 7G 21"	855	1004.62
PRINCETON		
EO40 14" 0.28 MPRII	109	128.07
EO50 15" 0.28 MPRII	159	186.82
EO17 17" 0.26 MPRII	299	351.32
EO710 17" 0.22 TCO92	319	274.82
EO75 17" 0.26 TCO92	399	468.82
EO90 19" 0.26 TCO95	529	621.57
C2001 21" 0.28 TCO95	999	1173.82
Arcadia 29"	599	703.82
SONY		
Multiscan 100es 15" MPRII	179	210.32
Multiscan 100gst 15" TCO95	215	252.62
Multiscan 120as 15" & Speakers	314	368.95
Multiscan 200es 17" TCO95	325	381.87
Multiscan 200gst 17" TCO95	359	421.82
Multiscan 220as 17" & Speakers	459	551.07
Multiscan 200pst 17" TCO95	534	627.45
Multiscan 17sell 17"	469	551.07
Multiscan 300sft 20"	729	856.57
Multiscan 20sell 20"	789	927.07
Multiscan 500pst 21"	1029	1209.07
Multiscan 20sh 20"	1479	1737.82
SuperWide 24"	1699	1996.32
TAXAN		
Ergovision 430 LR 14"	113	132.77
Ergovision 550 TCO95 15"	179	210.32
Ergovision 550 TCO95 15" & Audio	189	222.07
Ergovision 730 TCO95 17"	329	386.57
Ergovision 730 TCO95 17" & Audio	339	398.32
Ergovision 740 TCO92 17"	399	468.82
Ergovision 740 TCO95 17" & Audio	409	480.57
Ergovision 750 TCO95 17"	449	527.57
Ergovision 760 TCO95 17"	339	398.82
Ergovision 760 TCO95 17" & Audio	349	410.07
Ergovision 975 TCO95 19"	549	645.07
Ergovision 2040 TCO92 21"	685	804.87
Ergovision 2150 TCO95 21"	899	1056.32
Crystalvision 600 TFT & Audio	899	1056.32
Crystalvision 620 TFT & Audio	1099	1291.32
Crystalvision 650 TFT & Audio	1519	1784.82

MULTIMEDIA CARDS

	ex VAT	inc VAT
ATI		
TV Tuner	59	69.32
CREATIVE		
TV Coder External	105	123.37
DABS		
TV/Teletext PCI	49	57.57
FAST ELECTRONIC		
Screen Machine II	554	650.95
AV Master	689	809.57
HAUPPAUGE		
WinTV Primio PCI	55	64.62
WinTV PCI	75	88.12
WinTV Radio PCI	89	104.57
WinTV Cinema Pro	199	233.82
WinTV Cinema Pro MPEG Upgrade	75	88.12
WinTV Video Output Module	89	104.57
Video Wizard	115	135.12
Win Motion 60	295	346.62
LA VISION		
Dazzle Parallel	199	233.82
Snazzi PCI	299	351.32
MATROX		
Rainbow Runner TV Tuner	79	92.82
Mystique Rainbow Runner Studio	115	135.12
Millennium II Rainbow Runner Studio	139	163.32
MIRO		
miroMEDIA PCTV PCI	50	58.75
Video Director Studio 200	189	222.07
miroVIDEO DC10	189	222.07
miroVIDEO DC30	499	586.32
miroVIDEO DC300	659	774.32
miroVIDEO DV Pro Pack	989	1162.07
miroVIDED DC30 Plus	989	1162.07
SIGMA		
Hollywood MPEG2/AC-3	199	233.82
Ventura MPEG2	89	104.57
TYPHOON		
TV/Teletext PCI	55	64.62
Video Capture PCI	69	81.07
VIDEOLOGIC		
Captivator PCI	49	57.57
Captivator PCI/VC	149	175.07

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PRINCETON GRAPHIC SYSTEMS

NEW EO 710

- New Design
- 17" High Contrast CRT
- 0.22mm (h) Dot Pitch (0.21mm horizontal Mask Pitch)
- 1280 x 1024 max resolution
- 75 Hz refresh rate @ 1024 x 768
- 31 - 70 kHz
- TCO 95 compliant
- 3 Year Warranty

£319 (£374.82 inc VAT)

Because Image Is Everything...

447Za
17" monitor

£320
(£376.00 inc VAT)

- Invar Shadow Mask with .27 dot pitch
- Power consumption under 100 W
- Built-in stereo amplifier with 5 watt speakers
- Built-in directional microphone
- Dynamic Focus
- TCO-95
- Windows 95 Plug n Play

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CONNECTING PEOPLE

MITSUBISHI COLOUR DISPLAY MONITOR

100% PURE DIAMONDTRON

The DIAMONDTRON CRT takes Trinitron technology to new levels of excellence delivering more accurate, sharper images

WHY MITSUBISHI? Mitsubishi offers a 3 year return to base warranty, with 24-hour product replacement in the first year. Buy a DIAMONDTRON monitor made by Mitsubishi for guaranteed 100% pure DIAMONDTRON

The **Diamond Pro 91TXM** meets the needs of graphics and CAD users who require high resolution, high quality 21" monitors. Featuring Mitsubishi's latest 0.28mm CRT, the monitor reaches a maximum non-interlaced resolution of 1600 x 1280 at a refresh rate of 75Hz. **£859** (£1009.32 inc VAT)

The **Diamond Pro 87TXM** is a 17" monitor is perfect for professionals in the corporate marketplace as well as CAD users, designers and multimedia experts. Featuring Mitsubishi's patented DIAMONDTRON technology, the monitor reaches a maximum non-interlaced resolution of 1280 x 1024 at a refresh rate of 75Hz. **£389** (£457.07 inc VAT)

The **Diamond Pro 67TXV** is an advanced 17" monitor for the multimedia age delivering high-quality images in the finest detail thanks to Mitsubishi's patented DIAMONDTRON technology. The monitor reaches a maximum non-interlaced resolution of 1024 x 768 at a refresh rate of 75Hz with a 0.25 grille pitch. **£339** (£398.32 inc VAT)

The **Diamond Pro 15VX** 15" colour monitor offers an extensive array of features at a practical price, making it a staple for corporate environments. Featuring a flat-square CRT with Invar shadow mask, the monitor reaches a maximum non-interlaced resolution of 1024 x 768 at a refresh rate of 75Hz. **£199** (£233.82 inc VAT)

CTX

	1769MS	£349 (£410.07)
CRT Size/Viewable		17"/15.7"
Dot Pitch (mm)		0.28
CRT Type		FST
Max Resolution		1280 x 1024
Horiz.Sync. (KHz)		30-70
Special Features		Dome Speakers

	1792SE	£349 (£410.07)
CRT Size/Viewable		17"/15.7"
Dot Pitch (mm)		0.26
CRT Type		FST
Max Resolution		1600 x 1200
Horiz.Sync. (KHz)		30-92
Special Features		Made in UK/TCO95

	1792UA	£399 (£468.82)
CRT Size/Viewable		17"/16"
Dot Pitch (mm)		0.25
CRT Type		Trinitron® CRT
Max Resolution		1600 x 1200
Horiz.Sync. (KHz)		30-92
Special Features		BNC/TCO95

	1995UE	£Call (£Call)
CRT Size/Viewable		19"/18"
Dot Pitch (mm)		0.26
CRT Type		FST
Max Resolution		1600 x 1200
Horiz.Sync. (KHz)		30-95
Special Features		BNC/TCO95

	2195XE	£999 (£1173.82)
CRT Size/Viewable		21"/20"
Dot Pitch (mm)		0.26
CRT Type		FST
Max Resolution		1600 x 1200
Horiz.Sync. (KHz)		30-95
Special Features		BNC/TCO95

(Prices in brackets are inclusive of VAT)

Monitors

TAXAN

Ergovision 550 TCO 95
- 15" FST Digital Monitor
- 0.27mm Dot Pitch
- Fully TCO 95 Compliant
- AGRAS Face Treatment
- 30 - 69kHz (Multiscan)
- 1024 x 768 up to 85Hz
- Windows 95 Plug and Play

£179 (£210.32)

Ergovision 760 TCO 95
- 17" 'ZenTan' FST Tube
- Footprint equivalent to a 14" monitor
- AGRAS Face Treatment
- 0.27mm dot pitch
- 1024 x 768 up to 86Hz
- Fully TCO 95 compliant
- Easy One-Touch Control

£339 (£398.32)

Ergovision 750 TCO 95
- 17" Diamondtron® Monitor
- 0.25mm Aperture Grille Pitch
- Short-Neck Tube
- Fully TCO 95 Compliant
- 30 - 86kHz (Multiscan)
- 1280 x 1024 up to 80Hz
- Dual Input

PC Pro 'A' List Recommended

£449 (£527.57)

PCPro "A razor sharp image and incredibly comprehensive image controls make Taxan a star buy. May 1997"

VNU "Great image quality owing to the Diamondtron tube"

PCW "Great spec, image and price, an excellent choice. May 1997"

COMPUTER BUYER "At it's price the 750 makes an excellent choice"

Ergovision 760 TCO 95-S
Multimedia Version
As Ergovision 760 TCO 95 plus
- Built-in 4W x Dome Stereo Speakers
- Headphone socket
- Volume control

£349 (£410.07)

Ergovision 975 TCO 95
- 19" FST Tube
- ARASC Face Treatment
- 0.26mm dot pitch
- 30 - 95kHz Horizontal Scan Frequency
- 1600 x 1200 @ 75Hz
- Fully TCO 95 Compliant
- *BRAND NEW FROM TAXAN!!!*

£549 (£645.07)

Ergovision 2150 TCO 95
- 21" Diamondtron® Monitor
- 0.28mm Aperture Grille Pitch
- Short-Neck Tube
- Fully TCO 95 Compliant
- 30 - 95kHz (Multiscan)
- 1600 x 1200 up to 75Hz
- Dual Input

£899 (£1056.32)

Crystalvision 650-S
- 14.5" TFT Flat Panel Monitor
- Equivalent to 17" CRT Monitor
- Fully TCO 92 Compliant
- 1024 x 768 Flicker Free
- No special interface required
- 200cd/m² Brightness
- Stereo speakers

£1519 (£1784.82)

Prices shown in brackets are inclusive of VAT

Excellent Quality • Superior Service • Unbeatable Value

✔ Serving you since 1987
✔ Over £50m annual turnover
✔ Over 200,000 satisfied customers
✔ Highly trained specialist staff
✔ Repair & upgrade services

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CUSTOMER SERVICES

A Guide to Customer Services

by
Dianne Dillon
Customer Services Manager

As many of you will be aware, the Customer Services section of your 'Direct Focus' catalogue is a regular feature which aims to help you get efficient service and effective results from my department. If you would like to know more about the service commitment we make to you, or if you need to access that service please read on...

What do I do if my order is late in arriving?

1. Ring the sales number where you originally placed the order (or use our general sales number 01942 794000)
2. Quote your sales order number, account number or post code (this will enable us to find your account). We first have to establish if we have sent the order out or not. If not, usually because the product was out of stock when you ordered, and has still not arrived from our supplier, the salesperson will try to give you an up-to-date delivery date. You can then decide whether to wait, cancel, or buy an alternative product. This doesn't happen often, but when it does, the actual lead time is often indeterminable (ie the dates given to us by suppliers are not reliable).

If we have sent out the product, then the problem will be with the carrier, and your call will be passed to Customer Service Department, who will take the details, call the carrier, and then call you back. Please note that our carrier Amtrak normally delivers by 1pm, so we are only able to trace late deliveries after that time.

What if the carrier arrives but the box looks damaged?

1. Sign for the box as 'Unchecked'. Failure to do so will mean we have no claim on the carrier if the item inside is damaged in any way.
2. Ring the Customer Service number to report even if there is no damage. If your item is damaged, we will issue a returns number and arrange the collection and replacement. Please note that the collection and replacement delivery may not be on the same carrier visit.

What do I do if the carrier arrives but the note says two boxes and he only has one?

1. Cross out the number 2 and change it to read 1. If necessary write "only one received" on the note.
2. Ring Customer Services to report and they will contact the carrier/supplier and keep you informed.

What do I do if it's not the correct product - the delivery note does not match the goods?

1. Ring Customer Service. We will check the part number on the delivery note with the part number on your product. If the product has been shipped incorrectly a returns number will be issued and a collection and replacement arranged.

What do I do if it's not the correct product - I ordered the wrong thing?

1. Ring us before opening or using the product. Provided the package has not been opened at all it may be accepted back with a re-stocking fee. If an agreement has been reached to take the product back a returns number will be issued. You will be responsible for the cost of returning the product and only if it is in pristine condition will a credit be raised.

What do I do if it's not the correct product - you have not sent what I ordered?

1. Initially ring the sales number and speak to the original salesperson you ordered from.
2. Go through it with them to check that it is our misunderstanding and not yours. If we have misunderstood your requirements, you will be passed through to Customer Service, who will issue a returns number and arrange a collection and replacement.

What if my order has just arrived but won't work?

1. Ring Technical Support on 01942 794230. If possible have your product close to hand to enable you to try out any fixes technical may give you. If it has been established your product is faulty you will be issued with a returns number.
2. We will arrange collection of the goods and arrange a replacement. Provided that stock is available we will try to collect and replace within 24 hours.

What do I do if my equipment has stopped working - how do I action my warranty?

1. Ring Technical Support. They will try to establish what the fault is and offer you the warranty procedure for that product. A returns number will be issued.
2. You will return the goods to us and in turn we will send off for warranty repair. In some instances the warranty asks for the customer to ring the repair agent direct, this will be relayed to you when you call.

PC's only

Any software fault ring	01942 794230
Hardware fault within 14 days ring	01942 794230
Hardware fault outside 14 days ring	0990 133322

What do I do if I experience a problem with software?

1. Please note that once a software package is opened you have accepted the package under the manufacturer's software licensing agreement and therefore no opened packages will be accepted back.
2. Check the details on the box are correct before opening. If a fault occurs with any disc the manufacturer will exchange. If a manual or disc is missing or incomplete the manufacturer will supply these.

When you buy from us we are here to support you...

HELP US TO HELP YOU.

Dianne Dillon.

IMPORTANT POINTS TO REMEMBER

- A returns authorisation number must be obtained before the return of any product.
- Failure to display the number will result in the return being refused.
- The package must not be defaced in any way and must be securely packaged.
- A returns number is valid for 14 days only.
- Faulty items will be tested on receipt. If no fault is found the product will be returned to you or accepted back into our stocks if you agree a 25% re-stocking fee.
- If a fault is found a replacement will be sent to you by return .
- No opened software packages will be accepted back. Please check details on box before opening.
- Warranty repairs - carriage must be paid for by the customer.
- We offer the full manufacturers 'dead on arrival' and warranty to our customers.

Manufacturers (Vendors) offering technical support/DOA/warranty direct to customers

If our Technical lines are busy and your product has direct support from the manufacturer (vendor) please ring them.

Vendor	Number	Technical	DOA	Warranty
3COM	0800-966197	✓		✓
ADI	0181-236-0064	✓	✓	✓
Agfa	0891-615770	✓		✓
Amacom	0181-993-7373	✓		✓
APC	0800-132990	✓		✓
Apple *General / software enquiries*	01753-615999	✓		
Apple *Warranty*	0800-127753			✓
Brother	0161-330-6531	✓		✓
Canon	0990-143723	✓		✓
Casio	0181-450-9131	✓	✓	✓
Claris	0800-422322	✓	✓	✓
Compaq *(Through Digital MCS)*	0541-541555	✓		✓
Creative	01734-344744	✓		
CTX	01923-810801	✓	✓	✓
Diamond	01189-444444	✓		
Epson	01442-227277	✓	✓	✓
Evergreen	07000-808586	✓		
Fuji	01234-245383	✓		✓
Hayes	01252-775533	✓		
HP	0171-512-5202	✓		✓
Hitachi	0181-849 2092	✓		✓
IBM	0990-500900	✓		✓
Iiyama	01438-314416	✓	✓	✓
Intel	01793-404900	✓		
Iomega	0800-973194	✓		✓
Kyocera	01606-867017	✓	✓	✓
Macromedia	0800-374128	✓	✓	✓
Matrox	01793-441100	✓		
Maxtor	003531-204-1111	✓		
Microsoft	01189-270000	✓	✓	✓
Microvitec	01244-391204	✓	✓	✓
Miro	01494-510985	✓		
Mitsubishi	01707-278782	✓	✓	✓
Motorola	0990-134810	✓		
Mustek	01386-769429	✓	✓	✓
NEC	0181-993-8111	✓		✓
Newsoft	01752-895100	✓	✓	✓
Nikon	0181-541-4440	✓		
Nokia	01794-830775	✓		✓
OKI	01753-819819	✓	✓	✓
Orchid	01256-844899	✓		
Pace	01274-537031	✓		✓
Panasonic	01344-853508	✓		
Powerquest	01202-716726	✓	✓	✓
Quantum	01344-353500	✓		
Ricoh	01782-717100	✓	✓	✓
Samsung *(Monitors Only)*	01525-718444	✓	✓	✓
Sanyo	01483-301970	✓	✓	✓
Seagate	01628-894083	✓		
Sharp *(Sharpserv)*	01623-413800	✓	✓	✓
Sony *(Monitors Only)*	0990-168648	✓		✓
Tally	01734-771688	✓		✓
Taxan	01344-484646	✓		✓
Twinhead	01256-300300	✓		✓
UMAX *(through IMC) Scanners*	0891-647730	✓		
UMAX *MAC OS Compatible PCs*	01344-871300	✓		
US Robotics	01734-441000	✓		✓
Videologic	01923-271300	✓		
Visioneer	0171-519-5023	✓		

Imaging made clear with UMAX Scanners

Astra 610P — FROM £69 (£81.07)

- 30 bit colour scanning
- 300 x 600dpi optical resolution
- 4800 x 4800dpi maximum resolution
- Single Pass, colour CCD
- Bundled software: *PhotoDeluxe, Presto! PageManager, UMAX Copy Utility, VistaScan and OmniPage Direct*
- EPP/SPP Parallel Port

Astra 1210P — FROM £109 (£128.07)

- 30 bit colour scanning
- 600 x 600 dpi
- Maximum resolution: 9600 x 9600 dpi
- Bundled software: *PhotoDeluxe and PageManager*
- EPP/SPP Parallel Port

Powerlook *ColourStudio II* — FROM £749 (£880.07)

- Bundled software:
  Binuscan PhotoPerfect Advanced
  Adobe Photoshop LE
  Optional Photoshop full v4.0
  Includes FREE Painter 5 and Wacom ArtPad II

Call for details of CoverPlus Extended Warranty

Model	Standard	LE	Full	Pro
Astra 610 Parallel	£69 (£81.07)	£99 (£116.32)	£179 (£210.32)	-
Astra 610 SCSI	£99 (£116.32)	£129 (£151.57)	£209 (£245.57)	-
Astra 1210P	£109 (£128.07)	£139 (£163.32)	£229 (£269.07)	-
Astra 1200 SCSI	£229 (£269.07)	£259 (£304.32)	£349 (£410.07)	£548 (£643.90)
Powerlook ColourStudio II	-	£749 (£880.07)	£899 (£1056.32)	£1149 (£1350.07

LE = Photoshop LE, Full = Full Photoshop
Pro = Full Photoshop & Transparency Adaptor
All prices shown in brackets are inclusive of VAT

Powerlook III with Tranny unit	£1995	(£2344.12)
Mirage SE A3 with Tranny unit	£1999	(£2348.82)

GENUINE UK UNITS
All UMAX scanners supplied by Dabs Direct are genuine UK units and come with 1 year RTB

COVER plus
EPSON CoverPlus three year extended warranty service available
£149.00 (£175.07 inc VAT)

EPSON GTx-9500
Colour (4800 dpi/36 bit per pixel) Flatbed Scanner

- Advanced scanning options - TET, batch, page frame and negative film scanning
- SCSI and Bi-directional parallel interfaces built-in as standard
- Optional transparency unit and document feeder
- 1 year RTB warranty

FROM £446 (£524.05 inc VAT)

EPSON GT-5500
Compact Colour (400 dpi/ 30 bit per pixel) Flatbed Scanner

- Small footprint
- Single pass, full 30 bit colour scanning
- Advanced TET (Text Enhancement Technology)
- AAS (Auto Area Segmentation) for accurate copying and faxing

£187 (£219.72 Inc VAT)

EPSON GT-5000
Flatbed colour image scanner

- Small footprint
- Single pass, full 24 bits colour scanning
- Advanced TET (Text Enhancement Technology)
- Maximum resolution of 2400dpi
- Dedicated software for both PC and Mac users

£130 (£152.75 inc VAT)

Other models

EPSON FilmScan 200
35mm Film Scanner

- Affordable high quality scanning
- Suitable for 35mm - negative and positive
- Optional holder for Advanced Photo System cartridges
- Batch scanning capability - up to 6 images, simultaneously
- Fully TWAIN compliant, PC and Mac™ compatible
- BONUS PictureWorks PhotoEnhancer and Presto! PhotoAlbum software

FROM £303 (£356.02 inc VAT)

EPSON PhotoPC 600
XGA Colour digital camera

- High quality 24 bit colour images
- Prints directly to the Epson stylus Photo
- Displays presentations directly through video output
- High quality built-in 2" LCD colour viewfinder
- 4MB internal memory
- PAL TV/Video output for excellent large screen viewing
- Digital zoom, panoramic, B & W and Macro image capture modes
- Multi-frame mode
- Dedicated software for both PC and Mac users

£455 (£534.62 Inc VAT)

EPSON

- Serving you since 1987
- Over £50m annual turnover
- Over 200,000 satisfied customers
- Highly trained specialist staff
- Repair & upgrade services

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SCANNERS

	ex VAT	inc VAT
ACER		
VuegoScan S200	39	45.82
VuegoScan S310P Parallel	65	76.37
VuegoScan S310S SCSI	79	92.82
VuegoScan 610P Parallel	99	116.32
VuegoScan 610S SCSI	115	135.12
AGFA		
SnapScan 310 SCSI	124	145.70
SnapScan 600 SCSI	229	269.07
StudioStar SCSI	379	445.32
Arcus II SCSI & Transparency Adaptor	749	880.07
DuoScan SCSI	1799	2113.82
Accessories		
SnapScan Automatic Document Feeder	159	186.82
CANON		
Canoscan 300 SCSI	129	151.57
Canoscan 600 SCSI	454	533.45
DR3020 Document Management SCSI	3499	4111.32
EPSON		
GTx-5000 Parallel	130	152.75
GTx-5500 SCSI	187	219.72
GT-9500 Parallel & SCSI	383	450.02
GTx-9500 Parallel	446	524.05
GTx-9500 SCSI	469	551.07
GTi-9500 SCSI	538	632.15
FilmScan 200 SCSI	303	356.02
Accessories		
GT Automatic Document Feeder	299	351.32
GT Transparency Unit	365	428.87
HEWLETT PACKARD		
Scanjet 5s Parallel	134	157.45
Scanjet 5100c Parallel	149	175.07
Scanjet 6100c SCSI	449	527.57
Scanjet 5 Ethernet	1605	1885.87
Accessories		
6100 Automatic Document Feeder	279	327.82
6100 Transparency Unit	389	457.07
LOGITECH		
Scanman Colour 2000	77	90.47
PageScan Parallel	85	99.87
FreeScan Parallel	99	116.32
MICROTEK		
Phantom 330 Parallel	85	99.87
Colour PageWiz Parallel	89	104.57
ScanMaker 330 SCSI	109	128.07

ACER

VuegoScan 310

- Flatbed A4 colour scanner
- 300 x 600/600 x 1200 dpi optical resolution
- 4800dpi or 9600dpi max resolution
- High speed one pass scan
- 30bit colour
  8bit greyscale
- Software included
- Parallel (310P/610P) or
  SCSI II (310S/610S) interface

310P £65 (£76.37 inc VAT)

310S PC £79 (£92.82 inc VAT)

S-200 1200dpi, mono £39 (£45.82 inc VAT)

610P 9600dpi, Parallel £99 (£116.32 inc VAT)

610P 9600dpi, SCSI £115 (£135.12 inc VAT)

Nikon COOLSCAN II

High performance 35mm film scanner at an affordable price

- 2,700 dpi true optical resolution
- Fast 80 second scan time (approximate)
- Autofocus - consistently sharp scans
- Scans both slides and negatives
- Available with either Nikon Scan or SilverFast driver software

with Nikon Scan £499 (£586.32)

with SilverFast and Photoshop LE £599 (£703.82)

Prices in brackets are inclusive of VAT

SCANNERS

	ex VAT	inc VAT
MICROTEK continued		
ScanMaker 630 SCSI	209	245.57
35T Plus SCSI	595	699.12
ScanMaker III SCSI	675	793.12
ScanMaker Designer Pro SCSI	1195	1404.12
ScanMaker 6400XL A3 SCSI	1099	1291.32
ScanMaker 9600XL A3 SCSI	Call	Call
MUSTEK		
ScanExpress 6000P Parallel	65	76.37
ScanExpress 6000SP Pro SCSI	99	116.32
ScanExpress 12000P Parallel	119	139.82
ScanExpress 12000SP Pro SCSI	149	175.07
NIKON		
CoolScan II Internal SCSI & Drivers	439	468.82
CoolScan II External SCSI	499	586.32
CoolScan II External SCSI & Photoshop LE	599	703.82
Super Coolscan SCSI	1159	1361.82
POLOROID		
SprintScan 35LE SCSI	419	492.32
SprintScan Plus SCSI	1199	1408.82
SHARP		
JX-250	169	198.57
JX-330	689	809.57
JX-610	4299	5051.32
SPOT		
ScanTak 3c	69	81.07
Dynatek 6p Parallel	89	104.57
UMAX		
Astra 610P Parallel	69	81.07
Astra 610S SCSI	99	116.32
Astra 1210P Parallel	109	128.07
Astra 1200S SCSI	229	269.07
Photoshop LE add	30	35.25
Full Photoshop add	120	141.00
Powerlook ColourStudio II LE SCSI	749	880.07
Powerlook ColourStudio II Plus SCSI	899	1056.32
Powerlook ColourStudio II Pro SCSI	1149	1350.07
Powerlook III SCSI	1995	2344.12
Powerlook 2000 Pro SCSI	2499	2936.32
Mirage SE SCSI	1999	2348.82
VISIONEER		
PaperPort ix	119	139.82
PaperPort 3000	97	113.97
PaperPort Strobe Colour	169	198.57
PaperPort 6000	139	163.32

HEWLETT® PACKARD

HP ScanJet 5100c

£149 (£175.07 inc VAT)

The HP ScanJet 5100c is ideal for business people in the general office who wish to effectively convey paper based and electronic information.

With other scanners it can take hours to re-create a document; the HP ScanJet 5100c does it in minutes with the push of a button & Intelligent Scanning Technology.

Reproduction of black and white logos and linart to original quality, perfect for scaling to any size without jagged edges.

Complete scanning solution: includes software for desktop copying, text recognition, image editing, and document management.

- *600 dpi hardware super sampling*
  300 x 600 hardware
  1200 x 1200 enhanced
- *30-bit Convertor (36-bit colour image processor)*
- *CD-ROM:*
  HP PictureScan with integrated OCR software
  HP ScanJet Color Copy Utility
  Adobe PhotoDeluxe 2.0 Image Editor
  Caere pageKeeper Light document management

Designed for Microsoft® Windows®95

Mac OS

With 3 Years OSM Warranty **£289** (£339.57 inc VAT)

HEWLETT® PACKARD

HP ScanJet 6100c

Professional Series

£449 (£527.57 inc VAT)

The HP scanning solution that provides you with professional results and tools to communicate your ideas effectively.

- *Professional results with Intelligent Scanning Technology - Automatically*
- *NEW Slide Adapter for scanning 35mm slides*
- *Single-pass, single-exposure colour/greyscale flatbed*
- *600 dpi optical, 2400 dpi enhanced*
- *30-bit internal/24-bit colour output*
  10-bit internal/8-bit output grayscale
- *Includes the following hardware:*
  HP ScanJet 6100c
  HP ScanJet Slide adaptor
  Power cord, SCSI card, SCSI cable and manuals
- *Includes the following software:*
  OCR: Caere, with HP AccuPage
  Corel PhotoPaint Select (PC only)
  Adobe Photoshop LE (Macintosh only)
  HP ScanJet Color Copy Utility
  Adobe Acrobat 3.0
  Corel Web Graphics Suite (PC only)

Includes Microsoft Network, MSN CD-ROM (for a limited period only)

Designed for Microsoft® Windows®95

Mac OS

With 3 Years OSM Warranty **£589** (£692.07 inc VAT)

General Sales Hotline OPEN 8am - 7pm Mon to Thu . 8am - 5pm Fri . 10am - 3pm Sat

freephone
0800 558866

PRICE MATCHING
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Bolton 01942 794000 Edinburgh 0131 556 4114 London 0171 582 4777 Woking 01483 797474

MICROTEK
The Digitol Vision

NEW ScanMaker 6400XL/9600XL

Features and Benefits

Designed for professional applications the ScanMaker 6400XL and 9600XL are ideal for a production environment in corporations, advertising agencies, service bureaus for FPO positioning and for scanning large artwork, tabloid-sized publications, and x-rays for medical imaging.

Scanmaker 9600XL hardware features are:

- Large scan bed - Allows for batch scanning of up to ten 3.5" x 5" photo on the bed at one time.
- High Resolution CCD - The ScanMaker 9600XL allows for greater enlargement of scanned images.
- High Dynamic Range - Greater than 3.2 allows the scanner to produce vibrant images showing the slightest subtle differences in colour levels.
- 36-bit colour depth.
- Large 12" x 17" / 304.8 mm x 431.8 mm Scan Area - Scan oversize materials such as newspapers or tabloid magazines.

Specifications

- Resolution: 6400XL: 400 x 800 dpi, Interpolated 6400 dpi
  9600XL: 600 x 1200 dpi, Interpolated 9600 dpi
- Colour Depth: 36 bit
- Scan Area: 304 mm x 430 mm
- Interface: SCSI
- Software: Scan Wizard (PC/Mac)
  Caere OmniPage LE (OCR) (PC/Mac)
  Ulead PhotoImpact Full (Image Editing) (PC)
  ImagePals2Go! (Image Editing) (PC, Windows 3.X)
  ColorIt! (Image Editing) (Mac)
  Fractal Design Painter (Image Editing)
  Colour Management Software (PC/Mac)

ScanMaker 6400XL £1099 (£1291.32 inc VAT)
ScanMaker 9600XL £Call (£Call inc VAT)

Macintosh compatible versions also available - phone for prices

PC Home & PC Advisor Awards November 1997

ScanMaker 330

£109 (£128.07 inc VAT)

The ScanMaker 330 lets you place photos, drawings, company logos or pages of text into your computer software applications.

- 30-bit single-pass colour scanning
- 4800 dpi maximum resolution
- SCSI interface
- Software: Scan Wizard (PC/Mac)
  Caere OmniPage LE (OCR) (PC/Mac)
  Ulead PhotoImpact LE (Image Editing) (PC)
  Kai's PhotoSoap (Image Editing) (PC/Mac),
  DocuMagix PaperMaster (Document Management) (PC)
  ImagePals2Go! (Image Editing) (PC, Windows 3.X), ColorIt! (Image Editing) (Mac)

NOW includes Kai's PHOTOSOAP

Phantom 330

£85 (£99.87 inc VAT)

The Phantom 330 has integrated Enhanced Parallel Port technology, a colour depth of 30-bit, is very fast and thus about to become one of our most demanded models.

- 300 x 600 dpi optical resolution
- 4800 x 4800 dpi maximum (interpolated)
- Software: Scanner driver
  Caere OmniPage LE (OCR)
  Ulead iPhotoExpress (Image Editing)

ScanMaker 630

£209 (£245.57 inc VAT)

In terms of quality, speed and brilliance it's unequalled.

- 30-bit single-pass colour scanning
- 9600 x 9600 dpi maximum resolution
- SCSI interface
- Software: Scan Wizard (PC/Mac),Caere OmniPage LE (OCR) (PC/Mac)
  Ulead PhotoImpact Full (Image Editing) (PC),Kai's PhotoSoap (Image Editing) (PC/Mac)
  DocuMagix PaperMaster (Document Management) (PC)
  ImagePals2Go! (Image Editing) (PC, Windows 3.X)
  ColorIt! (Image Editing) (Mac)
  Colour Management Software (PC/Mac)

Macintosh compatible versions of thses two model are also available - phone for prices

All Microtek scanners are covered by 12 months of **Microtek Total Care**
...if within the 12 month warranty period, hardware fails, then you receive a brand new scanner free of charge.

Excellent Quality • Superior Service • Unbeatable Value

- ✔ Serving you since 1987
- ✔ Over £50m annual turnover
- ✔ Over 200,000 satisfied customers
- ✔ Highly trained specialist staff
- ✔ Repair & upgrade services

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FUJITSU

ScanPartner 300C

The Axis 700 Scan Server

Network Scanning from Fujitsu

A plug and play **Solution for Distributing Scanned Information** across and enterprise environment.

Attach the Axis 700 Scan Server with the Fujitsu ScanPartner 300C to your network and send scanned documents, photographs, reports etc. any where from individual to corporate distribution lists across the building or around the world.

The Axis 700 Scan Server

- *The AXIS 700 Network Scan Server is a practical way to reduce the cost, inefficiencies and duplication of effort required by photocopying, mailing, faxing and other conventional paper-based communication.*
- *Designed as an HTTP server with file (FTP) and e-mail (SMTP) clients.*
- *Optimised for Internet and intranets. It works within any Windows, UNIX or IntranetWare environment.*
- *Embedded Web server for easy configuration.*
- *Install in minutes and no special training required*
- *As easy to use as the copier or the fax*
- *View mono or colour scanned documents from standard Web browsers and free of charge image viewers.*

ScanPartner 300C

- *Colour Desktop Scanner • Up to 300 x 600 dpi • 10 pages per minute*

ScanPartner 300C with Axis 700 Scan Server starts form only **£2445** (£287.17 inc VAT)

(Includes BT Internet software, Avail Personal Edition Document Management software, and a SCSI cable)

ScanTak-3c™

Slim, Affordable, Powerful Performance

Single-Pass, 30-bit Colour Scanner

- 30-bit True colour flatbed scanner
- 300 x 600 dpi optical resolution
- 4800dpi max resolution
- TWAIN compatible
- Includes: Scantastic™ desktop image and document management software

£69 (£81.07 inc VAT)

SPOT The Most Advanced Graphics SPOT TECHNOLOGY INC.

TARGUS

A TRADITION OF EXCELLENCE

LIFETIME

A Global Company With a World Class Reputation

Digital Camera Case £35 (£41.12 inc VAT)

- Reinforced handle rivetted to case.
- Detachable shoulder strap with cushioned pad and steel fitting.
- Dual pull, self-healing nylon zips.
- Exterior accessory pocket with self-closing flap.
- File pocket with compartment for CD software
- Business card holder
- PC/Memory card pocket with secured flap
- Disk pocket with secured flap (holds up to 4-3.5" disks)
- Cover with self-locking tab to keep accessories in place
- Adjustable, foam padded dividers to create customised pockets for accessories
- Pen/Pencil holders

Please see page 8 for full Targus line listing

visioneer

PAPERPORT 6000 £139 (£163.32)

The Visioneer™ PaperPort® 3000 and PaperPort 6000 are compact desktop colour scanners that deliver excellent performance, unbeaten quality, and unmatched ease of use!

- 600 x 1200 dpi optical resolution; 2400 dpi enhanced
- 30-bit photorealistic colour
- Flatbed design allows for more flexible scanning of bound and loose items

£30 CASH BACK on all Visioneer hardware

example: Buy the PaperPort 3000 @ £113.97 inc VAT and get £30 CASH BACK, making the actual cost only £83.97 inc VAT. Cash Back claimed by voucher only.

AFTER CASH BACK £133.32 inc VAT

Free Software!

- PaperPort Software
- Web Publishing Kit
- Xerox TextBridge® OCR
- Corex CardScan™ SE
- PictureWorks PhotoEnhancer™
- Quicken ExpensAble SE
- Connectix QuickCards™ LE

PAPERPORT 3000 £97 (£113.97)

- 300 x 600 dpi optical resolution; 2400 dpi enhanced
- 30-bit photorealistic colour
- Flatbed design allows for more flexible scanning of bound and loose items

AFTER CASH BACK £83.97 inc VAT

PAPERPORT Colour Strobe £129 (£151.57)

With PaperPort Strobe, you can organise, edit, fax, e-mail, and publish using the world's most popular paper management software.

- Manage all your paper and images on screen
- Organise. Simply drag and drop your scanned documents to and from folders on your desktop.
- Fax*. Just drag any scanned document to your fax icon. SharpPage™ technology makes faxes from your PC razor-sharp.
- E-mail. With PaperPort Strobe, you can distribute your documents quickly using popular e-mail or Internet software - company-wide or worldwide.
- PaperPort Links™. Work with more than 150 applications. Just drag and drop your documents and images.

AFTER CASH BACK £121.57 inc VAT

Designed for Windows® 95

- Fits between your keyboard and PC
- Scans anything from business cards and photos to full news columns

Free Software!

- Xerox TextBridge® OCR
- Corex CardScan™ SE
- PictureWorks PhotoEnhancer™
- Connectix QuickCards™ LE

Designed for Microsoft® Windows®95

Upgrade to PAPERPORT DELUXE for just £65 (£76.37)

The Essential Companion For Your Scanner

** printer & modem required to print and fax* *Prices shown in brackets are inclusive of VAT*

Mustek

All Mustek products are fully TWAIN compliant
All Mustek scanners are single pass

The total scanning solution

Flatbed A4 Colour Scanners

ScanExpress 6000P £65 (£76.37)

- 300x600 dpi Optical Resolution
- 4800 Interpolated Resolution
- 30bit Colour Depth (1.1 billion colours)
- Connects simply, via the parallel port

ScanExpress 12000P £119 (£139.82)

- 600x1200 dpi Optical Resolution
- 9600 Interpolated Resolution
- 36bit Colour Depth (68.7 billion colours)
- Connects simply, via the parallel port

ScanExpress 6000SP Pro £99 (£116.32)

- 300x600 dpi Optical Resolution
- 4800 Interpolated Resolution
- 30bit Colour Depth (1.1 billion colours)
- Includes a SCSI interface

ScanExpress 12000SP Pro £149 (£175.07)

- 600x1200 dpi Optical Resolution
- 9600 Interpolated Resolution
- 36bit Colour Depth (68.7 billion colours)
- Includes a SCSI interface

The above models include image editing and OCR software

Digital Camera

VDC-100 £89 (£104.57)

- Up to 640x480 resolution interpolated (250k CCD)
- Stores up to 20 images in memory
- Includes editing software, PSU, batteries and carry pouch

VDC-200P £189 (£222.07)

- Up to 640x480 resolution (470k CCD)
- 2MB Memory (Up to 50 frames)
- 45mm TFT LCD image preview/menu
- Flash & self timer
- Composite connection to TV (PAL) to view images
- Includes editing software, batteries

Prices shown in brackets are inclusive of VAT

Scanners . Carry Cases . Digital Cameras

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DIGITAL CAMERAS

	ex VAT	inc VAT
AGFA		
ePhoto 307	208	244.40
ePhoto 1280	519	609.82
CANON		
PowerShot 350	388	455.90
PowerShot 600	529	621.57
CASIO		
QV-11A	139	163.32
QV-70	229	269.07
QV-200	299	351.32
QV-700	375	440.62
EPSON		
PhotoPC 600	455	534.62
Accessories		
PhotoPC 500 AC Adaptor	48	56.40
PhotoPC 500 LCD Display	165	193.87
PhotoPC 500 2Mb Card	85	99.87
PhotoPC 600 AC Adaptor	48	56.40
PhotoPC 600 4Mb Card	99	116.32
PhotoPC 600 15Mb Card	259	304.32
FUJI		
DX-5	179	210.32
DX-7	215	252.62
DX-9	309	363.07
Accessories		
Mains Adaptor	25	29.37
HEWLETT PACKARD		
PhotoSmart	199	233.82
HITACHI		
MPEG Video Camera	1449	1702.57
KODAK		
DC50	249	292.57
DC120	479	562.82
DC200	379	445.32
DC210	499	586.32
Accessories		
Carry Case	45	52.87
DC50/120 Mains Adaptor	40	47.00
DC200/210 AC Adaptor	59	69.32
DC120 Flash Sync Cable	15	17.62
DC120 Wide Angle Set	139	163.32
DC200/210 Mac Kit	29	34.07
4Mb Flash Card	89	104.57
10Mb Flash Card	159	186.82
20Mb Flash Card	259	304.32
MUSTEK		
VDC-100	99	116.32
VDC-2000P	199	233.82
NIKON		
CoolPix 100	246	289.05
CoolPix 300	329	386.57
OLYMPUS		
C-420L	309	363.07
C-820L	545	640.37
C-1400L	989	1162.07
RICOH		
RDC-300	295	346.62
RDC-2E	425	499.37
RDC-2L	549	645.07
Accessories		
RDC-2 AC Adaptor	48	56.40
RDC-2 Remote Control	34	39.95
SANYO		
DigiCam (VPC-G200)	295	346.62
DigiCam XGA (VPC-X300E)	495	581.62
Accessories		
Digicam AC Adaptor	75	88.12
SONY		
Mavica FD5	355	417.12
DSC-F1	389	457.07
Mavica FD7	469	551.07
Accessories		
Mavica Stamina Battery	47	55.22
Mavica Soft Case	29	34.07
DSC-F1 Battery	35	41.12
DSC-F1 Fast Charger	49	57.57
VIVITAR		
ViviCam 2000	89	104.57
ViviCam 2500	189	222.07
ViviCam 3000	269	316.07
SMARTMEDIA CARDS		
2MB	25	29.37
4MB	40	47.00
COMPACT FLASH/PCMCIA CARDS		
4MB	49	57.57
8MB	59	69.32
12MB	85	99.87
16MB	99	116.32
20MB	169	198.57
32MB	199	233.82
Compact Flash - PCMCIA Adaptor	15	17.62

Sanyo digiCAM XGA

As seen on TV!

- 4 Second of Sound
- 2.0" TFT Quality LCD Screen
- Auto Focus/Auto Flash/Auto Timer
- Optical Viewfinder
- Connect to TV and Video
- Continuous mode
- 1024 x 768 d

digiCAM	Models	digiCAM XGA
640 x 480	Resolution	1024 x 768
6 seconds	Sound with each picture	4 secs
TV Quality 2.0"	LCD Display	TV Quality 2.0"
NO	Zoom x 3	YES
16 pic/3.2	Continuous mode	9 pic/1.8 sec
YES	TV Video connect	YES
120	Max Pictures	30 per 4MB card
YES	Auto timer, focus, flash and viewfinder	YES
YES	J-Peg compression	YES
YES	PC and Mac compatible	YES
£295 (£346.62)	Price	£495 (£581.62)

£495 (£581.62) innovation award" - Vegas 97

Prices shown in brackets are inclusive of VAT

SANYO

The Award Winning DC210 Zoom Camera!

