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For complete specifications, contact your local BARCO INDUSTRIES Dealer or BARCO INDUSTRIES, 170 Knowles Drive, Suite 212, Los Gatos, CA 95030. Phone (408) 370-3721.

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STABILINE® Voltage Conditioning & Monitoring Equipment



Also provide common-mode noise rejection to help prevent computer errors, loss of information and other noise-related problems. Available in 50 or 60 Hz types in ratings to 2kVA. UL and CSA listed.

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AC Voltage Monitor Systems — Have detachable detector modules to reduce cost of multi-site voltage monitoring. Consist of a REMOTECTOR® Detector Module and a microprocessor based Printer/Controller Module housed in a briefcase. Distinguish and identify AC line perturbations exceeding operator set thresholds. Either 120 or 240VAC lines may be monitored. Data is presented in a categorized format with a summary of the 10 worst events in each category followed by a list of the last 10 chronological events. Can operate over telephone lines when used with Modem Adapters and Bell System Standard 103B or CCITT V.21 compatible modems. Models available for single or 3-phase operation.

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BCR Series Power Conditioners — Provide protection by regulating voltage, supplying isolation from common-mode noise and attenuating transverse mode noise. Models in 3, 5, 7.5 and 10kVA ratings having 115, 208, 220, 230 or 240V output. For 50 or 60 Hz operation. UL and CSA listed.

CR Series Power Conditioners — Maintain constant, conditioned voltage to computers and other voltage-sensitive equipment. Simple plug and cord connection to voltage source; 2 or 4 grounded receptacles for equipment connection. Provide output of 120V, rms, $\pm 3\%$, 60 Hz over an input voltage range of 95 to 130V, rms

Portable Standby Power Supplies — PSP Series Portable Standby Power Supplies provide uninterrupted AC power to microcomputers and other voltage sensitive equipment in the event of a sag, brownout or outage. Units also provide surge protection which filters and attenuates voltage transients (spikes) and line noise. The portable design allows convenient horizontal or vertical placement. Depending upon load, units provide 10 to 75 minutes of battery backup. Available for 120, 220, 230 or 240V service in ratings of 200, 400, 600, 800 or 1200VA.



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1988/89 Edition

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PREFACE

Today, almost any dealer catalog you consult contains selected information from our ‘‘Equipment Trade References’’. A number of years ago, we began developing pages for dealer catalogs from sales brochures, spec sheets, photos, and price lists. The end result is a ‘‘Catalog Page Bank’’ of over 15,000 pages. This page bank has become a product information library for the industries we serve. It became clear to us that most practitioners needed this information daily; therefore, we created the ‘‘Illustrated Trade References’’. Each volume serves a particular industry, providing the details necessary to design, specify, compare, or purchase equipment. In the past, we attempted to publish these books as annuals. The magnitude of this effort was awesome. We now have the systems in place to bring these books out on a regular schedule. To those who have waited for this edition, we appreciate your patience. We know you will find these volumes to be the dependable reference source you have come to expect from the Bill Daniels Company. If within 15 days you are not completely satisfied with our product, you may return it in resaleable condition for a full credit to your account. Please send us your comments on how we might improve these books. Your remarks will be seriously considered, and may benefit all of us in the future.

TABLE OF CONTENTS

A

Abekas Video Systems, Inc.	7-21
Acrodyne Industries, Inc.	22-28
Adcom	29
ADC Telecommunications, Inc.	30-32
ADM Technology, Inc.	33-44
Advanced Micro-Dynamics, Inc.	45
Advanced Music Systems	46
Agfa-Gevaert, Inc.	47, 48
AKG Acoustics, Inc.	49-56
Alamar Electronics USA, Inc.	57
Alexander Batteries	58, 59
Allen & Heath Brenell Ltd.	60-65
Allen Avionics, Inc.	66-70
Allsop, Inc.	71, 72
ALTA Group, Inc.	73, 74
Altronic Research, Inc.	75
Amber Electro Design, Inc.	76-79
Amek/TAC U.S. Operations	80-91
Amherst Electronic Instruments, Inc.	92
Amperex Electronic Co.	93-95
Ampex Corp.	96-123
Amtel Systems, Inc.	124-126
AMX Corp.	127, 128
Andrew Corp.	129-133
Angenieux Corp. of America	134-137
R.B. Annis Co.	138, 139
Anton/Bauer, Inc.	140-144
Aphex Systems Ltd.	145, 146
Aries America	147
Arrakis Systems, Inc.	148-152
Arriflex Corp.	153
Artel Communications Corp.	154
Asaca/Shibasoku Corp. of America	155
Aston Electronics, Inc.	156
Atlas/Soundolier	157-160
Audico, Inc.	161-163
Audi-Cord Corp.	164, 165
Audio Digital, Inc.	166
Audio Engineering Associates	167
Audio Kinetics, Inc.	168-174
Audiolab Electronics, Inc.	175
Audio Ltd.	176
Audiopak, Inc.	177
Audio Technica US, Inc.	178-182
Audio Technologies, Inc.	183-186
Audio Video Sciences Co.	187
Auditronics, Inc.	188-192
Auratone Corp.	193
Autogram Corp.	194-196

B

Bald Mountain Lab	197
Barco Industries, Inc.	198-200
Bardwell & McAlister, Inc.	201-212
B & B Systems, Inc.	213
BCD Associates, Inc.	214
Beaveronics, Inc.	215
Belar Electronics Laboratory, Inc.	216, 217
Belden Wire and Cable	218-230
Bencher, Inc.	231
Benchmark Media Systems, Inc.	232
Beyer Dynamic, Inc.	233-239
Biamp Systems, Inc.	240
Bird Electronic Corp.	241-247
Bogen Photo Corp.	248, 249
Bogner Broadcast Equipment Corp.	250-253
Boland Communications	after page 240
Brabury Ltd.	254, 255
Walter S. Brewer Co., Inc.	256-278
Broadcast Audio Corp.	279-281
Broadcast Electronics, Inc.	282-289
Broadcast Video Systems Ltd.	290-292
BSM Broadcast Systems, Inc.	293
BTS Broadcast Television Systems, Inc.	294-312

C

Cablewave Systems, Inc.	313-339
Calaway Engineering.	340, 341
Calibration Standard Instruments	342
Calrec by AMS	343-347
Cambridge Products Corp.	348
Cam-Lok, Inc.	349
Canare Cable, Inc.	350-352
Canon U.S.A., Inc.	353-357
Catel Telecommunications, Inc.	358-361
Dwight Cavendish Co.	362-370
CEL Electronics Ltd.	371, 372
Century Precision Optics	373
Cetec Vega	374-379
Channelmatic, Inc.	380-383
Christie Electric Corp.	384
Chyron Corp.	385-388
Cine 60, Inc.	389-403
Cinema Products Corp.	404-407
Cinetronics	408
Cipher Digital, Inc.	409-412
Circuit Research Labs, Inc.	413, 414
Clear-Com Intercom Systems	415-417
CMX Corp.	418-421

TABLE OF CONTENTS (cont'd)

C (cont'd)

Coherent Communications, Inc.	422, 423
Comark Communications, Inc.	424
Comprehensive Video Supply Corp.	425-430
Computer Prompting Corp.	431
Comtek Communications Technology, Inc.	432-435
Conrac Display Products Group	436, 437
Cool-Lux Lighting Industries, Inc.	438, 439
Michael Cox Electronics Ltd.	440
Crosspoint Latch Corp.	441-443
Crown International, Inc.	444

D

Bill Daniels Company, Inc.	619, 620, 1164
Datatek Corp.	445-451
dbx, Inc.	452-457
Delta Electronics, Inc.	458-468
Deltalab	469
DeSisti Lighting	470-474
Dielectric Communications	475-483
Digital Processing Systems, Inc.	484
Digital Services Corp.	485, 486
Dolby Laboratories, Inc.	487-490
Dorrrough Electronics	491
Dubner Computer Systems, Inc.	492, 493
Dynair Electronics, Inc.	494, 495

E

ECHOLab, Inc.	496, 497
EECO, Inc./Convergence Corp.	498-504
Electro Impulse Laboratory, Inc.	505
Electronics Research, Inc.	506
Electronic Systems Products, Inc.	507, 508
Electro-Voice, Inc.	509-515
Emcee Broadcast Products	516, 517
EMT	518-523
ESE	524-527
Eventide, Inc.	528, 529
Evertz Microsystems Ltd.	530-534

F

Fairlight Instruments, Inc.	535
Faroudja Laboratories, Inc.	536, 537
Fidelipac Corp.	538-541
FOR-A Corp. of America	542-544
Fortel, Inc.	545, 546
Fostex Corp. of America	547-550
Frezzolini Electronics, Inc.	551-560
Frezzolini Electronics, Inc./PAG	561-564
Fujinon, Inc.	565, 566
Fuji Photo Film U.S.A., Inc.	567-569

G

Garner Industries, Inc.	570
General Electric Co.	571, 572
Gentner Engineering Co., Inc.	573-577
Gentner RF Products	578
Gitzo	579-581
GKC Research & Development	582-585
GML Grove	586
Alan Gordon Enterprises, Inc.	587, 588
Gorman-Redlich Mfg. Co.	589
The Grass Valley Group, Inc.	590-609
Gray Engineering Laboratories, Inc.	610, 611
The Great American Market	612-616

H

Hallikainen & Friends, Inc.	617, 618
Harris Corp.	621-624
Harrison Systems, Inc.	625-630
HEDCO	631-637
Henry Engineering	638, 639
Hitachi Denshi, Ltd.	640-647
HM Electronics, Inc.	648-652
Hnat Hindes, Inc.	653, 654
Hotronic, Inc.	655
Howe Technologies Corp.	656-659

I

Ikegami Electronics (U.S.A.), Inc.	660-681
Image Video, Ltd.	682-686
Innovative Television Equipment	687-692
Inovonics, Inc.	693-697
Intergroup Technologies.	698-701

J

Jampro Antennas, Inc.	702-708
JBL Professional	709-714
JVC Professional Products Company	715-718

K

Kahn Communications, Inc.	719
Kangaroo Video Products, Inc.	720, 721
Kay Industries, Inc.	722
K & H Products, Ltd.	723, 724
Kinotone, Inc.	725, 726
Knox Video Products	727, 728
Eastman Kodak Company	729

TABLE OF CONTENTS (cont'd)

L

Laird Telemedia, Inc.	730-735
Lake Systems Corp.	736
Leader Instruments Corp.	737-740
Lectrosonics, Inc.	741
LEE Colortran, Inc.	742-751
Leitch Video of America, Inc.	752-757
Lenco, Inc.	758-766
Lexicon, Inc.	767-769
Light Wave Systems	770
Peter Lisand Machine Corp.	771, 772
Listec Video Corp.	773
Littlite	774
LNR Communications, Inc.	775
Logitek Electronic Systems, Inc.	776-782
Lowel-Light Mfg., Inc.	783-789
LPB, Inc.	790-793
LTM Corp. of America	794-797
Luxo Lamp Corp.	798
Luxor Corp.	799
Lyon Lamb Video Animations Systems, Inc.	800-803

M

3M Company	804-813
M/A-Com MAC, Inc.	814-818
Magni Systems, Inc.	819-820
Marantz Co., Inc.	821
Marathon Products Corp.	822
Marshall Products, Inc.	823
Marti Electronics, Inc.	824-838
Matthews Studio Equipment, Inc.	839-843
Matthey	844
Maxell Corp. of America	845, 846
MCL, Inc.	847-849
Memtek Products	850
Merlin Engineering Works	851, 852
Micron Audio Products, Ltd.	853
Microtime, Inc.	854-856
Micro-Trak Corp.	857-860
Microtran Co., Inc.	861
Microwave Radio	862-871
Miller Fluid Heads (USA), Inc.	872, 873
Miteq	874
Modulation Sciences, Inc.	875
Moseley Associates, Inc.	876-884
Motorola Comm. & Electronics, Inc.	885
MRL/Magnetic Reference Laboratory	886

N

Nady Systems, Inc.	887
Nagra Magnetic Recorders, Inc.	888-890
Nakamichi U.S.A. Corp.	891
Nalpak Video Sales, Inc.	892-894
NEC America, Inc.	895-899
Neotek Corp.	900-902
Georg Neumann GmbH	903-907
Nova Systems, Inc.	908

O

O'Connor Engineering Labs.	909-911
Orban Associates, Inc.	912-915
Otari Corp.	916-922

P

Paco Electronics USA, Inc.	923, 924
Paltex Corp.	925, 927
Panasonic Broadcast Systems Co.	928-934
Perrott Engineering Labs, Inc.	935
M.W. Persons and Associates	936
Pesa America, Inc.	937-939
Pinnacle Systems, Inc.	940
Plastic Reel Corp. of America.	941
Brabury/Porta-Pattern, Inc.	942, 943
Potomac Instruments, Inc.	944-947
Prime Image, Inc.	948

Q

QEI Corp.	949
QSI Systems, Inc.	950, 951
Q-Tv	952-954
Quanta Corp.	955-962
Quantel	963, 964
Quantum Audio Labs, Inc.	965
QuickSet International, Inc.	966-970

R

Racal	971-973
Radiation Systems, Inc.	974-981
Radio Systems, Inc.	982, 983
Ramko Research, Inc.	984-986
RAMSA/Panasonic Industrial Company	987, 988
Rangertone Research, Inc.	989
R-Columbia Products Co., Inc.	990-994
RF Technology, Inc.	995
Ross Video Ltd.	996-999

TABLE OF CONTENTS (cont'd)

R (cont'd)

RTS Systems, Inc.	1000-1006
Ruslang Corp.	1007, 1008
Russco Electronics, Inc.	1009-1011

S

Sachtler Corp. of America	1012-1014
Samson Technologies Corp.	1015
Scala Electronic Corp.	1016-1019
Schwem Technology.	1020
Seck	1021
Sennheiser Electronic Corp.	1022-1025
Sescom, Inc.	1026-1029
Sharp Electronics Corp.	1030, 1031
Shintron Co., Inc.	1032-1034
Shively Labs, Inc.	1035-1037
Shure Brothers, Inc.	1038-1042
Sierra Video Systems, Inc.	1043, 1044
Sigma Electronics, Inc.	1045, 1046
Sony Corp. of America	1047-1073
Soundcraft USA.	1074-1079
Sound Technology, Inc.	1080-1084
Soundtracs plc.	1085
Sound Workshop	1086
Stanton Magnetics, Inc.	1087
Strand Lighting	1088-1099
Studer Revox America, Inc.	1100-1103
Studio Technologies, Inc.	1104, 1105
Superior Electric	1106
Swintek Enterprises, Inc.	1107, 1108
Switchcraft, Inc.	1109, 1110
Symetrix, Inc.	1111-1113

T

Tapecaster	1114
Tascam/TEAC Corp. of America	1115-1121
TDK Electronics Corp.	1122
Technics	1123, 1124
Tekskil Industries, Inc.	1125
Tektronix, Inc.	1126-1143
Telemet	1144, 1145
Telescript, Inc.	1146
Television Technology Co.	1147-1154
Telex Communications, Inc.	1155, 1156
Telfax Communications	1157
Texar, Inc.	1158

T (cont'd)

TFT, Inc.	1159-1162
Thorn EMI	1163
Time Line, Inc.	1165
Titus Technological Laboratories	1166, 1167
Trident Audio USA	1168, 1169
Trompeter Electronics, Inc.	1170, 1171

U

Ultimate Corp.	1172
UNR-Rohn	1173
Utah Scientific, Inc.	1174-1176

V

Valley International, Inc.	1177, 1178
Valmont Industries, Inc.	1179, 1180
Varian Continental TVT	1181-1192
Video Accessory Corp.	1193, 1194
Videomedia, Inc.	1195-1197
Videotek, Inc.	1198-1206
Vinten Equipment, Inc.	1207-1210

W

Wheatstone Corp.	1211
Wheelit, Inc.	1212, 1213
The Will-Burt Co.	1214
The Winsted Corp.	1215-1222

Y

Yamaha International Corp.	1223-1229
------------------------------------	-----------

Z

The Zei-Mark Corp.	1230-1232
----------------------------	-----------

ABEKAS VIDEO SYSTEMS, INC.**Video Slide Projector****A42 Video Slide Projector**

Dedicated to optimum picture quality and ease of operation, the A42 is a compact and reliable digital still store system. Advanced digital video processing yields high quality images, and a microprocessor-based control system ensures powerful and easy-to-use features. A built-in 5 1/4" Winchester disk drive provides the safest on-line picture storage available.

Virtual Picture Numbering

The picture numbering scheme employed in the A42 is completely independent of disk storage locations. Pictures are identified by serial numbers ranging from 0 to 9999 regardless of the on-line storage capacity. The user is no longer unnecessarily burdened with keeping track of the actual picture location on disk.

Backup and Off-Line Storage

Utilizing a high speed digital streaming tape drive, the A42 stores pictures on a compact quarter-inch tape cartridge. For the first time, unlimited off-line picture storage is practical due to low media cost and compact size. This facilitates easy transport of pictures from one system to another, or from the studio to the mobile truck. With selective backup, any number of pictures up to 50 frames/100 fields can be transferred to the tape cartridge. In a similar manner, selective restore allows either the entire contents or only selected pictures to be transferred from the cartridge to the disk.

Sequence

Three sequences of 100 pictures each can be created using any of the recorded pictures. A sequence can be edited at any time by inserting, deleting or substituting pictures. The forward and back arrows on the control panel allow a sequence to be played at random. A sequence can be temporarily exited to perform other functions.

Simple Basic Operation

Regardless of the function selected, operation is always easy. A complete status display is superimposed on the preview video output to provide information to the operator. When a picture is grabbed, it can be recorded as a field or frame, as determined by the field/frame button. When the picture is played back, the system automatically selects field or frame depending on how the picture was recorded.

Independent Output Channels

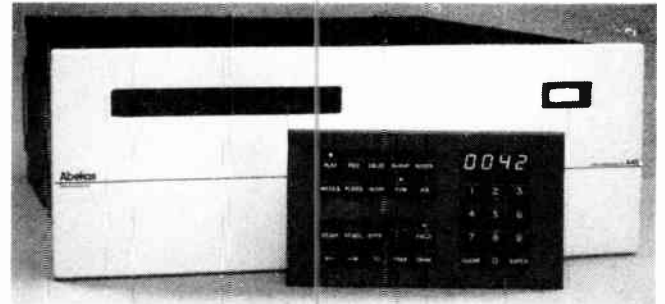
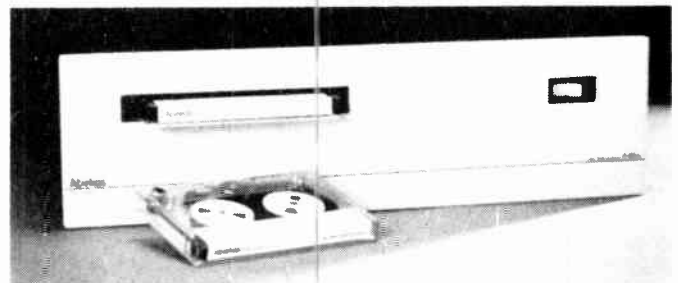
In the dual channel system, pictures can be recalled to both channels independently. While one channel is displaying a picture, the other channel can be fully used to record, playback or create sequences. Dissolves or vertical interval cuts can be programmed for on-air transitions between the channels. The dissolve rate can be varied from the control panel.

Graphics Compose

The A42 provides excellent multi-generation capability which is essential in the composition of multi-layer graphics. The special graphics compose mode optimizes the use of the two channels for easy graphics creation. Each layer, or the entire graphic, can be stored on the disk. The A42 makes it possible to recover from mistakes when composing multi-layer graphics, because it automatically saves the previous layer in the other frame buffer.

Built-In Test Signals

The A42 has the ability to generate digitally multiburst, color bars and other useful test signals to aid in the maintenance and troubleshooting of the system.

**A42**

The A42EX houses two additional disk drives to expand the on-line storage and a high speed digital streaming tape drive for off-line storage.

Digital Interface

An optional digital interface provides composite digital input and output ports. These ports make it possible to interface the A42 to the A52 Digital Special Effects system.

Library System (optional)

The A42 offers an easy-to-use library system. Each still on the A42 can be labeled with a title of more than 60 alphanumeric characters, including an automatic time and date stamp. Flexibility in searching for a picture eliminates the need to set up categories that other systems require. To group certain pictures together, all that is necessary is to include a common word anywhere in their titles. For example, if searching with the word '49ers', any picture that includes '49ers' anywhere in its title would be listed on the screen.

The A42 library system employs an extremely sophisticated searching algorithm to perform complex searches with unequalled speed. When all or part of a title is typed for a search, the system initiates a word-by-word comparison to find the right picture. Even if the operator misspells or changes the order of the words in the title, the system will find the picture that most closely matches what was typed.

Compatibility

The library system is compatible with all A42 systems. Pictures already on the A42 instantly become a part of the library system. Although pictures without titles are recognized by serial number, a title can easily be added.

ABEKAS VIDEO SYSTEMS, INC.

Video Slide Projector

A42 Cont'd

Specifications

VIDEO
 NTSC Television Standard
 Frequency Response ± 0.25 dB to 4.2 MHz
 Differential Phase 2°
 Differential Gain 2%
 K Factor (2T Pulse) 1%
 Signal to Noise 52 dB

A42 Video Slide Projector

INPUTS
 Video Input: Composite analog, synchronous or non-synchronous
 Composite digital (optional)
 Reference (gen lock): Composite analog, high impedance looping

OUTPUTS
 Channel A (2): Composite analog RS170A
 Composite digital (optional)
 Channel B (2): Composite analog RS170A
 Preview: Composite analog with status display

STORAGE
 Minimum on-line storage: 100 frames/200 fields
 Maximum on-line storage: 1050 frames/2100 fields
 WD100 Disk Drive: 100 frames/200 fields
 WD350 Disk Drive: 350 frames/700 fields
 Maximum of three drives per system. Drive types cannot be intermixed.

INTERCONNECTS
 A42CP control panel to A42: Serial RS422, 2000 ft. maximum
 A42EX expansion chassis to A42: Flat ribbon cables, 15 ft. maximum

PHYSICAL & ELECTRICAL			
UNIT	POWER	SIZE	WEIGHT
A42	Less than 250 Watts	7"H x 19" Rackmount x 22"D	75 Lb
A42EX	Less than 150 Watts	5.25"H x 19" Rackmount x 22"D	40 Lb
A42CP	Less than 5 Watts (DC from A42)	4.75"H x 8.25"W x 2"D	5 Lb

A42 Library System

INTERCONNECTS
 A42LC library computer to A42: RS422, 2000 ft. maximum
 A42LC to A42LT library terminal: RS232, 250 ft. maximum

PHYSICAL & ELECTRICAL			
UNIT	POWER	SIZE	WEIGHT
A42LC	250 Watts	7"H x 19" Rackmount x 22"D	75 Lb
A42LT	35 Watts	Desk Top	25 Lb

Basic A42 Single input/output channel. Slide to slide transition by vertical wipe. Includes one control panel. (must add at least one disk drive) **\$17,900.00**

A42WD100 Winchester disk drive provides 100 frames/200 fields on-line storage* **2,000.00**

A42WD350 Winchester disk drive provides 350 frames/700 fields on-line storage* **5,500.00**

* Maximum 3 drives per system; drive types cannot be intermixed.

A42SC Second output channel provides complete preview/program operation. Transitions by vertical wipe, cut and programmable dissolve **\$5,000.00**

A42STR Digital streaming tape drive for off-line storage and backup. One A42TC included. **5,000.00**

A42CP Additional control panel **2,000.00**

A42TC Tape cartridge for off-line storage. 50 frames/100 fields per cartridge **50.00**

A42DIO Digital video input/output port for interfacing to the A52 or A53-D digital special effects systems **3,750.00**

(For system requiring update to accommodate the A42-DIO) **POR**

A42 Library System (compatible with all A42 systems) Library system for complete on/off-line management of stills. Titles of up to 60 alphanumeric characters can be added to each picture. Searching for pictures is easily accomplished by typing in any part of the picture title **\$12,900.00**



A42

Typical System Configurations

Basic System:

- Single channel output
- One disk drive provides 100 frames/200 fields on-line storage
- Transitions between slides by vertical wipe
- Includes one control panel

..... **\$19,900.00**

Basic system with second channel output **24,900.00**

System A – WD100 Drive

Basic system

Second channel output	1 Drive	2 Drives	3 Drives
On-line storage			
frames/fields:	100/200	200/400	300/600
Streaming tape drive for off-line storage	\$29,900.00	\$31,900.00	\$33,900.00

Transitions between slides by vertical wipe, cut, and programmable dissolve

System B – WD350 Drive

Basic system

Second channel output	1 Drive	2 Drives	3 Drives
On-line storage			
frames/fields:	350/700	700/1400	1050/2100
Streaming tape drive for off-line storage	\$33,400.00	\$38,900.00	\$44,400.00

Transitions between slides by vertical wipe, cut, and programmable dissolve

Library System (compatible with all A42's):

- Complete on/off-line management of stills
- Pictures can be labeled with a title of up to 60 alphanumeric characters
- Terminal and keyboard

..... **Add \$12,900.00**

A42-DIO

Digital interface to A52 or A53-D Digital Special Effects Systems **Add \$3,750.00**

Maximum 3 drives per system, drive types cannot be intermixed. With the purchase of a second drive or the streaming tape drive, the A42EX expansion unit is included at no charge. Other configurations are available.

Prices and Specifications Subject to Change Without Notice.

ABEKAS VIDEO SYSTEMS, INC.**Digital Special Effects System****A52 Digital Special Effects System****Transparent Picture Quality**

The A52's transparent picture quality is the direct result of advanced digital signal processing. The incoming composite signal is immediately digitized to eliminate the usual analog decoding problems such as drift and complex adjustments. Digitally decoded into 4:2:2 components, it is then processed to ensure signal transparency and long-term stability.

Smooth Picture Movement

The A52 completely eliminates the stepping usually associated with moving a picture slowly across the screen. For flawless motion while keying the A52 over another source, the key output moves as smoothly as the picture.

The A52 Control System

The A52's control system is ideal for the speed required by on-air effects and the accuracy needed for post-production. By providing instantaneous access to a large number of effects, it makes on-air operation extremely simple. The power and sophistication are reflected in the ease with which complex effects can be created. Precise control over all parameters is provided to satisfy the most demanding requirements.

The A52 Control Panel

The control panel consists of a high-resolution graphics display, a professional 3-axis joystick, numeric keypad, optically encoded fader bar, dedicated keys and the DataKey. The heart of the control panel is the graphics display and associated "softkeys". Because information is clearly displayed above the softkeys, operation is easy. Instead of searching for buttons all over the control panel, simply press the softkey below the function desired. The joystick is used for specifying parameters during programming. For instance, the joystick is used to choose the hue, saturation and luminance of a background color. The numeric keypad allows precise entry of parameters. Duplicating the exact size, position, or other parameters of a previous effect is easy. The fader bar manually runs effects forward or reverse. With one full throw of the fader bar, an effect can be run in its entirety. The position of the fader bar directly corresponds to a given point on the time-line of the effect, thus enabling precise control when manually rehearsing any part of an effect.

Mini Control Panel

The A52MP mini control panel, one of the smallest ever designed, retains the majority of the A52CP functions. It also consists of a 3-axis joystick, display and the DataKey. Operation of the A52MP is similar to the A52CP, allowing them to be used interchangeably.

On-Air Operation

For fast on-air operation the A52 provides the user with 36 on-line effects. Twelve frequently used effects are pre-programmed and presented in picture form on the graphics display. These include flips, tumbles and a variety of compressions. As an added advantage, the user can modify the pre-programmed effects to meet specific needs.

The remaining 24 locations can accommodate simple to very complex effects created by the user. The 12 pre-programmed and 18 user-programmable effects are stored in non-volatile memory and are therefore protected from power down. The A52 offers additional effects such as mosaics, solarization, iterative freeze (strobe effect), 4, 9 and 16 picture multi-freeze, plus a variety of picture splits. These effects are always immediately available to the operator.

Off-Line Storage

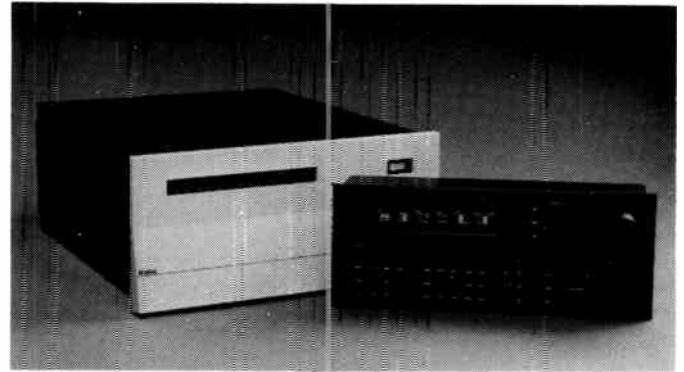
The DataKey is a small, reusable memory device that is fast, economical and fits right into the control panel. About the size and shape of a car key, the DataKey stores up to a 16 keyframe multi-channel effect. Whether an effect for a client or the open for a newscast, the DataKey is the most practical off-line storage available.

Programming The A52

Effects on the A52 are made up of keyframes. A keyframe is a collection of parameters such as size or position, at a specific point in an effect. The system simply looks for a difference in parameters from one keyframe to the next, and smoothly interpolates between them. This makes it possible for a 2-keyframe effect to be quite complex. Effects can range from 2 to 16 keyframes in length. Each keyframe is created by specifying parameters with the joystick or keypad. As parameters are varied, the output monitor instantaneously responds to all changes, providing visual feedback. In addition, the exact values of the parameters are shown on the graphics display.

Editing

The power of the control system is really evident when editing an existing effect. Easy-to-understand menus presented in simple English help the user every step of the way. Individual keyframes or groups of keyframes can be inserted, deleted or moved from one part of an effect to another. Furthermore, any parameter within a keyframe or an entire effect can be modified, eliminating the need to start all over again. For example, a border can be added to every keyframe of an existing effect with one simple command.

**A52****Motion Types**

In addition to linear motion, any effect can be programmed with trajectory for a curved path between keyframes. As many as 16 keyframes can be used to define a trajectory. The path of a given trajectory can then be altered with tension.

Graphics

The A52 can compose layer after layer of backgrounds, stripes, pictures or even drop shadows for creating graphics. Because all layers are generated within the A52, the graphic is created digitally with no generation loss. Once a graphic has been composed, it can be played back at any speed.

Complex Shapes

Another advanced feature of the A52 is its ability to create complex shapes with still video images. A variety of shapes can be created, limited only by the imagination of the user.

RGB Outputs

Digitally-decoded RGB outputs are offered as an option for the A52. One of the many applications for the RGB outputs is high quality chroma keying.

External Control

RS232 and RS422 serial ports are standard on the A52. Through these ports, all of the functions of the control panel can be emulated by a computer. For a simple interface to switchers and editors, four contact closure inputs are provided. These can trigger the A52 to run an effect forward or reverse, pause an effect already in progress, or freeze the incoming video. Contact closure outputs can be used to trigger an external device such as a video switcher for A/B switching.

Digital Interface

The A52 provides composite digital input and output ports. These digital ports make it possible to interface the A52 to the Abekas A42 digital still store system.

Key Softness

The A52 produces a variable soft edge key signal, to obtain hard or soft edges when keying the output of the A52 over another source.

Dual Channel Operation

The A52 digital effects combiner provides a truly flexible multi-channel system. It accommodates up to four control panels and two channels. A remote assignment panel allows the system to be configured either as a dual channel, or as two completely independent single channel systems. As a dual channel system, operation can be from any one of the four control panels. When operated as two single channel systems, one control panel is assigned to each channel. True dual channel operation is achieved by allowing each channel to be programmed independently to its fullest extent along a common time-line. In this way, different effects can be programmed on each channel and run simultaneously. For time critical applications such as live newscasts, there are also pre-programmed, complementary effects. As with the single channel A52, custom effects can be created and stored in non-volatile memory. Off-line storage is provided on the standard DataKey.

Variable Priority

In dual channel operation, a channel can be defined as the foreground or background, depending on its priority. The effects combiner offers variable priority, allowing programmable dissolves between the two channels.

Internal Keyer

An extremely versatile luminance keyer is also part of the effects combiner, which makes keying titles over a picture and manipulating them separately very easy.

ABEKAS VIDEO SYSTEMS, INC.

Digital Special Effects System

A52 Cont'd

Specifications

VIDEO

NTSC Television Standard
 Frequency Response ±0.25dB to 4.2MHz
 Differential Phase 2°
 Differential Gain 2%
 K Factor (2T Pulse) 1%
 Signal to Noise 52dB
 (A/D, D/A Direct Connection)

A52 Digital Special Effects

INPUTS

Video Input: Composite analog, synchronous ± 2lines
 Composite digital
 Reference (gen lock): Composite analog, high impedance looping

OUTPUTS

Composite analog video RS170A (2)
 Composite analog key RS170A (2)
 Composite digital video
 Optional RGB and Sync

INTERCONNECTS

A52CP control panel to A52: Serial RS422, 2000 ft. maximum
 A52MP mini panel to A52: Serial RS422, 2000 ft. maximum

A52 Digital Effects Combiner

INPUTS

Composite digital video/key from A52 (2)

OUTPUTS

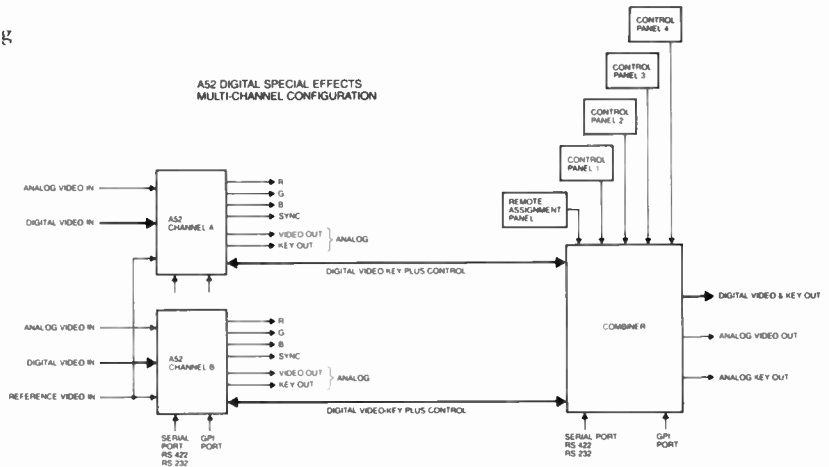
Composite analog video RS170A (2)
 Composite analog key RS170A (2)
 Composite digital video

INTERCONNECTS

Control panel inputs (4): Serial RS422, 2000 ft. maximum
 Remote assignment panel: Serial RS422, 2000 ft. maximum
 Channel control (2): Serial RS422, 2000 ft. maximum
 Digital video/key from channel to combiner: 40 pin ribbon, 4 ft. maximum

PHYSICAL & ELECTRICAL

UNIT	POWER	SIZE	WEIGHT
A52	Less than 500 Watts	8.75"H x 19" Rackmount x 22"D	80 lb
A52 Combiner	Less than 150 Watts	5.25"H x 19" Rackmount x 22"D	30 lb
A52CP	Less than 20 Watts (DC from A52)	7"H x 17.5"W x 3.5"D	12 lb
A52MP	Less than 15 Watts (DC from A52)	4"H x 8.5"W x 2.5"D	8 lb
A52 Assignment panel	Less than 5 Watts (DC from Combiner)	3.75"H x 3.3"W x 1.25"D	5 lb



Single Channel A52 with CP

One A52 signal system and one standard A52CP control panel with DataKey for off-line storage **\$31,900.00**

Single Channel A52 with MP

Same as above except one A52MP mini control panel instead of the standard control panel **\$29,900.00**

Dual Channel A52 With CP

Two A52 signal systems, one A52C Combiner with remote assignment panel and one standard A52CP control panel. The assignment panel allows any of four control panels to operate the dual channel system, or any two to operate the two channels separately **\$66,800.00**

Dual Channel Upgrade to Existing Systems

Includes additional A52 signal system and A52C Combiner **\$34,900.00**

A52CP

Additional standard control panel with graphics display, 3-axis joystick, T-bar and DataKey **\$5,900.00**

A52MP

Mini-panel (8.5" x 4") for critical space requirements. The mini-panel retains the majority of the A52CP functions and also has a display, 3-axis joystick and the DataKey **\$3,900.00**

A52DK

DataKey for off-line effects storage. Can store up to two 16-keyframe effects **\$75.00**

A52RGB

High quality RGB outputs for single channel A52 **\$5,900.00**

A52C Combiner

Combines the output of two single channels for dual-channel operation **\$8,900.00**

Custom Control Panel Cable

50' Control Cable **\$100.00**
 100' Control Cable **200.00**

(One 30' control cable is standard with each control panel).

ABEKAS VIDEO SYSTEMS, INC.**Digital Special Effects System****A53-D Digital Special Effects System**

The A53-D is a three-dimensional digital special effects system. Benefitting from state-of-the-art architecture, the A53-D performs rotation, translation, perspective and scaling transforms on the incoming video source, thus providing maximum flexibility in three-dimensional manipulation of images.

Signal Processing

The A53-D's outstanding picture quality and extremely smooth motion are the direct result of advanced digital signal processing. The incoming composite video signal processing. The incoming composite video signal is immediately digitized to eliminate the usual analog decoding problems such as drift and complex adjustments. The signal is digitally decoded into 4:2:2 components and processed to ensure long-term stability. Special emphasis has been put on key signal and picture boundary processing in order to completely eliminate jagged edges on keyed pictures.

The Control System

The control panel is simple and uncluttered. A powerful programming tool, the high-resolution menu display and its associated soft-keys are the heart of the control panel. The professional 3-axis joystick provides the tool for freehand-style creativity and the numeric keypad is used to enter exact values for the parameters — for instance, to choose the hue, saturation and luminance of a background color. The fader bar manually runs effects forward or reverse with its position directly corresponding to a given point on the time-line of the effect. This enables precise control when rehearsing any part of the effect. Complementing the control panel is a 3 1/2" floppy disk drive for off-line storage, mounted within the reach of the operator. Each micro floppy disk stores 200 effects, all of which can be 16 keyframes long.

Creating Effects

Effects on the A53-D are made up of keyframes, ranging from 2 to 16 in length. A keyframe is simply a set of parameters, defined by the operator, at a given point in an effect. The system then interpolates the intermediate values allowing the effect to run smoothly and continuously. These parameters could be size, position, border width, background color, perspective or rotation of the picture, etc. To edit an effect, the operator can step through it in forward or reverse direction. Parameters can be modified on one, all, or a group of keyframes saving time. Individual or groups of keyframes can be inserted, deleted, or moved from one part of the effect to another. Complete effects can be copied from one effect location to another or to the workspace.

Post-Production Operation

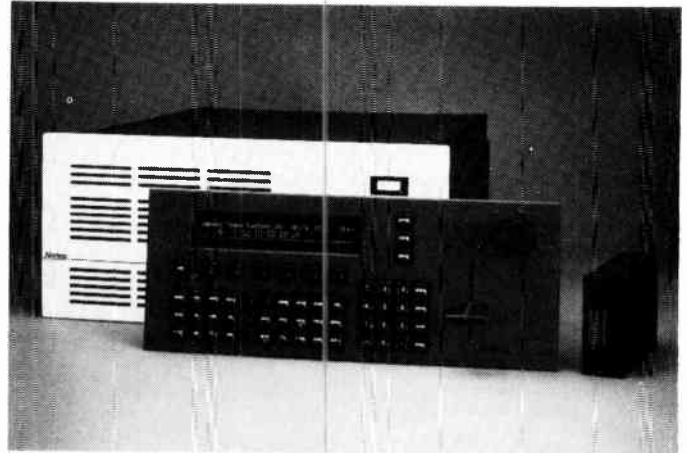
The A53-D is ideal for post-production, each parameter can be programmed with utmost accuracy. Numeric keypad entries allow the exact duplication of parameters making it simple to reconstruct an effect. Matched frame editing can be performed not only at keyframe boundaries, but also at every point between keyframes.

Live Operation

The A53-D provides the broadcaster with 24 on-line effects, each of which can be accessed at a stroke of a key. In addition, a repertoire of off-line effects can be quickly recalled from the disk. The 24 on-line effects are user-programmable and stored in non-volatile memory, protected from power down.

The Mini Control Panel

Ideal for space limited applications, the A53-D Mini Panel retains the majority of the A53-D standard control panel functions. The Mini Panel consists of a 3-axis joystick, a menu display and function keys. Provides 20 on-line effects, each 16 keyframes long. A micro floppy disk drive is provided for off-line effect storage. Operation of the Mini Panel is similar to the A53-D standard panel, allowing them to be used interchangeably.

**A53-D****A53-D Create Effects**

- True 3-D perspective • 3-D location • Rotation about H, V, Z axes
- Variable rotation axes • Global locate, rotate, axis • Expansion, compression • Variable inside or outside border • Background of any color
- Field and frame freeze • Full manipulation of frozen pictures
- Variable aspect ratio • Strobe • Cropping from any and all sides • Full manipulation of cropped pictures • Solarization/Posterization
- Variable effect time • Programmable pause • Contact closures for remote operations • Built-in A/B video switching • Forced monochrome
- Inverted luminance • Multi-pictures live • Switchable fold-over
- Auto-keying of multi-faceted objects • Cube maker • Timing setup from the control panel • Variable motion types

3-D Features

The A53-D is designed as a true 3-dimensional effects system. The operator can perform simultaneous 3-axis rotations and translations with variable perspective on the input picture. The picture can be reduced or expanded in size and moved to any location in the 3-D space. The system adds the appropriate perspective to the picture, but the operator can add any amount of perspective desired. Rotations can be performed about the picture axes or the H, V, Z axes of the 3-D space. The picture can rotate about its own center or any specified center. With a combination of 3-D controls on the A53-D, any imaginable 3-dimensional move can be applied to the plane of the input picture.

Motion Types

Every effect in the A53-D system can be programmed to have a linear and smooth motion. Manipulating the trajectory can result in an accelerating and decelerating linear motion. This feature can be programmed for any of the H, V, Z axes on a keyframe-by-keyframe basis. Further, the path of a given trajectory can be altered by varying the tension values to obtain a variety of curved paths for the same effect.

ABEKAS VIDEO SYSTEMS, INC.**Digital Special Effects System****A53-D Cont'd****Globals**

The A53-D features true Global manipulations. Globals are additional 3-D manipulations applied to previously programmed effects. Globals are used in a variety of applications. A typical example would be in the creation of multi-faceted objects. First, the different faces of the object are defined in relationship to each other. Then, the Globals are applied to all the faces for manipulating the multi-faceted object in the 3-D space while maintaining the facets' spatial relationship intact.

Cube Maker

In general, to make a cube on a single channel effects system, each one of the six sides of the cube is programmed as a separate effect. Then, using a video recorder, six recording passes are made to assemble the cube. The cube maker in the A53-D is a facility which allows the operator to build a cube by making three passes only. When a VTR is used for recording, the cube maker becomes extremely useful in saving several passes and thereby significantly reducing generation loss.

Auto-Keying

The A53-D can be used to make solid objects with any number of sides. To achieve this, each side is programmed as one effect. Then the assembled object is obtained through multipass recording.

Auto-key is a feature which determines the switching point between the front and back of each side of an object; it then automatically turns off the key signal every time the back of a side faces the viewer. When using tape as the recording medium in building multi-faceted objects, generation loss becomes the limiting factor after merely a few passes. Auto-key, therefore, is of great importance in reducing the generation loss in the construction of multifaceted objects. Using the Abekas A62 digital disk recorder as the recording device, of course, eliminates the issue of generation loss. Auto-key can then be used as a totally dramatic feature in creating effects.

Designed for the Greatest Degree of Flexibility for System Integration

External interfaces of the A53-D are all part of its standard features and accommodate various means of communication with other studio equipment.

Serial Ports

Two connectors, a 25-pin D and a 9-pin D, provide RS232 and RS422 communication paths respectively. Through these ports the A53-D can communicate with a variety of other equipment. An example of such devices would be the I² compatible editors or switchers with Emem type effects memory. Communication with switchers, editors or other devices which conform to the SMPTE time-line protocol is also supported through these ports. Via the RS232 port, a computer can emulate all of the A53-D control panel functions. The Abekas A62 digital disk recorder can interface serially to the A53-D through the RS422 port.

GPIs

For a simple interface to switchers and editors, four input general-purpose interfaces are provided. These contact closures can be triggered to run an effect forward or reverse, pause an effect already in progress or freeze the incoming video. A special GPI setup allows the effect to be advanced by a field at a time. This mode is especially desirable for film transfer or animation work. The two output contact closures can be used to trigger external devices. Specifically, using a routing switcher, any two of four video sources could be assigned to the front and back of the picture.

Two-Channel Operation

The A53-D Digital Effects Combiner provides a truly flexible multi-channel system. It accommodates up to four control panels and two channels. A remote assignment panel allows the system to be configured either as a dual channel, or as two completely independent single-channel systems. As a dual-channel system, operation can be from any one of the four control panels. When operated as two single channels, one control panel is assigned to each channel. True dual-channel operation is achieved by programming each channel independently to its full extent and along a common timeline. In this manner, different effects can be programmed on each channel and run simultaneously. As with the single-channel A53-D system, custom effects can be created and stored on non-volatile, on-line memory. Off-line effects can be stored on micro floppy disk.

Dual Channel Priority Assignment

In dual-channel mode, a channel can be defined as foreground or background, depending on its priority. Unlike other systems, the effects combiner offers variable priority, allowing programmable dissolves between the two channels, as well as instantaneous priority inversion. The channel priority can be changed at any point in the effect and from one keyframe to another.

Internal Keyer

An extremely versatile and adjustable luminance keyer is built into the effects combiner to allow keying the output of one channel over the other. The gain and clip level of this keyer can be adjusted from the control panel. A typical application of this keyer would be to key titles over a background and flying them together.

A53-D/A62 Digital Interface

The A53-D system provides composite digital video input and output ports. Through these ports the A53-D can be interfaced to the much acclaimed Abekas A62 Digital Disk Recorder. The combination of the two systems introduces a tremendously powerful tool for on-line post production. It is now possible to manipulate and composite an infinite number of layers in a completely digital environment and in real time. A typical A53-D/A62 setup is illustrated here using two channels of A53-D for video and key manipulation. The advantage of using a dual-channel A53-D as compared with one channel of a conventional effects system with a key processing channel is two-fold. First, with two channels of the A53-D, you have a full bandwidth key processing channel and a color video channel. Secondly, you get all the power and benefits of a full two-channel system whenever the key manipulation is not the order of the day.

ABEKAS VIDEO SYSTEMS, INC.

Digital Special Effects System

A53-D Cont'd

Specifications

Video

NTSC Television Standard
 Frequency Response ±.25dB to 4.2 MHz
 Differential Phase 2 degrees
 Differential Gain 2%
 K Factor (2T Pulse) 1%
 Signal to Noise 52dB
 (A/D, D/A Direct Connection)

A53-D Digital Special Effects

Inputs

Video Input: Input 1(A), input 2(B), composite analog, synchronous ± 2 lines
 : Composite digital
 Reference (genlock): Composite analog, high impedance looping

Outputs

Composite analog video RS170A (2)
 Composite analog key RS170A (2)
 Composite digital video

Interconnects

A53-D control panel to A53-D: Serial RS422, 2000ft. maximum
 A53-D control panel to floppy disk drive: cable length 10ft. maximum

A53-D Digital Effects Combiner

Inputs

Composite digital video/key from A53-D

Outputs

Composite analog video RS170A (2)
 Composite analog key RS170A (2)
 Composite digital video

Interconnects

Control panel inputs (4): Serial RS422, 2000ft. maximum
 Remote assignment panel: Serial RS422, 2000ft. maximum
 Channel control (2): Serial RS422, 2000ft. maximum
 Digital video/key from channel to combiner: 40-pin ribbon, 4ft. maximum

Physical and Electrical

Unit	Power	Size	Weight
A53-D	< 500 Watts	8.75"Hx19"Wx22"D	80 lb
A53-D Control Panel	< 20 Watts (DC from A53-D)	7"Hx17.5"Wx3.5"D	12 lb
A53-D Floppy Disk Drive		1.6"x4"Wx7"D	2 lb
A53-D Mini Panel	< 15 Watts	4"Hx8.5"Wx2.5"D	8 lb
A53-D Combiner	< 150 Watts	5.25"Hx19"Wx22"D	30 lb
A53-D Assignment Panel	< 5 Watts	3.75"Hx3.3"Wx4.25"D	5 lb

Single Channel A53-D With CP

One A53-D signal system and one standard A53-D control panel with 3.5" micro-floppy disk drive for off-line storage and one pre-programmed disk.

- Digital CCIR 601 input and output video ports
- Digital CCIR 601 key output
- Analog Y, R-Y, B-Y or RGB and key output

.....\$44,900.00

A20 Digital Video Encoder

Provides conversion of analog RGB or Y, R-Y, B-Y to CCIR 601 Component Digital Video. The A20 also offers remotely controlled, A/B switching between two analog inputs

.....\$4,900.00

Warp Option (plug-in board)

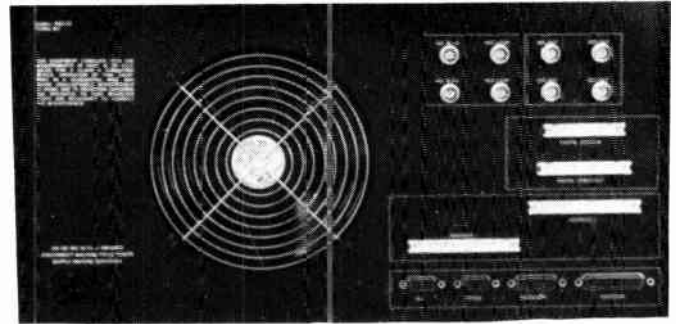
Adds picture bends, warps, and splits to basic A53-D. Includes page turns/page peels, rolls, cylinders, twists and more. (One board per channel needed for some dual channel effects.)

.....\$9,900.00

Key Channel

The A53-D Key Channel is an 8-bit, full bandwidth key processing channel for simultaneously manipulating a key signal along with the input video. The key channel can also produce a drop shadow which corresponds to the shape of the key signal. Any degree of transparency or color may be programmed for the drop shadow. The key signal or drop shadow may be positioned horizontally and vertically relative to the video being manipulated. The key channel is an upgradeable option to all existing single or dual channel A53-D's

.....\$14,000.00



Dual Channel A53-D With CP

Two A53-D signal systems, combiner with remote assignment panel and one A53-D control panel with micro-floppy disk drive and one pre-programmed disk. The assignment panel allows any of four control panels to operate the dual channel system, or any two to operate the two channels separately

.....\$97,800.00

Dual Channel Upgrade to Existing System

Includes additional A53-D signal system and A53-D Combiner

.....\$52,900.00

A53-D Control Panel

Additional control panel with graphics display, 3-axis joystick, T-bar, and 3.5" micro-floppy disk drive with one disk

.....\$5,900.00

A53-D Mini Panel

Mini-panel (8.5" x 4") for critical space requirements. The mini-panel retains the majority of the A53-D standard control panel functions and also has a display, 3-axis joystick, and 3.5" micro-floppy disk drive with one disk

.....\$3,900.00

A53-D Combiner

Combines the output of two single channels for dual channel operation.

- Digital CCIR 601 video and key input
- Digital CCIR 601 video and key output
- Analog Y, R-Y, B-Y or RGB and key output

.....\$13,900.00

Custom Control Panel Cable

50' Control cable

.....\$100.00

100' Control cable

.....200.00

(One 30' control cable is standard with each control panel)

ABEKAS VIDEO SYSTEMS, INC.

Digital Disk Recorder

A60 Digital Disk Recorder

- Full bandwidth 4:2:2 component digital recording
- 25- or 50-second capacity in 525-line system
- 30- to 60-second capacity in 625-line system
- CCIR 601 inputs and outputs
- Ethernet and SCSI ports
- GPI inputs and outputs
- RS232 and RS422 computer ports
- Timecode input as an external trigger
- Serial editor port for interface to a variety of editors
- High-speed GCR tape drive interface for off-line storage

The A60 is a real time component digital recording device ideally suited for recording single frames from graphics systems. Using Winchester disk drives, the A60 provides real time playback in forward or reverse, variable playback speeds and random access to recorded material. The A60 conforms to the 4:2:2 component digital standard and provides CCIR 601 input and output ports for interface to other CCIR 601 equipment. Unlike the Abekas A62 and A64, the A60 does not provide internal keying functions or the ability to simultaneously play and record. The A60 offers capacities of 25 and 50 seconds in the 525-line system or 30 and 60 seconds in the 625-line system.

The Perfect Recording Device

The A60 provides the ideal means of recording frames from 3D animation or paint systems. Single frames or fields can be recorded with perfect accuracy at a rate many times that of a video tape recorder. When used in conjunction with pin-registered film transfers, the A60 offers the fastest single-frame recording possible.

Simple Operation

The A60 is both flexible and easy to operate. A well-defined, compact control panel presents the necessary information for typical operations.

Transport controls for recording and playback are provided in addition to a trackball for browsing through material on the disks. A numeric keypad enables access to specific frames/fields by entering either a timecode or frame number. The current position of the disks may also be indicated on the control panel display as either a timecode or frame number. A monochrome status output provides additional information such as system timing and macro programming to complement the control panel.

Random Access

Because the A60 uses disk drives for storage, single frames or fields can be accessed immediately. A sequence of frames may be defined as a segment for playback. Segments may be linked and a total of 99 segments may be defined for random playback. Each segment may be accessed independently, different speeds set, and continuous segment loops defined. The expanded version of the A60 provides real time random access during segment playback.

Ethernet Port

- RCP or FTP for video file transfers
- RSH, RLOGIN or TELNET for specific A60 control
- RGB to 4:2:2 digital conversion using Ethernet

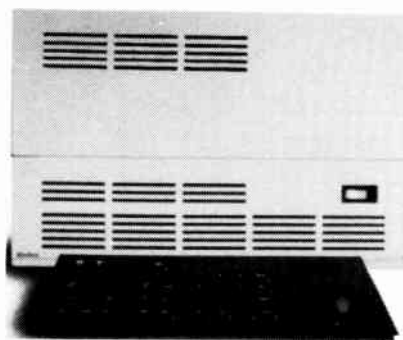
In order to be truly compatible with computer animation devices, an Ethernet port which uses the ARPA standard TCP/IP communications protocol has been implemented. Commonly used network services are supported to allow file transfers in the form of video fields or frames and specific machine control of the A60. Using TCP/IP, the A60 may become an Internet node by simply specifying an Internet address from the A60 control panel. The A60 also provides an automatic conversion of RGB files into 4:2:2 as part of an Ethernet transfer.

Additional Interface Ports

An RS422 and RS232 port, an editor port and an SCSI port provide a variety of interface possibilities to the A60. The RS422 and RS232 ports are intended as standard computer ports for emulating the functions of the control panel. The A60 may be controlled from computerized editing systems* through a single editor port (RS232/RS422 selectable). The A60 becomes an ultra-fast random access digital playback or record device while being controlled in the same manner as a video tape recorder. An SCSI port enables both digital video transfer and control for interface to existing devices with SCSI interfaces.

Specifications:

Video:	Available in either 525/60 or 625/50 television standard
Bandwidth:	4:2:2 13.5MHz sampling (Y) 5.75MHz (R-Y) 2.5MHz (B-Y) 2.5MHz
K Factor:	1%
Signal to Noise:	56dB
Reference:	Analog composite sync
Inputs:	Digital CCIR 601 video (2) (for use with component analog signals, the Abekas A20 is available)



Outputs	Digital CCIR 601 (2), Analog RGB and Sync or Y, R-Y, B-Y
Program:	Analog RGB and Sync or Y, R-Y, B-Y, timecode or frame number superimposed
Preview:	Monochrome analog status display from control panel
Status:	
SCSI and Ethernet	Digital video data transfer and machine control interface
Ports:	
External Control:	RS232 control port, RS422 control port, serial editor port RS422/RS232, GPI inputs and outputs (4), Timecode input as trigger
Interconnects:	A60 to control panel: Serial RS422, 2000' maximum
Storage Capacity	
525-Line System:	25 seconds expandable to 50 seconds
625-Line System:	30 seconds expandable to 60 seconds

Unit	Power	Size	Weight
A60 system	< 650W	12 1/4" H x 19" rack-mount x 22" D	100 lbs. (45.5 kg)
Expansion Disk			
Chassis	< 450W	7" H x 19" rack-mount x 22" D	90 lbs. (41 kg)
Control Panel	< 15W(DC from main chassis)	4.5" H x 11.75" W x 3.5" D	5 lbs. (2.3 kg)

A60 25 Second Version

- Provides 25 seconds of real time record or real time playback
- Random access to recorded material
- Variable playback speed up to ± 30 times normal
- CCIR 601 input and output ports
- RGB or R-Y, B-Y analog output
- SCSI interface port
- Ethernet port
- Single 12.25" chassis

.....\$64,500.00

A20 Digital Video Encoder

- Provides conversion of analog RGB or Y, R-Y, B-Y to CCIR 601 component digital video. The A20 also offers remotely controlled, A/B switching between two analog inputs

.....\$4,900.00

A60 50 Second Version (extended capacity)

- Provides 50 seconds of real time record or real time playback
- One 12.25" chassis plus one 7" chassis

.....\$114,500.00

All other features are identical to the 25 second version

A60 Off-Line Storage

- Kennedy GCR tape drive with one 3600' tape included
- Provides up to 10 seconds of digital video storage on a 3600' reel of tape

.....\$10,000.00

A60 CP

Additional A60 control panel with 30' control cable\$3,900.00

Custom Control Panel Cable

50' Control Cable\$100.00
100' Control Cable\$200.00
(One 30' control cable is standard with each control panel)

* Ampex, CMX, GVG

ABEKAS VIDEO SYSTEMS, INC.**Digital Disk Recorder****A62 Digital Disk Recorder**

The A62 brings the well-known advantages of digital recording and playback into the existing analog post-production suite. High-speed Winchester disk drives provide a precisely controllable real time record and playback device with storage capacities of 50 and 100 seconds.

The Way the A62 Works

The A62 has the unique ability of simultaneously playing and recording in real time. The 100-second version of the A62 can be configured as a 50-second playback and a 50-second record device, making digital real time layering possible. Background video is first recorded onto the A62. Foreground video to be keyed or matted onto the background is then fed into the A62 with its associated key signal. These signals may come directly from an Ultimatte™ or from an effects device such as the Abekas A53-D. As the background is played back from one part of the A62, another part of the A62 is recording the result of the keying process. In this way, layer after layer of video can be composited in real time while maintaining the cleanest look possible.

Controlling the A62 from an Editor

The A62 has been designed to fit right into the existing editing suite with two SMPTE-style editing ports. The A62 may be either a playback device, a record device, or both a playback and a record device when controlled from the computerized editing system. * In this way, the A62 can be controlled in the same manner as a tape machine. Because the A62 uses random access disk drives instead of tape, even the fastest VTR is slow compared to the A62. As an example, searching for the IN point of an edit is immediate with the A62.

Less Equipment, Less Time With Increased Quality

Because generations are not a problem with the A62, there is no need to use multiple VTRs and many channels of effects in order to save generations. The typical editing configuration consists of a VTR, an effects device such as the Abekas A53-D, and the A62.

The A62 as an Instant Editor

As a stand-alone editor, the A62 provides the fastest editing possible. Using IN and OUT buttons, an operator can quickly define segments of video with absolute control. In and out points can be entered from the keypad or by rolling the trackball to the desired point. The order of the segments can easily be changed, in and out points can be trimmed, and each segment may have a different playback speed. Once defined, the segments can immediately be played back in real time regardless of where the video is physically recorded on the disks. There's no waiting for the machine to reassemble the segments. The A62 actually edits in real time as the segments are being played back.

Dissolves

With a single source as an input to the A62, dissolves may be programmed and recorded in real time. The A62 can dissolve from video on the disks to incoming video while recording at the same time. This provides A/B roll editing with dissolves while using only one VTR and the A62. A sequence of dissolves may be programmed then triggered from the control panel or the editing system.

Internal Digital Keying and Matting

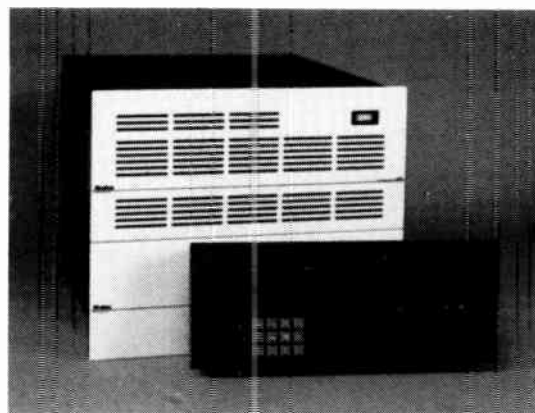
One of the most significant features of the A62 is its internal keying and matting ability. The digital linear keyer provides the control necessary for perfect transparent keys while maintaining edge detail previously sacrificed. The A62's matte function is able to add elements such as smoke and glass to a background while preserving the depth through the smoke and glass that are lost with a key. Self-keying as well as variable key timing are included in the A62.

Customizing the A62 with Macros

The A62 offers twelve on-line macros for custom operations to be defined by the user. Simply put, a macro is a list of key presses from the control panel recorded in the A62. This allows complex operations to be recorded once in a macro, then used repeatedly as a single function by the user. Full editing capabilities are provided for changing existing macros. For flexibility, the macros may be triggered through the GPI inputs. A DataKey provides off-line storage of macros.

Field and Frame Animation

The disk drives used by the A62 provide the fastest and most accurate means of recording frames or fields from an animation system. Automated control of this process can be easily accomplished with a general-purpose interface (contact closures) or through computer ports provided on the A62. The A62 can also be used to composite small elements of a complex animation quickly for previewing.



A62-50-Second Version

Pin-registered Film Transfers and Compositing

The A62 provides the ideal means of recording pin-registered film frames at a rate many times faster than a VTR. Interface to the pin-registered gate is through contact closures or a serial port provided on the A62. Once a background is recorded, multiple layers of film can be directly composited with first-generation quality using the internal keyer of the A62.

Rotoscoping and Retouching

The A62 is ideal for operations such as rotoscoping and retouching which involve drawing mattes and foreground elements a frame at a time. The A62 can digitally composite these elements with video already recorded on the A62 thus eliminating the need to output each frame to the paint system. As an example, a matte and foreground may be drawn by the artist, then fed into the A62 to be keyed onto a background. The video remains in digital form in the A62 guaranteeing no generation loss during the compositing.

Digital Off-Line Storage

The A62 uses a standard 9-track computer magnetic tape drive for off-line storage. Digital video is transferred to and from the tape drive through the A62 framestore port at a rate of approximately one frame per second. As much as twenty seconds of video can be stored on a single reel of tape. For work that needs to be set aside or for storing the production master the tape ensures a perfect copy that can be reloaded into the A62 at any time.

The A62 Signal System

The A62 is a full bandwidth 14.3MHz, composite digital record and playback system. To achieve the highest possible picture transparency, no color processing is used during realtime playback. For optimal variable playback and still frame processing a digital decoder is used. Composite digital input and output ports are provided for interface to additional A62's and the Abekas A53-D special effects system.

RGB Outputs

As an option, digitally decoded RGB outputs are provided on the A62. Because of the decoding performance of the A62, the RGB outputs provide the ideal means of feeding paint systems or other component equipment.

Interfacing to the A62

The A62 may be controlled by a variety of external devices through ports provided on the A62. An RS232 port is provided as a standard computer interface. The RS422 keyboard port may be used by computers to emulate the functions of the control panel. GPI inputs and outputs are provided for quick interface to equipment by means of contact closures. A parallel digital framestore port provides direct memory access to 3D animation systems. This port allows animation systems to render directly into the A62 framestore.

The 50- vs. 100-second A62

The A62 is available as a 50- or 100-second system. The systems are identical except for capacity and the ability to play and record simultaneously in real time. The simultaneous play and record feature of the 100-second A62 is a necessity for real time compositing in the on-line editing environment. The 50-second A62 is designed for applications that are not geared to the real time nature of the on-line edit suite. Such applications are animation, pin-registered film transfers, retouching and rotoscoping.

* Ampex, CMX, GVG

ABEKAS VIDEO SYSTEMS, INC.

Digital Disk Recorder

A62 Cont'd

Specifications

Video

NTSC Television Signal Standard

Frequency Response	±0.25dB to 4.2MHz
Differential Phase	2°
Differential Gain	2%
K Factor (2T Pulse)	1%
Signal to Noise	52dB

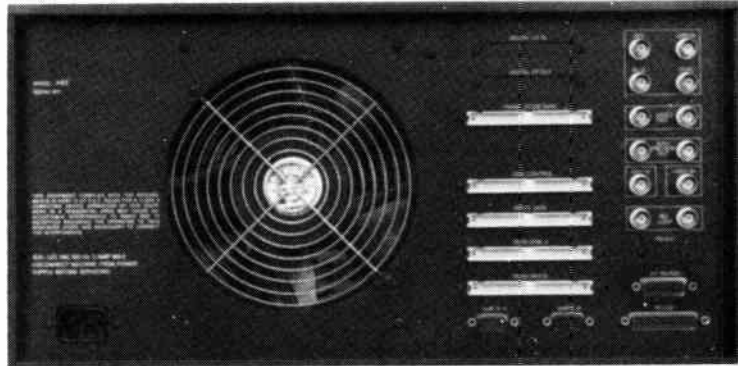
(A/D, D/A Direct Connection)

Inputs

- Video Input: Composite analog, synchronous ±20µS
- Key Input: Composite analog, synchronous ±20µS
- Reference: Composite analog, high impedance looping

Outputs

- Composite analog video RS170A (2)
- Composite analog key RS170A (2)
- Optional RGB and Sync



Interconnects

A62CP control panel to A62: Serial RS422, 2000 ft. maximum

Storage Capacity

- 50 Seconds (Requires one drive module)
- 100 Seconds (Requires two drive modules)

Physical & Electrical

Unit	Power	Size	Weight
A62 Signal System	Less than 500 Watts	8.75"H x 19" Rackmount x 22"D	80 Lb
A62 Disk Module	Less than 400 Watts	7"H x 19" Rackmount x 22"D	90 Lb
A62 CP	Less than 20 Watts (DC from A62)	7"H x 17.5"W x 3.5"D	10 Lb

A62 50 Second Version

- Real time record and playback
 - Variable playback speed up to ± 30 times normal
 - Internal digital keying and matting for non real time operations
-\$98,500.00

A62 100 Second Version

- Simultaneous play and record for real time layering of effects
 - Color framed real time random access
 - Variable playback speed up to ± 30 times normal
 - Internal digital keying and matting for real time layering
-\$148,500.00

A62 RGB

- Digitally decoded RGB outputs for the A62
-\$5,900.00

A62 Off-Line Storage

- SCSI interface chassis and Kennedy GCR tape drive with one 3600' tape included
 - Provides up to 20 seconds of digital video storage on a 3600' reel of tape
-\$14,900.00

A62 CP

Additional A62 control panel with 30' control panel\$5,900.00

Custom Control Panel Cable

- 50' Control cable\$100.00
- 100' Control cable200.00

(One 30' control cable is standard with each control panel)

ABEKAS VIDEO SYSTEMS, INC.

Digital Disk Recorder

A64 Digital Disk Recorder

Patterned after the award-winning Abekas A62, the A64 Digital Disk Recorder dramatically enhances many aspects of analog or digital post-production. The A64 brings the same advantages of digital recording and playback into the areas of graphics and component post-production that the A62 has brought to the composite post-production environment. In addition, using the A64, a D-1 format VTR, and the A53-D it is now possible to create a 4:2:2 digital edit suite capable of real time layering, editing and effects. High-speed Winchester disk drives provide a precisely controllable real time record and playback device with storage capacities of 50 and 100 seconds.

50- or 100-Second Capacities

The standard configuration of the A64 provides a total capacity of 50 seconds. During real time layering operations, the A64 is used as simultaneous 25 second playback and record devices. The total capacity of the A64 may be increased to 100 seconds with the addition of two disk drive modules. The expanded A64 allows 50 seconds of simultaneous playback and record for layering operations.

The Way The A64 Works

The A64 has the unique ability of simultaneously playing and recording in real time. The 50 second version of the A64 can be configured as a 25 second playback and a 25 second record device, making digital real time layering possible. The expanded 100 second version offers 50 seconds of playback and 50 seconds of recording. Background video is first recorded onto the A64. Foreground video to be keyed or matted onto the background is then fed into the A64 with its associated key signal. These signals may come directly from digital VTR's or from a digital component effects device such as the Abekas A53-D. As the background is played back from one part of the A64, another part of the A64 is recording the result of the keying process. In this way, layer after layer of video can be composited in real time while maintaining the cleanest look possible.

Controlling the A64 From an Editor

The A64 has been designed to fit right into the existing editing suite with two SMPTE style editing ports. Through these ports, the A64 may be either a playback device, a record device, or both as seen from the computerized editing system*. In this way, the editor can control the A64 in the same manner that tape machines are controlled. Because the A64 uses random access disk drives instead of tape, even the fastest VTR is slow compared to the A64. As an example, searching for the IN point of an edit is immediate with the A64.

The A64 As An Instant Editor

As a stand-alone editor, the A64 provides the fastest editing possible. Using IN and OUT buttons, an operator can quickly define segments of video with absolute control. In and out points can be entered from the keypad or by rolling the trackball to the desired point. The order of the segments can easily be changed, in and out points can be trimmed, and each segment may have a different playback speed. Once defined, the segments can immediately be played back in real time regardless of where the video is physically recorded on the disks. There's no waiting for the machine to re-assemble the segments. The A64 actually edits in real time as the segments are being played back.

Less Equipment, Less Time With Increased Quality

Because generations are not a problem with the A64, there is no need to use multiple VTR's and many channels of effects in order to save generations. The typical editing configuration consists of a VTR feeding a single channel effects device such as the A53-D, and the A64.

Dissolves

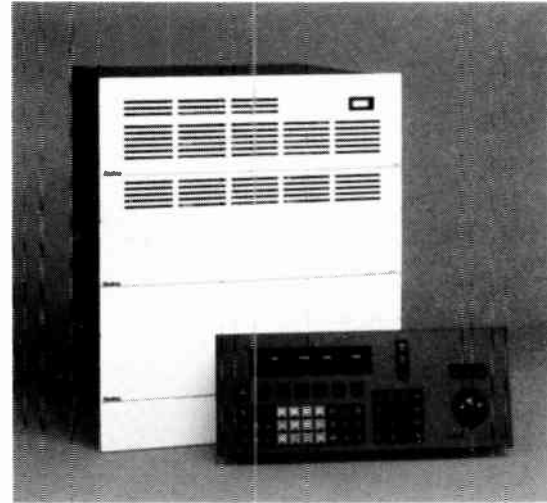
With a single source as an input to the A64, dissolves may be programmed and recorded in real time. The A64 can dissolve from video on the disks to incoming video while recording at the same time. This provides A/B roll editing with dissolves while using only one source and the A64. The dissolves may be programmed as part of a recording process or may be manually triggered from an AUTO TRANS button on the control panel.

Internal Digital Keying and Matting

One of the most significant features of the A64 is its internal keying and matting ability. The digital linear keyer provides the control necessary for perfect transparent keys while maintaining edge detail previously sacrificed. The A64's matte function is able to add elements such as smoke and glass to a background while preserving the depth through the smoke and glass that are lost with a key. To further complement the A64, self and external keying of either chrominance or luminance type are available in the A64.

The Mask Framestore

A valuable addition to the keying system of the A64 is the mask framestore. The mask framestore provides a stencil or holdback function during a keying process. This allows the keying process to be inhibited in areas defined by the mask. Simple masks may be "drawn" directly into the framestore using the internal graphics processor. In addition, video from a pattern generator, paint system, or video already recorded on the A64 may be used to feed the mask framestore.



A64 50-Second Version

Field and Frame Animation

The disk drives used by the A64 provide the fastest and most accurate means of recording frames or fields from an animation system. Automated control of this process can be easily accomplished with a general-purpose interface (contact closures) or through computer ports provided on the A64. The A64 can also be used to composite small elements of a complex animation quickly for previewing.

Pin-registered Film Transfers and Compositing*

The A64 provides the ideal means of recording pin-registered film frames at a rate many times faster than a VTR. Interface to the pin-registered gate is through contact closures or a serial port provided on the A64. Once a background is recorded, multiple layers of film can be directly composited with first generation quality using the internal keyer of the A64.

Rotoscoping and Retouching

The A64 is ideal for operations such as rotoscoping and retouching which involve drawing mattes and foreground elements a frame at a time from a paint system. As an example, a matte and foreground may be drawn by the artist, then fed into the A64 to be keyed onto a background. The video remains in digital form in the A64 guaranteeing no generation loss during the compositing.

Customizing the A64 With Macros

The A64 offers twelve on-line macros for custom operations to be defined by the user. Simply put, a macro is a list of key presses from the control panel recorded in the A64. This allows complex operations to be recorded once in a macro, then used repeatedly as a single function by the user. Full editing capabilities are provided for changing existing macros. For flexibility, the macros may be triggered through the GPI inputs. A micro-floppy provides off-line storage of macros.

The A64 Signal System

The A64 is a full bandwidth 13.5MHz, 4:2:2 component digital system. In addition to component inputs and outputs, the A64 is equipped with CCIR 601 digital video input and output ports. Accepted as the digital standard, these ports provide interface to other CCIR 601 compatible equipment such as D-1 digital VTR's.

Interfacing to the A64

The A64 may be controlled by a variety of external devices through ports provided on the A64. An RS232 port is provided as a standard computer interface. The RS422 keyboard port may also be used by computers to emulate the functions of the control panel. GPI inputs and outputs are provided for quick interface to equipment by means of contact closures. A parallel digital framestore port connected to an optional SCSI interface provides direct memory access to 3D animation systems. This allows animation systems to render directly into the A64 framestores.

The Graphics Processor

The A64's integral graphics processor can directly access all four framestores for a variety of useful functions. By "drawing" into the mask framestore, simple masks may be created to be used as holdbacks during keying operations. Key signals can be generated inside the A64 by drawing into the key framestore. The cut and paste function allows small areas of video to be "cut out" of a frame and pasted onto other areas of the same or different frame. This provides a quick and convenient method for basic fix-ups without leaving the A64. A grab function is also provided which enables automatic matching of a selected color to either of the color fill generators or the chroma keyer.

* Ampex, CMX, GVG

ABEKAS VIDEO SYSTEMS, INC.

Digital Disk Recorder

A64 Cont'd

Specifications

Video

525/60 Television Standard	
Bandwidth (Y)	5.75MHz
(R-Y)	2.5MHz
(B-Y)	2.5MHz
K Factor (2T Pulse)	1%
Signal to Noise	56dB

Inputs

- Analog Y, R-Y, B-Y or RGBS
- Analog Key
- Digital CCIR 601 Video
- Digital CCIR 601 Key
- Composite Sync or Black as reference

Outputs

- Program: Analog Y, R-Y, B-Y or RGBS
- Program: Digital CCIR 601
- Preview: Analog Y, R-Y, B-Y or RGBS
- Analog Key

Interconnects

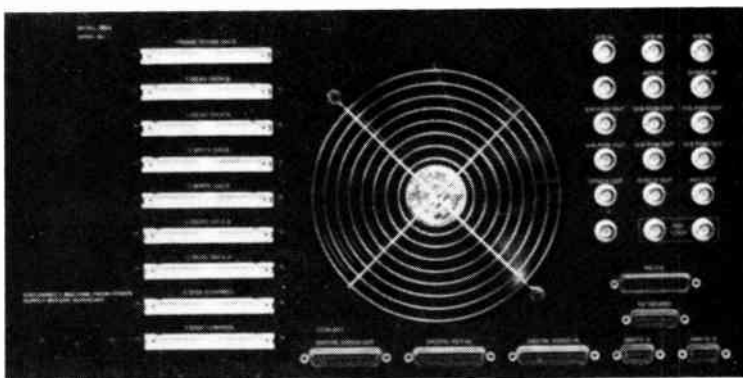
A64 to control panel to A64: Serial RS422, 2000 ft. maximum

Storage Capacity

- 50 seconds (22³/₄" total rack space)
- 100 seconds (36³/₄" total rack space)

Physical & Electrical

Unit	Power	Size	Weight
A64 Signal System	Less than 500 W	8.75" x 19" Rackmount x 22"D	80 lbs.
A64 Disk Module	Less than 400 W	7" x 19" Rackmount x 22"D	90 lbs.
A64 Control Panel	Less than 20 W (DC from A64)	7"H x 17.5"W x 3.5"D	10 lbs.



A64 50 Second Version

- Provides 50 seconds of real time record or real time playback
- Provides 25 seconds of simultaneous play and record for real time layering of effects
- True real time random access
- Variable playback speed up to ± 30 times normal
- Internal digital key, matte, NAM, chroma key and masking functions
- Digital CCIR 601 input and output ports
- Selectable RGB or R-Y, B-Y, Y inputs and outputs
- Total rack space: 22.75" \$174,500.00

A64 100 Second Version (extended capacity)

- Provides 100 seconds of real time record or real time playback
- Provides 50 seconds of simultaneous play and record for real time layering of effects
- Total rack space: 36.75" \$274,500.00

All other features are identical to the 50 second version.

A64 Off-Line Storage

- SCSI interface chassis and Kennedy GCR tape drive with one 3600' tape included
- Provides up to 10 seconds of digital video storage on a 3600' reel of tape \$14,900.00

A64 CP

Additional A64 control panel with 30' control cable \$5,900.00

Custom Control Panel Cable

50' Control cable \$100.00
 100' Control cable 200.00

(One 30' control cable is standard with each control panel)

ABEKAS VIDEO SYSTEMS, INC.

Digital Character Generator

A72 Digital Character Generator

The A72 Digital Character Generator utilizes a powerful 4:4:4 component architecture to deliver character quality superior to any other character generator.

Outstanding Character Quality

The A72 uses digital master typefaces from major print typeface manufacturers. Master typefaces precisely describe the look of an entire character set. There are presently over 1500 typefaces available. Combined with the advanced signal processing techniques of the A72 the result is extremely high resolution characters with 256 levels of antialiasing.

Instant Character Sizing

Any character can be sized from 8 to 256 scan lines high, instantly. The size changes are made by using the cursor up/down keys or the value is directly entered via the keypad. Once selected, the A72 can produce characters at the selected size faster than the operator can type. This capability completely eliminates the time required to size characters off-line.

Font Compose

The A72 allows the operator to create new fonts by a simple definition process. In addition to the size, many other attributes may be part of a font. Drop shadows can be added in any one of eight directions surrounding a character. Character outlines may be added to give the character a border of adjustable color. Italics slant the character left or right in 1 degree increments. All attributes are combined to define the font. All fonts defined are considered on-line which means a page of text can contain an unlimited number of fonts.

Full Color Scan-In

An advanced feature of the A72 is the ability to scan in full bandwidth RGB pictures. The video may be either analog or comply with the CCIR 601 standard. To enhance the scan-in process, both luminance and RGB chroma keyers are included. Since scanned-in images, or icons, are treated as typeface elements, full sizing and placement capability are possible.

Palette Colors

With over 16.7 million colors on hand the A72 provides the ultimate in color flexibility. Selection is made easy by picking a color chip and adjusting the hue, saturation, and luminance level for the desired color. All colors defined are considered on-line which means a page of text can contain over 16 million colors.

Background

A variety of attractive backgrounds can be created quickly within the A72. Color selection is from a palette of over 16.7 million colors. A background can be one solid color or multiple bands of many different colors. Select two different colors on the screen and the machine will interpolate between these colors to form an attractive color contour between the two points. This color contour can be from top to bottom or left to right.

Effects

The A72 provides ultra smooth rolls, crawls, and slow reveals in the form of preprogrammed effects. The speed of each effect is infinitely adjustable. If preferred, the overall length of the effect may be specified in seconds and frames. The speed or time of the effect can be preprogrammed or entered just prior to running the effect. An adjustable roll window is provided to restrict the effect to only a certain portion of the screen.

Multi-Channel Operation

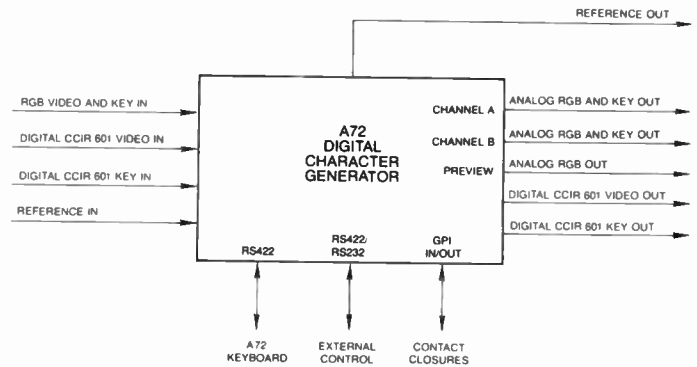
Multi-channel effects are made possible by adding the second channel to the A72. The second channel is a full bandwidth frame store. The transition between frame stores is completely programmable and includes cuts, variable rate dissolves, and variable softness wipes. Effect transitions are initiated simply by pushing the transfer key.

Standard Typefaces

The A72 comes equipped with 15 master typefaces. The collection includes the most popular serif, sans serif, and cursive styles.

Specifications

Video: 525/60 or 625/50 television standard
Inputs: Analog RGB, analog key, digital CCIR 601 video, digital CCIR 601 key, composite sync or black as reference
Outputs: Channel A: analog RGBS
 Channel A: analog key
 Channel B: analog RGBS
 Channel B: analog key
 Digital CCIR 601 video
 Digital CCIR 601 key
 Preview: analog RGBS
 Reference out: Sync, subcarrier, blanking



Interconnects: A72 keyboard to A72 signal system: serial RS422, 2000' maximum

Control Ports: Signal system: 2 keyboard RS422, 1 aux RS422/RS232, 1 general purpose interface

Keyboard: 2 keyboard RS422, 1 RS232, 1 external keyboard power

Physical and Electrical

Unit	Power	Size	Weight
A72 signal system	< 600W	8.75" H x 19" W x 22" D	90 lb.
A72 keyboard	< 20W	4" H x 22" W x 12.5" D	12 lb.

Single Channel A72

- Instant sizing, italics, drop shadows and borders
- Continuously variable roll and crawl speeds
- 100M byte Winchester disk drive
- 16.7 million colors
- Background generator
- Includes 15 master typefaces and one keyboard
- Preview and on-air output RGB (encoder not included)

Single Channel A72 \$34,900.00

Dual Channel A72

Includes all single channel A72 features plus:

- Full color RGB scan-in
- Two independent on-air output channels
- Variable cuts, wipes and dissolves between output channels

Dual Channel A72 \$44,900.00

A72MT

Additional master typefaces \$150.00

A72DI0

CCIR 601 compatible input and output for video and key \$8,000.00

A72CP

Additional keyboard complete with 3 1/2" floppy disk drive \$5,900.00

A72SC

Second output channel to upgrade single channel A72 to dual channel A72 \$10,000.00

Custom Control Panel Cable

50' Control Cable \$100.00

100' Control Cable 200.00

(One 30' control cable is standard with each keyboard)

ABEKAS VIDEO SYSTEMS, INC.**Switcher****T8 Switcher**

- Program preset flip flop bus
- Single key bus
- Integral downstream keyer and fade to black
- 64-register effects memory system
- Non-volatile memory
- Credit card off-line storage
- Two independent pattern generators
- True linear keying techniques
- Full transition preview facility
- Built in auxiliary bus
- Serial edit interface and GPI
- Independent auto-transitions (0-999 frames) at: Main transition, Downstream key, Fade-to-black
- RGB chroma key
- Encoded chroma key
- Key edging facility
- Key masking facility
- Video timing aid
- Interface to DVE's
- Composite genlock

The T8 was designed to meet the requirements of broadcast, production and post-production applications which constantly demand performance from a video switcher. The T8 is in a class by itself offering features that can only be found on larger switchers.

The T8 is a high-quality, compact switcher featuring a three-bus structure, eight primary inputs in addition to color background and black. A logical control panel with well-defined control groups, informative displays and a consistent operating philosophy makes the T8 extremely easy to operate.

Dual Pattern Generators

The T8 offers two independent pattern generators, the primary being the wipe pattern and the secondary being the split screen pattern generator. The T8 produces over 80 different patterns including rotary and clock wipes. Borders and/or softness can also be added to wipes to enhance the overall effect. Most patterns may be positioned and the aspect ratio of some can be altered. In addition the direction of the wipe can also be changed.

Keying

The T8 offers extremely high quality and flexible keying capabilities. It has a single mix effects system comprised of a program/preset bus and a key bus. In addition an integral downstream keyer and fade-to-black provides further keying flexibility.

Internal/External Luminance Keying

The T8 can perform luminance keying in two ways: internal keying from any primary input or external keying from one of two separate key inputs. In addition to normal keying techniques, true linear keying can be produced from a character generator or similar key source. This will enable characters of only 10 lines high to be displayed with perfect clarity.

Chroma Keying

An optional chroma keyer can perform RGB chroma keying from up to three independent sources or encoded chroma keying from a single source. In both cases there is full variable hue and shadow processing.

Split Screen Generator

The split screen generator repeats the first 9 patterns of the main wipes independently; similarly, the borders, softness and position can be adjusted. The split screen can also adopt the main wipe pattern shape to produce a wipe limit effect.

Key Modifiers

A key edger at both foreground and DSK can be fitted to enhance the key and produce black, white or colored outline borders or drop shadows of various thicknesses. An internal mask generator utilizing the split screen output can be used to hide the unwanted visual effects or for rolling credits. Soft or hard edge masks can be produced internally or the operator may select an external mask generator.

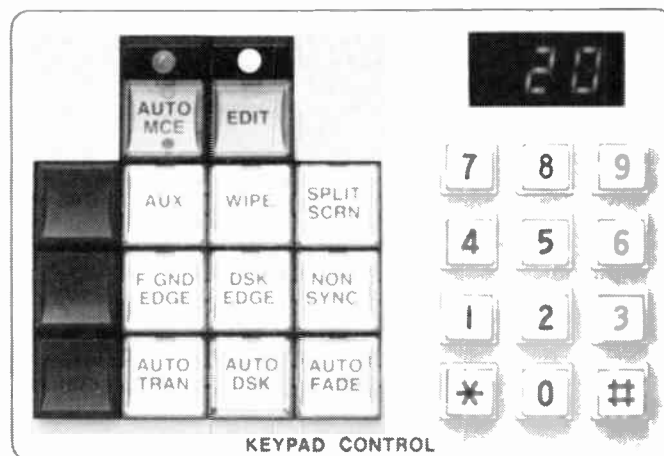
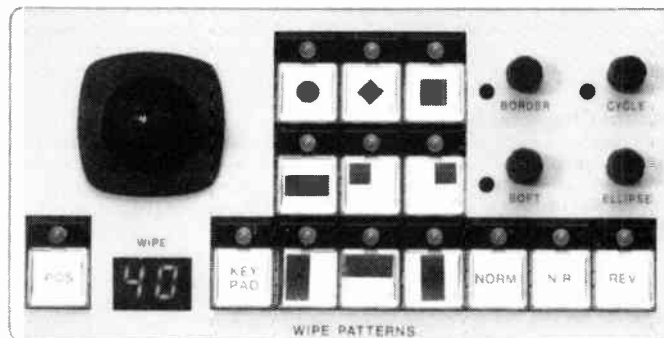
Downstream Keyer

Both DSK and fade-to-black are controlled by auto-transitions of independent rate duration. As with the key bus there are two luminance key inputs plus a facility to perform true linear keying. The key can be modified in a similar fashion to the key bus and a full key preview is incorporated.

Memory Controlled Effects

A non-volatile effects memory system can learn up to 64 complete control panel setups including all colors, borders, softness, etc. These registers may be recalled manually or via an editor. An auto sequence mode enables even the most complex set of control panel registers to be recalled one after the other in a single edit pass.

There is an optional facility to download all 64 registers to a storage medium that resembles a credit card, thus if more than one operator uses the edit suite each one can have their own set of registers, or the cards can be used for archiving for future edits on the same subject.



The switcher can also control a peripheral device such as a DVE so that a recalled event may capture the combined effects of both machines.

Auxiliary Bus

An auxiliary bus which is totally separate from the main mix effects system enables the selection of any of the eight primary inputs or the program output. This bus would be typically used to source a DVE or engineering station.

Automatic Non-Sync Detector

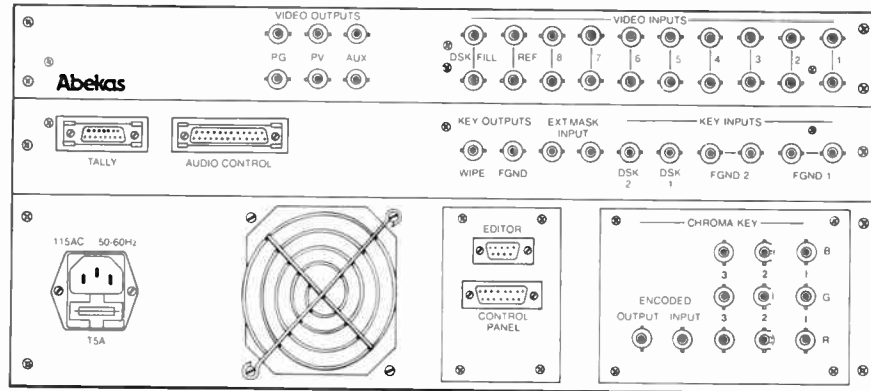
Each of the inputs may be declared synchronous or non-synchronous with respect to the reference. In addition an automatic detection mode will indicate as soon as a source is non-synchronous and will display this regardless of selection. During non-synchronous operation, dissolves and wipes are inhibited. Any attempt to perform such transitions will result in a cut at the end of the fader movement. This will ensure greater picture stability during live operation.

Video Timing Aid

The switcher requires just black burst as a reference which it subsequently reinserts for greater picture stability. A video timing aid assists operators and engineers in checking system timing by displaying the sync timing and subcarrier phase with respect to the reference on the preview output.

Component T8

The component T8 has identical operation and appearance to the composite version but accepts Betacam* or MII** format signals. The video timing aid and encoded chroma key facilities are not applicable to this switcher.



T8 Switcher Cont'd

T8 Switcher Rear Panel

TV systems

NTSC
525/60 Component (Betacam or MII)

Electrical

Frequency Response $\pm 0.1\text{dB}$ to 5.0 MHz
2T pulse 0.25%k
Insertion gain $\pm 0.1\text{dB}$
Gain difference between channels 0.1dB
Differential gain 0.5%
Differential phase 0.5°
Propagation delay source to program output 300ns
Signal-to-noise ratio -65dB rms to 7MHz
Cross talk -56dB at 3.5MHz at program output

Inputs

Video inputs 8: 1v pk-pk composite
High impedance looping
Key inputs 4: 1v pk-pk composite
High impedance looping (FGND only)
DSK ext fill: 1v pk-pk composite
High impedance looping
Genlock reference input: 1v pk-pk composite
High impedance looping

Outputs

Video outputs: Program 2
Preview 2
Auxiliary 2
1v pk-pk
75-ohm impedance

Control Panel

Free standing or rack mounted
10" high by 19" wide

Equipment rack

Composite T8 19" wide x 7" high
Component T8 19" wide x 10½" high

T8 Switcher, Composite NTSC

Standard configuration includes:

- 2 input downstream keyer
- 64 memory controlled effects
- Auxiliary bus (9 x 1)
- 2 independent wipe pattern generators
- 80 wipe patterns
- Rotary and clock wipes on main generator
- FGND wipe and key output
- Soft or hard edge internal mask
- External mask port
- 10 input luminance keyer
- Programmable linear/clipped keying
- Pulse regenerator
- Non-sync detection and processing
- Video timing display (sync and S.C.)
- Operation, installation and technical manuals
- Power cord and 25' serial control cable
- Service extender boards
- Desk top or flush mounting control panel
- General purpose interface to VT editor
- Interface to DVE's and peripherals
- 'On air' cue tallies

..... \$16,900.00

Options:

Serial interfaces to VT editor	\$ 1,500.00
3 input RGB shadow chroma key	960.00
Encoded and RGB shadow chroma key	1,800.00
Mix effects border generator	1,245.00
Downstream keyer border generator	1,245.00
Memory card system (including 1 card)	1,800.00
Additional memory cards (package of 3)	270.00
Single channel audio system	5,500.00
Dual channel audio system	9,600.00

T8 Switcher, Component

Standard configuration same as composite version \$28,050.00

Options:

8 input component shadow chroma key \$840.00
All other options same as composite version (Encoded chroma key and video timing display not applicable.)

Custom Control Panel Cable

50' Control cable	\$ 100.00
100' Control cable	200.00

(One 25' control cable is standard with each control panel)

ACRODYNE INDUSTRIES, INC.*Exciter***FL Series TCV VHF Exciter**

The standard exciter features video correction, stereo and monaural sound compatibility, a SAW IF filter, a phase locked local oscillator, digital and analog power control and IF precorrection.

The video input processor provides front panel adjustment for video gain, sync gain, differential phase and differential gain.

The modulator produces an IF output to the linearity corrector that drives the frequency converter. Vestigial side band shaping is accomplished in the modulator by means of a SAW filter complete with envelope delay and phase precorrection. The aural carrier is phase locked to the visual carrier to maintain stable carrier separation. A front panel switch is provided to select either mono or stereo (MTS) audio input. Dual channel sound versions are available also. Front panel metering includes percent video and aural carrier modulation.

An adjustable linearity corrector at IF compensates for any distortions present in the various amplifier stages.

The frequency converter is a modular front accessible plug-in design. All modules are RFI shielded and all RF connections are on the front panels. This frequency converter features a phase locked local oscillator with a 10MHz TCXO reference, digital and analog power control, Class A broadband amplifiers plus diagnostics and digital metering. Input connections are provided for overall AGC control.

Ease of access is provided by the plug-in modules and an extender board supplied with the system.

Enhanced frequency stability is achieved through the use of a 10MHz TCXO reference and a low noise, phase locked local oscillator.

A multi-pin connector provides a wide variety of interfaces with external equipment for AGC feedback, on/off control, interlocks, protective circuits as well as remote control interface.

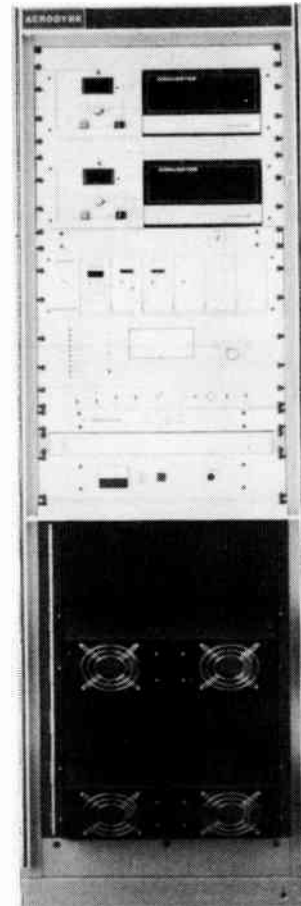
The use of microstrip techniques results in high reliability and a low component count with consistent response between modules.

Amplifiers are all bipolar devices operating Class A that provide exceptional linearity. Voltage regulators and EMI filters on the DC input to each module provide isolation from any power supply variations and RF pickup, preventing degradation of video performance. And, each amplifier stage contains active bias circuitry for optimum operating stability and thermal protection.

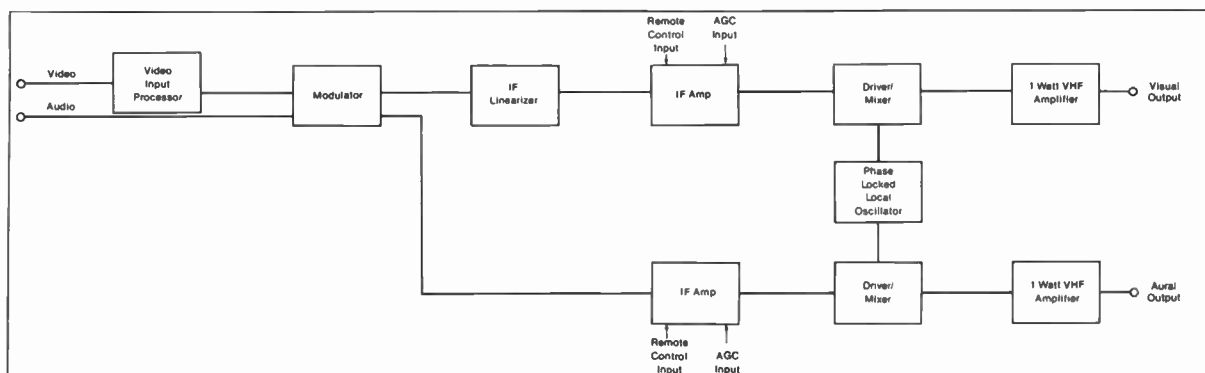
The IF amplifier contains analog and digital circuitry to control IF amplifier gain for output power control. Power can be controlled in a variety of ways: manually by a front panel switch, automatically through an AGC circuit, or by remote control. The front panel also contains an LED display that includes module status, video and transmit indicators.

Solid-State IPAs

The standard exciter delivers 1W peak visual, 1W average aural power output. Solid-state IPAs can be furnished to provide higher levels of drive power. For retrofits or standby applications.



TCV Exciter with 200W Solid-State IPAs



TR Series**5kW to 20kW VHF Television Transmitters**

- FCC and CCIR formats
- Built-in diagnostics
- Modular plug-in design
- Stereo ready
- Overall AGC
- PLL local oscillator
- Internally diplexed

These VHF transmitters are internally diplexed designs using output amplifiers incorporating tetrodes from RCA and either tube type or solid-state drivers. The simultaneous amplification of visual and aural carriers in common amplifiers eliminates the need for separate visual and aural power amplifier circuits reducing the complexity of the transmitter. This design simplification improves field reliability. TRL models are for use in Band I and TRH models are for use in Band III.

VHF Exciter

The Acrodyne standard exciter features video correction, stereo and monaural sound compatibility, a SAW IF filter, a phase locked local oscillator, digital and analog power control, and IF precorrection. The video input processor provides adjustment for video gain, sync gain and differential phase and gain adjustments.

The modulator produces an IF output to the linearity corrector that drives the frequency converter. Vestigial side band shaping is accomplished in the modulator by means of a SAW filter complete with envelope delay and phase precorrection. The aural carrier is phase locked to the visual carrier to maintain stable carrier separation.

An adjustable linearity corrector at IF compensates for any distortions present in the various amplifier stages.

The frequency converter is a modular front accessible plug-in design. All modules are RF shielded and all RF connections are on the front panels. This frequency converter features a phase locked local oscillator with a 10MHz TCXO reference, digital and analog power control, class A broadband amplifiers plus diagnostics and digital metering. Input connections are provided for overall AGC control.

Driver Amplifiers

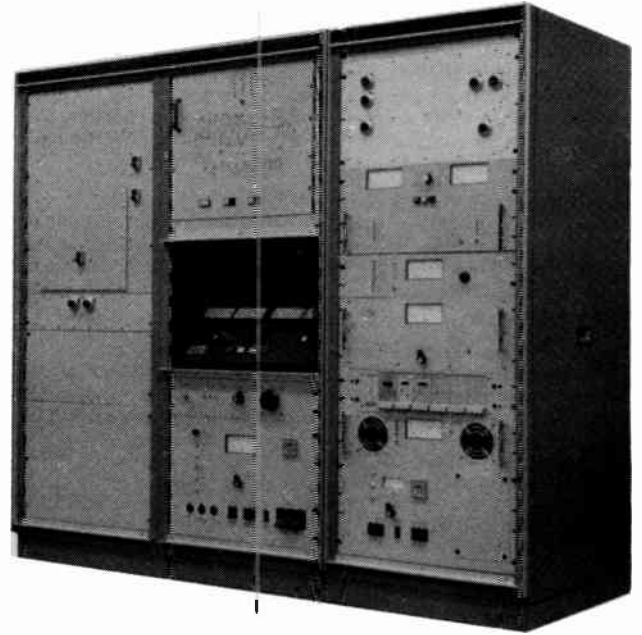
These transmitters can be supplied with either tube or solid-state driver amplifiers.

Tube drivers can reduce the initial cost of the system in certain applications. Dial type front panel controls facilitate tuning. Anode cooling fans provide filtered high pressure air that can be exhausted to the outside. Pressure switches ensure that sufficient air flow is present.

Solid-state broadband drivers are available, eliminating the tuned driver stage, periodic tube replacement and enhancing overall reliability. These Acrodyne designed modules use linear devices for combined amplification or separate visual and aural amplification depending on the application. Thermal protection circuits are provided for these amplifiers. A linear power supply ensures noise free operation and features current foldback and overvoltage protection. The modules are mounted in slide-out drawers with dedicated cooling fans.

Tetrode Final Amplifier

The tuned coaxial cavity final amplifiers use tetrodes from RCA operating in Class AB1. The tuned bandwidth of these amplifiers ensure that tube aging will have minor effects on the signal bandpass. The final output is a composite TV signal with in band intermodulation (IM) products down -54dB or better. Output notch filters reduce the out-of-band IM products to -60dB and a low pass



20kW Band I (Low Band) VHF TV Transmitter

filter provides harmonic rejection to -60dB. Air cooling is used exclusively to cool these tetrodes. The anode cooling fan may be located in a separate cabinet permitting it to be in another room or it may be ceiling mounted where floor space is limited.

Logic Interface

Self-protection and control circuitry are centrally located in the logic interface chassis. Critical transmitter parameters such as video presence, power supply voltages, thermal conditions, DC levels, safety interlocks and remote control inputs are processed to verify proper system operation and/or to operate automatic shutdown sequences.

Metering and Status

Visual indication of the system status is provided by the use of appropriate LED indicators, metering of DC voltages and current levels and forward/reverse RF power metering.

Logic Display

The transmitter incorporates a logic status panel which provides the operator with a positive LED display of the transmitter start-up and shutdown sequence. In case of a momentary fault, the system logic automatically recycles up to four times to maintain service. The event remains indicated until it is manually reset.

Protection

Special protection has been designed into this equipment to avoid damage from transient line conditions. All supplies in the final amplifier, except the plate supply, are regulated. The plate supply is designed for transient suppression through the use of choke filtering and high voltage, high current rectifiers. All power supplies are protected from voltage transients by MOVs at their AC input.

ACRODYNE INDUSTRIES, INC.*Transmitters/Translators***TL Series 1W to 1kW VHF and UHF
Television Transmitters/Translators**

The TL Series TV Transmitters and TV Translators are designed to meet the needs of domestic LPTV/Community TV broadcasters and translator users. They are also well suited for international applications from 1W to 1kW. This series of UHF and VHF equipment offers unmatched economy along with Acrodyne's traditional quality. Plus, all of today's high technology innovations have been designed into each system.

Modulator (Transmitter Service)

The modulator provides an IF output at 38.9 or 45.75MHz depending on the CCIR system. Vestigial side band shaping is accomplished at the IF frequency with a SAW filter complete with envelope delay and phase pre-correction. The aural carrier is phase locked to the visual carrier to maintain stable carrier separation.

Translator/Transposer Service

For these applications, the modulator is replaced by a VHF or UHF down converter which maintains video and audio transparency while producing an IF output. For special applications, both a modulator and a down-converter can be supplied.

Type T Upconverter

Standard systems are supplied with our Type T upconverter. This slide-out chassis is provided with a front panel meter, power control and on/off control and features:

- Class A broadband amplifiers
- 1W output
- Crystal or optional phase locked oscillator
- Built-in power supply

Optional TCU Upconverter

The TCU upconverter is a modular, front panel plug-in design for ease of access. Each module is RFI shielded and all connections are on the front panels. All RF circuitry is the same as the standard upconverter. In addition to the standard upconverter features, the TCU design offers the benefits of:

- Phase locked oscillator (standard)
- Built-in diagnostics
- Overall AGC
- Digital metering

Solid-State Amplifiers

VHF and UHF solid-state amplifier designs for the IPA stages and as final amplifiers are broadband and Class A operated to assure excellent visual and aural performance. These amps are mounted on slide-out drawers or hinged panels for easy access and are forced air cooled for long term reliability.

Power Amplifiers

Most standard systems are solid-state. Certain systems are available with either solid-state or tube type output amplifiers.

1kW tube models use industry standard tetrodes from RCA or Thomson. These systems also feature our logic interface chassis which processes critical system parameters to verify proper operation and/or to operate automatic shutdown sequences. Front panel LEDs and metering provide diagnostic information. Critical tetrode power supplies are protected with an AC line regulator. Double filtered high pressure air cools the tetrode and pressure sensing logic ensures that sufficient air pressure is always present.

Cooling

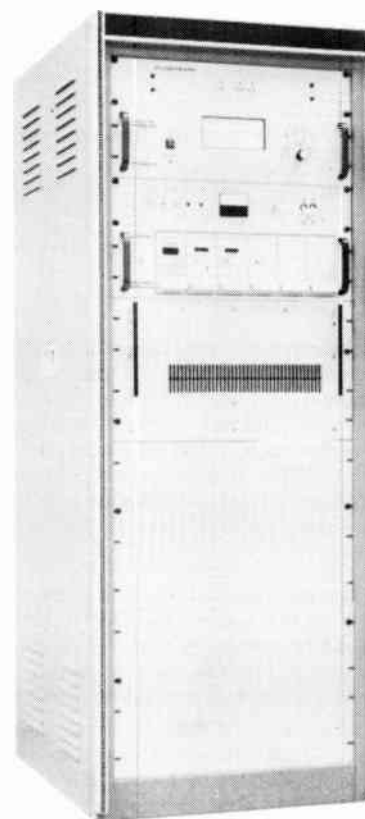
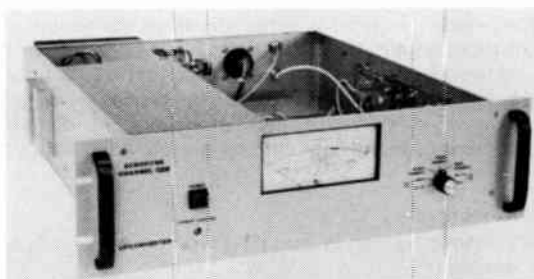
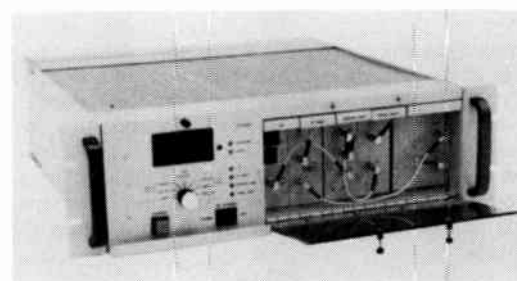
All systems with over 1W output are forced air cooled for long term reliability.

Stereo Compatibility

With optional wideband or dual channel exciters, all TV transmitters are stereo ready. The use of broadband Class A solid-state amps and ultra linear tetrodes assures virtual transparent transmission of stereo signals. TV translators will not degrade incoming stereo audio signals.

Options

- Phase locked oscillator (required for offset applications)
- TCU upconverter
- Stereo audio input
- Translator service
- Frequency agile systems
- Station ID

**100W Solid-State UHF TV Transmitter****Type T Upconverter****TCU Upconverter**

ACRODYNE INDUSTRIES, INC.**Transmitter/Translator****TRU/1KAC/TLU/1KAC****1kW UHF Television Transmitter/Translator**

The 1kW UHF transmitter utilizes IF modulation and low level diplexing to produce 1kW visual and 100W aural power. A solid-state driver, operating at approximately 30W, drives the final tetrode amplifier stage to its 1kW rated output power. The final amplifier is air-cooled.

This space efficient, self-contained television transmitter incorporates many features of high power equipment and may be used to drive high power UHF tetrode amplifiers.

Modulator TRU/1KAC

The modulator provides an IF output at 38.9 or 45.75MHz depending on the CCIR system specified. Vestigial side band shaping is accomplished at the IF frequency with a SAW filter complete with envelope delay and phase pre-correction. The aural carrier is phase locked to the visual carrier to maintain stable carrier separation. The modulator includes front panel metering of video and aural modulation.

Translator/Transposer Service TLU/1KAC

In translator/transposer applications, the modulator is removed from the system and replaced with a receiver chassis. The receiver chassis maintains video signal transparency while down converting to the required IF frequency. For special applications, the TLU/1KAC can be supplied with both a modulator and a receiver input.

Upconverter

The TCU upconverter is a modular plug-in design for ease of servicing and maintenance. Each module is RFI shielded and all RF connections are on the front panels. The upconverter features broadband amplifiers, digital and analog circuitry for power control, a phase locked local oscillator with a 10MHz TCXO reference for transmitter applications (fixed crystal oscillators for standard translator applications) plus extensive built-in diagnostics and metering. Input connections are provided for overall transmitter AGC.

Tetrode Amplifier

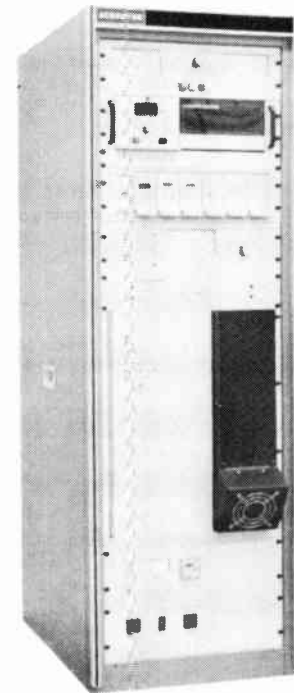
The tuned coaxial cavity final amplifier uses a high efficiency tetrode operating in Class AB1. The tuned bandwidth of this amplifier is 10MHz which insures that tube aging will have minor effects on the signal bandpass.

Filtered air cools the tube using a high pressure blower mounted on vibration absorbing pads. An air pressure switch and thermal sensor provide redundant protection in the event that cooling air is lost.

Output notch filters reduce the out-of-band intermodulation products to -60dB. The filter output is a complete TV signal containing both aural and visual carriers to a single transmission line antenna feed.

Protection

Special protection has been designed into this equipment to avoid damage from transient line conditions. Critical filament and bias supplies in

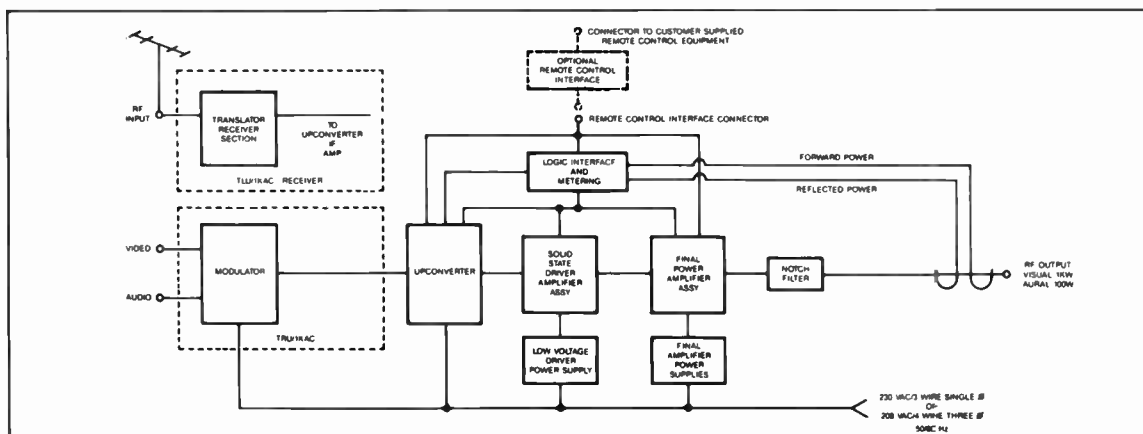


**TRU/1KAC
TLU/1KAC**

the final amplifier are AC regulated by magnetic regulation transformers. The plate and screen supply is designed for transient suppression by the use of choke filtering and high voltage, high peak current rectifiers.

The solid-state driver assembly is protected by a regulated DC supply that operates over $\pm 10\%$ input variations. Over-voltage protection by SCR crowbar and current foldback also protects all transistor circuits.

Optional logic control also provides for a 10 sec. turn-on if AC power is interrupted for less than 10 secs.



Refer to Green Section for Addresses and Telephone Numbers.

ACRODYNE INDUSTRIES, INC.

Transmitters

**TRU/5KA/TRU-5KA
5kW UHF Television Transmitter**

The 5kW UHF transmitters utilize IF modulation and low level diplexing to produce 5kW visual and 500W aural power output. A single driver, tetrode or solid-state driver operating at approximately 200W drives the final amplifier to rated power.

These units are completely air-cooled in either configuration. The transmitter is prewired for remote control and telemetry and can be easily interfaced with most RC systems by adding the optional RC interface board which provides prescaled outputs.

Modulator

The modulator provides an IF output at 38.9 or 45.75MHz depending on the CCIR system specified. Vestigial side band shaping is accomplished at the IF frequency with a SAW filter. The aural carrier is phase locked to the visual carrier to maintain stable carrier separation. The modulator includes front panel metering of video and aural modulation.

Upconverter

The TCU upconverter is a modular plug-in design for ease of servicing and maintenance. Each module is RFI shielded and all RF connections are on the front panels. The upconverter features broadband amplifiers, digital and analog circuitry for power control, a phase-locked local oscillator with a 10MHz TCXO reference plus extensive built-in diagnostics and metering. Input connections are provided for overall transmitter AGC.

TRU/5KA Solid-State Driver Amplifier

The solid-state driver consists of separate visual and aural amplifier chains to minimize in-band intermodulation products. The solid-state driver array features in-phase combined modular amplifiers with a common high current power supply with fused branches for each amplifier. The visual and aural signals are combined at approximately 200W peak visual. A single amplifier design covers the UHF spectrum and includes temperature compensating biasing techniques. Amplifier thermal protection and high temperature alarms are included in the basic logic design.

TRU-5KA Tetrode Driver Amplifier

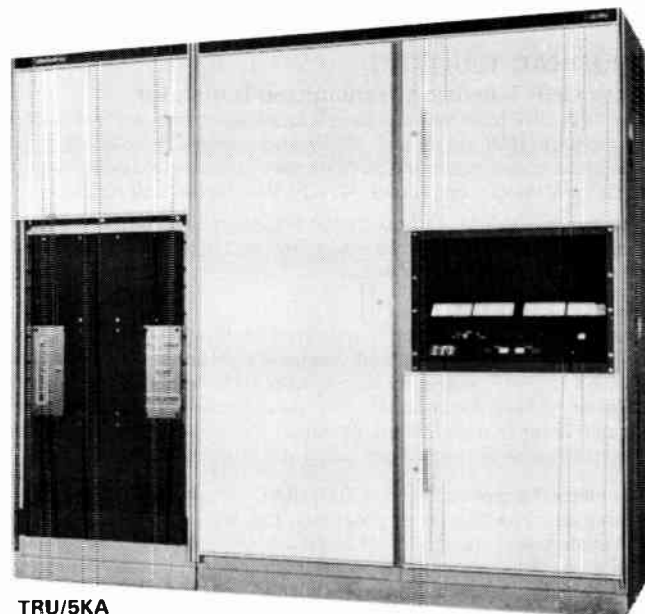
The combined visual/aural upconverter output drives a 5W solid-state amplifier which in turn drives a Thomson TH-338 air-cooled tetrode operating in class AB1. The tuned bandwidth of this amplifier is 10MHz which insures that tube aging will have minor effects on bandpass or intermodulation products.

Tetrode Final Amplifier

A Thomson TH-382 air-cooled tetrode with a tuned bandwidth of approximately 12MHz is the final amplifier stage for the TRU-5KA or TRU/5KA transmitter. The output filter assembly reduces out-of-band intermodulation products to -60dB or greater and a low pass filter provides harmonic rejection. Overall AGC is provided by a sample coupler at the output with feedback to the TCU upconverter.

Logic Interface

Self-protection and control circuitry, metering and status indicators are centrally located in the logic interface chassis. Critical transmitter parameters consisting of video presence, power supply voltages, thermal conditions, DC levels, safety interlocks and remote control inputs are processed to



**TRU/5KA
TRU-5KA**

verify proper system operation and/or to operate ASD and drive shutdown sequences. An output power meter with selector switch for visual and aural power is located on the front panel of the chassis.

Logic Display

The transmitter incorporates a logic status display panel which operates in conjunction with an automatic recycling circuit. In case of a momentary overload, the unit automatically recycles in an effort to maintain service. Four recycles occur before complete shutdown.

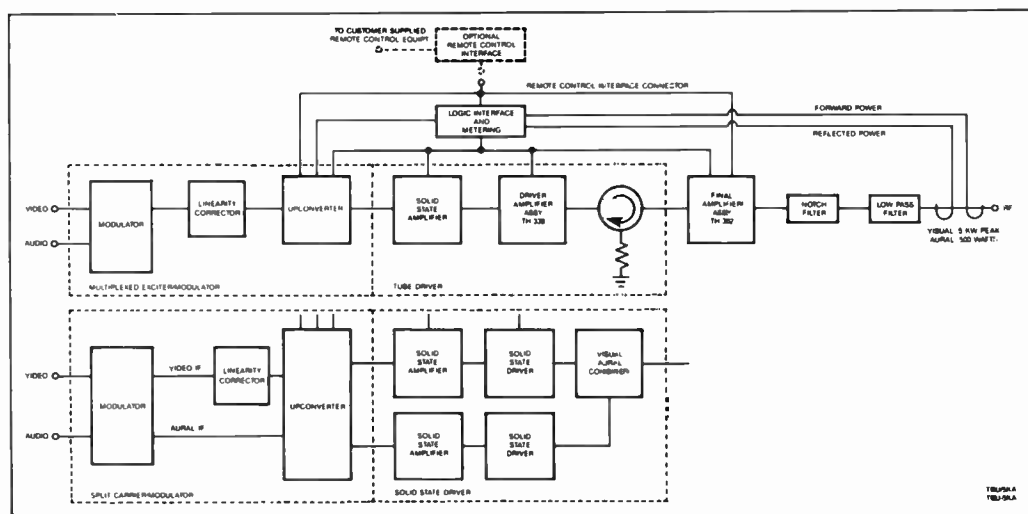
Metering and Status

The TRU/5KA and TRU-5KA are equipped with extensive built-in metering functions for DC voltage and current levels plus forward and reverse RF power measurements. In addition, LED indicators are employed for quick identification of normal (green) or alarm (red) conditions in critical subassemblies of the transmitter.

Protection

Special protection has been designed into this equipment to avoid damage from transient line conditions. Critical filament and bias supplies in the final amplifier are AC regulated by magnetic regulation transformers. The plate and screen supply is designed for transient suppression through the use of choke filtering and high voltage, high peak current rectifiers.