DC210 £499 (£586.32 inc VAT)

DC200 £379 (£445.32 inc VAT)

As DC210 except: No Carry Case; No Adobe software; No infrared interface; No zoom lens

Kodak digital science PRODUCTS

Incredible Pictures, Incredibly Easy

- True megapixel CCD with 1152 x 864 image resolution
- 4MB picture card included stores 16 - 60 pictures
- 1.8" TFT colour LCD for picture preview & review
- 2X Focus Free Zoom Lens with close-up mode
- Easy fuction select via Mode Dial
- Finished File Format (JPEG or FLASHPIX)
- Drag & Drop image straight into application
- Serial (RS232C), Infrared (IrDA) & Video Out (NTSC & PAL) interfaces - display pictures straight to TV!
- Supplied with Kodak PictureEasy 2.0, Adobe PhotoDeluxe & PageMill software, Windows '95 mounter & TWAIN Acquire module
- Optional Macintosh Interface Kit

Also available: DC50 £249 (£292.57 inc VAT)
DC120 £479 (£562.82 inc VAT)

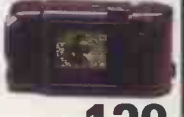
QV-700 Digital Camera

- Removable Flash Cards
- Large 2.5" LCD display
- Macro Function (to 7cm)
- 640 x 480 VGA resolution
- Interval or continuous shooting
- Panaramic function
- PC or MAC software and connection kit included

£375 (£440.62 inc VAT)

Also QV-70 £229 (£269.07 inc VAT) QV-200 £299 (£351.32 inc VAT)

QV-11A Digital Camera



- Stores 96 images
- Macro Lens
- LCD Display
- 1.8" TFT
- Exposure Control
- Zoom Function
- Self Timer
- TV Connection

£139 (£163.32 inc VAT)

QV-11A Accessories Included:

- Wrist strap • Soft case • Owner's manual
- Alkaline batteries (AA x 4) • Video cable
- Connection kit for PC or Macintosh • Lens cloth

CASIO

Wacom Graphics Tablets

It's as easy, as comfortable, and as natural as using a pen. Whether you're painting in Painter, retouching in Live Picture or Photoshop, or working with a host of other applications, a Wacom cordless pen and graphic tablet can significantly enhance your creativity and ease of working. Pressure sensitive pens allow you to vary line thickness, colour density or other characteristics, depending on the application. Already the most widely used graphics tablets for professional electronic artwork production, Wacom's innovative new features combine ergonomics with life like simulation of traditional graphics tools. UltraPad tablets are available from A5 to A2 size. All come with a programmable menustrip for commonly used functions, and provide tilt sensitivity for measuring pen angle - another Wacom first - for calligraphic effects in programs like Painter.

WACOM

Product	Price
Pen Partner	£59 (£69.32)
Pen Partner & PhotoSoap	£69 (£81.07)
ArtPad II	£96 (£112.80)
A5 UltraPad	£185 (£217.37)
A4 UltraPad	£279 (£327.82)
A3 UltraPad	£479 (£562.82)
A2 UltraPad	£1299 (£1526.32)

Prices shown in brackets are inclusive of VAT

VIDEO CONFERENCING

	ex VAT	inc VAT
BARAKA		
VidCall32 Parallel Video Conferencing Kit Software	169	198.57
Cinemail	59	69.32
CONNECTIX		
QuickCam	65	76.37
QuickCam VC	74	86.95
Software		
Digital Radar	19	22.32
PhotoBadge	39	45.82
Wig Out	19	22.32
CREATIVE LABS		
VideoBlaster WebCam	99	116.32
INTEL		
Create & Share USB	129	151.57
Create & Share PCI	199	233.82
ProShare Video Conferencing 200	639	750.82
ProShare Video System 200	925	1086.87
KODAK		
DVC300 Desktop	139	163.32
TYPHOON		
Colour Video Camera	74	86.95
VIDEOLOGIC		
Captivator PCI/VC	149	175.07
VIVITAR		
MPP-3 Desktop	89	104.57

PROJECTORS

	ex VAT	inc VAT
CTX		
Ez500	1289	1514.57
Ez550	1989	2337.07
Ez600	2989	3512.07
EPSON		
EMP-5100	4145	4870.37
EMP-7100	6220	7308.50
NEC		
MT810	4399	5168.82
MT1000	5999	7048.82
PROXIMA		
LB20	1989	2337.07
DP5610	3885	4564.87
DP5800	3885	4564.87
DP5900	3989	4687.07
DP9200	5449	6402.57
SANYO		
PLC-550B	3299	3876.32
PLC-5605	4499	5286.32
PLC-8805	5495	6456.62
SHARP		
XG3785E	2229	2619.07
XG3795	2589	3042.07
XGNV1E	3819	4487.32
XGSV1E	5529	6496.57
SONY		
CPJ-D500	1119	1408.82
VPL-S500	2895	3401.62

PROJECTOR HIRE

Projector hire available, please call for details

GRAPHICS TABLETS

	ex VAT	inc VAT
WACOM		
Pen Partner	59	69.32
Pen Partner & Soap	69	81.07
ArtPad II	96	112.80
Ultrapad A5	185	217.37
Ultrapad A5 & Painter	289	339.57
Ultrapad A4	279	327.82
Ultrapad A4 & Painter	359	421.82
Ultrapad A3	479	562.82
Ultrapad A3 electrostatic	599	703.82
Ultrapad A2	1299	1523.32

PLOTTERS

	ex VAT	inc VAT
HEWLETT PACKARD		
DesignJet 430 A1	1192	1400.60
DesignJet 430 A0	1642	1929.35
DesignJet 450C A1	1492	1753.10
DesignJet 450C A0	1942	2281.85
DesignJet 455CA A1	1942	2281.85
DesignJet 455CA A0	2242	2634.35
DesignJet 750C+ A1	3142	3691.85
DesignJet 750C+ A0	3742	4396.85
DesignJet 755CM A0	5017	5894.98
DesignJet 2000CP	5392	6335.60
DesignJet 2500CP	6292	7393.10
Accessories		
DesignJet 430/450 Roll Feed	139	163.32
DesignJet 430/450/455 A1 Stand & Bin	139	163.32
DesignJet 430/450/455 A0 Stand & Bin	169	198.57

- ✔ Serving you since 1987
- ✔ Over £50m annual turnover
- ✔ Over 200,000 satisfied customers
- ✔ Highly trained specialist staff
- ✔ Repair & upgrade services

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SONY

CPJ-D500
Portable Data Projector

The CPJ-D500 is ideal for groups of up to ten people and it makes the presenter's life a lot easier.

Exceptionally small and light - only the height and depth of an A4 sheet of paper and about 3.5 kg in weight - this neatly designed mid-range projector can fit in a briefcase, or be carried easily by its convenient fold away handle.

- Picture size (diagonal) 40" - 100" / 100 - 250 cm.
- Video input (PAL or NTSC) D-sub 15 (RGB) / Composite (RCA), S-Video
- Integrated speaker.

£1299 (£1526.32 inc VAT)

Mavica
Digital Still Cameras

There are two models to choose from, the Digital Mavica MVC-FD5 and the more advanced MVC-FD7.

The MVC-FD7 has all the functions of the MVC-FD5, plus 10x optical zoom lens, manual focus, and five pre-programmed auto exposure modes.

- 2.5" TFT LCD display.
- Stores up to 20 high resolution or 40 standard resolution images on one 3.5" 2HD floppy.
- 640 x 480 (VGA) image size.

MVC-FD5 £355 (£417.12 inc VAT)
MVC-FD7 £469 (£551.07 inc VAT)

Also available
DSC-F1 £389 (£457.07 inc VAT)

Connectix QUICKCAM VC

FOR WINDOWS 95™

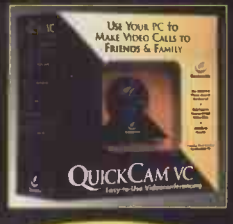
Bring the Excitement, Immediacy and Expressiveness of Colour Video Communications to Your Desktop

Use Your PC to Make Video Calls and send Video Emails to Friends & Family.

QuickCam VC is the easiest, most affordable colour video communications solution available. Using QuickCam VC's one-click video email integration, you can enliven text e-mail messages with graphics, sounds, still images and full motion video clips and turn your online chat into a truly interactive experience. QuickCam comes with all the software you need to make real time video conferencing calls to anyone virtually anywhere in the world over standard phone lines, the Internet or LAN connections.

- *Installation is a snap. With no cards to install or configure you can start making video calls in under 10 minutes*
- *Standard based video conferencing software means you can reach a broader community of people! With Connectix Video Phone 3.0 (compliant to modem H.324 standards) and Microsoft Net Meeting 2.0 (compliant to internet H.323 standards).*
- *Available in parallel and USB versions.*

Communicating has never been so satisfying!



SYSTEM PERFORMANCE
- Camera focus range: 1- inch to infinity
- Number of colours: thousands or millions
- Connectix VIDEC compression for improved video quality, faster frame rates and larger frame sizes
- Performance (thousands of colours):
  Parallel (ECP) 15+fps @ 352 x 288 pixels (CIF)
  USB: 15+fps @ 352 x 288 pixels (CIF)
- Image formats: AVI, BMP, JPEG, TIFF
- Video for Windows AVI support (v3.0)
- Software Applications include QuickCam software (v3.0) Connectix VideoPhone (v3.0), Microsoft NetMeeting (v2.0) Microsoft Internet Explorer and Vivo Active Video Now

Includes everything you need to video conference

Connectix

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PLC-8805B
Multimedia pro EX LCD Projector

- True XGA (1024 x 768 dots)
- 500 ANSI lumens brightness
- Lightweight 5.9kg
- Lens Protection
- Motor-Driven Zoom and Focus
- Auto Image Expansion
- Wireless remote with mouse functions
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- Freeze frame
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- Blue-back function
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Increase the performance of your printer with an additional memory option at a very cost effective price.
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- 1000 Mailbox voice mail
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- Call discrimination: Fax/Data/Voice

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Sportster Winmodem 33.6

The low-cost internal card - Windows compatible only

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- Call discrimination: Fax/Data/Voice
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- 33,600 bps V.34 data transmission speed, 14,400 bps fax data transfer
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- Call Back Message
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- Win 3.1, 95 printer driver

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Supports enhanced V.34 (33.6K bps) data and V.17 (14.4Kbps) data and V.17(14.4K bps) Class 1 fax.

Key Features
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- Flash upgradeable

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Key Features
- K56 flex 56K
- Flash upgradeable
- Plug and Play

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T 9108 Laser Printer

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- True 600 dpi
- Microsoft Windows Printing System
- Real PCL5e

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Tally T9014 Office Laser Printer (shown with optional Dual input bins)

T9014 Laser Printer

£525 (£616.87 inc VAT)

- 14 pages per minute
- 600 dpi
- Optional Dual input bins
- Optional LAN interface
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Ideal for small business or specialist home users, the **OKIPAGE** *4w Plus* is compatible with Windows 3.1/95 and Windows NT 4.0 and combines the highest standards of monochrome printing with fast throughput and excellent paper handling. The **OKIPAGE** *4w Plus* has one of the smallest footprints of any 600 dpi class personal page printer..

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OKIPAGE 10i

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The high speed page printer for workgroups

- LED 20 ppm page printer (PCL6), 7 seconds to first print
- 600 x 1200 dpi resolution
- Optional AdobePostScript Level II
- Fast MIPS R3000 RISC processor
- 8Mb RAM - upgradeable to 68Mb
- OKIVIEW network management software
- Bi-directional papallel and serial interface

£729 (£856.57)

OKIPAGE 20n/dx

- All the features of the OKIPAGE 20n
- Duplex unit as standard

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OKIPAGE 6e

- LED 6 ppm page printer (PCL5e)
- 600 dpi resolution
- 1Mb RAM - upgradeable to 18Mb
- DOS, Windows 3.1/95 and Windows NT

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OKIPAGE 6ex

- LED 6 ppm page printer (PCL5e)
- 600 x 1200 dpi resolution
- 2Mb RAM - upgradeable to 35Mb
- DOS, Windows 3.1/95 and Windows NT

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OKIPAGE 16n

- For heavier use, ideal for networks
- 16 Pages per minute
- 6Mb of memory
- 600 x 600 dpi
- Up to 1200 sheet paper capacity

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OKIFAX 4100/740/740MF

The OKIFAX 4100 is a high quality, high performance desktop LED fax, perfect for small office, home offices and for personal use.

- 14.4k modem
- 100 sheet paper capacity
- Memory expandable from 15 pages to 75
- Seperate toner and drum
- Advanced dialling features
- Power save mode

£489 (£574.57)

The OKIFAX 740 is an affordable plain paper fax

- Compact Footprint
- PC link via Serial interface
- 150 sheet paper capacity/20 sheet ADF
- 10 one touch and 50 two touch dialling
- 18 pages memory upgradeable to 68 pages
- ID coded Access
- 70 broadcast locations

£339 (£398.32)

The OKIFAX 740MF is a plain paper fax and colour printer.

- Supplied with mono and colour cartridges
- 150 sheet paper capacity/20 sheet ADF
- 18 sec/page transmission speed
- Autodial: 10 one-touch/50 speed dial/5 groupdial
- 1 Mb/50 page upgrade
- Q600 dpi mono printing

£349 (£410.07)

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HL-730 Plus £205
(£240.87 inc VAT)

The HL-730 Plus is the ideal low cost solution for your printing needs, combining flexibility with high print quality at an affordable price. Its compatibility with various computing environments makes it a good fit for home and corporate use.

FEATURES
- 6ppm engine speed
- 600 dpi resolution
- Straight paper path technology
- 1MB memory as standard
- Auto email printing software
- Intelligent sleep mode
- 200 sheet adjustable paper tray

HL-760 1MB £229
(£269.07 inc VAT)

FEATURES
- 6ppm engine speed
- 1200 x 600 dpi resolution
- Straight paper path technology

Also available:

HL-760 5MB £245
(£287.87 inc VAT)

MC-3000 £449
(£527.57 inc VAT)

The 3-in-1 Brother printer that brings out the best in colour. The MC-3000 offers you all the tools you need to bring out the best in your professional documents. A high quality, four colour printer, digital colour copier and colour scanner - all in one machine.

FEATURES
- Up to 5 ppm printing
- Up to 720x720 dpi printing
- 200 sheet input and output
- Bundled software
  Includes OCR textbridge and photo-manipulation package

Memory
Increase the performance of your printer with an additional memory option at a very cost effective price.
Phone now for prices

HL-1060 £349
(£410.07 inc VAT)

The only 10 ppm printer with two bins as standard (usually an expensive option), the HL-1060 is a real performance machine, ideally suited to workgroups or to individuals with demanding print requirements.

FEATURES
- 1200 x 600 dpi printing
- 10 pages per minute print speed
- 2MB memory
- Dual bin as std (2 x 200 sheets)
- Straight paper path
- Multiple emulations
- Network connectivity option

Also available:

HL-1060 6MB
(£42 8.87 inc VAT)

HL-1260e £599
(£703.82 inc VAT)

Incorporating Brother's own high speed 12 ppm engine and 1200dpi, the Brother HL-1260e delivers superb quality output with stunning graphic and text reproduction, for professional documentation.

FEATURES
- True 1200 x 600 dpi
- 650 sheet paper input
- 2Mb memory (upgradeable to 66Mb)
- PCL5e/BR-Script 2
- Advanced network capability
- Additional paper tray and duplex tray options

Also available:

HL-1260 6MB £615
(£722.62 inc VAT)

HL-2400c £2349
(£2760.07 inc VAT)

With a resolution of up to 2400dpi the new colour laser from Brother, provides the high quality output demanded by professionals

FEATURES
- up to 2400dpi
- up to 8ppm colour/16ppm mono
- 24Mb memory (upg to 112Mb)
- Semi automatic manual duplex
- Low running costs
- Automatic e-mail printing
- Intelligent sleep mode

Also available:

HL-2400cn £2685
(£3154.87 inc VAT)

The HL-2400cn is a network ready version, having all the features of the HL-2400c, with the addition of...
- 40Mb memory as standard
- Advanced Network Functionality
- 10BaseT & 10Base2 connectors with automatic detection

brother®

It's time your printing costs came down

All ECOSYS printers save you money.

ECOSYS

ECOSYS cartridge-free technology cuts printing cost by avoiding the need to replace the drum and developer, treated as consumables on conventional printers. Kyocera use long-life components instead meaning that printing is significantly cheaper than with cartridge-based printers.

FS-600
Laser Printer

energy EPA POLLUTION PREVENTER

Designed for Microsoft® Windows®95

FS-1700N
Network Laser Printer

THE SMART MONEY'S ON KYOCERA

FS-600 only £239
(£280.82 inc VAT)

- 600 dpi, 6ppm laser printer
- Cartridge-free technology
- 50MHz Power PC processor
- IEEE 1284 parallel plus option port
- Internal 150-sheet cassette
- Optional 250-sheet cassette
- Ethernet/serial interface options

One-year on-site warranty	£49	(£57.57 inc VAT)
Three-year on-site warranty	£99	(£116.32 inc VAT)

FS-1700N only £725
(£851.87 inc VAT)

- 600 dpi, 12ppm network laser printer
- 6MB memory plus memory enhancement
- Pre-installed multi-protocol Ethernet interface
- Fully SNMP compliant/Windows plug & play
- High speed parallel and serial interfaces
- Supported by Kyocera PrintMonitor management utility
- 250 sheet standard cassette plus 100 sheet multi-purpose feed
- Up to 2 x 500 sheet optional cassettes
- Optional duplex unit and output sorter/mailbox

One-year on-site warranty	£99	(£116.32 inc VAT)
Three-year on-site warranty	£199	(£233.82 inc VAT)

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HL-1260	599	703.82
HL-1260 6Mb	615	722.62
HL-1660	699	821.32
HL-1660 10Mb	715	840.12
HL-2400C Colour	2349	2760.07
HL-2400C Colour Ethernet	2685	3154.87
CANON		
LBP-660	177	207.97
LBP-1260+	614	721.45
EPSON		
EPL-N1200	593	696.77
EPL-N1200EN Ethernet	791	929.42
EPL-N1200PS PostScript	986	1158.55
EPL-N2000	1278	1501.65
EPL-N2000PS PostScript	1582	1858.85
FUJITSU		
Print Partner 10V	439	515.82
Print Partner 12V	579	680.32
Print Partner 16DV	729	856.57
Print Partner 16ADV	929	1091.57
GCC TECHNOLOGIES		
Elite 1212	1079	1267.82
Elite XL 608	1845	2167.87
Elite XL 616	2322	2728.35
Elite XL 808	2665	3131.37
Elite XL 1208	3599	3053.82
HEWLETT PACKARD		
Laserjet 6L	232	272.60
Laserjet 6P	461	541.67
Laserjet 6MP PostScript	562	660.35
Laserjet 4000 PostScript	711	835.42
Laserjet 4000T Twin Cassette PostScript	816	958.80
Laserjet 4000N Ethernet PostScript	914	1073.95
Laserjet 4000TN Twin Cass' E'net P'Script	1023	1202.02
Laserjet 5000 A3 PostScript	1239	1455.82
Laserjet 5000N A3 Ethernet PostScript	1779	2090.32
Laserjet 5000GB A3 PostScript	2199	2583.82
Laserjet 5Si	1604	1884.70
Laserjet 5SiNX Ethernet	1784	2096.20
Laserjet 5SiMX PostScript	2211	2597.92
Laserjet 5Si Mopier	4199	4933.82
Laserjet 5 Colour	2861	3361.67
Laserjet 5N Colour Ethernet	3142	3691.85
Laserjet 5M Colour PostScript	3600	4230.00
Accessories		
LaserJet Companion	78	91.65
LaserJet 4000 500 Sheet Tray	75	88.12
LaserJet 4000 500 Sheet Universal Tray	85	99.87
LaserJet 4000 500 Sheet Feeder	179	210.32
LaserJet 4000 75 Sheet Envelope Feeder	195	229.12
LaserJet 4000 Duplex Unit	175	205.62
LaserJet 5Si Duplex Unit	329	386.57
LaserJet 5Si 2000 Sheet MultiBin Mailbox	749	880.07
LaserJet 5Si 2000 Sheet Feeder	599	703.82
LaserJet 5Si Maintenance Kit	339	398.32
LaserJet 5Si Envelope Feeder	279	327.82
LaserJet 5Si Cabinet	229	269.07
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FS-600	239	280.82
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FS-3400	785	922.37
FS-1700	568	667.40
FS-1700T Twin Cassette	719	844.82
FS-1700N Ethernet	725	851.87
FS-1700M PostScript	859	1009.32
FS-3700	849	997.57
FS-3700T Twin Cassette	935	1098.62
FS-3700N Ethernet	1015	1192.62
FS-3700M PostScript	1119	1314.82
FS-6500 A3	1175	1380.62
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FS-1700/FS-3700 Accessories		
ST-20 Face-Down Stacker	619	727.32
HS-20 Face-Up Stacker	99	116.32
PF-7E Bulk Paper Feeder	419	492.32
HS-3E Bulk Output Stacker	419	492.32
EF-1 Power Envelope Feeder	150	176.25
PB-20 Printer Base	115	135.12
PA-20 Paper Path Adaptor	26	30.55
PF-20 Universal Paper Cassette	189	222.07
DU-20 Duplex Unit	345	405.37
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HS-1 500 Sheet Output Stacker	99	116.32
DU-1 Duplex Unit	345	405.37
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Xerox DocuPrint

Xerox DocuPrint 4508

Xerox DocuPrint 4508

The productive personal laser printer.

- 8 pages per minute
- 600 x 600 dpi
- 250 sheet paper tray

* 2ND YEAR RETURN TO BASE WARRANTY FREE OF CHARGE *

only £319 (£374.82 inc VAT)

Xerox DocuPrint 4512/4512N

Xerox DocuPrint 4512/4512N

The black and white network laser printer for small workgroups.

PC Direct BEST BUY

- Up to 12 pages per minute
- 600 x 600 dpi
- 2 x built-in 250 sheet paper trays
- Duplex printing as standard
- Optional Ethernet (standard on 4512N)

DocuPrint 4512

only £709 (£833.07 inc VAT)

DocuPrint 4512N

only £791 (£929.42 inc VAT)

DocuPrint C55

Xerox DocuPrint C55

Xerox DocuPrint C55

Colour laser printing for the office user.

- 600 x 600 dpi
- PCL5C emulation
- 3 ppm (colour), 12 ppm (mono)
- 30Mb memory

only £2439 (£2865.82 inc VAT)

C55MP only £3139 (£3688.32 inc VAT)

Photorealistic output for the large workgroup

C55MPV only £3999 (£4698.82 inc VAT)

Xerox DocuPrint N32 Network Laser Printer

- 600 x 600dpi laser technology
- 32ppm one-sided,30 ipm two-sided technology
- Edge-to-edge printing,all sizes
- Offers production level paper handling, document collating and stapling
- 2 x built-in 500 sheet paper trays
- 12 MB memory, upgradeable to 128 MB
- PCL5e emulation and PostScript Level 2 as standard
- Built-in Ethernet as standard

only £1729 (£2031.57 inc VAT)

Colour inkjet printer

Xerox Document XJ4C

Four colour inkjet printer

- Up to 4ppm mono, up to 1.5ppm colour
- Up to 6ppm (turbo black, optional)
- 600 x 600 dpi colour, high-resolution paper
- Takes plain paper, inkjet paper and transparencies, envelopes, card stock & labels
- Compatible with MS Windows 95

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Optra S2450N Ethernet	1759	2066.82
Optra SC1275 Colour	2769	3253.57
Optra SC1275N Colour	3079	3617.82
OKI		
OkiPage 4w plus	152	178.60
OkiPage 6e	195	229.12
OkiPage 6ex	229	269.07
OkiPage 10I	359	421.82
OkiPage 10IS	395	464.12
OkiPage 10IEN Ethernet	445	522.87
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OkiPage 16NPS PostScript	699	821.32
OkiPage 16EN Ethernet	749	880.07
OkiPage 16ENPS Ethernet PostScript	869	1021.07
OkiPage 20N	729	856.57
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OkiPage 20NPS PostScript	899	1056.32
OkiPage 20NDX Duplex	909	1068.07
OkiPage 20ENPS Ethernet PostScript	1039	1220.82
OkiPage 20ENDX Ethernet Duplex	1069	1256.07
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KX-P6300	172	202.10
KX-P6500	235	276.12
KX-P7200	1179	1385.32
QMS		
DeskLaser 600	159	186.82
DeskLaser 1400P	655	769.62
DeskLaser 2000Net A3 Ethernet	889	1044.57
DeskLaser 2000XNet A3 Duplex Ethernet	1339	1573.32
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JX-9865N Duplex Ethernet	899	1056.32
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4517D Duplex	909	1068.07
4517 MP PostScript	791	929.42
4517 MPD Duplex PostScript	987	1159.72
4520	1875	2203.12
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4925 PS Colour PostScript	5699	6696.32
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J2590A JetDirect External Plus3 10/100	349	410.07
J2591A JetDirect External Plus Combo	175	205.62
J2592A JetDirect 150X RJ45	99	116.32
J2593A JetDirect External Plus 3 Combo	229	269.07
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Professional Printers

HP LaserJet 6P/MP

- Up to 8 ppm print speed
- 600 x 600 dpi resolution plus REt and Microfine toner
- Two paper trays holding 350 pages total
- 1 year return to HP warranty, extendible to 3 year next day, on-site with HP SupportPack

6P only £461 (£541.67)
With 3 Years OSM Warranty £603 (£708.52)

6MP only £562 (£660.35)
With 3 Years OSM Warranty £704 (£827.20)

LaserJet 6P/6MP Accessories

Part No.	Item	Exc VAT	Inc VAT
C3903A	6P, 6MP Toner	£45	£52.87
C3987A	6P PostScript SIMM	£189	£222.07
J2591A	JetDirect EX Plus Combo	£175	£205.62
J2593A	JetDirect EX Plus 3 Combo	£229	£269.07
J2590A	JetDirect EX Plus 3 10/100	£349	£410.07

HP LaserJet 4000

4000 only £711 (£835.42)
- 4MB, 500 Sheet Tray

With 3 Years OSM Warranty £891 (£1046.92)

4000T only £816 (£958.80)
- 4MB, 2 x 250 Sheet Trays

With 3 Years OSM Warranty £996 (£1170.30)

4000N only £914 (£1073.95)
- 8MB, Network Card

With 3 Years OSM Warranty £1094 (£1285.45)

4000TN only £1023 (£1202.02)
- 8MB, 2 x 250 Sheet Trays, Network Card

With 3 Years OSM Warranty £1213 (£1425.27)

LaserJet 4000 Accessories

Part No.	Item	Exc VAT	Inc VAT
C4122A	75sht Envelope Feeder	£195	£229.12
C4123A	Duplex Assembly	£175	£205.62
C4124A	500sht Feeder	£179	£210.32
C4125A	500sht Universal Tray	£85	£99.87
C4127A	Toner	£69	£81.07

HP LaserJet 5000

5000 only £1239 (£1455.82)
- 4MB, 100 Sheet MP Tray, 250 Sheet Tray

With 3 Years OSM Warranty £1474 (£1731.95)

5000N only £1779 (£2090.32)
- 8MB, 100 Sheet MP Tray, 250 Sheet Tray & 500 Sheet Tray, Network ready

With 3 Years OSM Warranty £2014 (£2366.45)

5000GN only £2199 (£2583.82)
- 12MB, 100 Sheet MP Tray, 250 Sheet Tray & 500 Sheet Tray, Network ready, 1Gb Hard Disk

With 3 Years OSM Warranty £2434 (£2859.95)

LaserJet 5000 Accessories

Part No.	Item	Exc VAT	Inc VAT
C4113A	Duplex Assembly	£Call	£Call
C4114A	250sht Feeder	£Call	£Call
C4115A	500sht Feeder	£Call	£Call
C4116A	250sht Input Tray	£Call	£Call
C4129X	Toner	£Call	£Call

HP LaserJet 5Si/NX/MX

- Up to 24 ppm print speed for A4 documents
- 600 x 600 dpi plus REt and Microfine toner
- Three input sources, total capacity 1100 sheets
- 5Si 4MB RAM
- 5Si NX 4MB RAM & Network interface
- 5Si MX 12MB RAM, PostScript & Network i/f
- 1 year next day on-site warranty

5Si only £1604 (£1884.70)
With 3 Years OSM Warranty £2134 (£2718.95)

5SiNX only £1784 (£2096.20)
With 3 Years OSM Warranty £2314 (£2718.95)

5SiMX only £2211 (£2597.92)
With 3 Years OSM Warranty £2741 (£2597.92)

HP LaserJet 5Si Mopier

- Up to 24 ppm print speed for A4 documents
- 600 x 600 dpi resolution plus REt and Microfine toner
- Three input sources, total capacity 1100 sheets
- 12MB RAM
- Specifically designed for efficient high quality MOPying (Multiple Original Printouts) and automates associated activities, including Duplexing, collation and stapling
- 1 year return to HP warranty

only £4199 (£4933.82)

5Si Mopier with 3 Years OSM Warranty £4930 (£5792.75)

LaserJet 5Si/NX/MX/Mopier Consumables/Accessories

Part No.	Item	Exc VAT	Inc VAT
C3909A	Toner cartridge	£95	£111.62
C3762A	Duplex assembly	£329	£386.57
C3763A	2000-sheet paper tray	£599	£703.82
C3764A	Multi-bin Mailbox	£749	£880.07
C3765A	Envelope feeder	£279	£327.82
C2975A	Printer Cabinet	£229	£269.07
J2552A	JetDirect MIO Combo	£225	£264.37
C3972A	Maintenance Kit	£339	£398.32
B1375A	1MB Flash SIMM	£189	£222.07
B1376A	2MB Flash SIMM	£299	£351.32
B1377A	4MB Flash SIMM	£449	£527.57
C3969A	PostScript SIMM	£299	£269.07

HP Colour LaserJet 5/5M

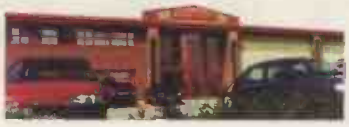
- Up to 10 ppm mono and up to 3 ppm colour
- 1200 dpi equivalent image print quality
- Standard 250 sheet tray
- Colour LaserJet 5 includes 20MB RAM
- Colour Laserjet 5M includes 36MB RAM, PostScript & Network interface
- 1 year return to HP warranty

5 only £2861 (£3361.67)
With 3 Years OSM Warranty £3480 (£4089.00)

5M only £3600 (£4230.00)
With 3 Years OSM Warranty £4219 (£4957.32)

Colour LaserJet 5/5M Accessories

Part No.	Item	Exc VAT	Inc VAT
C3119A	250 sheet Rear Feed	£205	£240.87
C3117A	250 sheet A4 Tray	£75	£88.12
C2937A	Printer Cabinet	£245	£287.87
C3102/3/4A	C/Y/M Toners	each £26	£30.55
C3105A	Black Toner	£6	£7.05
C3120A	Toner Collection Kit	£18	£21.15
C3964A	Coating Kit	£35	£41.12
C3965A	Black developer	£109	£128.07
C3966A	Colour developer	£299	£351.32
C3967A	Print Drum	£189	£222.07
C3968A	Transfer Belt	£119	£139.82
C3969A	Fuser Unit (110V, 220V)	£165	£193.87



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- Up to 4 ppm mono, 1.5 ppm colour
- 300 x 300 dpi resolution
- Handles up to 100 sheets
- Compatible with MS-DOS, Windows 3.1x and Windows 95
- 1 year unit exchange warranty

only £115 (£135.12)

670C with 3 Years OSM Warranty

£155 (£182.12)

HP DeskJet 720C

Brings photo-quality colour and crisp black text - on any paper - bringing all your print to life.

- Up to 8 ppm mono, 4 ppm colour/text
- 600 dpi resolution
- Photo REt II
- Smaller Ink drop size for sharper, more realistic color on anypaper
- More color shades provide smoother color transitions
- Crisp, professional-quality black text with HP's patented ink
- HP ColorSmart II automatically adjusts color settings also sharpens and enhances low resolution images
- Supports Intel's MMX technology for faster color processing
- Prints on plain and premium papers, transparencies, cards, envelopes and labels-even banners and Iron-on transfers
- Includes Kodak Image Enhancements for amazing photo-quality color on HP Deluxe Photo Paper
- Amazingly quiet
- Sleek compact design, easy setup and installation
- 1 year unit exchange warranty

720C £172 (£202.10)

720C with 3 Years OSM Warranty

£212 (£249.10)

HP DeskJet 690C Plus

- Up to 5 ppm mono, 1.7 ppm colour
- 600 x 300 dpi resolution
- Full colour Photo-Realistic printer with Photo Colour cartridge
- Mixes six Inks to produce desired colour tone
- 1 year unit exchange warranty

only £142 (£166.85)

690C Plus with 3 Years OSM Warranty

£182 (£213.85)

Value Bundle

HP DeskJet 690C Plus *with EasyPhoto Reader*

- HP DeskJet 690C Plus as features above
- Feed your photos into the EastPhoto Reader and you are ready to create a photo project
- Includes EasyPhoto Imaging software

only £161 (£189.17)

With 3 Years OSM Warranty

£201 (£236.17)

HP DeskJet 1100C

Versatility and Wide Format Capability at an affordable price.

The DeskJet 1100C is HP's latest Professional Series wide format printer designed to meet the varied printing needs of your small business.

- Up to 6.5 ppm black, 4 ppm color
- HP's Resolution Enhancement Technology (REt) for crisp black text at 600 x 600 dpi
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- Supports Windows® NT 4.0, Windows 95, Windows 3.1x and MS-DOS
- Network sharing via an optional HP JetDirect external print server.
- Easy setup and installation
- 1 year unit exchange warranty

1100C only £247 (£290.22)

1100C with 3 Years OSM Warranty

£287 (£337.22)

HP DeskJet 890C

- Up to 9 ppm mono, 5 ppm colour and text
- 600 dpi resolution
- Photo REt II
- Handles up to 150 sheets
- Compatible with DOS, Windows 3.1x, Win 95 and Win NT 4
- 1 year unit exchange warranty

only £202 (£237.35)

890C with 3 Years OSM Warranty

£242 (£284.35)

DeskJet Consumables

Part No.	Item	Exc VAT	Inc VAT
51629A	670/690C Black cart	£16	£18.80
51641A	820/870/1100 Colour	£18	£21.15
51645A	720/890/1100 Black	£16	£18.80
51649A	670/690C Tri-chamber	£18	£21.15
C1816A	690C Photo ink cart	£23	£27.02
51634Z	Premium A4 200 sht	£12	£14.10
C4847A	690C Photo paper 20sht	£8	£9.40
C4821A	690C Banner paper	£8	£9.40
C3831A	Glossy A4 10 sht	£9	£10.57
C3837A	Glossy A4 50 sht	£36	£42.30
C3832A	Transparency A4 10 sht	£18	£21.15
C3835A	Transparency A4 50 sht	£33	£38.77

HP LaserJet 6L

- Up to 6 ppm print speed
- 600 x 600 dpi resolution plus REt and Microfine toner
- Up to 100 sheets
- Multi-platform compatible
- 1 year return to HP warranty, extendible to 3 year next day, on-site with HP SupportPack

only £232 (£272.60)

6L with 3 Years OSM Warranty

£299 (£351.32)

LaserJet 6L Consumables

Part No.	Item	Exc VAT	Inc VAT
C3906A	6L Toner	£36	£42.30

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Canon colour BUBBLEJET PRINTERS

BJC-80
Colour Portable Printer

- 720x360dpi
- 4.5ppm mono 1.9ppm colour
- Image Optimiser technology - smooths away jagged edges
- New smudge-proof and fade resistant ink
- 30sheet Automatic Sheet Feeder
- Built-In IrDA infra-red sensor (Win95 only)
- Optional colour image scanner cartridge
- 1 year return to canon warranty

£142 (£166.85 inc VAT)

BJC-250

- 720x360dpi (mono) 360x360dpi (colour)
- Free mono cartridge (RRP £19.99)
- Free* Printmaster publishing package (RRP £29.99)
- Free* Catz computer pet (RRP £14.99)
- Free* Thomas Cook voucher worth £140
- Optional PhotoRealism cartridge
- Improved media support including T-shirt transfers
- 1 year return to canon warranty

*only while stocks last

£85 (£99.87 inc VAT)

BJC-4300

"Intense colour that shines out every time"

- 720x360dpi
- Drop Modulation Technology
- 4.5ppm mono 0.23ppm colour
- Image Optimiser technology - smooths away jagged edges
- New smudge-proof and fade resistant ink
- Supports a wide range of media
- Optional colour image scanner cartridge
- 1 year return to canon warranty

£114 (£133.95 inc VAT)

BJC-620

- Four colour cartridge system
- 720x720dpi
- 2.14ppm mono 1.71ppm colour
- Supports a wide range of media
- Windows Printing System
- 1 year return to base warranty

£167 (£196.22 inc VAT)

BJC-4650

- 720x360dpi
- Drop Modulation Technology
- New colour and photo cartridges
- Increased media support
- Up to 4.8ppm mono text in high speed mode
- Image Optimiser technology - smooths away jagged edges
- 100 sheet ASF
- Optional colour image scanner cartridge
- 1 year return to canon warranty

£197 (£231.47 inc VAT)

BJC-7000
Professional Bubble Jet

- 1200dpi unrivalled plain paper output
- New P-POP printing technology
- Increased media support
- Only printer in its class to print on card up to 550gsm
- Image Optimiser technology - smooths away jagged edges
- New large capacity cartridges
- A4+ size paper support gives full bleed A4 printing
- 1 year return to canon warranty

£245 (£287.87 inc VAT)

You and Canon can.

- Serving you since 1987
- Over £50m annual turnover
- Over 200,000 satisfied customers
- Highly trained specialist staff
- Repair & upgrade services

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EPSON

EPSON *Stylus*Photo EX

£308 (£361.90inc VAT)

NEW

COVER plus
EPSON CoverPlus three year extended warranty service available
£99.00 (£116.32 inc VAT)

Brilliant professional A3 colour images at 1440 dpi

- Photo Reproduction Quality Output on media up to A3 in size
- 1440 dpi and smaller Super MicroDot for the highest photo quality output • Windows 3.1, Windows NT and Mac compatible
- Epson PhotoEnhance 2 - automatically optimises photo output
- Includes Adobe Photoshop LE
- 1 year RTB warranty

EPSON *Stylus* Color 1520

£510 (£599.25 inc VAT)

COVER plus
EPSON CoverPlus three year extended warranty service available
£199.00 (£233.82 inc VAT)

1440 dpi A3 Colour Inkjet Printer

- Stunning 1440dpi print quality • Up to 6ppm black and 6ppm colour
- Over A3 print area for printing full A3 pages • PC and Mac compatible as standard • 'Look Your Best Color Pack' - inc a variety of fonts, images and application software • Optional PostScript RIP software
- Optional Network connectivity

EPSON *Stylus*Photo 700

£Call (£call inc VAT)

NEW

COVER plus
EPSON CoverPlus three year extended warranty service available
£65.00 (£76.37 inc VAT)

New Generation Home Printer for Photos & Text

- Perfect for photo reproduction, editing and output up to A4
- Windows 3.1, Windows NT and Macintosh compatible
- 1440 dpi and Super MicroDot for the highest photo quality output
- Epson PhotoEnhance 2 - automatically optimises photo output
- Includes Adobe Photo Deluxe V2.0

EPSON *Stylus*Photo

£199 (£233.82 inc VAT)

COVER plus
EPSON CoverPlus three year extended warranty service available
£65.00 (£76.37 inc VAT)

Professional Quality Photo & General Printer

- Prints documents, text and graphics
- Optimised for photo reproduction (can also print text as usual)
- Prints 4" x 6" format and enlargements to A4
- Normal and light colour QuickDry Inks (6 colour printer)
- Windows and Mac capability

EPSON *Stylus* Color 850

£243 (£285.52 inc VAT)

NEW

COVER plus
EPSON CoverPlus three year extended warranty service available
£65.00 (£76.37 inc VAT)

The Ideal Professional and Business Printer

- Up to 9ppm mono and 8.5ppm colour • 1440 dpi PhotoReal Colour and Laser-sharp Black output as standard • New smaller Super MicroDot
- Windows 3.1, Windows NT and Macintosh compatible
- Optional network and Postscript capability • PC and Mac support as standard • High capacity dual ink cartridge system
- New full function status monitor • 1 year RTB warranty

EPSON *Stylus* Color 400

£118 (£138.65 inc VAT)

COVER plus
EPSON CoverPlus three year extended warranty service available
£99.00 (£116.32 inc VAT)

720 dpi PhotoReal Colour Inkjet Printer

- Prints on plain, coated papers, envelopes and OHP transparencies
- Permanent Piezo print-head
- Windows 95 ICM compliant
- Video and camera mode
- 1 year RTB warranty

EPSON *Stylus* Color 800

Ultra-fast PhotoReal colour printing - at 1440 dpi **£207** (£243.22 inc VAT)

EPSON *Stylus* Color 600

1440 dpi PhotoReal Colour and Laser Sharp Mono Printer **£155** (£182.12 inc VAT)

EPSON *Stylus* Color 300

£99 (£116.32 inc VAT)

General Sales Hotline OPEN 8am - 7pm Mon to Thu . 8am - 5pm Fri . 10am - 3pm Sat

freephone 0800 558866

PRICE MATCHING
We can usually match competitors prices, please call for details.

Bolton 01942 794000 Edinburgh 0131 556 4114 London 0171 582 4777 Woking 01483 797474

INKJET PRINTERS

	ex VAT	inc VAT
CANON		
BJC-80	142	166.85
BJC-80 & Colour Scanner	185	217.37
BJC-250	85	99.87
BJC-4300	114	133.95
BJC-4300 & Colour Scanner	145	170.37
BJC-620	166	195.05
BJC-4650	197	231.47
BJC-4650 & Colour Scanner	235	276.12
BJC-5500	409	480.57
BJC-7000	245	287.87
EPSON		
Stylus 300 Color	99	116.32
Stylus 400 Color	118	138.65
Stylus 600 Color	155	182.12
Stylus 700 Color	Call	182.12
Stylus 800 Color	207	243.22
Stylus 850 Color	243	285.52
Stylus Photo	199	233.82
Stylus Photo EX	308	361.90
Stylus 1520 Color	511	600.42
Stylus Colour 3000	1118	1313.65
PostScript RIP	89	104.57
HEWLETT PACKARD		
Deskjet 340C	135	158.62
Deskjet 340CBI	166	195.05
Deskjet 400L Colour	86	101.05
Deskjet 670C	115	135.12
Deskjet 690C+	142	166.85
Deskjet 690C+ with Photo Reader	161	189.17
Deskjet 720C	172	202.10
Deskjet 820Cxi	153	179.77
Deskjet 890C	202	237.35
Deskjet 1100	247	290.22
Deskjet 1600C	871	1023.42
Deskjet 1600CN	1110	1304.25
Deskjet 1600CM	1280	1504.00
PhotoSmart Photo Printer	262	307.85
LEXMARK		
Colour JetPrinter 1000	89	104.57
Colour JetPrinter 3000	119	139.82
Colour JetPrinter 5000	145	170.37
Colour JetPrinter 5200	185	217.37
Colour JetPrinter 7200	199	233.82
OLIVETTI		
JP190	99	116.32
JP792	129	151.57
JP795	149	175.07
TALLY		
T-7060	169	198.57
T-7070	459	539.32
XEROX		
XJ4C	130	152.75
HomeCentre	339	398.32
WorkCentre 450c	339	398.32

DOT MATRIX PRINTERS

	ex VAT	Inc VAT
EPSON		
LX-300	97	113.97
LX-1050	200	235.00
FX-880	247	290.22
FX-1170	307	360.72
FX-2170	395	464.12
DFX-5000	1226	1440.55
DFX-8000	1911	2245.42
LQ-300	115	135.12
LQ-570+	216	253.80
LQ-670	230	270.25
LQ-870	377	442.97
LQ-2070	330	387.75
LQ-2170	468	549.90
DLQ-3000	831	976.42
OKI		
ML280	182	213.85
ML320	299	351.32
ML321	359	421.82
ML380	215	252.62
ML3320	315	370.12
ML3390	335	393.62
ML3321	369	433.57
ML3391	385	452.37
ML520	329	386.57
ML521	389	457.07
ML590	434	509.95
ML591	499	586.32
ML395 Mono	635	746.12
ML395 Colour	715	840.12
ML3410	799	938.82
PANASONIC		
KX-P1150	87	102.22
KX-P2023	108	126.90
KX-P3200P	173	203.27
KX-P3626	254	298.45
KX-P3696	254	298.45

PostScript Compatible Printing For Your Desktop Colour Printer

Affordable PostScript Compatible Printing

- Easy to use
- Chooser level printing
- Fast RIP on the fly processing
- High quality photographic screening & colour profiles
- Reliable PostScript Level 2 compatibility

PhotoScript Lite™ offers affordable PostScript® level 2 compatible printing for non-PostScript ink jet printers such as the Epson Stylus range, Canon BubbleJets and HP DeskJet models.

Documents will print faster, more accurately, and with superior quality and colour fidelity. Scanned images come alive with near photographic quality. Text and line drawings will be rendered to the full potential resolution of your printer with optimised colour matching for a full range of media and ink combinations.

PSGroup

- PhotoScript Lite DTP £89 (£104.57)
- PhotoScript Plus DTP £195 (£229.12) with PhotoMatch Colour Management

PostScript is the Registered trademark of Adobe Systems Inc.
PhotoScript Group Ltd and Adobe Systems Inc are not associated companies

EPSON PRINTER/PHOTOSCRIPT BUNDLES

Printer	PhotoScript Lite	PhotoScript Plus
Epson Stylus 300	£174 (£204.45)	£279 (£327.82)
Epson Stylus 400	£193 (£226.77)	£298 (£350.15)
Epson Stylus 600	£230 (£270.25)	£335 (£393.62)
Epson Stylus 800	£282 (£331.35)	£387 (£454.72)
Epson Stylus 1520	£586 (£688.55)	£691 (£811.92)

Prices shown in brackets are inclusive of VAT

olivetti lexikon

JP190 £99 (£116.32)

A compact colour inkjet recommended for anybody who needs quality colour printing.

- 600 x 300 resolution, mono and colour
- 128KB RAM
- 3ppm mono
- 30 Bitmap Fonts
- Low cost refillable printheads
- Free Micrografx software
- 12 Months On-Site/Exchange Warranty

Complete with a Black and a Colour cartridge

JP792 £129 (£151.57)

Olivetti has come up with a truly brilliant solution. Five colours instead of four.

- Five colour printing technology
- Up to 6ppm mono, 3ppm colour
- 600 x 600 resolution, mono and colour
- 120 sheet handling
- Optional photo lab
- Refillable print heads provides low cost per copy
- 12 Months On-Site/Exchange Warranty

JP795 £149 (£175.07)

Top quality printing every time.

- Five colour printing technology
- Up to 6ppm mono, 3ppm colour
- 600 x 600 resolution, mono and colour
- 120 sheet handling
- Photo lab standard
- Free photographic paper for outstanding results
- 12 Months On-Site/Exchange Warranty

Prices in brackets are inclusive of VAT

ORIGINAL INKJET CARTRIDGES

		ex VAT	inc VAT
CANON			
BC-01	BJ-10 Black	13	15.27
BC-02	BJ-200/210/230/240 Black	14	16.45
BC-05	BJC-210/240/250 Colour	18	21.15
BC-06	BJC-240/250 Photo	22	25.85
BC-06KIT	BJC-240/250 Photo Kit	29	34.07
BC-22	BJC-4550 Photo	26	30.55
BC-22PKIT	BJC-4550 Photo Kit	29	34.07
BC-29	BJC-4550 Fluorescent	24	28.20
BJI-642	BJ-300/330 Black	8	9.40
BJI-643BK	BJC-800 Black	12	14.10
BJI-643C/M/Y	BJC-800 Colour	16	18.80
BJI-201BK	BJC-600/610/620 Black	5	5.87
BJI-201C/M/Y	BJC-600/610/620 Colour	5	5.87
BC-10	BJ-30/70 Black	22	25.85
BCI-10BK	BJ-30/70 Black Tank 3pk	10	11.75
BC-11	BJC-70 Colour	25	29.37
BCI-11BK	BJC-70 Black Tank 3pk	12	14.10
BCI-11C	BJC-70 Colour Tank 3pk	15	17.62
BC-20	BJC-4200/4300 Black	19	22.32
BC-21	BJC-4200/4300 Colour	28	32.90
BCI-21BK	BJC-4200/4300 Black Tank	6	7.05
BCI-21C	BJC-4200/4300 Colour Tank	13	15.27
BC-60	BJC-7000 Black	22	25.85
BC-61	BJC-7000 Colour	24	28.20
BC-62	BJC-7000 Photo Colour	33	38.77
BCI-60	BJC-7000 Black Ink Tank	13	15.27
BCI-61	BJC-7000 Colour Ink Tank	15	17.62
BCI-62	BJC-7000 Photo Ink Tank	22	25.85
CITIZEN			
3000055	Printiva Black	4	4.70
3000056/7/8	Printiva Colours	5	5.87
3000059	Printiva Gold metallic	12	14.10
3000061	Printiva Red metallic	12	14.10
3000062	Printiva Blue metallic	12	14.10
EPSON			
S020025	Stylus 800/1000 Black	7	8.22
S020031	Stylus 300 Black	15	17.62
S020034	Stylus Colour/Pro Black	9	10.57
S020036	Stylus Colour/Pro Colour	19	22.32
S020047	Stylus 820/II/IIs/200 Black	12	14.10
S020049	Stylus II/IIs/200 Colour	18	21.15
S020062	Stylus 1500 Black	28	32.90
S020066	Stylus Pro XL+ Colour	22	25.85
S020089	Stylus 4/6/800/1520 Colour	14	16.45
S020093	Stylus 400/500/600 Black	14	16.45
S020097	Stylus 200/500 Colour	18	21.15
S020108	Stylus 800/1520 Black	15	17.62
S020110	Stylus Photo 5 Colour	14	16.45
S020118	Stylus 3000 Black	38	44.65
S020122/26/30	Stylus 3000 Colours	38	44.65
S020138	Stylus 300 Colour	15	17.62
HEWLETT PACKARD			
51626A	DJ 500 Black	17	19.97
51625A	DJ 500 Colour	17	19.97
51629A	DJ 600/670/690 Black	17	19.97
51649A	DJ 600/670/690 Colour	17	19.97
51645A	DJ 720/8x0/1100 Black	17	19.97
51641A	DJ 820/870/890/1100 Col	18	21.15
C1816A	DJ 690 PhotoRealistic	23	27.02
C1823A	DJ 720/890 Colour	22	25.85
51633M	DJ Port/310/320/340	14	16.45
51640A	DJ 1600 Black	16	18.80
51640C/M/Y	DJ 1600 Colours	19	22.32
51639A	PJ XL300 Black	13	15.27
51639C/M/Y	PJ XL300 Colours	14	16.45
LEXMARK			
1380490	PS 4079 Black	15	17.62
1380491/3	PS 4079 Colours	20	23.50
1380620	WinWriter 150 Black	19	22.32
1380619	WinWriter 150 Colour	26	30.55
1380620	ColourJet 1020 Black	20	23.50
1382050	ColourJet 2070 Black	24	28.20
1382060	ColourJet 2070 Colour	26	30.55
1380620	ColourJet 2050 Black	19	22.32
1380619	ColourJet 2050 Colour	26	30.55
XEROX			
XJ4C/Work/HomeCentre Black		12	14.10
XJ4C/Work/HomeCentre Colours		each 12	14.10

ORIGINAL RIBBONS

		ex VAT	inc VAT
EPSON			
8750	80 column 9 pin	5	5.87
8755	136 column 9 pin	6	7.05
7753	80 column 24 pin	5	5.87
7754	136 column 24 pin	6	7.05
S015086	FX-2170 black	14	16.45
S015083	LQ-2170 black	14	16.45
PANASONIC			
KX-P150	KX-P2180/2123/3124 black	8	9.40
KX-P150C	KX-P2180/2123/3124 colour	15	17.62
KX-P160P	KX-P2135 black	7	8.22
KX-P165P	KX-P2135 colour	13	15.27
KX-P170	KX-P3626/3696 black	10	11.75
KX-P181	KX-P3200 black	12	14.10

- Serving you since 1987
- Over £50m annual turnover
- Over 200,000 satisfied customers
- Highly trained specialist staff
- Repair & upgrade services

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ORIGINAL TONERS

		ex VAT	inc VAT
BROTHER			
TN-100	HL-630/631/660	19	22.32
TN-200	HL-730/760	15	17.62
TN-300	HL-1060	19	22.32
EP-ED	HL-1260/1660	60	70.50
CANON			
EPA	LBP-460/660	40	47.00
EPE	LBP-1260	60	70.50
EPSON			
S051011	EPL-5000/5200	92	108.10
S050005	EPL-5500	39	45.82
S051022	EPL-9000	139	163.32
S051016	EPL-N1200	65	76.37
S051035	EPL-N2000	129	151.57
HEWLETT PACKARD			
92275A	LaserJet IIP/IIIP	46	54.05
92295A	LaserJet II/III	42	49.35
92298A	LaserJet 4/4+/5	54	63.45
92274A	LaserJet 4L/4P	39	45.82
C3900A	LaserJet 4V	84	98.70
C3903A	LaserJet 5P/6P	45	52.87
C3906A	LaserJet 5L	36	42.30
C3909A	LaserJet 5Si	95	111.62
C4127A	LaserJet 4000	69	81.07
KYOCERA			
TK-11	FS-400	13	15.27
TK-12	FS-1550/1600/3400/3600	40	47.00
TK-20	FS-1700/3700	39	45.82
TK-20M	FS-1700/3700 HiCap	49	57.57
LEXMARK			
1382100	Optra 7k Diamond Fine	109	128.07
382150	Optra 14k Diamond Fine	149	175.07
	Optra S 7k Diamond Fine	119	139.82
	Optra S 17k Diamond Fine	149	175.07
NEC			
50015043	SuperScript 860	89	104.57
OKI			
4851	OL600/610/6e/6ex	15	17.62
5075	OL1200ex/Okipage 16n	35	41.12
5089	Okipage 4w	18	21.15
PANASONIC			
KX-P453	KX-P4410/4430/4400	28	32.90
KX-P457	KX-P6100/6150	12	14.10
KX-P459	KX-P6300/6500	12	14.10
SHARP			
JX92TC	JX-9200/9210	37	43.47
JX96DC	JX-9400/9600	95	111.62
TALLY			
044726	T-9108/9208	80	94.00

CABLES/CONNECTORS

CABLES	ex VAT	inc VAT
Parallel Printer 2m	4	4.70
Bi-Directional Parallel Printer 2m	5	5.87
Bi-Directional Parallel Printer 3m	7	8.22
Bi-Directional Parallel Printer 5m	9	10.57
Bi-Directional Parallel Printer 10m	15	17.62
C36M-C36M Centronics 2m	5	5.87
C36M-C36M Centronics 3m	7	8.22
C36M-C36M Centronics 5m	9	10.57
C36M-C36M Centronics 10m	15	17.62
Macintosh Printer 2m	5	5.87
Macintosh Printer 5m	10	11.75
D25-D25 Serial 2m	5	5.87
D25-D25 Serial 3m	7	8.22
D25-D25 Serial 5m	9	10.57
D25-D25 Serial 10m	15	17.62
D9F/D25F-D25M Modem 2m	5	5.87
D9F/D25F-D25M Modem 5m	9	10.57
RG58 (Thin) Ethernet 2m	4	4.70
RG58 (Thin) Ethernet 3m	5	5.87
RG58 (Thin) Ethernet 5m	7	8.22
RG58 (Thin) Ethernet 10m	10	11.75
RJ45 (Twisted Pair) Ethernet 2m	3	3.52
RJ45 (Twisted Pair) Ethernet 3m	5	5.87
RJ45 (Twisted Pair) Ethernet 5m	7	8.22
RJ45 (Twisted Pair) Ethernet 10m	10	11.75
IEC Mains 2m	5	5.87
IDE HD I40F-I40F-I40F Internal 1m	3	3.52
Floppy I34F-I34F-34F Internal 1m	3	3.52
SCSI I50F-I50F-I50F Internal 1m	5	5.87
SCSI D25M-C50M 1m	6	7.05
SCSI D25M-HC50M 1m	10	11.75
SCSI C50M-C50M 1m	8	9.40
SCSI C50M-C50M 2m	12	14.10
SCSI HC50M -C50M 1m	10	11.75
SCSI HC50M -C50M 2m	12	14.10
SCSI HC50M-HC50M 1m	10	11.75
SCSI HC50M-HC50M 2m	18	21.15
WideSCSI HC68M-C50M 1m	15	17.62
WideSCSI HC68M-HC50M 1m	18	21.15
WideSCSI HC68M-HC68M 1m	20	23.50
Keyboard Extension DIN5M-DIN5F 2m	5	5.87
VGA Extension HD15M-HD15F 2m	5	5.87

HEWLETT PACKARD

PhotoSmart

The HP PhotoSmart Photo Printer

£262 (£307.85 inc VAT)

- Print photographs in your own home or office **NO PROCESSING REQUIRED**
- On photo paper images feel and last just like real photos
- Reprint, enlarge, crop and enhance your photos
- Print enlargements up to A4 in eight minutes
- 6 inks designed for photographic prints

PhotoSmart

The HP PhotoSmart Photo Scanner

£322 (£378.35 inc VAT)

- Scans a variety of sizes and objects - slides, negatives and prints up to 13 x 18cm for highest possible quality
- Fast - preview scans in 10 seconds, final scans in 40 seconds
- Includes HP PhotoSmart Scanning Software so you can control exposure, colour, brightness and make multiple copies

FUJITSU

PRINTERS

Print Partner 12V

Print Partner 16ADV

Print Partner 10V £439

(£515.82 inc VAT)

- 600 dpi (1200 x 600 with FEIT)
- 10ppm (A4)
- 3MB RAM (expandable to 67MB)
- 250 sheet paper tray (optional 500 sheet tray)
- RS232, LocalTalk, Ethernet interfaces available
- 1 year on-site warranty

Print Partner 12V £579

(£680.32 inc VAT)

- 600 dpi (4800 x 600 with FEIT)
- 12ppm (A4)
- 4MB RAM (expandable to 68MB)
- 250 sheet paper tray (optional 500 sheet tray)
- LocalTalk, Ethernet interfaces available
- Plug and Play support
- 1 year on-site warranty

Print Partner 16DV £729

(£856.57 inc VAT)

- 600 dpi (4800 x 600 with FEIT)
- 16ppm (A4)
- 4MB RAM (expandable to 68MB)
- 500 manual sheet paper tray
- LocalTalk, Ethernet interfaces available
- 1 year on-site warranty

Print Partner 16ADV £929

(£1091.57 inc VAT)

- 600 dpi (4800 x 600 with FEIT)
- 16ppm (A4)
- 4MB RAM (expandable to 68MB)
- 500 manual and 100 multifunction sheet paper trays
- LocalTalk, Ethernet interfaces available
- 1 year on-site warranty

Prices in brackets are inclusive of VAT

DATA SWITCHES

2/1 Parallel Manual	10	11.75
4/1 Parallel Manual	15	17.62
2/2 Crossover Parallel Manual	29	34.07
2/1 Parallel Auto	19	22.32
4/1 Parallel Auto	29	34.07
8/1 Parallel Auto	99	116.32
2/1 VGA & keyboard	15	17.62
4/1 VGA & keyboard	25	29.37

CARTRIDGES/DISCS/CD'S

DISCS	ex VAT	inc VAT
1.44Mb DSHD x 10 each	0.50	0.58
1.44Mb DSHD x 100 each	0.40	0.47
1.44Mb DSHD x 250 each	0.35	0.41
650Mb CD Recordable x 1	2.70	3.17
650Mb CD Recordable x 10 each	2.20	2.58
650Mb CD Recordable x 100 each	1.90	2.23
650Mb CD ReWriteable x 1	16	18.80
650Mb CD ReWriteable x 10 each	14	16.45
650Mb CD ReWriteable x 100 each	13	15.27
TAPES		
2Gb/4Gb 90m DAT	6	7.05
4Gb/8Gb 120m DAT	14	16.45
12Gb/24Gb 125m DAT	29	34.07
Travan TR-1 400/800Mb	16	18.80
Travan TR-3 1.6/3.2Gb	22	25.85
Travan TR-4 4/8Gb	25	29.37
Verbatim TR-1 Extra 500/1000Mb	17	19.97
Verbatim TR-3 Extra 2.2/4.4Gb	20	23.50
Iomega Ditto 2000 1/2Gb	14	16.45
Iomega Ditto 2000 1/2Gb 3pack	38	44.65
DC2120 120/250Mb Formatted	10	11.75
DC2120XL 170/340Mb	12	14.10
MC3000XL 340/680Mb	19	22.32
MC3000XL 680/1360Mb	19	22.32
QW5122XLF 200/420Mb QIC-Wide	11	12.92
QW3010XLF 420/850Mb QIC-Wide	17	19.97
DC6250 250Mb	15	17.62
DC6525 525Mb	17	19.97
DC9100 1Mb	19	22.32
REMOVABLE CARTRIDGES		
Iomega ZIP 100Mb	9	10.57
Iomega ZIP 100Mb 6 pack	48	56.40
Iomega ZIP 100Mb 10 pack Coloured	89	104.57
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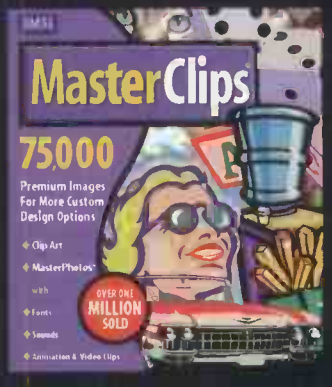

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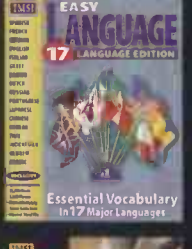
This leading design and planning suite offers five complete products in one package to allow you to plan and design your dream home, office and garden. Ideal for home and office, multi-storey layouts, landscaping, patios, bathrooms, kitchens, and more, a library of best-selling plans and a full set of drawing tools let you create the perfect design, then walk through it in accurate 3D.

TurboProject v2 Professional **£230** (£270.25)
TurboProject Professional is a powerful project management and planning system designed to support an organisation's requirements for the management of successful projects, activities, resources and costs. Its master/sub-project architecture and comprehensive functionality make it an ideal solution for any organisation that has multiple projects to co-ordinate.

WinDelete 97 **£29** (£34.07)
WinDelete 97 is the safest and easiest way to keep your system running smoothly and efficiently. It locates, then removes or archives any unneeded files, programs, demos or shareware, safely and effectively. Key features include a foolproof, thorough install and uninstall system for 16-bit or 32-bit programs. background installation tracking, archive, compress and transport facilities, duplicate finder and lots more.

NetAccelerator **£25** (£29.37)
This ingenious utility saves you time and money by using the idle time of your modem to intelligently download linked web pages - including both text and graphics - in the background as you are reading your selected site.
Includes two bonus utilities: Symantec's Internet FastFind for fast and efficient web searching, and Gravity Lite Newsreader for searching and sorting your newsreading tasks



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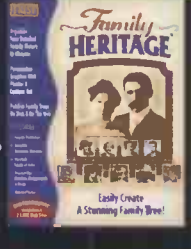
Easy Language Conversational Skills is the most complete multiple-language learning product available at this price. Learn Spanish, German, French and English all from one CD at your own pace. Everything from 'Ordering Food' to 'Communicating Clearly' are covered in nine self-paced, in-depth lessons in vocabulary, grammar, sentence structure, reading and listening comprehension.



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Family Heritage provides easy-to-use family tree-building tools, powerful information management features, access to a rich gathering of historical information and sources.
Ideal for anyone interested in creating a beautiful, timeless family tree to share and display with pride - from the beginner to the hobbyist to the dedicated family historian.

FormTool 97 **£68** (£79.90)
FormTool 97 from IMSI is the easiest and fastest way to create, fill and automate forms for any purpose. Powerful and simple-to-use design and editing tools allow you to produce professional looking forms quickly, saving time and money. Familiar Microsoft Office compatible interface, menus and floating toolbars all use standard MS names and images.

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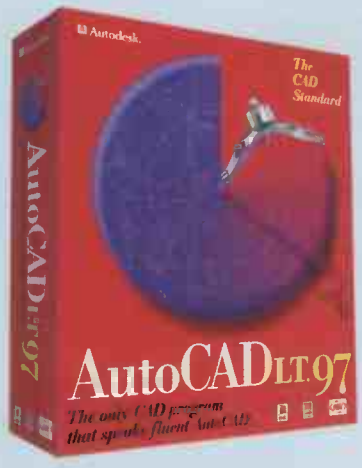

AutoCAD LT97

...NEW from Autodesk® 100% AutoCAD® Release 14 compatibility

Introducing AutoCAD LT® 97. The only CAD program that speaks 100 percent fluent AutoCAD®. AutoCAD LT® 97 is loaded with powerful 2D drawing and editing tools plus several new features that increase your productivity. There's a Office-like Object Property toolbar that lets you determine the layer, color, or linetype of an object and change it with a single mouse click. A drag & drop Content Explorer™ that makes it easy to manage and re-use symbols. Plus precision drawing tools like AutoSnap™ and PolarSnap™ that speed up your drawing process. With AutoCAD LT® 97, you can even share drawings on the Internet..

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AutoCAD LT97 *for Windows 95* **only £425** (£499.37 inc VAT)

AutoCAD LT97 *version upgrade* **only £179** (£210.32 inc VAT)

AutoCAD LT Features:

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- View popular images and vector file formats, including .GIF, HPGL and many more
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- Build an information system by adding text notes to files and creating links between related documents
- Safeguard original documents from unauthorised modifications

AutoSketch 5

...precision drawing made easy

AutoSketch have produced a brand new version of its award winning drawing software AutoSketch. It has been produced to provide the easiest to use product, that works in a familiar way and yet can quickly produce accurate drawings, layouts and charts. Template within the software immediatety start the drawing process through a series of 'wizards' which avoids the 'blank page syndrome' often faced by the casual or occassional user. The product has been completely configured to European standards and includes thousands of standard recognisable symbols for furniture, components and fixings. It is affordably priced and a 'must' for every desktop.

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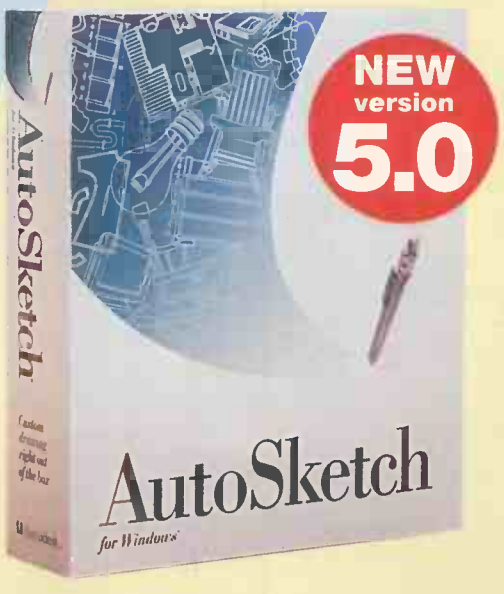

AutoSketch 5 Features:

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- Microsoft Office 97 compliant
- 'Wizard' technology produces a step by step guide to the drawing you need
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- No learning process necessary
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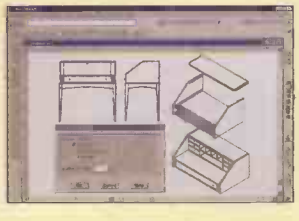

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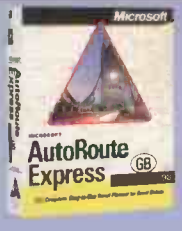

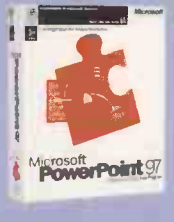

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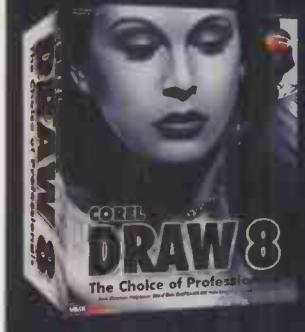

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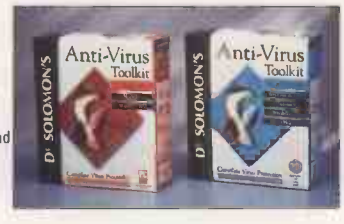

Dr Solomon's provides advanced techniques for the detection and removal of viruses and is the first choice for any PC user. Dr Solomon's Anti-Virus Toolkit finds new and unknown viruses, especially macro viruses, without costly false alarms.

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AutoCAD LT 97 VU	179	210.32
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C++ Builder Professional v3.0 VU	229	269.07
C++ Builder Client/Server v3.0 VU	979	1150.32
Delphi Professional v3.0 VU	229	269.07
Delphi Client/Server v3.0 VU	979	1150.32
Visual dBase 7 Pro VU	149	175.07
Visual dBase 7 Client/Server VU	795	934.12
COREL		
Draw v8.0	139	163.32
WordPerfect Suite v8.0	88	103.40
INTUIT		
QuickBooks v5.0	115	135.12
QuickBooks & Payroll v5.0	175	205.62
LOTUS		
Smartsuite 97 VU/CU	109	128.07
1-2-3 v5.0 VU	70	82.25
MICROSOFT		
Word/Excel/Access/PowerPoint 97 CU/VU	88	103.40
FrontPage 97 VU	69	81.07
Office 97 CU/VU	148	173.80
Office Pro 97 CU/VU	205	240.87
Office Pro 97 with Intellimouse	224	263.20
Office Small Business CU/VU	148	173.90
Visual Basic v5.0 VU	36	42.30
Visual Basic Pro v5.0 VU	166	195.05
Visual Basic Enterprise v5.0 VU	469	551.07
Visual C++ Pro v5.0 VU	213	250.27
Visual C++ Enterprise v5.0 VU	469	551.07
Visual FoxPro Pro v3.0 VU	189	222.07
Visual FoxPro Pro v5.0 VU	189	222.07
Visual Studio Pro 97 CU/VU	335	393.62
Visual Studio Enterprise 97 CU/VU	677	795.47
Works v4.5 VU	35	41.12
NOVELL		
Netware Any 5u - IntranetWare 5 user	215	252.62
Netware Any 10u - IntranetWare 10 user	375	440.62
Netware Any 25u - IntranetWare 25 user	655	769.62
Netware Any 50u - IntranetWare 50 user	875	1028.12
SHAPEWARE		
Visio v5.0 VU	69	81.07
Visio Professional v5.0 VU	129	151.57
Visio Technical v5.0 VU	129	151.57

VU = Version upgrade, CU = Competitive upgrade

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Company.....
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Card Number _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ Issue No _ _

Card Start Date _ _/_ _ Card Expiry Date _ _/_ _

Signed..... Date _ _/_ _/_ _

Carriage*	
Sub Total	
Vat @17.5%	
TOTAL	

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6. Goods not sold on a trial basis.
7. Goods offered subject to being unsold. In the event of non-availability of goods, we reserve the right to rescind the contract.
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13. You must use any manufacturer or on-site arrangements provided.
14. All returns must be in stock condition and be authorised by Dabs Direct.
15. No opened software will be accepted for credit. Faulty discs swopped by manufacturer.
16. You are responsible for ensuring safe delivery of the returned item.
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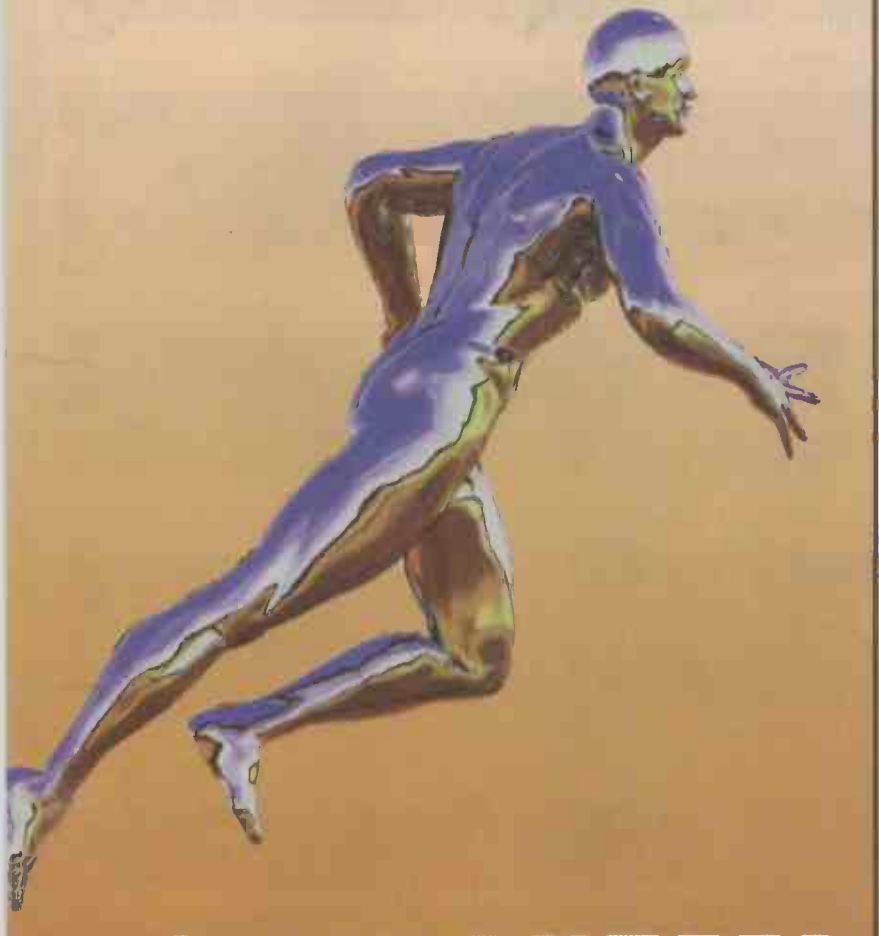

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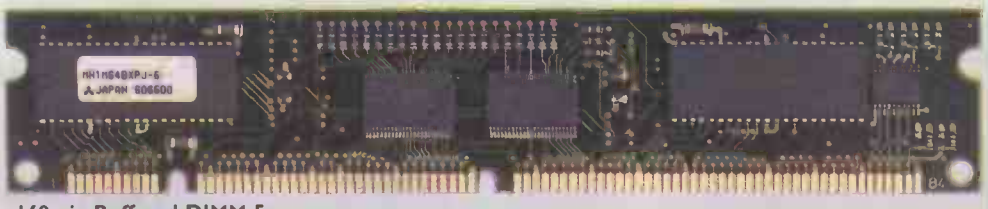
Why SMC ?

While memory specifications can look the same on the page, it's a hard fact of life that the quality of manufacture and supply is more variable than most people think possible.

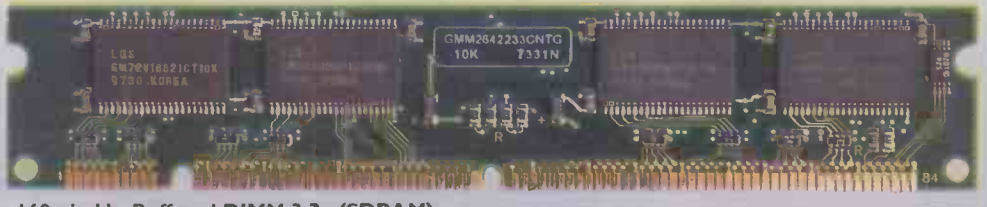
So, it's reassuring to know that at SMC we haven't forgotten the importance of quality control. Not only do we insist on buying from reliable and reputable sources, but also by instigating frequent batch checks and tougher tests we aim to maintain the quality of our goods, and safeguard our hard won reputation for reliability.

Our range of SIMMS, DIMMS and Matched Memory is exhaustive, and because we stock in depth we can guarantee swift delivery times and very competitive prices.

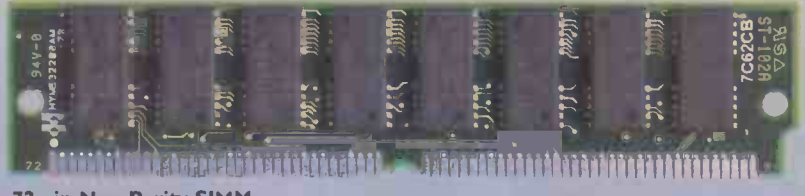
Add to this SMC's highest levels of after-sales service, and you'll know that when you buy from us, you're getting quality, value ... and peace of mind.



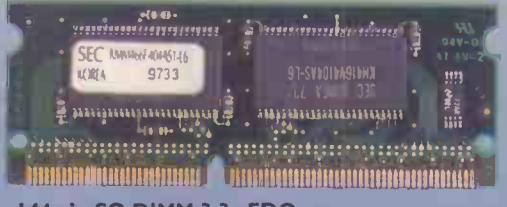
168 pin Buffered DIMM 5v



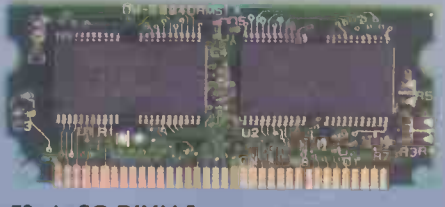
168 pin Un-Buffered DIMM 3.3v (SDRAM)



72 pin Non-Parity SIMM



144 pin SO DIMM 3.3v EDO



72 pin SO DIMM 5v

30 pin SIMM

Product Focus : SMC's guide to memory types

What is a DIMM?

A DIMM (Dual In-line Memory Module) is the latest technology which takes advantage of the new Pentium and Pentium II based computers. A circuit board with DRAM (Dynamic Random Access Memory) chips now provides 64-bit memory access to match the processor.

You should consider the following factors before you attempt a memory upgrade :

- DIMMs are available as 72pin, 144pin and 168pin. The desktop standard is 168pin.
- DIMMs are installed in a single bank so you won't have to worry about matching.
- Early Pentium PCs that could work with DIMMs used 5 volt modules.
- The most recent support is for 3.3 volt.
- However, always check your system's manual for sizes and voltages.

What is a SIMM?

Industry standard SIMMS (Single In-line Memory Modules) are based on DRAM (Dynamic Random Access Memory) chips and provide a cost effective way of adding memory to the PC. However, the followlng factors must be considered before you attempt a memory upgrade :

- Machines use either 30pin or 72pin SIMMs or a combination of the two.
- You must check which your machine takes before making your purchase.
- SIMMs are installed into a bank, which will be either two or four slots.
- You must fill a complete bank, with modules of the same size.
- 30pin SIMMs are supplied in the older form of 9-chip or the newer 3-chip versions.
- Older 286/386sx machines require 9-chip, whilst later 386DX/0486 use 3-chip.
- 72-pin SIMMS are fitted to later 486 PC's and PENTIUM based machines.
- They are fitted singly on the 486 or in pairs In Pentium machines.

PRODUCT FINDER :
SEE FRONT COVER

SALES LINES OPEN 8.30am - 6.30pm MONDAY TO FRIDAY & 9am - 1pm SATURDAY

MEMORY : SIMMS & DIMMS

Product Focus : EDO Memory

Almost all Pentium-class motherboards are designed to support Extended Data Out (EDO) SIMMs which offer a cost-effective alternative to installing a secondary cache to boost system performance. However, for top-level configurations, EDO RAM combined with a secondary cache will further enhance performance. Most motherboards that support EDO SIMMs will also work with standard SIMMs installed in a neighbouring bank.

5 Year Warranty -Batch Tested

SMC COMPUTERS

EDO Memory - 72 Pin

Mb	Description	Speed	Part No	ex VAT	inc VAT
4Mb	1Mb x 32bit	60ns	13-97-0400	£8	£9.40
8Mb	2Mb x 32bit	60ns	13-97-0801	£10	£11.75
16Mb	4Mb x 32bit	60ns	13-97-1601	£19	£22.33
32Mb	8Mb x 32bit	60ns	13-97-3201	£38	£44.65
64Mb	16Mb x 32bit	60ns	13-97-6401	£145	£170.38
128Mb	32Mb x 32bit	60ns	13-97-1281	£285	£334.88

Non-Parity EDO Memory requires Motherboard support, but offers faster performance.
486-based computers that support EDO can take single modules, but Pentium computers require EDO to be installed in pairs. Please check your motherboard manual to confirm that your PC supports the required module size.

SDRAM DIMM Memory - 168 Pin

Mb	Description	Part No	ex VAT	inc VAT
8Mb	1Mb x 64bit	19-95-0821	£29	£34.08
16Mb	2Mb x 64bit	19-95-1622	£25	£29.38
32Mb	4Mb x 64bit	19-95-3224	£44	£51.70
64Mb	8Mb x 64bit	19-95-6468	£125	£146.88
128Mb	16Mb x 64bit	19-95-1280	£245	£287.88

DIMM stands for Dual InLine Memory Module.
Our SDRAM Synchronous DIMMs have the following specifications:- Non-Parity, Un-buffered, Synchronous, 3.3volt, 168pin and they also feature an SPD chip allowing them to be compatible with all machines requiring standard SDRAM.
Motherboards and chipsets that support SDRAM include the Intel VX/TX & LX.

SIMMS - 72 Pin

Mb	Description	Speed	Part No	ex VAT	inc VAT
1Mb	Full Parity, 256k x 36bit	70ns	13-97-0117	£20	£23.50
2Mb	Full Parity, 512k x 36bit	70ns	13-97-0217	£38	£44.65
4Mb	Non Parity, 1Mb x 32bit	60ns	13-97-0406	£8	£9.40
		70ns	13-97-0407	£10	£11.75
4Mb	Full Parity, 1Mb x 36bit	60ns	13-97-0416	£12	£14.10
		70ns	13-97-0417	£14	£16.45
8Mb	Non Parity, 2Mb x 32bit	60ns	13-97-0806	£12	£14.10
		70ns	13-97-0807	£14	£16.45
8Mb	Full Parity, 2Mb x 36bit	60ns	13-97-0816	£20	£23.50
		70ns	13-97-0817	£25	£29.38
16Mb	Non Parity, 4Mb x 32bit	60ns	13-97-1606	£22	£25.85
		70ns	13-97-1607	£28	£32.90
16Mb	Full Parity, 4Mb x 36bit	60ns	13-97-1616	£29	£34.08
		70ns	13-97-1617	£35	£41.13
32Mb	Non Parity, 8Mb x 32bit	60ns	13-97-3206	£42	£49.35
		70ns	13-97-3207	£49	£57.58
32Mb	Full Parity, 8Mb x 36bit	60ns	13-97-3216	£59	£69.33
		70ns	13-97-3217	£65	£115.15

80486 based computers that support 72pin Simms can be installed as a single item. Pentium computers require Simms to be purchased in pairs. Please check your motherboard manual to confirm that your PC supports the required module size.
Note: Standard 36-bit SIMMs have full parity checking. We batch test SIMMs to ensure quality & reliability. 60ns Simms are in better supply than 70ns. We strongly advise the purchase of 60ns, please check your manual for compatibility.

SO DIMM Memory - 72 Pin

Mb	Description	Speed	Part No	ex VAT	inc VAT
		3.3 volt			
4Mb	1 x 4 chip	70ns	19-93-0413	£25	£29.38
4Mb	1 x 16 chip	70ns	19-93-0433	£35	£41.13
8Mb	1 x 16 chip	70ns	19-93-0833	£45	£52.88
8Mb	2 x 8 chip	70ns	19-93-0823	£45	£52.88
16Mb	4 x 4 chip	70ns	19-93-1613	£45	£52.88
		5 volt			
4Mb	1 x 4 chip	70ns	19-93-0415	£29	£34.08
4Mb	1 x 16 chip	70ns	19-93-0435	£35	£41.13
8Mb	1 x 16 chip	70ns	19-93-0835	£33	£38.78
8Mb	2 x 8 chip	70ns	19-93-0825	£45	£52.88
16Mb	4 x 4 chip	70ns	19-93-1615	£38	£44.65

Chip size, voltage, buffering, clock speeds and fitting can and do all differ.
Unless you know exactly which SO DIMM you require, we recommend the use of matched modules, especially for branded machines. Please call for details.
Due to various options available, please check machine compatibility before ordering.

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with all orders over £35 :
Please ask when ordering.

SIMMS - 30 Pin

Mb	Description	Speed	Part No	ex VAT	inc VAT
1Mb	1Mb x 9bit, 3-chip	60ns	10-97-1963	£7	£8.23
		70ns	10-97-1973	£8	£9.40
		80ns	10-97-1983	£11	£12.93
1Mb	1Mb x 9bit, 9 chip	60ns	10-97-1969	£9	£10.58
		70ns	10-97-1979	£10	£11.75
		80ns	10-97-1989	£13	£15.28
4Mb	4Mb x 9bit, 3 chip	60ns	10-97-4963	£10	£11.75
		70ns	10-97-4973	£10	£11.75
4Mb	4Mb x 9bit, 9 chip	60ns	10-97-4969	£16	£18.80
		70ns	10-97-4979	£18	£21.15
16Mb	16Mb x 9bit, 9 chip	60ns	10-97-7976	£59	£69.33

286 & 386sx based computers use 30pin Simms that are are installed in pairs.
386DX & 486 computers require four 30pin Simms to be purchased.
Please check your motherboard manual to confirm that your PC supports the required module size and speed.
Note : All 30pin SIMMs from SMC have full parity checking. We batch test SIMMs to ensure quality & reliability. 60ns Simms are in better supply than 70ns.
We advise the purchase of 60ns, but please check your manual for compatibility.