The solid-state driver assembly is protected by a regulated DC supply that operates over $\pm 10\%$ input variations. Over-voltage protection by SCR crowbar and current foldback also protects all transistor circuits. Standard logic control also provides for a 10 sec. turn-on if AC power is interrupted for less than 10 sec.



ACRODYNE INDUSTRIES, INC.

Transmitter

TRU-10KVC**10kW UHF Television Transmitter**

This 10kW UHF transmitter utilizes IF modulation and low level diplexing to produce 10kW visual and 1kW aural power. A single tube driver operating at approximately 400W drives the final amplifier stage to its 10kW rated output power.

The driver tube of the TRU-10KVC is air-cooled, while Hypervapotron® cooling is used for the final amplifier stage. These cooling systems insure minimal system maintenance and reliable operation, while minimizing high pressure air requirements.

Video Input Processor

The video input processor provides adjustment for video gain, sync gain and differential phase and gain adjustments to permit the operator to adjust the transmitter for optimum video performance.

Modulator

The modulator provides an IF output at 38.9 or 45.75MHz depending on the CCIR system specified. Vestigial side band shaping is accomplished at the IF frequency with a SAW filter complete with envelope delay and phase pre-correction. The aural carrier is phase locked to the visual carrier to maintain stable carrier separation. The modulator includes front panel metering of video and aural modulation.

Upconverter

The TCU upconverter is a modular plug-in design for ease of servicing and maintenance. Each module is RFI shielded and all RF connections are on the front panels. The upconverter features broadband amplifiers, digital and analog circuitry for power control, a phase locked local oscillator with a 10MHz TCXO reference plus extensive built-in diagnostics and metering. Input connections are provided for overall transmitter AGC.

Solid-State Driver Amplifier

The solid-state driver amplifier consists of a single 30W plug-in module operating at 10W nominal output. The amplifier is designed for 50 ohm interfacing and permits operation on any TV channel between 470MHz and 810MHz without adjustment. Gain variations over the 340MHz band are less than 1dB.

Tetrode Driver Amplifier

The tuned coaxial cavity driver amplifier uses a high efficiency tetrode operating in class AB1. The tuned bandwidth of this amplifier is 10MHz which insures that tube aging will have minor effects on the signal bandpass. This 1kW rated amplifier normally operates at 400W output resulting in extended tube life and exceptional performance.

Tetrode Final Amplifier

The tuned coaxial cavity final amplifier uses a high efficiency Thomson CSF TH-582 tetrode operating in class AB1. The tuned bandwidth of this amplifier is 12MHz which insures that tube aging will have minor effects on the signal bandpass. Output notch filters reduce the out-of-band intermodulation products to 60dB and a low pass filter provides harmonic rejection. The filter output is a complete TV signal containing both aural and visual carriers to a single transmission line antenna feed.

Hypervapotron Cooling

The TRU-10KVC utilizes a vapor phase cooling system. This system uses water and an external heat exchanger. The heat exchanger can be located up



TRU-10KVC

to 30' from the transmitter and contains all the necessary purification filters and control monitors for continuous unattended operation. It is designed to exhaust hot air into a duct for building heating or direct exhaust.

Logic Interface

Self-protection and control circuitry, metering and status indicators are centrally located in the logic interface chassis. Critical transmitter parameters consisting of video presence, power supply voltages, thermal conditions, DC levels, safety interlocks and remote control inputs are processed to verify proper system operation and/or to operate ASD and drive shutdown sequences. An output power meter with selector switch for visual and aural power is located on the front panel of this chassis.

Logic Display

The transmitter incorporates a logic status display panel which operates in conjunction with an automatic recycling circuit. In case of a momentary overload, the unit automatically recycles in an effort to maintain service. Four recycles occur before complete shutdown.

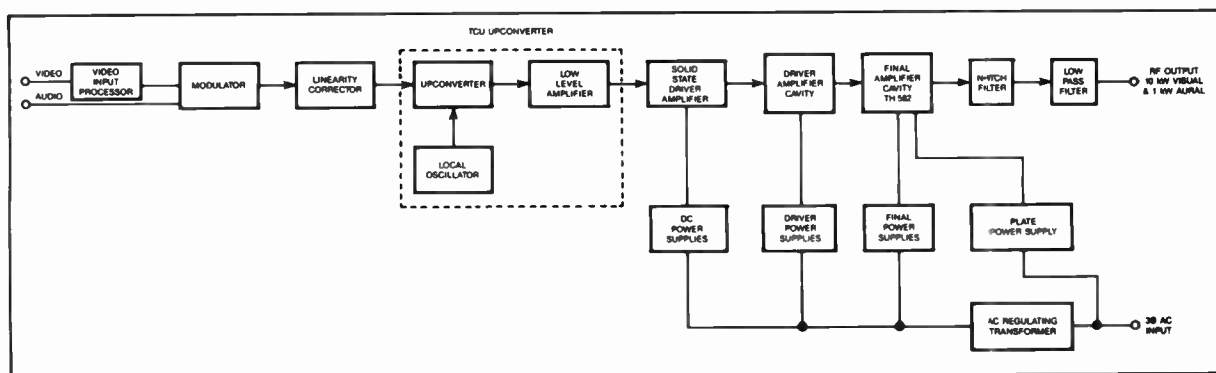
Protection

Special protection has been designed into this equipment to avoid damage from transient line conditions. All supplies in the final amplifier, except the tetrode plate supply, are AC regulated by magnetic regulation transformers. The plate supply is designed for transient suppression through the use of choke filtering and high voltage, high peak current rectifiers.

The solid-state driver assembly and low level electronics are protected by a magnetic regulator prior to any regulated DC supply. Over-voltage protection by SCR crowbar and current foldback also protects all transistor circuits. The solid-state amplifier is protected against load mismatches by means of a circulator.

Final Amplifier Bypass Option

This option affords the broadcaster the advantage of a 1kW standby in the event of final amplifier malfunction. Both manual and automatic final amplifier bypass switching are available.



Prices and Specifications Subject to Change Without Notice.

ACRODYNE INDUSTRIES, INC.**Transmitter****TRU-30KV****30kW UHF Television Transmitter**

This 30kW UHF transmitter utilizes a single tetrode final amplifier and IF diplexing to produce 30kW visual and 3kW aural power. A single tetrode driver operating at approximately 1200W drives the final amplifier. The driver is air cooled while Hypervapotron® cooling is used for the final amplifier. These cooling systems are designed for minimal maintenance and reliable operation.

UHF Exciter

The use of ultra linear tetrodes and class A solid-state amplifiers permits the use of relatively simple exciters that do not include extensive precorrection circuits as required with klystron type UHF transmitters. The standard exciter consists of two plug-in chassis with front accessible plug-in modules.

The video input processor provides adjustment for video gain, sync gain, differential phase and differential gain from the front panel.

The modulator produces an IF output to the linearity corrector that drives the frequency converter. Vestigial side band shaping is accomplished in the modulator by means of a SAW filter complete with envelope delay and phase precorrection. The aural carrier is phase locked to the visual carrier to maintain stable carrier separation.

An adjustable linearity corrector at IF compensates for any distortions present in the various amplifier stages.

The frequency converter is a modular front accessible plug-in design. All modules are RFI shielded and all RF connections are on the front panels. This frequency converter features a phase locked local oscillator with a 10MHz TCXO reference, digital and analog power control, class A broadband amplifiers plus diagnostics and digital metering. Input connections are provided for overall AGC control.

Solid-State IPA

The solid-state IPA is mounted in a slide out drawer with forced air cooling. This class A amplifier is designed for 50 ohm interfacing and permits operation on any TV channel between 470MHz and 810MHz without adjustment.

Tetrode Driver Amplifier

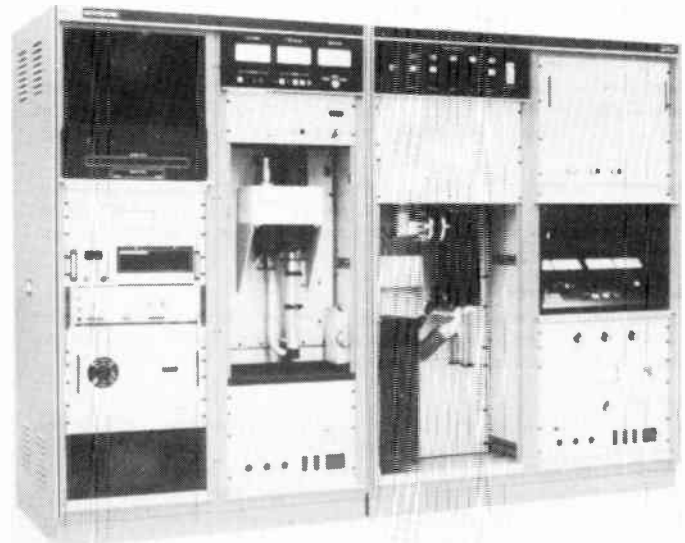
The tuned coaxial cavity driver uses a high efficiency Thomson CSF TH-393 tetrode operating in class AB1. The tuned bandwidth of the amplifier is 10MHz which ensures that tube aging will have minor effects on the signal bandpass. This 2kW rated amplifier normally operates at 1200W visual, 120W aural output resulting in extended tube life and exceptional performance.

Tetrode Final Amplifier

The tuned coaxial cavity final amplifier uses a high efficiency Thomson CSF TH-563 tetrode operating in class AB1. The tuned bandwidth of this amplifier is 10MHz which ensures that tube aging will have minor effects on the signal bandpass. The final output is a composite TV signal with in band intermodulation (IM) products down -54dB or better. Output notch filters reduce the out-of-band IM products to -60dB and a low pass filter provides harmonic rejection to -60dB.

Hypervapotron Cooling

The TRU-30KV utilizes a vapor phase cooling system. This system uses distilled water and an external heat exchanger. The heat exchanger can be located up to 30' from the transmitter and contains all the necessary purification filters and control monitors for continuous unattended operation. It is designed to exhaust hot air into a duct for building heating or direct exhaust to the outside.

**TRU-30KV****Logic Interface**

Self-protection and control circuitry are centrally located in the logic interface chassis. Critical transmitter parameters such as video presence, power supply voltages, thermal conditions, DC levels, safety interlocks and remote control inputs are processed to verify proper system operation and/or to operate automatic shutdown sequences.

Metering and Status

Visual indication of the system status is provided by the use of appropriate LED indicators, metering of DC voltages and current levels, and forward/reverse RF power metering.

Logic Display

The transmitter incorporates a logic status panel which provides the operator with a positive LED display of the transmitter start-up and shutdown sequence. In case of a momentary fault, the system logic automatically recycles up to four times to maintain service. The event remains indicated until it is manually reset.

Protection

Special protection has been designed into this equipment to avoid damage from transient line conditions. All supplies in the final amplifier, except the plate supply, are regulated. The plate supply is designed for transient suppression through the use of choke filtering and high voltage, high current rectifiers. All power supplies are protected from voltage transients by MOVs at their AC input.

Overvoltage protection by SCR crowbar and current foldback also protects all transistor circuits.

Final Amplifier Bypass Option

This option affords the broadcaster the advantage of a 2kW standby in the event that the final amplifier must be taken out of service.

ADCOM

Tonearm Cartridges

XC Series

High Output Moving Coil Cartridges

The XC Series of Crosscoil cartridges offer the utmost in performance. Every aspect of cartridge design has been explored in the XC development. Differences in models are basically due to choice of diamond shape and cantilever material. As with all Adcom Crosscoil designs, a pre-amplifier or transformer is not necessary for optimum performance.

SXC/VDH The flagship cartridge from Adcom. A van den Hul stylus tip is precision fitted to a tubular sapphire cantilever for extremely low phase shift.

The SXC-vdH cartridge is the most sophisticated cartridge currently available and will perform up to its potential in almost any currently available quality tonearm and turntable combination. The van den Hul stylus tip has a contact area of .15 x 3.3 mil allowing it to keep intimate contact with the record groove wall. This allows for not only outstanding sound quality, but also minimal record wear during the tracking process.

SXC/VDH \$500.00

XC-MR II An Adcom modified Micro-Ridge stylus tip, offers a level of performance that up to now has not been available in a cartridge at its price. The Micro-Ridge stylus tip along with the Crosscoil design allows tremendous recovery of detail

from the record groove. The contact area (.15 x 3.0 mil) of the stylus tip allows for the accurate tracing of record grooves along with improved tip life due to the unique shape of the Micro-Ridge stylus.

XC-MR II \$360.00

XC-LT II The "Best Buy" XC cartridge featuring a newly designed line trace stylus. The XC-LT II will provide a remarkably high level of performance and offers non-critical compatibility with nearly all tonearms currently available. The contact area of the line trace stylus (.25 x 1.5 mil) is both taller and narrower than typical elliptical shapes and therefore can retrieve more detail from the record groove.

XC-LT II \$290.00

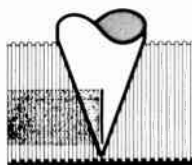


XC Series

Transducer Type:
Frequency Response:
Channel Separation:

Channel Balance:
Output Voltage at 1kHz, 5cm/s peak, 45°
Tracking Ability at 300Hz:
Dynamic Compliance at 10Hz:
Tip Dimensions:
Cantilever Material:
Stylus Type:

Square Wave Rise Time:
Phase Shift at 15kHz:
Group Delay Envelope 20 to 20kHz:
Vertical Tracking Angle:
Tracking Force:
Load Impedance:
Capacitance:
Cartridge Impedance at 1kHz:
Inductance at 1kHz:
Weight of Cartridge:



SXC/VDH

High output moving coil
20Hz to 20kHz +3 -0dB
200Hz to 10kHz 25dB
10kHz to 20kHz 20dB
Within 1.0dB

2.3mV
80µm at 1.8g
19 x 10⁻⁶cm/dyne
.15 x 3.3 mil
Tubular sapphire
Nude mounted grain oriented highly polished diamond
7µs
15°

Within 1µs
20°
1.8g ± 0.2g
47K ohms, non-critical
Non-critical
110 ohms
4mH
4.8g

XC/MR II

High output moving coil
20Hz to 20kHz ± 1dB
200Hz to 10kHz 25dB
10kHz to 20kHz 20dB
Within 1.0dB

2.3mV
75µm at 1.8g
19 x 10⁻⁶cm/dyne
.15 x 3.0 mil
Tubular aluminum
Nude mounted grain oriented highly polished diamond
10µs
28°

Within 1µs
20°
1.8g ± 0.2g
47K ohms, non-critical
Non-critical
110 ohms
4mH
4.8g

XC/LT II

High output moving coil
20Hz to 20kHz ± 1dB
200Hz to 10kHz 25dB
10kHz to 20kHz 20dB
Within 1.0dB

2.3mV
75µm at 1.8g
19 x 10⁻⁶cm/dyne
.25 x 1.5 mil
Tubular aluminum
Nude mounted grain oriented highly polished diamond
10µs
28°

Within 1µs
20°
1.8g ± 0.2g
47K ohms, non-critical
Non-critical
110 ohms
4mH
4.8g

HC Series

High Output Moving Coil Cartridges

The HC Series of Crosscoil cartridges is a major step forward in moving coil design at a price that almost everyone can afford. From the experience gained in producing the highly-regarded XC Series, the HC Series has been engineered to retain these design concepts and still offer a quality and value combination unavailable before now.

HC-VDH II All the performance of the HC-E-II with the addition of a van den Hul II stylus tip. The van den Hul II shape offers superior tracing of the record

groove wall for improved detail and depth. The contact area (.2 x 2.8 mil) of the vdH II stylus tip is radically different from the standard elliptical shapes and offers not only superior sound quality in comparison to standard elliptical shapes, but also increased record and stylus life.

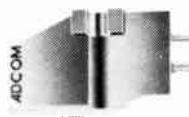
HC-VDH II \$250.00

HC-E II Adcom's most affordable high output moving coil cartridge, it retains almost all of the design concepts and quality assurance of our costlier Crosscoil models. A highly polished elliptical stylus is used for fine overall performance.

HC-E II \$160.00

HP/E II Owners of P-mount turntables may now obtain superior playback quality with the introduction of the Adcom HP/E II P-mount cartridge. The HP/E II is the first P-mount cartridge that offers almost all the outstanding design elements of the Adcom Crosscoil design. Weight, stylus overhang and vertical tracking angle have been engineered to give optimum performance with any P-mount turntable. An adaptor to allow the HP-E II to be used with non P-mount turntables is included at no extra charge.

HP/E II \$160.00



HC Series

Transducer Type:
Frequency Response:
Channel Separation:

Channel Balance:
Output Voltage at 1kHz, 5cm/s peak, 45°
Tracking Ability at 300Hz:
Dynamic Compliance at 10Hz:
Tip Dimensions:
Cantilever Material:
Stylus Type:

Square Wave Rise Time:
Phase Shift at 15kHz:
Group Delay Envelope 20 to 20kHz:
Vertical Tracking Angle:
Tracking Force:
Load Impedance:
Capacitance:
Cartridge Impedance at 1kHz:
Inductance at 1kHz:
Weight of Cartridge:



HC/VDH II

High output moving coil
20Hz to 20kHz +2.5 -1.0dB
200Hz to 10kHz 22dB
10kHz to 20kHz 19dB
Within 1.5dB

2.3mV
70µm at 1.8g
17 x 10⁻⁶cm/dyne
.2 x 2.8 mil
Tubular aluminum
Nude mounted grain oriented highly polished diamond
10µs
28°

Within 1µs
20°
1.8g ± 0.2g
47K ohms, non-critical
Non-critical
110 ohms
4mH
4.8g

HC/E II

High output moving coil
20Hz to 20kHz +2.5 -1.0dB
200Hz to 10kHz 22dB
10kHz to 20kHz 19dB
Within 1.5dB

2.3mV
70µm at 1.8g
17 x 10⁻⁶cm/dyne
.3 x .7 mil
Tubular aluminum
Highly polished elliptical diamond
10µs
28°

Within 1µs
20°
1.8g ± 0.2g
47K ohms, non-critical
Non-critical
110 ohms
4mH
4.8g

HP/E II

High output moving coil
20Hz to 20kHz +2.5 -1.0dB
200Hz to 10kHz 22dB
10kHz to 20kHz 19dB
Within 1.5dB

2.3mV
60µm at 1.25g
17 x 10⁻⁶cm/dyne
.3 x .7 mil
Tubular aluminum
Highly polished elliptical diamond
10µs
28°

Within 1µs
20°
1.25g ± 0.2g
47K ohms, non-critical
Non-critical
110 ohms
4mH
6.0g

ADC TELECOMMUNICATIONS, INC.

Video/Audio Patching

Pro-Patch Video Jackfield

PPV-24 MK II

The Pro-Patch Video Jackfield features a 2 x 24 array of ADC switching (self-normaling) coax jacks wired back to quick and simple BNC connectors on a clutter-free rear panel. Self-normaling loops internal to the jackfield are color-phase compensated for cross patching. No phase shift occurs between self-normal and patch cord providing a phase coherent patching system.

4-26792-0010 2 x 24 (48 Jacks) \$1750.00

Note: Use only 3' patch cord to preserve phase coherent capability of ADC Pro-Patch Video Jackfield.

Note: Use only 36" patch cords for Pro-Patch units.

Note: When ordering, G denotes gold plating on all contact surfaces, N denotes gold plating on the center conductors/springs only.

PPI Panels

- You can select the SJ3000 in terminating, non-terminating, nickel or gold versions
- The SJ3000 coax jack is rated for 10,000 insertion/withdrawal cycles
- PPI Panels are available in 1³/₄" and 3¹/₂" heights with 12, 20, 24 or 26 circuits for greater installation flexibility
- PPI Panels with various hole and spacing configurations are sold separately or loaded with your choice of jacks

Our innovative PPI Panel with SJ3000 switching (self-normaling) coax jacks makes accessing and connecting video circuits easy.

The PPI is available in several configurations to suit your particular application need.

PPI-2224RS-75N Loaded Panels \$820.00
 PPI-2224RS Blank Panels \$85.00

Standard Size Coaxial Patch Cords

CC1072G	12" (.305m)	..	\$18.09
CC1072N	12" (.305m)	..	13.72
CC1074G	24" (.609m)	..	18.09
CC1074N	24" (.609m)	..	13.72
CC1076G	36" (.914m)	..	18.09
CC1076N	36" (.914m)	..	13.72

Pro Patch Audio Jackfields

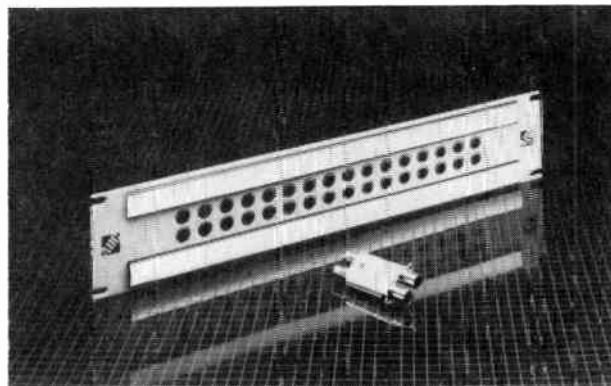
PPA3-14 MK II N.O.	3" x 14", normals brought out	..	\$705.00
PPA3-18 MK II N.O.	3" x 18", normals brought out	..	705.00
PPA3-14 MK II N.S.	3" x 14", normals strapped at panel	..	575.00
PPA3-18 MK II N.S.	3" x 18", normals strapped at panel	..	575.00
PPS3-14 MK II N.O.	3" x 14", stereo version, normals brought out	..	725.00
PPS3-18 MK II N.O.	3" x 18" stereo version, normals brought out	..	725.00
PPS3-14 MK II N.S.	3" x 14" stereo version, normals strapped at panel	..	595.00
PPS3-18 MK II N.S.	3" x 18" stereo version, normals strapped at panel	..	595.00

Longframe (1/4") Patch Cords

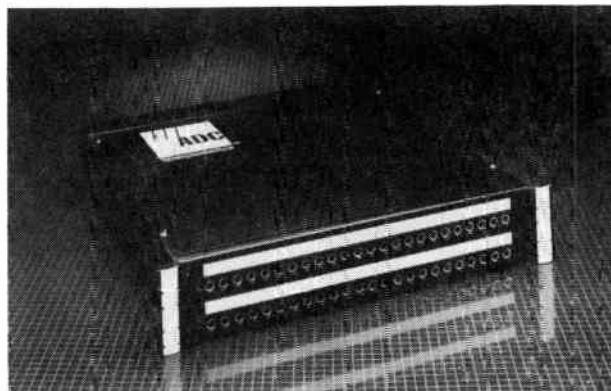
PJ81	1' length	..	\$12.97
PJ82	2' length	..	13.66
PJ83	3' length	..	14.14
PJ84	4' length	..	14.69
PJ86	6' length	..	15.76

Bantam Patch Cords

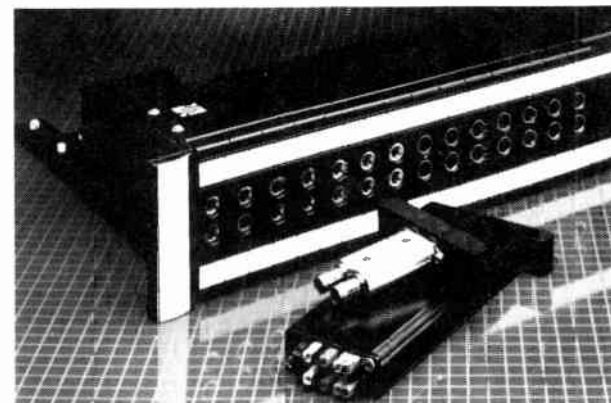
PJ712	12" length	..	\$7.61
PJ713	18" length	..	7.78
PJ714	24" length	..	7.96



PPI Panels



Pro Patch Audio



Vamp Patchbay

PJ715	30" length	..	\$8.11
PJ716	30" length	..	8.26
PJ718	48" length	..	8.56
PJ720	60" length	..	8.89
PJ722	72" length	..	9.19

VAMP—Video, Audio Modular Patchbay

- Chassis accepts 20 video and audio modules
- Audio module features unique QCP terminations
- Video module comes with the ADC SJ3000 self-normaling coax jack
- ADC supplies blanks for unused positions to give the appearance of a fully loaded patchbay

Offers all the flexibility you need in a single bay. Ideal if you have limited or changing patching requirements or need audio and video patching in the same bay.

Standard BJF MK II Patchbays

1.75 panels with 2 x 24 array of longframe (1/4") jacks

BJF103-4 MK II

Normals brought out, UP3-N termination \$ 725.00

BJF107-4 MK II

Normals strapped at jacks, UP3 termination 575.00

3.5 panels with 2 x 24 array longframe (1/4") jacks

BJF203-4 MK II

Normals brought out, UP3-N termination 725.00

BJF207-4 MK II

Normals strapped at jacks, UP3 termination 575.00

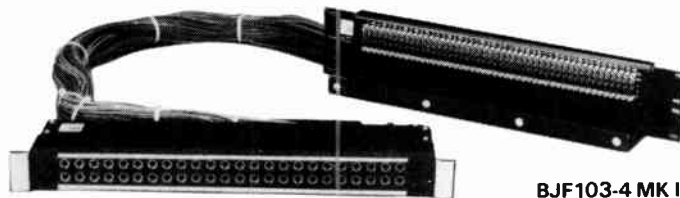
1.75" panels with 2 x 48 array of Bantam jacks

brought out, UP-96N termination 1350.00

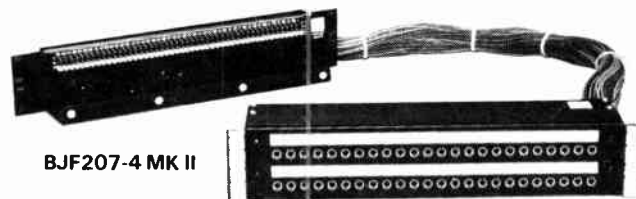
BJF303-4 MK II

BJF307-4 MK II

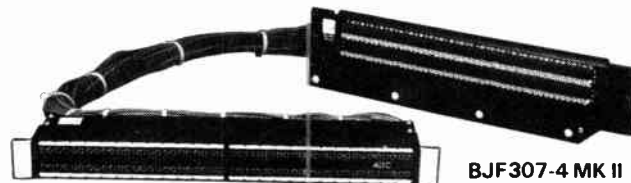
Normals strapped at jacks, UP-96 termination 1050.00



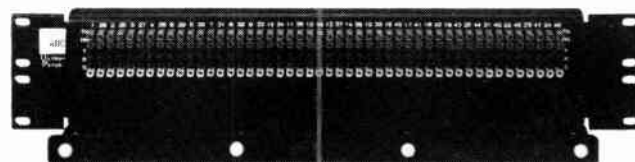
BJF103-4 MK II



BJF207-4 MK II



BJF307-4 MK II



UP-3N MK II

Ultra-Patch Panels

Utilizing Split Cylinder Technology

Ultra-Patch panels can be terminated at the factory to any of ADC's standard or custom jackfields and may be rack or wall mounted. Accessory brackets are available for racks with nonadjusting rear supports as well as for wall mount applications. Cable troughs, front and rear, provide for a clean and professional look for any system. Ultra-Patch panels are available separately.

- UP-3N MK II** Tip/ring/sleeve and normals brought out, 48 positions \$125.00
- UP-3 MK II** Tip/ring/sleeve only, 48 positions 110.00
- UP-W MK II** Wall mount brackets 20.00
- UP-R MK II** Rackmount brackets 20.00
- UP-96N MK II** 96 positions 210.00
- UP-96 MK II** Tip/ring/sleeve, 96 positions 75.00

Wire Insertion Tools

The insertion tools are used for insertion of wire into the split cylinder modules. The impact tool applies the correct force to the wire by a spring loaded mechanism within the tool. Either of 2 impact forces can be applied, as selected by the LO-HI thumbwheel on the side of the tool. The LO position installs 24 or 26 AWG wire, the HI position installs 22 AWG wire. The impact tool includes 1 removable tip which comes stored in the tool's handle.

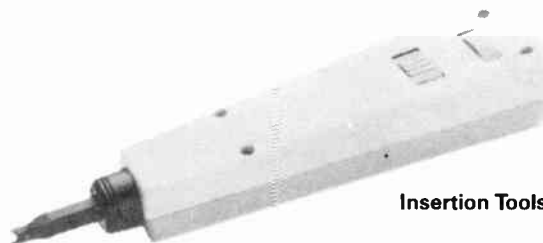
The manual tool performs identical functions as the impact tool without the aid of a spring loaded tip.

- Q114** Manual Wire Insertion Tool \$20.00
- Q814-804** Impact Wire Insertion Tool 65.00
- Q804** Spare Tip 25.00

Q150 Tool Holder

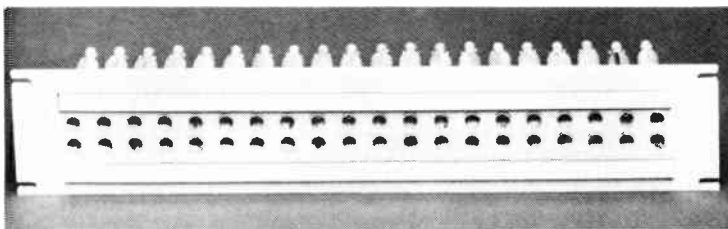
Tool Holder keeps Impact or Manual Tool at the bay where it is easily accessible. Mounts on either side of frame with two mounting screws.

Q150 \$ 15.00

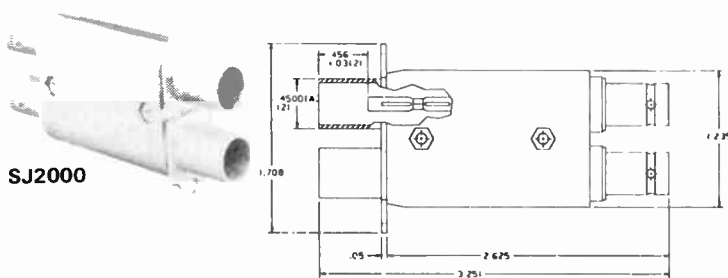


Insertion Tools

Coaxial Components



Panels are available in various sizes and configurations and can be purchased separately or loaded with choice of jacks.



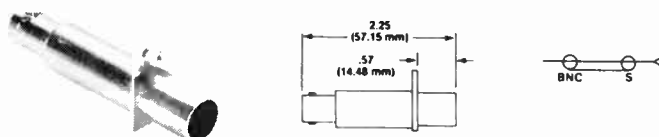
Coax Panels

19" x 1.75" Panels	
PPI-1120R	20 hole, .83" horizontal spacing \$49.00
PPI-1124G	24 hole, .625" / .75" horizontal spacing 56.00
PPI-1220R	40 hole, .83" horizontal spacing, .625" vertical spacing 77.00
PPI-1224G	48 hole, .625" / .75" horizontal spacing, .625" vertical spacing 85.00
PPI-1226R	52 hole, .83" horizontal spacing, .625" vertical spacing 85.00
19" x 3.5" Panels	
PPI-2220RS	40 hole, .83" horizontal spacing, .625" vertical spacing \$77.00
PPI-2224GS	48 hole, .625" / .75" horizontal spacing, .625" vertical spacing 85.00
PPI-2224RS	48 hole, .625" horizontal spacing, .625" vertical spacing 85.00
PPI-2226RS	52 hole, .625" horizontal spacing, .625" vertical spacing 95.00

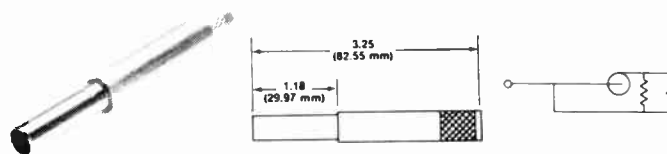
Coax Components

Patch Cords	
CC1072G	. . . . . \$18.09
CC1072N	. . . . . 13.72
CC1074G	. . . . . 18.09
CC1074N	. . . . . 13.72
CC1076G	. . . . . 18.09
CC-1076N	. . . . . 13.72
Plugs	
CP1040G	. . . . . \$13.30
CP1040N	. . . . . 11.41
CP1051G	. . . . . 9.29
CP1051N	. . . . . 6.68
CP1063G	. . . . . 14.94
CP1063N	. . . . . 14.63

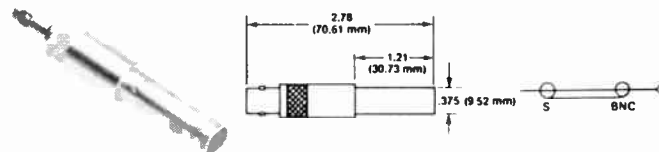
CJ1011X*



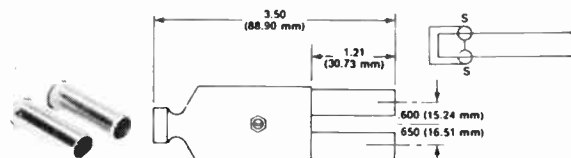
CP1040X*



CP1051X*



CP1063X*



Standard Size Coaxial Patch Cords



75 Ohm	Length
CC1072X	12" (.305m)
CC1074X	24" (.609m)
CC1076X	36" (.914m)

Note: use only 36" patch cords for Pro-Patch units.

*Note: When ordering, replace X with either G or N. G denotes gold plating on all contact surfaces, N denotes gold plating on the center conductors/springs only.

Coax Components (cont'd)

Single Jacks	
CJ1011G	. . . . . \$10.51
CJ1011N	. . . . . 5.78
Switching Jacks	
SJ2000N (non-terminating)	. . . . . \$27.53
SJ2000N-75 (75 ohm resistor)	. . . . . 31.87
SJ2000N (non-terminating)	. . . . . 27.53
SJ2000N-75 (75 ohm resistor)	. . . . . 31.87

BCS Series Stereo Television Console**Mainframe Features**

- 24 or 32 input channel mainframe sizes
- Patchbay (full size, tip-ring-sleeve)
- Console completely pre-wired to easily accept all plug-in modules
- Rugged construction of lightweight, anodized aluminum trimmed with formica covered wood end caps
- Full wiring harness and module accessibility
- All PC cards removable from front
- All customer interface points (audio connectors, power) located in rear opening rackmounted housings
- Gold card edge connectors
- All internal console wiring numbered in accordance with schematics
- All power wiring color coded and identified
- Reverse screen Lexan overlay on all module panels
- Preselect buttons custom engraved to user requirements
- Removable meter turret
- Large individually illuminated VU meters for submasters, masters, and utilities. PPM ballistics optional
- Built-in cue amplifier with speaker
- Illuminated on-air and power supply status indicators

Operational Features (Standard and Optional)

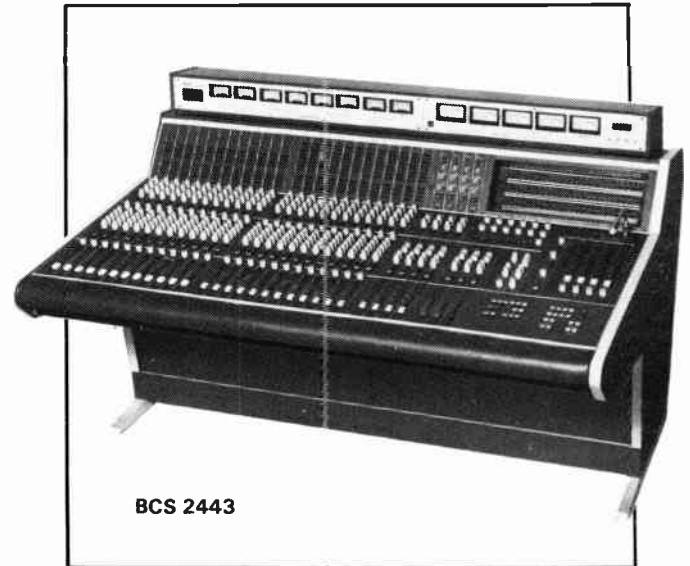
- Mike level input preselect: 4 sources per designated mike input
- Line level input preselect: 8 sources (stereo or mono) per designated line input
- Each input assignable to any or all of 4 stereo submasters
- Available input modules include: mono mike/mono line, mono line and stereo/mono line, all with phase reversal
- Hi/Lo pass filters on all input modules
- Group muting for news and live production
- Stereo pan on mono modules, stereo balance on stereo modules
- Ultra smooth VCA Slidex® spirallinear attenuators with cue detent and mute logic
- Choice of 2 or 4 independent stereo auxiliary sends plus a reverb (echo) send
- 4 independent aux (P.A.) sends from subs and masters
- 2 reverb returns to subs and masters
- 4 independent monitor buses
- Utility meter select matrix
- 6 sets of machine remote controls
- 5 frequency oscillator/slate assignable to subs and/or masters
- 2 studio talkback
- Optional signal processing includes 4 band Mono or Stereo EQ, compressor limiter/de-esser, noise suppressor and sound effects filters

The BCS Console is designed to address the needs of Stereo Audio for television. This means a functional easy-to-use layout, advanced fabrication and manufacturing techniques, high quality proven components, extensive module and system burn-in and test.

The console mainframe may be ordered with up to 24 or 32 inputs, with or without a patchbay, and is built in a floor stand configuration.

Input Preselection: There are 2 types of Input Preselection available with the BCS Console—microphone and line.

Above and in-line with input module positions 1-12 (or 1-20 on a 32 input console) are 4 LED illuminated pushbuttons which represent the 4 discrete mike sources which may be assigned to that input. Since the BCS is set up for 2-studio operation, the proper muting signals for each studio are derived from this preselect matrix.



BCS 2443

The balance of the input strips, dedicated to line level sources, have 8 LED illuminated pushbuttons above each input which select 1 or 8 line level sources that are individually available at those inputs.

The source preselect pushbuttons are custom engraved in accordance with the customer's needs.

Inputs: The BCS is capable of accepting several different types of inputs: mono mike/line, mono line only, stereo/mono line. Those modules capable of accepting stereo sources enable the operator to control both left and right channels with a single fader. Additionally, the stereo modules are also capable of accepting either the left or right channel only from the stereo source or a mono source, making these modules extremely flexible. Each module has phase reversal, and input level attenuation. This attenuation ranges from -80dBV to +10VU on the mike line modules to -12dBu to +8dBu for the line modules.

All mono modules feature a stereo pan control to acoustically place the audio signal where desired. All stereo modules include a stereo balance control to trim the left or right channel. Each input module also contains separately switched in and out high and low pass filter. Individual LED lamps indicate the status of both the high and low pass filters.

The BCS may be ordered with input modules having 2 or 4 auxiliary sends and a reverb/auxiliary send. In either case, all sends may be designated as pre or post fader and have individual master controls.

Each module also has a Phase Reversal switch to permit placing the signal 180° out of phase from the remaining console inputs. LED illumination informs the operator of the phase reversal status.

Each module also contains 2 independent module off/on muting functions designated GRP1 and GRP2. These Group Muting switches assign the off/on function of the module, or modules, to remote group 1 or group 2 master group switches. This enables the operator to assign a series of inputs to group 1 or group 2 and turn those inputs on or off at the same time. This function is especially useful on news sets or in live situations where multiple mikes must be switched on or off together.

BCS Series**Stereo Television Console (Cont'd)**

Submaster Bus Selection: This matrix permits assignment of any input module or combination of input modules to any submaster or combination of submasters.

Submasters: Each BCS console is wired and tested to accept up to 4 Stereo submaster modules. Each submaster may be assigned to any combination of the stereo masters and the mono master. Four PA/auxiliary sends are bused across the submasters and masters and have their own 0 output level controls. There are 2 reverb return buses which may be intermixed with the program outputs from the submasters. Each submaster is also capable of a left and right channel signal processor such as a Compressor/De-Esser or Noise Suppressor. The submasters also use a VCA Slidex® attenuator.

Masters: Each BCS console may have 2 stereo masters and 1 mono master. Each of the stereo submasters may be assigned to the mono master. The masters have the same PA/auxiliary send buses across them as the submasters. They also have 2 reverb returns which may be intermixed with the program output. The masters also use Slidex VCA attenuation.

Auxiliary Controls: There is an auxiliary attenuator panel with the input auxiliary send master level controls. This panel also contains the solo level control. A second auxiliary attenuator panel has the output level control for the reverb send bus, the 4 submaster/master PA/auxiliary send buses and the cue bus level control.

Auxiliary Positions: The BCS has 5 integral auxiliary signal processing positions which may be utilized to accept any of the available signal processors. A signal processor in this position may be inserted into the patch points of the console through the patch bay.

Mike Panel: The microphone panel contains the talkback microphone and the on air indicators for studio 1 and studio 2. This panel also contains the PPM ballistic meter switches for the submasters and masters.

Monitor Buses: Each BCS console is capable of 4 independent monitor modules. These modules are designated control room, studio A, studio B and director. Each of the 4 monitor modules, in stereo, are totally independent of each other but are identical in all respects and may be physically interchanged. A comprehensive selection of submaster, master, and external inputs is pushbutton selectable on each module. Each selection will be indicated via an LED tally light.

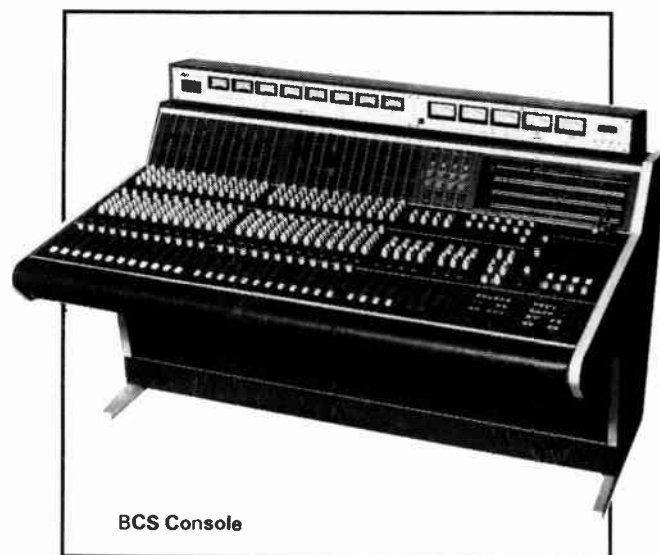
Each module also contains a Solo LED tally indicator and a mute defeat switch which, when depressed, will override any mute logic in the module and permit an output. Line level is the nominal output of the monitor modules. Each module contains the necessary program amplifiers with a monitor level control.

Studio Speaker Muting: Muting of the monitor speaker in the designated studio is accomplished when the following conditions are met:

- 1) Microphone preselect activated (inputs 1 through 12 or 1 through 20 in the BCS 32)
- 2) Input module attenuator in the microphone position
- 3) Input module turned on
- 4) Slidex and module out of cue
- 5) Input module assigned to a submaster bus
- 6) Input module not turned off by a group mute function

When all 6 of the above conditions are met, the designated studio speaker will mute automatically.

Oscillator/Talkback: Each BCS Console may be equipped with a Model 7510 Oscillator/Talkback module. This module contains a selectable 5 frequency oscillator (50, 400, 1,000, 7,500 and 15,000Hz) and a level control for precise adjustment of the oscillator output. The oscillator output is selectable for insertion into any one of, or combination of, submaster and master buses. A separate pushbutton labeled OSC activates the oscillator output to its preselected location. In addition, the



BCS Console

oscillator output also appears at the console terminal blocks (or Patchbay, if included) at a microphone level of -70dBu, as well as a line level of +8dBu.

The talkback portion of the 7510 module provides a level control for the talkback output. Associated with this portion of the module is a microphone as well as 2 push-to-talk controls which are located in the lower right console panel. This talkback system also provides a slating facility, which is selectable to the submasters and masters via the slate switch and the oscillator preselect pushbuttons. When the slate function is energized a 50Hz tone is superimposed on the audio at -20dBu for quick aural reference when a tape machine is in a high speed mode.

Patchbay: The BCS Console may be provided with a full size tip-ring-sleeve patchbay as an option. This patchbay will contain 208/256 patch points. This will permit patching at each module input, each submaster and master output and all +8dBu points in the console. The patchbay is recessed in the console housing to eliminate patchcords layout out over the operational controls.

Meter Turret: BCS Consoles come equipped with a meter turret containing thirteen 3 1/2" illuminated ADM VU meters. There are 2 meters for each stereo submaster and master bus as well as a left and right utility and mono position. As an optional feature these may be replaced, at the user's option, with ADM5110 PPM/VU meters in the submaster and master positions.

An illuminated switch is provided to permit the operator to select either PPM or the VU metering. 0 VU is equivalent to +8dBu line level.

Located in the meter turret housing is a 60 minute digital timer, a cue speaker, and the power supply status indicator tallies.

Machine Control: Each BCS Console comes equipped with 2 reel-to-reel audio tape and 4 audio cartridge remote machine controls as standard equipment. These controls provide contact closure to the associated machine and function. A return logic signal from the machine may be used to illuminate the lamp in the switch to provide closed-loop status indication.

Power Supply: The BCS Console is provided, as standard equipment, with 1 ADM 2110, ±20VDC, 10A, bi-polar power supply for all console audio functions. There is also 1 ADM 110, +20VDC, 10A power supply for all console lighting and logic functions. The 2110 and 110 are capable of supplying all necessary power for the console with a more than adequate safety factor.

Provision has been made for the inclusion of 2 additional optional supplies, one of each, to provide 100% redundancy with automatic changeover in the unlikely event of failure. Status indicators for the supplies are located in the right corner of the meter turret housing.

ST Series II Production Consoles

- Totally modular design, utilizing plug-in modules throughout
- Transformer balanced inputs and outputs
- Many variations of microphone and line module
- 2 preselect inputs per module
- Stereo pan-pot on microphone modules
- Stereo balance control on line modules
- Machine control logic built-in
- Input Slidex® Linear Attenuators drive VCAs for superior tracking and longevity
- 8 position stereo preselectors
- Variety of signal processors
- Independent studio and control room monitor matrices
- Headset jack with separate volume control
- Broadcast quality talkback microphone
- Large illuminated VU meters
- Built-in cue amplifier and speaker
- Simultaneous program and audition master outputs
- Independent auxiliary master output
- Selectable monaural master output
- 100% redundant power supply with automatic changeover
- All pushbuttons illuminated or with companion LED
- CMOS logic throughout
- Plug-in Op-Amps and ICs
- All circuit board and input/output connectors are gold plated

The ST Series II Stereo Radio Consoles are desk mount, modular consoles designed specifically for radio on-air and production applications. The ST Series II Consoles consist of 4 basic units, each identical with the exception of the number of input modules available.

These are:

- ST 100 II—a 10 input, 3 stereo and 1 monaural output console
- ST 160 II—a 16 input, 3 stereo and 1 monaural output console
- ST 200 II—a 20 input, 3 stereo and 1 monaural output console
- ST 240 II—a 24 input, 3 stereo and 1 monaural output console

The ST Series II Consoles are full stereo with 10, 16, 20 and 24 input modules. There are 3 independent stereo output modules and 1 monaural output module. Each console comes factory wired for its maximum capability, but may be ordered with a lesser number of modules for future expansion capability. Various combinations of signal processing devices (equalizers, limiter/de-essers) may be supplied with the console or added later, as usage dictates. This may be quickly accomplished on a plug-in basis. The ST Series II Consoles utilize the patented ADM Slidex driving stereo VCAs which provide superior tracking, noise-free attenuation and extreme longevity.

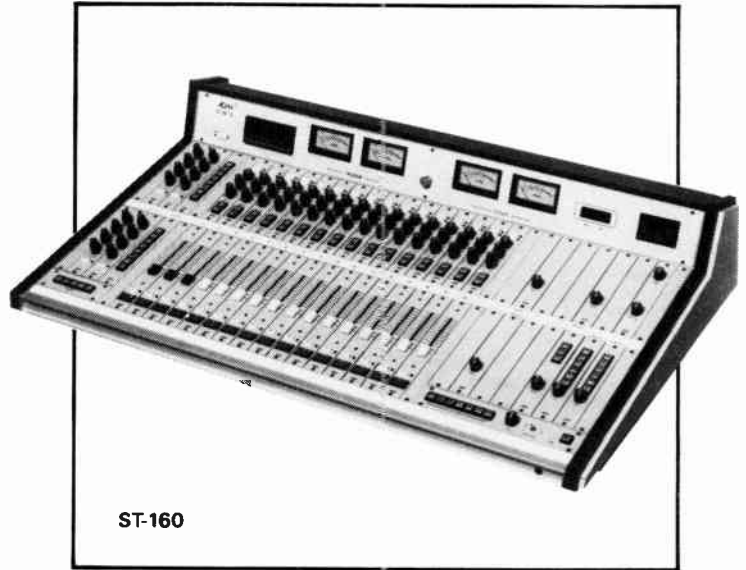
The unique 202 Discrete Operational Amplifier exemplifies ADM's ingenuity by giving the user an input noise figure unobtainable with conventional integrated circuitry.

Inputs: The ST Series II Stereo Broadcast Consoles are wired and tested to accept up to 10, 16, 20 or 24 ADM Microphone and/or line input modules, each with their associated Slidex VCA attenuator modules. Any number of these modules may be utilized in any combination within the input section.

There are 3 variations of the microphone input consisting of a 2716, 2717 and 2718 module. There are also 3 variations of the stereo line input consisting of a 2726, 2727, and 2728 module. Each of the above modules is capable of operating from 1 of 2 preselectable sources, designated A and B. Each preselect switch has an associated LED indicator for maximum operator visual information. Also associated with the stereo line inputs are two 8 x 1 stereo preselect matrices. These may be assigned to any of the stereo line modules via a plug-in connector.

Each input module has facility for a totally independent auxiliary output which is selectable from either the preamplifier output (PRE) or module output (POST). The auxiliary output has its own isolated level control, located concentric with the switch function. In the PRE position it will be totally independent, while in the POST position it will follow the module output.

Output bus assignment from each input module is available to both audition and program master buses simultaneously via the illuminated push-on/push-off AUD and PGM switches located on each input module. These output buses may be fed individually or simultaneously as required.



ST-160

Microphone Inputs: The 2716 Microphone Input Module may be selected to either mike A or mike B via this switch function. Logic control for the 2716 module will follow this source selection. The input attenuator will accept a normal microphone level within the range of -60dBu to -30dBu and is continuously variable. Should the user so desire, this attenuator control knob and shaft may be removed and a screwdriver adjustment through the front panel may be utilized.

The auxiliary bus output from the 2716 is a completely independent output from the module which is derived from the output of the input preamplifier when the associated concentric switch is in the PRE position. In the POST position the auxiliary bus will derive its signal from the output of the input module chain and will follow the Slidex fader movements. The OFF position totally removes it, electrically, from the circuit.

The 2716 Microphone Module features a full stereo pan left-to-right control with an associated switch to select either the stereo mode or the mono mode of operation. This switch is concentric with the panner control. In addition to the above, provision has been made for phantom powering of condenser type microphones.

The 2717 Microphone Input Module is identical to the 2716 except that the input attenuator knob and shaft have been removed, leaving the attenuator itself as an internal screwdriver adjustment. The Auxiliary bus circuitry has also been removed.

The 2718 Microphone Input Module is identical to the 2717 except that the stereo pan-pot and selector switch have also been removed.

Associated with each of the above microphone input modules is an ADM 4711 Slidex VCA Attenuator Module. The VCA provides superior tracking, noise free attenuation and extreme longevity for many years of trouble free service.

All logic functions for the microphone input strip are contained within the 4711 VCA Slidex Module.

These functions are:

- Control room speaker muting
- Studio or announce booth speaker muting
- Local on/off module control
- Remote on/off module control

Each of the above functions are user-programmable, via PC board mounted plug-in jumpers, to suit the user's particular requirements. All logic functions are CMOS. On-air relay contact closures are provided from both control room and studio speaker mute logic buses for station usage.

ST Series II**Production Consoles (Cont'd)**

Line Inputs: Each 2726 Stereo Line input module may be selected to either Line A or Line B via its A or B switch function respectively. Again, logic control for the 2726 module will follow this source selection with an associated LED indicator. The input attenuator will accept a normal line level within the range of -12dBu to +8dBu and is continuously variable. This control may also be removed as in the 2716 Microphone module.

The Auxiliary bus output from the 2726 is a completely independent output from the module which is derived from the output of the input preamplifier when the associated concentric switch is in the Pre position. In the Post position the Aux bus will derive its signal from the output of the input module chain and will follow the Slidex® fader movements. The Off position totally removes it, electrically, from the circuit.

The 2726 Line module features a full stereo Balance control to permit trimming level differences in the program source material. Located concentric with the Balance control is a switch to select Left (L), Right (R), Monaural (M), or Stereo (ST) mode of operation for the module. Maximum flexibility and utilization of the module is achieved with this function.

The 2727 Stereo Line input module is identical to the 2726 except that the input attenuator knob and shaft have been removed, leaving the attenuator itself as an internal screwdriver adjustment. The Auxiliary bus circuitry has also been removed.

The 2728 Stereo Line input module is identical to the 2727 except that the Balance control and the Input Source Selector switch have also been removed.

Associated with each of the above stereo Line input modules is an ADM 4721 Slidex VCA Attenuator module. Again, this VCA provides superior Stereo tracking, noise free attenuation and extreme longevity for many years of trouble free service.

External control of the VCA from a remote location is also available. All logic functions for the Stereo Line input strip are contained within the 4721 VCA Slidex module.

These functions are:

- Local or remote On/Off control
- Remote machine Start contact closure when the module is turned on
- Remote machine Stop contact closure when the module is turned off. (These contact closures are user programmable for either a constant closure or a 1/10 second pulse.)
- Timer reset/start function when the module is turned on
- Optional jumper arrangement which permits the Start/Stop pulsing to occur on the same contacts for machines which require this facility

All of the above functions are user programmable, via the PC board mounted plug-in jumpers, to suit the user's particular requirements. All logic functions are CMOS.

Masters: The ST Series II Broadcast Consoles are wired and tested for up to 4 Master Output modules. These modules are the 3 ADM 3826 Stereo Master modules designated Audition (AUD), Program (PGM), Auxiliary (AUX) and the 3816 Monaural Master module. Each module includes a continuously variable Master level control. The knob and shaft are removable for preset, screwdriver only, adjustment when desired.

The 3816 Monaural Master module is selectable, via its illuminated switch matrix, to the Audition, Program or Auxiliary buses. This module derives, and sums, the signal directly from these stereo buses prior to the 3826 Master modules and thus permits totally independent operation with no relationship to the Stereo Masters.

Signal Processing: The ST Series II Stereo Broadcast Consoles are wired and tested for up to 11 Signal Processing Modules. These modules may consist of Equalizer, Sound Effects Filter, Noise Suppressor or Limiter/De-Esser modules.

The ST Series II Consoles have provision for insertion of an Equalizer or Filter module in any of the 4 input signal processing positions prewired in the Console. These modules may be then assigned to any of the input modules via a simple internal plug-in connector.

The Program, Audition and Auxiliary outputs have Right and Left channel signal processing positions adjacent to each output module. The Mono Output module has a single signal processing position. Each of the above positions will accept any of the 4 ADM Signal Processing Devices.

Any Master Output Processing position which is not initially equipped will be provided with a Jumper Card and Blank module panel to maintain both the electrical path and the aesthetic appearance of the Console.

1316 Noise Suppressor: The ADM 1316 Noise Suppressor is a true gain expander with continuously varying gain. The device has no threshold clicks or pops, nor is the ear aware of the threshold. Threshold and decay time are adjustable to suit program content. There is a variable intensity LED to indicate when the unit is on. The 1316 is primarily designed to reduce studio background noise between audio passages.

1346 Limiter/De-Esser: The 1346 is both a Limiter Compressor and a De-Esser. Each function, although independent of the other, is contained within the same module housing. The compression ratio of the 1346 Limiter Compressor is variable from 1:1 to 20:1. The ratio changes from 1:1 to the selected value as signal power increases from 8dB below, to 8dB above threshold. The gradual ratio change minimizes signal distortion and results in natural sound at all times. Front panel controls permit individual adjustment of the attack and decay rates, as well as threshold and gain, providing maximum versatility for the operator.

The De-Essing function of the 1346, when activated, limits sibilants to natural levels with no adjustments required by the operator. Broadband gain is proportionally reduced only during the times of excessive sibilants. Both Compression and De-Essing functions may be used simultaneously, or individually, to meet all necessary program requirements.

1546 Equalizer: Featured in the ST Series II Stereo Consoles is the exclusive ADM 1546, 4 band, 14 frequency reciprocal Equalizer. This Equalizer has been developed, through exhaustive listening tests, for maximum effect on both Voice and Music Programs. Reciprocal EQ functions are provided in 4 frequency bands: Low Frequency (LF), Low Mid Frequency (LMF), High Mid Frequency (HMF) and High Frequency (HF). The unit is activated with a push-off/push-on switch and has an LED status indicator.

1586 Sound Effects Filter: The ADM 1586 is a High Pass/Lo Pass Filter module specifically designed for sound effects. Each section is independent of the other and has 10 selectable frequencies with an In/Out switch. Both sections may be used simultaneously. The High Pass section comprises frequency selection of 50, 70, 100, 150, 200, 300, 500, 700, 1000, and 2000Hz.

The Low Pass section comprises frequency selection of 700, 1K, 1.5K, 2K, 3K, 4.5K, 6K, 7.5K, 10K and 12.5kHz. The attenuation rate is approximately 18dB octave.

ST Series II Production Consoles (Cont'd)

Cue: As previously described in the input section, each 4711 and 4721 VCA Slidex® Attenuator Module is equipped with a cue detent, as well as a cue switch. The output of each module cue function is bused, feeds a 2W power amplifier and level control (located on the cue/talkback module) and cue speaker mounted in the meter turret housing.

In addition, this cue output appears at an output connector for use with an external cue speaker. The cue signal is also available at the headset jack and is accessed via the monitor/cue switch. Muting logic for the cue speaker, via plug-in jumpers, is provided when a control room microphone is live. However, the headset output is never muted.

Cue-Talkback: The talkback portion of the cue/talkback module provides a level control for the talkback output. Associated with the module is a turret-mounted microphone, as well as a push-to-talk control.

The talkback signal is normally fed over the studio monitor bus, overriding any signal being fed to the studio monitors. An extra talkback output is also available at the console output connector for station usage.

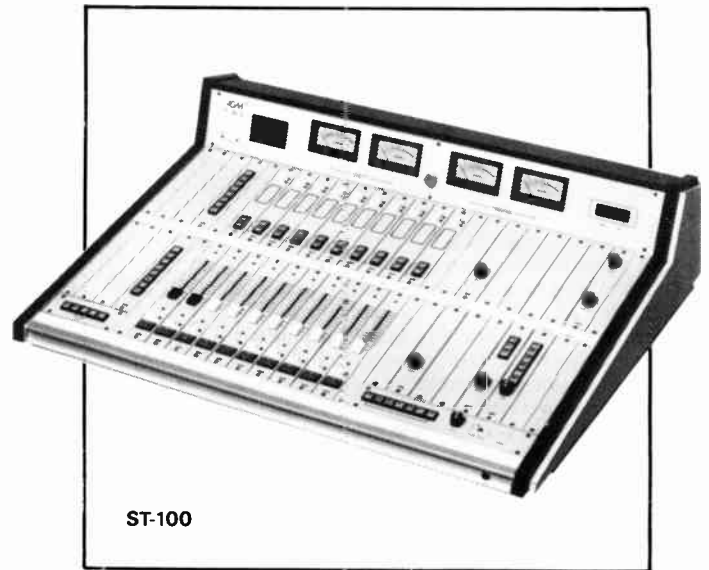
Monitor Buses: The ST Series II Stereo Broadcast Consoles are wired for 2 comprehensive monitor selector matrices, each totally independent of the other.

These modules are designated control room and studio. Each matrix is identical in the selection available. These are program, audition, auxiliary, monaural, external 1 and external 2. Each module contains its own program amplifiers, as well as individual rotary level controls.

Headphones: The control room headphone jack is located on the right front section of the console directly below the monitor matrices. This jack is selectable, via the MNTR/cue switch to hear either the program, as selected on the control room monitor matrix, or the cue bus.

Metering: Each ST Series II Console is capable of four 3 1/2" VU meters. Two of these meters, designated Program, are dedicated to the console program outputs. The other 2 meters are designated Utility and are switch selectable to monitor the audition bus, the monaural bus, the auxiliary bus and 2 spare inputs designated external 1 and 2. This illuminated selector matrix is located on the lower left of the console beneath the input signal processor area. 0 VU is equivalent to a nominal +8dBu line output level.

Timer: Each console may be equipped with an ADM 5060 Timer Assembly. This is a 60 minute timer with its associated timer controls. It may be operated in conjunction with the on/off logic in the stereo line input modules or independently. The timer is designed to count up or down as desired and preset times may be entered into the display via the second and minute advance functions.



Power Supply: Each ST Series II Console is provided with one 2107 Power Supply for all console functions. This unit is capable of supplying all necessary power for the consoles with a more than adequate safety factor. Provision has been made for the inclusion of 1 additional optional power supply to provide 100% redundancy with automatic changeover in the unlikely event of failure. LED status indicators for the supplies are located in the meter turret housing.

Console Specifications

Frequency Response:	No equalization. Measured at any output level up to clipping. ± 1 dB, 20Hz-20kHz ref. 1kHz
Distortion:	The total harmonic distortion at +24dBm or lower at 1kHz will be less than .07% and will not exceed .15% THD over the band 100Hz-20kHz at +24dBm or lower
Max. Output Level:	The clipping level at any output when terminated in 600 ohms shall be +27dBm 30Hz-20kHz
Noise:	The equivalent input noise of any microphone shall be lower than -125.5dBu referred to a 250 ohm impedance measured on an average response meter. Any line level input (+8dBm ref.) to any output channel (+8dBm ref.) will exhibit a maximum noise of -72dBm (S/N 80dB). All noise measurements based on a bandwidth 20Hz-20kHz
Crosstalk:	Better than 72dB measured between adjacent channels at normal operating levels over the band 100Hz-10kHz
Temperature:	Over the temperature range 0-55°C no apparent changes in operational characteristics are discernible
RF Susceptibility:	Based on the tailored roll off characteristics and proper manufacturing techniques, ADM consoles will operate in high RF environments

VP Series**Audio Post-Production Consoles**

- Stereo production capability
- Totally modular design utilizing plug-in components
- VCA based attenuator in each input strip
- Dual attenuation control bus assignable to each input
- Opto-isolated bus selection inputs
- External or local control of control bus and/or strip assignments
- Variable intensity LED indication of input control voltage
- Dual independent monitoring facility with local or external control of all monitor functions
- Input vs. output monitoring with bus/play switch
- "Invert" switch on each control fader allows smooth cross fade
- Phase reversal function for each input
- Up to 16 microphone/line inputs
- 1 auxiliary mix bus output
- 2 master output buses
- Built-in cue amplifier and speaker
- 5 illuminated VU meters
- Gold plated card edge connections throughout
- Patented, ultra smooth, sealed Slidex® linear attenuators
- 5 frequency oscillator
- Talkback and slate facilities
- Illuminated power supply status indicators
- Plug-in signal processors for each strip



The VP Series are full featured desk mount consoles which incorporate the latest technological advancements for coupling of the video editing system to the audio console.

The VP Series represents a new audio system designed specifically to meet the unique audio processing and control requirements of modern video production centers. It offers the necessary features to complement the video editing process by allowing extensive control of the audio mixdown, synchronized with the video editing control from a single editor.

The VP Series is available in three versions. The VP1603; which is a 16 input, 3 output console. The VP1203; a 12 input, 3 output console, and the VP803; an 8 input, 3 output console. Each console is identical in all respects except for the number of input strips and monitoring positions. The physical size of the console mainframe is scaled down appropriately.

Each VP Series Console utilizes the ADM 2783 Input Module with its associated 4158 VCA controlled Slidex attenuator, the ADM 3984 Master Output Module for the left/right outputs and the ADM 3985 Auxiliary Output Module. Various combinations of signal processor modules, such as the ADM 1310 Noise Suppressor, 1340 Limiter-Compressor/De-Esser, 1540 Equalizer and 1580 Sound Effects Filter may be utilized within the VP Console mainframe.

Each VP Series Mainframe is prewired for its maximum complement of modules, but may be ordered with any lesser number of input strips and signal processors as initially required. Future expansion (up to full mainframe capacity) is accomplished on a straight forward "plug-in" basis.

Console Specifications

- Frequency Response:** No equalization. Measured at any output level up to clipping. $\pm 1\text{dB}$, 20Hz-20kHz ref. 1kHz
- Distortion:** The total harmonic distortion at +24dBm or lower at 1kHz will be less than .07% and will not exceed .15% THD over the band 100Hz-20kHz at +24dBm or lower
- Max. Output Level:** The clipping level at any output when terminated in 600 ohms shall be +27dBm, 30Hz-20kHz
- Noise:** The equivalent input noise of any microphone shall be lower than -125.5dBu referred to a 250 ohm impedance measured on an average response meter. Any line level input (+8dBm ref.) to any output channel (+8dBm ref.) will exhibit a max. noise of -72dBm (S/N 80dB). All noise measurements based on a bandwidth 20Hz-20kHz
- Crosstalk:** Better than 72dB measured between adjacent channels at normal operating levels over the band 100Hz-10kHz
- Temperature:** Over the temperature range 0-55°C no apparent changes in operational characteristics are discernible
- RF Susceptibility:** Based on the tailored roll off characteristics and proper manufacturing techniques, ADM consoles will operate in high RF environments

Post-Pro Series Audio Consoles

- Stereo production capability
- Totally modular design utilizing plug-in components with gold card edge connectors
- 2 mainframe sizes: 8 or 12 inputs
- Optional 3 band equalizer with hi/lo pass filter for each input
- A and B VCA control buses may be operated manually or remotely by a video editor or switcher
- "Invert" switch on each control bus enables fingertip crossfades
- 2 master outputs
- ADM's patented Slidex®
- VCA controlled inputs
- 2 independent monitors for true stereo monitoring
- 4 large illuminated VU meters
- Cue bus built-in
- Oscillator, talkback and slate facilities standard
- Parallel general purpose interface standard, serial interface optional
- Opto-isolated control inputs for noise free remote operation

With up to 12 inputs, the ADM Post-Pro Audio Console can handle audio edits, crossfades, inserts and cuts with the necessary speed and accuracy to become an integral part of your video editing suite. This unit was designed specifically to provide a compact and convenient answer to audio control by the video editor or switcher. It can be used either manually or at any one of three levels of automation. ADM's in-line equalizers permit program sweetening and special effects to be inserted during the actual editing session.

Since the console is totally modular, you can equip it to meet current requirements and have room for future expansion as your facility grows. The Post-Pro is equipped with a standard parallel interface and a serial interface is optional, which makes the unit fully compatible with most editing systems.

The Post-Pro is specifically designed for ease of operation with minimal operator training. Scaled down dimensions and a very low profile make it an ideal choice for any post production facility where space is at a premium.

Console Specifications

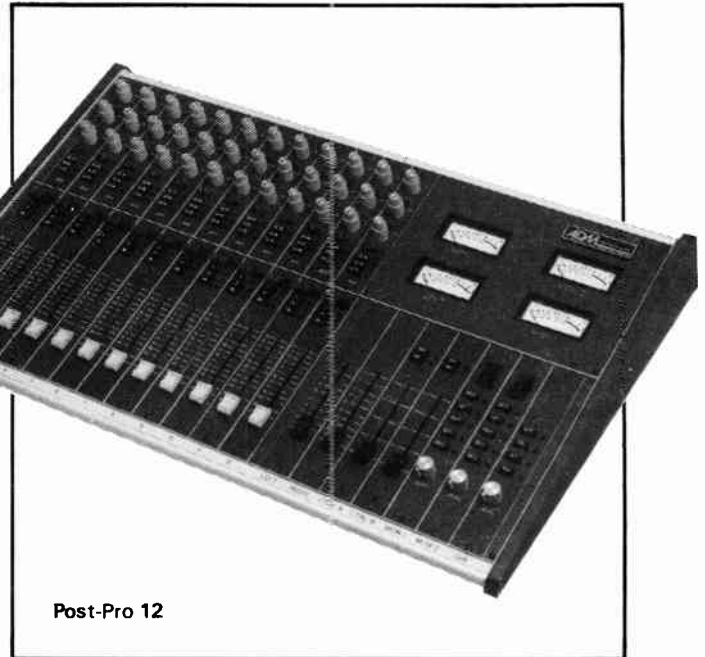
Frequency Response: No equalization. Any line input to any master output will not vary more than $\pm .4$ dB over the frequency range of 20Hz-20kHz

Harmonic Distortion: Total harmonic distortion from any line input (+ 24dBu) to any master output (+ 24dBu).
 30Hz: $\leq -.2\%$ 100Hz: $\leq .08\%$
 1kHz: $\leq .05\%$ 20kHz: $\leq .08\%$

Intermodulation Distortion: Intermodulation distortion from any line input (+ 24dBu) to any master output (+ 24dBu) with a standard SMPTE 60Hz: 7kHz signal at a 4:1 ratio will not be greater than .2%

Max. Output Level: The clipping level at any output when terminated in 600 ohms shall be $\geq + 27$ dBu 30Hz-20kHz

Noise: Any line input (+ 8dBu ref.) to any master output (+ 8dBu ref.) will exhibit a maximum absolute noise of -75dBu over a 20Hz-20kHz bandwidth
 SNR ≥ 83 dB (ref. + 8dBu nominal); 79dB (ref. + 4dBu nominal)



SNR ≥ 99 dB (ref. + 24dBu distortion measurement level)
 SNR ≥ 102 dB (ref. + 27dBu clipping measurement level)

Crosstalk: Measured between adjacent channels (adjacent line inputs to adjacent master outputs) at normal operating levels
 30Hz: ≤ -80 dB 100Hz: ≤ -80 dB
 1kHz: ≤ -85 dB 10kHz: ≤ -80 dB

Temperature: Over the temperature range of 0-55°C no apparent changes in operational characteristics are discernible

RF Susceptibility: Based on the tailored roll off characteristics and proper manufacturing techniques, ADM consoles will operate in high RF environments

Filters: Low Pass: -3dB at 10kHz, 12dB/octave
 High Pass: -3dB at 100Hz, 12dB/octave

Equalization: ± 15 dB in 3 bands
 LF: 40-400Hz peaking (switchable to shelving with -3dB point at specified frequency)
 MF: 200 to 7.2kHz peaking
 HF: 2K-15kHz peaking (switchable to shelving)

Mechanical: Overall Width: Post-Pro 8 25.25"
 Post-Pro 12 31.25"
 Max. Height above Table: 3.625"
 Max. Front to Back Depth: 20.25"

ADM TECHNOLOGY, INC.**Stereo Television Console****S/TV Stereo Television Console**

- 16 or 24 input mainframe
- Any combination of mike or stereo line input modules with two source pre-select and two mono auxiliary sends
- Patented Slidex[®] VCA spiralinear attenuators
- Optional machine control or AFV logic
- In-line 8 x 1 pre-select or 3-band EQ available on each input
- Six auxiliary positions for pre-select or EQ
- Submaster mix may be operated as four mono channels or two stereo channels
- Stereo program master
- Mono program master
- Two monitor buses
- Echo return
- 4-track tape return monitor
- Talkback system
- Oscillator and voice/tone slate
- Cue/headphone jack
- Studio and control room muting
- Timer
- Output metering

The S/TV is available in 16 or 24 input mainframe sizes. The 16 input is a tabletop version while the 24 input is a floor stand model. Even the 24 input version may be removed from its floor stand and permanently mounted in a table if desired.

The S/TV is configured so that each input strip consists of the following modules:

- In-line 8 x 1 pre-select or equalizer
- Mike or stereo line module
- Attenuator module

There are also six auxiliary positions which may house 8 x 1 pre-select or equalizer (mono or stereo) modules. These units may be wired to any input or may be used with the submaster or master outputs.

The output section contains separate stereo and mono program outputs. Additionally, the S/TV may have four mono submasters which can also be grouped together and used as 2 stereo subs.

Two mono auxiliary sends with master output level controls are fed from independent level controls on each input module. The aux sends from the input modules can be selected to Pre, Post, or Off.

There are two monitor modules (control room and studio) as well as cue and talkback buses, plus a headphone jack.

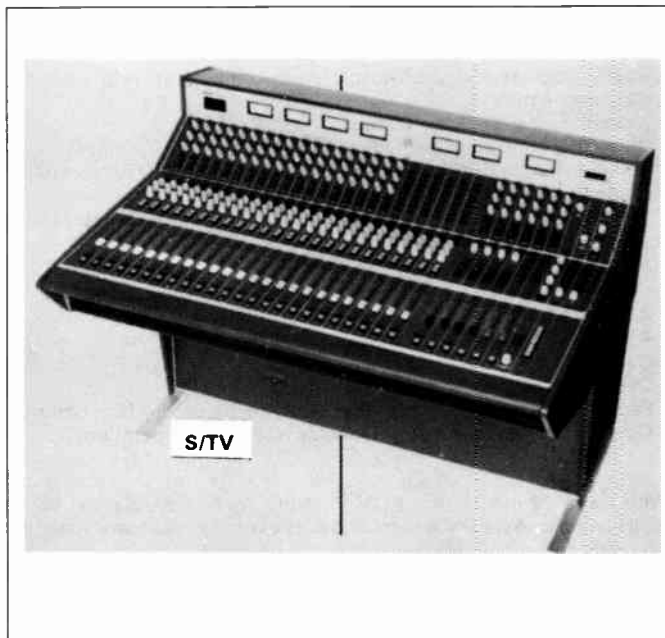
As an option, the S/TV may be equipped with a 4-track tape return monitor feed which may be used in conjunction with the mono submasters for 4-track production. An echo return bus is available at the submasters.

There are seven output meters and an up/down timer.

The S/TV is powerful, yet simple to operate. It gives the user maximum flexibility because the console can be configured specifically to suit the needs of virtually any facility.

Input Options

In-line and above each mike or line input module may be an 8 x 1 mike or stereo line pre-selector or a 3-band mono or stereo equalizer with continuously variable frequency selection. The high frequency (2-16K) and the low frequency (40-400Hz) may be peaking or shelving, while the mid frequency (200Hz-7.2kHz) is peaking. There is also a high pass and a low pass filter, both of which may be switched in or out.



Additionally, the 8 x 1 pre-select or the EQ module may be used in any of the six auxiliary positions and wired to any input. In the auxiliary position, the pre-selector may feed modules with in-line EQ, or vice-versa. The auxiliary position modules may also feed the submasters and masters.

The EQ module is interconnected to the input attenuator via a multi-conductor cable and high density connector. The 8 x 1 pre-selector is connected to the input module through a multi-conductor cable and a Molex connector. Wiring to the pre-selector through a high density connector is done by the customer.

This concept enables the S/TV to be configured exactly as required by giving the user the option of in-line pre-select or EQ, plus pre-select or EQ in the auxiliary position.

Input Modules

Both the mike and line modules have two source pre-selectors standard. Inputs which are utilizing the in-line EQ module will then have two sources which may be selected.

On inputs with an 8 x 1 pre-selector the two source pre-select switching may be used to select the primary input ('1') or the 8 x 1 pre-selector ('2').

Both the mike and line modules have front panel variable gain range adjustments for the input levels. The mike module has a range of 30dB (input level of -30dBu to -60dBu) while the line module has a 20dB range (-12dBu to +8dBu).

The two mono auxiliary bus sends are selectable as either pre or post fader. These sends may be used for any purpose such as mix minus, foldback, reverb send or a telco feed.

Mike modules have a stereo pan pot to acoustically place the mono signal in varying degrees of the stereo spectrum. In the mono position the signal is centered; by activating the pan pot the signal placement corresponds to the position of the pot.

S/TV Console (Cont'd)**Input Modules (Cont'd)**

On the stereo module the input selector enables the operator to choose between left, right, mono or stereo inputs. In the L or R mode the input signal (L or R) is applied equally to the module L and R outputs. In the mono mode the L and R signals are summed so the output is mono, and of course in the stereo mode the L and R signals remain separate.

In the stereo module the balance control attenuates either the L or R channels enabling the other channel to be accented. This is particularly useful if program audio is on one channel with wild footage on the other. A "two track" mix is then easily accomplished with a single input module.

The submaster assignments are made by sending the input module output to a pair of submasters (A-B, C-D). With the mono modules, if the pan pot is in the mono mode, the signal will be sent to subs A and B equally (left and right); if the pan pot is all the way left, only the A sub will receive signal and if the pot is all the way right, only the B sub will get the output. Operation is similar if assignment is made to C and D. Using a stereo line module, the left channel is sent to A (or C) and the right channel is sent to B (or D). In this manner all signals (mono mike, stereo L and R) may be processed individually at the submaster level—another measure of the S/TV's versatility.

Attenuator Module

The S/TV uses ADM's exclusive Slidex attenuator. This spiralinear device is impervious to dust, dirt and spills because the "spiral" activates a sealed rotary pot. This in turn drives a VCA. In the stereo version a single pot drives a dual VCA which makes the stereo tracking characteristics outstanding.

The S/TV uses a "dual cue" function which enables the operator to "cue" (pre-fade listen) a module two ways:

- Pull the Slidex into the cue detent position
- Turn the module off, engage the cue switch and use the fader to pre-set a level. The cue function will be disengaged when the module is turned on

An additional feature is the optional 2-way communications offered through the attenuator module which enables the module to be controlled (off/on) by a contact closure activated by a video switcher or other device. This AFV feature is extremely useful for early morning news cut-ins when it may be advantageous to have only one operator for video and audio.

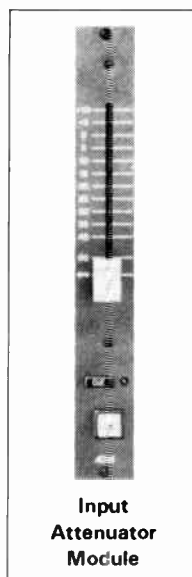
On the line side, inputs may have "cart start" logic built into the module. With either the audio-follow-video or cart start options a communications cable and rear connector are supplied. This connector is located on the rear panel of the console.

Submasters/Masters

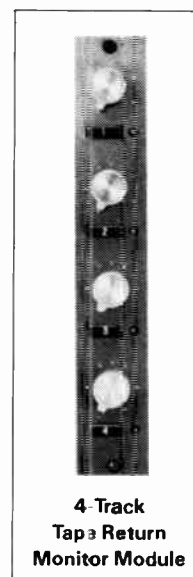
A unique feature of the S/TV is the submaster section.

Inputs are assigned to the A-B and/or C-D submasters from the inputs. If the input is mono it may be assigned only to the left (A or C) or right (B or D) sub using the pan pot on the input.

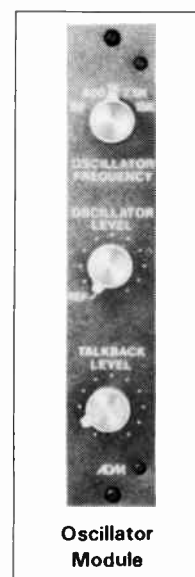
If the input is stereo, assignment is made by sending the left channel to the A or C sub and sending the right channel to the B or D sub. Using the balance control on the stereo module will have the same effect on the input send as the pan pot has on the mono module.



Input
Attenuator
Module



4-Track
Tap Return
Monitor Module



Oscillator
Module

An optional 4-track return mix module enables each track from a 4-track ATR to be monitored individually. This combination of a 4-track output plus the 4-track tape return feed enables true 4-track production.

For simplified operation the A and C submasters have a stereo tie switch. When this switch is depressed both left and right channels of each submaster pair are controlled by using only the fader with the tie switch.

The submaster section—with its ability to be used as 4 single sends for production or two stereo pair for air use—gives the S/TV user real versatility.

Each of the subs may be assigned to the L and/or R channels of the stereo program master. Both L and R channels of this master are controlled by a single fader. Additionally, the subs and stereo master may be assigned to the mono master. In this manner a "second audio program" may be derived from the submasters, or a summed mono output may be attained from the subs or masters.

Additional Features

The following features are also available on each S/TV:

Oscillator

A five frequency oscillator with level control is standard. This unit has frequencies set at 50Hz, 400Hz, 1kHz, 7.5kHz, 15kHz.

Talkback and Slate

A talkback microphone is built into the S/TV and is activated by a "push to talk" switch. A level control pot enables output volume to be raised or lowered. The slate function combines a 50Hz tone 20dB down with the talkback function and routes the output to the selected subs and/or masters. In this manner voice slating of various "takes" is possible with the tone used to identify the start of each take in the rewind mode of a VTR or ATR. The slate function may be used with any sub or master.

Echo Return

An echo return bus is available on the submasters. Typically this would be used as the return from a signal processing device. The send to the device may originate from the S/TV's stereo auxiliary bus.

S/TV Console (Cont'd)**Monitors**

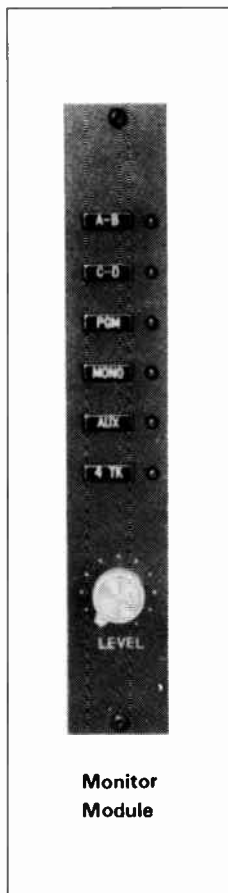
Each S/TV has two monitor buses: control room and studio. Each of the 2 monitors has switch selectable sources including the subs, masters, auxiliary (stereo auxiliary bus), and the 4-track tape return. Each monitor has its own level control. There is also a headphone jack with a level control for additional control room monitoring. The cue bus also has a level control for the cue speaker.

Muting

Studio or control room muting is tied into the source selectors (1 or 2) on the input module. The user may determine and program which monitors will be muted when source selectors 1 or 2 are used.

Timer

The S/TV has an up/down timer with up, down, stop, reset and disconnect controls. (The disconnect function is used so program times are not affected if a machine is remotely started from a module.) There is a digital readout on the meter panel.



Monitor
Module

Connectors

Input and output audio connections are made via sturdy Molex mating connectors. This type of connector is also used for remote module on/off and machine control. Pre-select terminations are made by the customer with AMP high density mating connectors.

Power Supply

The S/TV uses a 10A \pm 20V regulated power supply. A second supply with auto changeover may be added as an option.

Construction/Assembly

Rugged anodized aluminum with custom extrusions are used for frames and sub assemblies. Formica covered end plates and housings, with Lexan overlays on the panel, insure long life. All components, modules and systems are subjected to three levels of testing, and a full power burn-in cycle on all modules assures a minimum of in-field failures.

Specifications**Frequency**

Response: No equalization. Measured at any output level up to clipping. \pm 1dB, 20Hz-20kHz Ref. 1kHz

Distortion: The total harmonic distortion at +24dBm or lower at 1kHz will be <.07% and will not exceed .15% THD over the band 100Hz-20kHz at +24dBm or lower

Max. Output Level: The clipping level at any output when terminated in 600 ohms shall be +27dBm 30Hz to 20kHz

Noise: The equivalent input noise of any microphone shall be lower than -125.5dBu referred to a 250 ohm impedance measured on an average

response meter. Any line level input (+8dBm ref.) to any output channel (+8dBm ref.) will exhibit a maximum noise of -72dBm (S/N 80dB). All noise measurements based on a bandwidth 20Hz to 20kHz

Crosstalk: > 72dB measured between adjacent channels at normal operating levels over the band 100Hz to 10kHz

Temperature: Over the temperature range of 0° to 55°C no apparent changes in operational characteristics are discernible

RF Susceptibility: Based on the tailored roll off characteristics and proper manufacturing techniques, ADM consoles will operate in high RF environments

ADM TECHNOLOGY, INC.

Switching Matrix/Audio Mixer

RM1010 Stereo Switching Matrix

• Input instrumentation amplifier • Output floating balanced • Self contained • Stereo input with selection of left only, right only, stereo or monaural sum • Left channel phase reverse • LED indicators on all source selectors • Unity gain • Stereo monitor output with level control • Front panel 600 ohms headphone jack • 1 $\frac{3}{4}$ " x 19" EIA rackmount • Optional transformer output (RM1010T) • Two VU meters adjustable (+4 or +8)

The RM1010 was designed to be inserted between a line level stereo source (VTR, VCR, etc.) and its load. The RM1010 includes the features necessary to accept a stereo input and redistribute it in the proper stereo format. Inputs for left only, right only, stereo and monaural are front panel selectable. In the event of the loss of either the left or right channel of your stereo source, you can immediately select the functioning channel and feed it to your stereo output channels.

In addition, the phase of the left channel can be reversed which solves the "monaural sum" problem associated with "out of phase" stereo program material. Stereo monitor circuit, consisting of line-level outputs with metering, level control and a headphone jack, are provided for on-line monitoring.

The front panel measures only 1 $\frac{3}{4}$ " x 19" and fits a standard EIA rackmount. XLR input and output termination, instrumentation amplifier input and active balanced output are a few of the significant features found in the RM1010. +27dBu maximum input and output levels are available if the optional transformer (RM1010T) is used.

Specifications

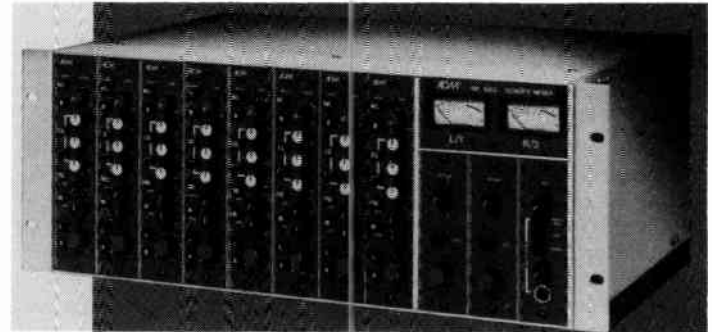
Nominal Level:	+4 or +8dBu = 0VU
Input Impedance:	> 10K ohms
Output Load Impedance:	600 ohms
Frequency Response:	\pm .2dB, 20Hz to 20kHz
Distortion (Active Output):	\leq .02%, 20Hz to 20kHz at +24dBu
(Transformer Output):	\leq .1% at 1kHz, .3% at 30Hz to 20kHz at +24dBu
Gain:	Unity \pm .1dB
Max. Level (Active Output):	> +24dBu
(Transformer Output):	> +27dBu
Absolute Noise:	\leq -86dBu, 20Hz to 20kHz
S/N Ratio:	\geq 90dB (ref. +4 nominal) \geq 94dB (ref. +8 nominal)
Dynamic Range:	\geq 110dB (ref. +24dB output)
Separation:	\geq 60dB, 20Hz to 20kHz
AC Line Voltage:	105 to 120/210 to 240, 50/60Hz
Power Consumption:	12W
Mechanical Size:	1.75" H EIA; 19" W EIA; 9.5" D
Weight:	6 lbs.

RM1083 8 x 3 Rackmount Audio Mixer

• 7" x 19" EIA rackmount • 8 mike/line input modules each with phase reverse switch • XLR connectors for all mike/line inputs • Transformer coupled mike/line inputs • Mike/line inputs may be configured as mike/mike or line/line • 30dB input gain range for both mikes and lines • 3-band EQ with in/out switch on each input module • High pass filter on each EQ • External signal processor loop—optional • Aux/mix-minus selectable pre- or post-fader (pre-fader may be strapped pre- or post-EQ) • Direct outs from each input module—optional (may be strapped pre- or post-EQ) • Stereo pan pot with in/out switch



RM1010

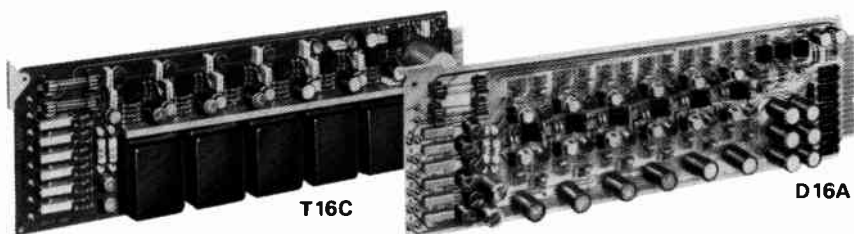


RM 1083

• Large input rotary fader controls • Remote input fader control interconnect—optional • Individual master left/right assignment switches • Left/right master bus external input patchpoints • Left/right master return input patchpoints • Remote master fader control interconnect brought out to a connector • Transformer coupled main and aux outputs • Individual left/right output VU meters • Aux metering via Mstr/Aux monitor switch • Stereo monitor output plus stereo headphone output with level control • Monitor mono sum switch • External stereo input to monitor, front panel selectable • 400Hz-1kHz internally adjustable oscillator • 20V phantom microphone power supply built-in • Mixer power supply built-in, with MOV surge protection • All modules are front panel removable

Specifications

Nominal Level	
Mike Input:	-60dBu
Line Input:	+4dBu
Output:	+4dBu
Input Impedance	
Mike:	> 2K ohms, balanced
Line:	> 24K ohms, balanced
Output Load Impedance:	600 ohms or greater
Frequency Response:	\pm .5dB from 20Hz to 20kHz
Distortion:	< .2% at 30Hz, < .07% from 100Hz to 20kHz
Max. Mike Gain:	84dB
Max. Line Gain:	42dB
Mike Equivalent Input Noise:	-125.5dBu
Line S/N Ratio:	82dB at +4dBu nominal
Line Dynamic Range:	105dB
Crosstalk:	> 80dB
AC Line Voltage:	100-120VAC, 60Hz
Power Consumption:	60W
Mechanical Size:	7" H x 19" W x 13" D
Weight:	30 lbs.

ADM TECHNOLOGY, INC.**Modular Audio Distribution System**

T16C

D16A

DAT 16C/DAD 16A Audio Distribution Amplifiers

These unique amplifiers are available in either transformer input/output (DAT 16C) or differential input/output (DAD 16A). Each amplifier is a 1 input by 6 output plug-in card, and has individual front access output gain controls to compensate for the different level requirements often found within the larger plant. Both amplifier types have input and output test points located on the front edge of the card for ease of setup and adjustment. Each card is also individually fused, preventing total system failure in the event of a single card failure.

The DAT 16C card, with its input and output transformers, is ideal for those locations dealing with outside sources over which you have no control and thus require transformer isolation. The DAD 16A card, with its differential inputs and outputs is best suited for in-house systems where common mode voltages are more readily controllable. The outputs are capacitor coupled, assuring that there is no DC offset voltage. The output circuits of the DAD 16A are capable of operating into a direct short.

DAT 16C/DAD 16A Common Features

- 1 monaural input by 6 monaural outputs
- Input level up to +27dBu
- Output level up to +27dBm
- Input and output test points for setup adjustments
- Each card is individually fused
- Socketed IC construction
- Gold plated card edge connectors

DAT 16C

- Bridging input transformer
- 6 transformer isolated outputs
- Individual output gain adjustments -5 to +20dB

DAD 16A

- Bridging differential input
- Input gain adjustment—unity to +20dB
- 6 active balanced outputs
- Outputs capacitor coupled for zero offset voltage
- Individual output gain adjustments—off to +5dB

CH20C Self-Contained Rack Frame

Houses up to 6 DAT 16C or DAD 16A cards, in any configuration, in 5 1/4" of rack space. Regulated, redundant power supplies, with automatic switchover, assure uninterrupted operation. Front panel LEDs provide instant visual indication of the power supply status. The CH20C frame uses motherboard construction and includes screw type barrier strips for easy input/output connections. The hinged front panel permits easy access for rapid card insertion and removal.

For the larger installation, the CH10 rack frame will accept up to ten DAT 16C or DAD 16A DA cards. In this instance the power supplies are externally mounted. This frame is recommended for those installations using fifty or more of the DA cards.



CH20C

DA261 Audio Distribution Amplifier

- 1 stereo input by 6 stereo outputs plus 1 mono sum output—or 1 stereo input by 13 mono outputs—or 1 mono input by 13 mono outputs—or 2 independent mono inputs with 6 mono outputs each
- Optional VCA boards may be supplied for remote gain control on each channel
- Inputs are true instrumentation amplifiers
- Individual input gain trim of ± 20 dB
- High/low frequency input trim for optimum CMRR
- Outputs are electronically balanced
- Input and output test points for setup adjustments
- LED power status indicators on each card
- On-board power rectification, fuses, filtering and regulation
- Outputs are short circuit proof
- Socketed IC construction
- Gold plated card edge connectors

For the professional monaural installations that wish to ultimately become stereo. The DA261 has the ability to be either a monaural or stereo distribution amplifier.

When used in the monaural configuration the DA 261 becomes a 1 input by 13 output amplifier. In the stereo configuration the DA 261 is a 1 stereo input by 6 stereo output amplifier. In this configuration, the amplifier will also accommodate two monaural signals offering two 1 x 6 high density amplifiers on a single plug-in card. In addition to the mono, stereo and dual channel output configurations, the DA 261 always provides a summed monaural output. This summed output may be used for monaural audio to foldbacks, IFB mix-minus, monitors, etc.

Another feature of the DA 261 is the optional VCA controls that may be supplied with individual DA cards. When remote gain control of the distribution amplifier is a requirement, the DA 261 may be equipped with 2 input VCA modules. With both VCA's installed, it is possible to cross-fade between the left and right channels as well as remotely control them.

CH27 Distribution Frame

Houses 10 DA 261s in 5 1/4" of rack space and includes 2 toroidal transformers, 2 AC indicators, 2 fuses and 2 line cords. For an additional level of redundancy the output of each toroidal transformer is distributed on its own power bus within the CH 27 frame. The standard input and output terminations are high density solderless connectors for fast, reliable installation.

ADVANCED MICRO-DYNAMICS, INC.**Remote Control System****TC-8 Remote Control System**

- 8 metering channels • 8 status inputs • 8 raise, 8 lower outputs
- Delayed failsafe output • One-person calibration • Non-volatile memory • Large dot-matrix display • Optional computer interface
- Radio or wire link • Space saving 1³/₄" rack units

The TC-8 is designed to provide highly reliable transmitter control at a modest cost. Eight metering channels are displayed on a large, easy to read dot-matrix array. The status display provides continuous tally for eight on/off inputs. Controls are easy for non-technical operators to learn and push button setup and calibration makes the TC-8 easy to install and operate.

Non-volatile memory stores all setup and calibration data for ten years without power, allowing convenient maintenance and providing orderly recovery from power outages. All inputs are filtered to provide RF immunity. Hefty open collector outputs are protected from over-current by individual crowbar circuits. An optional interface panel can be conveniently located away from the unit to provide relay outputs and barrier strip connections for all outputs and status and metering inputs. With this option, the transmitter unit can be easily removed from the rack for maintenance without disturbing the individual connections. An optional computer interface allows interconnection with several popular personal computers. This expands the capability of the TC-8 to include full screen display, automatic control functions, limits monitoring, and logging.

Specifications**Description:**

Microprocessor based transmitter control system. Studio and transmitter units are physically identical

Analog Inputs:

8 inputs ± 4.5 VDC maximum referenced to ground

Status Inputs:

8 inputs 5-28VDC or switch closure

Control Outputs:

16 open collector outputs (8 raise, 8 lower) will sink 250 ma., 28V max. Each output has over-current protection

Failsafe and Alarm**Outputs:**

Open collector failsafe output activated 45 seconds after detection of studio to transmitter link failure. Link alarm o.c. outputs activated when either link fails for more than one second

Controls:

Front panel selection of mode (normal, maint, setup, calib) and channel plus On/Raise and Off/Lower

Calibration:

Each channel is calibrated by using the raise and lower keys to adjust the reading to the proper value. The speed of the change in value is proportional, permitting ± 1 digit adjustment or rapid gross changes

Communications Link:

One bell 3002 or equivalent 2-wire circuit or STL subcarrier (command) and FM subcarrier (telemetry). Modem boards are installed for the class of service requested. Boards will be exchanged at customer request for a nominal handling charge

Modem**Characteristics:**

Wire modems: 600 ohms balanced, 0dBm out, -30dBm min. in. Radio modems: 2200 ohms unbalanced, 1.5V p-p out, 0.25V p-p min. in; FM on selected subcarrier between 26kHz and 185kHz

Modulation:

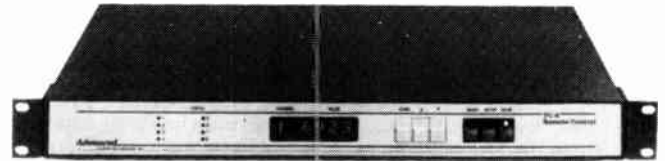
FSK 1070Hz and 1270Hz transmitter to studio, 2025Hz and 2225Hz studio to transmitter

Date Rate:

300bps full duplex with error detection

Display:

5-digit LED dot matrix array for channel and value plus 8 status LED's and 3 mode indicators. Values from -999 to +9999 are displayed with decimal point appropriate for each channel (defined by user)

**Update Rate:**

< 400ms for status and analog value (reading appears immediately when channel is selected due to continuous scan. Updates then occur at the rate of 3 per second)

A/D Converter:

12-bit dual slope integration with auto-zero

Measurement**Accuracy:**

> 0.1% for 4V input. > 0.5% at min. 0.25V input

Temperature Stability:

5 ppm/°C from 0°C to +50°C

Memory Retention:

Non-volatile storage of calibration constants and all setup information for ten years without power

External Connections:

Analog and status inputs: DB-37P submin. D conn.

Control outputs: DB-37S submin. D conn.

Link (radio) BNC

Link (wire) Barrier strip

AC power IEC power cord

Power Requirements:

117VAC nominal; 50/60Hz; 30W. May be strapped for 230V. Toroidal power transformer allows operation from UPS or inverter

Physical:

1³/₄" H x 19" W x 11" D

EIA standard rackmounting

TC-8 Remote Control System	\$2,495.00
IP-8 Interface Panel . . . . .	.495.00
CI-8 Computer Interface . . . . .	.495.00
TSU Telephone Speech Unit . . . . .	.595.00
ST4-A SCA Receiver . . . . .	.168.00

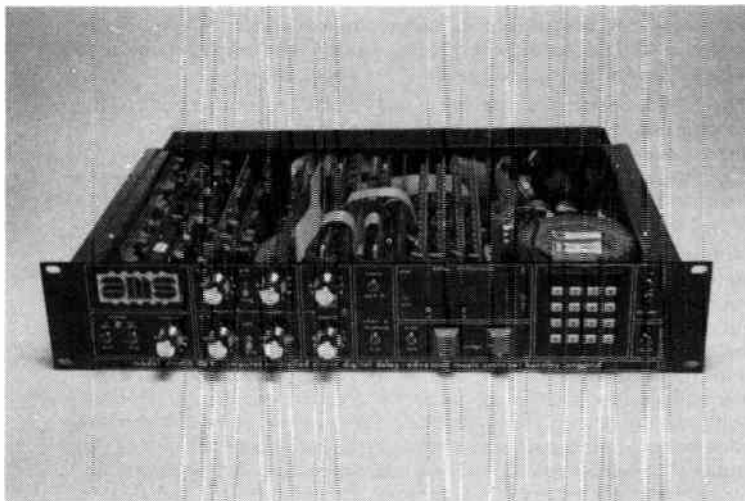
ADVANCED MUSIC SYSTEMS*Delay, Reverberation/
Time Compression/Expansion***DMX 15-80S COMPUTER CONTROLLED STEREO DIGITAL DELAY**

The DMX 15-80S is a modular dual channel device capable of providing two independent programmable channels of delay and/or pitch change at a full 18kHz bandwidth and a 90dB dynamic range. The DMX 15-80S can accommodate up to 25 seconds of audio delay at full bandwidth and either one or two intelligent pitch change modules.

For the user requiring the highest quality of pitch change the new de-glitch card offers an unbeatable standard of noise free pitch-changing anywhere in the 2 octave range. Also unique is a Loop Editing System (LES) which allows a digital recording equivalent to the maximum memory size of the system to be stored, edited and triggered from the unit on demand.

The DMX 15-80SB is a dual channel version of the DMX 15-80S for those requiring two independently selectable channels of delay only.

The DM-DDS is a high quality digital system which offers a 27kHz bandwidth and a 96dB dynamic range specifically for disc cutting.

**DMX 15-80S****RMX 16****RMX 16 DIGITAL REVERBERATION SYSTEM**

The RMX 16 is a compact, high quality digital reverberation system. The unit uses sophisticated 27 bit pipelined data processing and offers an 18kHz bandwidth and a 90dB dynamic range.

It features a large display showing all adjustable parameters and alphanumeric program description. Once programmed, complex set-ups may be stored in any one of up to 99 easily accessible user memories — making the RMX 16 at home in the studio or in any live application.

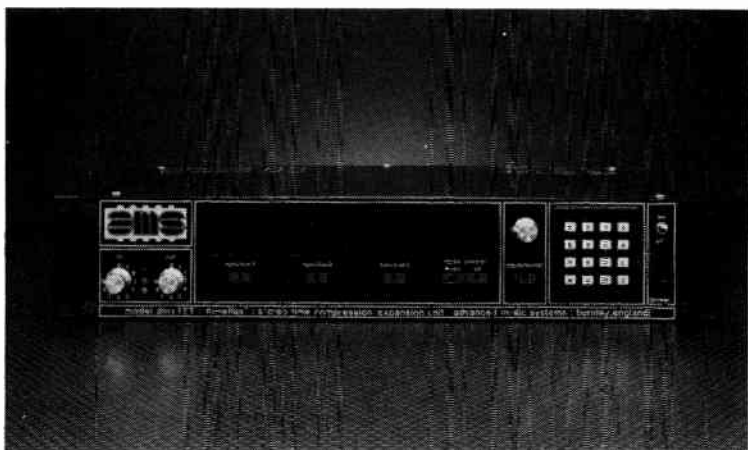
A conveniently sized remote terminal is available for the RMX 16 which connects to the mainframe by a slim 3 core cable. The remote has the added facility of being able to accept a bar code wand which can be used to upgrade the system with new programs without having to change EPROMs.

The remote terminal has the added advantage of being able to store and transport both reverberation programs and user settings between different RMX 16 mainframes.

DMX 15T TIMEFLEX STEREO TIME COMPRESSION/EXPANSION UNIT

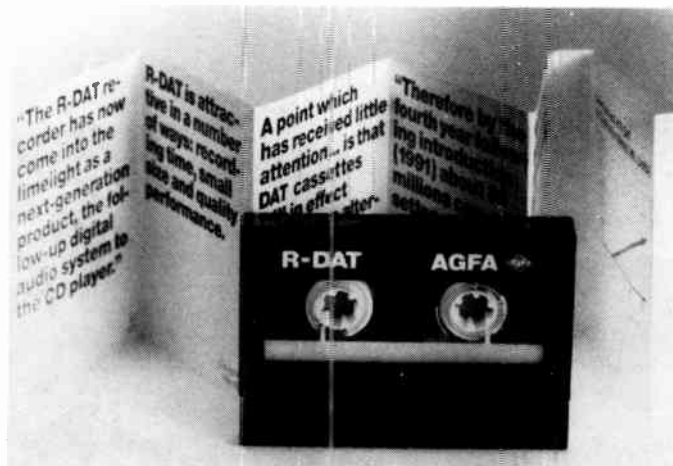
Timeflex is a time compression/expansion device which ensures correct pitch of audio when film or video/audio tape machines are speeded up or slowed down. The intelligent de-glitched pitch changers employed in the DMX 15-80S are also used in Timeflex to ensure the highest quality pitch transposition anywhere within the half to double speed range of the Timeflex. Operation of Timeflex is simplified by alphanumeric LED descriptions of all selectable functions including old time, new time and pitch deviation.

A most important feature of Timeflex is that the system is a true stereo device incorporating special circuitry to ensure preservation of the stereo image and a correct mono summed performance. Stereo or dual channel performance is selectable from the front panel controls. Timeflex can also be programmed to accept audio delays to allow synchronization of sound track and vision should track pick-up be offset from the picture. Percentage time changes may be entered via the front panel keypad.

**DMX-15T**

AGFA-GEVAERT, INC.

Reel/Cassette Tape



PEM 469 Studio Mastering Tape
1 1/2 Mil High Output, Low Noise, Low Print

- Extended dynamic range 5" Reel 1/4" x 625'
- Low print-through 7" Reel 1/4" x 1,250'
- Excellent slitting 10 1/2" Reel 1/4" x 2,500'
- Consistency Hub Bulk 1/4" x 2,500'
- Bias Compatibility 10 1/2" Reel 1/2" x 2,500'
- Tensitized Base Hub 1/2" x 2,500'
- 10 1/2" SK Reel 1" x 2,500'
- 10 1/2" SK Reel 2" x 2,500'
- 14" Reel 2" x 5,000'

PEM 468 Studio Mastering Tape
1 1/2 Mil High Output, Low Noise, Low Print

- Lowest print-through 5" Reel 1/4" x 600'
- Excellent slitting 7" Reel 1/4" x 1,200'
- Consistency 10 1/2" Reel 1/4" x 2,400'
- Tensitized base Hub Bulk 1/4" x 2,400'
- Batch number and web Hub 1/2" x 2,400'
- position printed on back 10 1/2" Reel 1/2" x 2,400'
- coating 10 1/2" SK Reel 1" x 2,400'
- 10 1/2" SK Reel 2" x 2,400'

PEM 369 Studio Mastering Tape
1 Mil High Output, Low Noise, Low Print

- Extended play Hub Bulk 1/4" x 3,600'
- Tensitized base
- Lowest print-through
- Excellent slitting
- Consistency

PEM 291D Digital Mastering Tape
1 Mil High Output, Low Noise

- Fewer dropouts 10 1/2" Reel 1/4" x 5,000'
- Superior slitting 10 1/2" Reel 1/2" x 5,000'
- Consistency roll after roll 12 1/2" Reel 1/2" x 7,500'
- 14" Reel 1/2" x 10,000'
- 10 1/2" Reel 1" x 5,000'
- 12 1/2" Reel 1" x 7,500'
- 14" Reel 1" x 10,000'

PEM 526 Bin Mastering Tape
1 1/2 Mil High Output, Low Noise, Low Print

- Specifically designed for bin application Hub Bulk 1/4" x 2,400'
- High frequency stability Hub Bulk 1/2" x 2,400'
- Mechanical stability Hub Bulk 1" x 2,400'

Bulk Audio Cassette Tape

Standard Bias

- Low noise • Super high output • Exceptional high end response for IEC Bias I, 120µs equalization • Designed for highest quality music recording.

Standard Ferric Music Grade

PE619I	C-60	PE649	C-60
PE919I	C-90	PE949	C-90
PE1249	C-120		

Premium Ferric Music Grade

High Bias

- Low noise • Pure chromium dioxide optimized for IEC Bias II 70µs chrome equalization • For high quality music recording where strong dynamics, high frequency response and low noise are critical performance factors.

PE627	C-60	PE827	C-90
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Magnetite

- Designed specifically for the high speed quality minded duplicator
- For the low end punch of an excellent bias 1 tape and the high end ability of a bias II tape

Magnetite 62	C-60	Magnetite 62	C-90
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R-DAT (Packaged/Duplicator)

- Designed specifically for the rotary-head digital audio tape cassette format
- Feature precision coating with pure metal pigments
- A special back-coating ensures perfect mechanical performance and security for the data stored

Prices and Specifications Subject to Change Without Notice.



Agfa Broadcast Plus U-Matic Video Cassettes

AGFA Broadcast Plus U-Matic Cassettes will add a new dimension of color brilliance and definition to your masters with: 1dB more color signal-to-noise, 2.5dB more video signal-to-noise, 4dB more RF output and an exceptionally low dropout rate, as compared to the industry standard.

In addition to excellent video characteristics, AGFA BROADCAST PLUS U-Matic Cassettes utilize a black anti-static backcoating resulting in better tape transport and winding properties.

Precision molded and assembled under stringent and uncompromising quality control standards, AGFA BROADCAST PLUS U-Matic Cassettes are designed for use on all U-Matic video cassette players and recorders.

CASSETTE TYPE	PLAYING TIME	TAPE LENGTH
Packaged/Labeled Series		
KCS 10 BP (mini)	10 min.	237 ft.
KCS 20 BP (mini)	20 min.	424 ft.
KCA 5 BP	5 min.	140 ft.
KCA 10 BP	10 min.	237 ft.
KCA 20 BP	20 min.	424 ft.
KCA 30 BP	30 min.	611 ft.
KCA 60 BP	60 min.	1175 Ft.

3/4" Bulk Tape PEV 297 Video Pancake Available

Super HGX VHS Video Cassettes

- Video S/N + 5dB
- Color S/N + 2dB
- RF output + 3.5dB
- Dropouts max. avg. 15/min.

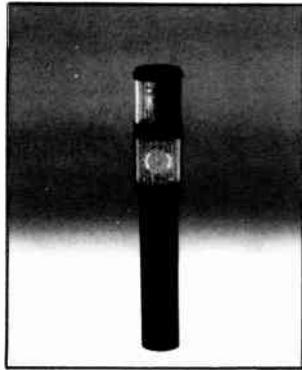
AGFA Super HGX VHS Video cassettes offer the combination of excellent chroma and luminance response found only in today's leading "high grade" cassettes, together with a consistently low dropout rate to truly meet the critical requirements of professional users.

CASSETTE TYPE	PLAYING TIME	TAPE LENGTH
Packaged/Labeled Series		
VHS T30	30 min.	203 ft.
VHS T60	60 min.	406 ft.
VHS T90	90 min.	608 ft.
VHS T120	120 min.	810 ft.

1/2" Bulk VHS Pancake Tape
 PEV 192 HGX 1/2" x 14, 764'
 PEV 192 "A" Grade 1/2" x 14, 764'

AKG ACOUSTICS, INC.

Condenser Microphones



O/A/Q/8

C-34 Stereo Condenser Microphone
Small-diaphragm (CK-1) stereo microphone with FET preamplifier. Nine polar patterns selected via remote control. 9-52V phantom powered. Complete with S-42E remote control, MK-42/20 66' (20m) cable, W-34 windscreen, H-15/6 suspension mount/stand adaptor and foam-lined carrying case.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -47dBV

C-34 \$2295.00



O/A/Q/8

C-422 Stereo Condenser Microphone
Large-diaphragm stereo microphone with FET preamplifier. Nine polar patterns selected via remote control. 0, -10dB, -20dB pre-attenuator. 9-52V phantom powered. Includes unique LED "aiming lights." Complete with S-42E remote control, MK-42/20 66' (20m) cable, W-42 windscreen, H-15/9 suspension mount/stand adaptor and foam lined carrying case.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -44dBV

C-422 \$2995.00



O/A/Q/8

AKG-Tube Microphone
Large diaphragm condenser using the low noise 6072 vacuum tube combined with new circuit design provides the classic AKG tube sound. Nine polar patterns and three bass-rolloff positions (flat, 75Hz, 150Hz) selected via remote control. 0, -10, -20dB pre-attenuator. Includes N-tube power supply. H-15T shock-suspension, 30' (10m) connecting cable, W-42 foam windscreen and professional metal flight case.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -41dBV

AKG-Tube \$2295.00

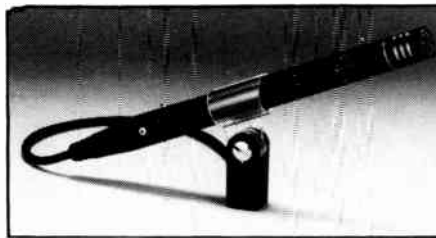


Q

C-460B ULS Microphone Combination
12-52V cardioid condenser-microphone combination. With switchable bass-rolloff, 4 positions: flat, 70Hz, 150Hz and 10dB attenuation. Consists of: C-460B preamplifier and CK-61 cardioid capsule. Satin-black finish; W-32 foam windscreen; SA-40 stand adaptor and foam lined case.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -40dBV

- C-460B/CK61 Combo \$550.00
 - C-460B/CK62 Combo 550.00
 - C-460B/CK63 Combo 550.00
 - C-460B/CK1X Combo 775.00
 - C-460B Black preamp 420.00
 - C-451EB Black preamp 335.00
 - CK-1 Cardioid capsule, black 145.00
 - CK-1X Cardioid capsule, black 200.00
 - CK-2X Omni capsule, black 200.00
 - CK-3X Hypercardioid capsule, black 200.00
 - CK-3 Hypercardioid capsule, black 145.00
 - CK-5 Shock suspended cardioid capsule, black 275.00
 - CK-B Short shotgun capsule, black 260.00
 - CK-BX Capsule, short shotgun 365.00
 - CK-9 Long shotgun capsule, black 320.00
 - CK-22 Omni capsule, black 145.00
 - CK-61 ULS cardioid capsule, black 170.00
 - CK-62 ULS omni capsule, black 170.00
 - CK-63 ULS hypercardioid capsule, black 170.00
 - A-51 Swivel, black 100.00
 - H-52 Stereo mount for CK-X 55.00
- A complete range of accessories is available.

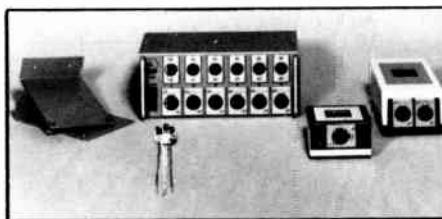


Q

C-451E and C-451EB Microphone Combinations
9-52V Cardioid condenser microphone combination. C-451E has nickel finish while C-451EB has black satin finish and includes 3 position bass-rolloff switch. Modular system utilizes a wide range of capsules, modules, extension tubes, and accessories. Combination includes W-32 windscreen, SA-40 stand adaptor and case.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -40dBV

C-451E Combination (nickel finish) \$400.00
C-451EB Combination (black finish) 495.00



- Power Supplies For Condenser Microphones**
- B-9 Two mike, 9V battery \$ 55.00
 - B-18 Battery 1 mike, 2x9V battery 95.00
 - N62E AC 2 mikes 110.00
 - N62ET AC 2 mikes w/transformers 180.00
 - N66E AC 6 mikes 315.00
 - A-52 Custom module 35.00

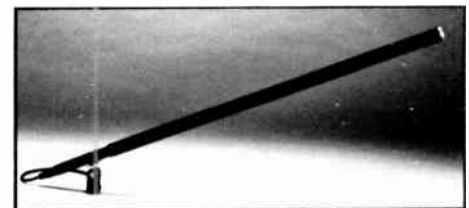


O/A/Q/8

C-414B/ULS Microphone
FET condenser microphone with large diaphragm capsule, providing four selectable patterns (omni, cardioid, hypercardioid, figure eight), with three position bass-rolloff switch (flat, 75Hz, 150Hz) and 0, -10dB, -20dB attenuator switch. For 9-52V low-current drain (1 mA) phantom powering. Complete with W-26 windscreen, SA-1B/3 clamp stand adaptor and case.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -38dBV

C-414B/ULS \$ 995.00
C-414B/TL Transformerless version 1195.00



Q

C-451EB/CK-9 Microphone
Shotgun condenser-microphone combination. Consists of: C-451EB preamplifier; CK-9 shotgun capsule; B-18E battery power supply; W-19 windscreen; SA-1B/3 black stand adaptor; SA-70/3 pistol-grip and boom suspension adaptor; H-7 pistol grip; H-70 boom suspension shock mount; and MC-25 cable. CC-9 foam-lined carrying case included.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -39dBV

C-451EE/CK-9 Black combination \$1100.00

Refer to Green Section for Addresses and Telephone Numbers.

AKG ACOUSTICS, INC.

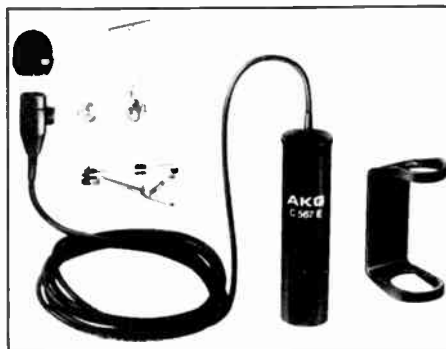
Microphones



C-535EB Microphone
Versatile studio-quality cardioid microphone for demanding applications in broadcasting, recording or sound reinforcement. Special 4-position output-padding/bass-rolloff switch. (1) 0 padding, 0 rolloff; (2) 0 padding, 12dB/octave rolloff below 100Hz; (3) 14dB padding, 0 rolloff; (4) 14dB padding, 6dB/octave rolloff below 500Hz. Removable windscreen; field-replaceable shock-mounted transducer with integral FET pre-amplifier. 9-52V phantom powered. Includes: SA-41 stand adaptor, and case. Satin-black finish.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -41dBV

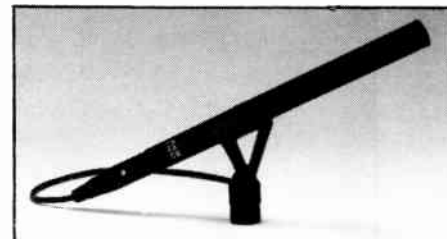
C-535EB\$350.00



C-567E Lavalier Microphone
Miniature wide-range lavalier microphone for exceptional clean speech and music coverage in film, TV and general theatrical sound reinforcement. May be user worn or clipped to musical instrument. Couples unobtrusive appearance and durable metal construction with shock/noise resistance and ease of field service. 9-52V phantom powered. Includes: W-37 windscreen; H-16 belt clip; H-20 tie tack; H-21 tie bar case. Satin-black chrome finish.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -44dBV

C-567E Lavalier\$275.00



C-568EB Shotgun Microphone
Rugged one piece short shotgun. Outstanding performance and attractive appearance enables mike to be used in film, TV (handheld or camera mount), stage, and audio or video recording. System includes two-position bass-rolloff switch, SA-40 stand adaptor and W-68 foam windscreen. Integrated preamplifier is phantom powered by 9-52V. Satin black finish.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -42dBV

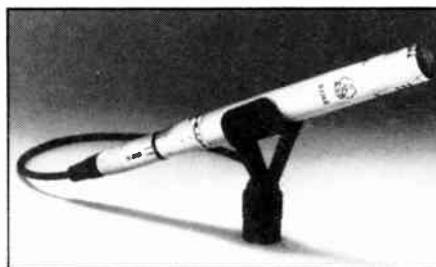
C-568EB\$350.00



C-410 Microphone Boom Set
Featherweight (0.9 oz. without connector) boom set secures behind the head. Utilizes a high quality cardioid microphone for 20-20kHz response. Perfect for singing keyboard players and drummers. 9-52V phantom powered. Includes: removable windscreen, H-45 cable clip and case. Matte-black finish.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -50dBV

C-410\$215.00



D-224E Two-Way Microphone
Studio two-way cardioid dynamic microphone. Dual-transducer design eliminates proximity effect. Small-diaphragm design provides condenser-type extended response without high susceptibility to wind and popping noises. 3-position bass-rolloff switch. Includes W-2 (front) and W-2A (rear) windscreens. SA-40 stand adaptor and case.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -58dBV

D-224E\$600.00



C-522 Stereo Microphone
Handheld or boom X-Y stereo microphone. Internal rechargeable battery, or 9-52V phantom powerable. Ideal for ENG/SNG applications. Includes: W-52 windscreen; SA-41/1 stand adaptor; H-30 shock mount; balanced MK-52/3 and unbalanced MK-52/3U cables; and carrying case. Satin-black finish.