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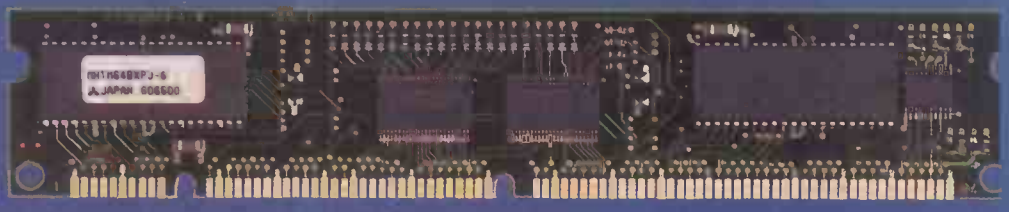

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PowerEdge XE-2, XE Series, XE-2 5133, 5100; XE 5100, 590, 566, 560.
PowerEdge SP 466, 450, 433.
PowerEdge XE 466, 450, 433s, 433.
PowerEdge XL, EL5133, EL5120, EL5100, EL590, EL575.
PowerEdge 4100, 2200, 2100/200,/180

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Latitude LX 4100D, 4100T, 475D.
Latitude XP 4100C, 4100CX, 475C, 450C.
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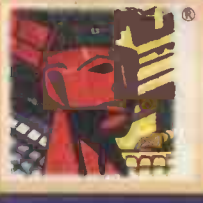

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MEMORY : MATCHED MODULES

Product Focus : Performance

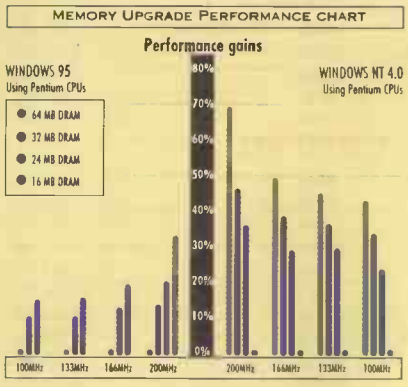


Chart supplied by Kingston Technology

How much memory ?

Increasing memory is the single best way to improve system performance.

A recent study by PC Computing demonstrated how adding just 4Mb of memory increased productivity by up to 26%. The productivity gains achieved are shown in the chart opposite.

Right across the board . . .

We have been supplying matched memory for years, at prices that are a fraction of original manufacturers' levels.

Our range is guaranteed 100% compatible, and covers all major brands, including Acer, AST, Ambra, Apple, Apricot, Brother, Canon, Compaq, Dell, Elonex, Escom, Gateway, Hewlett Packard, IBM, INTEL, NEC, Toshiba and Zenith.

SMC COMPUTERS

5 Year Warranty -Batch Tested

FREE!

ANTI-STATIC WRIST STRAP
with all orders over £35:00
Please ask when ordering.

IBM

DESKTOPS

APTIVA 300, 500 & 700 486s
APTIVA PENTIUM Series.
IBM PC300, 330, 350 486s
IBM PC300, 330, 350 Pentiums
IBM PC700, 730, 750 Pentiums
PC SERVER 77i (ECC)
PC SERVER 300, 320, Server 85
PC SERVER 95 & 500 Series (ECC)
PC SERVER 486 & Pentium Series
PS/1 486 Series with IBM 72pin slots
PS/1 486 Series with IBM 30pin slots
PS/1 2011 & 2121 286/386sx Series
PS/1 2123 PRO 386SX
PS/1 386SX Series
PS/2 SERIES - PLEASE CALL : model-specific
PS/VP 6382,6384,6387 - IBM 72pin slots
PS/VP 6384 Series - IBM 30pin slots
PS/VP 6384 C00, C20, C40 Series
PS/VP 6381 SI Series

LAPTOPS

ThinkPad 350, 350C Series.
ThinkPad 360, 360C, CE, CSE, CS, P, PE.
ThinkPad 345C, CS.
ThinkPad 355, 355C, 355Cs.
ThinkPad 370C, 730T, 730TE.
ThinkPad 365C, CD, CS, CSD, 365E, ED.
ThinkPad 560; 365X, 365XD, 380 Series.
ThinkPad 760E, 760ED, 760EL, 760ELD.
ThinkPad 500 Series, 510Cs
ThinkPad 701C, 701CS Butterfly Series.
ThinkPad 710T.
ThinkPad 720, 720C, 700, 700C.
ThinkPad 750, 750C, Ce, Cs, P Series.
ThinkPad 755C, Cs, CD, CDV, CE, CSE, CV.
ThinkPad 755CX, CV, CD, CDV.
ThinkPad 760C, 760CD, 760L, 760LD.
ThinkPad 820 Series ThinkPad 850 Series

Toshiba

DESKTOPS

Equium 6200 Desktop Series
Equium 5200, 5160 Desktop Series

LAPTOPS

(Dynapad) **T**200, T200CS
T1000LE
T1800, T1850, T1850C
T1900, T1910, T1920, T1950, T1960 C, CS, **CT** models
T2000, T2200 SX, SXE
T2100, T2105, T2110, T2115, T2130, T2135 CS,CT models
T2150, T2155 CDS, CDT models, T2400, T2450 CS, **CT** models
T3100e & SX, T3200 inc. SX & SXC, T3400 inc. CT, T3600C
T4400C-DX, T4400C-SX, T4400SX & SXC
T4500 & T4600 inc. C, T4700CS/**CT**, T4800CT, T4850CT, T4900CT, T5200
T6400 SX, SXC, DX, DXC, T6600C, CD, CDV
T8500 Series
Portege 660CDT, 650CT, 620CT, 610CT.
Satellite 105CS, 100CS Series.
Satellite 210,205,200,115,110 Series. Satellite Pro 430,425,420,415,410 Series.
Satellite 225CDS, 220CDS TECRA 740, 730, 720, 710 Series.
Satellite PRO 405, 400 Series.
Satellite PRO 460CDT, 445CDX, 445CDT, 440CDT, 440CDX.
TECRA 700CS, 700CT Series.
TECRA 530CDT, 520CDT, 510CDS, 510CDT, 500CS, 500CDT.

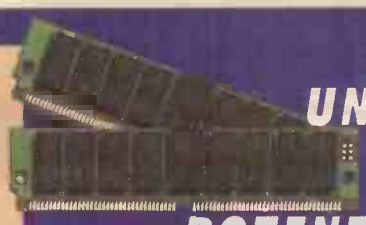
Zenith

Z300/400 Series. Z-433/DX, Z-433/SX,
Z-425/SX, Z-420/SX
Z-386SX/20, Z-386SX16
Z-Select 100 486 Series. Z-466X, Z-450X, Z-433D, Z-433S, Z-425S
Z-Server EX & LT Series. EX P66E, 450DE, 433DE LT P60E, 466XE, 433DE
Z-Server SE & DE Series. 450DE, 433DE, 425SE
Z-Station 325Sh, 325Sn
Z-Station 450XEn, 433Dh, 433DEh, 425Sh, 420Sh, 420SEh, 420Sn, 420SEn
Mastersport 386SL, 386SLe.
ZDS-600NL Series 625nl, 620nl
Z-Note GT P90, P75 (Kits) 450DE, 433DE, 425SE

IF YOU DON'T SEE YOUR PC LISTED HERE :
Call our memory experts, who will be happy to help.

ALSO Intel Overdrive options for many of the systems listed.

See page 8



UNLEASH YOUR POTENTIAL ...

Our Website Address is: http://www.smc-computers.co.uk

SMC COMPUTERS

IF ALL MEMORY IS THE SAME, WHY DO SOME BRANDS FAIL MORE OFTEN THAN OTHERS?

Upgrading memory is the single most cost effective way of increasing system performance and productivity.

But Not All Memory Is Created Equal.
Knowing what questions to ask about memory will save you time and money.

Warranties – what do they mean?
Insist on a lifetime warranty from an established manufacturer.

What about support?
Make sure your memory comes from a manufacturer that offers free, expert technical support.

What are the testing procedures?
Choose memory from a manufacturer who tests every single module 100% of the time.

Is compatibility absolute?
Modules must be specifically designed for the exact systems they will be used in.

Where do the components come from?
Only accept chips purchased directly from manufacturers such as IBM, Samsung and Toshiba.

Kingston Technology is the world's leading supplier of computer memory. All Kingston memory is guaranteed for 100% compatibility and reliability and carries a lifetime warranty.

Kingston Generic Memory

Description	Mb	Part No	ex VAT	inc VAT
72 Pin Non-Parity Simms 60 or 70Ns	4Mb	KTM1x32L-60T	£15	£17.63
(Available in Tin (T) or Gold (G))	8Mb	KTM2x32L-60T	£24	£28.20
	16Mb	KTM4x32L-60T	£40	£47.00
	32Mb	KTM8x32L-60T	£93	£109.28
	64Mb	KTM16x32L-60T	£159	£186.83
72 Pin Parity Simms 60 or 70Ns	4Mb	KTM1x36L-60T	£18	£21.15
(Available in Tin (T) or Gold (G))	8Mb	KTM2x36L-60T	£31	£36.43
	16Mb	KTM4x36L-60T	£45	£52.88
	32Mb	KTM8x36L-60T	£84	£98.70
	64Mb	KTM16x36L-60T	£178	£209.15
72 Pin EDO Non-Parity Simms 60Ns	4Mb	KTM1x32L-60ET	£15	£17.63
(Available in Tin (T) or Gold (G))	8Mb	KTM2x32L-60ET	£24	£28.20
	16Mb	KTM4x32L-60ET	£40	£47.00
	32Mb	KTM8x32L-60ET	£75	£88.13
72 Pin Parity EDO Simms 60Ns	4Mb	KTM1x36L-60ET	£18	£21.15
(Available in Tin (T) or Gold (G))	8Mb	KTM2x36L-60ET	£31	£36.43
	16Mb	KTM4x36L-60ET	£45	£52.88
	32Mb	KTM8x36L-60ET	£84	£98.70
168 Pin DIMM, Synchronous	64Mb	KTM66x64/64	£206	£242.05
(Gold Connectors)	128Mb	KTM66x64/128	£403	£473.53

JUST A FEW EXAMPLES OF THE MASSIVE RANGE AVAILABLE FROM **SMC**.
RING NOW FOR THE LATEST PRICING FOR YOUR SYSTEM

Kingston® TECHNOLOGY
COMPUTING WITHOUT LIMITS

100% TESTED · FREE Technical Support · LIFE TIME WARRANTY

Kingston Matched Memory

Systems	Mb	Part No	ex VAT	inc VAT
AST				
Manhattan GV	16Mb	KST486P/16	£61	£71.63
LP, MS, MS-T P/66-166, MT series	32Mb	KST486P/32	£87	£102.23
	64Mb	KST486P/64	£168	£197.40
PowerExec 3/255L-C, 4/255L	8Mb	KST09484/8	£33	£38.70
Special ED,4/33SL	16Mb	KST09484/16	£52	£61.10
COMPAQ				
DeskPro 2000, 4000, 6000 series	8Mb	KTC2430/8	£27	£31.73
	16Mb	KTC2430/16	£46	£54.05
	32Mb	KTC2430/32	£78	£91.65
	64Mb	KTC2430/64	£149	£175.08
Armada 7000 series D/MT,	16Mb	KTC2721/16	£42	£49.35
1500 series D/M/T, 1130/T	32Mb	KTC2721/32	£86	£101.05
	64Mb	KTC2721/64	£181	£212.68
Deskpro 2000, 4000, 6000 MMX Series	16Mb	KTC2428/16	£43	£50.53
	32Mb	KTC2428/32	£78	£91.65
	64Mb	KTC2428/64	£206	£224.05
	128Mb	KTC2428/128	£403	£473.53
Presario 4800s, 4200s, 4500s	16Mb	KTC-P4800/16	£49	£57.58
	32Mb	KTC-P4800/32	£89	£104.58
	64Mb	KTC-P4800/64	£206	£242.05
DELL				
Dimension XPS 486, Optiplex 486s				
Netplex 486	4Mb	KTD-LMT/4	£15	£17.63
Performance 425(s), 433(s),M, T, L series	16Mb	KTD-LMT/16	£40	£47.00
Dimension p133v, p166v, p200v	8Mb	KTD-SDRAM/8	£50	£58.75
Dimension XPS p133s, p166s	16Mb	KTD-SDRAM/16	£49	£57.58
	32Mb	KTD-SDRAM/32	£84	£98.70
Optiplex GXPRO series	16Mb	KTD-GXPRO/16	£52	£61.10
	32Mb	KTD-GXPRO/32	£93	£109.28
	64Mb	KTD-GXI/64	£198	£232.65
	128Mb	KTD-GXPRO/128	£380	£446.50
DIGITAL				
Digital Hinote VP 520, 525, 535	8Mb	KTV-VP500/8	£31	£36.43
	16Mb	KTV-VP500/16	£50	£58.75
	32Mb	KTV-VP500/32	£92	£108.10
HEWLETT PACKARD				
Pavilion 7270, 7275, 7280, 7285, 7295	8Mb	KTH-VL4/8	£27	£31.73
	16Mb	KTH-VL4/16	£46	£54.05
	32Mb	KTH-VL4/32	£78	£91.65
	64Mb	KTH-VL4/64	£149	£175.08
Laserjet 4000s	16Mb	KTH-J4000/16	£45	£52.88
	16Mb	KTH-J4000E/16	£46	£54.05
	32Mb	KTH-J4000/32	£108	£126.90
IBM				
Thinkpad 760 series, ELDS,560, 360, 380s	8Mb	KTM760ELD/8	£30	£35.25
	16Mb	KTM760ELD/16	£46	£54.05
	32Mb	KTM760ELD/32	£99	£116.33
Thinkpad 760C, CD, L, LD	8Mb	KTM-TP760/8	£34	£39.95
	16MB	KTM-TP760/16	£46	£54.05
	32Mb	KTM-TP760/32	£108	£126.90
Aptiva 2137 E series	16Mb	KTM2137/16	£49	£57.58
	32Mb	KTM2137/32	£86	£101.05
	64Mb	KTM2137/64	£206	£242.05
Aptiva L, C & S series 2136 E series	16Mb	KTM7318/16	£46	£54.05
	32Mb	KTM7318/32	£78	£91.65
	64Mb	KTM7318/64	£149	£175.08
TOSHIBA				
Tecra 710, 720, 730,749 CDT Models	8Mb	KTT610/8	£42	£49.35
	16Mb	KTT610/16	£59	£69.33
	32Mb	KTT610/32	£95	£111.63
Tecra 750s, Portege 650, 660s	16Mb	KTT650/16i	£49	£57.58
	32Mb	KTT650/32i	£93	£109.28
	64Mb	KTT650/64i	£174	£204.45
Portege 610 CT, Satellite 110CS/CT	8Mb	KTT610/8i	£42	£49.35
200CDS, 205CDS, Satellite Pro 420/425	16Mb	KTT610/16i	£59	£69.33
430 CDS/CDT	32Mb	KTT610/32i	£95	£111.63

Kingston manufactures memory for nearly every system in use today.
Call for details of the right memory for your machine.

PRODUCT FINDER :
SEE FRONT COVER

VISA · DELTA · MasterCard · SWITCH · AMERICAN EXPRESS · MasterCard

SALES LINES OPEN 8.30am - 6.30pm MONDAY TO FRIDAY & 9am - 1pm SATURDAY

CD SOFTWARE

Edutainment

Part No	Description	ex VAT	inc VAT
	MICROSOFT		
	MULTIMEDIA EDUCATIONAL		
05-50-5381	500 Nations	£19	£22.33
05-95-5209	Art Gallery	£33	£38.78
05-50-5213	Composer Collection	£32	£37.60
05-95-5217	Dangerous Creatures	£22	£25.85
05-50-5219	Dinosaurs	£22	£25.85
05-50-0114	Encarta 98 (British edition)-Win 95	£31	£36.43
05-50-0115	Encarta 98 Deluxe (British edition)-Win 95	£49	£57.58
05-50-0117	World Atlas 98-Win 95	£31	£36.43
05-50-7103	Musical Instruments	£19	£22.33
05-95-7151	Oceans	£19	£22.33
	MULTIMEDIA GENERAL		
05-50-0122	Autoroute Express GB 98- Win 95	£39	£45.83
05-50-0121	Autoroute Express Europe 98-Win 95	£39	£45.83
05-95-5213	Bookshelf 98	£55	£64.63
05-95-7047	Cinemania 97	£19	£22.33
05-50-7151	Wine Guide	£19	£22.33
	MULTIMEDIA GAMES		
05-50-0175	Chaos Island-Win 95	£19	£22.33
05-50-0131	Age of Empires-Win 95	£25	£29.38
05-50-0129	Close Combat 2-Win 95	£25	£29.38
05-50-0135	Flight Simulator 98-Win 95	£32	£37.60
05-50-0133	CART Precision Racing-Win 95	£24	£28.20

Utilities

Part No	Description	ex VAT	inc VAT
	ONTRACK		
01-93-8642	**Disk Manager** - purchased with a hard drive (floppy)	£15	£17.63
01-93-8644	**Disk Manager** full retail version (floppy)	£35	£41.13
01-93-8402	**Drive Rocket** - purchased with a hard drive (floppy)	£12	£14.10
01-93-8404	**Drive Rocket** full retail version (floppy)	£17	£19.98
	POWERQUEST		
01-94-0002	**Partition Magic** - Data management (floppy)	£44	£51.70
01-94-0030	**Drive Image** - Drive Data backup/recovery (floppy)	£43	£50.53
01-94-0035	**Drive Image Pro** - Drive Data cloning (floppy)	£499	£586.33
	NORTON		
01-95-0103	**Utilities** V8	£83	£97.53
05-95-9503	**Utilities** - WIN 95 V3	£59	£69.33

Anti-Virus

Part No	Description	ex VAT	inc VAT
	Dr. SOLOMON'S		
01-93-0014	Anti-Virus Toolkit * - 1 Year cover, 4 updates	£69	£81.08
01-93-0112	Anti-Virus Toolkit * - 1 Year cover, 12 updates	£122	£143.35
01-93-0034	Anti-Virus Toolkit * - 3 Year cover, 4 updates p.a.	£129	£151.58
01-93-0312	Anti-Virus Toolkit * - 3 Year cover, 12 updates p.a.	£249	£292.58

* Anti-Virus Toolkit is designed for single user computers running any of the following:- DOS/Windows/Windows 95/Windows NT and OS/2. License packs and server versions for Novell Netware/Windows NT Server are available. Please call for details.

	NORTON		
01-95-9103	Anti-Virus - Windows	£88	£103.40
05-95-9050	Anti-Virus Deluxe - WIN 95	£49	£57.58

Business Applications

Part No	Description	ex VAT	inc VAT
	MICROSOFT		
05-50-9299	Home Essentials 98	£79	£92.83
01-50-3155	WORD 97 - WIN 95	£224	£263.20
05-50-3113	Office V4.2	£325	£381.88
05-50-3117	Office 97 - WIN 95	£319	£374.83
05-50-3137	UPGRADE - Office Std - Office 97 (CCP)	£148	£173.90
05-50-3177	Office Professional 97 - WIN 95	£418	£491.15
05-50-3157	UPGRADE - Office Pro - Office Pro 97 (CCP)	£204	£239.70
05-50-9702	Office Small Business Edition (SBE) 97 - V2	£325	£381.88
05-50-1209	Money 98	£19	£22.33
05-50-3235	Excel 97 - WIN 95	£222	£260.85
01-50-3197	Access 97 - WIN 95	£224	£263.20
01-50-3357	Powerpoint 97 - WIN 95	£222	£260.85
01-50-9109	Publisher 98 - WIN 95	£66	£77.55
01-50-9798	Publisher 97 to Publisher 98 UPGRADE	£33	£38.78
05-50-7157	FrontPage 98	£89	£104.58
05-50-9505	Visual Basic Pro V5 - WIN 95	£319	£374.83
05-50-3313	Visual FoxPro Std V3 - WIN 95	£121	£142.18
	LOTUS		
05-91-0107	Smartsuite 97 - WIN 95	£290	£340.75
05-91-0103	Smartsuite V4	£290	£340.75
	COREL		
05-95-0517	Quattro Pro V7 - WIN 95	£46	£54.05
05-95-6061	Wordperfect Suite 6.1 Win 3.1x	£159	£186.83
05-95-0505	Wordperfect Suite 7 - WIN 95	£159	£186.83

Operating Systems

Part No	Description	ex VAT	inc VAT
	MICROSOFT		
05-50-9509	Windows '95 Upgrade	£59	£69.33
01-50-1957	Windows '95 Upgrade (Floppy disc version)	£59	£69.33
05-50-9531	Windows '95 3 in 1 Upgrade	£65	£76.38
01-50-9503	Windows '95 - Full Version (Floppy disc version)	£129	£151.58
05-50-9507	Windows '95 Service Release 2.5 - Full Version *	£99*	£116.33
05-50-1013	Windows NT Version 4 Workstation	£225	£264.38
05-50-1015	Windows NT 3.51 to Ver 4 Upgrade	£99	£116.33

* 05-50-9507 must be purchased with a new Hard Drive. No Microsoft Support.

Software support

Part No	Description	ex VAT	inc VAT
	ICL/MICROSOFT		
	Call support packs for selected Microsoft products		
99-50-0201	2 call pack with 1m free MSN access	£45	£52.88
99-50-0501	5 call pack with 1m free MSN access	£105	£123.38
99-50-1001	10 call pack with 1m free MSN access	£190	£223.25
99-50-1012	10 call pack with 1yr MS Technet CD	£399	£468.83
99-50-2512	25 call pack with 1yr MS Technet CD	£699	£821.33

Applications covered include Windows 95, Windows 3.x, DOS 5+, Windows NT, Office4, Office Pro 95/97, Office SBE, Money, Autoroute E+, Project, Team Manager, Home Essentials, Product. These are available for both new and old Software purchases.

Our Website Address is: http://www.smc-computers.co.uk

SMC COMPUTERS

INTEL Overdrive Processors

Part No	Model-Description	ex VAT	inc VAT

All INTEL Overdrive Processors come complete with built-on fan.

Pentium MMX Overdrive

MMX Overdrives will upgrades all Pentium PC's to MMX technology!

09-31-5205	**200Mhz Pentium MMX** OverDrive : 3.3v, for P100/133/166Mhz Pentiums with Socket 7 ZIF	£155	£182.13
09-31-5185	**180Mhz Pentium MMX** OverDrive : 3.3v, for P90/120/150Mhz Pentiums with Socket 5/7 ZIF (upgrades P75 to P150Mhz)	£135	£158.63
09-31-5165	**166Mhz Pentium MMX** OverDrive : 3.3v, for P100Mhz Pentiums with Socket 5/7 ZIF	£109	£128.08

Pentium P60/P66

09-31-5105	**Pentium 120/133Mhz** OverDrive for P60/66Mhz Pentiums with Socket 4 ZIF	£113	£132.78

486 to Pentium Overdrive

09-31-5083	**Pentium 83Mhz** OverDrive, P24T : 5v, for 486 PC's with Socket 3 ZIF	£114	£133.95

Please note: the Pentium P60/P66 and 486 to Pentium Overdrives are soon to be discontinued.
There are expected to be no alternatives, so we advise you to make your decision !

Heat Sink and Fan Units

NOTE : these units are only available when purchasing a CPU.
We recommend their use for all 486 and Pentium CPUs.
Ball Bearing units are designed for use with CPUs that run at very high temperatures.

Part No	Description	ex VAT	inc VAT
09-95-4240	486 processor low profile	£7	£8.23
09-95-5090	Pentium P75 through to P233	£9	£10.58
09-95-6000	Pentium Pro 200	£12	£14.10
09-95-6086	Cyrix 6x86MX Ball Bearing unit	£14	£16.45
09-95-5266	AMD and Intel Pentium Ball Bearing unit	£15	£17.63

Processors

Part No	Model-Description	ex VAT	inc VAT

Intel

Pentium II - Slot 1

Boxed, with HS & Fan (3 Yr Warranty)

09-31-8233	PII 233MMX - 233Mhz (with 512k cache)	£185	£217.38
09-31-8266	PII 266MMX - 266Mhz (with 512k cache)	£259	£304.33
09-31-8300	PII 300MMX - 300Mhz (with 512k cache)	£369	£433.58
09-31-8333	PII 333MMX - 333Mhz (with 512k cache & ECC)	£415	£487.63

Pentium MMX - Socket 7

Bare processors (1Yr Warranty)

09-31-4166	P166MMX - 166Mhz, 2.8v	£75	£88.13
09-31-4200	P200MMX - 200Mhz, 2.8v	£85	£99.88
09-31-4233	P233MMX - 233Mhz, 2.8v	£133	£156.28

Boxed, with HS & Fan (3 Yr Warranty)

09-31-6166	P166MMX - 166Mhz, 2.8v	£79	£92.83
09-31-6200	P200MMX - 200Mhz, 2.8v	£99	£116.33
09-31-6233	P233MMX - 233Mhz, 2.8v	£149	£175.08

Pentium Pro - Socket 8

09-31-3200	Intel Pentium Pro 200Mhz - with 256k cache	£319	£374.83

AMD

K6 MMX Enhanced Processor - Socket 7

09-05-6166	166Mhz, 3.2v	£69	£81.08
09-05-6200	200Mhz, 3.2v	£96	£112.80
09-05-6233	233Mhz, 3.2v	£99	£116.33

Cyrix

6x86 & 6x86MX - Socket 7

09-17-5126	6x86-120 - 150Mhz+, 3.3v	£45	£52.88
09-17-5136	6x86-133 - 166Mhz+, 3.3v	£48	£56.40
09-17-6166	6x86MX-166, 166Mhz (requires M/B support)	£59	£69.33
09-17-6200	6x86MX-200, 200Mhz (requires M/B support)	£69	£81.08

486 - Socket 3

09-17-4066	486DX2-66 - 66Mhz, 5v	£23	£27.03

We recommend the use of a Heat Sink and Fan Unit for all CPUs.

PC Cases (CE Approved)

Part No	Make & Model	ex VAT	inc VAT

Standard PC cases

PC-AT

70-97-0300	Super-Slimline Desktop, 100w PSU, 2x 3.5" bays*	£55	£64.63
70-97-0500	Slimline Desktop, 200w PSU, 2x 3.5", 2x 5.25" bays*	£49	£57.58
70-97-1000	Standard Desktop, 200w PSU, 1x 3.5", 3x 5.25" bays	£39	£45.83
70-97-1510	Mini Tower, 200w PSU, 3x 3.5", 2x 5.25" bays	£39	£45.83
70-97-1730	Midi Tower, 200w PSU, 5x 3.5", 3x 5.25" bays	£45	£52.88
70-97-1910	Full Tower, 200w PSU, 3x 3.5", 6 x 5.25" bays	£59	£69.33

Cases marked * are suitable for ISA Motherboards only.
All cases are supplied with power supply units, power cables, screws and motherboard mounts.

High-specification PC cases

PC-AT

70-97-3012	Standard Desktop, 230w PSU, 3x 3.5", 2x 5.25" bays	£59	£69.33
70-97-3712	Mini/Midi Tower, 230w PSU, 4x 3.5", 3x 5.25" bays	£65	£76.38
70-97-3912	Full Tower, 230w PSU, 4x 3.5", 6x 5.25" bays	£89	£104.58

PC-ATX

70-97-3330	ATX - Desktop, 200w PSU, 3x 3.5", 2x 5.25" bays	£89	£104.58
70-97-3790	ATX - Mini Tower, 200w PSU, 4x 3.5", 2x 5.25" bays	£79	£92.83
70-97-3730	ATX - Midi Tower, 200w PSU, 4x 3.5", 3x 5.25" bays	£99	£116.33
70-97-3930	ATX - Full Tower, 230w PSU, 4x 3.5", 6x 5.25" bays	£115	£135.13

Keyboards & Mice

Part No	Make & Model	ex VAT	inc VAT

KEYBOARDS

82-50-3505	**For Windows 95** 105 key, 5-pin (AT)	£10	£11.75
82-50-3509	**For Windows 95** 105 key, 6-pin Din (PS/2)	£12	£14.10
82-50-0001	**MS Natural Keyboard v1** 105 key, 5-pin AT/6-pin Din	£45	£52.88
82-91-3595	**Cherry G81-3000 Lamb** 105 key, 5-pin AT, soft touch	£25	£29.38
82-91-3597	**Cherry G80-3000HFM** AT, 102 key, 5-pin AT, click	£39	£45.83
82-91-3599	**Cherry G80-3000HPM** PS/2, 105 key, 6-pin Din, click	£43	£50.53

MICE

82-53-3153	**MS compatible mouse** 9 pin serial, 2 buttons	£10	£11.75
82-50-3192	**Microsoft Home** 9 pin serial, 2 buttons	£17	£19.98
82-50-0002	**Microsoft V.2** - 9 pin serial & PS/2	£27	£31.73
82-50-0605	**Microsoft Intellimouse** 9 pin serial & PS/2	£35	£41.13
82-97-1511	**Pilot Mouse** New shape. 9-pin serial, 3 buttons	£15	£17.63
82-97-1513	**Pilot Mouse** New shape. 6-pin DIN, 3 buttons	£15	£17.63
82-97-0035	**Pilot Mouse +** 9-pin serial & PS/2, 3 buttons/Wheel	£19	£22.33
82-97-1315	**Trackman Portable** 9-pin serial, 3 buttons, 200dpi	£30	£35.25
82-97-1395	**Trackman Marble** - 3 buttons, marble infra-red tech	£42	£49.35
82-97-0021	**Mouseman** 9-pin serial & PS/2, 4 buttons	£24	£28.20
82-97-0022	**Mouseman +** 9-pin serial & PS/2, 4 buttons/Wheel	£27	£31.73

PRODUCT FINDER : SEE FRONT COVER

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SALES LINES OPEN 8.30am - 6.30pm MONDAY TO FRIDAY & 9am - 1pm SATURDAY

MOTHERBOARDS

When you buy a motherboard from SMC, you get full technical support. **You also get SMC's FREE 16 page, easy-to-follow Installation Guide.**
Subjects covered include:-
Mounting the board, installing Processors and Memory, making Power and Case connections.
Basic and Advanced connections, configuring your BIOS and a section on Troubleshooting.

FULL OF TIPS

SMC COMPUTERS

ASUSTEK (ASUS) Motherboards

Part No	Model-Description	ex VAT	inc VAT

All ASUS motherboards are fitted with built-on USB / floppy / EIDE / Ultra-IDE support with Ultra-IDE drivers for Windows 95/NT4, and 1 Parallel, 2 high-speed Serial as standard. They have LDCM Hardware monitoring support (Includes Intel LanDesk CD for live PC monitoring). Full documentation is supplied.

Pentium - Socket 7

These motherboards are fitted with an Intel 'TX' (430TX) chipset, 4 x 72pin SIMM, 2 x 168pin DIMM sockets (max. memory 256Mb), and 512k Pipeline Burst Cache.

ATX
ATX Motherboards have a PS/2 style keyboard and mouse connector.
They have 4 x PCI and 4 x ISA bus slots.

07-99-0400	TXP4-X - no LDCM	£75	£88.13
07-99-0500	TX97-XE - supports LDCM	£89	£104.58
07-99-0510	TX97-XES, as TX97-XE with Creative Labs ViBRA sound	£109	£128.08

Baby-AT
Baby-AT Motherboards have an AT style 5pin and serial mouse connector.
They have 4 x PCI and 3 x ISA bus slots.

07-99-0405	TXP4 - no LDCM	£72	£84.60
07-99-0505	TX97-E - supports LDCM	£85	£99.88

Pentium II - Slot 1

ATX
These motherboards are fitted with an Intel 'LX' (440LX) chipset and have AGP support.

Single-processor - 5 x PCI, 2 x ISA bus

07-99-0700	P2L97 - 3x 168pin SDRAM (Max.memory 384Mb)	£105	£123.38
07-99-0710	P2L97-S -3 x 168pin SDRAM (Max.memory 384Mb) On board Adaptec AIC7880 SCSI controller	£155	£182.13

Dual-processor - 4 x PCI, 2 x ISA bus

07-99-0715	P2L97-DS - Dual Pentium II support, 4 x 168-pin SDRAM DIMM sockets (max. 512Mb) On board Adaptec AIC7880 SCSI controller	£275	£323.13

Gigabyte Motherboards

Part No	Model-Description	ex VAT	inc VAT

All Gigabyte motherboards are fitted with an Award BIOS

Pentium - Socket 7

These motherboards are fitted with a 512kb Pipeline Burst Cache, 4x PCI, 3x ISA, built-on floppy & EIDE/Ultra-IDE support, 1 Enhanced Parallel & Fast Serial Ports. They are Windows 95 Plug & Play and have PS/2 Mouse connection.

ATX

07-93-5057	GA-586ATX3 - Intel 'TX' Chipset (82430TX), 4x SIMM, 2x DIMM Sockets, 256Mb max memory, Supports Ultra DMA/33, 2x USB connectors	£75	£88.13

BABY AT (5-pin AT keyboard connection)

07-93-5035	GA-586TX - Intel 'TX' Chipset (82430TX), 4x SIMM, 2x DIMM Sockets, 256Mb max memory, Supports Ultra DMA/33, 2x USB (optional)	£69	£81.08

Pentium II - Slot 1

ATX
These motherboards are fitted with Intel 'LX' Chipset (440LX) and support Ultra DMA/33. They have 4 x DIMM Sockets for SDRAM (1Gb max memory), 2x USB ports, 1x AGP, with Super I/O and built-on floppy and EIDE/Ultra-IDE support.

07-93-6001	GA-686LX	£95	£111.63
07-93-6021	GA-686DLX - has Dual Processor slots and on-board Adaptec Ultra-wide SCSI support	£195	£229.13

Intel Motherboards

Part No	Model-Description	ex VAT	inc VAT

ATX - Pentium II

07-31-2081	Intel 'Atlanta' (MMX) Intel 440LX Chipset, Slot 1 P233-P300MHz Pentium II option, 3 x PCI, 1 x ISA, 1 x AGP graphics, 3x 168pin DIMM, max. 384Mb, USB connectors, Ultra IDE, 3Yr Warranty	£115	£135.13

This motherboard is fitted with USB support, 16-Bit Yahama sound, built-in floppy/EIDE/UIDE support, 1 Enhanced Parallel & Fast Serial Ports.
It requires SDRAM DIMMs (384Mb max memory) and is Windows 95 Plug & Play.

TMC Motherboards

Part No	Description	ex VAT	inc VAT

All TMC motherboards are fitted with AMI/Award BIOS, built-in Floppy / EIDE support and Enhanced Parallel & Fast Serial Ports.

Pentium - Socket 7

These motherboards are Windows 95 Plug & Play.

Baby AT

07-97-5925	Intel 'TX' Chipset (supports Ultra-DMA), 4 x PCI, 3 x ISA Bus, 2 x USB headers, 4 x 72 pin SIMMS, 2 x 168pin DIMMs (256Mb max memory), 512Kb Burst Pipeline cache	£69	£81.08

ATX

07-97-5901	Intel 'TX' Chipset (supports Ultra-DMA), 4 x PCI, 4 x ISA Bus, 2 x USB headers, 4 x 72 pin SIMMS, 2 x 168pin DIMMs (256Mb max memory), 512Kb Burst Pipeline cache	£69	£81.08
07-97-5315	VIA VP3 Chipset (supports Ultra-DMA), 4 x PCI, 3 x ISA, 1 x AGP, 2 x USB ports, 4 x 72 pin SIMMs, 3 x 168 pin DIMMs (768Mb max. memory).	£72	£84.60

USB Port Adaptors
These adaptors convert USB headers into usable ports to allow external connection of USB-supported devices.
USB is not expected to be widely supported until the availability of Windows 98.

75-95-5002	USB Port Adaptor	£10	£11.75

Pentium II - Slot 1

ATX
This motherboard is Windows 95 Plug & Play and has Hardware Monitoring.

07-97-1060	Intel 'LX' Chipset, (82440LX : supports Ultra-DMA) 3 x PCI, 3 x ISA, 1 x AGP, 2 x USB ports, 4 x 168 pin DIMMs (512Mb max. memory), modem ring on	£105	£123.38

Our Website Address is: http://www.smc-computers.co.uk

SMC : FOR THE BEST IN BACKUP SOLUTIONS

HEWLETT PACKARD

SMC provides a flexible choice of tape drives for networks and individual PC systems. This is true of the HP range of drives, which makes it a good choice for anyone considering tape back-up. For backup from any system configuration, SMC has a choice of drives and software, or you can choose a complete plug-and-play solution. At the top of the HP range is the industry-leading C5648A DAT Autoloader, based on the fastest DDS-3 DAT drive in the industry today. This uses standard DDS-3 125M cartridge tapes with a native capacity of 12Gb : this can be increased using compression to typically 24Gb, thereby giving up to a massive 144Gb using a six-cartridge magazine.

Drives in the HP SureStore range are supplied with one media tape, one cleaning tape, basic backup software and a full operating manual. Internal drives have a bracket set whilst external drives are supplied with a premium-quality data cable.

Hewlett Packard DAT Drives

Part No	Model & Description	Tape	Fixture	ex VAT	inc VAT
Bare drives					
All are 1" high for a 3.5" bay, except the Autoloader, which is Full-Height, 5.25" bay. They are supplied with a basic operating manual.					
42-28-0120	**C1534** 2Gb, 11Mb/min,	B1	Internal	£335	£393.63
42-28-0125	**C1534-X** 2Gb, 11Mb/min,	B1	External	£429	£504.08
42-28-0130	**C1536** 4Gb, 22Mb/min,	B1	Internal	£365	£428.88
42-28-0135	**C1536-X** 4Gb, 22Mb/min,	B1	External	£455	£534.63
42-28-0140	**C1599A** 4-8Gb, 44Mb/min,	B1, B2	Internal	£475	£558.13
42-28-0145	**C1599A-X** 4-8Gb, 44Mb/min,	B1, B2	External	£545	£640.38
42-28-0240	**C1554A** 12-24Gb, 44mb/min,	B1, B2, B3	Internal	£689	£809.58
42-28-7144	**C5648A** 72-144Gb, DDS-3 Autoloader (6 tapes)	B1, B2, B3	Internal	£1749	£2055.08
Surestore					
Surestore DAT drives are 5.25", Half-Height. Internal drives include side rails.. They are supplied with cleaning tape, 1 media tape, backup software & full manual.					
42-28-2020	**SS2000** 2Gb, 11Mb/min,	B1	Internal	£449	£527.58
42-28-2025	**SS2000-X** 2Gb, 11Mb/min,	B1	External	£519	£609.83
42-28-2050	**SS5000** 4Gb, 22Mb/min,	B1	Internal	£475	£558.13
42-28-2055	**SS5000-X** 4Gb, 22Mb/min,	B1	External	£545	£640.38
42-28-2067	**SSDAT8i** 4-8Gb, 44Mb/min,	B1, B2	Internal	£595	£699.13
42-28-2069	**SSDAT8e** 4-8Gb, 44Mb/min,	B1, B2	External	£669	£786.08
42-28-2070	**SSDAT24i** 12-24Gb, DDS-3,	B1, B2, B3	Internal	£795	£934.13
42-28-2073	**SSDAT24e** 12-24Gb, DDS-3,	B1, B2, B3	External	£879	£1032.83
42-28-2144	**SSDAT24X6e** 72-144Gb DDS-3 Autoloade (6 tapes)	B1, B2, B3	External	£2129	£2501.58

Please ask about HP 3 year on-site warranty options.

DAT Drives

Part No	Description	Tape	Fixture	ex VAT	inc VAT
Seagate					
42-13-0200	**4320** 2Gb, 11Mb/min,	B1	Internal	£339	£398.33
42-13-0400	**4324** 4Gb, 22Mb/min,	B1	Internal	£355	£417.13
42-13-0405	**4354** 4Gb, 22Mb/min,	B1	External	£429	£504.08
42-13-0800	**4326** 8Gb, 44Mb/min,	B1, B2	Internal	£459	£539.33
42-13-0805	**4356** 8Gb, 44Mb/min,	B1, B2	External	£549	£645.08
Sony					
42-71-0020	**SDT-2000E** 2Gb, 11Mb/min,	B1	Internal	£349	£410.08
42-71-0040	**SDT-5200** 5Gb, 22Mb/min,	B1, B2	Internal	£399	£468.83
42-71-0080	**SDT-7000** QUAD, 4-8Gb, 44Mb/min,	B1, B2	Internal	£489	£574.58
42-71-0090	**SDT-5000** 4.8Gb, 22Mb/min,	B1, B2	Internal	£455	£534.63
42-71-0120	**SDT-9000** 12-24Gb, 22Mb/min,	B1, B2, B3	Internal	£649	£762.58
42-71-0320	**TSL-7000** Autoloader 64Gb, 22Mb/min	B1, B2	Internal	£1299	£1526.33
42-71-0325	**TSL-7000** Autoloader 64Gb, 22Mb/min	B1, B2	External	£1379	£1620.33
Wangdat					
42-84-1000	**3100** 2Gb, 11Mb/min	B1	Internal	£335	£393.63
42-84-1005	**3100-X** 2Gb, 11Mb/min	B1	External	£435	£511.13
42-84-2000	**3200** 4Gb, 22Mb/min	B1	Internal	£399	£468.83
42-84-2005	**3200-X** 4Gb, 22Mb/min	B1	External	£489	£574.58
42-84-4000	**3400DX** 8Gb, 44Mb/min	B1, B2	Internal	£479	£562.83
42-84-4005	**3400DX-X** 8Gb, 44Mb/min	B1, B2	External	£579	£680.33
42-84-9000	**TS3900i** 12-24Gb, DDS-3	B1, B2, B3	Internal	£695	£816.63
42-84-9005	**TS3900e** 12-24Gb, DDS-3	B1, B2, B3	External	£749	£880.08

Hewlett Packard DLT Drives

Part No	Description	Tape	Fixture	ex VAT	inc VAT
42-28-1549	SureStore DLT30e, 30Gb	F1	External	£1749	£2055.08
42-28-1579	SureStore DLT40e, 40Gb	F2	External	£2399	£2818.83
42-28-5658	SureStore DLT70e, 70Gb	F2	External	£4399	£5168.83

DLT technology offers high performance with exceptional reliability for backup operations involving the new generation of high end servers & workstations.
Fast backup speeds are combined with advanced error detection to give complete peace of mind.
All products are supplied with user documentation, TapeAssure software on CD, SCSI cable and terminator, power cable, DLT cleaning cartridge and one piece of DLT media for instant use.
A SCSI controller is required.

Product Focus : DLT drives

If the protection of mission-critical data is a priority then the DLT range is the best solution, offering exceptional reliability as a result of robust drive construction, extremely durable media and advanced error detection
The DLT range offers capacities from 30Gb to 70Gb with sustained transfer rates of 2.5Mb/s upto 10Mb/s.

PRODUCT FINDER : SEE FRONT COVER

SALES LINES OPEN 8.30am - 6.30pm MONDAY TO FRIDAY & 9am - 1pm SATURDAY

Product Focus : Iomega Ditto

The Iomega Ditto drive allows you to customise your capacity because its unique cartridge caddy takes a choice of 3.5Gb, 5Gb, 7Gb and 10Gb tape cartridges, as well as reading smaller TR-3 and 2Gb cartridges.

So, whether you use your computer for work, home or fun, the Ditto drive takes care of your stuff.