Frequency Range: 20-20kHz
Sensitivity at 1kHz: -40dBV

C-522\$995.00

D-222EB Two-Way Microphone
Rugged two-way cardioid dynamic microphone. Modular dual-transducer design eliminates proximity effect and simplifies field service. Integral sintered bronze windscreen/pop filter makes unit equally suitable for studio or location use. Three-position bass-rolloff switch. Includes: SA-40 stand adaptor and case.

Frequency Range: 20-16kHz
Sensitivity at 1kHz: -57dBV

D-202E
Frequency Range: 20-20kHz
Sensitivity at 1kHz: -56dBV

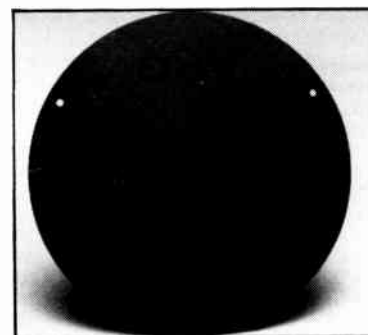
D-222EB\$350.00
D-202E\$425.00



C-562 Boundary Layer Microphone
Newly developed condenser transducer mounted in a flat round plate (6.25" x 0.25") with holes for mounting. Phantom powerable 9-52V. Includes: Stand adaptor, W-62 windscreen and integral steel (10') cable with XLR-type connector. Satin-black finish.

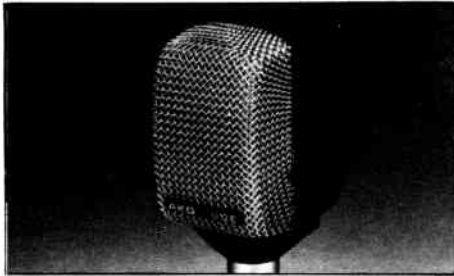
Frequency Range: 20-20kHz
Sensitivity at 1kHz: -33dBV

C-562\$435.00



AKG ACOUSTICS, INC.

Microphones



D-12E Microphone

Large-diaphragm cardioid dynamic microphone with high proximity effect. For miking bass drums and other low-pitched instruments, as well as for general vocal applications. Features shock suspended transducer and fixed wire-mesh windscreen. Integral XLR-type connector in microphone shaft. Includes: SA-40 stand adaptor and case.

Frequency Range: 30-15kHz
Sensitivity at 1kHz: -53dBV

D-12E \$390.00

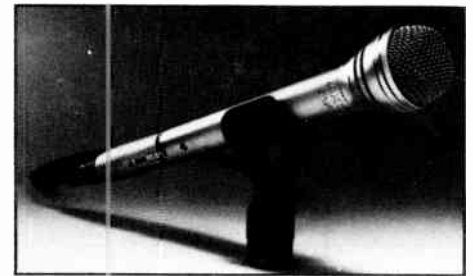


D-112 Microphone

Large-diaphragm cardioid dynamic microphone handles extreme (168dB) Sound Pressure Levels. Excellent on all bass instruments. Rugged construction. Finished in non-reflective dark gray. Includes SA-40 stand adaptor and case.

Frequency Range: 20-17kHz
Sensitivity at 1kHz: -55dBV

D-112 \$220.00



D-125E Microphone

Anti-feedback cardioid dynamic microphone perfect for sound reinforcement. Wire-mesh windscreen and diecast housing assure reliability. Includes: SA-40 stand adaptor and case.

Frequency Range: 100-18kHz
Sensitivity at 1kHz: -54dBV

D-125E \$170.00

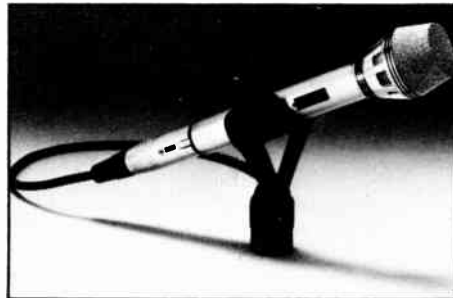


D-130E Microphone

Ruggedized omnidirectional microphone for field broadcast use. Designed for newscast and ENG applications where durability is of utmost importance. Includes: SA-40 stand adaptor and case.

Frequency Range: 50-13kHz
Sensitivity at 1kHz: -55dBV

D-130E Nickel finish \$135.00
D-130NR in non-reflective dark-gray finish 150.00

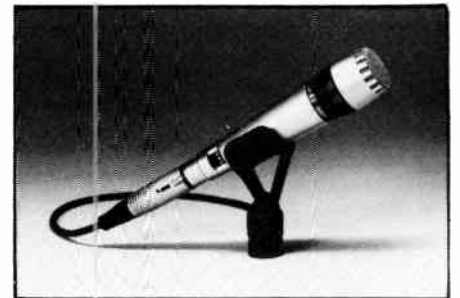


D-190E Microphone

Cardioid dynamic microphone with sintered bronze windscreens/pop filter. Cardioid pattern reduces feedback. Smooth frequency response makes it an excellent speech or music microphone for performing and recording use. Includes: SA-40 stand adaptor and case.

Frequency Range: 30-15kHz
Sensitivity at 1kHz: -53dBV

D-190E \$135.00
D-190ES w/On-Off Switch (shown) 155.00



D-1200E Microphone

Rugged cardioid dynamic microphone. Unique B-M-S switch allows for on-mike equalization to adjust sound of mike for almost any application without sacrificing performance. Includes: SA-41 adaptor and case. (Replaces D-1000E).

Frequency Range: 25-17kHz
Sensitivity at 1kHz: -52.8dBV

D-1200E \$250.00

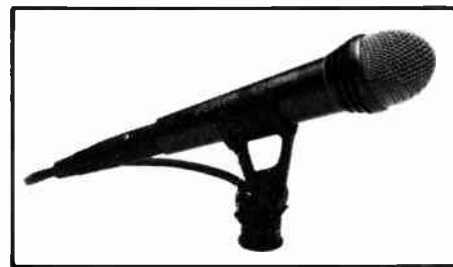


D-310 Microphone

Ruggedized cardioid dynamic microphone for vocal-music coverage in the home or studio. Shock mounted transducer, diecast housing and dual windscreens/pop filter for reliability. Includes: SA-41 stand adaptor and case.

Frequency Range: 80-18kHz
Sensitivity at 1kHz: -58dBV

D-310 \$160.00
D-310S w/On-Off Switch 175.00
D-310NR Same as D-310S but in non-reflective dark-gray finish (shown) 165.00



D-321 Microphone

Ultra-rugged hypercardioid dynamic microphone for vocalists on the road. Patented magnet/diaphragm suspension system reduces handling noise. Diecast housing and dual windscreens/pop filter withstands repeated abuse. Captive locking screw to secure cable connector to the microphone. Includes: SA-41 stand adaptor and vinyl case.

Frequency Range: 40-20kHz
Sensitivity at 1kHz: -57dBV

D-321 \$210.00
D-321S w/On-Off Switch 225.00



D-330BT Microphone

Ultra-rugged feedback-rejecting hypercardioid design demanded by top vocalists. Unsurpassed reliability ensured by shock-mounted plug-in field-replaceable transducer, diecast housing and dual windscreens/pop filter. Two equalizer switches (3-pos. bass rolloff, 3 pos. treble rise) for ultimate flexibility in tailoring response to specific voices and ambient acoustics. Includes: SA-41 stand adaptor and case.

Frequency Range: 50-20kHz
Sensitivity at 1kHz: -58dBV

D-330BT \$250.00
D-330NR in non-reflective dark-gray finish 265.00

All AKG microphones are low impedance balanced-output units fitted with a standard 3-pin XLR-type connector. Nominal output impedance is 200 ohms and is suitably matched by all low impedance (25-1000 ohms) inputs.

Prices and Specifications Subject to Change Without Notice.

AKG ACOUSTICS, INC.

Microphones



D-70M Cardioid Microphone
 Low cost musical instrument microphone. Ideal for home recording and sound reinforcement. Medium impedance (200-1000 ohms). Rugged construction with fixed 9.8' (3m) cable and 1/4" phone plug. Includes nickel plated plug-in stand.

Frequency Range: 50-18kHz
Sensitivity at 1kHz: -58dBV

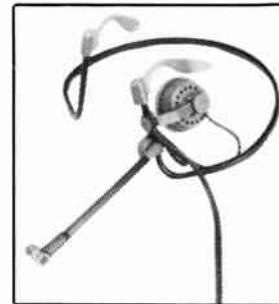
D-70M \$75.00
D-70ME Same as D-70M except with an integral XLR connector. Includes: SA-40 stand adaptor.
D-70ME \$85.00



D-109 Lavalier Microphone
 Lightweight lavalier dynamic microphone with matte-nickel finish. Includes 29 1/2' (9m) non-detachable cable with stripped and tinned leads at free end, nylon neck cord, tie clasp, cable spool, and case.

Frequency Range: 70-12kHz
Sensitivity at 1kHz: -59dBV

D-109 \$125.00



Q-15/10 Boom Set
 Ultra-lightweight boom set, secures behind the head, with single side dynamic earphone and condenser microphone. Includes 6'4" (1.9m) non-detachable cable and H-45 cable clip. Weight 1.3 oz.

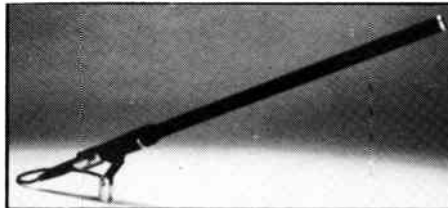
Q-15/10 \$145.00
Q-15/20 Single earpiece with dynamic microphone 165.00
Q24/10 Dual earpiece with condenser mike 165.00
Q24/20 Dual earpiece with dynamic mike . 185.00



D-58E Dynamic Microphone
 Differential noise-cancelling dynamic microphone for communications, paging and talk-back applications. Extremely small and lightweight.

Frequency Range: 70-12kHz
Sensitivity at 1kHz: -63dBV

D-58E \$125.00



D-900E Shotgun Microphone System
 Shotgun dynamic microphone system. Includes W-19 windscreen, W-9A windscreen, SA-16/1 stand adaptor, SA-70/9 pistol-grip and boom suspension adaptor, H-7 pistol grip, H-70 boom suspension shock mount, MC-25 cable and CC-9 foam-lined carrying case.

Frequency Range: 60-12kHz
Sensitivity at 1kHz: -50dBV

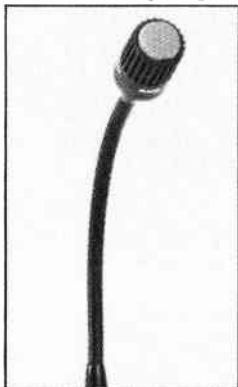
D-900E \$430.00
D-900E System 775.00



D-510B Microphone
 Omnidirectional dynamic microphone on flexible gooseneck shaft. 12 3/16" (310mm) long overall. Includes 3 3/4" (1.15m) cable and mounting hardware. Table stand not included.

Frequency Range: 125-20kHz
Sensitivity at 1kHz: -59dBV

D-510B \$140.00



D-541 Microphone
 Cardioid dynamic microphone on flexible shaft. 13 3/4" (350mm) long overall. Includes 5' (1.6m) cable and mounting hardware. Black finish.

Frequency Range: 80-15kHz
Sensitivity at 1kHz: -55dBV

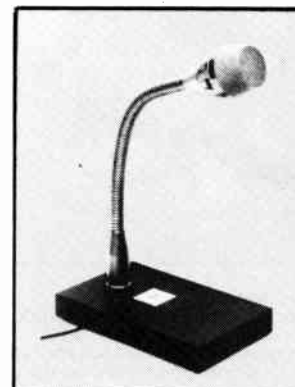
D-541 \$115.00



D-558B Microphone
 Differential noise-cancelling dynamic microphone on flexible gooseneck shaft. 12 3/16" (310mm) long overall. Includes 3 3/4" (1.15m) cable and mounting hardware. Table stand not included.

Frequency Range: 70-15kHz
Sensitivity at 1kHz: -63dBV

D-558B \$160.00



D-590 Microphone
 Cardioid dynamic microphone on flexible gooseneck shaft. 11 1/4" (285mm) long overall. Includes 3 3/4" (1.15m) cable and mounting hardware. Table stand not included.

Frequency Range: 160-15kHz
Sensitivity at 1kHz: -58dBV

D-590 \$170.00

AKG ACOUSTICS, INC.

Microphone Stands

KM Series Floor and Table/Microphone Stands

KM-5 Short Round Floor/Table Stand

Shock isolated round base floor or table stand. Two section upright is adjustable between 10" and 16". Can be used with KM-211 boom arms. Upright: Chrome plated with 5/8"-27 thread. Net weight 8.1 lbs.

KM-5\$50.00

KM-10/1 Round Floor Stand

Base is shock isolated from floor via a round rubber "donut." Two section upright is adjustable between 39" and 66". Base: 10" diameter, finish black. Upright: chrome plated with 5/8"-27 thread. Net weight 9 3/4 lbs.

KM-10/1\$50.00

KM-10/1 Black Round Floor Stand

Same as KM-10/1 except upright is finished in matte-black.

KM-10/1 Black\$50.00

KM-199 Tripod Floor Stand

Sturdy, lightweight adjustable floor stand. Continuously adjustable in four sections. Maximum height 67 1/4"; minimum height 22". Chrome with matte-black fittings. Folding legs. Net weight 3 lbs.

KM-199\$45.00

KM-265 Tripod Floor Stand

Lightweight yet high quality collapsible floor stand. Height adjustment between 34" and 62". Base radius: 13.5". Collapsed length: 33". 5/8"-27 thread, black finish. Net weight 3.6 lbs.

KM-265\$60.00

KM-211/3 Adjustable Boom Arm

KM quality at a low price. Adjustable boom arm for use with KM-265. Total length 32", black finish. Net weight 1.5 lbs.

KM-211/3\$30.00

KM-251 Tripod Floor Stand

Heavy-duty, collapsible floor stand similar to KM-201A/2, but with three telescoping pieces. Height adjustment from 23" to 53". Folds down to 21" total length and maximum diameter of 3 1/2". 5/8"-27 thread. Chrome with matte-black fitting. Includes handy cable clamp on largest telescoping section. Net weight 5 lbs. (Also available with matte-black finish throughout.)

KM-251\$65.00

KM-275 Tripod Floor Stand With Adjustable Boom Arm

Lightweight yet high quality collapsible floor stand with adjustable boom arm. Stand height adjustment between 34" and 62". Base radius: 13.5". Collapsed length: 33". 5/8"-27 thread. Boom arm total length: 32". Available in red, white, blue, black and chrome. Specify color. Net weight 5.1 lbs.

KM-275\$85.00

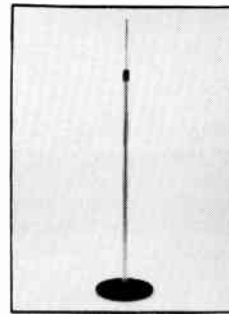
KM-200 Anti-Shock Floor Stand

Anti-shock floor stand. Unique suspension attenuates floor vibration. Noiseless height adjustment. Telescoping pole permits continuous height adjustment between 35" and 62". Base radius: 11". Collapsed length 33". 5/8"-27 thread. Chrome with beige fittings. Includes handy cable clamp on main telescope section. Net weight 6 lbs.

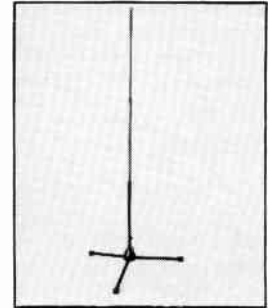
KM-200\$90.00

KM-255 Two-Way Stand With Boom

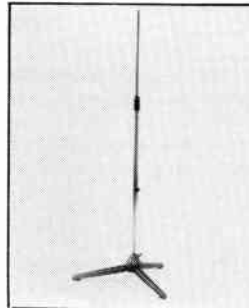
Versatile two-way floor stand. Converts for use as: (1) low-profile stand with telescoping boom arm; (2) conventional upright stand. In boom configuration, boom arm adjusts from 28" to 60". In upright configuration, height adjustable from 41" to 67 1/2". Base radius: 13 1/2". Folds down to 34" length and 3" maximum radius. 5/8"-27 thread. Chrome



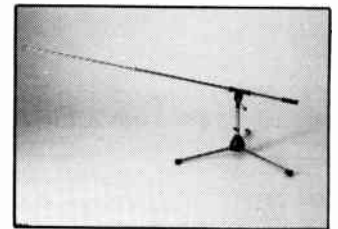
KM-10/1



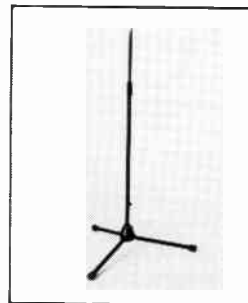
KM-251



KM-200



KM-255



KM-201A/2

with matte-black fittings. Includes cable clamp on vertical section. Net weight 8 lbs.

KM-255\$75.00

KM-259 Black Boom Floor Stand Combination

Heavy-duty low profile boom/floor stand combination. Adjustable vertical height from 17.7" to 49.2". Includes KM-211/1 boom arm. Folding tripod base. Matte-black finish throughout. Net weight 7.5 lbs.

KM-259\$80.00

KM-201A/2 Tripod Floor Stand

Heavy-duty collapsible floor stand. Impact resistant. Noiseless telescopic height adjustment between 36" and 63". Heavy-duty feet with elastic-rubber tips. Base radius: 14 1/2". Collapsed length: 33". 5/8"-27 thread. Chrome with matte-black fittings. Includes handy cable clamp on main telescope section. Net weight 5 1/2 lbs. (Also available with matte-black finish throughout.)

KM-201A/2\$60.00

KM-201A/2 Black Tripod Floor Stand

Same as KM-201A/2, but with matte-black finish throughout.

KM-201A/2 Black\$60.00

AKG ACOUSTICS, INC.

Microphone Stands/Accessories

**KM Series Floor And Table/
Microphone Stands (cont'd)**

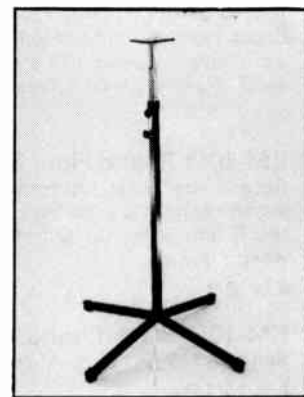
KM-212 Boom Stand

Extra heavy-duty collapsible stand with large telescoping boom arm with counterweight. Adjustable height from 60" to 88". Telescoping boom arm from 37 1/2" to 64 1/2". Base radius: 23". Collapsible with folding legs; folds down to 54" (boom: 48" overall) length and maximum radius of 3 1/2". 5/8"-27 thread. Chrome with matte-black fittings. Net weight 22 lbs.

KM-212 \$195.00



KM-212



KM-195

KM-195 Speaker Stand

Extra heavy-duty speaker stand for mounting columns or conventional speakers. Locking height adjustment, with five positions in 8" steps from 48" to 78". Exceedingly stable. Threaded flat mounting plate 6" x 4 3/4" x 1/2". Collapsible with folding legs; folds down to 60" length and maximum diameter of 5 1/2". Matte-black with chrome extension. Net weight 23 lbs.

KM-195 \$155.00

KM-211/1 Telescoping Boom Arm

Telescoping boom arm for KM-200, KM-201A/2 or KM-251. Boom extension 27 1/2" max. 5/8"-27 thread. Chrome with matte-black fittings. Net weight 2 lbs.

KM-211/1 \$30.00

KM-211/1 black 30.00



KM-235/1



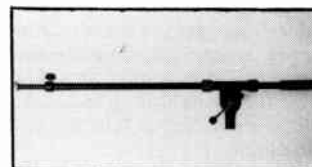
KM-237

KM-211/2 Telescoping Boom Arm

Telescoping boom arm for KM-200, KM-201A/2 or KM-251. Boom extension 17 1/4" min., 33" max. 5/8"-27 thread. Collapsed length: 22 1/2". Chrome with matte-black fittings. Net weight 2 lbs.

KM-211/2 \$30.00

KM-211/2 black 30.00



KM-211/Black

Accessories

- KM-160/1** Ashtray, to attach to KM-200, KM-201A/2, KM-251, KM-255, or KM-257/2. Chrome \$ 8.00
- KM-160/2** Clamp-on glass holder. 10.00
- KM-216** Thread adaptor, 3/8" male to 5/8"-27 female. Chrome . . 3.00
- KM-217** Thread adaptor, 3/8" female to 5/8"-27 male. Chrome . . 3.00
- KM-221C** Flange adaptor for microphone mounting. 3/8" thread. Hammertone gray 10.00
- KM-235/1** Stereo microphone bar adaptor to mount two microphones on KM-199, 200, 201A/2, 251, 255, 257/2 or any similar stand having 5/8"-27 thread. Chrome with matte-black 10.00
- KM-237** Clamp adaptor for microphone mounting on tabletops, etc. 5/8"-27 thread. Chrome 10.00
- KM-238** Microphone adaptor to clamp 2nd microphone to KM-199, 200, 201A/2, 251, 255, 257/2 or any similar stand. 5/8"-27 thread. Chrome. 10.00
- KM-239/2** "Quick Release" mike holder. Two parts. Bottom part screws on to 5/8"-27 stand or gooseneck. Top part "snaps" on to bottom, top has 5/8"-27 thread to accommodate mike stand adaptor. To remove top part depress spring loaded pushbutton. Total length 2 3/8" 10.00

Flexible Cable Assemblies for Microphones

- MC-25** Low impedance without switch (female XLR — male XLR). \$19.00
- MC-25F** Low impedance without switch (female XLR — stripped and tinned ends). 16.00
- MC-25P** Low impedance without switch (female XLR — phone plug) 20.00
- MC-25RC** Low impedance without switch (female XLR — male right angle XLR) 22.00
- MC-25S** Low impedance with switch (female XLR — male XLR) 28.00
- MC-25T** High impedance without switch (female XLR — transformer — phone plug) 31.00
- MC-25TS** High impedance with switch (female XLR — transformer — phone plug) 36.00
- MC-50** Low impedance 50' (15.2m) extension (female XLR — male XLR). 31.00

Note: All cables are 25' (7.6m) long, except MC-50.

AKG ACOUSTICS, INC.

Headphones/Headsets



K-340 Electrostatic/Dynamic Stereo Headphone
Two-way stereo headphone. Offers unsurpassed frequency and transient response, plus accurate spatial reproduction. Patented design combines electrostatic high-frequency transducers, dynamic mid/low frequency transducers, crossovers and 10 passive diaphragms in circumaural earcups. Matches 4-400 ohm outputs. With 10' coiled cable and standard stereo phone plug. Weight 14 oz.
K-340 \$235.00



K-145S Electrostatic/Dynamic Systems
Distortion-free, high frequencies, excellent reproduction of all bass and midrange frequencies. Both dynamic and electrostatic technologies. The "unbreakable" flexi-plastic headband provides vertical adjustment for positive ear alignment. Soft, cushiony ear pads. Dynamic/Electrostatic; 25-24,000Hz. Y-connected, 10' 1/4" phone plug. Weight 6 oz. without cable.
K-145S \$110.00



K-130 Stereo Headphone
The K-130's transducers are microphone-derived moving coil/markrofol-diaphragm systems, not merely small paper-cone loudspeakers as widely used by other manufacturers. The transducers, ear-cushions, and housing are all bio-acoustically designed to form an integrated system with the listener's ear—a system concept that replicates natural listening conditions. This is achieved by utilizing a Supra earcup and maintaining an open-air operating principle. Weight 8 oz.
K-130 \$70.00



K-260 Professional Dynamic Headphone
Open-air, circumaural stereo headphone with newly developed dynamic moving-coil transducers. Provides ultra-wide frequency reproduction and dynamic range. Capable of withstanding high transient peaks without failure. Self-adjusting headband, 10-20,000Hz, Y-connected 9.8' cord, 1/4" phone plug. Weight 9.2 oz. without cable.
K-260 \$170.00



K-141M Deluxe Cardan Stereo Headphone
Quality stereo headphone that is lightweight and comfortable. It is semi-open featuring resonance-free characteristics but with greater freedom from low-frequency side effects. The K-141M provides an extremely broad, flat response almost totally free of coloration—sound which is warm, not boomy; open and present, without harshness. Weight 9 1/4 oz.
K-141M \$100.00



K-45 Supra-Aural Stereo Headphone
Combines lightweight design and high efficiency of a mini with full frequency response and imaging of a studio-quality headphone. Adjustable headband and earcups allow for an extremely comfortable fit. Matches 4-200 ohm outputs and comes with a 9 3/4' cable and standard 1/4" phone plug. Weight 3 oz.
K-45 \$60.00

K-18 Headphone/Boom—Microphone Set
Consists of two monophonically connected dynamic earphones and boom arm with noise-cancelling dynamic microphone. Headphone impedance matches 4-300 ohm outputs. Nominal microphone impedance 200 ohms matched by all low impedance unbalanced (25-1000 ohms) inputs. With 3 1/4' non-detachable cable with stripped-and-tinned leads.
K-18 \$75.00



K-240M Monitor
Preferential use in many professional recording and broadcast studios, as well as the home. An accurate performer with precise bass and distortion-free high frequency capability. Weight distribution over the head is uniform. Its carbon-pivoted earpieces are comfortable, self-adjusting. Dynamic Moving Coil, 20-20,000Hz. Single cord 8' 4" 1/4" phone plug. Weight 8.5 oz. without cable.
K-240M \$120.00
K-240DF Studio Monitor
Frequency range: 20-20,000Hz; channel balance ± 2B; 8' 4" 1/4" phone plug.
K-240DF \$150.00

K-135 Dynamic Systems
It is rugged and durable. Withstands the rigors of broadcast, DJ's, recording studios and the vagaries of the young and the jet set, where its rough and tumble features are most desirable. Moving-coil large dynamic transducers provide a wide frequency listening range. Its patented semi-open air design is rear-vented and is equipped with supra-aural soft earpads covered in a washable kid-glove leatherette. Dynamic moving coil, 25-18,000Hz, Y-connected, 10' 1/4" phone plug. Weight 5.6 oz. without cable.
K-135 \$80.00



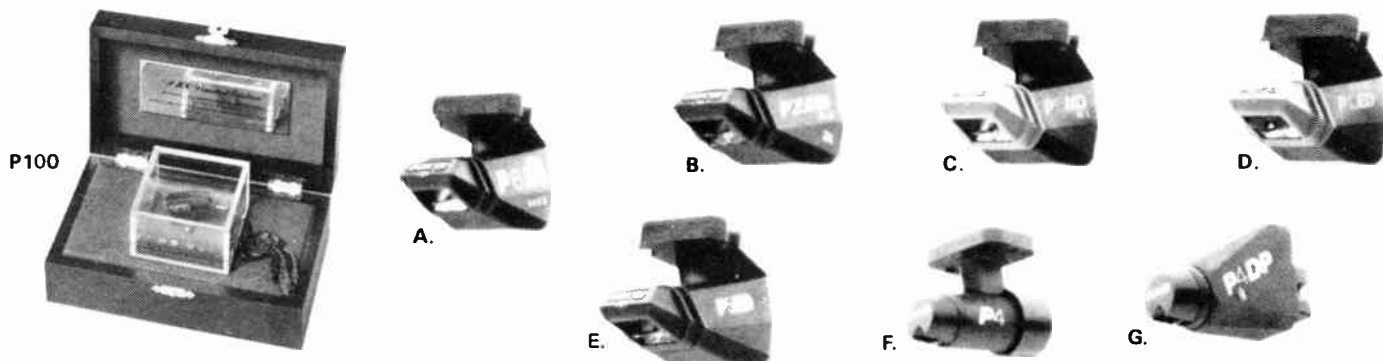
K-2 Lightweight Mini Headphone
Two moving-coil dynamic elements produce a well balanced, open sound. Adjustable earcups with washable foam cushions. Perfect for lightweight open-air sound at home, on the go. Includes a combination standard phone/mini stereo plug on a Y-connected 8' 3" cable. Weight 3.2 oz.
K-2 \$45.00

Q34 Professional Headset
The Q34 can be used in audio and video monitoring and talkback, radio and surveillance services, and broadcasting. Features time-tested dynamic transducers and a self-adjusting headband. Microphone boom may be continuously adjusted for positioning. Dynamic two-cond. shielded 200 ohms. 4' 8" 7 conductor with free ends.
Q34 \$145.00
Q35 Single earpiece with microphone. 120.00
Q32 Single earpiece, no microphone. 105.00
Q31 Dual earpiece, no microphone. 120.00

Prices and Specifications Subject to Change Without Notice.

AKG ACOUSTICS, INC.

Phono Cartridges



P100
Utilizing the performance-proven "TS System," the stereo image is real and precise because the patented knife-edge bearing keeps the pivot of the featherweight beryllium cantilever at a defined location—allowing free right-angle movement while restricting axial aberrations. Vertical tracking angle is adjustable, accommodating records which deviate from standard. Choose from two styli versions: P 100LE with multi-faceted Analog 6 diamond tip, tracks wonderfully throughout the audio range. P 100 vdHII, van den Hul diamond, replicates record cutter geometry.
P100 Series \$1000.00

A. P8ES Super Nova
The transducer components include an annular magnet system with a conductive plastic body which constantly grounds accumulated static. Balance and trackability are incomparable. The van den Hul II stylus is cut and polished to replicate the geometry of a record cutting stylus.
Frequency Range: 10—28,000Hz
Channel Separation: 1kHz/10kHz: 30/19dB
Recommended Load Impedance: 47/470K ohms/pF
Tracking Force Range: 1.0—1.5g
Replacement Stylus: X8 Nova
Includes mounting hardware
P8ES Super Nova \$450.00

B. P-25S
Offers the "TS Knife-edge Suspension" and a multi-faceted stylus capable of excellent groove tracking. Low effective cantilever mass provides "feather touch" contact regardless of high or low frequency passages.
Frequency Range: 10—28,000Hz
Channel Separation: 1kHz/10kHz: 30/25dB
Recommended Load Impedance: 47/470K ohms/pF
Tracking Force Range: 0.75—1.25g
Replacement Stylus: X25S
Includes mounting hardware and frequency curve.
P-25S \$250.00

C. P-15S
Hum rejection has been increased by 6dB and crosstalk rejection by 3dB. The frequency sensitivity range has been increased while the coil design provides vital advantages as reduced distortion. Equipped with TS Suspension System and an advanced micro mass stylus.
Frequency Range: 10—25,000Hz
Channel Separation: 1kHz/10kHz: 30/22dB
Recommended Load Impedance: 47/470K ohms/pF
Tracking Force Range: 1.0—1.5g
Replacement Stylus: X15S
Includes mounting hardware and frequency curve
P-15S \$175.00

D. P-10S
Ideal phono cartridge for upgrading the performance of any medium quality system. It will provide noticeable improvement in audio quality throughout the entire range—even over heavily warped records. A more rugged version, the P-10ED Studio, is the ideal cartridge for trouble-free back cueing.
Frequency Range: 20—20,000Hz
Channel Separation: 1kHz/10kHz: 25/15dB
Recommended Load Impedance: 47/470K ohms/pF
Tracking Force Range: P-10ED: 1.0—1.5g; Studio: 2.5—4.5g
Replacement Stylus: P-10ED: X10S; Studio: X10ST
Includes mounting hardware
P-10S \$125.00
P-10ED Studio \$130.00

E. P5ED
Elliptical diamond stylus affixed to a titanium cantilever... to markedly reduce the effective mass of this component so as to greatly improve high frequency tracking performance. The patented TS Knife-edge Suspension System prevents longitudinal or axial shifting of the cantilever point.
Frequency Range: 20—20,000Hz
Channel Separation: 1kHz/10kHz: 25/15dB
Recommended Load Impedance: 47/470K ohms/pF
Tracking Force Range: 1.25—2.0g
Replacement Stylus: X5ED
Includes mounting hardware
P5ED \$80.00

F. P4
Designed for turntables with heavy or medium-heavy tonearms, tracking force of only 1.5g.
Frequency Range: 20—20,000Hz
Channel Separation: 1kHz/10kHz: 20/15dB
Recommended Load Impedance: 47/470K ohms/pF
Tracking Force Range: 1.0—2.0g
Replacement Stylus: X4
Includes mounting hardware
P4 \$60.00

G. P4DP
This version of the P4 is fitted with a standard T4P connector. It may be plugged into a matching receptacle in the tonearm, eliminating the need for fussing with leads, wires or clips.
P4DP \$65.00

Prices and Specifications Subject to Change Without Notice.

ALAMAR ELECTRONICS USA, INC.

Automation Systems/ Remote Interfaces

Alamar's family of products offer flexible solutions for the following:

- Commercial insertion • Program playback • Net delay programming
- Traffic system interface • Management of media resources • Pre-packaged commercial reel • Cart machine replacement

Alamar provides integration with equipment from major manufacturers including Ampex, Sony, JVC, Panasonic, Grass Valley, 3M, Utah Scientific and many more. Features include:

- Supports all VTR formats • Interfaces master control, strip and routing switchers • Provides general purpose telecine control • Compatible with SMPTE/EBU remote control bus

MC-1055 Sequencer System

- 6-channel capability • Stores 10,000 events on disk • ESBUS compatibility • Multi-user allows three workstations • Automatic program cueing and configuration • "As-Aired" station log (optional) • Random access to multiple spots on tape

A most cost-effective way to automate one to six independent program channels while using our general purpose record/play channel for network delay. Operators can access current "on-air" status with the MC-1005's flexible and easy-to-read displays. The on-line event editing feature allows for last-minute changes in the program schedule.

The MC-1055 utilizes SC-2000 interfaces to control up to 32 machines with a variety of formats.

MC-1055 \$17,995.00

Auto-Cart Sequencer System

- Low-cost machine control system • Single-event channel • Includes control of three VTRs and one switcher • Automatic program cueing and confirmation • Interfaces with all VTR formats

Auto-Cart, VTR Sequencer, answers the programming needs of small-to-medium-sized television facilities. It is a compact, single channel system designed for use in commercial insertion and playback. The Auto-Cart controls three mixed-format VTRs and one strip switcher. With additional SC-2000 interfaces the system can be expanded to control up to 32 VTRs.

Auto-Cart \$7,995.00

Copy-Cart Net Delay System

- Interfaces with all VTR formats • Variable pre-roll • Router control of any source to any destination

Copy-Cart Remote Controller permits automatic recording and delayed playback of program material on 1 to 32 VTRs of all formats. A routing switcher interface can be added to preassign switcher cross points prior to net recording.

Copy-Cart \$9,750.00

RCMP-5 Remote Control Panel

Applications

- Multi-format duplication • Remote machine control • Auto-cueing for news playback

The RCMP-5 Remote Control Panel works in conjunction with the MC-1055, Auto-Cart and Copy-Cart systems, and is the product that ties automation together with remote control. Users can add from one to ten RCMP-5 panels, and have full remote control at any location in their facilities. VTRs, switchers, telecines, character generators, still store devices and general purpose interface contacts can all be remotely controlled with the RCMP-5 Panel.

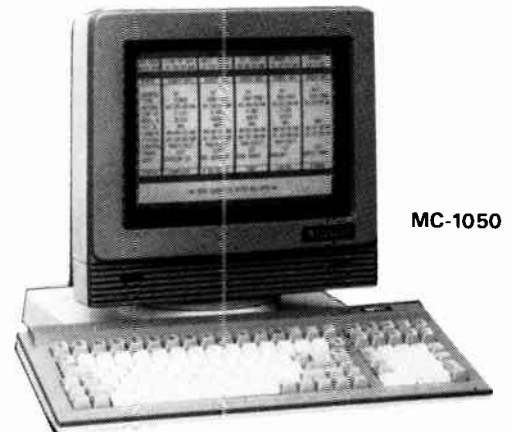
RCMP-5 \$2,750.00

SC-2000 Interface Controller

The SC-2000 Remote Controller provides a modular approach to machine control requirements. The SC-2000 links VTRs, switchers, telecines and other broadcast equipment to the ESBUS standard. No modifications are necessary to most quadruplex, Type C, U-Matic, Beta and M format machines. Program information is recorded on tape to provide for automatic cueing and confirmation of program material.

SC-2000P Remote control of four parallel devices \$3,250.00

SC-2000S Remote control of two serial devices. 2,500.00



- SC-2000T** General purpose remote control of one telecine system \$4,450.00
- SC-2000R** Remote relay control and opto-isolated status of four devices 3,750.00
- SC-RT** Satellite DTMF interface PC board (one parallel port of SC-2000P required) 1,200.00

Schedule Manager Software

Applications

- Educational television • Community access • LPTV scheduling

Schedule manager allows daily logs to be created using the Run-sheet information in the Media Manager's database. Once a log is created, the Schedule Manager downloads the daily logs to the MC-1055. All software is IBM XT/AT compatible.

Schedule Manager \$5,500.00

Media Manager (Software)

Applications

- News clip retrieval • Run-sheet storage • Distribution management • Film/video cataloging • Central library database

Media Manager provides a means of cataloging all film and videotape programming in your facility. A flexible search feature allows easy access to program entries.

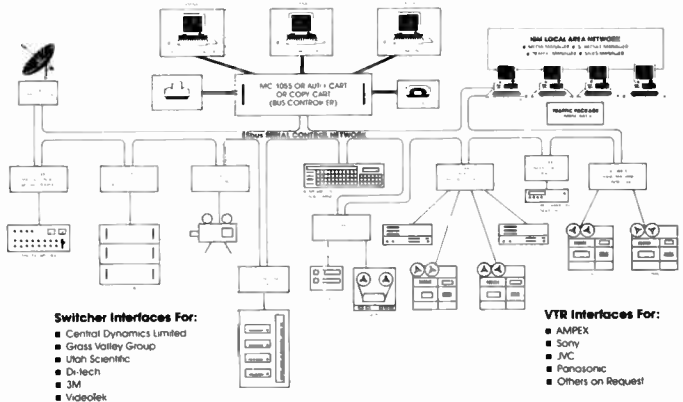
Media Manager \$3,750.00

Traffic Manager (Software)

The Traffic Manager furnishes the interface link between a facility's existing traffic system and Alamar's automation system. When fully integrated, the Traffic Manager will cross reference your catalog entries for media assignment.

Traffic ManagerPOR

Ala-Bus Integrated Network



ALEXANDER BATTERIES

Batteries/Battery Belts

7700 Series Ride Behind Batteries

All Alexander ride behind (on board) batteries are equipped with an Anton Bauer Snap On battery mount. No cables or modifications are needed. All Alexander batteries feature graded and sorted cells so the battery is assembled with premium grade cells.

7700-10	7700-11	7700-12
Voltage: 12V	Voltage: 13.2V	Voltage: 14.4V
Capacity: 4AH	Capacity: 4AH	Capacity: 4AH
Weight: 3 lbs., 8.5 oz.	Weight: 3 lbs., 14 oz.	Weight: 4 lbs., 6 oz.
Type: NiCad	Type: NiCad	Type: NiCad

Mini 7700 Series

The same premium quality as our full size 7700 series except lighter weight. Each of the Mini 7700 batteries will have slightly more than 50% of the run time of our full size 7700 series batteries. All are equipped with an Anton Bauer Snap On battery mount.

7700-10 Mini	7700-11 Mini	7700-12 Mini
Voltage: 12V	Voltage: 13.2V	Voltage: 14.4V
Capacity: 2.2AH	Capacity: 2.2AH	Capacity: 2.2AH
Weight: 1 lb., 15 oz.	Weight: 2 lbs., 2 oz.	Weight: 2 lbs., 5 oz.
Type: NiCad	Type: NiCad	Type: NiCad

In Board Batteries

All Alexander in board batteries are constructed of premium grade, tested and sorted cells. The batteries are constructed using the most advanced technology available.

BP90A	BP60A	BP20A-11
Replaces: Sony BP90	Replaces: Sony BP60	Replaces: Sony BP20A
Voltage: 12V	Voltage: 13.75V	Voltage: 13.75V
Capacity: 4AH	Capacity: 2.2AH	Capacity: 2.2AH
Weight: 3 lbs., 9 oz.	Weight: 2 lbs.	Weight: 2 lbs., 6 oz.
Type: NiCad	Type: NiCad	Type: NiCad

JVC-1	JVC-11
Replaces: JVC/Panasonic PBP-1	Replaces: JVC/Panasonic PBP-1
Voltage: 12V	Voltage: 13.75V
Capacity: 2.2AH	Capacity: 2.2AH
Weight: 1 lb., 13 oz.	Weight: 2 lbs.
Type: NiCad	Type: NiCad

Camcorder Batteries

With longer run time and slightly higher voltage, the Alexander BP-1-11 is the only replacement battery for the NP-1 made in the USA.

BP-1-11
Replaces: Sony BP-1
Voltage: 13.75V
Capacity: 1500mAH
Weight: 1 lb., 8.5 oz.
Type: NiCad

Again and Again Camcorder Batteries

RC1209	RC1212	RC1220
Voltage: 12V	Voltage: 12V	Voltage: 12V
Capacity: 900mAH	Capacity: 1200mAH	Capacity: 2AH
Weight: 1 lb., 5 oz.	Weight: 1 lb., 8oz.	Weight: 1 lb., 8 oz.
Type: NiCad	Type: NiCad	Type: Lead Acid
RC6013	RC1215	RC9614 (CAM)
Voltage: 6V	Voltage: 12V	Voltage: 9.6V
Capacity: 1300mAH	Capacity: 1500mAH	Capacity: 1000mAH
Weight: 9 oz.	Weight: 1 lb., 3 oz.	Weight: 1 lb., 3 oz.
Type: NiCad	Type: NiCad	Type: NiCad

NPP1245C (Power Pack with Charger)	NPP1245B (Power Pack Battery Only)
Voltage: 12V	Voltage: 12V
Capacity: 4.5AH	Capacity: 4.5AH
Weight: 3 lbs.	Weight: 3 lbs.
Type: NiCad	Type: NiCad

PP1260C (Power Pack With Charger)	BB1280C (Battery Belt)
Voltage: 12V	Voltage: 12V
Capacity: 6AH	Capacity: 8AH
Weight: 6 lbs.	Weight: 9 lbs.
Type: Lead Acid	Type: Lead Acid
	Capacity: 4.5AA
	Weight: 3 lbs.
	Type: NiCad



Double Adjusting Battery Belts

All Alexander battery belts feature a unique double adjusting system allowing the crew member to adjust the belt to fit his or her figure...large or small. In addition, all Alexander battery belts include a shoulder strap for additional comfort and ease. The belt is leather with polyethylene and nylon stitched pockets. Polyethylene will not crack, split or break even under extreme weather conditions.

BB6304A	Voltage: 30V
	Capacity: 4AH
	Weight: 11 lbs., 14.5 oz.

BB6307A	Voltage: 12V
	Capacity: 4AH

BB8307F (Fast Charge)	Voltage: 12V
	Capacity: 4AH

BB7007A	Voltage: 12V
	Capacity: 7AH

BB9007F (Fast Charge)	Voltage: 12V
	Capacity: 7AH

Battery Belt Replacement Batteries

2D24 (2 "D" cells, side by side)

Used In: BV to 16V, 4AH battery belts	Voltage: 2.4V
	Capacity: 4AH

S240/T (2 "D" cells, stacked)

Used In: BP90 batteries and 13.2V, 8AH battery belts	Voltage: 2.4V
	Capacity: 4AH

4D4.8S (4 "D" cells, two side by side stacked 2 high)	Used In: 30V, 4AH battery belts; all 8AH battery belts and BP90 batteries
	Voltage: 4.8V
	Capacity: 4AH

6D7.2S (6 "D" cells, three side by side stacked 2 high)

Used In: 7.2V, 4AH battery belts	Voltage: 7.2V
	Capacity: 4AH

ALEXANDER BATTERIES**Chargers and Analyzers****Chargers and Analyzers****TA3877-II TriAnalyzer**

Helps you determine the remaining capacity or life of up to three batteries independently, yet simultaneously. Fully charges, discharges, recharges each battery. Remaining capacity is displayed in mA. The deep discharge process also conditions each battery, extending battery life. The ideal companion for our SM32077 Smart Charger.

Voltage: 12V to 14.4V
Charge Rate: 1600mA
Discharge Rate: 1700mA
Trickle Charge Rate: 10mA

SM32077 Smart Charger

Independently charges up to three batteries. "Smart" because it automatically detects when a battery reaches full charge by using a unique microprocessing system. For use with all types of video batteries.

Voltage: 12V to 14V
Charge Rate: 1600mA
Trickle Charge Rate: 10mA

20-11 Charger

Completely charges three 220mA batteries in 10 hours or less. This includes our 7700 Mini Series, BP-20-11, BP60A, JVC-1 and JVC-11 batteries.

Charge Rate: 200mA

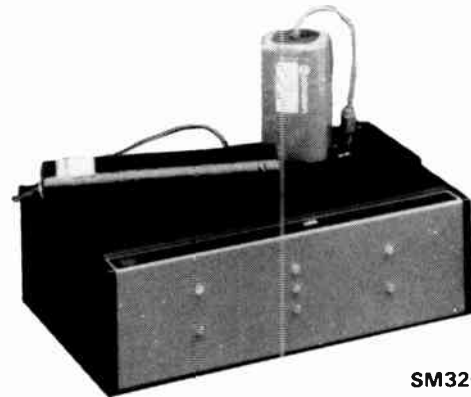
20-40 Charger

Completely charges two 4AH batteries in 10 hours or less. The full size 7700 Series and BP90A are in this category.

Charge Rate: 400mA



TA3877-II



SM32077

Battery Cross Reference Guide**RC 1209**

Used In:
 RCA VKP975
 RCA VJP170
 RCA VJP825
 RCA VJP900
 RCA VJP950
 RCA VJP970
 RCA VLP800
 RCA VKP925
 RCA VKP926
 RCA VKP950
 Hitachi VT3P
 Hitachi VT5P
 Hitachi VT7P
 Hitachi VT94
 Hitachi VT98
 Hitachi VT8A
 Pentax 2000
 Pentax 2200
 Pentax PV R1000
 Pentax PV R1100

RC 1212

Used In:
 JVC GX700U
 JVC HRC3U
 JVC HRS100
 JVC HPS101

RC 1212 (Cont'd.)

Zenith VR5000 (CAM)
 Zenith VR7000 (CAM)

RC 1220

Used In:
 Chinon CVT60
 Pentax PV-R1100A
 Philco 1728
 Olympus VC 105
 Olympus VC 106
 Sylvania 4525
 Sylvania 4540
 Sylvania 4546
 Sylvania 4527
 Philco VCR801
 JC Penney 5110
 JC Penney 5115
 Canon VR20A
 Canon VR30A
 Canon VR40A
 GE 5022
 GE 5024
 GE 5025
 GE 5026
 GE 5028
 GE 5030
 GE Movie 9-9606
 GE Movie 9-9608

RC 1220 (Cont'd.)

GE Movie 9-9610
 Quasar 5440
 Quasar 5442
 Quasar 5740
 Quasar 5744
 Quasar 5450
 Quasar 5452
 Quasar 5747
 Quasar 5750
 Quasar VM20
 Quasar 2100 (CAM)
 Magnavox 8474
 Magnavox 8475
 Magnavox 8292
 Magnavox VR8485
 Magnavox VR8486
 Panasonic 5800
 Panasonic 5850
 Panasonic 8100
 Panasonic 8484
 Panasonic 8485
 Panasonic PV8500
 Panasonic 8600
 Panasonic 9600
 Panasonic PV 210
 Panasonic PV 220
 Panasonic PV 300
 Panasonic PV 320
 Panasonic A6 2400

RC 1220 (Cont'd.)

Minolta MV-9005
 Minolta MV5C0S
 Curtis Mathes 773
 Sears 5370
 Teknika C-7100
 Teknika C-6000

RC6013

Used In:
 Aiwa CV50
 Sony CCD V3
 Sony CCD M8V
 Sony CCD V8AF
 Sanyo VM8
 Pioneer
 Kyocera KD200
 Aiwa CV80
 NEC EM-A8U
 Samsung SVC8
 Fisher FVC801
 Vivitar Magic 8

RC 1215

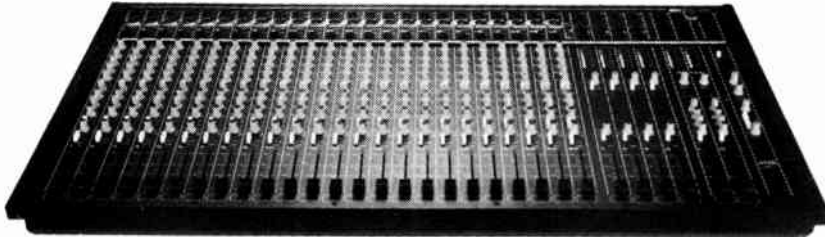
Used In:
 Sears 934
 RCA CMR300
 RCA CMR200
 Hitachi VM2000A
 Hitachi VM2100A

RC 1215 (Cont'd.)

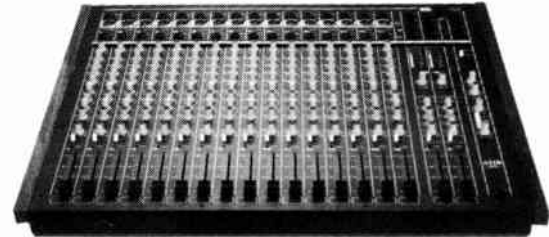
Hitachi VM5000A
 Pentax PVC11A
 Pentax PVC55A
 Minolta CR1000S
 Minolta CR1100S
 Mitsubishi HS F-1 OUR

RC9614 (CAM)

Used In:
 JVC GRC 1U
 JVC GRC 2U
 Sharp VCC-50
 Toshiba SK-60
 PV 100
 MGA HSC 20
 VR 8297 AV
 Teknika C-7500
 Zenith VM6200



SR Series



SR Series Sound Mixing Consoles

- SR8 stereo and mono outputs, 8 input channels
- SR12 stereo and mono outputs, 12 input channels
- SR16 stereo and mono outputs, 16 input channels
- SR416 four group, stereo and mono outputs, 16 input channels
- SR424 four group, stereo and mono outputs, 24 input channels

The AHB SR Series are a versatile range of sound mixing consoles designed for live sound usage and stereo or 4-track recording.

Constructed of high quality durable materials, designed and matched with components that allow ease of use, they represent the ideal equipment for high quality sound reinforcement through fixed installations or touring PA systems.

The panel coloring is designed so that under poor lighting conditions the graphics are easily read, where circumstances prevail, a connector is provided for gooseneck lights.

Specifications

Construction:

1. Steel control panel, stove enamel, epoxy silkscreen legend
2. Steel base, black finish with furniture trims
3. Channel circuit boards are individual, secured to control panel
4. Internal busbar circuits employ removeable harness
5. IC op amp circuit design with discreet transistor input pre amp

Electronic Performance:

0dBV = 0.775RMS 1kHz
OVU = +4dBV = 1.23VRMS

Gain:

- Mike in to Group Out + 80dB max.
- Mike in to L/R out + 70dB max.
- Line in to group out + 50dB max.
- Line in to L/R out + 40dB max.
- Group to L/R out + 10dB max.
- L/R to mono out + 6dB
- FX Return to L/R out + 12dB max.
- Aux. return to group out + 17dB max.

Figures include 10dB input and group fader boost.

Input gain control range 40dB

Frequency Response:

Equalizer set to flat response—20Hz-20kHz +0, -1dB

Outputs:

Max. level + 21dBV, recommended load 2K ohms or more. With 600 ohms load max. level + 18dBm.

Distortion:

THD typically 0.05% 20Hz-20kHz at normal levels and gain settings

AC Supply Voltages:

Supply type MPS8P provides the DC supply for all mixer functions including 48V phantom power. It is factory set for operation on the required AC supply as follows:

- Europe 220/240VAC, 50Hz
- North America 110/120VAC, 60Hz
- Japan 100V or 110/120 or 220/240VAC

The supply voltage setting may be altered to suit local requirements if required. BNC connector (to suit lamps rated 12-15V, 50mA DC)

Noise Performance:

RMS noise 20kHz bandwidth ref. 0VU

Model:	SR8	SR12	SR16	SR416	SR424
i Stereo Output, all inputs routed and faders closed	-87dB	-85dB	-84dB	-84dB	-81dB
ii Group Output, all inputs routed and faders closed			-78dB	-74dB	
iii Aux. Output	-89dB	-84dB	-82dB	-82dB	-79dB
iv Microphone Input	equivalent noise -125dBm (200 ohm source)				

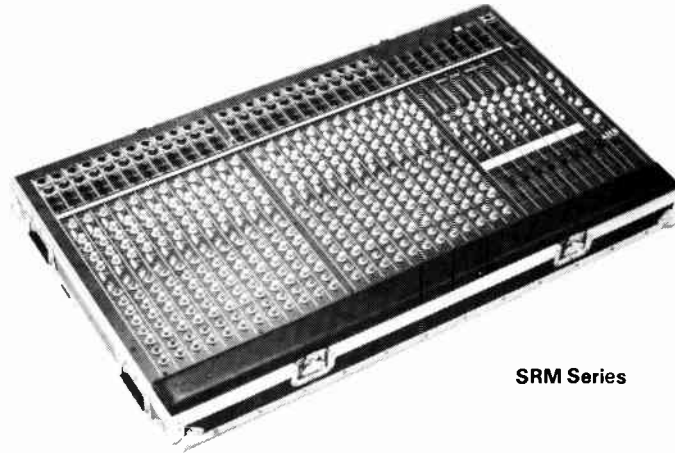
Equalizer:

HF continuously variable ± 12dB with shelving characteristic at 8kHz. 3.5kHz continuously variable peak/dip ± 12dB centered at 3.5kHz, Q=0.6, 250Hz continuously variable peak/dip ± 12dB centered at 250Hz. LF continuously variable ± 12dB with shelving characteristic at 80Hz.

Each model is shipped in protective packing with the power supply and one owner handbook which includes technical service data and schematics.

Dimensions

(mm/ in.):	SR8	SR12	SR16	SR416	SR424	MPS8P
Width:	472(19)	600(24)	728(29)	872(35)	1128(45)	85(4)
Height:	100(4)	100(4)	100(4)	100(4)	100(4)	75(3)
Front to back:	644(26)	644(26)	644(26)	644(26)	644(26)	285(12)
Wt. kg. (lbs.)	16(36)	20(44)	25(55)	26(58)	35(77)	



SRM Series

SRM Series On-Stage Monitor Mixers

Available in 18 x 6 and 24 x 8 configurations. Includes passive splitting system and road case.

The SRM Series of "On Stage" monitor mixers are intended for use by artists requiring multiple independent mixes within their performing environment.

To be used in conjunction with a high quality monitor system (i.e. speakers, amplifiers, equalizers, etc.), both the needs of the artist and engineer are easily satisfied by extensive use of patch and insert points, and the liberal use of status LED indicators throughout. Incorporation of an internal microphone splitter eliminates the need for costly external systems.

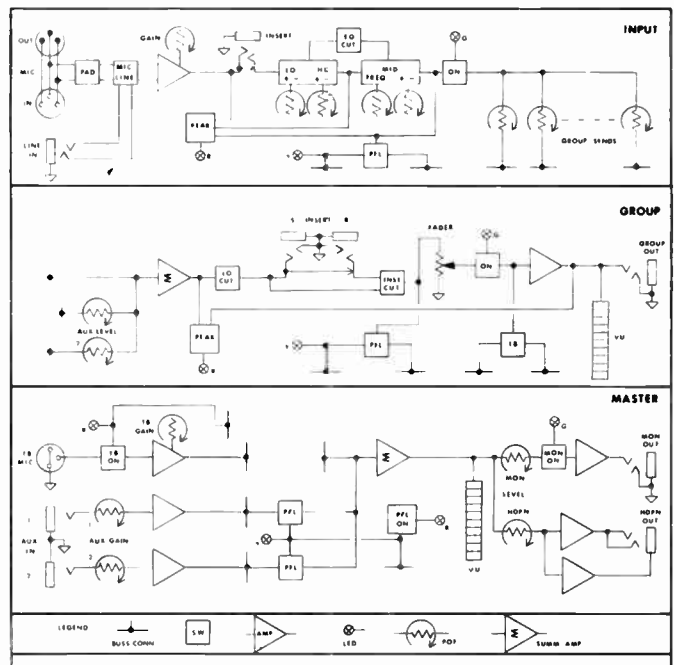
Monitor systems have been shown to be capable of producing higher and more intelligible sound levels before feedback when the mixing equipment and engineer are in the same environment as the artist (On stage, usually behind the main speaker system). Because of the better communications between the artist and engineer, the mix can more easily be tailored to the artist's needs.

Specifications

Input Impedance	
Balanced Microphone	4K ohms
Balanced Microphone w/pad	8K ohms
Balanced Line	40K ohms
Unbalanced Aux In	50K ohms
Output Impedance	
Any Output	22 ohms
Max. Gain	
Mike In to Group Out	80dB
Line In to Group Out	54dB
Aux. In to Group Out	32dB
Output Level (Nominal + 4dBV)	
Into 2K ohms or Greater	+ 21dBV
Into 600 ohms	+ 18dBV
Frequency Response	
	20Hz-20kHz ± 1dB
Harmonic Distortion	
	Typically less than 0.05%
Noise (Mike Pre)	
	EIN -125dBV (200 ohm source)
Dimensions (In Flight Case)	
SRM-186 40.5" x 29.5" x 7.5"	Weight (Case Mounted)
(1030x750x190mm)	80 lbs.
	(36kg)
SRM-248 52.0" x 31.5" x 7.5"	105 lbs.
(1320x800x190mm)	(48kg)

The engineer's portion of the monitor system is designed so that external equalization can easily be patched into any of the individual groups. The equalized signal can be monitored through the PFL (Solo) system, exactly as the artist is hearing it. The engineer has a choice of monitoring, using headphones or his own speaker system. A mute switch is provided on this output to eliminate the need for adjusting engineering monitor levels when switching between headphones and speakers. A separate LED meter is used to follow the PFL (Solo) function of the mixer. This prevents confusion that could occur if one meter were used for multiple functions, as employed in some current designs.

Physical layout and color selections have been chosen for ease of operation under low light conditions as are often encountered on stage wings during a performance. BNC connectors are provided for use with optional goose neck lighting fixtures. An arm rest is provided for engineering comfort during long performances.



ALLEN & HEATH BRENELL LTD.

Mixing Consoles



1616-D

System 8 Mk III—8 Bus Mixing Consoles

- 16 or 24 input channels
- Discrete differential balanced inputs
- Insert points on all input channels
- Post fader direct outputs on all input channels
- 48V phantom power
- 3 aux. outputs
- 1 stereo cue output
- 100mm Alps top of the line faders
- 2 effect return channels with the capability of sending an effect to the headphone cue system without tying up an input channel
- 16 tape monitor channels can also be used as additional FX returns
- Fader reversal between group out and tape (or FX) input
- Full tie line system enables mixers to be linked together
- EX-8 8 input expander available
- Any input channel can access the left/right outputs without the need of assignment to a group channel
- Insert points on all group and left/right outputs
- Control room monitor section
- Talkback system
- Normal operating level +4dBV or -10dBV selectable
- External power supply
- All steel construction

Designed for use in 8 and 16-track recording, as well as sound reinforcement, input configurations of 16 and 24 inputs are available and may be expanded by linking System 8 mixers together or using the EX-8 expander module, all without sacrificing any inputs or outputs.