HEWLETT PACKARD
TAKE COVER
Buy an HP SupportPack
Ask about the range of support packs available

SMC COMPUTERS

Tape Drives

Part No	Description	Tape	Fixture	ex VAT	inc VAT
	HP Colorado Travan				
48-10-2000	**T3000** 1.6-3.2Gb, 9.5Mb/min	A3	Internal	£105	£123.38
48-10-2505	**HPC5GB/ATAPI** 2.5-5Gb, EIDE	A5	Internal	£127	£149.23
48-10-2509	**HPC5GB/PP** 2.5-5Gb, P/Port	A5	External	£159	£186.83
	Wangtek				
48-84-1000	**51000ES** 1Gb, 17Mb/min	D2,3,4	Internal	£279	£327.83
	Iomega Ditto				
	Ditto 2000 - up to 19Mb/min				
46-35-2000	**2000 Insider** 2Gb, 19Mb/min	E1	Internal	£55	£64.63
46-35-2009	**2000 P/Port** 2Gb, 19Mb/min	E1	External	£86	£101.05
46-35-2003	**2000 Bundle** Parallel Port drive with Carry Case and 3 Ditto tapes	E1	External	£119	£139.83
	DittoMax -up to 36Mb/Min				
46-35-3070	**DMAX7/I** EIDE, 3-7Gb	E2, E3, E4	Internal	£99	£116.33
46-35-3075	**DMAX7/PP** P/Port, 3-7Gb	E2, E3, E4	External	£129	£151.58
46-35-3010	**DMAXP/I** EIDE, 3-10Gb	E2/3/4/5	Internal	£189	£222.08
46-35-3015	**DMAXP/PP** P/Port, 3-10Gb	E2/3/4/5	External	£189	£222.08
26-35-0030	**DITTO-DASH** ISA controller for highest throughput for internal drives			£19	£22.33
	Seagate				
	Floppy Drive interface - 19Mb/min				
48-13-3200	**TSM3200R** 3.2Gb, 19Mb/min,	A3	Internal	£106	£124.55
	Hard Drive interface - 54Mb/min				
48-13-8000	**TST8000R-A** EIDE, 4Gb	C7	Internal	£169	£198.58
48-13-8005	**TST8000R-S** SCSI, 4Gb	C7	Internal	£199	£233.83
48-13-8015	**TST8000ES-S** SCSI, 4Gb	C7	External	£265	£311.38

Product Focus : Ditto Bundle

Fast, convenient and safe. The ideal way to store, back-up and transfer data across a number of platforms. Fully portable for use with laptops, running through a standard or enhanced parallel port.

Ditto 2Gb External Bundle

46-35-2003 **£119**

Product Link
Tape selector chart page 15

Parallel Port Tape Drives

Part No	Description	Tape	Fixture	ex VAT	inc VAT
	COLORADO				
46-10-2505	**HP Travan** 5Gb, 2.5-5Gb	A5	External	£134	£157.45
	Iomega DITTO				
46-35-2009	**Ditto 2000** 2Gb, 19Mb/min,	E1	External	£86	£101.05
46-35-2003	**Ditto 2000** Bundle : Drive with Carry Case and 3 x Ditto tapes	E1	External	£119	£139.83
46-35-3075	**Ditto Max** 3-7Gb, 36Mb/min,	E2,E3,E4	External	£129	£151.58
46-35-3015	**Ditto Max Pro** 3-10Gb, 36Mb/m	E2,3,4,5	External	£189	£222.08

Product Focus : Back-up

Why do I need to back up ?

For many people, making sure that their data is safe only ever becomes important when the data isn't there any more !

Imagine how many hours it would take to re-install software, set up all your applications as you had them before and then re-type all your work!

At SMC, we offer every kind of option, from parallel port devices which plug into your printer port to advanced SCSI DAT and Autoloader equipment, supporting from a basic 400Mb right through to a massive 144Gb.

Call us now for the solution to fit your requirements.

BACK-UP Software

Part No	Make & Model	ex VAT	inc VAT
	Cheyenne		
	Backup for Win95		
01-90-7001	Single user, easy to use, includes a scheduling facility	£35	£41.13
	Arcserve 6 for Netware		
	Server based, supports DOS, OS/2, Windows 3.x and Windows 95 workstations (optional support packs for UNIX, Macintosh and Windows NT Servers and Workstations), better support for NetWare 4.1 than previous versions, with an improved Windows'95 style user interface.		
01-90-6011	Single Workgroup Edition	£320	£376.00
01-90-6015	Enterprise Edition (Supports Multiple Servers)	£789	£927.08
	Arcserve 6 for Windows NT		
	Supports Windows NT, Windows'95 and Windows 3.x. clients (optional agents available for NetWare, UNIX, OS/2 and Macintosh). Windows NT 4.0 compatible, with a built in Virus Scanner.		
01-90-6033	Workstation Edition (W95 Client not supported)	£125	£146.88
01-90-6031	Single Server Edition	£330	£387.75
01-90-6035	Enterprise Edition (Supports Multiple Servers)	£559	£656.83
	Seagate Software		
01-13-0351	Windows 95 for single user, complete data protection for your workstation, includes Job Scheduling, Netware aware, will backup any workstation or network	£74	£86.95
01-13-0500	Windows NT 4.0 Workstation Edition, hassle-free Install, includes Job Scheduling, protects even Netware data, offers true 32-bit backup to a host of devices	£135	£158.63

INSIDE INFORMATION

Did you know - SMC Computers orlginally specialised in data storage (that's hard disks and tape drives) and has grown from what was a very technical and specialised area into the one-stop PC source it is today.

In expanding our product range, we have retained our expertise: we don't feel anyone can come close to our excellence in supplying the right product for customers' needs.

We have also steadily expanded our market to cater for serlous home users, businesses both large and small, government departments, local authorities, schools, universities, hospitals and the Ministry of Defence.

So in dealing with SMC, you are choosing a supplier with proven experience of providing a comprehensive range of products for an enormous variety of applications and customer needs - **and getting it right.**

Our Website Address is: http://www.smc-computers.co.uk

HARD DRIVES : EIDE & ULTRA-IDE

PERFORMANCE FROM THE UK's PREMIER HARD DRIVE SUPPLIER

EIDE Hard Drives

Part No	Size	Make	Model	Cache	Access	ex VAT	inc VAT
1.2Gb - 1.7Gb							
30-95-1201	1.2Gb	Samsung	WNR312016A	128k	11ms	£95	£111.63
30-70-1201	1.2Gb	Seagate	ST31276A	64k	12.5ms	£75	£88.13
30-86-1206	1.2Gb	Western D	AC11200A	128k	10ms	£95	£111.63
30-95-1601	1.6Gb	Samsung	WNR31601A	128k	11ms	£99	£116.33
30-86-1602	1.6Gb	Western D	AC21600A	128k	12ms	£97	£113.98
30-24-3017	1.7Gb	Fujitsu	MPA3017AT	128k	11ms	£89	£104.58
2.0Gb - 6.4Gb							
30-70-2132	2.0Gb	Seagate	ST32132A	128k	12ms	£89	£104.58
30-64-2111	2.1Gb	Quantum	CY2111AT 5.25"	128k	12ms	£85	£99.88
30-95-2152	2.1Gb	Samsung	WNR321520A	128k	11ms	£95	£111.63
30-86-2005	2.1Gb	Western D	AC22100A	128k	12ms	£105	£123.38
30-24-3026	2.5Gb	Fujitsu	MPA3026AT	128k	11ms	£109	£128.08
30-95-2543	2.5Gb	Samsung	WNR325430A	128k	11ms	£99	£116.33
30-70-2503	2.5Gb	Seagate	ST32531A	128k	12ms	£92	£108.10
30-24-3035	3.5Gb	Fujitsu	MPA3035AT	128k	11ms	£125	£146.88
30-64-4335	4.3Gb	Quantum	CY4335AT 5.25"	128k	12ms	£109	£128.08
30-39-5160	5.1Gb	Maxtor	85120A	256k	10ms	£175	£205.63
30-24-3052	5.2Gb	Fujitsu	MPA3052AT	128k	11ms	£155	£182.13
30-64-6510	6.4Gb	Quantum	CY6510AT 5.25"	128k	12ms	£135	£158.63
30-70-6401	6.4Gb	Seagate	ST36450A	512k	9.9ms	£169	£198.58

All the above hard drives come with a 3 year warranty and are 3.5" wide.
Please see Ultra-IDE Hard Drives section for more options.
Ultra-IDE is compatible with IDE/EIDE.

Utility Software

Part No	Description	ex VAT	Inc VAT
01-93-8642	Ontrack Disk Manager - purchased with a hard drive	£15	£17.63
01-93-8644	Ontrack Disk Manager full retail version	£35	£41.13
01-93-8402	Ontrack Drive Rocket - purchased with a hard drive	£12	£14.10
01-93-8404	Ontrack Drive Rocket full retail version	£17	£19.98
01-94-0002	Partition Magic - Data management software	£44	£51.70
01-94-0030	Drive Image - Drive Data backup/recovery software	£43	£50.53
01-94-0035	Drive Image Professional - Drive Data cloning software	£499	£586.33

IDE/EIDE/UIDE Controllers

Part No	Description	ex VAT	inc VAT
IDE			
24-95-1300	IDESPC, ISA, 2HDD/2FDD, Standard I/O Port	£13	£15.28
24-97-0300	ADP60, ISA, 2HDD, LBA Support	£35	£41.13
24-97-0355	ADP60F, ISA, 2HDD/2FDD, LBA Support	£39	£45.83
EIDE			
24-97-1360	EIDEMAX, ISA, 2HDD, ATAPI/CD-ROM, LBA.	£24	£28.20
24-97-1365	EIDEPRO, ISA, 4HDD/2FDD, ATAPI/CD-ROM, LBA	£39	£45.83
24-91-2300	DC2300+ VESA, 4HDD/2FDD, ATAPI/CD-ROM, LBA	£35	£41.13
24-91-4035	DC4030+Cache, 4x HDD, 1x ATAPI/CD-ROM, LBA	£85	£99.88
24-91-5175	16030/CD 32, ISA, 4HDD, 1x ATAPI/CD-ROM, LBA	£27	£31.73
FloppyMax			
24-97-0120	FloppyMax, ISA Add-on for LS-120 (120Mb A:Drive)	£25	£29.38
ULTRA DMA33 (UIDE)			
24-97-0033	Promise Pro ATA Ultra33, PCI add-on controller supporting Quantum ST and UIDE drives. Co-exists with existing IDE/EIDE - ATAPI devices	£44	£51.70

EIDE 2.5" Hard Drives

Part No	Size	Make	Model	Cache	Access	ex VAT	inc VAT
1.4Gb - 3.2Gb							
30-75-1403	1.4Gb	Toshiba	MK1403MAV	128k	13ms	£109	£128.08
30-75-2103	2.1Gb	Toshiba	MK2103MAV	128k	13ms	£139	£163.33
30-75-0035	3.2Gb	Toshiba	MK3205MAV	128k	13ms	£297	£348.98

These Hard Drives come with a 2 year warranty. All are 12.7mm high with a 44-pin connector, but please check your system for compatibility.

Ultra-IDE Hard Drives

Part No	Size	Make	Model	Cache	Access	ex.VAT	inc.VAT
1.6Gb - 3.2Gb							
30-64-0163	1.6Gb	Quantum	ST1620AT	128k	<10ms	£92	£108.10
30-86-2009	2.0Gb	Western D	AC22000AU	128k	11ms	£105	£123.38
30-24-3021	2.1Gb	Fujitsu	MPB3021AT	256k	10ms	£89	£104.58
30-39-2160	2.1Gb	Maxtor	82160D2	256k	9.7ms	£89	£104.58
30-64-2100	2.1Gb	Quantum	SE2100AT	128k	9.5ms	£89	£104.58
30-64-0213	2.1Gb	Quantum	ST2160AT	128k	<10ms	£89	£104.58
30-86-2100	2.1Gb	Western D	AC12100AU	128k	12ms	£97	£113.98
30-86-2505	2.5Gb	Western D	AC22500AU	128k	12ms	£99	£116.33
30-24-3032	3.2Gb	Fujitsu	MPB3032AT	256k	10ms	£112	£131.60
30-64-3201	3.2Gb	Quantum	SE3200AT	128k	9.5ms	£114	£133.95
30-64-0323	3.2Gb	Quantum	ST3240AT	128k	<10ms	£119	£139.83
30-70-3232	3.2Gb	Seagate	ST33232A	128k	12ms	£105	£123.38
30-86-3205	3.2Gb	Western D	AC23200AU	128k	12ms	£105	£123.38
30-86-3200	3.2Gb	Western D	AC33200AU	256k	11ms	£115	£135.13
4.0Gb - 5.2Gb							
30-86-4009	4.0Gb	Western D	AC34000AU	128k	<12ms	£139	£163.33
30-24-3043	4.3Gb	Fujitsu	MPB3043AT	256k	10ms	£129	£151.58
30-39-4320	4.3Gb	Maxtor	84320D4	256k	9.7ms	£129	£151.58
30-64-4300	4.3Gb	Quantum	SE4300AT	128k	9.5ms	£125	£146.88
30-64-4320	4.3Gb	Quantum	ST4320AT	128k	<10ms	£132	£155.10
30-70-4342	4.3Gb	Seagate	ST34342A	128k	12ms	£129	£151.58
30-86-4300	4.3Gb	Western D	AC34300AU	256k	<11ms	£125	£146.88
30-86-5100	5.1Gb	Western D	AC35100AU	256k	<11ms	£145	£170.38
30-24-3152	5.2Gb	Fujitsu	MPB3052AT	256k	10ms	£155	£182.13
6.4Gb - 8.4Gb							
30-24-3064	6.4Gb	Fujitsu	MPB3064AT	256k	10ms	£169	£198.58
30-30-5064	6.4Gb	IBM	09J0308	256k	8.5ms	£165	£193.88
30-30-8064	6.4Gb	IBM	00K0355	512k	8.5ms	£165	£193.88
30-39-6480	6.4Gb	Maxtor	86480D6	256k	9.7ms	£165	£193.88
30-64-6400	6.4Gb	Quantum	SE6400AT	128k	9.5ms	£169	£198.58
30-64-6480	6.4Gb	Quantum	ST6480AT	128k	<10ms	£182	£213.85
30-86-6400	6.4Gb	Western D	AC36400AU	256k	<9.5ms	£169	£198.58
30-30-8084	8.4Gb	IBM	00K0394	256k	8.5ms	£219	£257.33
30-39-8400	8.4Gb	Maxtor	88400D8	256k	9.7ms	£219	£257.33
30-64-8400	8.4Gb	Quantum	SE8400AT	128k	9.5ms	£219	£257.33

All the above hard drives come with a 3 year warranty and are 3.5" wide.
They can all work as standard IDE/EIDE or as Ultra-IDE (DMA-33) drives (max. transfer 33Mb/sec).
We recommend the Promise PCI Ultra33 controller for optimized transfer rates.

PRODUCT FINDER : SEE FRONT COVER

SALES LINES OPEN 8.30am - 6.30pm MONDAY TO FRIDAY & 9am - 1pm SATURDAY

HARD DRIVES : SCSI & ULTRA-SCSI

Ultra SCSI Hard Drives (20 Mb/sec)

Part No	Size	Make	Model	Cache	Access	ex VAT	inc VAT
2.1Gb - 4.5Gb							
35-30-2104	2.1Gb	IBM	09J1034	512k	8.5ms	£115	£135.13
35-64-2100	2.1Gb	Quantum	SE2100S Fireball SE	128k	9.5ms	£115	£135.13
35-64-2105	2.1Gb	Quantum	ST2160S Fireball ST	128k	<10ms	£139	£163.33
35-70-2151	2.1Gb	Seagate	ST32155N Hawk	256k	9ms	£199	£233.83
35-86-2173	2.1Gb	Western Dig	E2170-0003Enterprise	512k	8ms	£192	£225.60
35-24-2200	2.2Gb	Fujitsu	M2952S AL3	512k	8ms	£285	£334.88
35-70-2260	2.2Gb	Seagate	ST32272N Barracuda	512k	8.8ms	£209	£245.58
35-64-3201	3.2Gb	Quantum	SE3200S Fireball SE	128k	9.5ms	£157	£184.48
35-24-4400	4.3Gb	Fujitsu A/V	M2954S AL3	512k	10ms	£299	£351.33
35-30-4304	4.3Gb	IBM	09J1035 Ultrastar	512k	8.5ms	£172	£202.10
35-64-4301	4.3Gb	Quantum	SE4300S Fireball SE	128k	9.5ms	£175	£205.63
35-64-4305	4.3Gb	Quantum	ST4320S Fireball ST	128k	<10ms	£169	£198.58
35-86-4363	4.3Gb	Western Dig	E4360-0003Enterprise	512k	8ms	£309	£363.08
35-30-4527	4.5Gb	IBM	27H1713 Ultrastar	512k	7.5ms	£329	£386.58
35-64-4500	4.5Gb	Quantum	XP34550S Atlas II	512k	8ms	£295	£346.63
35-70-4505	4.5Gb	Seagate A/V	ST34501N Cheetah	512k	7.5ms	£389	£457.08
35-70-4515	4.5Gb	Seagate	ST34572N Barracuda	512k	8.8ms	£389	£457.08
6.4Gb - 9.1Gb							
35-64-6400	6.4Gb	Quantum	SE6400S Fireball SE	128k	9.5ms	£229	£269.08
35-64-6405	6.4Gb	Quantum	ST6480S Fireball ST	128k	<10ms	£235	£276.13
35-64-8400	8.4Gb	Quantum	SE8400S Fireball SE	128k	9.5ms	£299	£351.33
35-24-9100	9.1Gb	Fujitsu A/V	M2949S AL3 *	512k	9.5ms	£519	£609.83
35-30-9188	9.1Gb	IBM A/V	59H6588 Ultrastar	512k	7.5ms	£629	£739.08
35-64-9100	9.1Gb	Quantum	XP39100S Atlas II	1024k	8ms	£495	£581.63
35-70-9105	9.1Gb	Seagate A/V	ST19101N Cheetah	512k	8ms	£595	£699.13
35-70-9175	9.1Gb	Seagate A/V	ST19171N Barracuda	512k	8ms	£479	£562.83
18Gb - 23Gb							
35-30-1800	18Gb	IBM	59H6589 Ultrastar	512k	7.5ms	£1149	£1350.08
35-70-0230	23Gb	Seagate	ST423451N Elite	2048k	13ms	£1039	£1220.83

Drives marked * are Fast-SCSI-2 (10Mb/sec) only.

Partition Magic
01-94-0002
£44
(£51.70 inc.VAT)

SMC COMPUTERS

When you buy a Hard Drive from SMC you get something no other company offers - a free 24 page, easy to follow Installation Guide containing everything you need to ensure a trouble-free set up.

It covers:
- Getting Started & basic troubleshooting
- IDE/EIDE Hard Drive Installation
- CMOS configuration
- Installing with & without a translating BIOS
- SCSI Hard Drive installation & configuration
- Creating a bootable floppy disk
- Windows NT & Windows'95

FREE WHEN YOU BUY FROM SMC

Product Link
Drive cables & boxes page 14

Ultra Wide SCSI Hard Drives (40 Mb/sec)

Part No	Size	Make	Model	Cache	Access	ex VAT	inc VAT
2.1Gb - 4.5Gb							
35-30-2108	2.1Gb	IBM	09J1036 Ultrastar	512k	8.5ms	£129	£151.58
35-70-2153	2.1Gb	Seagate	ST32155W Hawk	512k	9ms	£219	£257.33
35-86-2177	2.1Gb	Western D	E2170-0007Enterprise	512k	8ms	£219	£257.33
35-24-2203	2.2Gb	Fujitsu	M2952QA AL3	512k	8ms	£289	£339.58
35-70-2265	2.2Gb	Seagate	ST32272W Barracuda	512k	8.8ms	£289	£339.58
35-24-4403	4.3Gb	Fujitsu A/V	M2954QA AL3	512k	10ms	£299	£351.33
35-30-4308	4.3Gb	IBM	09J1037 Ultrastar	512k	8.5ms	£175	£205.63
35-86-4367	4.3Gb	Western D	E4360-0007Enterprise	512k	8ms	£329	£386.58
35-30-4537	4.5Gb	IBM A/V	27H1772 Ultrastar	512k	7.5ms	£333	£391.28
35-64-4507	4.5Gb	Quantum	XP34550W Atlas II	512k	8ms	£299	£351.33
35-70-4507	4.5Gb	Seagate A/V	ST34501W Cheetah	512k	7.5ms	£395	£464.13
35-70-4517	4.5Gb	Seagate	ST34572W Barracuda	512k	8.8ms	£395	£464.13
9.1Gb							
35-24-9103	9.1Gb	Fujitsu A/V	M2949QA AL3	512k	9.5ms	£529	£621.58
35-30-9190	9.1Gb	IBM A/V	59H6590 Ultrastar	512k	7.5ms	£599	£703.83
35-30-9118	9.1Gb	IBM A/V	05J7618 Ultrastar	512k	7.5ms	£699	£821.33
35-64-9107	9.1Gb	Quantum	XP39100W Atlas II	1024k	8ms	£499	£586.33
35-70-9177	9.1Gb	Seagate A/V	ST19171W Barracuda	512k	8ms	£499	£586.33
35-70-9107	9.1Gb	Seagate A/V	ST19101W Cheetah	512k	8ms	£599	£703.83
18Gb - 23Gb							
35-30-1891	18Gb	IBM	59H6591 Ultrastar	512k	7.5ms	£1159	£1361.83
35-70-0231	23Gb	Seagate	ST423451W Elite	2048k	13ms	£1049	£1232.58

Adaptec SCSI Controller Cards

Kits (include software and internal cable)

Part No	Model	Interface	Ext.Con	Devices (Max)	Boot Bios	ex VAT	inc VAT
ISA Bus							
26-03-1542	AHA1542CP	FastSCSI2	Micro-D	7&FDD	Y	£152	£178.60
EISA Bus							
26-03-2742	AHA2742AT	FastSCSI2	Micro-D	14&FDD	Y	£219	£257.33
26-03-2747	AHA2742W	WideSCSI2	Micro-D wide	15&FDD	Y	£245	£287.88
PCI Bus							
26-03-2910	AHA2910B	FastSCSI2	Micro-D	7		£65	£76.38
26-03-2920	AHA2920	FastSCSI2	Micro-D	7		£88	£103.40
26-03-2941	AHA2940UA	UltraSCSI	Micro-D	7	Y	£145	£170.38
26-03-2947	AHA2940UW	UltraWide	Micro-D wide	15	Y	£175	£205.63
26-03-3940	AHA3940U	UltraSCSI	Micro-D	14	Y	£245	£287.88
26-03-3947	AHA3940UW	UltraWide	Micro-D wide	30	Y	£285	£334.88
PCMCIA (PC Card)							
26-03-1460	APA1460A-2	FastSCSI2	PCMCIA, SCSI I&2 cables	7		£99	£116.33
MCA							
26-03-1640	AHA1640	FastSCSI2	Micro-D/MCA bus	7	Y	£199	£233.83
RAID 0, 1, 0/1, or 5 (PCI Bus-Netware & WinNT)							
26-03-0131	AAA-131	UltraWide	Micro-D wide		45	£269	£316.08
26-03-0133	AAA-133	UltraWide	Micro-D wide		45	£469	£551.08

Bare Cards (do not include software or cable)

Part No	Model	Interface	Ext.Con	Devices (Max)	Boot Bios	ex VAT	inc VAT
ISA Bus							
26-03-1520	AHA1520B	FastSCSI2	Micro-D	7		£44	£51.70
26-03-1549	AHA1542	FastSCSI2	Micro-D	7&FDD	Y	£115	£135.13
PCI Bus							
26-03-2943	AHA2940UA	UltraSCSI	Micro-D	7	Y	£119	£139.83
26-03-2949	AHA2940UW	UltraWide	Micro-D wide	15	Y	£156	£183.30

Our Website Address is: http://www.smc-computers.co.uk

DRIVE BOXES, CABLES & BRACKETS

SMC COMPUTERS

Product Focus : Cables

Data Cables

Part No	Make & Model	ex VAT	Inc VAT
External SCSI Cables - 1m			
75-95-3521	25-pin to 50-pin Centronics	£14	£16.45
75-95-3719	25-pin to 68-pin Wide SCSI	£30	£35.25
75-95-3551	50-pin Centronics to 50-pin Centronics	£15	£17.63
75-95-3552	50-pin Centronics to 50-pin Centronics - 2 metres	£18	£21.15
75-95-3571	50-pin Micro D to 50-pin Centronics	£20	£23.50
75-95-3572	50-pin Micro D to 50-pin Centronics- 2 metres	£28	£32.90
75-95-3721	50-pin Micro D to 25-pin D	£20	£23.50
75-95-3771	50-pin Micro D to 50-pin Micro D	£25	£29.38
75-95-3661	Wide SCSI to Wide SCSI	£35	£41.13
Internal SCSI Cables - 50 pin			
75-95-1501	Single drive, 19 inches	£8	£9.40
75-95-1502	Dual drive, 38 inches	£10	£11.75
75-95-1503	Triple drive, 38 inches	£15	£17.63
75-95-0500	Custom made to order, as required	£10	£11.75
Internal SCSI Cables - 68 pin			
75-95-1703	Triple drive, for Wide SCSI	£20	£23.50
75-95-1705	5 drives, for Wide SCSI	£25	£29.38
Internal IDE Cables			
75-95-1401	Single Drive, 40 Way Ribbon, 12.5", 2 x IDC40	£8	£9.40
75-95-1402	Dual Drive, 40 Way, 18" (4" gap), 3 x IDC40	£10	£11.75
75-95-0400	Custom made , 40 Way Ribbon, up to 20"	£10	£11.75

Note: Cable lengths may vary - IDE will support max of 2x drives per cable

Product Focus : External Cables

External SCSI Cables

Parallel Port Drive Box

Part No	Make & Model	ex VAT	inc VAT
73-97-1183	Parallel Port Box for IDE/EIDE drives (inc. software)	£69	£81.08

Ideal solution for turning a standard Hard drive into a portable solution. Easy to install and includes software to work with any size drive.

External Drive Boxes

Part No	Make & Model	ex VAT	inc VAT
Centronics			
73-97-3113	1 x 3.5"HH/FH, 40 watt, Centronics Ext. Interface	£69	£81.08
73-97-3213	2 x 3.5"HH/FH, 65 watt, Centronics Ext. Interface	£99	£116.33
73-97-3413	4 x 3.5"HH/FH, 2 x 65 watt, Centronics Ext. Interface	£189	£222.08
73-97-3114	1 x 3.5"HH/LP, 30 watt, Centronics Ext. Interface	£69	£81.08
73-97-6114	1 x 5.25"FH, 65 watt, Centronics Ext. Interface	£94	£110.45
73-95-9412	2 x 5.25"HH, Conversion Kit for 73-97-6114	£14	£16.45
73-97-5116	1 x 5.25"HH, 40 watt, Centronics Ext. Interface	£62	£72.85
73-97-5114	1 x 5.25"FH, 30 watt, Centronics Ext. Interface	£65	£76.38
73-97-6215	2 x 5.25"FH, 2 x 65 watt, Centronics Ext. Interface	£175	£205.63
73-95-9524	4 x 5.25"HH, Conversion Kit for 73-97-6215	£24	£28.20
73-97-6315	3 x 5.25"FH, 3 x 65 watt, Centronics Ext. Interface	£239	£280.83
73-95-9536	6 x 5.25"HH, Conversion Kit for 73-97-6315	£34	£39.95
73-97-6415	4 x 5.25"FH, 4 x 65 watt, Centronics Ext. Interface	£345	£405.38
Micro-D			
73-97-3133	1 x 3.5"HH/FH, 40 watt, Micro D Ext. Interface	£79	£92.83
73-97-3233	2 x 3.5"HH/FH, 65 watt, Micro D Ext. Interface	£119	£139.83
73-97-3433	4 x 3.5"HH/FH, 2 x 65 watt, Micro D Ext. Interface	£199	£233.83
73-97-5134	1 x 5.25"FH, 30 watt, Micro D Ext. Interface	£85	£99.88
73-97-6144	2 x 5.25"FH, 65 watt, Micro D Ext. Interface	£115	£135.13
Fast-Wide			
73-97-3152	1 x 3.5"HH/FH, 40 watt, Fast Wide Ext. Interface	£95	£111.63
73-97-3252	2 x 3.5"HH/FH, 65 watt, Fast Wide Ext. Interface	£145	£170.38
73-97-3452	4 x 3.5"HH/FH, 65 watt, Fast Wide Ext. Interface	£215	£252.63

All boxes are TUV approved and come with a 3 year warranty.
Wide SCSI options are available on selected models. Please call for details.

Product Focus : Drive Caddy

Removable Drive Caddies enable easy movement of data between sites.
They are ideal for use where large volumes of data may need to be physically transerred, and also where the removal of data for security purposes is required.

See below for detalls of options available from SMC.

Hard Drive Mounting Kits

Part No	Dsecription	ex VAT	inc VAT
Fitting Bracket kit			
This universal kit can be used to mount any 3.5" Hard Drive we sell into a 5.25" bay in virtually any standard PC case. (Note : not suitable for cases using special bays or slide rails.)			
79-95-1135	DBHD - Suitable for IDE or SCSI interface	£9	£10.58
Removable Caddies			
The Removable Caddy consists of a 5.25" docking bay which receives a sliding frame containing a 3.5" Hard Drive. All kits are complete and come with full installation instructions.			
79-97-3502	SCSI - High-duty plastic frame	£35	£41.13
79-97-3504	SCSI - Metal frame	£59	£69.33
79-97-3506	Fast/Wide SCSI - Metal frame	£79	£92.83
79-97-3102	IDE / EIDE / Ultra-IDE - High-duty plastic frame	£25	£29.38

PRODUCT FINDER :
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VISA DELTA MasterCard SWITCH AMERICAN EXPRESS

SALES LINES OPEN 8.30am - 6.30pm MONDAY TO FRIDAY & 9am - 1pm SATURDAY

MEDIA SELECTOR

CD-ROM Media

Part No	Description	ex VAT	inc VAT	ex VAT	inc VAT	ex VAT	inc VAT
CD-ROM Media		Qty 1-4		Qty 5-19		Qty 20+	
95-97-7174	CD Gold - CD media (74 Mins)	£4	£4.70	£3	£3.53	£2	£2.35
95-97-0700	TRAX CD Gold - CD media (74 Mins)	£5	£5.88	£4	£4.70	£3	£3.53
95-97-0774	TRAX CD Re-writable, CD-RW players	£17	£19.98	£16	£18.80	£14	£16.45
Optical Media		Qty 1-4		Qty 5-19		Qty 20+	
95-97-0128	128Mb, (LMD300)	£10	£11.75	£13	£15.28	£11	£12.93
95-97-0230	230Mb, Fujitsu M2512A (OM230)	£8	£9.40	£9	£10.58	£8	£9.40
95-97-0640	640Mb, Fujitsu M2513A (OM640)	£18	£21.15	£14	£16.45	£12	£14.10
95-97-0653	650Mb, Panasonic LF1004-PD Drive	£19	£22.33	£16	£18.80	£15	£17.63
95-97-1300	1.3Gb, HP C1716T, HP C2550A	£32	£37.60	£72	£84.60	£70	£82.25
95-97-1500	1.5Gb, Panasonic LF7304, LF7300B	£82	£96.35	£83	£97.53	£80	£94.00

Removable Media

Part No	Description	ex VAT	inc VAT	ex VAT	inc VAT	ex VAT	inc VAT
Removable Media		Qty 1-4		Qty 5-19		Qty 20+	
95-35-0101	Iomega Zip 100Mb, Single	£10	£11.75	£8	£9.40	£7	£8.23
95-35-0110	Iomega Zip 100Mb, 10 Pack (Multi-Coloured 10-pack, Inc Software)	£85	£99.88	£80	£94.00	£75	£88.13
95-35-1001	Iomega Jaz 1.0Gb, Single	£55	£64.63	£55	£64.63	£52	£61.10
95-35-2001	Iomega Jaz 2.0Gb, Single	£92	£108.10	£89	£104.58	£86	£101.05
95-73-3135	Syquest 3.5" 135Mb, Single	£15	£17.63	£13	£15.28	£12	£14.10
95-73-3270	Syquest 3.5" 270Mb, Single	£35	£41.13	£32	£37.60	£30	£35.25
95-73-5044	Syquest 5.25" 44Mb, Single	£29	£34.08	£26	£30.55	£24	£28.20
95-73-5088	Syquest 5.25" 88Mb, Single	£32	£37.60	£29	£34.08	£27	£31.73
95-73-5200	Syquest 5.25" 200Mb, Single	£40	£47.00	£37	£43.48	£35	£41.13

Floppy Disks

Part No	Description	ex VAT	inc VAT	ex VAT	inc VAT	ex VAT	inc VAT
Floppy/Super Floppy Media		Qty 1-4		Qty 5-19		Qty 20+	
95-93-0140	Unbranded 1.44Mb 3.5" DS,HD	£16	£1.187.05	£4	£4.70	£3	£3.53
95-71-0144	Sony - 1.44Mb 3.5" DS,HD (Box-10)	£8	£9.40	£7	£8.23	£6	£7.05
95-95-0144	3M - 1.44Mb 3.5" DS,HD (Box-10)	£8	£9.40	£8	£9.40	£7	£8.23
95-95-1200	3M - 120Mb 3.5" LS-120	£13	£15.28	£12	£14.10	£11	£12.93

Tape Media Selector Chart

Part No		Description	ex VAT	inc VAT	ex VAT	inc VAT	ex VAT	inc VAT
Tape Type		(Price each)	Qty 1-4		Qty 5-19		Qty 20+	
95-95-0805	A1	TR1 (QIC Formatted)	£15	£17.63	£13	£15.28	£12	£14.10
95-95-3405	A3	TR3 (QIC Formatted)	£18	£21.15	£16	£18.80	£15	£17.63
95-95-8005	A4	TR4 (QIC Formatted)	£24	£28.20	£21	£24.68	£19	£22.33
95-95-2505	A5	TR4/5Gb (QIC Wide Formatted)	£21	£24.68	£18	£21.15	£16	£18.80
95-95-9409	B1	DAT 4mm 90metre DDS-1	£5	£5.88	£5	£5.88	£4	£4.70
95-95-9412	B2	DAT 4mm 120metre DDS-2	£12	£14.10	£11	£12.93	£10	£11.75
95-95-9417	B3	DAT 4mm 125metre DDS-3	£20	£23.50	£20	£23.50	£18	£21.15
95-95-0120	C1	DC2120 unformatted	£8	£9.40	£7	£8.23	£6	£7.05
95-95-0125	C2	DC2120 pre-formatted	£12	£14.10	£10	£11.75	£9	£10.58
95-95-0255	C3	DC2120XL pre-formatted	£10	£11.75	£8	£9.40	£7	£8.23
95-95-0345	C4	DC3000XL pre-formatted	£13	£15.28	£11	£12.93	£10	£11.75
95-95-0680	C5	DC3000XL unformatted	£15	£17.63	£13	£15.28	£12	£14.10
95-95-1365	C6	DC1400	£19	£22.33	£17	£19.98	£16	£18.80
95-95-4005	C7	DC3080XLF (QIC Formatted)	£20	£23.50	£17	£19.98	£15	£17.63
95-95-0150	D1	DC6150	£10	£11.75	£8	£9.40	£7	£8.23
95-95-0250	D2	DC6250	£12	£14.10	£10	£11.75	£9	£10.58
95-95-0520	D3	DC6525	£15	£17.63	£13	£15.28	£12	£14.10
95-95-1000	D4	DC9100	£19	£22.33	£17	£19.98	£16	£18.80
95-35-2002	E1	Ditto 2000 2Gb Media	£14	£16.45	£12	£14.10	£10	£11.75
95-35-2003	E2	DittoMax 3Gb Media	£15	£17.63	£POA	£POA	£POA	£POA
95-35-2005	E3	DittoMax 5Gb Media	£19	£22.33	£POA	£POA	£POA	£POA
95-35-2007	E4	DittoMax 7Gb Media	£22	£25.85	£POA	£POA	£POA	£POA
95-35-2010	E5	DittoMax Pro 10Gb Media	£25	£29.38	£POA	£POA	£POA	£POA
95-28-0514	F1	HP DLT Tape III, 30Gb	£35	£41.13	£33	£38.78	£32	£37.60
95-28-5141	F2	HP DLT Tape IV, 40Gb	£69	£81.08	£64	£75.20	£61	£71.68
95-95-9130		DAT 4mm Tape Cleaner	£10	£11.75	£8	£9.40	£7	£8.23

Our Website Address is: http://www.smc-computers.co.uk

SMC : FOR THE BEST IN MULTIMEDIA

CREATIVE
CREATIVE LABS

The Sound Blaster AWE64 Value breaks the 32 voice barrier to give you incredible audio realism. It's the most compatible sound card you can buy, running with more applications than any other sound card, yet at an incredibly low price.

Enjoy the smoothest, most realistic audio experience with 64 voices of Advanced WavEffects. Listen to expressive, true-to-life instrument reproductions as well as stunning sound effects. Thrill to ultra-realistic sound for your games and multimedia. Immerse yourself in 3D Positional Audio. Treat your ears to the astounding sound quality of SoundFont technology, playing back customised samples from your applications. Surf the sounds of the Internet with Inspire, Creative's own multimedia wizard.

The Sound Blaster AWE64 Value lives up to its name for great value and great performance.

Sound Blaster AWE-64 Discovery Kit
59-15-2464
£99
(£116.33 Inc.VAT)

Creative Labs Multimedia Kits

Part No	Make & Model	ex VAT	inc VAT
59-15-2464	**Sound Blaster AWE-64 Discovery**	£99	£116.33

This is the Market Leader in Multimedia Kits ! In addition to the SoundBlaster AWE64 Value sound card, it contains the Blaster CD24x (the latest 24-speed CD-ROM drive from Creative Labs) and powered STEREO Speakers. It also comes complete with Windows 3.x/95 drivers and Actua Soccer.

"Upgrade to higher sound - NOW!"

*From now until the 31st of August 1998 you can claim a rebate of £23.00 against a new AWE64 Gold or £12.00 against an AWE64 Value card. All details are included with your NEW AWE 64 card. The return of your old Sound Card is required - this offer applies to ALL old sound cards - not just Creative Labs cards. Look-out for details on the Special promotion packs.

Internet Video

Part No	Make & Model	ex VAT	inc VAT
64-15-0162	**WebCam 2** - Full colour internet Video solution Capable of 16.7million colour live video capture Supports AVI, e-mail, requires Windows'95. Connection via Parallel port, with any modem.	£99	£116.33

Video Blaster WebCam
LIVE VIDEO OVER THE INTERNET...

Video Blaster WebCam gives you everything you need to capture, create and communicate with live full colour video on the internet. It's an affordable and easy-to-use upgrade kit which will get you up and running with live video from your own PC in minutes No installation is required-it just plugs in like a printer !

Also see :
Page 19 for CREATIVE LABS Graphics
Page 20 for CREATIVE LABS PC-DVD

The hottest upgrades for the coolest PC's....

SMC Computers have the coolest range of Creative Labs multimedia upgrades.. a full range of SoundBlaster cards, VideoBlaster cards and accessories that are hot enough to wake up any PC. Whether you are exploring the internet, enhancing your knowledge, talking to your colleagues with video conferencing or gaming in another dimension, you'll find yourself completely at home with the Creative range. Easy to install and easy to use, our top quality products will help keep you informed, in-touch and entertained for years to come.

PRODUCT FINDER :
SEE FRONT COVER

SALES LINES OPEN 8.30am - 6.30pm MONDAY TO FRIDAY & 9am - 1pm SATURDAY

SOUND CARDS, SPEAKERS & KITS

Sound Cards

Part No	Description	ex VAT	Inc VAT
CREATIVE	CREATIVE LABS		
	All Creative Labs products sold by SMC are full retail boxed versions containing all documentation, drivers and software where applicable.		
SB16			
53-15-1639	**SB16 Value Plug 'n Play** - 16bit FM Stereo, Offers CD quality audio, MIDI/Joystick interface, Windows 3.1x - Win'95 Audio and Internet tools.	£33	£38.78
AWE-64			
53-15-6425	**AWE64 Value Plug 'n' Play** - 64 Voice Wavetable, Creative WaveSynth, Wave Guide, 16bit FM Stereo, 512Kb RAM (max 24Mb), Windows 3.1x/95 software.	£59	£69.33
53-15-6445	**AWE64 Gold Plug 'n' Play** - 64 Voice Wavetable, 4Mb RAM (max 28Mb), Gold RCA connectors for clearer audio, supplied with audio sequencing software. Offers real-time music editing and 8 track digital recording.	£112	£131.60
	Creative Labs SoundBlaster cards are designed to take advantage of Intel Pentium technology & EIDE/ATAPI CD-ROM motherboard support, and use 16-bit ISA.		
Upgrades & Accessories			
19-15-6404	4Mb Memory Module for AWE-64 Series	£29	£34.08
19-15-6408	8Mb Memory Module for AWE-64 Series	£49	£57.58
	Allows you to download more sound fonts onto your card. Also includes SoundFont Gold CD.		
82-15-0213	**Action Blaster** - Games Accessories kit - including SBS38 Speakers, Joystick, plus 3 CD games titles - Slipstream, Virtual Pool, FIFA Soccer (titles may change)	£29	£34.08
DIAMOND	MULTIMEDIA		
53-19-2030	**Diamond Monster** 3D Sound, Supports Microsoft Direct Sound for Window '95. Audio playback support for 4 speakers - Multi-stream audio, PCI	£85	£99.888
GRAVIS			
53-91-0503	**Ultrasound Plug 'n Play Pro** - Full Duplex, 32-Voice wavetable, 16bit Stereo, IDE CD-ROM interface, 512k memory, upgradable to 8Mb. Driver software for Dos/Windows/Win'95, over 200Mb of games & demos.	£79	£92.83
57-91-2403	**Gravis MIDI Adaptor** - Supports MIDI in, out and through. 2 Joystick connectors supplied with 2-metre MIDI cable	£39	£45.83
82-91-2400	**Gravis PC Pro Joystick** - 5 Fire buttons, Analogue, Adjustable handle settings, Free software	£19	£22.33
82-91-2501	**Gravis PC Gamepad Pro** - Digital 10-button gamepad	£29	£34.08

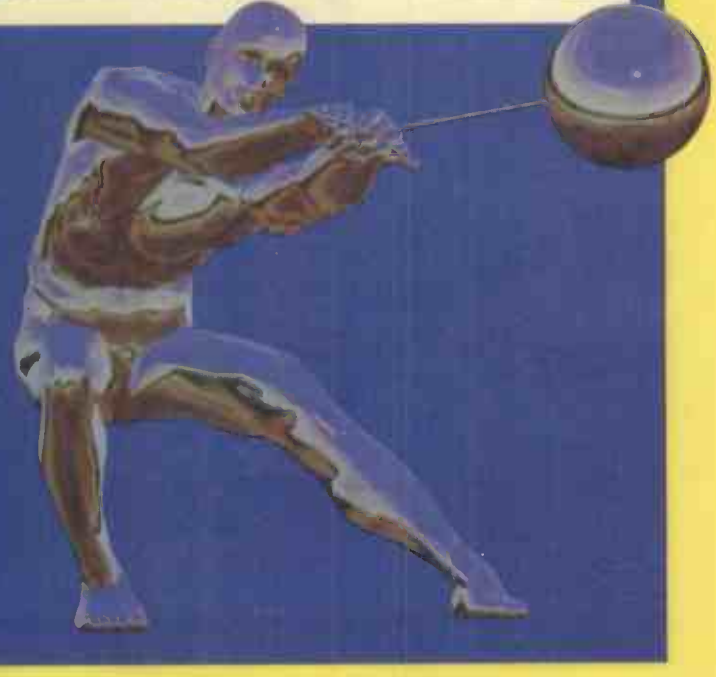
Speakers

Part No	Make & Model	ex VAT	inc VAT
Labtec			
57-93-3105	Labtec LCS-1024 - 10 watt	£35	£41.13
Yamaha			
57-93-7133	Yamaha MI5 - 10 watt	£38	£44.65
57-93-7135	Yamaha SS510 Sub Woofer	£63	£74.03
57-93-0515	Yamaha YST-MSW5 Sub Woofer	£45	£52.88
57-93-5525	Yamaha YST-MSW5 Sub Woofer + Speakers	£59	£69.33
Creative Labs			
57-15-0020	Creative CSW20 Speakers - 5Watt RMS	£14	£16.45
57-15-0050	Creative CSW50 Speakers - 11Watt RMS	£34	£39.95
57-15-0100	Creative CSW100 Speakers and Amplifier - 17Watt RMS	£59	£69.33
57-15-0200	Creative CSW200 Speakers and Amplifier - 23Watt RMS	£99	£116.33
57-15-0350	Creative CSW350 Speakers and Amplifier - 68Watt RMS	£179	£210.33

Creative Labs Speakers
from only
£14
(£16.45 Inc.VAT)

INSIDE INFORMATION

Did you know - SMC Computers was formed in 1991 after the present directors had had unsatisfactory dealings with computer companies of the time. It was felt that there was a lack of ability, or proper care, or both, in the market and that a space existed for a capable and properly committed company.
We are happy to say that while SMC has grown into one of the UK's leading PC and upgrade companies, all of the companies that served us so badly have either gone out of business or have been taken over.



SMC :
THE BEST YOU'LL GET

Our Website Address is: http://www.smc-computers.co.uk

SMC COMPUTERS

PERFORMING WITH STYLE ...

Graphics Cards - Diamond & ATI

Part No	Make & Model	ex VAT	inc VAT

DIAMOND MULTIMEDIA

Diamond Stealth 3D series

2000 Pro - Outrageously fast 2-D and 3-D

64bit graphics processor with an S3 ViRGE DX chipset. Supports software MPEG. 170MHz RAMDAC with maximum refresh 120Hz.

64-19-1442	**2Mb EDO-DRAM** (4Mb max)	£39	£45.83

1280x1024 (256 colours) at 85Hz, 800x600 (16.7m colours) at 120Hz & 1024x768 (64k colours) at 100Hz.

64-19-1444	**4Mb EDO-DRAM**	£45	£52.88

1280x1024 (64k colours) at 75Hz, 1024x768 (16.7m colours) at 100Hz & 1280x1024 (256 colours) at 85Hz.

2000 Pro with TV Output option

View PC software on your TV !

64-19-1452	**2Mb EDO-DRAM**	£29	£34.08
64-19-1454	**4Mb EDO-DRAM**	£59	£69.33

Diamond FireGL Series

Premium performance 2D/3D professional graphics.

1000 Series

Based on 3Dlabs Permedia 2 graphics chip and rendering engine.
Excellent for Windows 95, outstanding Windows NT OpenGL acceleration.

64-19-1008	**1000Pro PCI** - 8Mb SGRAM	£115	£135.13
64-19-1108	**1000Pro AGP** - 8Mb SGRAM for AGP slot	£129	£151.58

Diamond Viper Series

The NVIDIA RIVA chipset gives true 128-bit power for incredible 2D, 3D & video. Blistering Windows 95 and Windows NT performance.
Hardware-accelerated OpenGL, with multiple monitor support for multiple cards.
1600x1200 (64k colours), 1152x864 (16.7m colours) at 85Hz.
230MHz RAMDAC, 100MHz SGRAM.

64-19-2004	**V330 PCI** - 4Mb SGRAM	£99	£116.33
64-19-2104	**V330 PCI** - 4Mb SGRAM with TV Output	£129	£151.58
64-19-2704	**V330 AGP** - 4Mb SGRAM for AGP slot	£105	£123.38

ATi

ATI 3D Graphics Cards - PCI

64-97-0302	**Charger** - OEM, 2Mb SGRAM	£32	£37.60
64-97-0304	**Charger** - OEM, 4Mb SGRAM	£45	£52.88
64-97-0602	**XPERT @ Play** - OEM, TV Out, 2Mb SGRAM	£99	£116.33
64-97-0604	**XPERT @ Play** - OEM, TV Out, 4Mb SGRAM	£85	£99.88
64-97-0608	**XPERT @ Play** - OEM, TV Out, 8Mb SGRAM	£105	£123.38
64-97-0502	**XPERT @ Work** - OEM, 2Mb SGRAM	£85	£99.88
64-97-0504	**XPERT @ Work** - OEM, 4Mb SGRAM	£75	£88.13
64-97-0508	**XPERT @ Work** - OEM, 8Mb SGRAM	£99	£116.33
	Retail packs with 3D software titles Formula 1, Terracide & Wirl :		
64-97-1604	**XPERT @ Play** TV Out, 4Mb SGRAM	£109	£128.08
64-97-1608	**XPERT @ Play** TV Out, 8Mb SGRAM	£129	£151.58
	Retail packs with 3D software titles Simply 3D, Photosuite & Wirl :		
64-97-1504	**XPERT @ Work** - 4Mb SGRAM	£99	£116.33
64-97-1508	**XPERT @ Work** - 8Mb SGRAM	£119	£139.83

ATI 3D Graphics Cards - AGP

64-97-0614	**XPERT @ Play** - OEM, TV Out, AGP 4Mb SGRAM	£89	£104.58
64-97-0618	**XPERT @ Play** - OEM, TV Out, AGP 8Mb SGRAM	£115	£135.13
64-97-0514	**XPERT @ Work** - OEM, AGP 4Mb SGRAM	£79	£92.83
64-97-0518	**XPERT @ Work** - OEM, AGP 8Mb SGRAM	£105	£123.38

Graphics Cards - Matrox & Videologic

Part No	Make & Model	ex VAT	inc VAT

matrox

Matrox Millennium II

Optimized 64-bit MGA-2164W dual-ported processor, 250MHz flicker-free RAMDAC. Max. refresh 230Hz : now faster 2D than before & supports Direct3D (D3D) app's. True 24-bit colour for photo realistic displays available at 1600x1200 with 8Mb !
Software and drivers supplied.

64-95-2004	4Mb WRAM (Max 16Mb) for PCI	£109	£128.08
64-95-2008	8Mb WRAM (Max 16Mb) for PCI	£164	£192.70
64-95-6004	4Mb WRAM (Max 16Mb) for AGP	£115	£135.13
64-95-6008	8Mb WRAM (Max 16Mb) for AGP	£165	£193.88

Matrox Millennium II WRAM PCI/AGP upgrades

64-95-0042	4Mb WRAM upgrade	£69	£81.08
64-95-0082	8Mb WRAM upgrade	£119	£139.83
64-95-0122	12Mb WRAM upgrade (for 4Mb board only)	£179	£210.33

Matrox Millennium MPEG

NOTE : This MPEG upgrade is for the bare 2Mb or 4Mb board only, not Millennium II

64-95-1036	Media XL-MPEG board (fits into memory slot).	£189	£222.08

Matrox Mystique

Mystique 220 Rainbow Runner

This is a plug-in 'daughter board' video upgrade with sound being captured through your normal sound card. Video output is via PC to PAL and there is an easy-to-use on-screen PC-VCR remote. Hardware MPEG1 on board enables video capture/playback, with both live and still frame capture. High-quality video editing, conferencing and recording are also included.

64-95-1199	For 2Mb or 4Mb (original) Mystique	£109	£128.08

Matrox Mystique 220 - Home & Business Series

The 64 bit MGA graphics processor is based on the award-winning Matrox Mystique, now with faster 3D facilities and improved support for larger 21" monitors.
All cards include operating system drivers, plus utilities and Software MPEG.
Home Series : with Disney's Toy Story, MotorRacer and 3D Game Demo's.

64-95-2202	2Mb SGRAM	£65	£76.38
64-95-2204	4Mb SGRAM	£77	£90.48

Business Series : with Netscape Navigator, Micrografx Simply 3D and Serif PagePlus.

64-95-2402	2Mb SGRAM	£65	£76.38
64-95-2404	4Mb SGRAM	£79	£92.83

Matrox Mystique 220 SGRAM upgrades (2, 4, 6Mb) are available - please ask for details.

Matrox Mystique Memory

NOTE : This memory upgrade is for the original 2Mb version only, not the 220 series

64-95-0102	2Mb SGRAM (expansion to 4Mb)	£30	£35.25

Matrox m3D

Based on the PowerVR PCX2 processor, this card balances price with incredible 3D gaming.

64-95-0403	4Mb SDRAM, includes games	£59	£69.33

VideoLogic

Grafixstar

64-97-1411	**410** - S3 Trio64V2, 1Mb EDO DRAM	£25	£29.38
64-97-0224	**410** - S3 Trio64V2, 2Mb EDO DRAM	£39	£45.83
64-97-0242	**560 PCI** - 4Mb	£57	£66.98
64-97-0249	**560 AGP** - 4Mb	£59	£69.33
64-97-0261	**600 Pro PCI** - 2Mb	£52	£61.10

Apocalypse

64-97-0287	**3Dx Value** - Power VR chipset, 4Mb SDRAM	£49	£57.58
64-97-0213	**3Dx Retail Pack** - 4Mb SDRAM	£66	£77.55
64-97-0265	**5D** - ET6100, 128-bit processor, 6Mb memory	£125	£146.88
64-97-0234	**5D** - ET6100, 128-bit processor, 8Mb memory	£149	£175.08

PRODUCT FINDER : SEE FRONT COVER

VISA · Switch · MasterCard · Switch · AMERICAN EXPRESS · MasterCard

SALES LINES OPEN 8.30am - 6.30pm MONDAY TO FRIDAY & 9am - 1pm SATURDAY

Product Focus : Voodoo2

3D Blaster Voodoo2
64-15-0208
£129
(£151.58 Inc.VAT)

The 3D Blaster Voodoo2 brings a new dawn to 3D graphics and intense gaming. The card is based on the newest chipset from 3Dfx Interactive. An 8Mb and 12Mb version are available. The 8Mb version is supplied with up to 4 games (to be confirmed) and has 2x 2Mb texture stores, whilst the 12Mb has no games, but offers 2x 4Mb texture stores. Designed for PC gamers who have a passion for exceptional performance, the 3D Blaster Voodoo2 delivers more than three times the speed found in current graphics add-on cards that use the current Voodoo Graphics chipsets.

Product Focus : AGP

What is AGP?

Designed by Intel, AGP stands for Accelerated Graphics Port.
AGP streamlines the flow of data between the processor, graphics accelerator and system memory, delivering a new level of rich media and graphics performance to the PC. For the home user, AGP supports improved texture rendering in 3D software, including games, entertainment, educational and digital imaging applications. Business users will see smooth performance in 3D applications from CAD programs to sophisticated data visualisation and web authoring tools.
AGP frees system resources with its high bandwidth and is supported in all new Intel-based LX chipsets sold by SMC - See ASUS and Intel in the motherboards section.

Creative Labs Graphics

Part No	Make & Model	ex VAT	inc VAT
64-15-0208	**3D Blaster Voodoo2 8Mb** - PCI, up to 4 games	£129	£151.58
64-15-0212	**3D Blaster Voodoo2 12Mb** - PCI with no games	£152	£178.60
64-15-0423	**Graphics Blaster Exxtreme** See feature above	£69	£81.08
62-15-0313	**VideoBlaster RT300** Display/capture real time video, max. 30fps, built-In I750, 320x240 @ 30fps	£199	£233.83
62-15-1311	**TV Coder (external)** Display SVGA screens to TV via serial port. Gives 800x600 with 64,000 colours	£103	£121.03

TV Cards - for Windows 95 Only

Part No	Make & Model	ex VAT	inc VAT
	Hauppauge		
62-95-0105	Win TV PCI - Plug'n'Play card, 125 channel	£75	£88.13
62-95-0215	Win TV Radio - as above with addltional radio tuner	£89	£104.58

TV and professional Teletext (supporting DDE) for Win95 only. Frame grabbing & video clip capture. Supports higher resolutions up to 1600 x 1200 full colour display, requires Direct Draw drivers. Displays live video in fully movable and sizable window. Captures live video at 320 x 240 upto 15-25 frames per second (limited by system spec), creates AVI files in a compressed YUV format, 24bit images with high 4:2:2 digitising.

DOUBLE VISION

VideoLogic

64-97-0287
£49 (£57.58 inc VAT)
3DX- 4Mb SDRAM Value version

64-97-0265
£125 (£146.88 inc VAT)
5D - 6Mb version

Apocalypse 3DX:

- 4Mb Fast SDRAM texture memory
- NEC PCX1/PowerVR 3D processor
- Runs MS DirectX, Win'95 Direct3D
- Add-on uses existing graphics card
- Windows™95 Plug'n'Play, PCI Bus

Apocalypse 3D has the power to deliver complex effects at very high frame rates, bringing arcade-level performance to your desktop. Take full advantage of all the latest 3D games.

Apocalypse 5D:

- 4/6Mb Fast SDRAM texture memory
- NEC PCX1/PowerVR 3D processor
- Runs MS DirectX, Win'95 Direct3D
- Full 3D & 2D Graphics Acceleration
- Windows™95 Plug'n'Play, PCI Bus

Apocalypse 5D supports all the features needed to deliver stunning 3D realism and lightning fast 2D graphics (400% more bandwidth over 64bit DRAM cards). Comes with 5 of the best 3D games.

DOUBLE VISION

DIAMOND MULTIMEDIA

64-19-8001
£109 (£128.08 inc VAT)
(DOS and Windows 3.x programs require accelerated drivers)

ORCHID
64-53-2030
£109 (£128.08 inc VAT)
(DOS and Windows 3.1x programs require accelerated drivers)

BOTH INCLUDE :

- 4Mb Fast EDO-DRAM
- Dual 64bit memory architecture
- 3Dfx Interactive Voodoo Graphics
- Full motion frame rates
- Real time interactive rendering
- Awesome 3D software titles
- Direct 3D support in Windows '95

Monster 3D - 5 year warranty
Righteous 3D - 2 year warranty

Advanced 3D features include :

Bilinear filtering, anti-allasing, Gouraud shading, MIP mapping, perspective texture mapping, texture modulation, per-pixel alpha blending, texture compositing/morphing.

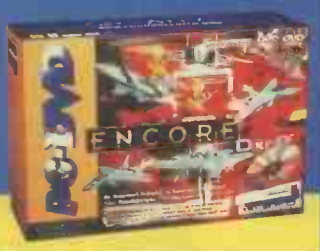
Both cards are designed to work with your existing graphics card.

Our Website Address is: http://www.smc-computers.co.uk

CD-ROM & DVD DRIVES

SMC COMPUTERS

CREATIVE LABS



Product Focus

Creative Labs **Encore DVD CD-ROM Kit**

51-15-1700 **£199** (£233.83 inc.VAT)

Add the very latest technology to your Windows 95 PC and have the confidence of choosing the market leader in Multimedia technology.
The Creative DVD has a unique view zone function., it is compatible with standard CD Discs and will play DVD movies to your monitor or TV. It includes :

- Internal EIDE/ATAPI, DVD-ROM Drive for Windows 95 (with full 17Gb capacity)
- MPEG-2 PCI decoder card with full screen & TV out for broadcast quality output
- All required cables
- Software titles : Claw and Wing Commander 4

EIDI/ATAPI CD-ROM Drives

Part No	Make	Model	Speed	Access	D/Tran	Mount	ex VAT	inc VAT
51-48-0800	Mitsumi	FX800	8x	x	1200	Internal	£35	£41.13
51-48-0162	Mitsumi	FX162	16x	x	2400	Internal	£43	£50.53
51-48-0240	Mitsumi	FX240	24x	x	3600	Internal	£45	£52.88
51-93-0068	Teac	CD-C68 6	8x	190	1200	Internal	£99	£116.33
51-26-8160	Goldstar	CRD-8160B	16x	150	2400	Internal	£45	£52.88
51-15-2402	Creative	Blaster CD	24x	90	3600	Internal	£59	£69.33
51-26-8240	LG Goldstar	CRD-8240B	24x	90	3600	Internal	£45	£52.88
51-57-0587	Panasonic	CR-587	24x	85	3600	Internal	£45	£52.88
51-62-2400	Pioneer	DR-A24X	24x	75	3600	Internal	£55	£64.63
51-95-2430	Samsung	SCR2430	24x	x	3600	Internal	£45	£52.88
51-93-0524	Teac	CD524E	24x	x	3600	Internal	£45	£52.88
51-75-6102	Toshiba	XM6102B	24x	90	3600	Internal	£45	£52.88
51-26-8320	LG Goldstar	CRD-8320B	32x	80	4800	Internal	£65	76.38
51-75-6202	Toshiba	XM6202B	32x	x	4800	Internal	£59	£69.33

All CD-ROM drives running at 12x or greater are MPC-3 Compatible
6 6-disc Autochanger Player. All CD-ROMs are tray loading, supplied with software drivers / audio cable

SCSI CD-ROM Drives

Part No	Make	Model	Speed	Access	D/Tran	Mount	ex VAT	Inc VAT
51-62-1412	Pioneer	DRM-6324X	612/24x		1800	External	£349	£410.08
51-57-0506	Panasonic	CR-506B T	8x	150	1200	Internal	£69	£81.08
51-93-1210	Plextor	12Plex C	12x	110	1800	Internal	£135	£158.63
51-93-1215	Plextor	12Plex C	12x	110	1800	External	£169	£198.58
51-75-5701	Toshiba	XM5701B T	12x	115	1800	Internal	£69	£81.08
51-93-1516	Teac	CD516S T	16x	115	2400	Internal	£72	£84.60
51-93-2000	Plextor	20Plex T	20x	95	3000	Internal	£99	£116.33
51-93-2005	Plextor	20Plex T	20x	95	3000	External	£139	£163.33
51-62-2415	Pioneer	DR-U24X T	24x	75	3600	Internal	£79	£92.83
51-93-3200	Plextor	PX32Tsi T	32x	85	4800	Internal	£109	£128.08
51-93-3205	Plextor	PX32Tse T	32x	85	4800	External	£169	£198.58
51-93-3210	Plextor	PX32Csi C	32x	85	4800	Internal	£145	£170.38
51-93-3215	Plextor	PX32Cse C	32x	85	4800	External	£195	£229.13
51-75-6201	Toshiba	XM6201B T	32x	x	4800	Internal	£72	£84.60

Plextor drives have a 2-year warranty and the 32 speed drives are Ultra SCSI
6 6-disc Autochanger Player.
T=Tray Loading. C=Caddy Loading

Micro-Solutions Parallel Port CD-ROM

Part No	Model	ex VAT	inc VAT
BackPack 8-Speed drives			
51-42-0800	Access<180ms, 1.2Mb/sec max	£139	£163.33
51-42-0804	As above, with Microsoft sound compatibility	£165	£193.88
Bantam Lightweight drives			
51-42-1000	150ms, 1.2Mb/sec max. weighs 21oz	£149	£175.08
51-42-1004	As above, with 16-bit & 8-bit sound	£179	£210.33

Bantam drives support DOS, Windows 3x, Windows 95 and Windows NT.

Product Focus : DVD

DVD (Digital Versatile Disk) looks exactly like a normal CD, but stores over 26 times the amount of data. A standard DVD disk can hold over two hours of high quality MPEG-2 video with better-than-CD quality audio. DVD-ROM disks can be used to distribute all types of computer data with storage capacities from 4.7Gb and 17Gb, making them ideal for distribution of large multimedia or interactive applications such as music videos and full-length films.

Product Focus : Bantam

Micro Solutions
Bantam
CD-ROM
51-42-1000
from just
£149 (£175.08 inc.VAT)

Micro-Solutions latest parallel port CD-ROM is probably the most compact device available on the market. Just 1" high and weighing only 21oz, it is available with or without sound, and with a data transfer rate up to 1.2Mb/sec, it has the performance to match its state-of-the-art design.

CD-ROM Accessories

Part No	Description	ex VAT	inc VAT
51-95-9700	CD-ROM Caddy (spare drive caddy)	£9	£10.58
75-95-1402	EIDE Data Cable for up to 2 drives	£10	£11.75
75-75-0404	ATAPI to ATAPI, 4-4pin for EIDE CD-ROMs	£8	£9.40
75-57-0570	Panasonic Cable for SCSI CD-ROM only (not IDE)	£8	£9.40
75-75-0751	Toshiba Cable, 3-4 for 3xxx series	£8	£9.40
75-75-0757	Toshiba Cable, 4-4 for 4xxx series	£8	£9.40
75-75-0753	Toshiba Cable, 4-4 for 5xxx series	£8	£9.40

IMPORTANT : These items are only available when purchasing a CD-ROM Drive.

PRODUCT FINDER :
SEE FRONT COVER

VISA DELTA MasterCard AMERICAN EXPRESS

SALES LINES OPEN 8.30am - 6.30pm MONDAY TO FRIDAY & 9am - 1pm SATURDAY

CD WRITERS & CD TOWERS

Panasonic PD Writer

Part No	Make & Model	ex VAT	Inc VAT
51-57-0410	LF1004BK Internal kit, incl: SCSI adaptor, cables, sw	£249	£292.58
51-57-0811	LF1196AB Internal EIDE, 8x CD + 650Mb Optical	£199	£233.83
51-57-0815	LF1500EPB External P/Port, 8x CD + 650Mb Optical	£249	£292.58

All kits include cables and driver software. External kits include one 650Mb PD Optical Disk. SCSI adaptor included in kits is an Adaptec AHA1520A.

CD-ROM Recorders (CD-R)

Part No	Make & Model	ex VAT	Inc VAT
Plasmon CD-Writer Kits and bare drives			
52-95-2120	CDR480I - 4x write, 8x play, bare drive, Internal	£245	£287.88
52-95-2122	CDR480I-SI Kit - 4x write, 8x play, SCSI controller, Int	£299	£351.33
52-95-2125	CDR480E - 4x write, 8x play, bare drive, External	£275	£323.13
52-95-2127	CDR480E-SI Kit - 4x write, 8x play, SCSI controller, Ext	£375	£440.63

Plasmon Drives have a 1Mb Cache and 175ms Access time and are all tray loading.
ALL above CD Recorders are SCSI, come with CD software for Win 3.1x, NT 3.51 & 4, Win95.

Plextor CD-Writer drives			
52-93-4120	PX-R412Ci - 4x write, 12x play, bare drive, Internal	£339	£398.33
52-93-4125	PX-R412Ce - 4x write, 12x play, bare drive, External	£379	£445.33

Plextor Drives have a 2Mb Cache and 190ms Access time and are all Caddy loading.
They are supplied with Software and cables and 1x caddy. 1year warranty.

TraxData CD-Writer drives			
52-95-4120	CDR 4120EL Pro - 4x write, 12x play, Internal SCSI	£265	£311.38
52-95-4128	CDE 4120EL Pro - 4x write, 12x play, External SCSI	£295	£346.63

TraxData drive units include WinOnCD to GO Software for Windows, Windows 95 and Windows NT4.

99-95-0020	PRESSIT - CD Labeller	£20	£23.50

CD-ROM Re-Writers (CD-RW)

Part No	Make & Model	ex VAT	inc VAT
Hewlett Packard CD Re-Writer drives			
52-28-4380	Surestore 7200i, EIDE/ATAPI, 1Mb cache, 1xCD-RW, 1xCD-R, 6x Play, 2x Write & 2x Re-write, software, Internal	£239	£280.83
52-28-4381	Surestore 7200e, Parallel Port, 1Mb cache, 1xCD-RW, 1xCD-R, 6x Play, 2x Write & 2x Re-write, software, External	£299	£351.33

Designed for Windows 95 or Windows NT4. CD-RW disks can be read in CD-RW drives, Multiread drives and DVD drives. Once your CD-RW is ready you can produce a standard CD (CD-R) for all CD players! Software includes Adaptec DirectCD, HP SimpleTrax and Norton Anti-Virus.
Warning: Requires Pentium 133Mhz, 32Mb RAM, Win'95, 1x un-shared IDE channel or EPP port.

TraxData CD Re-Writer drives			
52-95-4260	CDRW4260ELPro - 6xP, 4xW, 2xRe-write, SCSI, Internal	£285	£334.88
52-95-4268	CDEW4260ELPro - 6xP, 4xW, 2xRe-write, SCSI, External	£299	£421.83

The TraxData SCSI drives are supplied with WinOnCD to GO software for Windows, Windows 95, WNT4.

HEWLETT PACKARD
SureStore CD Re-Writer
from £239 (£280.83 inc.VAT)

Power MO Optical Writer
from £199 (£233.83 inc.VAT)
OLYMPUS

Optical Writers

Part No	Make & Model	ex VAT	inc VAT
50-24-0640	Fujitsu M2513A 640Mb, 2.1Mb/s, 237Kb Cache, Internal	£235	£276.13
50-57-1500	Panasonic LF7304 - 1.5Gb, 512Kb Cache, 1.5Mb/sec, 45ms Internal	£1399	£1643.83
50-57-1505	Panasonic LF7300B - 1.5Gb, 512Kb Cache, 1.5Mb/sec, 45ms External	£1459	£1714.33
50-91-0230	Olympus Power MO 230 II Universal - 230Mb, 256Kb Cache, 2Mb/sec, 34ms, 1x media, External P/Port & SCSI	£199	£233.83
50-91-2600	Olympus Power MO 2600 - 2.6Gb, 4Mb Cache, 4.1Mb/sec, 34ms, 1x media, External	£1399	£1643.83

All opticals are SCSI devices requiring a SCSI Controller, unless specified otherwise.

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Access everything with
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A breakthrough technology that makes peripherals of all kind 'network ready'. Access your CD-ROMs with no intermediate PC client or server, allowing them to work faster & smarter.
Everything is plug and play!

CD-ROM Towers

Part No	Model Specifications	ex VAT	Inc VAT
Toshiba			
Standalone for PC use			
51-75-0807	8 bays, with 7 12-speed SCSI CD-ROM drives	£729	£856.58
51-75-0908	8 bays, with 7 32-speed SCSI CD-ROM drives	£889	£1044.58
51-75-1614	16 bays, with 14 12-speed SCSI CD-ROM drives	£1459	£1714.33
51-75-1715	16 bays, with 14 32-speed SCSI CD-ROM drives	£1599	£1878.83
With Axis StorPoint CD Server module for networking use			
51-75-5707	8 bays, with 7 12-speed SCSI CD-ROM drives	£1199	£1408.83
51-75-6207	8 bays, with 7 32-speed SCSI CD-ROM drives	£1359	£1596.83
51-75-5714	16 bays, with 14 12-speed SCSI CD-ROM drives	£1989	£2337.08
51-75-6214	16 bays with, 14 32-speed SCSI CD-ROM drives	£2339	£2748.33
Plextor			
Standalone for PC use			
51-93-0708	8 bays, with 7 20-speed SCSI CD-ROM drives	£925	£1086.88
51-93-0809	8 bays, with 7 32-speed SCSI CD-ROM' drives	£1099	£1291.33
51-93-1416	16 bays, with 14 20-speed SCSI CD-ROM drives	£1899	£2231.33
51-93-1517	16 bays, with 14 32-speed SCSI CD-ROM drives	£2279	£2677.83
With Axis StorPoint CD Server module for networking use			
51-93-0720	8 bays, with 7 20-speed CD drives	£1395	£1639.13
51-93-0732	8 bays, with 7 32-speed CD drives	£1579	£1855.33
51-93-1420	16 bays, with 14 20-speed CD drives	£2599	£3053.83
51-93-1472	16 bays, with 14 32-speed CD drives	£2989	£3512.08

CD-ROM JukeBoxes

Part No	Make & Model	ex VAT	Inc VAT
51-62-1418	Pioneer DRM-1804X - Quad Speed, 300ms, 600Kb/s, 18 CD's, 3 Drives, External	£1339	£1573.33
51-62-1450	Pioneer DRM-5004X - Quad Speed, 500 CDs, 1 Drive (max 4), 600Kb/s, 280ms, External	£12499	£14686.33

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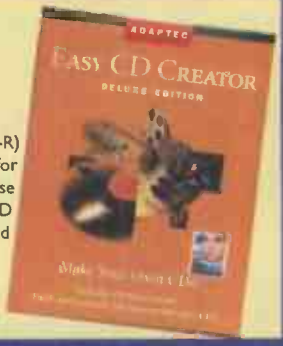
>Save your presentations & graphics
>Back up your important files to CD
>Duplicate CD's with CD Copier

Write your own CD's with CD-Recordable (CD-R) and CD-Writable (CD-RW) players. Optimized for Win'95 and Windows NT v.4, featuring easy to use CD Creation software, CD Spin Doctor, Picture CD Creator, Video CD Creator, Sound Editor and Session Selector software, and audio cable.



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3COM Networking Products

Network Interface Cards (NIC's)

Part No	Model	ex VAT	inc VAT
ISA			
84-90-0931	Etherlink III, (3C509B-TP) AUI/RJ45	£65	£76.38
84-90-0933	Etherlink III, (3C509B-TP) AUI/RJ45 - 5pk	£269	£316.08
84-90-0935	Etherlink III, (3C509B-TP) AUI/RJ45 - 20pk	£975	£1145.63
84-90-0951	Etherlink III, (3C509B-Combo) BNC/AUI/RJ45	£75	£88.13
84-90-0953	Etherlink III, (3C509B-Combo) BNC/AUI/RJ45 - 5pk	£305	£358.38
84-90-0955	Etherlink III, (3C509B-Combo) BNC/AUI/RJ45 - 20pk	£1109	£1303.08
PCI -10Mb/s			
84-90-1900	Fast Etherlink XL, (3C900-TPO) RJ45	£61	£71.68
84-90-5900	Fast Etherlink XL, (3C900-TPO) RJ45 - 5pk	£259	£304.33
84-90-2900	Fast Etherlink XL, (3C900-TPO) RJ45 - 20pk	£988	£1160.90
84-90-9951	Fast Etherlink XL, (3C900-Combo) BNC/AUI/RJ45	£75	£88.13
84-90-9953	Fast Etherlink XL, (3C900-Combo) BNC/AUI/RJ45 - 5pk	£348	£408.90
PCI -100Mb/s			
84-90-1905	Fast Etherlink XL, (3C905-TX) UTP	£54	£63.45
84-90-5905	Fast Etherlink XL, (3C905-TX) UTP - 5pk	£255	£299.63
84-90-2905	Fast Etherlink XL, (3C905-TX) UTP - 20pk	£935	£1098.63
EISA			
84-90-9251	Etherlink III, (3C592-Combo) BNC/AUI/RJ45	£125	£146.88
MCA			
84-90-2911	Fast Etherlink III, (3C529) BNC/AUI	£145	£170.38
84-90-2931	Fast Etherlink III, (3C529-TP) BNC/AUI/RJ45	£139	£163.33
PCMCIA - Mobile adapter 10/100Mb/s			
84-90-1575	Fast Etherlink III, Card Bus PC Card (3C575-TX) UTP	£88	£103.40
84-90-5575	Fast Etherlink III, Card Bus PC Card (3C575-TX) UTP 5pk	£415	£487.63
PCMCIA - Combined 33.6Kbp/s Modem+10Mb/s Lan Adapter			
84-90-1563	Fast Etherlink XL, (3C563D-TP) RJ45	£159	£186.83
84-90-5563	Fast Etherlink XL, (3C563D-TP) RJ45 - 5pk	£769	£903.58
84-90-5631	Fast Etherlink XL, (3C563D-Combo) BNC/RJ45	£199	£233.83
84-90-5635	Fast Etherlink XL, (3C563D-Combo) BNC/RJ45 - 5pk	£879	£1032.83

OfficeConnect Hubs/Switches

All OfficeConnect Hubs & Switches are supplied with a user-guide, power adapter, stacking clips and rubber feet as standard.

4 Port Stackable Hub 10Mb/s			
84-90-1674	OfficeConnect TP4, 4x RJ45 (3C16704)	£39	£45.83
84-90-1673	OfficeConnect TP4 Combo, 4xRJ45/1xAUI/BNC (3C16703)	£52	£61.10
8 Port Stackable Hub 10Mb/s			
84-90-1670	OfficeConnect 8TPO, 8x RJ45 (3C16700)	£49	£57.58
84-90-1671	OfficeConnect 8TPC, 8x RJ45/1x BNC (3C16701)	£69	£81.08
16 Port Stackable Hub 10Mb/s			
84-90-1672	OfficeConnect TPC16C, 16x RJ45/1x BNC (3C16702)	£129	£151.58
4 Port Stackable Hub 100Mb/s			
84-90-6723	OfficeConnect TP400, 4x UTP (3C16723)	£129	£151.58
8 Port Stackable Hub 100Mb/s			
84-90-6722	OfficeConnect TP800, 8x UTP (3C16722)	£229	£269.08
12 Port Stackable Hub 100Mb/s			
84-90-6721	OfficeConnect TP1200, 12x UTP (3C16721)	£329	£386.58
4 Port Office Connect Switch 100Mb/s			
84-90-6730	OfficeConnect Switch 140, (3C16730) 1x UTP 100Mb -in, 4x RJ45 10Mb -out	£275	£323.13

Superstack Hubs/Switches

12 Port			
84-90-6406	SuperStack II PS Hub 40, 12 port, TP	£219	£257.33
84-90-6450	SuperStack II Switch 3000, 10/100Mb/s, 12 port	£1465	£1721.38
24 Port			
84-90-6524	SuperStack II PS Hub 40, 24 port, TP	£379	£445.33
84-90-6824	SuperStack PS 50, 24 port	£699	£821.33

ISA Network Cards

Part No	Make & Model	ex VAT	inc VAT
BNC			
84-93-2411	SMC EZ P'n P, 16-bit ISA, w/stations, small servers	£55	£64.63
COMBO			
84-93-1651	SMC E16, 16-bit ISA, w/stations, small servers	£62	£72.85
84-93-2451	SMC EZ P'n'P, 16-bit ISA, w/stations, small servers	£39	£45.83

PRODUCT FINDER : SEE FRONT COVER

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intel

Product Focus

BNC or thin ethernet connector.

RJ45 or twisted pair connector.

SMC COMPUTERS

Intel Network Cards

Part No	Make & Model	ex VAT	inc VAT
Network Interface Cards (NIC's)			
ISA - 10Mb/s Ethernet			
84-31-8220	Ether Express Pro, (8220B), 10+, TP	£39	£45.83
84-31-5822	Ether Express Pro, (8220B), 10+, TP - 5 Pack	£214	£251.45
84-31-8210	Ether Express Pro, (8210B), 10+, TP/BNC	£45	£52.88
84-31-5821	Ether Express Pro, (8210B), 10+, TP/BNC - 5 Pack	£224	£263.20
84-31-8200	Ether Express Pro, (8200B), 10+, COMBO	£64	£75.20
84-31-5820	Ether Express Pro, (8200B), 10+, COMBO - 5 Pack	£313	£367.78
PCI - 100Mb/s Fast Ethernet			
84-31-8460	Ether Express Pro, (8460), 100+, UTP	£49	£57.58
84-31-5846	Ether Express Pro, (8460), 100+, UTP - 5 Pack	£215	£252.63
84-31-8465	Ether Express Pro, (8465), 100+, UTP	£49	£57.58
84-31-8467	Ether Express Pro, (8465), 100+, UTP - 5 Pack	£249	£292.58
84-31-8480	Ether Express Pro, (8480), 10+, Server Adapter	£339	£398.33
PCMCIA Mobile Adapters - 100Mb/s Fast Ethernet			
84-31-1600	Ether Express Pro, (1600), 10/100+, 16Bit, UTP	£97	£113.98
84-31-3200	Ether Express Pro, (3200), 100+, 32Bit, UTP - 5 Pack	£119	£139.83
Network Switches			
8 Port			
84-31-1018	Ethernet switch, (101TXW) 10/100Mb/s Autosensing	£1345	£1580.38
84-31-1001	Express 100FX Switch, (100FX) Fibre switch	£5399	£6343.83
24 Port			
84-31-1024	Ethernet switch, (10T24) 10Mb/s, 100Mb/s Up-link	£1195	£1404.13
Network Hubs			
8 Port			
84-31-1008	Express 100 Stand-alone Hub, (100TX8) 100Mb/s	£275	£323.13
12 Port			
84-31-1112	Express 10/100Mb/s Stackable Hub, (110TX12W)	£649	£762.58
24 Port			
84-31-1124	Express 10/100Mb/s Stackable Hub, (110TX24W)	£999	£1173.83
InBusiness Networking Products			
84-31-6015	5 port 10Mb/s Hub	£42	£49.35
84-31-6018	8 port 10Mb/s Hub	£59	£69.33
84-31-6104	4 port 100Mb/s Fast Hub	£129	£151.58
84-31-6108	8 port 100Mb/s Fast Hub	£233	£273.78
84-31-6118	8 port 100Mb/s Fast Hub Plus	£459	£539.33
84-31-6008	8 port 10Mb/s Switch	£329	£386.58
84-31-6080	8 port 100Mb/s Switch Plus	£475	£558.13
84-31-6101	Internet Station (requires Hub) shared access	£265	£311.38

Network Cables & Connectors

Part No	Description	ex VAT	inc VAT
BNC Accessories			
86-95-1371	Thin Ethernet cable, made to order. per metre :	£1	£1.18
86-95-1311	BNC solderless crimp connectors	£3	£3.53
86-95-1353	BNC Ethernet terminator	£5	£5.88
86-95-1331	BNC 'T' piece	£6	£7.05
86-95-1302	2m BNC Thin Ethernet cable with crimps - ready made	£4	£4.70
86-95-1305	5m BNC Thin Ethernet cable with crimps - ready made	£7	£8.23
86-95-1310	10m BNC Thin Ethernet cable with crimps - ready made	£11	£12.93
86-95-1320	20m BNC Thin Ethernet cable with crimps - ready made	£17	£19.98
86-95-1330	30m BNC Thin Ethernet cable with crimps - ready made	£24	£28.20
RJ45 Accessories			
86-95-4502	2m RJ45 Ethernet/Fast Ethernet cable - ready made	£5	£5.88
86-95-4503	3m RJ45 Ethernet/Fast Ethernet cable - ready made	£6	£7.05
86-95-4505	5m RJ45 Ethernet/Fast Ethernet cable - ready made	£8	£9.40
86-95-4510	10m RJ45 Ethernet/Fast Ethernet cable - ready made	£12	£14.10
86-95-4520	20m RJ45 Ethernet/Fast Ethernet cable - ready made	£18	£21.15
86-95-4530	30m RJ45 Ethernet/Fast Ethernet cable - ready made	£25	£29.38

UPS's

Part No	Make & Model	ex VAT	inc VAT
BackUPS			
Lowest cost protection for desktop PC's			
89-90-0250	**250** 175 watts, for 486 with 15" monitor	£59	£69.33
89-90-0402	**400** 285 watts, for Pentium with 15" monitor	£69	£81.08
89-90-0602	**600** 425 watts, for Pentium with 17"+ monitor	£137	£160.98
BackUPS PRO			
High Performance PC protection with voltage regulation and shutdown software for Windows, Win95. Supplied with serial cable.			
89-90-0280	**280** 200 watts, for 486 with 15" monitor	£99	£116.33
89-90-0422	**420** 300 watts, for Pentium with 15" monitor	£145	£170.38
89-90-0652	**650** 460 watts, for Pentium with 17" monitor	£155	£182.13
SmartUPS			
High Performance protection for servers, with Smart Boost, Smart Trim and shutdown software for Windows, Win95, WinNT, SCO UNIX, Novell Netware. Supplied with serial cable.			
89-90-0710	**700** 500 watts, for Pentium with 17"+ monitor	£229	£269.08
89-90-1010	**1000** 700 watts, for single server	£259	£304.33
89-90-1410	**1400** 1000 watts, for single server	£369	£433.58
89-90-2210	**2200** 1550 watts, for multiple servers	£539	£633.33
89-90-3010	**3000** 2135 watts, for multiple servers	£995	£1169.13
Smartups also available in Rack Mount version.			

HP JetDirect Print Servers

Part No	Model	ex VAT	inc VAT
84-28-5002	**J2550B** - for 10Base-T (MIO)	£195	£229.13
84-28-5202	**J2552B** - for 10BT, BNC, LocalTalk (MIO)	£225	£264.38
84-28-5502	**J2555B** - for Token Ring (MIO)	£325	£381.88
84-28-5602	**J2556B** - for 10/100Base-T (MIO)	£245	£287.88
84-28-2593	**J2593A - EX** Plus3 - Ethernet - 10BT, BNC	£235	£276.13
84-28-2594	**J2594A** - EX Plus3 Token Ring	£329	£386.58
84-28-2591	**J2591A - EX** Plus - Print Server	£175	£205.63
84-28-9201	**J2592A** - 150X for 10Base-T (IPX Protocol only)	£99	£116.33

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MODEMS

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£1255
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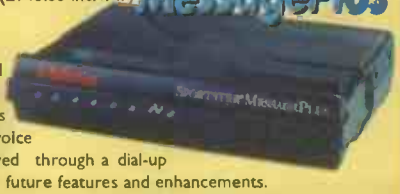
Sportster MessagePlus



MessagePlus Faxmodem with Independent Messaging Facilities
Integrates x2 technology allowing users to download from the Internet and other x2 hosts at speeds up to 56Kbps. Its Independent Voice Messaging facility stores incoming fax and voice messages - even when your computer is switched off. The 2Mb chip can store approx. 25 faxes or approx. 35 voice messages of about 20 seconds in length, and voice messages can be retrieved through a dial-up connection. Integrated Flash memory offers the flexibility to future features and enhancements.

91-79-3392
£755
(£88.13 inc.VAT)

Sportster Winmodem

33.6 Internal Faxmodem for Windows™ with Personal Voice Mail
This modem was designed exclusively for the Windows environment, providing you with internet access at up to 33,600bps, fax, e-mail, personal voice mail and speakerphone facilities all in one compact unit.*
The Sportster Winmodem is easy to install and use. With the Windows operating system already on your PC, all the installation chores are done for you : simply insert the Sportster Winmodem and away you go!
*To utilise all voice features an external speaker, headset or soundcard is required.

Modems : US Robotics

Part No	Make & Model	ex VAT	inc VAT
	All US Robotics modems come with 5yr warranty and lifetime tech. support These are compact, easy to use products designed to offer the fastest connection to the outside world. Based on an award-winning series, their performance, features, reliability & low price make a combination that's hard to beat.		