Specifications

Frequency Response:	± 1dB (ref. 1kHz) Mike or line input to output — 20Hz-20kHz	
Max. Level:	+ 21dBV into 5K ohms or more + 18dBm into 600 ohms	
Equalization:	HF shelving ± 16dB at 12kHz or 8kHz LF shelving ± 12dB at 120Hz or 60Hz MID peak/dip ± 12dB, 400Hz to 6kHz (Q = 1.5)	
Distortion:	Mike input to output at +4dBV, 45dB gain. Less than 0.05% THD -20Hz-20kHz	
Noise Performance:	20kHz bandwidth RMS noise ref. 0dBV Group output—one line input routed unity gain -82dB Stereo output—one line input routed unity gain -78dB Microphone equivalent input noise: -125dB (200 ohm source)	
Crosstalk:	Left and right output separation better than 60dB — 30Hz-10kHz Interchannel separation better than 70dB — 30Hz-10kHz	
Gain:		
Input to output	Mike	Line
Min. (includes mike pad)	+ 4dB	-15dB
Max. (includes fader boost)	+ 70dB	+ 35dB
Normal Range	+ 20-+ 60dB	-15- + 25dB
Dimensions:		
(inches)	Height	9 ³ / ₄ "
	Front-to-back	26 ¹ / ₂ "
	Width—1616	41 ¹ / ₂ "
	Width—2416	53 ¹ / ₂ "
Shipping Weight:		
	1616 Mk III	103 lbs.
	2416 Mk III	130 lbs.
	EX-8 Mk III	37 lbs.

ALLEN & HEATH BRENELL LTD.*Mixing Consoles***CMC 24/24 Input Mixer
CMC 32/32 Input Mixer**

- 16 to 24 input/output (in-line) I/O channels
- 8 line input/sub group channels
- Master output/monitor section
- CARS computer aided routing and muting system
- RIAA amplifier for turntables
- Headphone monitor output
- Talkback microphone input
- 2 master outputs, one hi-level, one low level
- Master meters switchable between Peak and VU characteristics
- Peak warning LEDs on all channels
- CMR-MIDI remote controller (optional)
- CMPTE computer interface—SMPTE time code synchronization of routing and muting functions, with SMPTE to MIDI converter (use with Commodore™ 64/128 plus SMPL™ Software) (optional)
- Multi-track meter bridge (optional)

The CMC range from AHB consists of two compact high quality multi-track recording consoles and associated accessories, both the 24 input and 32 input models have the same control functions and automation systems (CARS).

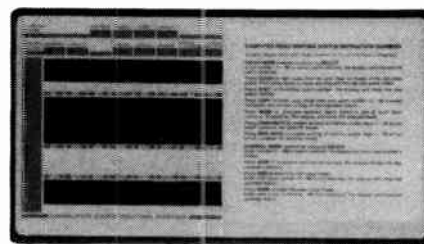
CMC 24

CMC 24 — the 16 track CMC with 16-bus routing under computer control, and 16 track monitoring, coupled with the MIDI/SMPTE control packages it provides a high quality, sophisticated mixing console to use with any 8 or 16 track tape machine.

The CMC 24 is a 24 into 16 into 2 format console, having 16 full facility in-line I/O channels, 8 line input or sub-group channels. The 16 tape monitor inputs can be used as line inputs for mixing with no replugging problems. The line inputs and insert points under the arm rest make easy work of remix when instruments are to be added live.

CMC 32

The CMC 32 is a 24 track capable console. Using the same comprehensive I/O channels the CMC 32 has a 32 into 16 into 2 format, with 24 track output and monitoring capability with outputs 17 to 24 being duplicates of outputs 1 to 8 thus avoiding any difficult interconnections. The CMC 32 has 56 line inputs available for mixing, all with programmable muting.

**CARS****CMC 24****CARS**

The computer aided routing and muting on the CMC is the first stage in console automation giving instant recall and up-date of channel and monitor mutes and routing changes to tape outputs. The routing and muting information is entered using the CARS keypad, with copy and patch delete facilities the system is simplicity itself. The versatility of the system gives you the ability to control your mix with hands free operation, or synced to MIDI sequencers or SMPTE time code.

The CMC internal micro-computer with its keypad and status display provides the following features:

- Routes I/O channels, line inputs/sub-groups to the multi-track outputs
- Mutes I/O channel input and monitor sections, also sub-groups
- 32 on-board patch memories (with battery back-up). Each patch contains a complete set of routing and muting data for the console
- Instantaneous changes of route and mute settings with footswitch control for hands free operation
- Expansion of CARS facilities by use of either the CMR MIDI remote controller or the CMPTE Commodore interface with SMPTE time code synchronization

ALLEN & HEATH BRENNEL LTD.

Mixing Console

CMC MKII (cont'd)

Specifications

Construction: Steel chassis panel, stove enamel painted and silkscreen printed.
High strength ABS base for "tabletop" installation
All connections are easily accessible from the front.
Individual channel circuit board assemblies are interconnected by removeable internal harness.
The audio system features IC op amp design with low noise, and distortion performance. Status indicators are LED type throughout

Connector Types

Mike In: XLR
Multitrack and Monitor: RCA phono
Line Input & Insert Points: 1/4" jack

Audio System

Performance: OVU = 300mVRMS = -10dBV 0dBV = 0.775VRMS

Frequency

Response: Input to stereo or multitrack output, equalizer bypassed or flat. 20Hz-20kHz +0, -1dB

Distortion: At normal operating level and between 100Hz and 10kHz THD typically 0.05%

Headroom: Input headroom between normal level and overload 21dB. Peak indicators illuminate when 3dB of headroom remains

Max. Output

Level: +21dBV, recommended load impedance 5K ohms or more

Noise: RMS 20Hz-20kHz

Mike input

Equivalent Noise: -125dBV

Multitrack Output

Noise—One Line

Input, Routed, Fader at "0": -80dBV

24 Inputs Routed, Faders Closed: -78dBV

Stereo Mix Noise—

One Line Input Routed, Fader at "0": 82dBV

24 Inputs Routed,

Faders Closed: -84dBV

Note: Gain figures are with control setting as follows—

Faders at normal position "0"

Pan pot fully over to one side

Gain control range is then as stated

Additional 10dB gain is available with fader max. settings

Input/Output Channel

Inputs

Microphone: Electronic balanced XLR for dynamic and condenser microphones with 48V phantom power. Sensitivity for OVU output variable between 300 μ V and 30mV, gain range +20 to +60dB. Input impedance 2K ohms
Line: Unbalanced quarter inch jack. Sensitivity for OVU output variable between 10mV and 1V, gain range -10 to +30dB. Input impedance 500K ohms
Tape: RCA phono socket input from multitrack, sensitivity for OVU is 300mV. Input impedance 500K ohms

Outputs

Multitrack: RCA phono socket. Output at OVU is 300mV. Load impedance > 5K ohms

Insert Point: Quarter inch 3 pole jack socket connected in the channel input circuit before equalizer. Nominal signal level 300mV. Tip = return (input). Ring = send (output)

Equalizer: HF \pm 12dB tuneable 6kHz to 12kHz, mid \pm 12dB tuneable 300Hz to 6kHz, LF \pm 12dB tuneable 40Hz to 300Hz. Operates on the selected channel input source Mike, Line or Tape. Equalizer bypass switch provided

Return Channel

Inputs: Quarter inch unbalanced jack in parallel with RCA phono socket. Sensitivity for OVU variable between 35mV and 1.5V. Tip = return (input). Ring = send (output)
Equalizer: HF \pm 16dB at 10kHz, LF \pm 16dB at 100Hz

Master Section

Stereo Tape Inputs: RCA phono sockets for 2 inputs to monitor section. Nominal sensitivity for OVU is 300mV

Gramophone

Inputs: Left and right RCA phono sockets to accept stereo magnetic cartridge. Outputs on RCA phono sockets for connection to mixer channels. Nominal sensitivity 5mV, input impedance 47K ohms

Patch Bay: 3 RCA phono sockets are connected in parallel. Four identical groups are provided

Meters: Left and right LED column meters indicate the signal level of the selected monitor source. OVU is 300mV. Ballistic response may be selected either VU or quasi peak

Footswitch: Quarter inch 2 pole jack accepts footswitch step command for CARS program stepping

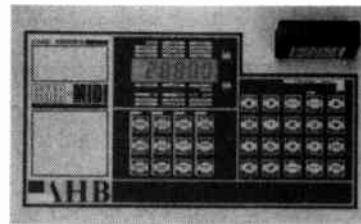
Stereo Output: Duplicate L and R RCA phono sockets. Output level for OVU is 300mV, variable up to 1V

Insert Points: Quarter inch unbalanced jack connected before master L & R faders. Nominal signal level 300mV. Tip = return (input). Ring = send (output)

Monitor Output: RCA phono sockets for connection to power amplifiers. Output level is set by monitor level control and is variable up to approximately 1VRMS for OVU

Headphone Output: Quarter inch stereo jack socket for headphones of 8 ohms and greater impedance. Duplicate sockets provided

Aux. Outputs: RCA phono sockets for auxiliary outputs 1 to 6 with duplicates for circuits 1 and 2

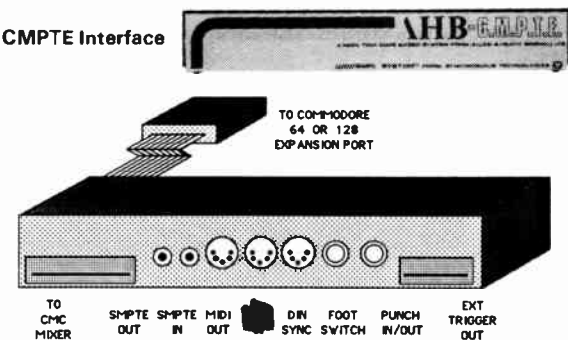


CMR

CMR (Optional)

The CMR remote programmer offers powerful facilities without the need for an external computer. The unit has data storage for 100 MIDI patches for MIDI control of console status, 100 routing and 100 muting patches, where any one route patch can be combined with any one mute patch. A 10 song, 100 events per song sequencer (chaining facility available giving maximum of 1 song of 1000 events), MIDI synchronization and song pointer implementation. All CMR memory is held in interchangeable RAM cartridges for fast and economical data storage.

CMPTe Interface



CMPTe (Optional)

The SMPTe time code based AHB option for CMC consoles. It connects between the CMC computer interface socket and a Commodore 64/128 cartridge slot. The ROM based software within the CMPTe interface has a 7 page menu giving:

- Channel index
- Track and take index
- Route Patches: 56 different routing combinations, any of which can be incorporated into the sequencer page
- Mute Patterns: 1024 different muting patterns which can be sequenced in any order with any route patch
- Sequencer: 2048 event sequencer. Each event can have a different route patch (1-56) and a different mute pattern (0000-1023)
- SMPTe time code generation, all formats 24, 25, 30, drop-frame and non drop-frame, with various clocking modes including real time event recording
- Individual data storage and recall from disk or cassettes



Studio 12 Compact Mixer

Combine the expertise and experience of MBI and AHB, draw upon MBI's broadcast knowledge and AHB's ability to provide high quality mixing consoles at affordable prices and the Studio 12 is the result. The Studio 12 answers the demand for a compact mixer encompassing the requirements for on-air broadcast, stereo production, and sophisticated club installation at a sensible pricing level.

For any cost-conscious installation, the Studio 12 offers a comprehensive range of features—some of which are

unavailable on other consoles regardless of price. The console has 6 mono mike/line inputs and 6 stereo line inputs, 3 of which have RIAA amplifiers as standard for operation with turntables fitted with magnetic cartridges. Each mono input can be switched between mike or line input and each stereo input can be switched between two different stereo line sources. Six microphones, 6 line sources and 12 stereo line sources can be permanently connected, which maximizes the potential of the system, allowing a wide variety of programming situations.

CONSTRUCTION

1. Steel control panel, stove enamel, epoxy silkscreen legend.
2. Steel base, black finish with furniture trims.
3. Channel circuit boards are individual, secured to control panel.
4. Internal busbar circuits employ removable harness.
5. IC op amp circuit design with discrete transistor input mic pre amp.
6. DIMENSIONS:

Width	Depth	Height
600mm	644mm	100mm
23.6"	25.4"	4"

Packed weight including PSU = 25kg/55lbs.

SPECIFICATION:

MICROPHONE INPUT: electronically balanced XLR pin 2 = hot. Input impedance = 2K ohms. Noise EIN = -125dBu ref 200 ohms 20Hz to 20kHz. Gain = +24 to +64dB variable (maximum system gain = 75dB).

MONO LINE INPUT: electronically balanced XLR pin 2 = hot. Input impedance = 10K ohms. Gain = -13 to +27dB variable (maximum system gain = +38dB). Gain pot mid position = 0dB.

STEREO LINE INPUT: Line 1 = phono unbalanced. Line 2 = jack unbalanced. Input impedance = 50K ohms minimum. Gain = -12 to +27dB variable. Gain pot mid position = +10dB. Gain pot at position 3 = 0dB. Balance = ± 6dB variable.

RIAA INPUT: Fitted as standard on CH7, 8 and 9 in LINE 1 position. Available as option for CH 10, 11 and 12. Input sensitivity = 5mV. Output = 300mV (-10dBV).

FX RETURN INPUT: Mono input unbalanced. Uses stereo jack for dual level. Input impedance tip = 30K ohms, ring = 130K ohms. Gain tip = +12dB, ring = 0dB.

EXTERNAL STEREO MONITOR INPUT 1, 2, 3: Stereo jack unbalanced tip = left, ring = right. Input impedance = 50K ohms. Gain trim = 0 to +16dB. Left/Right adjustable separately. Trims gain of all three points.

INSERTION POINTS: Stereo jack unbalanced. Tip = SEND at nominal line level, ring = RETURN.

AUX 1, AUX 2, CUE OUTPUTS: jack unbalanced. Output = nominal line level. Maximum gain = +18dB. Normal setting for OdB gain = SEND and MASTER pots at position 7.

LOUDSPEAKER STEREO OUTPUT: Stereo jack unbalanced. Output = nominal line level. Maximum gain = 9dB. Normal setting for OdB gain = LS level pot at position 8.

PRESENTER HEADPHONE OUTPUT: Stereo jack — tip = left, ring = right, sleeve = return. To drive 8 to 600 ohm headphones. Output is stereo.

GUEST HEADPHONE OUTPUT: Stereo jack — tip = signal, ring = signal, sleeve = return. To drive stereo or mono headphones of 80hm or greater impedance. Output is mono. Mono headphones need to be connected using a stereo 1/4" jack plug with ring and tip joined.

TALKBACK INPUT: Stereo jack — tip = signal unbalanced. Input = nominal line level. Input impedance = 25K ohms. Ring = DC to control PFL relay. Connect to jack sleeve to activate relay.

MAIN OUTPUTS — LEFT, RIGHT, MONO: Electronically balanced XLR pin 2 = hot. Output = nominal line level. Three additional pairs of left and right outputs are available on RCA phono connectors. These are unbalanced and unbuffered.

LAMP OUTPUT: BNC — 15V DC via 22 ohms. For 12-14V 250mA max bulb.

EQUALISATION

MONO EQUALISATION:			
8KHz	=	±12dB	shelving
3.5KHz	=	±12dB	peak/dip
	=	Q = 0.8	
250Hz	=	±12dB	peak/dip
	=	Q = 0.8	
STEREO EQUALISATION:			
80Hz	=	±12dB	shelving
8KHz	=	±12dB	shelving
2KHz	=	±12dB	peak/dip
	=	Q = 0.9	
80Hz	=	±12dB	shelving
Lo-filter	=	-24dB at 20Hz	

GENERAL

NOMINAL LINE LEVEL:	
VU Version	= OVU = +4dBu
PPM Version	= PPM 4 = 0dBu
Where 0dBu	= 0.775 v rms.

Maximum output =
 +21dBu into 2K ohms or more
 +18dBu into 600 ohms.

Output impedance = 30 ohms. PEAK leds indicate 3dB before clipping.

FREQUENCY RESPONSE: Equaliser set flat. MIC INPUT 40dB gain to main output +0, -1dB 18Hz to 30KHz ref 1KHz.

DISTORTION (Thd + Noise) : Nominal

+10dBu	80Hz	less than .05%
	1KHz	less than .04%
	16KHz	less than .05%

CROSSTALK: Interchannel crosstalk = better than 75dB at 1KHz. Fader shut-off = better than 70dB at 1KHz. Left/Right crosstalk = better than 70dB at 80Hz, better than 65dB at 1KHz, better than 45dB at 16KHz.

NOISE: measured 20Hz to 20KHz rms. MAIN OUTPUT = Faders off = -82dBu. Stereo line at OdB gain = -78dBu. Mic at 40dB gain = -76dBu. Aux 1, Aux 2, Cue Outputs = sends off, master at position 7 = -73dBu.

AC POWER REQUIREMENT: AHB MPS8P unit provides the necessary DC for the mixer and will operate on the following supplies.

110-120V A.C. 50/60Hz 50VA North America

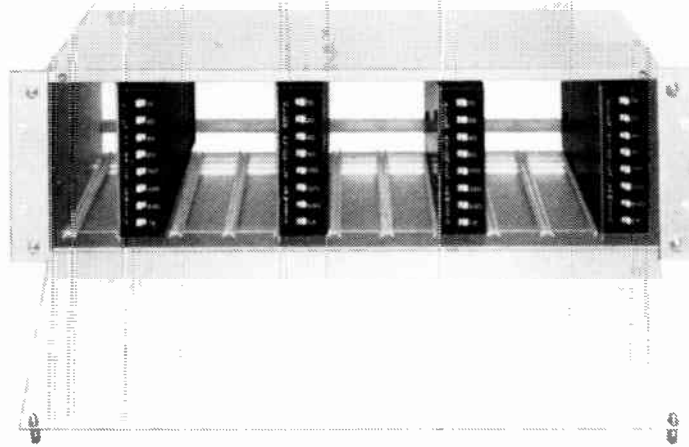
220-240V A.C. 50/60Hz 50VA Europe

100-V A.C. 50/60Hz 50VA Japan.

ALLEN AVIONICS, INC.

*Rackmountable Video/
Pulse Delay Lines*

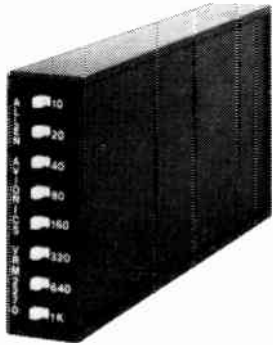
A complete rack mountable series of video and pulse delay lines, with the capability of replacing up to 1450 feet of cable, is now being marketed by Allen Avionics.



All models are stocked in our plant in Mineola, New York.

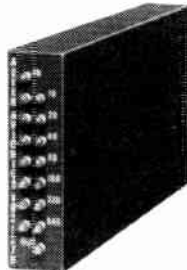
RACK MOUNT showing delay units with switches and terminals available for delay changes. Up to 11 delay units can be housed. Cards for mounting units in rack are purchased separately. Note hinged front panel.

Rack Size: 19" w., 10" d., 5 1/4" h.

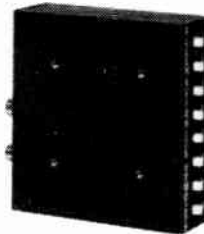


Showing 8 individual slide switches for rapid delay changes.

Photo shows 1 of 4 Strappable versions (VRS Series). Note that there are 7 input and output terminals available for strapping desired delay.



Four variable slide switch units are being offered with total delays of 255, 637.5, 1275 and 2270 nanoseconds. Each unit contains 8 individual delay units. Four strappable units are also manufactured with total delays of 317.5, 635, 1270 and 2260 nanoseconds. The strappable units consist of 7 separate delay lines each having their own input and output terminals. The slide switches or terminal strapping provide methods for adding the individual lines together so that the output is always the summation of the individual lines. This eliminates most video distortions and assures good chrominance to luminance delay. Precision delay changes of as small as one nanosecond are easily accomplished. Low insertion loss, amplitude and delay flatness, along with excellent pulse fidelity, are characteristic of this series.



Units are rack mounted by attaching a durable plastic card to the large surface. Note inserts provided for the attachment.



To satisfy requirements other than rack mounting, additional inserts are provided.

All units are manufactured to fit standard 19 inch racks and are provided with additional inserts to satisfy almost any mounting requirement. Delay units and racks can be purchased separately. The rack is manufactured with a hinged panel so that fast delay adjustments can be made. However, once adjustments are made, the front panel prevents further tampering with the slide switches or terminals.

Part No.	Delay Range (Nano-Sec.)	Delay Steps (Nano-Sec.)	Method of Variation	Maximum Insertion Loss (@ 100 KHz (db)	Amplitude Flatness At Any Delay Setting 100KHz to 5.5MHz (db)	Max. Rise Time (Nano-Sec.)	Package Size (Inches)
VRM0255	0-255	1.0	Slide Switch	.40	.4 Max.	20	1.250 x 4.15 x 4.00
VRM0637	0-637.5	2.5	Slide Switch	*1.00	.4	28	1.250 x 4.15 x 6.00
VRM1275	0-1275	5.0	Slide Switch	*3.00	.4	33	1.250 x 4.15 x 9.00
VRM2270	0-2270	10.0	Slide Switch	*3.00	.5	40	1.250 x 4.15 x 9.00
VRS0317	0-317.5	2.5	Strap	.40	.5	26	1.250 x 4.15 x 4.00
VRS0635	0-635	5.0	Strap	.75	.5	35	1.250 x 4.15 x 6.00
VRS1270	0-1270	10.0	Strap	1.50	.5	37	1.250 x 4.15 x 9.00
VRS2260	0-2260	20.0	Strap	3.00	.5	40	1.250 x 4.15 x 9.00

*±.2db variation at any delay setting.

Impedance: 75 ohms.

Pulse Distortion: Less than 4% with an input pulse rise time of 20 nanoseconds.

Working Voltage: 50 volts maximum.

Return Loss: 15db minimum.

Delay Tolerance: 5% or 1 nanosecond, whichever is greater.

ALLEN AVIONICS, INC.

Video/Pulse Delay Lines

Allen Avionics, an established leader in the design and manufacture of Electromagnetic Delay Lines and L-C Filters has now developed a specialized group of products for the video market.

In color television broadcasting, accurate timing of signals is essential. This was initially achieved by the use of 75 ohm coaxial cable. The cost in time and materials to accomplish precise trimming and the lack of a rapid and convenient method of changing delays is currently responsible for the decline in cable usage. Television studios, studio equipment manufacturers and others engaged in the video industry are changing from 75 ohm cable to a more suitable method of achieving precise short delays. Allen Avionics now offers a line of Video Units for this purpose. Their use will result in a reduction of size, weight, installation cost and an overwhelming saving in time and effort to make delay changes.



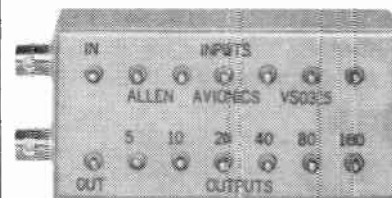
Models VPO635, VP1270 and VP2075 are padded to provide a flat loss at any setting. As a result of this padding, these units will exhibit a maximum variation of $\pm .2$ db at any delay setting.

Model VP0010 was designed specifically to be used as a delay trimmer in conjunction with our other delay units or any 75 ohm system. It offers .5 nanosecond switching resolution with excellent amplitude flatness up to 5.5 MHz.

These new delay units feature extremely flat amplitude response to 5.5 MHz, small increments of delay variation, low signal distortion and tight delay tolerance. The delay networks are ideal for pulse applications because of their fast rise times and low distortion. Amplitude equalization is employed to achieve excellent flatness over the video frequency range. The delayed output of any model in this group is the summation of individual lines. It is not the result of a tapped line. This feature insures that output pulse distortions are minimized. Units will match to any 75 ohm system and can be directly connected into the video signal path by means of BNC connectors.



Part No.	Delay Range (Nano-Sec.)	Delay Steps (Nano-Sec.)	Method of Variation	Maximum Insertion Loss @ 100 KHz (db)	Amplitude Flatness At Any Delay Setting 100KHz to 5.5MHz (db)	Max. Rise Time (Nano-Sec.)	Package Size (Inches)
VP0010	0-10.5	.5	Toggle	.15	.2 Max.	3	4 3/8 x 2 3/8 x 1 1/16
VP0127	0-127	1.0	Toggle	.15	.3	14	4 3/8 x 2 3/8 x 1 1/16
VP0255	0-255	1.0	Toggle	.15	.3	16	4 3/8 x 2 3/8 x 1 1/16
VP0317	0-317.5	2.5	Toggle	.15	.3	20	4 3/8 x 2 3/8 x 1 1/16
VP0635	0-635	5.0	Toggle	* .50	.4	25	4 1/16 x 3 1/16 x 2 1/16
VP1100	0-1100	10.0	Rotary	1.25	.4	30	4 1/16 x 3 1/16 x 2 1/16
VP1270	0-1270	10.0	Toggle	*3.00	.4	30	4 1/16 x 3 1/16 x 2 1/16
VP2075	0-2075	25.0	Toggle	*3.00	.5	40	7 3/8 x 4 1/16 x 2 3/16
VS0315	0-315	5.0	Strap	.25	.4	28	4 x 2 x 1 1/4
VS0635	0-635	5.0	Strap	.60	.5	33	5 x 2 x 1 1/4
VS1275	0-1275	5.0	Strap	1.25	.5	33	5 x 3 x 1 1/4
VS2075	0-2075	25.0	Strap	2.50	.5	40	6 1/2 x 3 1/2 x 2

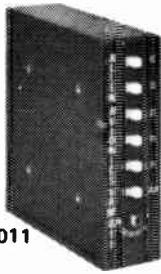


* $\pm .2$ db variation at any delay setting.

Impedance: 75 ohms.
 Pulse Distortion: Less than 4% with an input pulse rise time of 20 nanoseconds.
 Working Voltage: 100 volts maximum.
 Return Loss: 20db minimum. 15db minimum for VP2075 & VS2075.
 Delay Tolerance: 5% or 1 nanosecond, whichever is greater.

Prices and Specifications Subject to Change Without Notice.

DELAY TRIMMERS—VRM011, VAR011 & VAR005



VRM011

These VAR Units, which permit an infinitely small delay adjustment, insure an amplitude and delay flatness superior to that of any other unit presently available.

The units can be used as delay trimmers alone, or in conjunction with any of our other delay boxes from D.C. to over 5.5 MHz.



VAR011

Part No.	Delay Range (Nano-Sec.)	Toggle Switch Variation (Nano-Sec.)	Trimmer Variation (Nano-Sec.)	Maximum Insertion Loss @ 100 KHz (db)	Amplitude Flatness at Any Delay Setting 100KHz to 5.5 MHz (db)	Package Size (Inches)
VRM011	0 - 11	.5 steps to 10.5	Continuously Variable to .5	.3	.3	1 1/4 x 4 5/32 x 4
VAR011	0 - 11	.5 steps to 10.5	Continuously Variable to 1	.2	.25	4 3/8 x 2 3/8 x 1 1/16
VAR005	3 - 7	---	Continuously Variable from 3 to 7	.2	.2	3 5/8 x 1 1/2 x 1 1/4



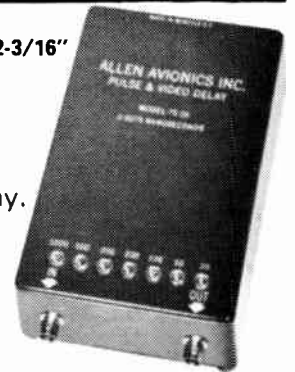
VAR005

Impedance: 75 ohms.
 Working Voltage: 100 volts.
 Pulse Distortion: Less than 3% with an input rise time of 20 nanoseconds.
 Return Loss: 20db or greater.

TYPE AV-397 & 75-2A

75-2A
 7-3/8" x 4-11/15" x 2-3/16"

Maximum Delay: 2.075 microseconds \pm 3% variable in .025 μ s. steps from .025 to 2.075 microseconds.
 Time Delay of Individual Lines: 1, .5, .2, .2, .1, .05, .025 microseconds.
 Rise Time for Entire Line: .06 microseconds maximum.
 Frequency Response: 3db down at 5 megahertz for 2.075 microseconds delay.
 Distortion: 2% maximum with .2 microsecond input pulse.
 Impedance: 75 ohms \pm 5%.
 Working Voltage: 100.
 Temperature Coefficient: 50 parts/million/ $^{\circ}$ C from -55° C to 105° C.
 Attenuation: 7% maximum for 2.075 microsecond delay.



AV-397
 2" x 2-1/2" x 5-1/2"

TV LINE EQUALIZERS—VE300 & AV-535

IMPEDANCE: 75 ohms \pm 2 ohms to 8 Megahertz.
 ATTENUATION OF CABLE PLUS EQUALIZER: 3db.

These Equalizers are designed to compensate for losses in RG-11/U (75 ohm) cable and its equivalents. The units are capable of equalizing 50 to 300 feet in 50 foot increments.



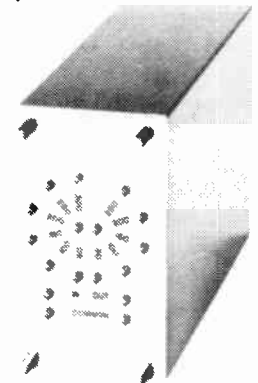
VE300
 4-11/16" x 3-11/16" x 2-1/16"

The VE300 is provided with a rotary switch to select the required amount of cable footage to be equalized. It is supplied with BNC connectors for quick input and output connections and is foamed in a metal can.

The AV-535 has terminals on its mounting surface arranged to provide for simplified strapping of different cable lengths. The unit is foamed and hermetically sealed in a metal can.

Attenuation of equalizer alone is as shown. TOLERANCE \pm .07 db.

Feet	0.1 MHz	2 MHz	4 MHz	8 MHz
50	2.97 db	2.86 db	2.79 db	2.67 db
100	2.93	2.68	2.53	2.27
150	2.90	2.51	2.28	1.88
200	2.86	2.35	2.03	1.52
250	2.82	2.19	1.82	1.21
300	2.78	2.02	1.58	0.86



AV-535
 2" x 3-1/2" x 5"

Prices and Specifications Subject to Change Without Notice.

“MVFL” SERIES

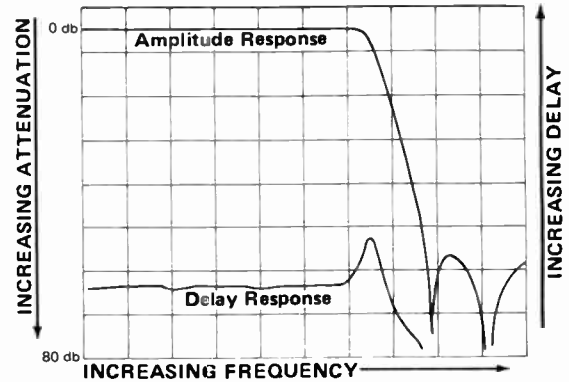
DELAY EQUALIZED NTSC LOWPASS FILTERS — VFL, MVFL & VCL SERIES

For the video field, we have built many lowpass filters having sharp roll-offs and good passband delay linearity with cut-off frequencies from .1 MHz to 10 MHz. The most popular of these are used to attenuate the harmonics of the NTSC color sub-carrier frequency 3.58 MHz. The most commonly used filters in this group are tabulated below:

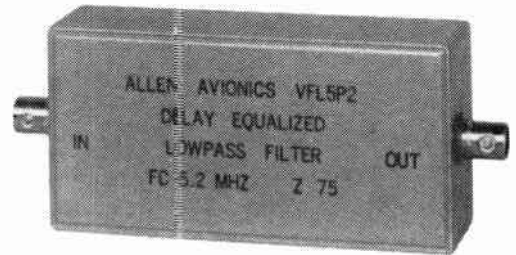
VFL & MVFL SERIES — IMPEDANCE = 75 OHMS

Standard Size Max. Insertion Loss 1db Part No.	Miniature Size Max. Insertion Loss 2db Part No.	Max. .25db Attenuation @ Frequency (MHz)	Max. 3db Attenuation @ Frequency (MHz)	Min. 45db Attenuation @ Frequency (MHz)	Approximate Passband Delay (Nanoseconds)
VFL1P7	MVFL1P7	1.75	1.92	2.41	1691
VFL2P2	MVFL2P2	2.25	2.45	3.10	1325
VFL2P7	MVFL2P7	2.75	3.00	3.77	1082
VFL3P2	MVFL3P2	3.20	3.50	4.40	928
VFL3P5	MVFL3P5	3.50	3.84	4.82	846
VFL3P8	MVFL3P8	3.80	4.16	5.22	781
VFL4P0	MVFL4P0	4.00	4.38	5.51	741
VFL4P5	MVFL4P5	4.50	4.93	6.19	659
VFL5P2	MVFL5P2	5.20	5.70	7.16	570
VFL6P0	MVFL6P0	6.00	6.58	8.27	494
VFL6P5	MVFL6P5	6.50	7.12	8.95	457

DELIVERY FROM STOCK



TYPICAL AMPLITUDE & DELAY RESPONSE OF VFL & MVFL SERIES



Max. Delay Variation = ±3% to -.25 db Freq. Max. Passband Ripple = ±.25db.

VFL Size: 4" x 2" x 1 1/4" in metal can with BNC Connectors.

MVFL Size: 3" x 1 1/2" x 1/2" in metal can with terminals for PC mounting.

VCL SERIES — IMPEDANCE = 75 OHMS

Part No.	Maximum ±3% Delay Distortion to Frequency (MHz)	Maximum .25db Attenuation @ Frequency (MHz)	Minimum 45db Attenuation @ Frequency (MHz)	Approximate Passband Delay (Nanoseconds)
VCL3P2	2.7	3.2	3.63	1100
VCL3P5	2.9	3.5	3.97	1010
VCL3P8	3.2	3.8	4.31	930
VCL4P2	3.5	4.2	4.76	840
VCL4P5	3.8	4.5	5.10	780
VCL4P9	4.1	4.9	5.56	720
VCL5P2	4.4	5.2	5.90	680
VCL5P7	4.8	5.7	6.46	620

Max. Insertion Loss @ 100 KHz = 2.5db. Max. Passband Ripple = ±.25db.

Size: 6" x 2" x 1 1/4" in metal can with BNC Connectors.

NTSC REJECT FILTERS

Some of the most frequent specifications that we encounter in the video industry are based upon rejection of the color information in the video signal to provide isolation from the luminance signal. These specifications require very low phase distortion to the luminance signal. To satisfy this requirement, Allen Avionics has designed a group of band reject filters with phase equalization where necessary. One of the most often used applications for this band reject filter is in color systems for monochrome transmission to prevent color flashes from appearing on the screen. Since various segments of the television industry have different passband requirements, we are listing three filters with different reject bandwidths.



Impedance = 75 ohms.
Maximum Insertion Loss @ 100 KHz = 3db.
Maximum Passband Ripple to 5.5 MHz = ±.25db.

Part No.	Maximum 3db Attenuation @ Frequency (MHz)	Minimum Attenuation @ 3.58 MHz
VFR4P6	1.95 - 6.55	40db
VFR1P3	3.00 - 4.30	40db
VFR0P5	3.37 - 3.88	30db

Size: 4" x 2" x 1 1/4" in metal can with BNC Connectors.

NTSC BANDPASS FILTER

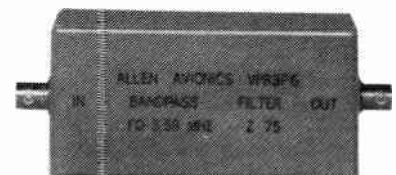
Allen Avionics sub-carrier bandpass filter is a low distortion unit designed to attenuate the luminance information in color TV signals. This filter is useful in most applications where it is required to isolate the chrominance information.

Impedance = 75 ohms.
Maximum Insertion Loss @ 3.58 MHz = 1.5db.
Maximum Ripple = ±.25db.

Part No.	Maximum 3db Attenuation @ Frequency (MHz)	Minimum 30db Attenuation @ Frequency (MHz)
VFB3P6	3.40 - 3.70	2.40 - 5.80

Size: 4" x 2" x 1 1/4" in metal can with BNC Connectors.

Refer to Green Section for Addresses and Telephone Numbers.



ALLEN AVIONICS, INC.

Video Filters

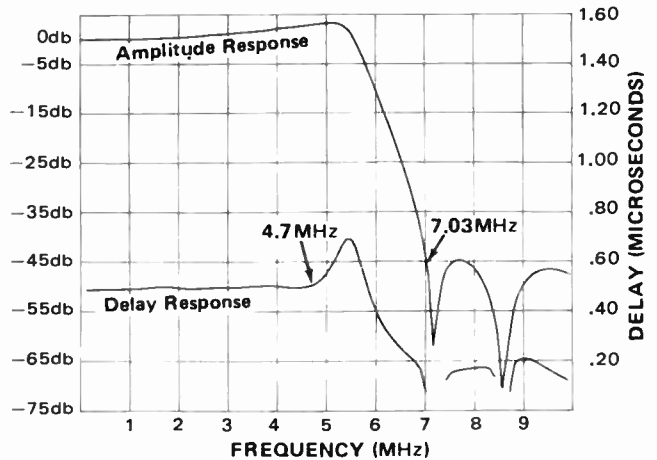
VSL4P5 DELAY EQUALIZED LOWPASS FILTER

This filter is similar to the VFL series and is intended for use at the output of a digital to analog converter. Its special feature is that amplitude equalizers have been incorporated to shape the passband response for $\frac{\text{SIN } X}{X}$ correction.

Impedance = 75 ohms.
 Attenuation = 38db or greater at 7.03 MHz to 20 MHz.
 Maximum Group Delay Distortion = 30 nanoseconds or less to 4.7 MHz.
 Nominal Delay = 500 nanoseconds.
 Size - 4 x 2 x 1/4 inches.

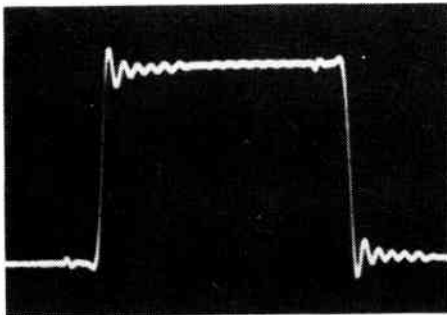


Units supplied in Metal Cans with BNC Connectors

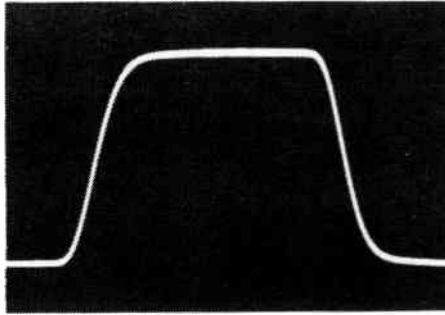


VIDEO GAUSSIAN FILTERS

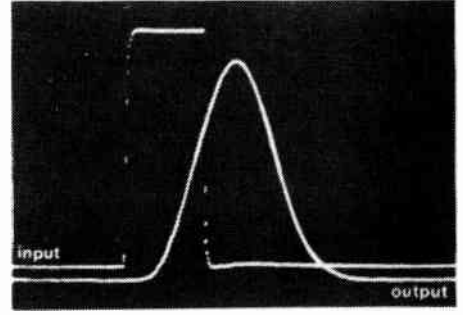
These filters are used for pulse shaping and bandwidth limiting. They are very useful in the removal of unwanted distortions caused by noise, ringing, preshoot and overshoot. Due to their fine impulse response, they are often used in conjunction with delay lines that must have minimum pulse distortion in the delayed output.



Input Pulse



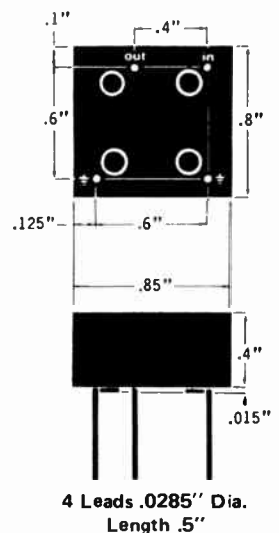
Output Pulse



An approximate Gaussian Waveshape obtained by passing a pulse through a Gaussian Filter.

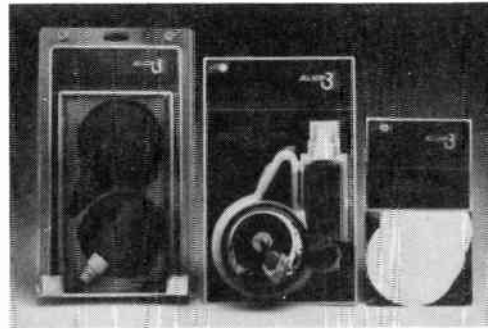
Part No.	3db ± .5db Frequency (MHz)	Impedance (Ohms)	17db Min. Attenuation Frequency (MHz)	Delay Time (Nanoseconds) Nominal	Rise Time (Nanoseconds) Nominal
VGF00P17Z500	0.17	500	.45	1988	2016
VGF00P30Z500	0.30	500	.80	1126	1147
VGF00P33Z500	0.33	500	.87	1024	1038
VGF01P00Z***	1.00	50, 75, 500	2.60	340	357
VGF01P14Z***	1.14	50, 75, 500	3.00	296	300
VGF01P25Z***	1.25	50, 75, 500	3.30	270	275
VGF01P50Z***	1.50	50, 75, 500	4.00	225	229
VGF01P72Z***	1.72	50, 75, 500	4.50	196	200
VGF02P00Z***	2.00	50, 75, 500	5.20	169	171
VGF02P39Z***	2.39	50, 75, 500	6.30	142	144
VGF02P50Z***	2.50	50, 75, 500	6.60	135	137
VGF03P00Z***	3.00	50, 75, 500	8.00	113	115
VGF03P44Z***	3.44	50, 75, 500	9.00	98	100
VGF04P00Z***	4.00	50, 75, 500	10.50	84	86
VGF04P89Z***	4.89	50, 75, 500	12.80	68	70
VGF05P00Z***	5.00	50, 75, 500	13.20	67	69
VGF05P53Z***	5.53	50, 75	14.65	67	69
VGF12P00Z***	12.00	50, 75	32.00	29	30

*** Replace asterisks with 050, 075 or 500 depending on your impedance selection from chart.

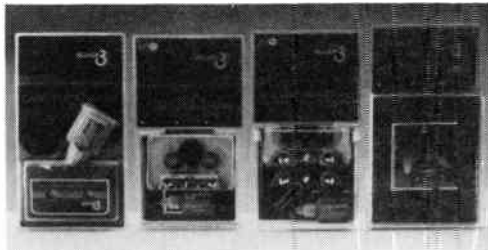


ALLSOP, INC.

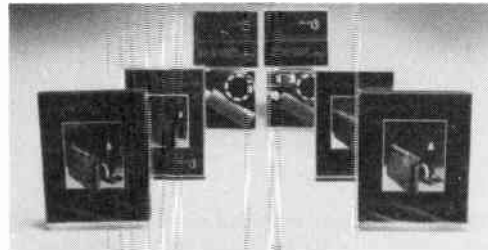
Cleaning/Maintenance Products



58000/58010



71200/71300



60200/68000

60100-A VCR Cleaner for VHS

Utilizes an exclusive ribbon that feeds into your machine like a conventional tape. A few drops of Allsop 3 solution are placed on the delicate ribbon which then circles critical parts to remove oxide residues from the video and audio heads. Additional soft pads swab contaminants from the capstan and pinch rollers. This great cleaning system is effective for up to 30 cleaning cycles. Non-refillable.

60100-A \$ 16.95

66000-A VCR Cleaner for Beta

Incorporates Allsop's unique ribbon for thorough, non-abrasive cleaning power. Simply place a few drops of Allsop 3 solution on the soft ribbon and insert the tape into your machine like an ordinary cassette. The ribbon gently swabs contaminants from critical parts, removing oxides and airborne debris from audio and video heads. Good for 20-30 separate cleanings. Non-refillable.

66000-A \$ 16.95

60200 Ultraline VHS Video Recorder Cleaner

Uses a technologically innovative design to provide a cleaning breakthrough offered by no other system. Small "windows" on the surface allow you to directly apply Allsop 3 solution to the internal cleaning ribbon for maximum cleaning coverage. The non-abrasive ribbon cleans entire tape path, removing contaminants from critical VCR parts. Additional felt pads clean capstan and pinch rollers. Replaceable ribbon and pads available.

60200 \$29.95

68000 Ultraline Beta Videocassette Cleaner

The ultimate Beta cleaning system. Strategic "windows" on the cleaning cassette surface allow you easy access to place Allsop 3 solution directly inside the cassette. The moistened cleaning ribbon then gently removes harmful contaminants and oxides from critical parts along the entire tape path. Replacements available.

68000 \$29.95

71300 Ultraline Audio Cleaner

Our gear driven wiper arm and felt cartridge replacement system enables the user perfect cleaning action for all three areas needed. When cleaning felts become soiled, cartridges can be easily replaced to make the Ultraline like new again. System includes 1/2 oz. bottle of Allsop 3 cleaning solution. Use part #71010 for replacement cartridges and solution.

71300 \$8.95

71200 Ultraline Audio Cleaner with Case

Fits nicely into any automotive glove or map compartment. This wet system cleaner performs three important tasks in one cleaning cycle. First our gear driven wiper arm insures positive wiping action for head cleaning; second our felt cartridges on both sides (for auto reverse) of the head wiper cleans the pinch roller as it revolves; and third the Allsop 3 wipes the capstan automatically. Includes a 1 oz. bottle of special Allsop 3 solution, spare felt cartridges and tweezers which all fit into an attractive leather-like case. Uses #71010 for replacement.

71200 \$ 14.95

58000 Orbitrac™ Record Cleaning System

58060 Orbitrac™ Record Cleaning Solution

Takes a totally new approach to record care. By anchoring the cleaner in the record center, the Orbitrac, when rotated around the record surface, delicately wipes and removes dirt from each groove. After one or two revolutions the record should be free of impurities and have no static charge because of the Orbitrac specially formulated cleaning solution. This system comes complete with Orbitrac cleaner, solution and sprayer, wipe off brush, special record cleaner anti-static mat, attractive designer case and complete instructions. Orbitrac record cleaner solution is also available in an 8 oz. refill bottle, and in a refill kit that includes two new cleaning pads with an 8 oz. bottle of cleaning solution.

58000 \$ 16.95

580607.95

60210 Ultraline VHS Replacement Components

Contains fresh ribbon and pad cartridge. Replace after 20-30 cleanings.

60210 \$8.95

68010 Ultraline Beta Replacement Components

Has new ribbon good for 20-30 cleanings. Available from quality videocassette dealers.

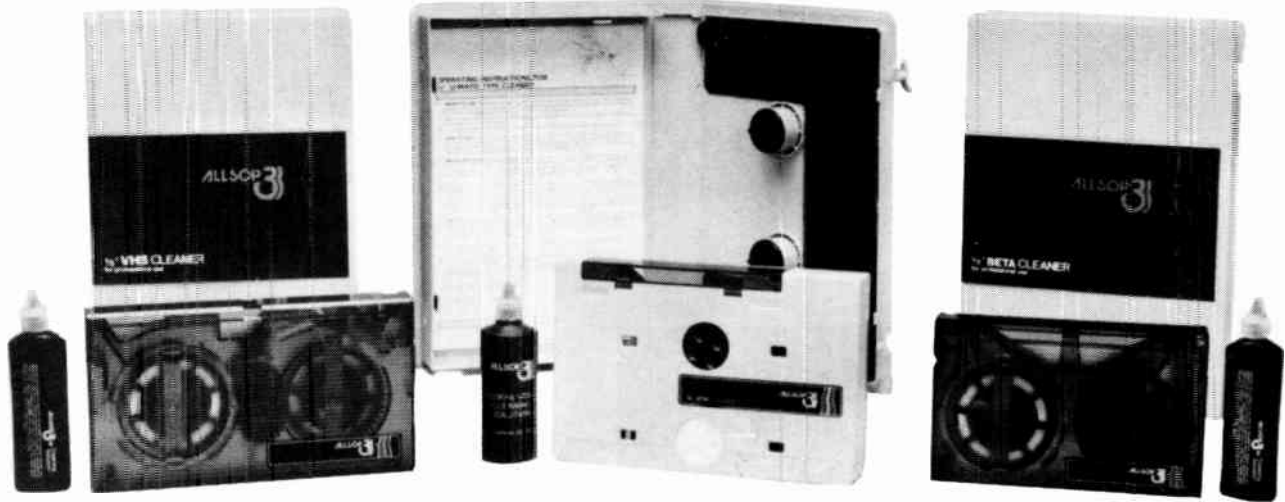
68010 \$8.95

71010 Audio Cleaner Replacement

Cartridges and Solution

Makes the Allsop 3 audio cleaning products even more unique. This kit includes four complete capstan and pinch roller cartridges, two head felt cartridges, a 1 oz. bottle of Allsop 3 solution and a pair of specially designed tweezers. This kit is compatible with Allsop #71200 and #71300.

71010 \$7.95



Professional Video Products

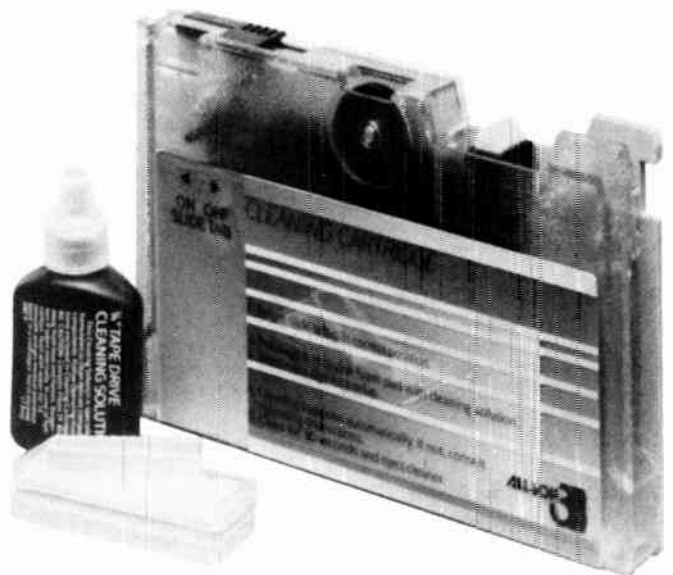
- 67000 3/4" U-Matic Video Cleaner with Solution**
Non-abrasive cleaner with an alternating wet/dry cleaning action. Comes in a plastic storage case. \$49.95
- 67500 3/4" U-Matic Refill Kit**
Included two refill spools of tape and a bottle of solution \$29.95
- 62000 1/2" VHS Format Cleaner with Solution**
Non-abrasive cleaner with an alternating wet/dry cleaning action. Comes in a plastic storage case. \$29.95

- 60210 1/2" VHS Refill Kit**
(For Model #62000) includes new cleaning ribbon, drive system cleaning pads, and a bottle of solution \$9.95
- 63000 1/2" Beta Format Cleaner with Solution**
Non-abrasive cleaner with an alternating wet/dry cleaning action. Comes in a plastic storage case. \$29.95
- 68010 1/2" Beta Refill Kit**
(For Model #63000) includes new cleaning ribbon and a bottle of solution. \$9.95
- 65000 8mm Cleaner** \$19.95

1/4" Tape Drive Head Cleaner and Refill

- 54000 Cleaner**
One cleaning cartridge, two plastic boxes each with 6 cleaning pad replacements, two 1/2 oz. bottles of cleaning solution, one pair of tweezers, one cleaning record, one instruction booklet, reusable box to contain above components \$44.95
- 54010 Refill**
Four plastic boxes each with 6 cleaning pad replacements, two 1/2 oz. bottles of cleaning solution, one pair of tweezers, one cleaning record, packaged in tray and box for storage \$12.95

- **Cleaning Components:** Absorbent, non-shedding pads in a spring-loaded holder allowing conformance to the head with controlled movement. Replaceable and good for 40 cleanings
- **Cleaning Solution:** A "trichlorotrifluoroethane" cleaning solution is applied to the cleaning foam prior to insertion of the cartridge
- **Cleaning Action:** A thorough cleaning is accomplished by the cleaning pad passing horizontally across the read-write head. Such movement is derived mechanically from the tape drive's own drive roller. The area cleaned on the head surface is approximately .4" x .7". This can be increased by programming the head to be moved up and down



ALTA GROUP, INC.

Digital Video Production Systems

Pyxis/Pyxis-E Digital Video Production Systems

Common Features

Effects

- Cut (Vertical interval switch between channels) • Dissolve
- Horizontal wipe • Corner wipes • Window • Shutter (R and L edges to center) • Blind (Top and bottom to center) • Fade to black • Vertical wipe

Editor Interface

- GPI connection allows external triggering of selected effect by ground closure

Modifiers

- Midstop • Soft edge (all effects) • Transition speed (16, 24, 32 or 60 frames)

Proc Amp Controls (2 Channels)

- Luminance level • Chroma level • Hue (NTSC only) • Set-up
- H phase • SC phase

Audio Select

- Audio cuts • Audio lead • Stereo production • Audio follow video • Audio hold

Wipes

- Vertical • Horizontal • Four corners • Window, shutter and blind

Sync

- Operates on a stand-alone basis or genlocked

Stereo Audio Mixing

- Audio can be mixed, switched or faded along with the video or locked to the A or B channel using "Audio Hold"

Digital Effects

- Push on • Pull off • Push off • Posterize

Pyxis

- 2-channel TBC • A/B video switcher • Digital video effects
- Audio mixer • 8-bit resolution • Live camera inputs • Editor interface • Dual proc amp picture control

The easy way to move up to professional A/B roll editing. A dual-channel TBC with built-in digital effects and full proc amp control for two video tape sources plus two live cameras. It works with 1/2" and 3/4" VCRs to synchronize timing, correct picture imbalances and provide smooth transitions between scenes...cuts, soft wipes, dissolves and even digital push-ons and pull-offs.

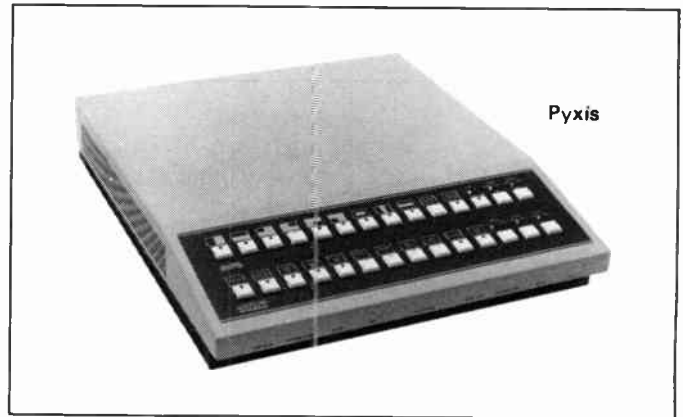
Other features include posterization and selectable source switching. Meets RS-170 broadcast specifications.

- Pyxis NTSC** \$6250.00
- Pyxis PAL** 6950.00

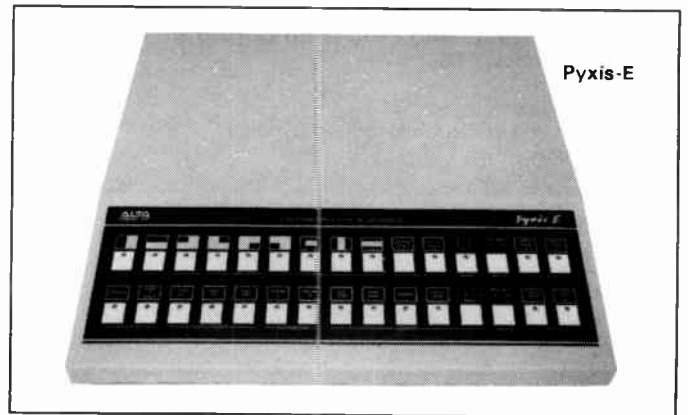
Pyxis-E

- Video channels have independent freeze capability that can be used in field or frame mode • Field mode achieves the clearest image when motion is present • Frame mode delivers the highest resolution for detailed originals and graphics • 8-bit resolution • Built-in dual channel picture freeze • A wide spectrum of special effect possibilities and combinations available
- To ensure smooth operation and broadcast quality results, the output is frame synchronous

This is a video production system that incorporates the same A/B roll editing and special effects features found in Pyxis...plus more, with new features and capabilities.



Pyxis



Pyxis-E

For maximum interfacing flexibility, it is designed with dual eight-bit infinite window TBC/Synchronizers. As a result, the system can synchronize video from any source, even consumer equipment, without advance sync or feedback connections. This means that you can employ equipment ranging from video cameras to remote feeds to 8mm VCRs to VTRs.

- Pyxis-E NTSC** \$8450.00
- Pyxis-E PAL** 9200.00

Celeris Y/C Format Converter

- Interfaces 3/4" U-Matic equipment to S-VHS equipment
- Converts Y/C 688 Dub signals to Y/C 3.58 S-VHS and composite video signals • Converts Y/C 3.58 S-VHS signals to Y/C 688 dub and composite video signals • Maintains full picture quality with 6MHz bandwidth • Unity gain input to output
- Requires no set-up controls or adjustments • Selectable input: Y/C 688 (U-Matic Dub) or Y/C 3.58 (S-VHS) • Provides three simultaneous video outputs: Y/C 688 (U-Matic Dub); Y/C 3.58 (S-VHS); Composite video • 4-pin and 7-pin S-VHS input and output connectors

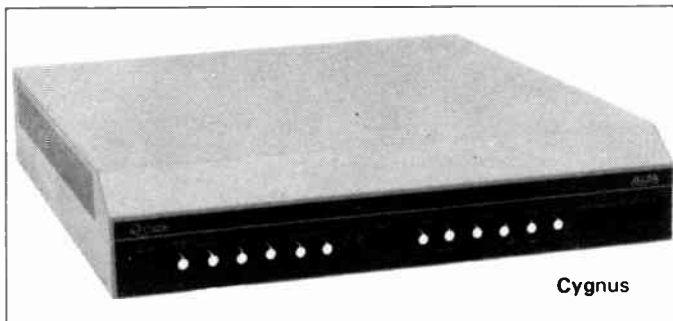
- Celeris** \$1150.00

Pictoris Infinite Video Compressor

- Key output • 8-bit resolution • Full 4.2MHz bandwidth
- Compressed image over live background video • Colored borders/matte • Variable crop and position • Four programmable presets • GPI remote control • Auto zoom-in and zoom-out • Freeze • Composite and S-VHS (Y/C 3.58) inputs and outputs

- Pictoris** \$9500.00

Refer to Green Section for Addresses and Telephone Numbers.

ALTA GROUP, INC.**Digital Video Production Systems****Cygnus****Cygnus Digital Video Production System
TBC with Effects and Proc Amp Controls**

- "Infinite window" TBC
- Video effects
- H & V image enhance (NTSC)
- 4x1 video and stereo audio routing switcher
- 8-bit resolution

Effects

- Continuously variable picture strobe
- Continuously variable posterization
- Continuously variable colorization
- Digital picture freeze
- 64 levels of mosaic tile
- Cuts (vertical interval switching between channels, audio follows video)

Proc Amp Controls

- Luminance level
- Chroma level
- Hue (NTSC only)
- Setup
- H phase
- SC phase

Cygnus provides an infinite window TBC as well as numerous special effects and 4x1 audio/video switching.