SPORTSTER Range

External

91-79-3396	Sportster Flash, 56Kbps max. Data Speed, 14,400bps Fax Speed, (with voice mail/Data/Fax/ Internet software & cables), X2 Compatible. V.34 std	£99	£116.33
91-79-2896	Sportster 33.6 Voice*, 33,600bps max. Data Speed, 14,400bps Fax Speed, (with voice mail/Data/Fax/ Internet software & cables), X2 Compatible. .	£97	£113.98

Internal

91-79-5690	Sportster Flash Internal, 56Kbps max. Data Speed, 14,400bps Fax Speed, (with voice mail/Data/Fax/ Internet software & cables), X2 Compatible. V.34 std	£99	£116.33
91-79-2892	Sportster 33.6 Voice*, 33,600bps Data, 14,400bps Fax Speed, with Data and Fax software, X2 Compatible	£97	£113.98
91-79-3392	Sportster 33.6 Winmodem, 33,600bps Data, 14,400bps Fax, with Data/Fax software, X2 Compatible. Win'95	£75	£88.13

*The Sportster 33,600 voice modems are hardware upgradeable through US Robotics direct (may be chargeable)

PCMCIA

91-79-4288	Sportster 28.8 PCMCIA XJACK, 28,800bps Data Speed, 14,400bps Fax Speed uses standard PCMCIA Type II /III slot, inc. software	£108	£126.90
91-79-3356	Sportster Winmodem PC card, 33.600bps Data Speed, 14,400bps Fax Speed uses standard PCMCIA Type II /III slot, inc. software. Requires Windows '95	£75	£88.13

COURIER Range

The Courier Dual Standard V34+Fax uses upgradable flash memory and can run at 33,600bps (Data) and 14,400bps (Fax).
Dial security is enabled via password facility and Adaptive Speed Levelling is used to cater for poor line conditions. Automatic Fax/Data selection is made via software supplied, and Universal Connect automatically detects & connects at the fastest speed. For the communications professional looking for advanced performance at an affordable price - the COURIER delivers.

91-79-3402	V34+ Internal	£195	£229.13
91-79-3406	V34+ External	£195	£229.13

ISDN

The Courier-I (ISDN ONLY) supports X2 Technology, V34, 64Kbps, 14,400 Fax, Active Terminator, with Data/Fax software.

91-79-4902	Courier-I Internal	£239	£280.83
91-79-4906	Courier-I External	£239	£280.83

Modems : Pace

Part No	Make & Model	ex VAT	inc VAT
91-91-5662	56k Voice Modem, uses 56k Flex technology, Internal	£79	£92.83
91-91-5666	56k Voice Modem, uses 56k Flex technology, External	£99	£116.33
91-91-3362	Microlin 33.6, 33,600Kbps Data, 14,400bps Fax, Int.	£96	£112.80
91-91-3366	Microlin 33.6, 33,600Kbps Data, 14,400bps Fax, Ext.	£96	£112.80
91-91-3364	Microlin NB33.6 Voice PCMCIA, 33,600bps Data, 14,400bps Fax, Voice Software, External	£135	£158.63
91-91-3382	Microlin 33.6 Voice, 33,600Kbps Data, 14,400bps Fax, Volce Software, Internal	£115	£135.13

All Pace Modems include cables, Manuals, software, 2Yr warranty, Lifetime technical support and FREE Internet trial bundles.

Product Focus : ISDN

Integrated Services Digital Network (ISDN) is the latest telecommunications technology, utilising fibre optics and digital systems.

Data transfer is pushed up to 64Kbit/s or 128Kbit/s using bonded (2x) channels, with rates up to 460Kbit/sec using V.42 bis compression.

All this makes an ISDN modem up to 5 times faster than a standard modem.

IMPORTANT : All ISDN modems require the use of an ISDN line.

Modems : BT

Part No	Description	ex VAT	inc VAT
	BT modems are supplied with software and cables.		

Prologue K56EV+

91-92-3356	Data/Fax/Voice modem using 56K Flex technology and flash upgradeable firmware	£99	£116.33

Prologue x3

91-92-0333	PCMCIA modem, 33600kbps data, 14,400kbps fax Flash EPROM, upgradeable to ISDN or GSM	£149	£175.08
91-92-4110	GSM (Motorola) upgrade	£119	£139.83
91-92-1210	GSM (Nokia 1210) upgrade	£159	£186.83
91-92-8110	GSM (Nokia 8110) upgrade	£161	£189.18
91-92-3128	ISDN upgrade	£94	£110.45

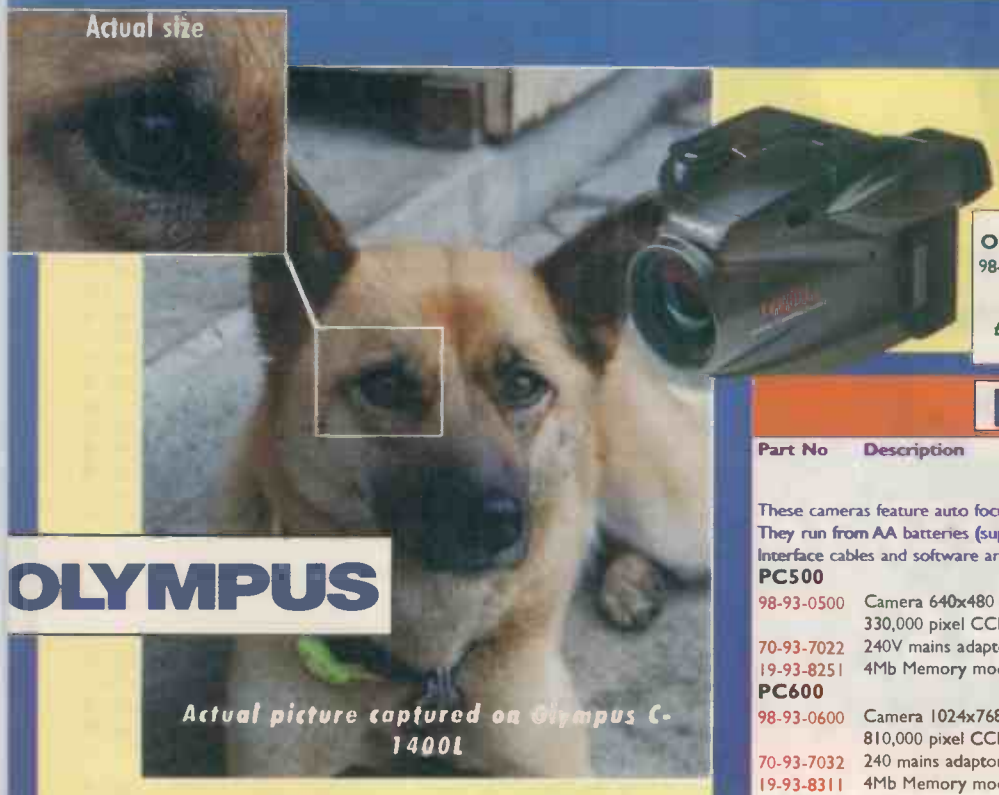
ISDN

91-92-5128	**Prologue 128 PTA** Passive adapter card. Internal	£69	£81.08
91-92-7128	**Express Lane** Intelligent interface card. Internal	£272	£319.60
91-92-9128	**Ignition** terminal adapter. External	£259	£304.33

PRODUCT FINDER : SEE FRONT COVER

VISA MasterCard SWITCH AMERICAN EXPRESS

SALES LINES OPEN 8.30am - 6.30pm MONDAY TO FRIDAY & 9am - 1pm SATURDAY



Olympus C-1400L
98-91-1400
£1099
£1291.33 Inc.VAT

OLYMPUS

Part No	Description	ex VAT	inc VAT

CAMERAS

Olympus has used its renowned optical expertise to develop high resolution lenses that push the CCD's performance to the max !
All cameras feature auto focus, built-in flash, 12s self timer and a TTL viewfinder.
Supplied with interface cables and software.

98-91-0420	**C-420L** 640x480 pixels (HQ mode), 2Mb memory, 350,000 pixel CCD, Soft case and AC adapter	£425	£499.38
98-91-0820	**C-820L** 1024x768 pixels (HQ mode), 2Mb memory, 810,000 pixel CCD, LCD monitor, on-screen display	£699	£821.33
98-91-1400	**C-1400L** 1280x1024 pixels (Super HQ/HQ mode), 2x 4Mb memory, 1,410,000 pixel CCD, LCD monitor, on-screen display, 3x Zoom, Auto focus, Soft case, Battery charger kit	£1099	£1291.33
70-91-0006	**C-6AG** mains adaptor for complete range	£59	£69.33
19-91-0102	**M-2PE.** 2Mb Smartmedia Memory Card	£35	£41.13
19-91-0104	**M-4PE.** 4Mb Smartmedia Memory Card	£52	£61.10

FILM SCANNERS

This product is supplied with cables and software. It is an external Parallel device that supports 35mm negatives and slides at 1770dpi, 24 bit colour.

97-91-0010	**ES-10 Film Scanner** 35mm negative or slide scanner	£379	£445.33
97-91-1010	Advanced Photo System adapter	£135	£158.63

PRINTERS

Olympus digital printers support either parallel or direct printing.
A cable and software are supplied for PC and MAC. Dye sublimation produces a higher quality image through lower resolution over standard printing.

P-150E

99-91-0150	640x480, 16.7m colours using dye sublimation (148Dpi). Ideal for C-420L Camera	£325	£381.88
96-91-5050	P-50NE, A6 paper for P-150E Printer (x50)	£34	£39.95

P-300E

99-91-0300	1280x1024, 16.7m colours using dye sublimation (306Dpi). Ideal for C-820L/1400L Camera	£497	£583.98
96-91-6060	P-60NE, A6 paper for P-300E Printer (x60)	£42	£49.35

EPSON

Part No	Description	ex VAT	inc VAT

CAMERAS

These cameras feature auto focus, built-in flash and a 10-sec timer.
They run from AA batteries (supplied) with a mains adapter optional.
Interface cables and software are supplied.

PC500

98-93-0500	Camera 640x480 pixels (High Quality mode), 330,000 pixel CCD, 2Mb memory	£271	£318.43
70-93-7022	240V mains adaptor	£49	£57.58
19-93-8251	4Mb Memory module	£159	£186.83

PC600

98-93-0600	Camera 1024x768 pixels (XGA mode), 810,000 pixel CCD, 4Mb memory, Zoom focus.	£529	£621.58
70-93-7032	240 mains adaptor	£49	£57.58
19-93-8311	4Mb Memory module	£125	£146.88

FILM SCANNERS

The Epson Filmscan 200 is supplied with an interface card, cables and software.
It is an external device that supports negative and positive scanning at 1200x2400 dpi, max 4800 dpi - 30 bit colour. There is an optional film (APS) holder.

97-93-0201	**Epson Filmscan 200** 35mm film scanner, SCSI interface	£326	£383.05
97-93-0235	**Advanced Photo System (APS) Holder** Film cartridge holder for batch scanning	£85	£99.88

PRINTERS

99-93-5191	**Epson Stylus Photo** 720Dpi, 4"x6" - A4, 1ppm	£199	£233.83

HEWLETT PACKARD

Part No	Description	ex VAT	inc VAT

CAMERAS

The Photosmart Digital Camera features auto focus, built-in flash and 10-sec timer. It runs with 4x AA batteries, with a mains adapter optional.
Interface cables and software are supplied.

98-28-5340	**PhotoSmart Digital Camera** 640x480 pixels (HQ mode), 2Mb memory	£205	£240.88
70-28-5345	Mains adaptor	£POA	£POA
19-28-5347	4Mb memory module	£POA	£POA

FILM SCANNERS

This product is supplied with cables and software. It is an external SCSI device that supports 35mm negatives and slides at 2400dpi and Photos at 300 dpi, 30 bit colour.

97-28-5100	**PhotoSmart Photo Scanner** 35mm-5"x7" photo, 35mm negative or slide scanner	£329	£386.58

PRINTERS

99-28-3804	**PhotoSmart Photo Printer** 4"x6" - 8"x10", Enhanced print quality with photographic resolution	£296	£347.80

Our Website Address is: http://www.smc-computers.co.uk

SMC : FOR THE BEST IN PRINTERS

Inkjet Printers

Part No	Make & Model	ex VAT	inc VAT
	Epson		
99-93-5132	Stylus 200 - 720dpi , 3ppm	£104	£122.20
99-93-5130	Stylus Color 300 - 720dpi , 3ppm	£99	£116.33
99-93-5131	Stylus 1000 - 360dpi, 180cps, A3	£299	£351.33
99-93-5153	Stylus Pro XL+(A3) - 720dpi, 3ppm	£446	£524.05
99-93-5140	Stylus Color 400 - 720 dpi, 4ppm	£118	£138.65
99-93-5160	Stylus Color 600 - 1440 dpi, 6ppm	£155	£182.13
99-93-5180	Stylus Color 800 - 1440 dpi, 8ppm	£207	£243.23
99-93-5252	Stylus Color 1520 - 1440 dpi, 800cps LQ, A3	£510	£599.25
99-93-5191	Stylus Photo - 720dpi, 1ppm	£199	£233.83
99-95-5300	Stylus Color 3000 - 1440 dpi, A2	£1099	£1291.32
	Hewlett Packard		
99-28-5034	DeskJet 340 - 600x300dpi, 2ppm	£135	£158.63
99-28-5042	DeskJet 400L - 600x300dpi, 3ppm	£86	£101.05
99-28-5067	DeskJet 670C - 600dpi, 4ppm	£115	£135.13
99-28-5068	DeskJet 690C+ - 600dpi, 5ppm	£142	£166.85
99-28-5870	DeskJet 720C - 600dpi, 8ppm	£172	£202.10
99-28-5082	DeskJet 820Cxi - 600dpi, 5ppm	£153	£179.78
99-28-5087	DeskJet 870Cxi - 600dpi, 7ppm	£199	£233.83
99-28-5089	DeskJet 890C - 600dpi, 9ppm	£202	£237.35
99-28-0110	DeskJet 1100C - 600dpi, 6.5ppm, A3	£285	£334.88
99-28-5160	DeskJet 1600C - 600dpi, 8ppm	£871	£1023.43
99-28-5164	DeskJet 1600CN - 600dpi, 8ppm	£1065	£1251.38
99-28-5168	DeskJet 1600CM - 600dpi, 8ppm	£1280	£1504.00

Both the CN and CM models are Network Ready, The CM is Postscript Ready.

	Canon		
99-91-5030	BJ30 (cream) - 720x360dpi, 1.7ppm	£124	£145.70
99-91-5070	BJC70 (cream) - 720x360dpi, 3ppm	£142	£166.85
99-91-5250	BJC250 - 720x360dpi, 3ppm	£97	£113.98
99-91-5620	BJC620 - 720dpi, 1.87-2.14ppm	£169	£198.58
99-91-6430	BJC4300 - 720x360dpi, 4.5ppm	£129	£151.58
99-91-6455	BJC4550 - 720x360, 4.8ppm, A3	£195	£229.13
99-91-6550	BJC5500 - 360dpi, 0.8ppm, max A2	£425	£499.38

All quoted print speeds may vary depending upon configuration and print settings.

Printer (Parallel Port) Cables

With the increasingly demanding two-way data communication requirements of modern PC's, it is ever-more apparent that a low-quality cable can often compromise the level of performance achieved.

SMC stock premium quality bi-directional printer cables ensuring the highest performance from your printer or parallel port device.

Cables use the standard 25-pin D-connector to 36-pin Centronics and are available in three lengths to suit a wide variety of installations.

Part No	Description	ex VAT	inc VAT
75-95-6002	1.8 metres	£5	£5.88
75-95-6003	3.0 metres	£7	£8.23
75-95-6005	5.0 metres	£9	£10.58

Laser Printers

Part No	Make & Model	ex VAT	inc VAT
	Hewlett Packard		
99-28-7442	Laserjet 4MV 600dpi, 16ppm	£1724	£2025.70
99-28-7451	Laserjet 4V 600dpi, 16ppm	£1184	£1391.20
99-28-7522	Laserjet 5M 600dpi, 12ppm	£969	£1138.58
99-28-7524	Laserjet 5N 600dpi, 12ppm, 10 BaseT	£847	£995.23
99-28-7500	Laserjet 5 600dpi, 12ppm	£655	£769.63
99-28-7570	Laserjet 5 Colour	£2861	£3361.68
99-28-7555	Laserjet 5Si 600dpi, 24ppm	£1604	£1884.70
99-28-7560	Laserjet 5SiMX 600dpi, 24ppm, Network	£2211	£2597.93
99-28-7565	Laserjet 5SiNX 600dpi, 24ppm	£1779	£2090.33
99-28-7610	Laserjet 6L 600dpi, 6ppm (replaces HP5L)	£232	£272.60
99-28-7631	Laserjet 6MP 600dpi, 8ppm	£562	£660.35
99-28-7650	Laserjet 6P 600dpi, 8ppm	£461	£541.68
99-28-4118	Laserjet 4000 1200dpi, 17ppm	£711	£835.43
99-28-4119	Laserjet 4000T 1200dpi, 17ppm	£815	£957.63
99-28-4120	Laserjet 4000N 1200dpi, 17ppm	£914	£1073.95
99-28-4121	Laserjet 4000TN 1200dpi, 17ppm	£1023	£1202.03
	Canon		
99-91-7173	LBP1260+- 600dpi, 12ppm	££629	£739.08
	Epson		
99-93-7151	EPL5500 - 600dpi, 6ppm	£274	£321.95
99-93-7120	EPL-N1200 - 600dpi, 12ppm	£593	£696.78
99-93-7191	EPL9000 600dpi x 600dpi, 8ppm	£579	£680.33
99-93-7200	EPL-N2000 - 600dpi, 20ppm A4, 11ppm A3	£1278	£1501.65
	Brother		
99-90-0073	HL730 - 300dpi, 6ppm	£218	£256.15
99-90-0076	HL760 - 600dpi, 6ppm	£229	£269.08
99-90-7605	HL760 - 600dpi, 6ppm, 5Mb Mem	£245	£287.88
99-90-0126	HL1260 - 600dpi, 12ppm	£599	£703.83
	OKI		
99-93-9601	OL6E - 600dpi, 6ppm	£195	£229.13
99-93-9603	OL6EX - 600dpi x 1200dpi, 6ppm	£239	£280.83
99-93-9810	OL810EX - 600dpi, 8ppm	£399	£468.83

Product Link

Digital Cameras : see page 25

Dot Matrix Printers

Part No	Model & specification	ex VAT	inc VAT
	Epson		
99-93-0131	LX300 - 80 columns, 9 pin, 264cps, 4Kb Buffer	£97	£113.98
99-93-0137	LX1050+ - 136 columns, 9 pin, 240cps, 4Kb Buffer	£200	£235.00
99-93-0880	FX880 - 80 columns, 9 pin, 455cps, 32Kb Buffer	£247	£290.23
99-93-0135	FX1170 - 136 columns, 9 pin, 342cps, 24Kb Buffer	£307	£360.73
99-93-0139	FX2170 - 136 columns, 18 pin, 440cps, 64Kb Buffer	£395	£464.13
99-93-0311	LQ300 - 80 columns, 24 pin, 240cps, 8Kb Buffer	£115	£135.13
99-93-0313	LQ570+- 80 columns, 24 pin, 269cps,8Kb Buffer	£216	£253.80
99-93-0315	LQ870 - 80 columns, 24 pin, 330cps, 8Kb Buffer	£377	£442.98
99-93-0322	LQ2070 - 136 columns, 24 pin, 330cps, 64Kb Buffer	£330	£387.75
99-93-0320	LQ2170 - 136 columns, 24 pin, 440cps, 64Kb Buffer	£468	£549.90
	Panasonic		
99-57-1150	KXP1150 - 80 columns, 9 pin, 240cps, 4Kb Buffer	£87	£102.23
99-57-2023	KXP2023 - 80 columns, 24 pin, 192cps, 14Kb Buffer	£112	£131.60
99-57-3626	KXP3626 - 136 columns, 24 pin, 300cps, 40Kb Buffer	£254	£298.45

PRODUCT FINDER : SEE FRONT COVER

SALES LINES OPEN 8.30am - 6.30pm MONDAY TO FRIDAY & 9am - 1pm SATURDAY

SCANNERS & CONSUMABLES

Printer Consumables

Part No	Make & Model	ex VAT	inc VAT
	Hewlett Packard		
	Laser Toner		
96-28-7413	HP92274A - Laserjet 4L/4P/4ML/4MP	£42	£49.35
96-28-7313	HP92275A - Laserjet IIP/IIIP/IIIPplus	£49	£57.58
96-28-7354	HP92291A - Laserjet IIISi/4Si/4Si MX	£69	£81.08
96-28-7230	HP92295A - Laserjet IID/IIID	£45	£52.88
96-28-7434	HP92298A - Laserjet 4/4M/4+/4M+/5/5N/5M	£54	£63.45
96-28-7451	HPC3900A - Laserjet 4V/4MV	£85	£99.88
96-28-7551	HPC3903A - Laserjet 5P/5MP/6P/6MP	£45	£52.88
96-28-7515	HPC3906A - Laserjet 5L/6L	£36	£42.30
96-28-4127	HPC4127A - Laserjet 4000	£52	£61.10
96-28-0412	HPC4127X - Laserjet 4000 Long life	£77	£90.48
	Ink Cartridges for Deskjet		
96-28-5030	HP51633M - 310/320/340/DW310,320,340	£16	£18.80
96-28-5060	HP51629A - 600/660C/690C/DW600,660C	£18	£21.15
96-28-5069	HP51649A - 600/660C/690C/DW600,660C	£19	£22.33
96-28-5080	HP51645A - 820Cxi/850C/870Cxi/890C/1600C/CM	£18	£21.15
96-28-5089	HP51641A - 820Cxi/850C/870Cxi	£19	£22.33
96-28-5120	HP51640A - 1200C/1200C PS	£19	£22.33
96-28-5123	HP51640C - 1200C/1200C PS/1600C/1600CM	£21	£24.68
96-28-5125	HP51640M - 1200C/1200C PS/1600C/1600CM	£21	£24.68
96-28-5127	HP51640Y - 1200C/1200C PS/1600C/1600CM	£21	£24.68
96-28-1823	HPC1823A - 890C	£24	£28.20
	Epson		
96-93-4000	S020093 - Stylus Color 500/400/600/Photo	£14	£16.45
96-93-8009	S020089 - Stylus Color 400/600/800/1520	£17	£19.98
96-93-8200	S020047 - Stylus 820/200/Color IIs/II,Color200	£14	£16.45
96-93-8209	S020049 - Stylus 1500/820/Color IIs/II	£19	£22.33
96-93-8005	S020110 - Stylus Photo	£14	£16.45

Product Focus

SMC carry a full range of high-quality replacement toner and inkjet cartridges as specified by each manufacturer for the best results from your printer.

HEWLETT PACKARD

TAKE COVER

Buy an HP Support Pack

Ask about the range of support packs available

SMC COMPUTERS

PRINT COPY SCAN All in One

Hewlett Packard All-In-One

The Officejet range offers a versatile combination of printer, copier and scanner in a single compact yet high-performance unit.
Both models offer printing in 600x300dpi (colour) and 600x600dpi (mono).
They are both A4 copiers with digital zoom and come with scanning software and OCR.

Part No	Model & description	ex VAT	inc VAT
99-28-3590	**OfficeJet 590** Colour Printer/Copier/Fax/Scanner 300dpi optical mono scanner	£296	£347.80
99-28-3050	**OfficeJet Pro 1150C** Colour Printer/Copier/Scanner 300dpi optical 24bit colour scanning	£491	£576.93

Epson Flatbed Scanners

Part No	Make & Model	ex VAT	inc VAT
	GTX Range		
	A4 scanners supplied with Adobe Photoshop LE & Caere OmniPage LE OCR package		
	Parallel Port interface - supplied with Parallel cable		
97-93-0507	**GTX5000/P** - 24-bit colour, A4, 1200/300dpi	£140	£164.50
97-93-0857	**GTX8500/P** - 30-bit colour, A4, 1600/400dpi,	£369	£433.58
97-93-0957	**GTX9500/P** - 36-bit colour, A4, 2400/600dpi	£446	£524.05
	SCSI interface - supplied with ISA SCSI controller card & cable		
97-93-0553	**GTX5500/S** - 30-bit colour, 1600/400dpi,	£209	£245.58
97-93-0853	**GTX8500/S** - 30-bit colour, 1600/400dpi,	£389	£457.08
97-93-0953	**GTX9500/S** - 36-bit colour, 2400/600dpi,	£469	£551.08
	GTI Range		
	A4 scanners with ISA SCSI interface, supplied with ISA SCSI controller card & cable. Software : Adobe Photoshop (full version), scanner utility CD & Image Stitch.		
97-93-0855	**GTI8500** - 30-bit colour, 1600/400dpi	£469	£551.08
97-93-0955	**GTI9500**- 36-bit colour, 2400/600dpi,	£538	£632.15
	GT Range		
	A3 scanners with ISA SCSI Interface, supplied with PC/MAC drivers.		
97-93-0120	**GT12000 (bare)** - 36-bit colour, 6400/800dpi,	£1315	£1545.13
97-93-0124	**GT12000/Graphics** - as GTI2000 with SCSI controller card & cables, transparency adaptor, Adobe Photoshop LE	£1699	£1996.33
97-93-0126	**GT12000/OCR** - as GTI2000 with SCSI controller card & cables, document feeder, Caere Omnipage LE V5	£2035	£2391.13

Hewlett Packard Scanners

HP's industry-standard A4 scanners are all supplied with software & OCR

Part No	Model & description	ex VAT	inc VAT
97-28-0050	**ScanJet 5S** - 600/300dpi 24-bit colour, pass-thru sheet feed, Parallel Port interface with cable	£133	£156.28
97-28-5100	**Scanjet 5100C** - 1200/300Dpi, 24-bit colour, Parallel Port interface with cable	£148	£173.90
97-28-6100	**Scanjet 6100c** - 2400/600dpi, 30-bit colour, includes ISA SCSI controller card & cable Also includes 35mm adaptor.	£449	£527.58

Logitech Scanners

Logitek scanners are one of the leading brands names in the market.
Each model operates through the parallel port and comes complete with scanning software and OCR.

NOTE : Windows 95 is required

Part No	Make & Model	ex VAT	inc VAT
97-97-0606	**Scanman Color 2000** 400dpi, 24-Bit colour handheld,	£49	£57.58
97-97-0902	**PageScan Colour Pro** 400dpi, 24-bit colour, Without feeder.	£129	£151.58
97-97-1002	**FreeScan** 600dpi, 4800Dpi enhanced, 30-bit colour. With 25-page feeder.	£109	£128.08

Our Website Address is: http://www.smc-computers.co.uk

SMC COMPUTERS

SMC : FOR THE BEST IN MONITORS

iiyama Monitors

Part No	Model	Size	Dot Pitch	Max.Res	ex VAT	inc VAT
68-93-9153	MF-8515G	15"	.28mm	1280x1024	£183	£215.03
68-93-9171	MF-8617T	17"	.26mm	1280x1024	£325	£381.88
68-93-9175	MF-8617ES	17"	.26mm	1280x1024	£399	£468.83
(The MF-8617ES has built-in stereo speakers)						
68-93-9173	MT-9017T	17"	.25mm grille	1600x1200	£399	£468.83
68-93-1901	S-901GT	19"	.27mm	1600x1200	£575	£675.63
Limited Offer -All 21" Monitors supplied by SMC come with 3 Year on-site included.						
68-93-9211	MF-8221E	21"	.28mm	1600x1200	£925	£1086.88
68-93-9213	MT-9021T	21"	.30mm grille	1600x1200	£909	£1068.08
68-93-9721	MF-8721	21"	.27mm	1800x1440	£799	£938.83
68-93-9215	MT-9221	21"	.28mm grille	1800x1440	£829	£974.08
All iiyama monitors now have a 3-year warranty, with the first year on-site.						
IIYAMA VISION CARE (Extended Warranty Options)						
68-93-9916	15" MF-8515G				£15	£17.63
68-93-9917	17" MF-8617T/ES & MT-9017T				£25	£29.38
68-93-9921	21" MF-8221E,MF-8721 & MT-9021T,MT-9221,ProLite				£35	£41.13
Warranties are Upgrade 3 Year On-Site next day swap-out. Only available on purchase.						
Resistive Touch Screen Monitors (for Windows 95)						
68-93-1500	TS15	15"		Based on MF-8515G	£699	£821.33
68-93-1700	TS17	17"		Based on MF-8617T	£999	£1173.83
68-93-2100	TS21	21"		Based on MT-9221T	£1499	£1761.33
PROLITE - Experience the Power of Touch.						
68-93-3601	ProLite 36	14.1"	Analogue LCD	1024x768	£999	£1173.83

Product Focus

iiyama have over 20 years experience in manufacturing monitors in Japan and across the world. Since the UK office has been established they have won 43 leading computer magazine awards for technical excellence, display quality and value for money - a unique achievement. The current range starts from an excellent quality 15" FST Monitor all the way through to a professional series 21" FST Monitor. We can provide the iiyama Vision Master Prolite 36, a 14.1" TFT flat panel LCD, offering full colour at 1024x768! Through a partnership between iiyama UK and MicroTouch UK, SMC are also able to provide a range of touchscreen monitors. Based around the popular Vision Master series - each utilises MicroTouch ClearTek capacitive technology.

ViewSonic Monitors

Part No	Model	Size	Dot Pitch	Max.Res	ex VAT	inc VAT
The Economy Series						
68-99-1114	E641	14"	.28mm	1024x768	£99	£116.33
68-99-1115	E655	15"	.28mm	1280x1024	£149	£175.08
68-99-1117	E771	17"	.27mm	1280x1024	£269	£316.08
The Graphics Series						
68-99-3715	G653	15"	.28mm	1280x1024	£159	£186.83
68-99-3515	15GA	15"	.27mm	1280x1024	£199	£233.83
68-99-3917	GA771	17"	.27mm	1280x1024	£345	£405.38
68-99-3517	G773	17"	.26mm	1280x1024	£365	£428.88
68-99-3717	GT775	17"	.25mm grille	1600x1280	£385	£452.38
The Professional Series						
68-99-5115	P655	15"	.27mm	1280x1024	£169	£198.58
68-99-5117	P775	17"	.25mm	1600x1280	£379	£445.33
68-99-5217	PT775	17"	.25mm grille	1600x1280	£429	£504.08
68-99-5121	P810	21"	.25mm	1600x1280	£829	£974.08
68-99-5321	PT813	21"	.28mm	1600x1280	£889	£1044.58
The LCD Series						
68-99-7140	VP140	14"	n/a	1024x768	£925	£1086.88
68-99-7150	VPA150	15"	n/a	1024x768	£1409	£1655.58
All ViewSonic Monitors are supplied with a FREE 3 Year Express Exchange Warranty.						

PRODUCT FINDER : SEE FRONT COVER

VISA DELTA MasterCard SWITCH AMERICAN EXPRESS

SALES LINES OPEN 8.30am - 6.30pm MONDAY TO FRIDAY & 9am - 1pm SATURDAY

MONITORS

lour Monitors

l monitors are Energy Star compliant.

	Model	Size Dot Pitch	Max. Res.	ex VAT	inc VAT
		14"			
C					
0-1405	AOC4VLR	14" .28mm	1024x768	£99	£116.33
(formerly Goldstar)					
6-1440	GS441	14" .28mm	1024x768	£115	£135.13
ILIPS					
9-1405	104S	14" .28mm	1024x768	£105	£123.38
9-1404	104B	14" .28mm	1024x768	£119	£139.83
MSUNG with 2 year on-site warranty					
5-1407	SM400b	14" .28mm	1024x768	£115	£135.13
ar on-site warranty.					
		15"			
C					
0-1505	AOC5VLR	15" .28mm	1280x1024	£129	£151.58
(formerly Goldstar)					
6-1505	GS1505DM	15" .28mm	1024x768	£181	£212.68
6-1557	GS561	15" .28mm	1280x1024	£145	£170.38
ILIPS					
9-1505	105S	15" .28mm	1024x768	£149	£175.08
MSUNG with 3 year on-site warranty.					
5-1501	500s FST	15" .28mm	30-54KHz	£149	£175.08
available with multimedia speakers. Please ask for details.					
5-1507	500b FST	15" .28mm	30-69KHz	£159	£186.83
NY					
1-1517	CPD100ES	15" .25 Grille	1024x768	£189	£222.08
1-1917	CPD100SFT	15" .25 Grille	1280x1024	£224	£263.20
		17"			
(formerly Goldstar)					
6-1777	GS771	17" .28mm	1280x1024	£265	£311.38
6-1778	GS781	17" .26mm	1600x1280	£399	£468.83
NASONIC					
7-1734	TX1734	17" .27mm	1280x1024	£319	£374.83
MSUNG with 3 year on-site warranty.					
5-1703	700s FST	17" .28mm	30-69KHz	£299	£351.33
available with multimedia speakers. Please ask for details.					
5-1701	17GLsl	17" .26mm	1600x1200	£409	£480.58
NY					
1-1715	CPD200SX	17" .25mm	1024x768	£359	£421.83
1-1719	CPD200GST	17" .25 Grille	1280x1024	£385	£452.38
rated mono speaker jack (Ideal for video conferencing and voice mail applications)					
1-1705	GDM17SE2T5	17" .25mm	1280x1024	£489	£574.58
		20"			
(formerly Goldstar)					
6-2020	GS20i	20" .28mm	1600x1280	£595	£699.13
ILIPS					
9-2004	200B	20" .28mm	1280x1024	£669	£786.08
NY					
1-2017	CPD300SFT	20" .30mm	1280x1024	£729	£856.58
		21"			
ILIPS					
9-2104	201B	21" .27mm	1600x1200	£829	£974.08
MSUNG with 3 year on-site warranty.					
5-2101	21GLs	21" .28mm	1600x1200	£889	£1044.58

SAMSUNG

MultiMedia Monitors (with speakers)

* All monitors are Energy Star compliant.

Part No	Model	Size Dot Pitch	Max. Res.	ex VAT	inc VAT
		14"			
LG StudioWorks					
68-26-1444	44M	14" .28mm	1024x768	£129	£151.58
		15"			
LG StudioWorks					
68-26-1556	56M	15" .28mm	1280x1024	£155	£182.13
68-26-1559	5D	15" .28mm	1280x1024	£188	£220.90
PHILIPS					
68-59-1513	105BR	15" .28mm	1280x1024	£219	£257.33
P'n'P also with Microphone					
		17"			
LG StudioWorks					
68-26-1783	78M	17" .26mm	1600x1280	£425	£499.38
PHILIPS					
68-59-1713	107B	17" .28mm	1280x1024	£349	£410.08
Incldng CustoMax software and Built-in Stereo sound					
68-59-1703	107BR	17" .26mm	1280x1024	£395	£464.13
With Microphone					
		19"			
PHILIPS					
68-59-1901	109BR	19" .26mm	1600x1200	£575	£675.63
		21"			
PHILIPS					
68-59-2113	201BR	21" .26mm	1600 x 1200	£1419	£1667.33
With microphone					
68-59-2103	201BR	21" .26mm	1600 x 1200	£1575	£1850.63
Advanced Colour, also with microphone					

GoldStar
Technology with the human touch

Goldstar's continued commitment to research and development has resulted In their latest series of completely redesigned and re-engineered monitors. And with many components, including the casings, being produced from recyclable materials, you are assured that a Goldstar monitor does all it can to help save the earth's valuable resources.

Inside Information

Did you know - SMC maintains a constant emphasis on training in all aspects of its operation to ensure that staff are able to provide the highest levels of service.

In addition to full-time staff employed to teach and reinforce Job skills and procedures, we periodically engage outside agencies to provide another perspective, and in 1997 we received a Thames Valley Business of the Year award in recognition of the investment we have made in training.

When we say that we are continually seeking improvement In what we do - we mean it.

Our Website Address is: http://www.smc-computers.co.uk

INFINITE SYSTEMS

SMC COMPUTERS

For a truly Personal Computer ...

While the systems listed below can usually be provided off-the-shelf, our major PC activity is the production of made-to-measure PC's, designed and built to individual requirements.
If you have a specific design in mind - or would simply like a quotation on a variation of a model you see below - just give our sales Hotline a call on 01753 - 550333 and one of our Technical Sales specialists will be happy to discuss what you need in terms of performance and price.
Individually-built systems take around five working days to process fully, so if you call us today, within a week you could have a new PC that is exactly what you want, and because we don't charge for the extra service, it will be at a price you can afford.

Home Multimedia £779 (£915.33 inc.VAT)

With the increasing sophistication of today's educational, games and reference software, full multimedia capability is required for acceptable performance on even the most basic packages.
With the Home Multimedia system, we have put together some very high-performance hardware with a firm eye on the price. In addition to the 166MHz Pentium MMX processor, this PC comes with 16Mb of fast EDO-RAM, 4Mb Matrox 3D graphics, 64-voice Soundblaster sound, powered stereo speakers and a fast 24-speed CD ROM drive.
We don't believe you'll find better value for money.

Driver £719 (£844.83 inc.VAT)

Many situations require the use of several advanced applications at once and for this reason we have configured a system with memory and processing power to match the task.
A massive 32Mb of EDO RAM, coupled with a powerful P200 Pentium MMX processor form the basic engine of this system, while graphics are handled by a 4Mb 3D video card.
Yet despite the high-power specification that offers performance beyond its low price, the Driver offers enormous scope for future upgradability.

Pentathlon £888 (£1043.40 Inc.VAT)

One of the lowest-priced quality all-round performing PC's available on the market today, the Pentathlon has everything you need.
ATX motherboard and case support a Pentium P200 MMX processor and 32Mb of EDO RAM.
A fast 56Kbps Fax Modem drives communications with other PC's or the Internet, and Multimedia applications are served by a 64-voice Soundblaster card and stereo speaker system.
If it's high performance you want at a very competitive price, the Pentathlon is the system for you.

HARDWARE : Our product quality is the best because we control every stage of the process, and will only install major branded products into our systems.
SOFTWARE : In addition to the latest version of Windows 95, we supply Lotus Smartsuite free of charge.
SUPPORT : There's a full FIVE-YEAR warranty with every system (the first year on-site, years 2-5 return to base, labour only) and 3 year warranty with every monitor. In addition, there's lifetime technical support on our dedicated hotline.

Infinite Personal Computer

Business Workstation £679 (£797.83 inc.VAT)

With all the power of Pentium MMX technology, 16Mb of EDO RAM and a 2Mb 2D/3D graphics card, this system will handle all your business requirements at a price that won't stretch your budget.
Lotus Smartsuite is supplied with all INFINITE systems and this means you'll be ready to go with no extra fuss, or for an incredibly low £123 you can choose Microsoft Office (see opposite for details).
Should you wish to upgrade for network use, we can include this at build time for a nominal price : give us a call for details.

ATX Starter £759 (£891.83 inc.VAT)

ATX technology is becoming ever more popular because its design enables power-saving, lower radiation, lower noise level and easy upgradability. If you expect your performance requirements to increase as time goes on, then ATX is the choice to make so you can future-proof your system.
With this in mind, we feel there is a need for a basic, low-cost system that can be upgraded over time.
We have designed our starter system around the standard Pentium processor (to avoid the price premium payable for Pentium II) so that not only do you get upgradability, but high performance is included at the lowest possible price.

Target £1085 (£1274.88 inc.VAT)

Pentium II technology makes use of a daughter board set-up to enable easier access to the processor and a larger cache. The Target is our entry-level Pentium II system.
More like the "big brother" (or sister) to the Pentathlon, it has all the same features but with a high-power P233Mhz Pentium II processor and motherboard, plus 32Mb of SDRAM memory at its heart.
Whether you are looking for a powerful PC for video or Multimedia or a valuable addition to your network, you will find this machine more than capable.

Win'Jammer £1499 (£1761.33 inc.VAT)

The Win'Jammer blows up a real storm with the latest ATX motherboard with LX chipset, a blisteringly fast P300MHz Pentium II Processor and an enormous 64Mb of SDRAM memory. A 56Kbps Fax/Modem communicates with the outside world, and a 64-voice Soundblaster card & speakers give you exceptional sound quality. Other features include a massive 6.4Gb Ultra-IDE hard drive, 24-speed CD ROM and superb graphics performance in the form of a 4Mb 2D/3D AGP video card driving a high-spec. 15" monitor.
This machine is really tomorrow's technology today !

PRODUCT FINDER : SEE FRONT COVER

VISA DELTA MasterCard SWITCH AMERICAN EXPRESS MasterCard

SALES LINES OPEN 8.30am - 6.30pm MONDAY TO FRIDAY & 9am - 1pm SATURDAY

INFINITE SYSTEMS

5 YEAR WARRANTY * . . .
LIFETIME PEACE OF MIND

SMC COMPUTERS

* Three-year warranty applies to monitors

Infinite
Personal Computer

All **INFINITE** systems have **Lotus Smartsuite** pre-installed FREE OF CHARGE with the following applications :

Lotus 1-2-3
Organiser
Freelance
Approach
Word Pro
ScreenCam

intel inside pentium processor

intel inside pentium II processor

YEAR 2000 COMPLIANT
PASSED

SMC INFINITE systems

At SMC, we have been building PC's for years, and we don't believe anyone can offer our unique combination of high performance, flexibility and competitiveness. We take a genuine pride in our work : every PC is built on-site by our own staff : we do not sub-contract or "buy in" systems from third parties. Initial assembly is carried out by an individual engineer, fully "burned in" and then quality-checked by another engineer before being passed for shipment. Components used are all major-brand items, fully compatible and upgradable as technology moves on.

The **INFINITE** brand has been built strongly over the years on the basis of care and attention to detail, and a deliberate and unbroken rejection of so-called "box-shifter" principles. In this way we have developed a no-compromise approach to quality that will give you a PC to be proud of. What's more, as with everything we do, getting a premium service from SMC doesn't mean you'll find anything added to the price.

Upgrade to Microsoft Office

The Small Business Edition includes :
MS Word, Excel, Autoroute Express GB, Publisher, Outlook, Internet Tools and Financial Manager.