Broadcast television stations, cable stations, corporations, and independent video producers represent a few of the users that have already gained the "Cygnus Advantage."

The system meets broadcast RS-170 specifications.

The system enables you to freeze the video, or achieve stop-action and slow-motion through strobing controls. As a result "Rock Video" effects can be created.

You can artificially colorize or color correct the video, posterize the video and add a mosaic effect. Each effect can be independently adjusted through a variable control.

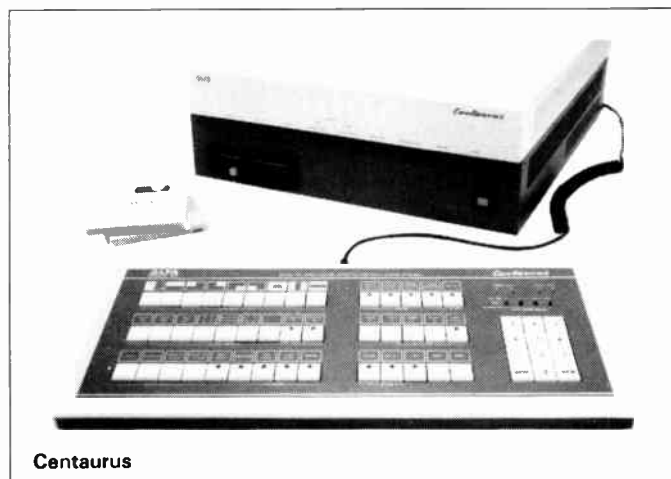
But the best part is that all effects can be used in any selected combination. This means you can manipulate the video through a virtually endless stream of visual possibilities. Even a frozen screen can be altered through variable colorization, posterization, and mosaic effects.

Cygnus NTSC \$4,990.00
Cygnus PAL 5,600.00

Centaurus Digital Video Production System

- Full 5.5MHz bandwidth
- Y/C 358 and composite input/output
- Full 8-bit video resolution
- Meets broadcast specification RS 170A
- Complete remote operation
- Direct connection to numerous editors
- Simple, single key operation
- Dual proc amp controls: Luma, setup, chroma and hue
- Genlock indicator with horizontal and SC phase adjustments
- Built-in disk drive with removable digital video data disk
- Matched frame editing
- S-VHS inputs/outputs
- GPI interface with internal programmable sequence memory (list mode)
- Display monitor shows full system status, edit listing, retrieval sequence and storage information
- Number key utilizes pad for picture storage-retrieval, programmable transition speeds, variable stops, variable background colors and programmable strobing
- Allows inputs and modifier effects to be changed during split screen operation

Centaurus, a wideband Video Production System for A/B roll editing, provides high resolution still storage and retrieval. The system contains dual infinite window TBCs/synchronizers, a video/stereo-audio routing switcher and special effects generators. Other features include an internal downstream keyer, numerous wipes, digital effects and dual channel fully independent digital frame/field freeze.

**Centaurus**

Pictures, logos, slides and titles can be easily stored and retrieved with either a removable hard disk or an external 500M byte disk drive which stores up to 1000 frames or 2000 fields of video. The entire system features simple key operation, making it ideal for on line operation and post production.

Centaurus NTSC \$16,900.00
Centaurus Without disk drive 13,900.00

ALTRONIC RESEARCH, INC.**RF Coaxial Load Resistors****RF Coaxial Load Resistors**

The "Omegaline" is a direct water-cooled termination for 50-ohm coaxial transmission line systems. Transmitters, microwave components, power tube manufacturers, and transmitting stations can be assured of ideal dummy load conditions during designing, testing, adjusting and aligning of transmitters or components.

- Low cost
- Lightweight
- RF power is dissipated in a proven, ceramic rugged film-type cylindrical resistor
- Resistors can easily be replaced
- No field adjustments needed
- Non-contaminating water circuit
- Ordinary tap or distilled water in open or closed systems
- Brass and aluminum construction
- Bright nickel plate finish
- Rugged construction
- Any operating position

5705

- Impedance: 50 ohms nominal
- Max. power rating: 5kW continuous
- Frequency range: 60Hz to 800MHz
- Max. VSWR: 1.10 to 800MHz
- Max. output water temp: 90°C
- Water flow: 2gpm
- Water connectors: 3/4" (garden hose) or 1/2" NPT
- Input connectors: 1 5/8" EIA flanged or QC/SC-FE
- Dimensions: Approx. 10 3/16" x 3 1/2"
- Weight: 4 lbs. (depending on connections)

5715

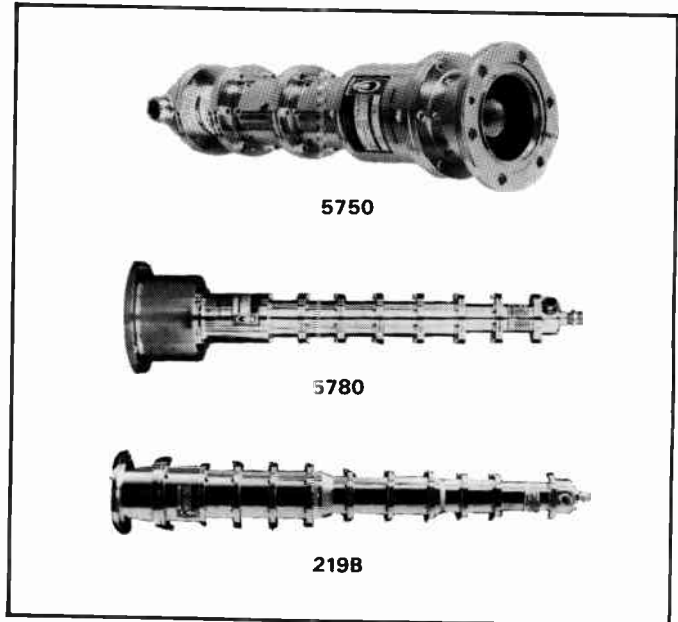
- Impedance: 50 ohms nominal
- Max. power rating: 15kW continuous
- Frequency range: 60Hz to 800MHz
- Max. VSWR: 1.10 to 800MHz
- Max. output water temp: 90°C
- Water flow: 4gpm
- Water connectors: 3/4" (garden hose) or 1/2" NPT
- Input connectors: 3 1/8" or 1 5/8" EIA flanged or 3 1/8" flangeless
- Dimensions: Approx. 15" x 3 1/2"
- Weight: Approx. 9 1/2 lbs.

5725

- Impedance: 50 ohms nominal
- Max. power rating: 25kW
- Frequency range: 60Hz to 800MHz
- Max. VSWR: 1.10 to 800MHz
- Max. outlet water temp: 90°C
- Water flow: 6gpm
- Water connectors: 3/4" (garden hose) or 1/2" NPT
- Input Connectors: 3 1/8" or 6 1/8" EIA flanged or 3 1/8" flangeless
- Dimensions: Approx. 6" x 16"
- Weight: Approx. 15 lbs.

5750

- Impedance: 50 ohms nominal
- Max. power rating: 50kW continuous
- Frequency range: 60Hz to 800MHz
- Max. VSWR: 1.10 to 800MHz
- Max. output water temp: 90°C
- Max. inlet water pressure: 150psi
- Water flow: 10gpm
- Water connectors: 3/4" (garden hose) or 1/2" NPT
- Input connectors: 3 1/8" or 6 1/8" EIA flanged and 3 1/8" flangeless
- Dimensions: Approx. 8" x 15 1/8"
- Weight: Approx. 20 lbs.

**822B (single resistor)**

- Impedance: 50 ohms nominal
- Power rating: 120kW continuous
- Frequency range: 60Hz to 450MHz
- VSWR: 1.10 to 450MHz
- Output water temp: 90°C
- Input water pressure: 150psi
- Water flow: 15gpm
- Water connectors: 3/4" (garden hose) or 1/2" NPT
- Input connectors: 3 1/8" or 6 1/8" EIA flanged
- Dimensions: Approx. 8 1/8" x 33"
- Weight: Approx. 40 lbs.

5780B (single resistor)

- Impedance: 50 ohms nominal
- Power rating: 80kW continuous
- Frequency range: 60Hz to 800 MHz
- VSWR: < 1.10 to 1000mc (w/3 1/8" flange)
- Output water temp: 90°C
- Input water pressure: 150psi
- Water flow: 10gpm
- Water connectors: 3/4" (garden hose) or 1/2" NPT
- Input connectors: 3 1/8" or 6 1/8" EIA flanged
- Dimensions: Approx. 8 1/2" x 30"
- Weight: Approx. 35 lbs.

219B (single resistor)

- Impedance: 50 ohms nominal
- Power rating: 200kW continuous
- Frequency range: 60Hz to 450MHz
- VSWR: < 1.10 to 450MHz
- Output water temp: 90°C
- Input water pressure: 150psi
- Water flow: 19gpm at 45°C inlet
- Water connectors: 3/4" (garden hose) or 1/2" NPT
- Input connectors: 3 1/8" or 6 1/8" EIA flanged
- Dimensions: Approx. 8 1/8" x 42"
- Weight: Approx. 47 lbs.

150 ohm and 300 ohm loads are also available

AMBER ELECTRO DESIGN, INC.

Audio Measurement System

5500 Audio Measurement System

• **Fully Programmable**—all features and parameters, even hidden ones, can be controlled via the IEEE-488 or RS-232 interface • **Comprehensive Features**—measures signal level, weighted and unweighted noise, frequency, THD, narrow band level, crosstalk and spectrum analysis. Options for two kinds of IMD, DC Volts, phase, wow and flutter • **High Performance**—excellent specifications allow testing of the highest quality systems. Software controlled Autocal maintains these specifications over time • **Fast Operation**—sophisticated speed enhancement techniques and thorough programmability for production test and repetitive lab performance tests • **Broadcast Ready**—high level balanced input/output, high RFI immunity, stereo switch matrix • **Simple to Use**—most tests require just one keystroke. Non-volatile user storage of 10 instrument setups • **Flexible Data Presentation**—read level in dBm, dBV, Volts, Watts, change impedance reference in dBm, Watts • **Comprehensive Noise Weighting**—four filters standard, four more optional out of a broad library • **Modular Architecture**—configure the system for changing needs, upgrade to meet new measurement requirements

The 5500 is a fully automatic, programmable, high performance audio measurement system. Equipped with both a generator and a comprehensive measurement section, the instrument can completely characterize virtually all audio performance parameters including signal level, gain, frequency response, total harmonic distortion, weighted and unweighted noise, crosstalk and spectrum analysis. Options can add intermodulation distortion, VDC, phase and wow and flutter.

Measurement settling time is rapid for use both in production test and repetitive R & D applications. Accuracy and measurement performance is state-of-the-art to allow critical testing of the highest quality audio equipment. And flexible interfaces facilitate testing of balanced professional broadcast equipment and telecommunication circuits.

Modular design allows user configurability and convenient upward growth. The broad range of measurement functions and sophisticated instrument software conveys a versatility not previously available.

The instrument may be controlled using the simple, user friendly front panel, the ten internal non-volatile user defined instrument setups or externally via a variety of available interfaces including serial (RS-232) and GPIB (IEEE-488).

Total System

The 5500 contains a high performance programmable generator covering the range of 10Hz to 100kHz. Typical mid-band residual distortion is below 0.001% (-100dB) and maximum output capability is over +30dBm (30V open circuit). Settling time is instantaneous (a few cycles) and free from amplitude bounce.

The 5500 measurement section measures signal level to over 100V (+40dBm), noise to below 1V (-120dBm), total harmonic distortion to below 0.001% (-100dB) and optionally, intermodulation distortion. A high resolution, fast update frequency display indicates either the frequency of an external signal or the internal oscillator. Comprehensive filtering and noise weighting allow measurements to various international standards and conventions. A spectrum analysis mode allows for measurement of crosstalk and noise floor analysis. Data presentation format is easily user definable in Volts, Watts, dBm, dBV, %, etc.

Additionally, several enhancement options are available for the 5500 to even further broaden its capability in measurement and control in a system.

Easy To Use

The instrument's sophisticated internal firmware simplifies operation, enhances speed, performs self-check and auto-cal, and provides external programmability. The user can store up to 10 complete instrument setups in non-volatile memory. Additionally, the last setup at power down is always automatically saved.

Results are repeatable and consistent. The on-board intelligence handles the internal housekeeping allowing the operator to make most measurements with only a single key stroke. Invalid operating setups are automatically inhibited yet this simplicity of operation does not constrain the versatility of the instrument. The user has complete control over instrument configuration, internal parameters and methods of testing.

A powerful data manipulation facility simplifies and enhances data entry and readout. For example, generator output level may be specified in dBm, dBV or Volts into a user defined load. Levels may be read in dBV, dBm, Volts or Watts. The user may specify a reference impedance for dBm or Watts or use the default values of 600 and 8 ohms respectively. Relative readings can be made as a percent or a dB offset from a user defined reference. This reference can be the current measured value or any keyboard entered value.



5500

Powerful Keystrokes

For convenience of source parameter definition, generator amplitude and frequency may be entered as absolute values or variations of existing values. Up and Down keys can be used to increase or decrease the oscillator amplitude or frequency and the user can easily define the increment/decrement magnitude. Again the magnitude of the change may be specified as a percent, dB, Volt or Hz value allowing the versatility of both linear and log stepping.

A comprehensive set of up to eight noise weighting and bandwidth limiting filters is provided for noise measurements to various audio and telecom standards (ANSI, CCIR, CCITT, IHF, etc.) and distortion measurements with restricted bandwidths (30kHz, 80kHz). Additionally, a separate fourth-order variable band pass filter with four programmable percentage bandwidths plus a high pass and low pass mode allows spectrum analysis, crosstalk measurements and variable bandwidth noise measurements. This filter can be set to automatically tune to the input signal, track the internal oscillator or be programmed to a keyboard entered frequency.

Three user selectable detection characteristics are included—true RMS, RMS calibrated average and RMS calibrated quasi-peak. This facility gives the user complete freedom to measure to the requirements of various standards—true RMS for accurate noise, distortion and SINAD measurements; average to correlate results to those of earlier instruments and quasi-peak for CCIR/European requirements.

The 5500 includes two balanced or unbalanced inputs with switch selection of either input (or either generator output for self-check). An optional dual output switch matrix can also be added for stereo system evaluation. The instrument has two oscilloscope monitor outputs for Input signal and Measured signal. Also provided are oscillator sync output and external source input.

ATE Ready

A GPIB/IEEE-488 computer interface is standard and a serial RS-232 interface is also available. Provision is made for the user to change parameters of these to suit the mating equipment. For long distance remote control and data acquisition a modem can be used.

The generalized nature of the 5500 allows its use in a wide variety of applications. Telecommunication and transceiver technicians will appreciate the SINAD measurement capability, balanced input and output and telecom noise weighting filters available (C-message, psophometric, etc.). Radio and TV broadcast users can use it to completely automate a proof of performance and, with an optional accessory for sum/difference output switching, stereo AM and FM measurements are easy. And the excellent RFI immunity and shielding let it work in the high RF fields near transmitters. The +30dBm power output allows full level headroom checking.

Computer interface facilitates documentation in either graphical or tabular format. Tests of tape recorders or satellite links are possible due to the autonomous nature of the analyzer and oscillator—the analyzer asynchronously locks to the input frequency, which need not be the same as the internal oscillator.

The 5500 is fully programmable—not just selected front panel functions. The user can access all front panel controls and most of the hidden internal circuits via the GPIB or serial ports to handle unusual test conditions, optimize measurement setups and gain measurement speed.

Optional digital utility outputs, programmable relays, programmable DC outputs and DC measurement capability can make the 5500 the total instrument in an ATE environment minimizing the need for additional equipment.

AMBER ELECTRO DESIGN, INC.

Audio Measurement System

5500 (cont'd)

Filters

The 5500 system comes with several standard and optional filters to meet various noise measurement standards, enhance measurements and allow analytical work.

Standard Fixed Filters

The 5500 comes with four standard band limiting/weighting filters. They can be used to remove the effects of mains hum or high frequency out-of-band noise from distortion or noise measurement. The fourth filter is supplied as an ANSI/IEC "A" Weighting as standard or, on special order, may be supplied as CCIR 468-3 or Psophometric CCITT/DIN.

Tunable Filters

The Narrow Band measurement capability of the 5500 gives the user a choice of six tunable filters: four 4th order band pass, a 2nd order high pass and a 2nd order low pass. The center frequency of the band pass or corner frequency of the high or low pass may be set by a numerical entry (keyboard, GPIB or serial port), may track the internal oscillator or may be set to automatically tune to the input signal.

Option 005 Audio Fixed Filters

This option provides four common weighting filters used in the audio and broadcast field. If this option is supplied, the four filters can be selected one at a time as the shifted mode of the four filter buttons.

Option 006 Telecom Fixed Filters

This option provides four popular weighting filters used in the telecommunications and communications fields. They meet the requirements of the Bell System Technical Reference 41009 and applicable CCITT and DIN standards.

Applications

Broadcast and Professional Audio

The 5500 comes with balanced (and unbalanced) inputs and outputs. And the balanced output, using a novel transformer coupling scheme, can be completely floated for high ground isolation. Switchable impedances of 50, 150 and 600 ohms, excellent RFI immunity and shielding, stereo inputs and outputs and internal filters and detectors for international standards allow measurement of all broadcast facilities.

Production Test/ATE

The 5500 is 3 to 10 times faster than other automatic audio test systems and over 100 times faster than manual equipment. GPIB and RS-232 ports permit interface to any controller. And the high degree of programmability lets your controller software achieve even greater system speed gains. State-of-the-art performance allows measurement of the highest quality equipment. Comprehensive filtering, measurement modes and detectors let it measure everything from Hi-Fi equipment to communication transceivers. Optional utility DC, digital and relay outputs can be included to control test fixtures. A single 5500 can replace five or more conventional instruments simplifying the system interconnect and controller programmability.

Acoustic Measurements/Speakers

The 5500 includes comprehensive spectrum analysis capability with flat top fourth order filters for accurate measurements to ANSI/IEC specifications. Fine resolution in the generator frequency setting and an optional compressor allows measurement of transducers. And for exceptional speed (over 100 times faster than competitive systems) the high speed plotting option produces high resolution (256 point) swept measurements in seconds. With non-volatile digital storage, normalization to a reference plot and RT60 measurement, the 5500/054 package is one of the most powerful programmable acoustic measurement systems available.

Communications and Telecommunications

The 5500 is available with a wide selection of noise weighting filters. C-Message, Psophometric and Program to name a few, for measurements to various international standards. Companded circuits can be measured in the presence of a pilot tone using the automatic notch mode. The auto-ranging, RMS detection and notch lock features facilitate SINAD measurements. And asynchronous Send and Receive signals are easily handled by the 5500 for satellite and other measurements. The RS-232 port allows remote control and data acquisition using a modem.

5500 System \$6500.00



Options and Accessories

001	High Level Balanced Output	.....\$ 800.00
002	Intermodulation Distortion	.....1200.00
005	Audio Weighting Filter Group (Adds four filters to AUX filters location)	.....950.00
006	Telecommunications Weighting Filter Group (Adds four filters to AUX filters location)	.....950.00
	Note: Only one of option 005 or 006 may be installed.	
056	Special combination of any four filters (from options 005 and 006)	.....1050.00
007	Second output (stereo applications) (Requires option 001)	.....600.00
008	DC Group and digital utility DC measurement, generation, 16 digital outputs, 8 utility relays	.....1200.00
054	High Speed plotting system	.....2800.00
101	CCIR Weighting Filter in place of ANSI/IEC A in SPCL location	.....100.00
102	Psophometric Weighting Filter in place of ANSI/IEC A in SPCL location	.....200.00
	Note: Only one of option 101 or 102 may be installed.	
200	High speed modification. Doubles CPU clock rate and substitutes high speed semiconductors	.....600.00
232	RS-232 Serial Interface	.....100.00
488	GPIB (IEEE-488) Interface	.....N/C
701	PROMAG® extender board	.....120.00
710	Rackmounting tray	
	Slide out rack tray-5 rack units	.....300.00
820	Audio check software	.....500.00
900	Extra Manual (One copy supplied with instrument)	.....100.00
	With option 005 or 006, the 5500 will have a total of 8 weighting filters.	

AMBER ELECTRO DESIGN, INC.

*Distortion and Noise
Measuring System*



3501 Distortion and Noise Measuring System

- Super high performance: THD to below 0.0008%. Noise to below -120dBm (1 μ V)
- Easy to use: Auto null, auto set level, tracking oscillator/analyzer
- Low Cost: 15% to 60% below competitive units
- Portable: Under 1/2 cu. ft., 12.5 lbs. — smaller than a portable oscilloscope
- Additional unique features: Frequency selective voltmeter for manual spectrum analysis, crosstalk measurements
- Optional IMD: Dual tone measurements to 100kHz as well as SMPTE, DIN, CCIF and IHF standards
- Flexible filtering: Four user changeable filters for weighted noise measurements
- Optional balanced input/output: Output capability to over +28dBm (+30dBm typical) into a 600 ohm load
- Optional rechargeable battery: For field use or ground loop problems
- Optional frequency meter: High resolution and fast update
- User upgrade: All options must be field installed

The Amber 3501 is an ultra high performance distortion and noise measuring system. Distortion measurement capability is the best in the industry with measurements to below 0.0008% (-102dB). The 3501 offers the convenience of automatic nulling and automatic set level in a portable low cost instrument. It provides several unique features for even greater measurement power such as manual spectrum analysis. Comprehensive filtering allows weighted noise measurements to virtually any standard — and the four filters are easily user changeable.

Configured to Your Application

A wide selection of field retrofitable options allows customization to specific user requirements. A powerful Intermodulation Distortion measurement capability allows measurements not only to various international standards but also front panel choice of frequencies from 2kHz up to 100kHz — a feature useful in qualifying TIM and other high frequency phenomena. Rechargeable battery systems are available for field use of floating applications in the lab.

Balanced Input and Output

For broadcast and professional audio applications a balancing option gives a balanced/differential input and a balanced/floating output with the highest output level in the industry — over +28dBm into a 600 ohm load (typically +30dBm). Front panel controls select the configuration: balanced or unbalanced, grounded or floating, terminated or unterminated.

Reliability

System reliability is enhanced by the liberal use of "cold switching" technology and high performance components such as precision conductive plastic controls, enclosed switches and gold contacts. RFI susceptibility is virtually eliminated by the linear front end.

Convenient and Portable

A well engineered front panel layout, automatic operation, comprehensive input/output configurations and full monitoring make the 3501 particularly easy to use and the convenient size and weight will be welcome by both the travelling technician and the crowded lab bench.

3501 System \$3000.00

Options and Accessories

3501-001	Battery and Charger System	\$200.00
3501-002	Extended Battery and Charger System	325.00
3501-005	Balanced Output	400.00
3501-006	IMD Analysis	800.00
3501-007	Rackmount Kit (specify with/without 358)	120.00
3501-900	Extra Manual	40.00
3501-358	High Resolution Frequency Meter	700.00
3501-1105	Tip-Ring-Sleeve Plug-to-Banana Post Adaptor	45.00
109	Internal Speaker/Amplifier	375.00
330	Preset Frequency and Stereo Switch Matrix	700.00

NOTE: Misc. Noise Weighting Filters Also Available.

AMBER ELECTRO DESIGN, INC.**Distortion and Noise
Measuring System****3501 (cont'd) Options and Accessories**

001 Rechargeable battery and charger system. 12V 2.5AH battery and power supply provides independent instrument power and isolates grounds. Gives approximately 1 1/2 hours or more of operation on a full charge. Automatically shuts down instrument when battery reaches end of life.

002 Extended life battery and charger. Same as 001 above but with 12V 5AH battery for approximately 3 hours or more of operation.

003 International AC adaptor/charger. Replaces 120VAC transformer normally supplied with one suitable for use on 100, 120, 220, 240VAC + 5%, -10% 48-62Hz. Contains IEC standard mains receptacle, voltage tap selector and US/European type fuse holder. Housed in metal box and supplied with mating mains cable with European color code suitable for user terminated AC mains plug.

004 Balanced input. Adds a differential input preamplifier to provide active balanced input for use in professional/broadcast systems and for measurement of non-ground referenced sources. Also useful to break ground loops.

005 Balanced output. Adds a floating/balanced output to instrument and increases capability to provide up to +28dBm (+30dBm typical) into a 600 ohm load. Uses a transformer for true float and a proprietary active correction technique (patent pending) to virtually eliminate distortion contribution.

006 Intermodulation distortion measurement/Generation facility. Adds a second (low frequency) oscillator and mixing circuitry to provide twin-tone composite signal (SMPTE type) and intermodulation measurement circuits to measure SMPTE, DIN, CCIF or IHF distortion. Frequency range 2kHz-100kHz.

358 High resolution frequency meter. Adds a six digit frequency readout of internal oscillator or external signals. Frequency multiplier provides two orders of magnitude improvement in measurement speed/resolution over conventional meters with several readings per second and up to 0.01Hz resolution. "Smart" signal detector automatically blanks display in absence of sufficient signal amplitude. Auto range circuitry (with manual override) permits measurement from below 10Hz to over 500kHz (typically 1MHz). Using the high meter sensitivity and filtering of the 3501, valid measurement of low level and noisy signals is possible. Pushbutton input selection permits measurement of 3501 oscillator, external signal input or the external signal with filtering.



Pushbuttons select either fast (approx. 3 readings/second, 0.1Hz resolution) or high resolution (0.01Hz resolution, 1 reading/second).

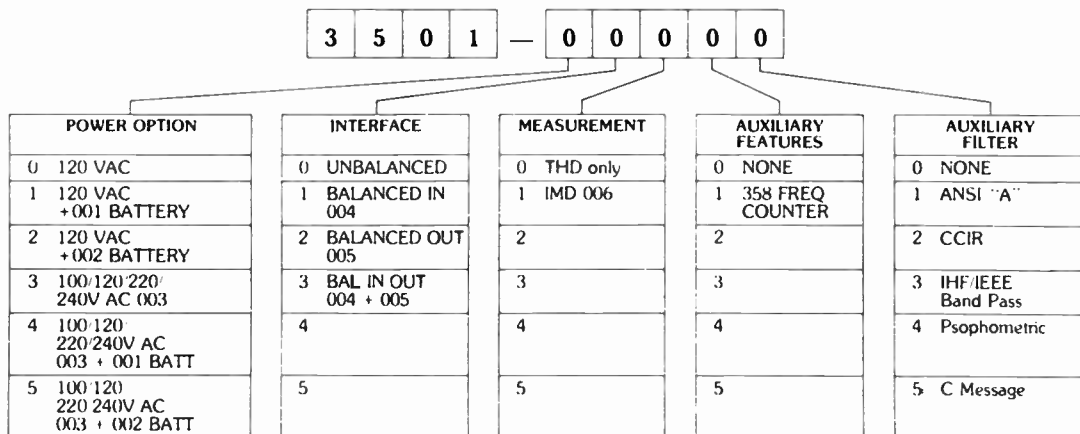
The 358 is powered by the 3501 internal power supply and automatically switches off when the 3501 is turned off. It mounts on the top cover of the 3501 adding approximately 1.2" (3cm) to the height and is 7.7" (20cm) wide by 8.5" (22cm) deep. It plugs into existing connectors on the 3501 and may be field retrofitted.

Filters. To accommodate various noise weighting standards several special and custom filters are available. Normally, if a single optional filter is ordered, it will be fitted to the Aux Filter position of the 3501. Alternatively, any of the four filter positions may be populated with any of several available filters.

Typical choices for standard optional filters include ANSI/IEC "A" weighting and CCIR 468-2.

Custom filters include the IHF-T 200/IEEE 185 receiver band pass, the telecommunications C-message weighting with and without notch, program weighting and psophometric.

One, two and three pole high pass and low pass filters are easily accommodated and may be either purchased from Amber or constructed by the user from data supplied in the 3501 owner's manual.

Ordering Instructions

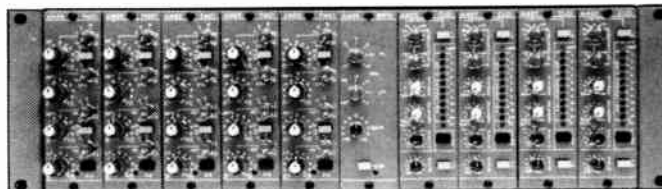
Example: a basic 3501 with no options is a 3501-00000. A 3501 with the 001 battery option, 004 balanced input, 005 balanced output, 006 IMD and an ANSI/IEC "A" weighting filter in the AUX FILTER position would be a 3501-13101.

Prices and Specifications Subject to Change Without Notice.

RM01 Signal Processing System

The RM01 system is a rackmounting system comprising 3 signal-processing modules for equalization, compressor limiting, and a band pass filter module.

The unit is 3U high and has a separate rackmounting power supply, PS01. Each module plugs into a printed circuit motherboard, and the rack accommodates a total of 10 modules. All input and output connections are via screw terminals labelled on the rear of the case.



PM01 Parametric Equalizer

The PM01 is a four band parametric equalizer. It is identical to those used on the Amek M1000 and M2500 mixing consoles, which are renowned for their total flexibility and musical transparency, and has been introduced as a separate unit due to customer demand.

The unit's four bands are each configured with a center detented dual concentric pot, the upper pot controlling gain, $\pm 14\text{dB}$, the lower one for Q, with a fully variable range. A third pot is used to select the desired frequency. The high and low ranges are selectable for bell or shelving response characteristics via a pushbutton switch. The two mid-ranges have bell characteristics. An EQ in/out switch with LED is also fitted.

With this equalizer it is possible to radically change the sound of an instrument or recording to suit the engineer, while at the same time maintain the coherence of the original sound.

PM01 Specifications

- HF
- Gain: $\pm 14\text{dB}$
- Center Frequency
- Range: Variable between 500Hz and 16kHz
- Curve
- Characteristic: Switchable between bell or shelf with variable Q of 0.35 to 3.5
- MF1
- Gain: $\pm 14\text{dB}$
- Curve Frequency
- Range: Variable between 500Hz and 16kHz
- Curve
- Characteristic: Bell curve with variable Q of 0.5 to 5.0
- MF2
- Gain: $\pm 14\text{dB}$
- Center Frequency
- Range: Variable between 40Hz and 1.6kHz
- Curve
- Characteristic: Bell curve with variable Q of 0.5 to 5.0
- LF
- Gain: $\pm 14\text{dB}$
- Center Frequency
- Range: Variable between 40Hz and 1.6kHz
- Curve
- Characteristic: Switchable between bell or shelf with variable Q of 0.35 to 3.5
- In/out switch with LED. Input and output electronically balanced.
- PM01\$575.00

CL01 Compressor Limiter

The CL01 combines separate compressor and limiting functions in a single compact module. It is a mono unit, with a front panel switch which allows two units to be ganged together for stereo use. The Compressor and Limiter have individual threshold controls for independent use. There are six rotary controls which alter the following parameters: limiter threshold, compressor threshold, attack time, release time, compression ratio and gain.

The module is fitted with 2 in/out switches, one to switch the compressor and limiter in and out of circuit and a secondary switch to enable the limiter to be bypassed while still using the compressor. A 12 segment LED display indicates the following: a single green LED shows when the unit is in the signal chain, a single yellow LED shows when the unit is in limiter mode, and 10 red LEDs display gain reduction.

For greater control of the compressor parameters an 8 position DIL switch is internally mounted on the printed circuit board. Adjustment of this switch greatly increases the effectiveness of this unit for a wide variety of applications.

CL01 Specifications

- Limiter threshold: Variable between 0dB and + 20dB (nominal)
- Limiter ratio: 25:1
- Compressor threshold: Variable between -10dB and + 15dB (nominal)
- Ratio: Variable from 1:1 to 10:1
- Attack time: Variable from 0.25ms to 25ms
- Release time: Variable from 75ms to 5sec
- Auto release: Program dependent
- Gain make up control range: -20dB to + 20dB
- Inputs and outputs electronically balanced.
- CL01\$575.00

BP01 Band Pass Filter

The BP01 band pass filter is identical to that employed on the AMEK M2500 mixing console, and it has a variety of applications for both broadcasters and studio engineers.

The unit comprises three rotary controls, 2 for pass filter frequency selection (low and high), and the third is a gain control ($\pm 10\text{dB}$) with center detent. An in/out switch is also fitted.

In practice the unit is most likely to be used in conjunction with the PM01, although it could be used alone to good effect, for example it may be used to limit the bandwidth of an on-air telephone line, or alternatively to remove low frequency rumble from an old valve organ.

BP01 Specifications

- High Pass: Continuously variable between 20Hz and 400Hz
- Low Pass: Continuously variable between 800Hz and 20kHz
- Filter Slope: 12dB per octave
- Gain: $\pm 10\text{dB}$
- Filter in/out switch. Input and output electronically balanced.
- BP01\$525.00
- RM01 Card Cage 19" rackmount, 10 position345.00
- Power Supply Unit505.00

AMEK/TAC U.S. OPERATIONS*Mixing Consoles***ANGELA Mixing Consoles**

The ANGELA is an extremely flexible, high-performance 24-bus console which is available in a variety of configurations. The ANGELA has proved to be highly suited for use in both multitrack recording studios and video post-production suites.

Chassis Sizes There are three standard chassis sizes, each of which may be supplied with the jackfield on board (denoted OBJ) or external to the console (denoted EJ).

When the jackfield is external to the console it will be supplied on a 3-meter long umbilical cable as standard. If a longer or shorter umbilical is required this must be specified at time of ordering. The external jackfield may not be detached from the console.

The jackfield space occupies 11 module positions. It is NOT possible to remove the jackfield and retrofit modules at a later date. The desk must be supplied either as OBJ or EJ and cannot be converted.

The three chassis sizes are: ANGELA M42: maximum 42 module positions in the EJ version, or 31 positions on the OBJ version. ANGELA M50: maximum 50 module positions in the EJ versions, or 39 positions in the OBJ version. ANGELA M65: maximum 65 module positions in the EJ version, or 54 positions in the OBJ version. The fully-loaded configurations of the 3 chassis sizes available in the ANGELA system are therefore: M42/OBJ: 28/24, M42/EJ: 39/24, M50/OBJ: 36/24, M50/EJ: 47/24, M65/OBJ: 51/24 or 51/48, * M65/EJ: 62/24 or 62/48. *

Modules Three different modules are used in the system. These are ANGELA A10 input/output module. ANGELA A20 and A21 auxiliary send/return — subgroup module. ANGELA A30 stereo bus/master monitor module.

The A20, A21 and A30 modules occupy three module positions in any of the chassis sizes. They are fitted in the chassis after position 24, in other words after A10 i/o modules 1-24.

All versions can of course be supplied short-loaded. A bolt-on 19-inch producer's desk and jackfield/rack of similar profile to the console is available. The bolt-on may be fitted to either right or left hand end of the chassis. 13 rackmounting units of space are available in the bolt-on section. Note that the addition of the bolt-on adds a third leg to the console. All versions have 4 stereo audio subgroups with outputs to the stereo mix bus.

*NOTE that M65 chassis may be set-up for 48-track metering and monitoring, with 24 bus outputs and 24 direct outputs (from inputs 25-48).



Metering Standard metering on all chassis sizes is 27 LED-column meters each with 30 segments including a PEAK LED, with ballistic switchable VU/PEAK. The meters read Bus/Tape 1-24; Left Output; Right Output; and Solo/PFL.

Automation The standard ANGELA is supplied without any automation facilities either in the form of computer-readiness or DC subgroups. The A10 i/o module is however prepared for a VCA-automation ready or non-automation ready directly from the factory, and although it is possible, so far no field retrofits have been performed.

The addition of the VCA card to the module also includes replacement of the standard fader with a Penny & Giles conductive plastic fader.

AMEK/TAC U.S. OPERATIONS**Mixing Consoles****ANGELA Mixing Consoles (cont'd)**

The VCA card provides automation remote controls and 8DC subgroups using the free-grouping system (any fader may be assigned as subgroup master.)

The standard computer offered with the ANGELA is the Audio Kinetiks "Mastermix" SMPTE-synchronized, floppy-disk based computer mix-down system.

Alternatively, the ANGELA can be fitted with automation control cards suitable for interfacing the console to the Sound Workshop ARMS computer. However, we will not install the ARMS computer; this must be done by an authorized Sound Workshop dealer.

The ANGELA may also be interfaced with the Allison 65K programmer.

As a special option and to quotation only, the ANGELA may be fitted with the GML VME-bus computer. The GML computer uses twin 68000 processors with 1M byte RAM and 40M byte hard disk. The power, speed and flexibility of the GML computer are to our knowledge unsurpassed at the present time by any other mixing computer.

The ANGELA may not be supplied as "automation-ready" for the GML system but only with the GML computer and moving faders installed.

The prefix (A) signifies that the console is automation-ready suitable for use with a Mastermix computer and with DC subgroups. Interface cabling is also included for the Mastermix computer.

Reference Code:

M42 = 42 module position chassis (note: the Jackfield is 11 modules wide).

M50 = 50 module position chassis

M65 = 65 module position chassis

OBJ = On-board jackfield

EJ = External Jackfield (10' umbilical standard, longer to special order)

A = Automation ready

(note: all automation ready models can only be fitted with Penny and Giles faders)

Angela M42 Chassis

Dimensions: 79¹/₈" x 36¹/₄" x 38¹/₂"

Weight: 663 lbs. approx.

M42/OBJ	28/24 (24 monitor-27 meters)	\$46,950.00
M42/OBJ/A	28/24	50,950.00
M42/EJ	39/24	56,950.00
M42/EJ/A	39/24	63,950.00

Angela M50 Chassis:

Dimensions: 88¹/₄" x 36¹/₄" x 38¹/₂"

Weight: 792 lbs. approx.

M50/OBJ	36/24	\$56,950.00
M50/OBJ/A	36/24	63,950.00
M50/EJ	47/24	67,950.00
M50/EJ/A	47/24	78,500.00
M50/EJ	47/47 (47 monitor-50 meters)	71,950.00
M50/EJ/A	47/47 (47 monitor-50 meters)	82,500.00

Angela M65 Chassis:

Dimensions: 119³/₄" x 36¹/₄" x 38¹/₂"

Weight: 1100 lbs. approx.

M65/OBJ	51/24	\$ 74,950.00
M65/OBJ/A	51/24	83,950.00
M65/OBJ	51/48 (48 monitor-51 meters)	79,950.00
M65/OBJ/A	51/48 (48 monitor-51 meters)	89,950.00
M65/EJ	62/24	86,950.00
M65/EJ/A	62/24	101,250.00
M65/EJ	62/48 (48 monitor-51 meters)	92,950.00
M65/EJ/A	62/48 (48 monitor-51 meters)	107,250.00

**Options/Accessories**

A 10 Input Module (Alps Fader)	\$ 695.00
(when shortloading subtract \$500.00)	
A 10 Input Module (P and G Fader)	775.00
(when shortloading subtract \$600.00)	
A 10/A Input Module (Auto-Ready)	995.00
(when shortloading subtract \$800.00)	
A 11 Stereo Line Input Module (Alps)	1,150.00
A 11 Stereo Line Input Module (P and G)	1,270.00
A 11/A Stereo Line Input Module (Auto-Ready)	1,529.00
A20/21 Auxiliary and Subgroup Module (Alps)	550.00
A20/21 Auxiliary and Subgroup Module (P and G)	719.00
A32 Master Module (Alps)	739.00
A32 Master Module (P and G)	900.00
A32A Master VCA Module	1,329.00
Module Blank Panel	35.00
Spare Power Supply Unit 1 (Audio)	1,850.00
Spare Power Supply Unit 2 (light meters)	875.00
Phase Meter	475.00
Peak Program Meter (PPM)	339.00
Dual Needle Peak Program Meter (PPM)	695.00
Extender Cards (per set)	475.00
Owners Manual	25.00
Effects Jackstrip (96 point TT to Elco Connectors)	1,500.00
1 U 19" Patchbay Blank Panel	45.00
4 U 19" Patchbay Blank Panel	75.00
Mono Output (includes VU Meter)	500.00
Extra Producers Desk (specify right or left)	2,250.00
Spare Parts Kit	815.00
Spare Parts Kit (Auto-ready)	950.00

AMEK/TAC U.S. OPERATIONS

Mixing Consoles

TAC MATCHLESS Mixing Consoles

- Complete 24 bus, 24-track in-line monitor functions
- 8 Auxiliary send buses and 8 effects returns • 8 Audio groups usable as mono or stereo subgroups • 4-Band semi-parametric equalizer on all input channels • Separate Mike and Line gain controls on all input channels • 2 Independent, overlapping mute groups • Separate monitor mix and stereo buses • LED metering with switchable VU Peak ballistics • External 19" rackmounting power supply • +48VDC phantom power rail • Oscillator and talkback system • 19" Hand-wired TT (Tiny Telephone) patchbay • Complete control room monitor input system

- **Performance data**

Mike input: Equivalent input noise with 200 ohm source, -126dBV DIN Maximum input level without pad, +1dBV CMRR (common mode rejection ratio), at 40dB gain, typically better than 60dB, 20Hz-20kHz

Line input: Noise, at unity gain, measured at insert send with eq out of circuit, -93dBV DIN

Bus output noise, multitrack: With no inputs assigned to the bus, -92dBV DIN. With 24 inputs assigned to the bus, -78dBV DIN

Stereo bus output noise: With 24 channels assigned to the stereo bus but with channel faders down, main faders set at "0" and stereo only assigned to main outputs (normal mixdown mode), -78dBV DIN

Overall performance: With microphone input routed to stereo bus at 40dB mike gain, and with an output level of +10dBV: Frequency response: +/-1dB, 20Hz-20kHz. Distortion (THD): better than 0.05% at 45Hz, 1kHz, and 10kHz. Crosstalk: multitrack bus to bus, typically better than -64dB at 10kHz stereo bus typically better than -60dB at 10kHz

- **Power supply unit:**

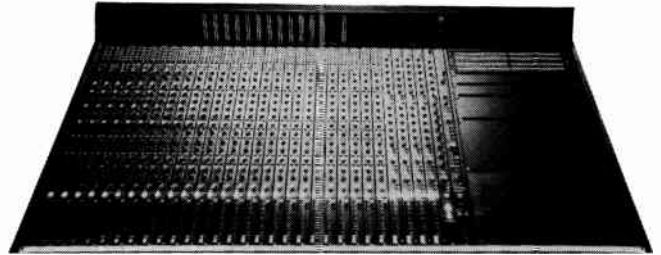
19" Rackmounting with console DC supply rails and +48VDC phantom power rail, factory-set for 110, 220 or 240VAC operation

- **Chassis size (jackfield version):**

Length: 77" (195.4cm) including wood; Front-to-back: 37" (94.3cm); Height (including stand) 37" (94.3cm); Height (without stand): 13" (32cm); Length of faceplate (excluding section under meter hood): 27" (68.4cm)

- **Construction:**

The chassis is fabricated from sheet steel with a welded tubular steel frame. The floor stand is manufactured from tubular steel. The console is finished with solid hardwood end cheeks and leather padded armrest.



Modules are interconnected via a hard (printed circuit board) busing system using gold-plated computer-backplane edge connectors. Modules locate by a simple 3-point stud and location hole arrangement and are removed by swinging back the meter hood and armrest. The armrest support is hollow allowing storage of sundry items. The jackfield is hard-wired to the console and standard 19" TT fields are used in preference to printed circuit board mounted jacks

MATCHLESS—LF/JFL Includes 36 inputs, full 24 track routing, 8 sends, 8 returns, 2 programmable mute groups, 8 mono sub-groups, 4 band EQ with swept mids and selectable Q, 27 hi-resolution LED 20 segment meters, outboard power supply, producers desk, 286 point patch field, and console stand. \$32,945.00

MATCHLESS—LF/O Includes all of the above but NO patch field. \$29,645.00

MATCHLESS—SF/JFL Includes 26 inputs, full 24 track routing, 8 sends, 8 returns, 2 programmable mute groups, 8 mono sub-groups, 4 band EQ with swept mids and selectable Q, 27 hi-resolution LED 20 segment meters, outboard power supply, producers desk, 192 point patch field, and console stand. \$27,445.00

MATCHLESS SF/O Includes all of the above but NO patch field. \$25,245.00

MCDS 1000 Input Module 523.00

When shortloading subtract \$366.00

MCDS 2000 Group Module 468.00

When shortloading subtract \$328.00

MCDS 3000 Aux Module 633.00

MCDS 4000 Master Module 633.00

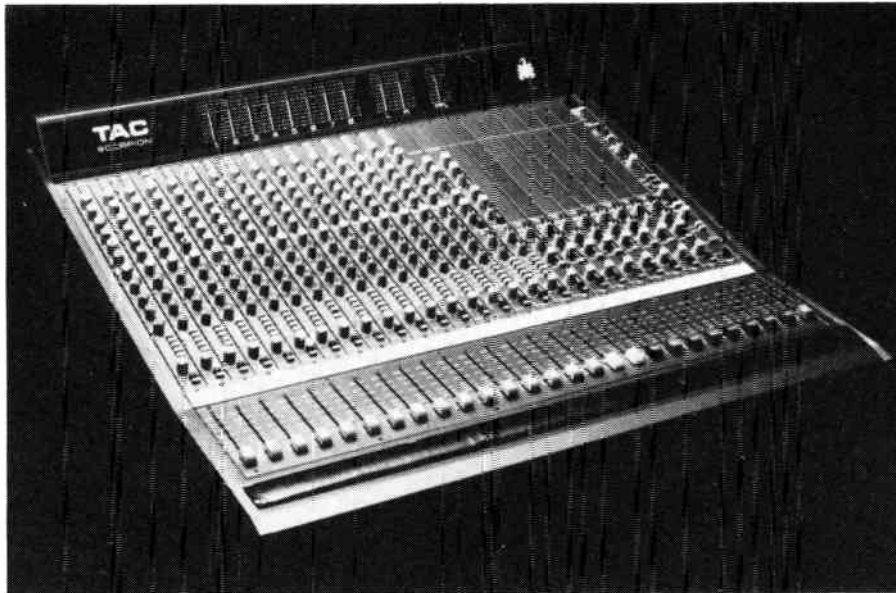
Power Supply 1045.00

Spare Parts Kit 396.00

Extender Card 88.00

Penny & Giles 3000 Mono Faders (Per channel) . . 110.00

Owners Manual 22.00



TAC SCORPION Mixing Consoles

The TAC SCORPION is a console system comprised of two chassis sizes and 6 modules. The chassis are denoted SF (short frame) and LF (long frame). This combination allows us to offer a very wide variety of configurations to suit both multitrack recording and concert sound reinforcement applications.

The S1000 input module has transformerless microphone and line inputs, 4-band equalization, 4 auxiliary sends and 16-bus routing.

The S2000 auxiliary send-return channel has master outputs for two auxiliary send buses, and one high level effects return input with 16-bus routing. Two S2000 modules are fitted in every console.

There are 4 types of subgroup module. S3000 is a single subgroup with Bus/Tape monitoring, two auxiliary sends and fader reverse. This module may be used as a subgroup, as a monitor mixer and bus output for recording, or as an effects input. Using the S3000 module, you can have an 8-bus Scorpion with 8-track monitoring, or a 16-bus Scorpion with 16-track monitoring. The S3300 module is identical to the S3000 except for the inclusion of a 3 band fixed EQ and 4 aux sends instead of 2.

S3100 is a subgroup module with two independent channels of Bus/Tape monitoring each channel including 4 auxiliary sends. Using the S3002 module, you can have an 8-bus Scorpion with 16-track monitoring, or a 16-bus Scorpion with 32-track monitoring.

S3200 is a subgroup/matrix output module purpose-built for sound reinforcement use in concerts and theaters. The S3001 module configures the console with 8 subgroups and an 8 x 8 output matrix for routing the signal to secondary speaker systems.

Given the above modules and chassis, the principal configurations of the Scorpion are as follows:

In the large frame (denoted LF):

24/16/2 with 16-track monitoring; 24/16/2 with 32-track monitoring; 32/8/2 with 8 subgroups; 32/8/2 with 16-track monitoring (alternatively this can be used in sound reinforcement applications as 8 subgroups and 8 extra effects returns); and 32/8/2 with an 8 x 8 matrix.

Because there are two types of standard operating levels for tape machines depending on their make, some mixing desks need modification for them to be compatible with tape machines, while other manufacturers have ignored this fact with the result that the customer never actually achieves the signal quality that he could.

We have recognized this problem and have designed the Scorpion for full dual-level operation.

Thus, the Scorpion is supplied, without needing any modification, to work at either standard +4dBV or Fostex/TEAC -10dBV (more precisely -12dBV) operating levels. This is simply done through providing different levels on input/output connectors.

The power supply is housed in a separate, 19" rack-mounting case and has, as standard, +48VDC phantom power output for powering condenser microphones. The phantom power may be switched in and out on each S1000 input channel.

The Scorpion has full LED-metering. Each meter is calibrated -22 to +3dB. All versions have individual meters for the stereo bus and reading the Pfl/Afl signal. The 8-bus version has 8 bus/tape-reading meters, and the 16-bus version has 16 bus/tape-reading meters.

TAC SCORPION Mixing Consoles (Cont'd.)**Performance data:**

All input module measurements are made at the channel pre-fade insert point with the equalizer out of circuit (except for equalizer measurements). All other measurements are made at the respective bus outputs.

Noise measurements were obtained using a RADFORD ANM3 set to DIN weighting and true RMS characteristics. The signal source is a RADFORD LDO4B oscillator. The distortion measuring set was a RADFORD DMS3.

Frequency response measurements were made on a RADFORD ANM3 set to WIDEBAND weighting and true RMS characteristics.

Microphone input noise: -126dBV DIN AUDIO BAND. Source impedance 200 ohms; 20dB pad out of circuit; input gain set at maximum

Maximum input level to mike amp (without pad): +1dBV. Sine wave source; 20dB pad out of circuit; input gain at minimum; supply rails +/-16.5V

Microphone input CMRR: 64dB. Mike gain set to 40dB; Sine wave source giving output of +10dBV from mike amp; frequency 200Hz, 2kHz

Line amp noise: -85dBV. Input short-circuited; input gain set for unity

Channel distortion, 20Hz-20kHz: Microphone input: 0.02%. Gain set to 40dB; mike amp output +10dBV. Line input: 0.02%. Gain set to unity; amplifier output +10dBV

System measurements:

(Made on 24/16/2 version, comprising 24 S1000 input, 2 S2000 auxiliary send-return, 16 S3000 subgroup/monitor, and 1 S4000 master monitor)

Bus noise, 24 inputs routed to 1 bus, master closed: -88dBV; master at 0 (unity gain); -75dBV. Input faders at maximum attenuation

Distortion, 20Hz-20kHz: 0.05%. From input module with 40dB gain setting, via subgroup and main stereo output at +10dBV with all faders at unity gain. Measured at main stereo output

Frequency response, 20Hz-20kHz, +/-1dB. From input module, via mike amp with 40dB gain setting, to main stereo output.

Crosstalk, at subgroup output: -60dBV. Sine wave signal on input module at 10kHz and 0dBV routed to a subgroup output at 0dB. Measurements made at adjacent subgroup outputs.

Crosstalk, at stereo bus output: -56dBV. (Set-up as for i) **Operating level ref:** 0dBV (.775mV). Subgroup and Stereo bus pre-fade inserts operate at -6dBV.

Aux send output noise, masters closed: -85dBV; masters set for unity gain; -75dBV.

All channel sends closed, 24 input modules.

Power supply unit:

19" rackmounting unit giving console DC supply rails and +48VDC phantom power rail; factory pre-set for 110, 220 or 240VAC operation.

Chassis sizes:

Front-to-back: 33.15" (842mm); Height (at meter hood): 10.35" (263mm); Width, SF: 36" (915mm) LF: 55.55" (1411mm)

Total Audio Concepts "Scorpion" Series

Because there are so many configurations of the Scorpion, a coding system has been devised to describe them. The code gives a quick description of the console in terms of chassis size, number of inputs, number of groups, quantity of buses, number of meters, number of blank modules, and number of auxiliary sends. Each model's code number is the reference number for ordering it. For part-loaded consoles the appropriate number of modules are reduced and an equivalent number of blanks added.

At present the codes are denoted by letter and operates as follows:

A: Chassis Sizes

S=Short—27 module positions; L=Long—43 module positions; X=Extended Long—53 module positions; XPB=Extended Long—45 module positions with Patchbay

B: Total Number of Input Modules To Be Supplied**C: (Sub) Group Module Type**

B=S3000 basic group; D=S3100 dual monitor group; M=S3200 matrix group; E=S3300 basic group with EQ; F=SFB2000 foldback output with EQ; N=SFB2100 basic foldback output with no EQ

D: Total Number Of Group Modules To Be Supplied**E: Total Number of Group Buses In The Console**
(8, 12, or 16)**F: Total Number Of LED Meters To Be Fitted**

(11, 16, 27 or 35 meters are available on the general purpose versions; 9 or 13 on foldback consoles)

G: Total Number Of Blank Modules**H: Number Of Auxiliary Sends**

(8 aux sends can only be fitted on 8 and 12 bus versions of the Scorpion)

In general terms, the configuration of the console is determined by the chassis size. In the description column of the following tables, the expression "+4" (8, 16, 24, 32) indicates the number of Bus/Tape monitor channels available in the console; for example, 16/8/2+8 means 16 inputs, 8 groups, stereo bus, and 8 track monitoring.

Some similar Scorpions are available with different numbers of meters. For example, item 6 has 8 buses and 16 Bus/Tape monitor channels, but only 8 Bus/Tape meters; item 7 is identical but has 16 Bus/Tape meters. The reason for having different quantities of meters is both for price and user preference.

AMEK/TAC U.S. OPERATIONS

Mixing Consoles

TAC SCORPION Mixing Consoles (cont'd)

Small Chassis

	A	8	C	D	E	F	G	H	General Description	Retail
1.	S	10	8	4	8	11	10	4	10/4/2 + 4	\$ 6,545.00
2.	S	10	E	4	8	11	10	4	10/4/2 with EQ on groups	6,765.00
3.	S	10	D	4	8	11	10	4	10/4/2 + 8	7,425.00
4.	S	16	8	8	8	11	0	4	16/8/2 + 8	8,305.00
5.	S	16	E	8	8	11	0	4	16/8/2 with EQ on groups	8,745.00
6.	S	16	D	8	8	11	0	4	16/8/2 + 16	10,175.00
7.	S	16	D	8	8	19	0	4	16/8/2 + 16 with 19 meters	10,725.00
8.	S	16	M	8	8	11	0	4	18/8/2 + 8x8 matrix	10,175.00

Large Chassis

9.	L	32	8	8	8	11	0	4	32/8/2 + 8	\$15,015.00
10.	L	32	E	8	8	11	0	4	32/8/2 with EQ on groups	15,455.00
11.	L	32	M	8	8	11	0	4	32/8/2 with 8x8 matrix	16,775.00
12.	L	32	D	8	8	11	0	4	32/8/2 + 16, 11 meters	16,775.00
13.	L	32	D	8	8	19	0	4	32/8/2 + 16, 19 meters	17,325.00
14.	L	30	B	8	8	11	0	8	30/8/2 + 8, with 8 Aux	16,995.00
15.	L	30	E	8	8	11	0	8	30/8/2. EQ on groups, 8 Aux	17,435.00
16.	L	30	M	8	8	11	0	8	30/8/2 with 8x8 matrix, 8 Aux	18,645.00
17.	L	30	D	8	8	11	0	8	30/8/2 + 16, 11 meters, 8 Aux	18,645.00
18.	L	30	D	8	8	11	0	8	30/8/2 + 16, 19 meters, 8 Aux	19,305.00
19.	L	24	B	16	16	19	0	4	24/16/2 + 16	14,135.00
20.	L	24	E	16	16	19	0	4	24/16/2 with EQ on groups	15,015.00
21.	L	24	D	16	16	19	0	4	24/16/2 + 32, 19 meters	18,205.00
22.	L	24	D	16	16	27	0	4	24/16/2 + 32, 27 meters	18,865.00
23.	L	28	D	12	12	27	0	4	28/12/2 + 24, 27 meters, 4 Aux	18,975.00
24.	L	26	D	12	12	27	0	8	26/12/2 + 24, 27 meters, 8 Aux	20,735.00

Extended Large Chassis

25.	X	40	B	8	8	11	0	8	40/8/2 + 8, with 8 Aux sends	\$21,395.00
26.	X	40	E	8	8	11	0	8	40/8/2 with EQ on groups, 8 Aux	21,835.00
27.	X	40	M	8	8	11	0	8	40/8/2, 8x8 matrix, 8 Aux	23,045.00
28.	X	40	D	8	8	11	0	8	40/8/2 + 16, 8 Aux sends	23,045.00
29.	X	40	D	8	8	19	0	8	40/8/2 + 16, 19 meters, 8 Aux	23,595.00
30.	X	40	8	8	8	11	2	4	40/8/2 + 8, 4 Aux sends	18,315.00
31.	X	40	E	8	8	11	2	4	40/8/2 with EQ on groups, 4 Aux	18,755.00
32.	X	40	M	8	8	11	2	4	40/8/2, 8x8 matrix, 4 Aux	19,965.00
33.	X	40	D	8	8	11	2	4	40/8/2 + 16, 4 Aux sends	19,965.00
34.	X	40	D	8	8	11	2	4	40/8/2 + 16, 19 meters, 4 Aux	20,515.00
35.	X	32	8	16	16	19	2	4	32/16/2 + 16, 4 Aux	18,095.00
36.	X	32	E	16	16	19	2	4	32/16/2 EQ on groups, 4 Aux	18,975.00
37.	X	32	D	16	16	19	2	4	32/16/2 + 32, 4 Aux	21,395.00
38.	X	32	D	16	16	19	2	4	32/16/2 + 32, 35 meters, 4 Aux	22,605.00
39.	X	36	D	12	12	27	0	8	36/12/2 + 24, 27 meters, 8 Aux	24,475.00
40.	X	36	D	12	12	27	2	4	36/12/2 + 24, 27 meters, 4 Aux	21,615.00

Patchbay Versions

41.	XPB	32	D	8	8	19	0	8	32/8/2 + 16, 19 meters, 8 Aux	\$24,805.00
42.	XPB	32	D	8	8	19	2	4	32/8/2 + 16, 19 meters, 4 Aux	22,165.00
43.	XPB	24	8	16	16	19	2	4	24/16/2 + 16, 19 meters, 4 Aux	19,635.00
44.	XPB	24	E	16	16	19	2	4	24/16/2 EQ on groups, 4 Aux	20,515.00
45.	XPB	28	D	12	12	27	0	8	28/12/2 + 24, 27 meters, 8 Aux	26,235.00
46.	XPB	28	D	12	12	27	2	4	28/12/2 + 24, 27 meters, 4 Aux	23,925.00

Foldback Versions

47.	S	18	F	8	8	9	0		18/8 Foldback, EQ on output	\$10,945.00
48.	S	18	N	8	8	9	0		18/8 Foldback, no output EQ	9,075.00
49.	L	30	F	12	12	13	0		30/12 Foldback, EQ on output	20,625.00
50.	L	30	N	12	12	13	0		30/12 Foldback, no output EQ	17,875.00
51.	X	40	F	12	12	13	0		40/12 Foldback, EQ on output	23,925.00
52.	X	40	N	12	12	13	0		40/12 Foldback, no output EQ	21,175.00

Note: Optional Phantom Power is available on foldback version at time of order only.