Available for just
£123
£144.53 inc.VAT

Our Website Address is: http://www.smc-computers.co.uk

REMOVABLE & PARALLEL PORT

SMC COMPUTERS

AMACOM

High capacity - up to 8.0Gb*
PCMCIA & Parallel Port interface
Either draws power from mains or PC
Incorporates Toshiba Disk Drives
Fast access and data transfer
Includes Novadisk backup software
*Using compression ratio of 2:1

37-92-9064

£555 £652.13 inc.VAT

6.4Gb Flip disk - Innovative Portability

AMACOM Parallel Port / PCMCIA

Part No	Description	ex VAT	inc VAT
FLIP DISK			
37-92-9028	2.8Gb, Parallel Port/PCMCIA, 13ms access, 128Kb	£335	£393.63
37-92-9042	4.2Gb, Parallel Port/PCMCIA, 13ms access, 128Kb	£435	£511.13
37-92-9064	6.4Gb, Parallel Port/PCMCIA, 13ms access, 128Kb	£555	£652.13
37-92-9080	8.0Gb, Parallel Port/PCMCIA, 13ms access, 128Kb	POA	POA
EZCD CD-ROM DRIVES			
51-92-0004	4 speed, Parallel Port, 250ms access, 128Kb cache	£110	£129.25
51-92-0008	8 speed, Parallel Port, 145ms access, 256Kb cache	£115	£135.13
51-92-0016	16 speed, Parallel Port	£124	£145.70
51-92-0024	24 speed, Parallel Port	£134	£157.45
EZCD CD-ROM DRIVES with 16bit Sound			
51-92-1016	16 speed, Parallel Port	£169	£198.58
51-92-1024	24 speed, Parallel Port	£179	£210.33
EZCD CARD			
51-92-3008	8 speed CD, PCMCIA, 145ms access, 256Kb cache	£115	£135.13
51-92-3016	16 speed CD, PCMCIA	£134	£157.45
51-92-3024	24 speed CD, PCMCIA	£144	£169.20
EZCD PLUS			
51-92-5010	10 speed CD, PCMCIA	£165	£193.88
51-92-5020	20 speed CD, PCMCIA	£179	£210.33

The EZCD Plus can be used as a standalone CD player. A mains adaptor and battery pack is included or power can be drawn direct from your PC.

iomega

NEW LOW PRICE PARALLEL PORT ZIP DRIVES

IOMEGA, with the 100Mb ZIP and 1Gb JAZ, are market leaders in removable drive technology. Applications include backup, library and data sharing.
And with the 2Gb JAZ newly released, it's clear that the leaders intend to stay in front !

zip drive 100

Part No	Description	ex VAT	inc VAT
ZIP Drives			
35-35-0105	100Mb, SCSI (External) Interface, 1.25Mb per second	£86	£101.05
35-35-0100	100Mb, SCSI (Insider) Inc. Controller, 1.25Mb per sec	£86	£101.05
37-35-0100	100Mb, Parallel port, 1.25Mb per second	£86	£101.05
35-35-3537	100Mb, ZIP Plus, Parallel port & SCSI combined	£109	£128.08
ZIP Media (Cartridges)			
95-35-0101	100Mb, Single	£10	£11.75
95-35-0110	100Mb, 10 Pack (multi coloured disks)	£85	£99.88
ZIP Accessories			
70-35-0003	Carry Case	£19	£22.33
26-35-0284	PCMCIA to SCSI card	£65	£76.38

jaz drive

Part No	Description	ex VAT	inc VAT
JAZ Drives			
35-35-1000	1.0Gb, SCSI(Internal) Interface, 10Mb per second	£173	£203.28
35-35-1005	1.0Gb, SCSI(External) Interface, 10Mb per second	£227	£266.73
35-35-2000	2.0Gb, SCSI(Internal) Interface, 10Mb per second	£319	£374.83
35-35-2005	2.0Gb, SCSI(External) Interface, 10Mb per second	£375	£440.63
JAZ Media (Cartridges)			
95-35-1001	1.0Gb, Single	£55	£64.63
95-35-2001	2.0Gb, Single	£92	£108.10
JAZ Accessories			
70-35-0003	Carry Case	£19	£22.33
26-35-0450	PCMCIA to SCSI card	£77	£90.48
26-35-0347	ISA 16-bit SCSI interface card	£59	£69.33
26-35-0346	PCI Bus-mastering SCSI interface card	£65	£76.38
75-35-0231	Parallel to SCSI convertor	£29	£34.08

TELESALES HOTLINE 01753 550333
FAX HOTLINE 01753 524443

SMC Computers Plc. 253-257 Farnham Road.
Slough. Berkshire. SL2 1HA

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or send cheques to:

Owl Associates Ltd

Dept 603, Owl House, 5 The Brambles, Lichfield, Staffs, WS14 9SE

Normal UK Delivery £2.00, Next Day £7.50

All Prices INCLUDE VAT @ 17½%)

E&OE

Printer Ribbons

BLACK	1 off	2+	5+	10+
Amstrad DMP2000/3000	2.80	2.65	2.45	2.25
Amstrad PCW8256/LQ3500	2.85	2.70	2.50	2.30
Citizen 120D/LSP10/Swift 24/9	2.85	2.70	2.50	2.30
Epson LQ100	4.10	3.95	3.75	3.55
Epson FX/MX/RX80/FX/LX800	2.90	2.75	2.55	2.35
Panasonic KXP1123/1124/1140	3.46	3.31	3.11	2.91
Panasonic KXP1080/1180/90	2.89	2.74	2.54	2.34
Panasonic KXP2123/2124/2180	4.95	4.80	4.60	4.40
Star LC10/20/100	2.29	2.14	1.94	1.84
Star LC200	3.00	2.85	2.65	2.45
Star LC24-10/20/200	2.86	2.71	2.51	2.31
COLOUR				
Citizen 224, 240, Swift 24/9	8.99	8.84	8.64	8.63
Panasonic KXP2123/2124/2180	8.99	8.84	8.64	8.63
Star LC10/20/100	6.00	5.85	5.65	5.25
Star LC200	9.78	9.63	9.43	9.03
Star LC24-10/20/200	9.63	9.48	9.28	8.88

These are just a small selection of our Ribbons – Ring for those not listed

Ring us and *WE WILL BEAT* all other Ribbon prices

Laser Toners

Ring for Toners not listed

HP Laserjet II/IID	35.00 each
HP Laserjet IIP/IIP	40.00 each
HP Laserjet 4L, 4LM	50.00 each
HP Laserjet 4, 4M	65.00 each
Panasonic KXP-4410/4430	20.00 each
Panasonic KXP-4400/5400	17.00 each

High quality re-manufactured toners -originals also available

Miscellaneous Items

100 3½" Disk Labels	1.99	Mouse House	2.99
1000 3½" Disk Labels	8.99	Glass Screen Filter 17"	29.99
1000 White Tractor Feed		14"/15"	16.99
3½" Disk Labels	10.99	Python 5 Joystick	10.99
3½" Disk Cleaning Kit	2.99	Warrior 5 Joystick	10.99
Parallel Printer Cable	3.99	Super Warrior Joystick	15.99
Mouse Kit	2.99	Skymaster Joystick	29.99

Dust Covers – Ring for prices

Branded CD-R

All supplied with cases

1 - 9	2.70 each
10 - 19	2.55 each
20 - 49	2.45 each
50 - 99	2.30 each
100+	2.15 each

Disk & CD Boxes

3½" 100 Capacity Box	5.99
3½" 10 Capacity Box	1.50
2 Capacity CD Cases	0.75

3½" Disk

	Bulk DD	HD	Branded HD
10 Disk	£5	£6	£8
25 Disks	£10	£11	–
50 Disk	£16	£18	£24
100 Disk	£29	£33	£46

All Disks Certified 100% *ERROR FREE* & Include *FREE* Labels

Inkjet / Bubblejet Cartridges

	Compatible	Original
Apple Stylewriter	-	16.30
Canon BJ 10,10ex,10sx,20	-	16.30
Canon BJ 30,70 Blk (Pk 3) BCI-10BK	8.00	12.60
Canon BJC 70 Blk (Pk 3) BCI-11BK	7.00	12.50
Canon BJC 70 Col (Pk 2) BCI-11C	11.00	17.20
Canon BJ 200/10/30/40 Black	-	16.30
Canon BJC 210/40 Colour	-	19.90
Canon BJ 300/30	5.20	12.30
Canon BJC 600/10/20 Black	3.00	9.00
Canon BJC 600/10/20 Cyn, Mag or Yel	3.00	7.50
Canon BJC 4000/100/200 Large Black	-	23.50
Canon BJC 4000/100/200 Hd+Blk+Col	-	34.00
Canon BJC 4000/100/200 Small Black	4.00	8.00
Canon BJC 4000/100/200 Small Colour	8.00	14.90
Commodore MPS1270	-	10.80
Commodore 1P3300 Blk Head + Refill	-	39.00
Commodore 1P3300 Blk Clip-In Refill	-	15.00
Commodore 1P3300 Colour	-	33.00
Epson Stylus 400,800,800+,1000 Black	6.00	10.80
Epson Stylus Color, Pro XL Black	6.00	11.90
Epson Stylus Color, Pro XL Colour	10.00	22.50
Epson Stylus 820, Color II/IIS Black	6.00	16.40
Epson Stylus 820 Color II/IIS Colour	10.00	21.10
Epson Stylus Color 200 Black	6.00	16.40
Epson Stylus Color 200 Colour	10.00	22.50
Epson Stylus Color 400/600 Black	6.00	17.90
Epson Stylus Color 400/600 Colour	10.00	22.00
Epson Stylus Color 500 Black	6.00	17.90
Epson Stylus Color 500 Colour	10.00	22.50
HP Deskjet 400,500/10/20/40/50/60 Black	-	21.00
HP Deskjet 400,500/40/50/60 Tri-Colour	-	22.50
HP Deskjet Portable, 310/20/40 (High Cap.)	-	19.50
HP Deskjet 5600/60/90/93/94 Black	-	23.00
HP Deskjet 600/60/90/93/94 Tri-Colour	-	24.00
HP Deskjet 600/60/90/93/94 Photo Tri-Col	-	31.80
HP Deskjet 820/50/55/70 Black	-	24.00
HP Deskjet 820/50/55/70 Tri Colour	-	25.50
HHP Thinkjet/Quietjet	-	10.80

We also stock other cartridges & refill kits suitable for most inkjet / bubblejet printers Ring for details & prices for those not listed

Inkjet / Bubblejet Refill Kits

Apple Stylewriter	8.50 for 2 x 20ml Refills
Canon BJ 10/10ex/20 200/230	8.50 for 2 x 20ml Refills
Epson Stylus 400/800/1000	8.50 for 2 x 20ml Refills
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2 When eating out, do you try the spiciest dishes?	P = *Mostly* C = *Never* W = *Always*
3 If you drive, do you go as fast as the law allows?	P = *Mostly* C = *Never* W = *Always*
4 If there's a ladder in your way, do you walk under it?	P = *Mostly* C = *Never* W = *Always*
5 Do you forget to back-up your files regularly?	P = *Mostly* C = *Never* W = *Always*
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76317	9	600p	100p	**BARBACK v4.0** - 1000s of drink recipes
97297	9	360p	100p	**TITANIC SS** - Film based screen saver
93291	9	80p	80p	**OPENTRAP v1.0** - Essential Win95 system tool
95708	D	190p	100p	**CHINESE EROTISM** - 20 good quality JPG images
88016	9	600p	100p	**INOCULAN ANTIVIRUS v5.0** - Auto protection
93231	9	280p	100p	**STONEHENGE THEME** - One of NeckByters best
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95021	9	280p	100p	**THAMES TUTORIAL v1.0** - In depth but easy
93125	9	440p	100p	**RAUNCHY TRUCKERS** - An adult picture story
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78226	9	200p	100p	**BUBBLE PUZZLE v1.1H** - Fun game for any age
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96226	9	50p	50p	**STAR TREK LIGHTS** - Desktop enhancer
98796	9	170p	100p	**METEOR STORM** - Classic rock blaster
93073	9	170p	100p	**BLOXX v1.1** - Multi featured Tetris
67911	9	50p	50p	**AROS FRACTALS v1.0** - Good Fractal generator
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92626	9	210p	100p	**MOPY FISH** - A beautiful virtual pet fish

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24449	D	60p	60p	**HACKERS HANDBOOK** - Hugo Cornwall edition
02586	D	80p	80p	**ETCA1 v1.25** - 31 lessons in electronics
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14980	D	180p	100p	**COUNTRY SKETCHES** - Quality PCX clipart
78142	W	170p	100p	**WINGROOVE** - Exceptionally good Midi player
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50355	9	90p	90p	**ACDSEE v2.22** - Excellent Win95 picture viewer
05880	W	80p	80p	**GOLDWAVE v2.10** - Powerful sound processor
02793	W	70p	70p	**CHARTIST v1.6A** - Very attractive chart maker
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88064	9	CANNABINATIC	- Attractive & informative SS
79498	9	ANICURS	- 250 good animated cursors
57308	D	QUAKE v1.06	- A good improved version
57353	9	HAPPY ICONS v3.2	- 2500 icons neatly classified
63469	9	JOHNNY CASTAWAY	- Hilarious S.Saver
78202	9	DIRECTX v5.0	- Improved & reliable version
10012	D	DOOM v1.9	- The final enhanced s/w version
79599	9	CYBERMIND v1.0	- Game for deep thinkers
38271	9	WINZIP v6.3	- New final 6.3 enhanced version
96095	9	CELESTE'S GRAPHICS	- Holiday mini GIFs
71204	9	REALCLOCK95	- 14 photorealistic ones
67858	9	DX-BALL v1.07	- Amiga Megaball breakout game
72399	9	ASTRONOMY SLIDE SHOW	- 19 astro photos
69858	9	HARDWARE BOOK v1.2	- Useful technical info

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36920	W	210p	100p	**TASTELESS** - Fairly disgusting
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67706	9	140p	100p	**SAUSAGE** - Performing sausages
89311	9	240p	100p	**NORMALITY** - Super cool dude
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19906	W	50p	50p	**CHICKENS FROM HELL** - Madness
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27087	W	40p	40p	**FOOD FIGHT** - Magnificent messy

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63110	170p	100P		**DANGEROUS CREATURES**
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75016	280p	100p		**HORSEHEAD NEBULA**
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63193	280p	100p		**NIGHTMARE BEFORE CHRISTMAS**
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98758	170p	100p		**PAMELA ANDERSON**
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RoboHELP 5.5 now supports the creation of nine different professional Help formats including Blue Sky's new cross-platform WebHelp, Microsoft Windows CE Help and Netscape NetHelp 2.0. WebHelp is a new cross-platform Help format that is browser independent. The new Multi-Level Index Designer uses drag & drop and an integrated keyword editor lets you add both K- & A-keywords on the fly.

RoboHELP Office 5.5

RoboHELP Office is the new name for WinHelp Office, Blue Sky's award-winning Help authoring suite. It features the new RoboHELP 5.5, RoboHTML 1.0, and 16 state-of-the-art WinHelp and HTML Help authoring tools. These 16 innovative tools are included in the Moving to HTML Kit, Help Video Kit, Help Tool Kit, and Mastering Help. RoboHELP Office now provides Help authors with everything they need to quickly and easily generate all major Windows Help and HTML-based Help formats.

DataTable 4.0

DataTable 4.0, with its new Microsoft-compatible data-binding support, is the perfect choice for your Internet/Intranet or enterprise-wide system solutions. This new version also features printing (including inside IE 4.0- the only grid with this feature), word wrapping as well as reading & writing configuration and data to and from disk.

Data Explorer 2.0

You can now place ANY ActiveX Component, Form or Window in the Right-Hand Pane of the Data Explorer! This new version allows each tree node to have its own view in the right-hand pane. Create an application with a calendar, VB Form, grid component...all within the easy-to-use windows explorer metaphor.

InstallShield 5.1 International & Bilingual

The International and Bilingual variants of InstallShield 5.1 Professional are now available, so you can use all of its new features for your foreign language installations.

DemoShield 5.3

The latest version of DemoShield lets you localise your demos into over 20 languages, create interactive demos, have background images for full screen demos, create Internet demos (ActiveX or plug-in) and has an integrated spell checker.

ProtoSpeed 2.0

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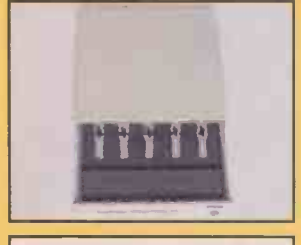

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Because we specialise in input and associated devices our expertise is unrivalled – and, if we don't stock exactly what you need, we'll supply a custom product quickly and at a low cost you'll find hard to believe.

ELECTRONE General

9001 KEYBOARD

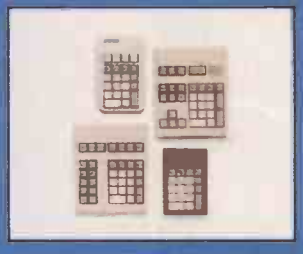
The 9001 squeezes 86 keys into the smallest footprint with full travel tactile keys, 17mm key spacing and embedded numeric pad. They don't come much smaller than this!

MINIKB

Occupying less space than an A4 sheet, the MINIKB has 85 full size tactile click keyswitches. Full typing area, function key row and cursor controls. Optional number pad available.

MCK142 PRO

All the keys you'll ever need! Two sets of function keys, enhanced style 102 layout and 24 user-programmable function keys. A great keyboard for terminal emulation.



MICROPADS

Keypads for all applications: numeric pads for notebooks, keyboard replacements, function keypads – we can customise the standard models or make complete custom designs to match your needs exactly.

TRACKBALLS

Our new trackball range features the new infrared Star Track for remote control of presentation, demonstration and any other mouse applications. Two desktop models offer the choice of thumb or finger operations with two enclosure styles. All trackballs can directly replace a serial mouse.

TOUCH SCREENS

Our new touch screen panel clips directly to your existing monitor and, through the supplied serial interface and software, can emulate a mouse for instant touch control of your applications – or use it as a development tool for your own touch screen programmes. Fits 14" and 15" screens. Bonded touch monitors also available.

KEYPORT

The latest Keyports now include a full PC keyboard wedge interface – just plug into the keyboard port, with or without your keyboard attached, and you're ready to programme your own layout. Software to download programme and design overlay included.

ELECTRONE

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ChipChat

There'll be moo-sic everywhere

The latest exciting glance into Bill Gates' life, courtesy of his diary on www.slate.com: "Melinda and I got back to the hotel room about midnight and considered calling Jennifer at home (there's a three-hour time difference). She is almost two and we can ask her exciting questions over the phone now, like: 'What sound does a cow make?' I love the way she says, 'Moo'. However, we decided it was too late to call."

Ah... never mind, Bill, you can phone *Chipchat* any time of the day or night and you'll get all the "Moos" your sweet little heart desires.

Searching for the young soul rebels

Rumours abound of Netscape engineers, with the free-code giveaway deadline looming, scrambling to locate and remove amusing obscenities that programmers have scattered throughout the program.

Harmless enough fun perhaps, but *Chipchat* has heard whispers of a more sinister nature. Running the Netscape code backwards, some users claim to hear a scratchy ethereal voice emanating from their internal PC speaker repeating, *ad nauseam*: "Bill is good, trust in Bill".

Rest assured, *Chipchat* is not prey to such supernatural twaddle and the thrice daily mouthwash of garlic and holy water is being taken purely on doctor's orders.

The sound of silence

Avid *Chipchat* readers will have noticed a big blank space in last month's thrilling reportage. We had planned to print a particularly juicy story about John Major, a drunken polar bear and Tara Palmer-Tomkinson, but had to pull it at the last minute... because it wasn't true.

Caption competition

Left "It's a big moustache, certainly, but is it art?"

■ Think you can do better than this? Enter via our web site at www.pcw.co.uk or write to the usual address (p10) with your caption(s) on a postcard marked "May Caption Compo" before 15th April. We'll print the funniest entry in all its glory and the winner will receive a £20 book token.

"So YOU'RE the one who installed Internet Explorer 4!"

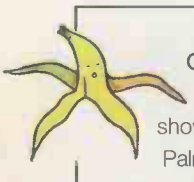
Congratulations to Alan Tracey from Totton, winner of March's competition.

Sweet dreams are made of this

Another, somewhat more puzzling excerpt from Bill Gates' diary: "There is no more open market than internet browsers. Consumers can use any internet browser they want just by taking five seconds to download a new browser." Oh, really?

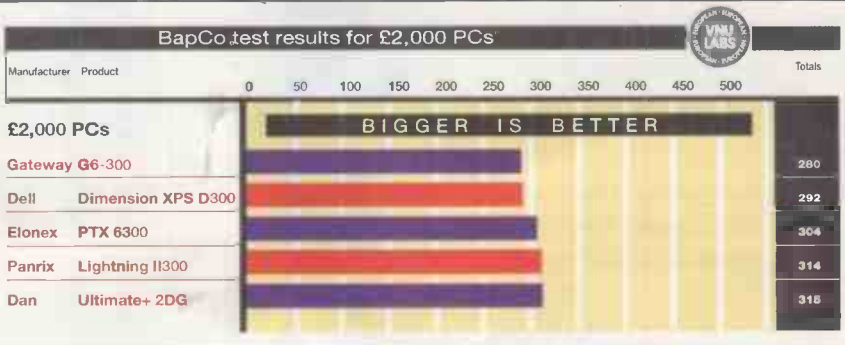
...meanwhile, this is planet Earth

The year 2000 strikes again with the launch of the Millennium Countdown Clock. Combining the functions of a normal clock and a countdown device, the timepiece "creates awareness and excitement every day until the millennium". Guess what happens at midnight, 31st December 1999...?



OOPS

■ Our PDA group test (p242) shows two prices for the 3Com Palm Pilot. The correct one is at the end of the review, and is Pro £229 and Personal £169 (both incl VAT). We printed the wrong graph for the £2,000 PCs in this month's group test (p192). The correct version is printed opposite.



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With one of the most modern automated factories in the UK, we can provide an entire range of built-to-order systems including PCs, notebooks, and file servers. These pages show systems with pre-configured specifications, but we will be happy to adapt them to meet any particular requirements you may have.

Whether you are buying for business or home, Viglen has the system you want – and for less than you might think.

Why great minds choose Viglen

GREAT PRODUCTS
Viglen PCs consistently win top industry awards and are in the highest league for winning the most awards and acclaims.

GREAT RELIABILITY
Viglen PCs are acclaimed for having some of the best reliability figures in the industry and have topped the charts year after year.

GREAT QUALITY
The quality of our systems is second to none, a record recognised in review after review. Add to this our BS EN ISO 9002: 1994 quality accreditation and it means that every PC that leaves our factory is manufactured to the highest possible quality standards.

GREAT SUPPORT
Viglen's technical support is renowned for being one of the best in the industry. With our "customer first" philosophy, when you buy a Viglen PC we ensure your satisfaction is at the top of our priorities.

GREAT WARRANTY
Every Viglen PC is backed by our 12 month parts and labour warranty, including collection and return to you at our expense (mainland UK only). And we also offer a complete range of low-cost on-site packages for up to 5 years and a 4-hour response premium on-site option for mission critical systems (such as File servers).

GREAT DELIVERY
Viglen has one of the most modern build-to-order PC manufacturing plants in the UK and so even the most complicated custom configuration can be shipped within 10 working days. What's more, standard Business and Personal systems can be delivered within 3 working days from clearance of payment.

GREAT UPGRADES
Viglen is not only the best choice today, but for tomorrow too. Should you need to upgrade your PC in the future we offer a full upgrade service which is competitively priced.

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Our Business and Personal systems combine the highest quality with best possible value to bring you a range of systems to suit your exact needs.

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If you require any help or advice on choosing a system to suit your requirements please do not hesitate to call our Sales Department. To help us identify your requirements quickly, please state the product code (where applicable), description and price of items required. Then, when you have decided on your system please fax or phone your order. Please allow 7-10 working days for delivery, except for Viglen special configuration models which we will do our utmost to despatch within 3 working days from clearance of payment.

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Easy2own Monthly payment scheme is available to private purchasers subject to status. Typical example of payment calculation of PC costing £999 inc delivery and VAT. 10% deposit of £99.90 required followed by 36 monthly payments of £31.90 (APR= 17.9%).

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Public sector customers may also purchase all Viglen systems through The Stationery Office by calling 01603 694153 and GCat on 0870 6041000, for further details.

Viglen systems are exclusively distributed in Eire by Lendac Data Systems, Unit 6 IDA Enterprise Centre, Pearse St., Dublin 2, Ireland. Tel No: Dublin 6776133 Fax No: Dublin 6710135. Prices in Eire differ from those quoted in this advertisement.

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◆ AGP 3D 4MB Graphics Card ◆ 24X CD ROM ◆ Microsoft® Office 97 Small Business Edition

If you're thinking about new technology, think Viglen. Intel's fastest Pentium® II processor yet – the 333MHz version – has just been launched and, with Viglen, you can already benefit from its breathtaking performance. The Viglen PC333 is one of the fastest PCs ever built. But that's not all. It's crammed full of the latest technology, including AGP graphics and a 56kbps modem. And to make it go even faster, it's available at the unbelievably sensible price of just £1499 exc VAT and delivery. It's no wonder great minds think Viglen.

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- To a 17" Monitor* and 8.4GB Hard Drive for only £249+VAT
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Our business systems are configured to provide the essential tools for business by combining performance and value in an easy to use package with a choice of processor to suit your individual requirements and budget. Our entry system is supplied with Microsoft® Works for Windows® 95 to provide the basic needs of word processing, spreadsheets and presentations. Our higher specification systems include Microsoft® Office 97 and Microsoft's Office Pro 97 for the more demanding business applications.

A Business PC

The Business PC provides performance and features suitable to most business applications.

◆ Executive case ◆ 32MB EDO RAM ◆ 256K Cache ◆ 2.1GB Hard Drive ◆ 24 Speed CD ROM ◆ 1MB Fast PCI Graphics ◆ Sound ◆ 3.5" floppy drive ◆ 2 serial, 1 parallel and 2 PS/2 ports ◆ 14" Colour Monitor* with built-in speakers ◆ Keyboard ◆ Microsoft® Mouse ◆ Microsoft® Windows® 95 ◆ Microsoft® Works®

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Pentium® Processor with MMX™ Technology	166MHz	£639.00	£780.20	SYBB16M5	£24.91
	200MHz	£669.00	£815.45	SYBB20M5	£26.04
	233MHz	£719.00	£874.20	SYBB23M5	£27.91

B Business PC Ultimate

The Business PC Ultimate provides more power and storage capacity to satisfy the most demanding business or corporate user.

◆ Desktop case ◆ 32MB EDO RAM ◆ 512K Cache ◆ 3.5GB Hard Drive ◆ LS-120, 3.5" 120MB floppy drive ◆ 24 Speed CD ROM ◆ 56kbps voice/fax modem with Internet access ◆ 2MB Fast PCI Graphics ◆ Sound ◆ 2 serial, 1 parallel, 2 PS/2 and 2 USB ports ◆ 15" Colour Monitor* with built-in speakers ◆ Keyboard ◆ Microsoft® Intellimouse ◆ Microsoft® Windows® 95 ◆ Choice of either Microsoft® Office 97 (CD with manual) or Microsoft® Office 97 SBE. Upgrade to Microsoft® Office Pro for £80 inc VAT.

			Exc Delivery & VAT	Inc Delivery & VAT	Order code	Easy2Own
Pentium® II Processor	233MHz	3 day	£1199.00	£1438.20	SYBU2323	£45.92
	266MHz		£1299.00	£1555.70	SYBU2623	£49.67
	300MHz		£1399.00	£1673.20	SYBU3032	£53.43
	333MHz		£1499.00	£1790.70	SYBU3223	£57.18

Our personal systems have been designed specifically for Home and Small Office use by providing a range of multimedia systems, with a host of processor options, from an entry level to the most powerful and fully configured system possible. Look out for some of the latest and most Advanced Multimedia technology in the more enhanced configurations, which are marked with the AM symbol.

1 Home Value PC

The Home Value system is a fully configured multimedia and Internet ready PC with an abundance of software packages to get you started.

◆ Desktop Case ◆ 32MB RAM ◆ 512K Cache ◆ 2.1GB hard Drive ◆ 2MB Graphics Card ◆ 24 Speed CD ROM ◆ 3.5" Floppy Drive ◆ Multimedia Sound ◆ 2 serial, 1 parallel, 1 games, 2 PS/2 and 2 USB ports ◆ 33.6kbps voice/fax modem with Internet Access ◆ 14" Colour Monitor* with built-in stereo speakers ◆ Keyboard ◆ Microsoft® Intellimouse ◆ Microsoft® Windows® 95 ◆ Software Bundle A (see software packages).

Internet Ready · MMX™ Technology Software · 24X CD ROM

		Exc Delivery & VAT	Inc Delivery & VAT	Order code	Easy2Own
Pentium® Processor with MMX™ Technology	200MHz	£769.00	£932.95	SYHM20M5	£29.79
	233MHz	£819.00	£991.70	SYHM23M5	£31.66
Pentium® II Processor	233MHz	£899.00	£1085.70	SYHM2325	£34.67

2 Ultimate PC Plus

The Ultimate System provides additional enhancements to the Home Value PC by providing a much higher specification but still remaining as one of the best value multimedia systems available.

◆ Desktop Case ◆ 64MB SDRAM ◆ 512K Cache ◆ 5GB Hard Drive AM 4MB ATI 3D Xpert@Work AGP2X Graphics card ◆ 24 Speed CD ROM ◆ 3.5" Floppy Drive AM 3D Sound with wavetable ◆ 2 serial, 1 parallel, 1 games, 2 PS/2 and 2 USB port ◆ 56kbps voice/fax modem with Internet Access ◆ 15" Colour Monitor* with built-in stereo speakers AM Yamaha stereo speakers (with subwoofer) ◆ Keyboard ◆ Microsoft® Intellimouse ◆ Microsoft® Windows® 95 ◆ Software Bundle B (see software packages).

Internet Ready · 24X CD ROM · 3D Sound with wavetable · 3D Graphics · MMX™ Technology Software · 3D Games · AGP2X

			Exc Delivery & VAT	Inc Delivery & VAT	Order code	Easy2Own
Pentium® II Processor	266MHz	3 day	£1399.00	£1673.20	SYHU2623	£53.43
	300MHz		£1499.00	£1790.70	SYHU3023	£57.18
	333MHz		£1599.00	£1908.20	SYHU3323	£60.93

Designed for Microsoft® Windows® 95 · Microsoft Products

June 1996 Viglen Awesome 166 Multimedia · August 1996 Viglen Genie P200 · September 1996 Viglen Dossier CD 133MHz · Parent magazine October 1996 Viglen Power 150 · January 1997 Viglen Ultimate 200 Plus · February 1997 Viglen Ultimate 166 Plus · March 1997 Viglen Awesome 200 Plus MMX · 1996 Gold Computing Award for Excellence for the Multimedia PC of the year · June 1997 Viglen Awesome 200 TV Plus · March 1998 Viglen Home Value 233MHz · April 1998 "Recommendation of the Month" Viglen Ultimate 266MHz

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MMX™ intel inside pentium® II PROCESSOR

Viglen is one of the longest established and most respected British computer companies with a reputation for the highest quality, support and reliability. With our renowned commitment to bringing the latest leading edge technology to market as early as possible, we have now produced several multimedia PCs that will suit every person, from the budget conscious to the most demanding, all with the same Viglen pedigree. Look out for the latest Advanced Multimedia technology products marked by the symbol MMX™ as these represent the absolute leading edge which you may not find elsewhere. We have also identified some very special bundle upgrades for those seeking additional value.

EASY2OWN from £66.56 per month (APR 17.9%)

Microsoft® WINDOWS® NT 4.0

Microsoft® OFFICE PRO 97

INTERNET READY

2 Business PC Professional

The Business PC Professional uses the latest and most powerful processor yet and combines it with Microsoft Windows NT 4.0 WS to provide 32 bit performance and power for the next generation.

◆ Medium Tower case ◆ 64MB RAM ◆ 512K CPU Cache ◆ 8.4GB Hard Drive ◆ LS-120, 3.5" 120MB floppy drive ◆ 24 Speed CD ROM ◆ 56kbps voice/fax modem with Internet access ◆ 3D graphics card with 4MB ◆ Sound ◆ 2 serial, 1 parallel, 2 PS/2 and 2 USB ports ◆ 17" Colour Monitor* with built-in speakers ◆ Keyboard ◆ Microsoft® Intellimouse ◆ Microsoft® Windows® NT 4.0 Workstation ◆ Microsoft® Office Pro 97

			Exc Delivery & VAT	Inc Delivery & VAT	Order code	Easy2Own
Pentium® II Processor	266MHz	3 day	£1749.00	£2084.45	SYBP2624	£66.56
	300MHz		£1849.00	£2201.95	SYBP3024	£70.31
	333MHz		£1949.00	£2319.45	SYBP3324	£74.06

3 Awesome® PC

The Awesome PC is by far the most advanced of its kind. Its next generation AGP graphics card prepares this system for this year's 3D games whilst the 3DFX card gives this system the most powerful graphics engine for today's 3D games. The DVD drive not only allows you compatibility with CD ROMs of today but also takes DVD software of the future. The MPEG 2 system also allows you to play DVD movies which are already creating a revolution in the US. In fact this system is so fully specified that we could not think of any further upgrades that you may require except perhaps a digital camera, a colour photo real printer, an LCD display or maybe all three.

EASY2OWN from £81.57 per month (APR 17.9%)

INTERNET READY

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Internet Ready | DVD | MPEG-2 | 8.4GB Hard Drive | 64MB RAM | AGP2X

TV Tuner | 3DSound with wavetable | 3D FX 4games accelerator | 3D FX 4games | 120MB Floppy | A4 Colour Scanner

			Exc Delivery & VAT	Inc Delivery & VAT	Order code	Easy 2 Own
Pentium® II Processor	266MHz		£2149.00	£2554.45	SYHA2623	£81.57
	300MHz		£2249.00	£2671.95	SYHA3D23	£85.32
	333MHz	3 day	£2349.00	£2789.45	SYHU3323	£89.07

Upgrades

Why not upgrade your chosen system with any of the following packages which have been specially put together to not only give extra value but also provide you with the latest and best technologies currently available. Please note that adding some of the bundle options will increase the delivery time of your PC as these may need factory installation. We would like to also point out that these bundles are only available as upgrades to new systems and must be ordered at the same time as the main system.

SOFTWARE BONUS UPGRADES

All the configurations shown can be further upgraded to include one of the following professional integrated software applications from Microsoft at a very special bonus upgrade price.
Microsoft® Office 97 Bonus Upgrade Price £161 ex VAT (£189.18 Inc VAT) (CD version with manual).
Microsoft® Office Professional 97 Bonus Upgrade Price £221 ex VAT (£259.68 Inc VAT) (CD version with manual).
Microsoft® Office 97 SBE Bonus upgrade Price £161 ex VAT (£189.18 Inc VAT) (CD version with manual).

PRO GAMES BUNDLE

If you need the absolute best in 3D games technology, the 3DFX card is the one for you. This bundle includes 3DFX card along with some top games optimised for it as well as a Microsoft® SideWinder™ joystick and games pad. £139 ex VAT (£163.33 Inc VAT)

3D GAMES

DVD UPGRADE

DVD is the future of CD technology. By buying a DVD ROM instead of a CD ROM you will not only be able to do everything that you can on a CD ROM but will also read DVD discs which are already becoming popular in the US. Furthermore, if you need to be able to play the latest DVD movies then you will need our DVD plus MPEG II card solution. Don't be left out of the DVD revolution.
Upgrade from a 24X CD ROM drive to a DVD ROM drive £79 ex VAT (£92.83 Inc VAT)
Upgrade from a 24X CD ROM drive to a DVD ROM with an MPEG 2 card (for watching DVD movies) £179 ex VAT (£210.33 Inc VAT)

IMAGE BUNDLES

You can join the digital imaging age by using your PC not only to input photographic images and manipulating them to your hearts desires, but also printing them out on a photo real quality printer. Just imagine what you can do. It's ideal for web publishing too!

Image Bundle 1 – Casio QV10A Camera & Epson 300 stylus photo real printer. £259 ex VAT. (£304.33 inc VAT).

plus

Image Bundle 2 – Casio QV10A & Epson 600 stylus photo real printer. £340 ex VAT. (£399.50 inc VAT).

Image Bundle 3 – Casio QV10A & Epson photo printer. £420 ex VAT. (£493.50 inc VAT).

MONITOR UPGRADE

You can upgrade the monitor in the specific configuration to a higher model by adding the following prices:

Upgrade from	to	Price inc VAT
14"	15"	£76.38
14"	17"	£270.25
15"	17"	£199.75
17"	17" Enhanced	£70.50

*Monitor Viewing Area
14" = 13.2" viewable
15" = 14" viewable
17" = 15.3" viewable

LCD SCREEN

The Viglen Envy 1714T uses a high contrast TFT screen and is the ultimate in flat screen technology. With a viewable diameter of 14.5", it is only slightly smaller than the viewing diameter of a 17" monitor, thus making it one of the most desirable products to own.
Upgrade from 15" monitor £1449 exc VAT (£1702.58 Inc VAT)
Upgrade from 17" monitor £1229 ex VAT (£1444.08 Inc VAT)

PHOTO REAL PRINTERS

The following printers have been chosen as they offer the latest in colour printing by not only providing an excellent printout for normal use but also the ability to print photo real quality images.

Epson Stylus 300. The affordable single cartridge colour printer ideal for the whole family. £110 ex VAT. (£129.25 inc VAT).
Epson Stylus 600. High definition colour printer with an amazing 1440 dpi output for professional quality results. £175 ex VAT. (£205.63 inc VAT).
Epson Stylus Photo. Dedicated photo printer, for use with digital cameras and scanners, producing prints equal to that of normal photographs. £255 ex VAT. (£299.63 inc VAT).
Includes FREE printer cable and FREE delivery if ordered and shipped with a Viglen PC.

SCANNERS

Photo Scanner Drive Why not add this drive to your system and scan in your existing photographs (max size 5" x 7") in an easy and low cost way. £105 ex VAT (£123.38 Inc VAT)
External A4 Colour Scanner Easy to connect parallel port 24 bit colour scanner £90 ex VAT (£105.75 Inc VAT)

MAINTENANCE OPTIONS

Every Viglen PC comes with lifetime technical support and a 12 months parts and labour repair and return warranty (which is better than most of our competitors "so called" on-site warranty). For an additional cost of only £45.00 inc VAT, you can convert this to our Premium service with a 12 month next business day on-site repair warranty. That's not all, as an option we can continue this service for up to five years.

Software Packages

The Viglen configurations shown are bundled with different software packages. Each package is outlined here to help you choose the configuration that's right for you.

FAMILY BUNDLE A

Microsoft® Works for Windows® 95, five essential tools for easier everyday computing. Word processing, spreadsheet, database, graphics and Communications tools.
Microsoft® Encarta® 97, The leading Interactive Multimedia Encyclopaedia bringing information to life.
Microsoft® Money. Complete set of financial management tools for managing and planning your investments.
Microsoft® Golf. The most true-to-life golf game you've ever played with realistic sound and graphics.
Microsoft® Magic School Bus: Rain Forest. Jump aboard for an amazing interactive trip through a rainforest for a fun-packed science adventure.
Microsoft® Gex. Slither with Gex the lizard through 5 TV and movie worlds full of crazy over-the-top action.
Microsoft® Windows Entertainment Puzzle Pack. Exciting puzzles and games to provide hours of intrigue for the family.
CRT Easy Tutor. A comprehensive interactive tutorial guide to Windows 95.
Five MMX Technology Enhanced CD Titles. Ultimate Human Body II, Timetables of Technology, The Third Dimension, International Space Station and POD.

FAMILY BUNDLE B

Same as Family Bundle A but with the following.
Terracide Futuristic Combat game. MGI Video Wave Video editing software. MGI Photo Suite Image manipulater package

FAMILY BUNDLE C

Same as Family Bundle B but with the following.
3D FX Games- F1 Formula One Racing Game EF2000 Flight Simulator, MDK Futuristic 3D action game.

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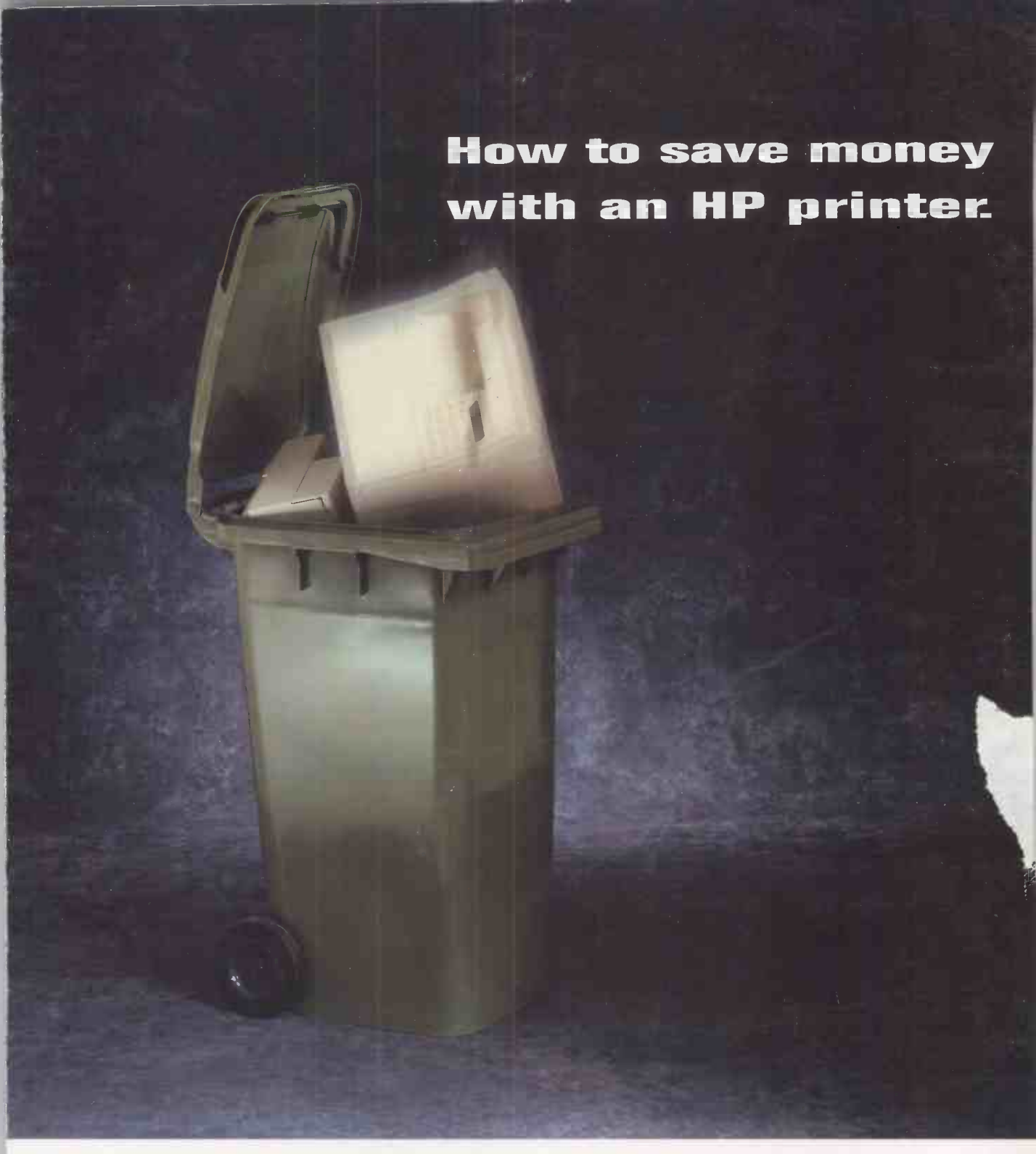
How to save money with an HP printer.



Incredible as it may seem, by chucking out your existing HP printers and starting again with brand new ECOSYS III printers from Kyocera, you'll spend less on your network printing.

The largest contributor to the total cost of ownership is the print cartridge and the big difference with ECOSYS printers is that we don't use them.

Our cartridge-free technology means that when you run out of toner, that's all you replace.

Which in turn means significant savings. According to our calculations, every single new printer on your network could save you around 1p per page – or more than £2,600 over three years.

But that's not the whole story. Our unrivalled paper saving options, printer management software and forms handling capabilities also bring many other economies.

Are we talking rubbish, or can our cartridge-free printers really deliver what we claim? Check our calculations for yourself.

Call 0345 103 104 now for your free copy of our cost comparison disk.

It's an opportunity you really can't afford to throw away.

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