Parts and Options

A.	X or XPB Frame Console Stand	\$ 550.00
B.	Long Frame Console Stand	.500.00
C.	Short Frame Console Stand	.450.00
D.	S1000 Input Module with 4 Aux	.275.00
	when shortloading subtract \$190.00	
E.	S1100 Input Module with 8 Aux	.330.00
	when shortloading subtract \$230.00	
F.	S1200 Stereo Line Input Module	.440.00
	when shortloading subtract \$300.00	
G.	S2000 Effects Send/Return Module	.220.00
H.	S3000 Basic Group Module	.165.00
	when shortloading subtract \$115.00	
I.	S3100 Dual Group Module	.385.00
	when shortloading subtract \$270.00	
J.	S3200 Matrix Group Module	.385.00
	when shortloading subtract \$270.00	
K.	S3300 EQ Group Module	.220.00
	when shortloading subtract \$155.00	
L.	S4000 Master Module	.330.00
M.	SFB1000 Foldback Input Module	.330.00
	when shortloading subtract \$230.00	
N.	SF82000 Foldback Group with EQ	.415.00
	when shortloading subtract \$270.00	
O.	SF82100 Foldback Group without EQ	.165.00
	when shortloading subtract \$115.00	
P.	SF83000 Foldback Master	.330.00
Q.	S9000 Blank Panel	.38.00
R.	1 VU Meter Option (PFL Only) except short frame chassis	.110.00
S.	2 VU Meter Option (L and R) except short frame chassis	.220.00
T.	3 VU Meter Option (PFL + L and R) except short frame chassis	.330.00
U.	Power Supply	1,045.00
V.	Short Frame Flitecase	.580.00
W.	Short Frame Flitecase (extended back)	.690.00
X.	Long Frame Flitecase	.750.00
Y.	Long Frame Flitecase (extended back)	.935.00
Z.	XPB Flitecase	.800.00
AA.	XPB Flitecase (extended back)	.990.00
BB.	P and G Faders (each)	.110.00
CC.	P and G Faders (complete short frame chassis)	.3,025.00
DD.	P and G Faders (complete long frame chassis)	.4,785.00
EE.	P and G Faders (complete extended frame chassis)	.5,665.00
FF.	P and G Faders (complete XPB frame chassis)	.4,785.00
GG.	Transformer balanced per input	.90.00
HH.	Transformer balanced per output	.100.00
II.	Spare parts kit (small)	.195.00
JJ.	Spare parts kit (large)	.495.00
KK.	Extender Card	.50.00
LL.	Owners Manual	.30.00



BCII Audio Production Consoles

- Mono and Stereo input modules
- Stepped input gain control with gain range from +15dB to -70dB covering both microphone and line level signals
- 3-Band equalization with swept mid-frequency control
- 2 or 4 Auxiliary sends
- 6 Output buses to give 4 subgroup/2 main output operation
- AFV (audio follows video) channel on/off remote switching port as standard, with VCA option for remote fading
- Remote start facilities fitted as standard
- Penny & Giles 3000 Series faders
- 3 Chassis sizes allowing up to 24 inputs with 4/2 output, including a full studio console version
- Jackfield options
- Metering options
- Signal processing modules may be fitted in some versions
- Compact size 1.18" W (30mm) module allows 16 modules to fit in 19 inches
- Mains AC or battery operation, using external battery pack
- Balanced inputs and outputs

Chassis Systems Three chassis sizes are provided, but in actuality the three are based commonly on a single chassis unit.

Basic 16-Position Chassis BC/16P/MH is the standard chassis unit, 19" W, and thus suitable for rackmounting. The 16P chassis has 16 module positions. Configurations of these positions are described below, but typical are 8/4/2, 10/4 and 12/2.

The 16P chassis is constructed from precision folded steel and is of robust and durable design. The chassis is suitable for installation in mobile studios and is also portable, especially with the flightcase option.

All internal busing and edge connectors are incorporated into a single large printed circuit motherboard. AFV ports and outputs are accessed via Cannon D-connectors mounted on the motherboard, and optionally, D connectors can be fitted to allow insertion points to be brought up to an external jackfield. Inputs to the channels are via XLR and jack connectors. All connectors are brought out on the rear panel of the chassis. The edge connectors are computer-grade with gold-plated pins.

A meter hood with adjustable tilt is fitted at the rear of the console. Two meters are provided, which may be either VU or BBC-type PPM. Inputs to the meters are selected via a bank of 4 switches.

The talkback microphone is located in the meter hood and space is allowed for the installation of a Pfl speaker if required.

The power supply is an external 19" rackmounting unit which gives not only DC rail voltages but also a +48VDC. An external battery supply is also available.

Extender Chassis BC/16/PX is a 16-position, 19" extender chassis which is bolted on to the main chassis to be fitted. The 16/PX is essentially the 16P/MH chassis without the meter hood and power supply.

The addition of the extender chassis is a factory retrofit only.

Studio Chassis BC/32SC is a complete floor-standing console version of the BCII with 32 module positions. In broad terms the SC version comprises two 16-position chassis mounted in a console which also includes a 19" rackmounting bay suitable for a jackfield; a meter hood in which may be mounted various combinations of metering and signal processing devices; and, at the front, a script area.

BCII Audio Production Consoles (Cont'd.)

The actual console input-output configurations which may be obtained using the BC/32SC are identical to those available in the combinations of the two 16-position chassis, but with the benefit of being able to incorporate additional equipment harmoniously into the system.

Two types of jackfield are available, either 1/4" type or TT (bantam). The 1/4" jackfield incorporates 48 sockets in two rows of 24, while the TT jackfield incorporates 96 sockets in two rows of 48.

The standard metering provided on the BC/32SC is 7 VU meters, 4 for subgroups, Left, Right and Pfl. A knockout is provided for fitting the optional Phase Correlation meter.

The Pre-fade Listen speaker is an option.

The meter hood of the BC/32SC may be used to house signal processing devices. Two are provided for the BCII system. These are:

- BC/COMP, which is a combined compressor-limiter; and
- BC/EQ, which is a 3-band equalizer

These devices would normally be brought up to sockets in the jackfield and would be patched according to requirement.

Configurations of the BCII The scope of the BCII system is large. The modules and their options cover a great number of possible requirements. However, the basic configurations available can be described briefly.

In the BCII/16P/MH Chassis The outputs of the mixer can be arranged in three standard ways, and this arrangement in turn determines how many inputs will fit in the chassis.

In every case, one BC1145 Auxiliary Master Module and one BC1155 Dual Monitor Module must be fitted (BC1156 Single Monitor is an optional replacement for BC1155).

Outputs can be set-up as either stereo, 4 out, or 4 subgroups mixed to 2. Given that there are 16 positions in the chassis, and 2 must be used for BC1145/BC1155, then the standard configurations are: • 8/4/2 • 10/4 • 12/2.

Variations are possible, for example, using the BC1136 stereo output module, the 10/4 could be expanded to 12/4 providing that it would be satisfactory to have the 4 outputs controlled by 2 stereo faders. A mono output may also be derived.

It is also possible to mix quantities of mono and stereo input modules as required, so that, for example, the 12/2 could be comprised of 6 stereo and 6 mono inputs.

Within this basic framework it is then possible to add other options, such as extra auxiliary sends, VCA's, direct outputs, and so on.

Using BC/16P/MH with BC/16PX Joining the extender chassis to the main chassis gives an extra 16 module positions. Normally these will be used for either mono or stereo inputs, and the extended configurations become: • 24/4/2 • 26/4 • 28/2.

From this point of departure the other optional additions can be added as required.

The extender chassis is a factory retrofit only.

Using the BC/32SC The studio chassis is, in essence, the extended standard chassis housed in a large frame. This allows the addition of extras such as jackfields to make up a full studio console.

The actual input-output configurations are the same as those described above for the 32-position expanded chassis.

The script table, located in front of the modules, is suitable for remotes, locators, scripts, etc.

The meter hood is 2-U high and has space not only for meters but also for signal processing devices made by this company; the dynamics unit and the equalizer.

A few minor variants on the meter hood configuration are available for the studio chassis version.

Typical Portable Versions

BCII—10/4 with 10 Mono Mic/Line Inputs . . \$11,575.00
Includes:

- 10 x BC1115 Mono Mic/Line Input Module
- 4 x BC1135 Single Output Module
- 1 x BC1145 Aux Master Module
- 1 x BC1155 Dual Monitor Module
- 1 x BC/16P/MH Chassis

AMEK/TAC U.S. OPERATIONS

Audio Consoles

BCII Audio Production Consoles (cont'd)
Typical Portable Versions

BCII—10/4 with 10 Mono Mic/Line Inputs

Includes:

10 x BC1115	Mono Mic/Line Input Module	
4 x BC1135	Single Output Module	
1 x BC1145	Aux Master Module	
1 x BC1155	Dual Monitor Module	
1 x BC/16P/MH	Chassis	\$12,750.00

BCII—10/4 with 6 Stereo Line and 4 Mono Mike/Line Inputs

Includes:

4 x BC1115	Mono Mike/Line Input Modules	
6 x BC1118	Stereo Line Input Modules	
4 x BC1135	Single Output Module	
1 x BC1145	Aux Master Module	
1 x BC1155	Dual Monitor Module	
1 x BC/16P/MH	Chassis	\$14,700.00

BCII—8/4/2 with 8 Mono Mike/Line Inputs

Includes:

8 x BC1115	Mono Mike/Line Input Module	
4 x BC1125	Single Subgroup Module	
2 x BC1135	Single Output Module	
1 x BC1145	Aux Master Module	
1 x BC1155	Dual Monitor Module	
1 x BC/16P/MH	Chassis	\$12,575.00

BCII—12/2 with 12 Mono Mike/Line Inputs

Includes:

12 x BC1115	Mono Mike/Line Input Module	
2 x BC1135	Single Output Module	
1 x BC1145	Aux Master Module	
1 x BC1155	Dual Monitor Module	
1 x BC/16P/MH	Chassis	\$12,900.00

BCII—24/4/2 with 24 Mono Mike/Line Inputs

Includes:

24 x BC1115	Mono Mike/Line Input Module	
4 x BC1125	Single Subgroup Module	
2 x BC1135	Single Output Module	
1 x BC1145	Aux Master Module	
1 x BC1155	Dual Monitor Module	
1 x BC/16P/MH	Chassis	
1 x BC/16PX	Extension Chassis	\$24,775.00

BCII—24/4/2 with 12 Stereo Line and 12 Mono Mike/Line Inputs

Includes:

12 x BC1118	Stereo Line Input Module	
8 x BC1115	Mono Mike/Line Input Module	
4 x BC1125	Single Subgroup Module	
2 x BC1135	Single Output Module	
1 x BC1145	Aux Master Module	
1 x BC1155	Dual Monitor Module	
1 x BC/16P/MH	Chassis	
1 x BC/16PX	Extension Chassis	\$28,750.00

Typical Studio Chassis Versions

BCII/SC—24/4/2 with 24 Mono Mike/Line Inputs

Includes:

24 x BC1115	Mono Mike/Line Input Module	
4 x BC1125	Single Subgroup Module	
2 x BC1135	Single Output Module	
1 x BC1145	Aux Master Module	
1 x BC1155	Dual Monitor Module	
1 x BC/32SC	Chassis	\$33,425.00

BCII/SC/JFL—24/4/2 with 24 Mono Mike/Line Inputs and Jackfield

Includes:

24 x BC1115	Mono Mike/Line Input Module	
4 x BC1125	Single Subgroup Module	
2 x BC1135	Single Output Module	
1 x BC1145	Aux Master Module	
1 x BC1155	Dual Monitor Module	
2 x Option #46	1/4 Jackfield	
1 x BC/32SC	Chassis	\$36,200.00

BCII/SC/JFL—24/4/2 with 12 Stereo Line and 12 Mono Mike/Line Inputs

Includes:

12 x BC1115	Mono Mike/Line Input Module	
12 x BC1118	Stereo Line Input Module	
4 x BC1125	Single Subgroup Module	
2 x BC1135	Single Output Module	
1 x BC1145	Aux Master Module	
1 x BC1155	Dual Monitor Module	
2 x Option #46	1/4 Jackfield	
1 x BC/32SC	Chassis	\$40,125.00

BCII/SC/JFL—24/4/2 with 12 Stereo Line and 12 Mono Mike/Line Inputs

VCAs on all inputs for complete Audio Follows Video, 8 BC/COMP

Compressor/Limiters brought up to Jackbay

Includes:

12 x BC1116	Mono Mike/Line Input Module	
12 x BC1119	Stereo Line Input Module	
4 x BC1125	Single Subgroup Module	
2 x BC1135	Single Output Module	
1 x BC1145	Aux Master Module	
1 x BC1155	Dual Monitor Module	
12 x BC/COMP	Compressor/Limiter Modules	
3 x Option #46	1/4 Jackfield	
1 x BC/32SC	Chassis	\$52,175.00

The large number of modules and options make it impossible to include all possible BCII configurations. Many others are possible.

Individual Module Pricing

BC1115	Mono Mike/Line Input	\$ 575.00
BC1116	Mono Mike/Line Input with VCA	750.00
BC1118	Stereo Line Input	910.00
BC1119	Stereo Line Input with VCA	1,150.00
BC1125	Single Subgroup	500.00
BC1126	Single Subgroup with Compressor/Limiter	1020.00
BC1135	Single Output Module	500.00
BC1136	Stereo Output Module	910.00
BC1137	Single Output Module with Compressor/Limiter	1020.00
BC1145	Aux Master Module (2 Send Masters)	550.00
BC1146	Aux Master Module (4 Send Masters)	970.00
BC1155	Single Monitor Module	575.00
BC1156	Dual Monitor Module	1020.00
Blank Module		50.00

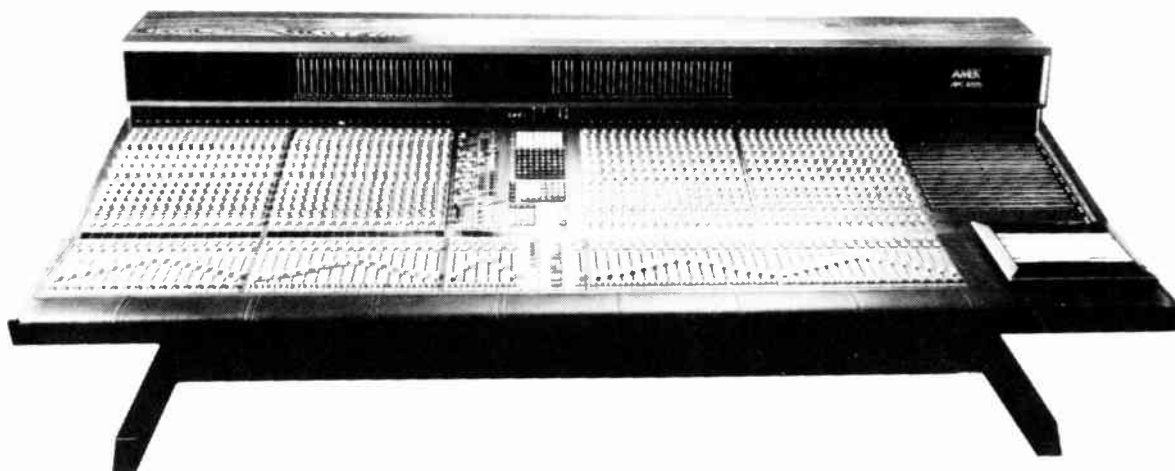
Chassis Types

BC/16P/MH	16 Position Chassis, Meter Hood, 2 VUs, PSU	\$ 3,850.00
BC/16RM/MH	As above except rack or flush mounting	3,850.00
BC16RM	As above except drop-in chassis/36" cable to meter hood	3,850.00
BC/16PX	16 Position Extender Chassis	3,000.00
BC/32SC	Studio Chassis, 32 Position, Rack Bay, Floor Stand	15,450.00

Components/Options

BC/DO/E	Direct Output, Electronically Balanced (per channel)	\$ 165.00
BC/DO/T	Direct Output, Transformer Balanced (per channel)	220.00
BC/VCA/S	Single VCA Card (retrofit)	165.00
BC/VCA/D	Dual VCA Card for stereo input channel (retrofit)	250.00
BC/4AUX	Addition of 2 Extra Sends per input module	85.00
Extra VU Meter (Sifam R22)		195.00
BBC Type PPM Meter (retrofit)		470.00
Extra BBC Type PPM Meter		360.00
Phase Correlation Meter (BC/32SC only)		495.00
PFL Speaker		495.00
Spare Power Supply Unit		1050.00
Battery Pack for field use		POR
FLITECASE (BC/16P/MH)		635.00
FLITECASE (BC/16P/MH + BC/16PX)		750.00
1/4" Jackstrip (wired)		1,375.00
TT Jackstrip (wired)		2,035.00
FX Jackstrip (TT Jackstrip wired to 4 Elco Multiways)		1,895.00
BC/COMP Compressor/Limiter		720.00
BC/EQ 3-Band Equalizer		550.00
Spare Service Manual		55.00
Spare Parts Kit		POR

Refer to Green Section for Addresses and Telephone Numbers.



APC 1000 Assignable Production Consoles

The flexible chassis system allows many different input configurations to be created easily. The central keyboard control for assigning module switching functions allows multiples of console routing and switching setups to be recalled either as snapshots or as dynamic routing adjustments in real time synchronized to timecode, and a 'recall' of rotary knob positions using novel and simplified setting up procedures is provided. The console is fitted with AFV (Audio Follows Video) ports as standard; and two levels of fader automation are available as part of the sophisticated systems control technology.

The console may have up to 128 computer-controlled modules.

The central assignment section is comprised of separate keyboards for recall, for individual module configuration, and for memory management.

Almost all the switch functions are removed from the individual modules and relocated to a master assignment panel. Several other functions also retain individual local switches for preview or effects use. The removal of the switches also makes the rotary controls clearer.

Switch functions controlled from the keyboard include:

- Channel input selection, with + 48V, Phase, etc.
- Equalization in/out, including pass filters separately
- Auxiliary output bus selection, with pre/post and in/out
- Up to 48 routing buses and 8 stereo buses
- Characteristics of the (optional) Dynamics section

To access the keyboard from an input module, an 'INT' (Interrogate) button on the module is pressed. The configuration keyboard will then

illuminate, showing which functions have already been selected. If these selections are to be changed, the appropriate switches on the keyboard are pressed and the new setup is stored in RAM.

When the engineer has configured all the input channels and track selection, the setup positions may be stored as a Page in the memory for long-term Reset usage. Thus if the console is used by different engineers and in several applications, the various setup configurations may be stored as pages in the RAM and reset as each new engineer begins work.

A quick visual check of the configuration and selection of switches, buses, etc. can be made using the keyboard and is displayed by a large LED located in the meter hood behind each input module strip. Should the engineer want to check, for example, which channels are selected 'Eq In', he simply puts the keyboard to 'Display' mode and presses the 'Eq' button. The LED behind all those channels selected 'Eq In' will then illuminate. This simple procedure can be followed for all keyboard-assigned functions.

Banks of assignment LEDs are not fitted to individual input channels, since research has shown that this display method does not enhance operational convenience.

Recall of input channel rotary control positions is enabled using the recall keyboard together with the segment displays located behind each module. Each display compares the actual and memorized position. Recall is displayed by function and not by channel. For example, recall the high pass filter and the segment displays immediately show all high pass filter settings for the console.

(Cont'd)

AMEK/TAC U.S. OPERATIONS

Production
Consoles**APC1000 Assignable Production
Consoles (cont'd)**

A flexible chassis system has been designed which will accommodate various configurations of consoles, and also to include jackfields. The width of individual channel modules is 30.125mm, which means that a large number of inputs will fit into a much smaller area than at present, eliminating the need for a separate effects returns panel. For example, 48 channels will fit into a width of 6' (1830mm). The addition of a jackfield and wooden trim panels (if required) will of course lengthen the console, but offboard jackfields for mounting in a separate rack are a standard option.

Dynamics modules which are the same width as the channels may be located in the meter hood.

All channels have a separate horizontal fader section at the front. Various different types of fader units are available, including, as standard, a VCA-fader with digital grouping which may be interfaced to the Audio Kinetics Mastermix computer; and a motor-driven fader which is linked to the GML computer.

A central 11.8" (300mm) chassis section has a minimum of six module positions occupied by the central assignment section. Master monitor output and auxiliary send modules also located in this section.

The 48 buses may be configured for 48-track recording, as 48 mono subgroups, as 24 stereo subgroups, etc., as required; the console may, of course, be set up with less than the full amount of buses and in principle could even be supplied as a 6 into 1, or 12 into 2. The general configuration of the APC1000 console is (n) inputs with routing up to 48 buses and eight independent stereo buses, from each input. The maximum amount of computer controlled modules which may be used in any one console is 128. Within this framework almost any variant is possible.

When used as a large multitrack console, the APC1000 should be configured with a number of input modules suitably greater than the number of tracks being used to provide adequate amounts of channels for sources and effects. For example, 88 inputs could be a suitable number for a large production studio with 48 track facilities, using 48 for tape returns and 40 for effects and sources. A multi-function 'Trim' pot is incorporated into each input module allowing for a secondary signal path to be set up for dual-channel operation or as an additional auxiliary send with output to the multitrack routing.

APC1000 With Digital Creations Disk Mix VCA Fader System**32 Input Chassis**

APC 1000/16 (32) DC/R	\$121,750.00
APC 1000/32 DC/R	198,750.00

48 Input Chassis

APC 1000/32 (48) DC/R	\$215,000.00
APC 1000/40 (48) DC/R	240,250.00
APC 1000/48 DC/R	266,450.00
APC 1000/48 DC/R/48 Dynamics	299,250.00

64 Input Chassis

APC 1000/32 (64) DC/R	\$235,750.00
APC 1000/40 (64) DC/R	262,500.00
APC 1000/48 (64) DC/R	285,650.00
APC 1000/56 (64) DC/R	310,750.00
APC 1000/64 DC/R	334,500.00
APC 1000/48 (64) DC/R/48 Dynamics	319,650.00
APC 1000/56 (64) DC/R/48 Dynamics	345,500.00
APC 1000/64 DC/R/48 Dynamics	365,750.00

Individual Module Prices

APC 115 DC/R	\$ 3,115.00
APC 115 GML/R	3,625.00
Dynamics Module	710.00
Blank Module	60.00

APC1000 with the GML Moving Fader System**32 Input Chassis**

APC 1000/32 GML/R	\$247,375.00
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48 Input Chassis

APC 1000/32 (48) GML/R	262,600.00
APC 1000/40 (48) GML/R	288,550.00
APC 1000/48 GML/R	314,450.00
APC 1000/48 GML/R/48 Dynamics	343,350.00

64 Input Chassis

APC 1000/32 (64) GML/R	278,850.00
APC 1000/40 (64) GML/R	304,750.00
APC 1000/48 (64) GML/R	330,675.00
APC 1000/56 (64) GML/R	356,625.00
APC 1000/64 GML/R	382,500.00
APC 1000/48 (64) GML/R/48 Dynamics	359,550.00
APC 1000/56 (64) GML/R/48 Dynamics	385,475.00
APC 1000/64 GML/R/48 Dynamics	411,375.00

80 Input Chassis

APC 1000/40 (80) GML/R	321,000.00
APC 1000/48 (80) GML/R	346,900.00
APC 1000/56 (80) GML/R	372,800.00
APC 1000/64 (80) GML/R	398,750.00
APC 1000/80 GML/R	450,550.00
APC 1000/48 (80) GML/R/48 Dynamics	375,800.00
APC 1000/56 (80) GML/R/48 Dynamics	401,700.00
APC 1000/64 (80) GML/R/48 Dynamics	427,600.00
APC 1000/80 GML/R/48 Dynamics	479,450.00

96 Input Chassis

APC 1000/96 GML/R/48 Dynamics	625,750.00
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112 Input Chassis

APC 1000/112 GML/R/48 Dynamics	745,000.00
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128 Input Chassis

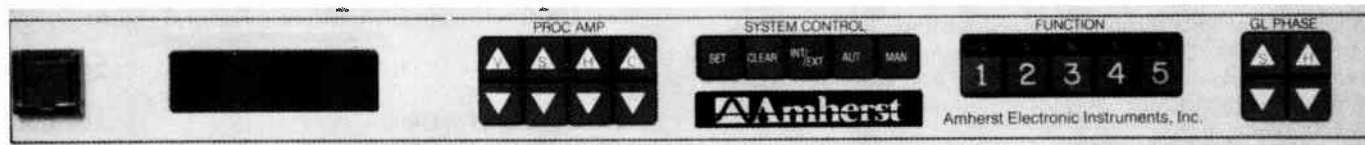
APC 1000/128 GML/R/48 Dynamics	825,750.00
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Please Note:

- Maximum number of faders controllable by Digital Creations DiskMix is 64; by GML computer, 128
- "Recall" of knob settings, "Dynamic Reset" of switch settings and "Synchronous Reset" of switches are all included in this price
- The GML computer gives real-time control of not only mutes and motorized faders but also allows increased use of the Synchronous Reset and the (REM) remote switching functions
- The AMEK VCA Faders can be switched to bypass the VCA completely. Mute automation is still available when the VCA is bypassed
- All chassis prices include 48 plasma meters normally distributed to 48 buses, and 4 VUs, for the stereo bus and master monitor output. The 32 input chassis only includes 24 plasma meters. Where Dynamics are fitted it may be necessary to add an overbridge to accommodate the metering
- The APC 1000 has a maximum capability of 4 main stereo busses but only one is included in this price. All input modules have 8 auxiliary sends
- The Digital Grouping Fader version of the APC1000 includes the digital creations (ARMS) digital grouping boards, fader computer, Diskmix card and software. We do not supply the IBM PC computer required to run the system
- Frame sizes up to 128 inputs are possible. Typical widths are as follows:

32 Inputs: 74"	48 Inputs: 93"	64 Inputs: 113"
80 Inputs: 132"	96 Inputs: 151"	112 Inputs: 176"
128 Inputs: 190"		

AM-2100 AMHERST INTELLIGENT CONTROLLER



Using advanced microprocessor control, the AM-2100 packs high performance image processing and machine control functions into a rugged, single rack high chassis. Its unique "open bus" design lets you add new functions as you need them, through software.

Standard features include:

- 32-line Time Base Corrector with subcarrier feedback for full bandwidth performance
- RS170A Color Field Sequencer for cleaning up mismatched color frame edits
- Full Proc Amp Controls with presets and front panel LCD display of parameter readings
- SMPTE/EBU Time Code and Control Track Reader
- PC Control from IBM PC or compatible
- Modem Control for remote operation via telephone line, with keyboard override
- Machine Control for VTRs, switchers, etc. Operated from its own front panel or from a PC
- Help menus guide the user as needed
- New functions and updates can be installed in the field
- Multiple units tie together via RS-232, and stack easily with daisy-chain power runs
- Built-in diagnostics can be accessed by phone
- Rear panel circuit breaker resets quickly and eliminates downtime due to blown fuses

Power, expandability, and ease of use make the AM-2100 the ideal tool for broadcast and teleproduction professionals.

Front Panel:

Video adjust, setup adjust, hue adjust, chroma adjust, SCH phase adjust, genlock, (RS-170A) protected power on/off switch and indicator, 16 character x 2 line backlit LCD display, 5 button programmable function control with LED status indicators

Back Panel:

RS-232 (422 on request), GPI port 1, GPI port 2, Slide-out PCB trays, computer reset switch, circuit breaker, Power receptacle, Power outlet

Central Processing Unit:

96-pin Amherst video/computer bus, 8088 processor, 2K to 8K SRAM, 2K increments, 24K EPROM, clock/calendar with battery backup

Modes:

Direct (vertical lock), bypass (E/E)

Specifications

Performance

- Window of Correction:** 32 line window
- Bandwidth:** 4.3MHz, ±0.5dB at unity chroma gain
- Differential Phase:** < 2°
- Differential Gain:** < 2%
- Tilt:** < 1%
- Signal-to-Noise Ratio:** 56dB (plus quantizing effects)

Method

- Digitizing Rate:** 14.3MHz (4X subcarrier)
- Quantization:** 8 bits
- Bus:** Multiplexed, computer/video

Signals

- Video In:** 0.5 to 2.0V p-p into 75 ohms, NTSC
- GL In:** NTSC, RS-170A loop-through, 0.4 to 2.4V p-p
- Video Out (2):** 1V p-p into 75 ohms, NTSC RS-170A
- Advanced Sync Out:** 0.4/4V, selectable, into 75 ohms
- SC Feedback:** 1V p-p (minimum) into 75 ohms

Mechanical

- Dimensions:** 1.75"H x 19"W x 16"D
- Power:** 120VAC, 60Hz, < 30W
- Weight:** 12 lbs.
- AM-2100** \$7750.00

Options

- Sony VO5850/5800 Interface Cable \$250.00
- JVC CR850 Interface Copy 300.00
- Sony BVU-800 Interface Cable 325.00

30mm TUBES**XQ1410 Series Plumbicon® Camera Tube**

1.2" (30mm) diameter Plumbicon television camera tube with high resolution lead oxide photoconductive target, separate mesh construction, magnetic deflection and magnetic focusing and internal light bias. It's intended for highest quality usage in XQ1410L, XQ1410R, XQ1410G and XQ1410B types of color cameras, in broadcast, educational and high quality industrial applications.

The XQ1410 series has increased resolution and internal light bias for reduction of lag under low-key conditions.

XQ1413, XQ1415 Series Plumbicon Camera Tube

1.2" (30mm) diameter Plumbicon camera tube with high resolution lead oxide photoconductive target, with extended red response.

This series is interchangeable with the XQ1023 series, however the XQ1413 series has internal light bias for reduction of lag under low-key conditions.

Tubes of the XQ1415 series are identical to tubes of the XQ1413 Series but incorporate an infrared reflecting filter on the anti-halation glass faceplate.

XQ1430 Series Plumbicon Camera Tube

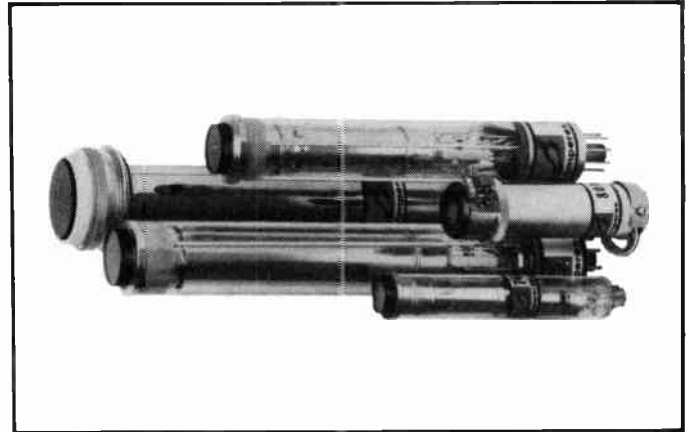
1.2" (30mm) Diameter high resolution, separate mesh, all magnetic Plumbicon television camera tube intended for high quality color studio cameras which have internal prism of front bias lighting. The XQ1435 is an extended red Plumbicon tube for best red response and includes an integral IR filter.

XQ3410 Series Plumbicon Camera Tube

1.2" (30mm) Diameter rear loading high resolution Diode Gun™ (Patent Pending) Plumbicon Television Camera Tube with a 1" scan format for geometry and low capacitance for high sensitivity and high signal-to-noise. Internal bias light provides for low lag characteristics. The XQ3415 is an extended red Plumbicon tube designed for best red response and includes an integral IR filter.

XQ3430 Series Plumbicon Camera Tube

Diode Gun Plumbicon Television Camera Tube with full 30mm scan format for high resolution and low capacitance for high sensitivity with high signal-to-noise ratio. The XQ3435 is the extended red Plumbicon tube in this series. It is designed for the best red response and includes an integral IR filter.

**1" TUBES****XQ1070 Series Plumbicon Camera Tube**

1" (25mm) high resolution Plumbicon television camera tube with low heater power, separate mesh construction, magnetic focusing and deflection.

This series is intended for use in highest quality broadcast camera equipment.

The XQ1070 series is also mechanically interchangeable with 1" diameter vidicons with separate mesh construction and has the same base pin connections.

XQ1075 Series Plumbicon Camera Tube

1" (25mm) High resolution Plumbicon television camera tube with extended red response, and is intended for use in high quality broadcast camera equipment where infrared filtering is required but not present in the camera optical system.

This series is identical to the XQ1075 series with the exception that it does not have an infrared cutoff filter.

XQ2170 Series Plumbicon Camera Tube

A 1" (25mm) Diode Gun High Resolution Plumbicon Camera Tube. High sensitivity, high resolution, low lag television pick-up tube with lead oxide photoconductive layer, separate mesh and all magnetic deflection and focus. The electron gun assembly is designed to significantly improve resolution and lag. It operates in a diode mode. The beam has a uniform energy distribution, improved beam acceptance and speed of response, and enhanced resolution. The gun also provides very high beam reserve, minimizing comet tailing and blooming in cameras with dynamic beam control.

Note that while the XQ2170 series is mechanically interchangeable with the XQ1070 series, the "diode gun" requires a positive grid 1 voltage (up to +20V) and draws a positive grid current of up to 5mA. Cameras designed around XQ1070 then, must be modified to accommodate this.

©T.M.N.V. Philips of Holland

AMPEREX ELECTRONIC CO.*Camera Tubes***1" TUBES****XQ1500 Series Plumbicon® Camera Tubes**

1" (25mm) High resolution Plumbicon Television Camera Tube which features the Anti-Comet Tail (ACT) gun designed to handle highlights up to four f/stops over peak white. The internal light bias reduces lag to a minimum. The XQ1505 extended red Plumbicon tube for best red response incorporates an infrared reflecting filter on the anti-halation glass faceplate.

XQ3070 Series Plumbicon Camera Tube

1" (25mm) Diameter Plumbicon with high resolution lead oxide photoconductive layer with Diode Gun™ (Patent Pending) construction and high beam reserve for cameras with DBC. Light bias for low lag. Low output capacitance for high signal-to-noise ratio. The XQ3075 extended red Plumbicon tube provides for the best red response and includes an integral IR filter on the anti-halation button.

2/3" TUBES**XQ4187 (85XQ) Plumbicon Camera Tube**

2/3" (17.8mm) Diameter Plumbicon Television Camera Tube with Diode Gun for dynamic beam control DBC and low output capacitance for best signal-to-noise ratio. The R, G, and B has a high resolution lead oxide photoconductive layer, Electrostatic Focus magnetic deflection with high stability (HS) electrode structure. It requires very low power and has low deflection field damping.

XQ3467 Series Plumbicon Camera Tube

2/3" (17.8mm) Diameter Plumbicon Television Camera Tube with lead oxide, high resolution layer. The R, G, and B employs a triode gun with Electrostatic Focus and Magnetic Deflection.

XQ3457 (87XQ) Series Plumbicon Camera Tube

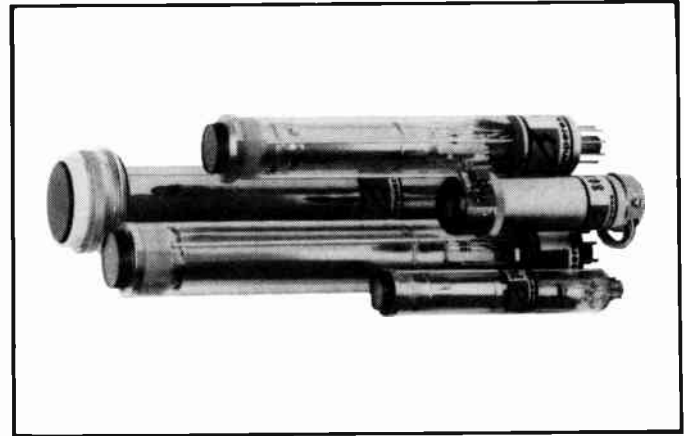
2/3" (17.8mm) Diameter Plumbicon Television Camera Tube with high resolution lead oxide layer, Magnetic Focus and Electrostatic Deflection (MS). The R, G, and B incorporates the Diode Gun for dynamic beam control DBC, Low Capacitance for high signal-to-noise ratio and is only 87.5mm long for smaller cameras.

XQ2427 Series Plumbicon Camera Tube

2/3" (17.8mm) Diameter Plumbicon Television Camera Tubes with special high resolution lead-oxide photoconductive target, low heater power, magnetic focusing and deflection.

Special features are:

- Photoconductive target for increased resolution
- Diode Electron Gun for DBC (Dynamic Beam Control) to minimize comet tailing and blooming

**XQ3427 Series Plumbicon Camera Tube**

2/3" (17.8mm) Diameter Plumbicon Television Camera Tubes with special high resolution lead-oxide photoconductive target, low heater power, magnetic focusing and deflection.

Special features are:

- Photoconductive target for increased resolution
- Diode Electron Gun for DBC (Dynamic Beam Control) to minimize comet tailing and highlight blooming
- Low output capacitance for high signal-to-noise ratio

XQ1427 Series Plumbicon Camera Tube

2/3" (17.7mm) Plumbicon Television Camera Tube with high resolution lead oxide photoconductive target, separate mesh construction, low heater power, magnetic deflection and magnetic focusing.

The XQ1427R, XQ1427G, and XQ1427B types are intended for use in color cameras in Field Production, Broadcast Studio, Electronic News Gathering, educational and high quality industrial applications.

1/2" TUBE**XQ4087 (80XQ) Plumbicon Camera Tube**

1/2" (8mm scan diagonal) Plumbicon Television Camera tube with low heater power, magnetic deflection and electrostatic focusing, assembled with a DT1120 small lightweight deflection unit.

Special features are:

- Diode electron gun for DBC (Dynamic Beam Control), which minimizes comet tailing and blooming
- Low output capacitance achieved by a special signal plate with contact through the window
- Low deflection field damping by wall electrodes
- Excellent geometry and registration capability
- Reduced line pick-up due to side connection of the mesh
- Low power consumption due to electrostatic focus

The XQ4087 tubes are intended for color and monochrome cameras in broadcast (Electronic News Gathering), educational and high quality industrial applications.

AMPEREX ELECTRONIC CO.

*Vidicon/Newvicon
Camera Tubes*

Antimony Trisulfide Vidicons

Type	Length mm/in.	Mesh Construction I - Integral S - Separate	Focus- ing Method	Deflec- tion Method	Max Image Size mm (Scan diagonal)	Heater		Typical Operation Conditions (2856 K Source)					Application Remarks
						Current (mA)	Power (Watts)	Sensitivity		Response (4 x 3 Aspect)			
								At Dark Current (nA)	Output Signal nA at F.C.	At Mesh Voltage	Amp Response at 400 TV Lines/PH (%)	Limiting Resolution (TV-Lines) or (Line Pair/ mm)	
XQ1240	159 6.260	S	M	M	16	95	0.6	20	300 at 0.1	425 950	50 65	750 1000	1" X-Ray (Medical and Industrial)
XQ1241	159 6.260	S	M	M	16	95	0.6	20	300 at 0.1	425 950	50 65	750 1000	1" Industrial
XQ1280	159 6.260	S	M	M	16.2	95	0.6	20	150 at 0.1	425 950	—	60LP/mm	1" Ultra High Resolu- tion
XQ1285	159 6.260	S	M	M	15.8	95	0.6	20	150 at 0.1	425 950	—	50LP/mm	1" with Fiber Optic Face plate for Medical or In- dustrial X-Ray Equipment
XQ1270/ 20PE11	108 4.235	I	M	M	11	95	0.6	20	200 at 0.1	400	35	500	1" with Fiber Optic Face plate for Medical and con- sumer CCTV applications
XQ1271/ 20PE13	108 4.235	S	M	M	11	95	0.6	20	200 at 0.1	400	35	500	2/3" Industrial and con- sumer CCTV applications
XQ1272/ 20PE14	108 4.235	S	E	M	11	95	0.6	20	200 at 0.1	600	35	500	2/3" Industrial CCTV applications with elec- trostatic focus
XQ1600/ S4152	85 3.35	S	E	M	8	105	0.3	10	120 at 0.1	550	> 20	450	1/2" Miniature, electro- static focus

Newvicons

XQ1440/ S4076	159 6.260	S	M	M	16	95	0.6	—	240 at 0.5	500	50	800	1" Industrial CCTV appli- cation
XQ1442/ S4093	160 6.299	S	M	M	16	95	0.6	—	240 at 0.5	500	50	650	1" Industrial CCTV appli- cation with fiber optic faceplate
XQ1274/ S4075	108 4.235	S	M	M	11	95	0.6	—	260 at 0.1	400	35	650	2/3" Industrial CCTV application
XQ1275/ S4092	108 4.235	S	E	M	11	95	0.6	—	260 at 0.5	35 to 55	30	600	2/3" Industrial CCTV application with elec- trostatic focus
XQ1601/ S4162	85 3.35	S	E	M	8	105	0.3	—	110 at 0.1	550	> 20	450	1/2" Miniature electro- static focus

Deflection and Focusing Coil Units

Type	Max. Out Side Dia. (mm)	Overall Length (mm)	Weight (g)	Inductance (mH)		Resistance (ohms)			Current (mA)			Tube Diameter	Remarks
				Line Deflec- tion Coils	Frame Deflec- tion Coils	Line Deflec- tion Coils	Frame Deflec- tion Coils	Focus Coil	Line Deflec- tion Coils	Frame Deflec- tion Coils	Focus Coils		
AT1116	60.4	136.7	615	0.78	28	2.4	62	149	300 p-p	43 p-p	105	1"	Front load, for B/W and color applications
KV-12S	46	84	300	0.86	28.7	3.2	146	55	160 p-p	25 p-p	120	2/3"	Front load, for B/W appli- cations
KV-19G	30	80	56	0.9	23	4.6	146	—	160 p-p	25 p-p	—	2/3"	Front load, "Electro- Magnetic" for B/W applications

Prices and Specifications Subject to Change Without Notice.

AMPEX CORP.

Audio Tape

Professional Audio Tape

631 Series 1.5 Mil Polyester

Catalog No.	Description	Ctn. Qty.	Price
631-131111	1/4" x 600' 5" P	40	\$ 5.82
631-151111	1/4" x 1200' 7" P	40	8.76
631-173111	1/4" x 2500' 10 1/2" NAB	10	26.38

641 Series 1.0 Mil Polyester

641-131111	1/4" x 900' 5" P	40	\$ 7.29
641-151111	1/4" x 1800' 7" P	40	12.23
641-173111	1/4" x 3600' 10 1/2" NAB	10	32.07

632—1.5 Low Noise High Output

632-131111	1/4" x 600' 5" P	40	\$ 6.44
632-151111	1/4" x 1200' 7" P	40	9.63
632-173111	1/4" x 2500' 10 1/2" NAB	10	30.69

642—1.51 Mil Low Noise High Output

642-131111	1/4" x 900' 5" P	40	\$ 8.03
642-151111	1/4" x 1800' 7" P	40	13.23
642-173111	1/4" x 3600' 10 1/2" NAB	10	39.34

**651 Series 0.5 Mil Tensitized Polyester
(0.4 Mil Oxide Coating Thickness)**

651-131111	1/4" x 1200' 5" P	40	\$ 11.28
651-151111	1/4" x 2400' 7" P	40	18.76

**661 Series 0.5 Mil Polyester
(0.2 Mil Oxide Coating Thickness)**

661-131111	1/4" x 1800' 5" P	40	\$ 13.67
661-151111	1/4" x 3600' 7" P	40	23.00

Professional Audio Cassettes

672 Series Packaged Cassette (Clear Box, Black Shell)

Catalog No.	Description	Ctn. Qty.	Price
672-C30PB	30 min.	20	\$.87
672-C45PB	45 min.	20	.93
672-C60PB	60 min.	20	1.03
672-C90PB	90 min.	20	1.27

(Bulk Cassettes—White Shell)

672-C30BW	30 min.	100	\$.67
672-C45BW	45 min.	100	.73
672-C60BW	60 min.	100	.81
672-C90BW	90 min.	100	1.05

(Bulk Cassettes—Black Shell)

672-C30BB	30 min.	100	\$.67
672-C45BB	45 min.	100	.73
672-C60BB	60 min.	100	.81
672-C90BB	90 min.	100	1.05



**406 Series 1.5 Mil Polyester Low Noise,
High Output Backcoated Mastering Tape**

Catalog No.	Description	Ctn. Qty.	Price
406-131131	1/4" x 600' 5" P	40	\$ 10.66
406-151131	1/4" x 1200' 7" P	40	14.21
406-17313J	1/4" x 2500' 10 1/2" NAB	10	34.96
406-17613T	1/4" x 2500' PH (Bulk)	10	18.03
406-17613C	1/4" x 2500' PH (SUB)	10	21.14
406-272131	1/2" x 2500' MH	7	45.15
406-273131	1/2" x 2500' x 10 1/2" NAB	7	54.31
406-293131	1/2" x 5000' 14" NAB	7	131.81
406-572131	1" x 2500' MH	5	89.48
406-573131	1" x 2500' 10 1/2" NAB	5	96.85
406-593131	1" x 5000' 14" NAB	5	223.82
406-97G131	2" x 2500' 10 1/2" PREC	2	204.39
406-99G131	2" x 5000' 14" PREC	2	478.30

407 Series—1.0 Mil Polyester

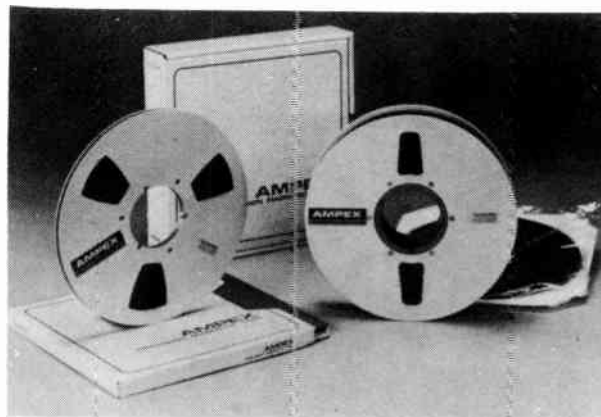
407-131131	1/4" x 900' 5" P	40	\$ 12.59
407-15113J	1/4" x 1800' 7" P	40	17.49
407-17313J	1/4" x 3600' 10 1/2" NAB	10	47.48
407-17613T	1/4" x 3600' PH (BulkT)	10	26.34
407-272131	1/2" x 3600' MH	7	62.69
407-273131	1/2" x 3600' 10 1/2" NAB	7	72.66
407-572131	1" x 3600' MH	5	123.23
407-573131	1" x 3600' 10 1/2" NAB	5	135.36
407-97G131	2" x 3600' 10 1/2" PREC	2	283.59

456 Series "Grand Master"—1.5 Mil Polyester

456-151111	1/4" x 1200' 7" P	40	\$ 17.31
456-17311J	1/4" x 2500' 10 1/2" NAB	10	40.13
456-17611C	1/4" x 2500' PH (SUB)	10	29.08
456-17611T	1/4" x 2500' PH (Bulk)	10	22.54
456-18341J	1/4" x 3750' 12 1/2" NAB	10	65.89
456-19311J	1/4" x 5000' 14" NAB	10	78.82
456-19611T	1/4" x 5000' PH (Bulk)	10	40.57
456-272111	1/2" x 2500' MH	7	56.26
456-273111	1/2" x 2500' 10 1/2" NAB	7	69.88
456-283411	1/2" x 3750' 12 1/2" NAB	7	116.41
456-293111	1/2" x 5000' 14" NAB	7	161.26
456-572111	1" x 2500' MH	5	110.04
456-573111	1" x 2500' 10 1/2" NAB	5	120.95
456-593111	1" x 5000' 14" NAB	5	279.45
456-97G111	2" x 2500' 10 1/2" PREC	2	261.93
456-99G111	2" x 5000' 14" PREC	2	612.88
456-99G11F	2" x 5000' 14" PS	2	628.05

AMPEX CORP.

Audio Tape



Audio Duplicating Tape

Open Reel Tape — Standard Output Polyester

Cat. No.	Description	Ctn. Qty.	Price
631-17611T	1/4" x 2500' PH 1.5 mil	10	\$ 6.10
631-19611T	1/4" x 5000' PH 1.5 mil	10	11.46
641-17611T	1/4" x 3600' PH 1.0 mil	10	9.59
641-19611T	1/4" x 7200' PH 1.0 mil	10	15.34

Open Reel Tape — Low Noise — High Output Polyester

632-17611T	1/4" x 2500' PH 1.5 mil	10	\$ 6.48
632-19611T	1/4" x 5000' PH 1.5 mil	10	12.05
642-17611T	1/4" x 3600' PH 1.0 mil	10	8.56
642-19611T	1/4" x 7200' PH 1.0 mil	10	14.18

Open Reel Tape — Low Noise — High Output Polyester — Backcoated

406-17613T	1/4" x 2500' PH 1.5 mil	10	\$ 11.94
407-17613T	1/4" x 3600' PH 1.0 mil	10	16.46
456-17611T	1/4" x 2500' PH 1.5 mil	10	15.03
457-17611T	1/4" x 3600' PH 1.0 mil	10	22.98

Low Noise — High Output Premium Performance Type I

615-F76BMI	150 mil x 8200' 0.5 mil Black HUB, C-60	30	\$ 6.56
615-F76ZMI	150 mil x 10,100' 0.5 mil Black HUB, C-60	30	8.08
616-F76XMI	150 mil x 11,500' 0.33 mil Gray HUB, C-90	30	10.35
616-F76RMI	150 mil x 13,250' 0.33 mil Gray HUB, C-90	30	11.93

Low Noise — Extended Range Pure Chrome Type II

619-F76BMI	150 mil x 8200' 0.5 mil Black HUB, C-60	30	\$ 9.51
620-F76XMI	150 mil x 11,500' 0.33 mil Gray HUB, C-90	30	13.92
619-F76ZMI	150 mil x 10,100' 0.5 mil Black HUB, C-60	30	11.72

Digital Audio Mastering Tape

467 Series High Energy Digital Audio Tape

Cat. No.	Description	Ctn. Qty.	Price
467-173J1J	1/4" x 4600' 10 1/2" NAB Reel	10	\$ 131.97
467-17HJ1J	1/4" x 4600' 10 1/2" Heavy-duty precision reel	10	147.30
467-18H91J	1/4" x 7200' 12 1/2" Heavy-duty precision reel	10	217.21
467-19HR1J	1/4" x 9700' 14" Heavy-duty precision reel	10	274.22
467-27GJ11	1/2" x 4600' 10 1/2" Heavy-duty precision reel	7	178.08
467-28G911	1/2" x 7200' 12 1/2" Heavy-duty precision reel	7	264.24
467-29GR11	1/2" x 9700' 14" Heavy-duty precision reel	5	354.56
467-57GJ11	1" x 4600' 10 1/2" Heavy-duty precision reel	5	308.46
467-58G911	1" x 7200' 12 1/2" Heavy-duty precision reel	5	509.96
467-59GR11	1" x 9700' 14" Heavy-duty precision reel	5	651.61

467 Series Digital U-Matic Cassettes — Shelf Box

Cat. No.	Description	Ctn. Qty.	Price
467-DA-30	3/4" Digital Audio Cassette, 30 Minutes	10	\$ 41.58
467-DA-60	3/4" Digital Audio Cassette, 60 Minutes	10	55.23
467-DA-75	3/4" Digital Audio Cassette, 75 Minutes	10	77.75
467-DA-80	3/4" Digital Audio Cassette 80 Minutes	10	81.84

467 Series Digital U-Matic Cassettes — Shippers

467-DA-30S	3/4" Digital Audio Cassette, 30 Minutes	10	\$ 42.08
467-DA-60S	3/4" Digital Audio Cassette, 60 Minutes	10	55.73
467-DA-80S	3/4" Digital Audio Cassette, 80 Minutes	10	82.34

Audio Tape Accessories

Plastic Reels — No Logo, in Boxes

Cat. No.	Description	Ctn. Qty.	Price
A-413D	1/4" x 5" P, white box	40	\$ 1.49
A-41397	1/4" x 5" P, gray Ampex box	40	1.39
A-414D	1/4" x 7" P, white box	40	1.89
A-41467-11	1/4" x 7" P, gray Ampex box	40	1.59
A-4146FM	1/4" x 7" SH, gray Ampex box	40	5.09
A-4176FM	1/4" x 10 1/2" CD, gray Ampex box	10	6.19

NAB Metal Flange Reels in Boxes

A-1171	1/4" x 10 1/2" Ampex economy SUB	10	\$ 15.99
A-1181	1/4" x 12 1/2" Ampex Tyvek SUB	10	30.29
A-1191	1/4" x 14" Ampex Tyvek SUB	10	35.19
A-1271	1/2" x 10 1/2" Ampex economy SUB	7	27.39
A-1281	1/2" x 12 1/2" Ampex Tyvek SUB	7	47.99
A-1291	1/2" x 14" Ampex 2-piece, E & I	7	41.59
A-1471	1" x 10 1/2" Ampex economy SUB	5	29.99
A-1491	1" x 14" Ampex 2-piece, E & I	5	43.69

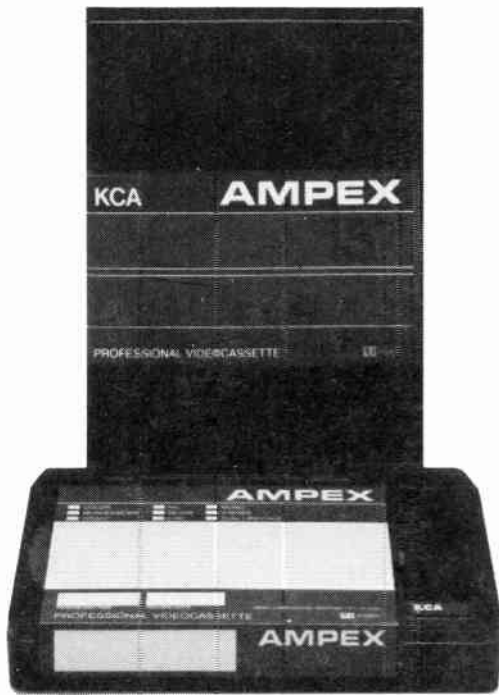
Precision Reels in Boxes

A-21D4	1/4" x 10 1/2" HDP reel	10	\$ 38.16
A-21K4	1/4" x 12 1/2" HDP reel	10	44.86
A-21E4	1/4" x 14" HDP reel	10	51.55
A-227GA	1/2" x 10 1/2" HDP reel	7	40.09
A-228G	1/2" x 12 1/2" HDP reel	7	45.69
A-229GA	1/2" x 14" HDP reel	7	54.26
A-247GA	1" x 10 1/2" HDP reel	5	43.99
A-248G	1" x 12 1/2" HDP reel	5	50.49
A-249GA	1" x 14" HDP reel	5	58.39
A-257G	2" x 10 1/2" HDP reel	2	49.29
A-259G	2" x 14" HDP reel	2	64.69

Refer to Green Section for Addresses and Telephone Numbers.

AMPEX CORP.

Video Tape



187 Series 3/4" Helical Scan Videocassettes

KCA-3/4" U-Matic Standard—Shelf Box

Catalog No.	Length	Ctn. Qty.	Price
187-KCA-05	5 min.	10	\$17.42
187-KCA-10	10 min.	10	18.61
187-KCA-15	15 min.	10	19.76
187-KCA-20	20 min.	10	20.92
187-KCA-30	30 min.	10	23.23
187-KCA-40	40 min.	10	27.88
187-KCA-50	50 min.	10	30.22
187-KCA-60	60 min.	10	32.55

KCA-3/4" U-Matic Standard—Shipper

187-KCA-10S	10 min.	10	\$19.11
187-KCA-20S	20 min.	10	21.42
187-KCA-30S	30 min.	10	23.73
187-KCA-60S	60 min.	10	33.05

KCA-3/4" U-Matic Standard—Bulk

187-KCA-05B	5 min.	20	\$16.42
187-KCA-10B	10 min.	20	17.61
187-KCA-15B	15 min.	20	18.76
187-KCA-20B	20 min.	20	19.92
187-KCA-30B	30 min.	20	22.23
187-KCA-40B	40 min.	20	26.88
187-KCA-50B	50 min.	20	29.22
187-KCA-60B	60 min.	20	31.55



197 Series 3/4" Helical Scan Videocassettes

BCA-3/4" U-Matic Standard—Shelf Box

Catalog No.	Length	Ctn. Qty.	Price
197-BCA-05	5 min.	10	\$20.29
197-BCA-10	10 min.	10	23.30
197-BCA-20	20 min.	10	26.15
197-BCA-30	30 min.	10	27.84
197-BCA-45	45 min.	10	33.52
197-BCA-60	60 min.	10	39.17

BCA-3/4" U-Matic—Shippers

197-BCA-10S	10 min.	10	\$23.80
197-BCA-20S	20 min.	10	26.65
197-BCA-30S	30 min.	10	28.34
197-BCA-60S	60 min.	10	39.67

BCA-3/4" U-Matic—Bulk

197-BCA-05B	5 min.	20	\$19.29
197-BCA-10B	10 min.	20	22.30
197-BCA-20B	20 min.	20	25.15
197-BCA-30B	30 min.	20	26.84
197-BCA-60B	60 min.	20	38.17

BCS-3/4" Mini U-Matic—Shelf Box

197-BCS-05	5 min.	10	\$20.29
197-BCS-10	10 min.	10	23.30
197-BCS-20	20 min.	10	26.15

BCS-3/4" Mini U-Matic—Shippers

197-BCS-05S	5 min.	10	\$20.79
197-BCS-10S	10 min.	10	23.80
197-BCS-20S	20 min.	10	26.65

BCS-3/4" Mini U-Matic—Bulk

197-BCS-05B	5 min.	20	\$19.29
197-BCS-10B	10 min.	20	22.30
197-BCS-20B	20 min.	20	25.15

AMPEX CORP.

Video Tape

1/2" Industrial Videocassettes

Beta Format Videocassettes

Catalog No.	Play Time Minutes			Ctn. Qty.	Price
	BI	BII	BIII		
Sleeve					
188-L250-6C	30	60	90	20	\$ 9.29
188-L500-6C	60	120	180	20	11.69
Plastic Box					
188-L250-6A	30	60	90	20	\$10.29
188-L500-6A	60	120	180	20	12.49
Bulk					
188-L125-6B	15	32	45	40	\$ 7.69
188-L250-6B	30	60	90	40	8.69
188-L500-6B	60	120	180	40	11.09

VHS Format Videocassettes

Catalog No.	Play Time Minutes			Ctn. Qty.	Price
	X1	X2	X3		
Sleeve					
189-T30-6C	30	60	90	20	\$11.99
189-T60-6C	60	120	180	20	12.89
189-T90-6C	90	180	270	20	15.09
189-T120-6C	120	240	360	20	16.29
Plastic Box					
189-T30-6A	30	60	90	20	\$13.09
189-T60-6A	60	120	180	20	13.99
189-T90-6A	90	180	270	20	16.19
189-T120-6A	120	240	360	20	17.39
Bulk					
189-T15-6B	15	30	45	40	\$10.59
189-T30-6B	30	60	90	40	11.39
189-T45-6B	45	90	135	40	11.89
189-T60-6B	60	120	180	40	12.29
189-T90-6B	90	180	270	40	14.39
189-T105-6B	105	210	315	40	15.09
189-T120-6B	120	240	360	40	15.69
189-T127-6B	127	254	381	40	16.19

1/2" Broadcast Videocassettes

198 Series

BC - 1/2" Betacam - Shelf Box

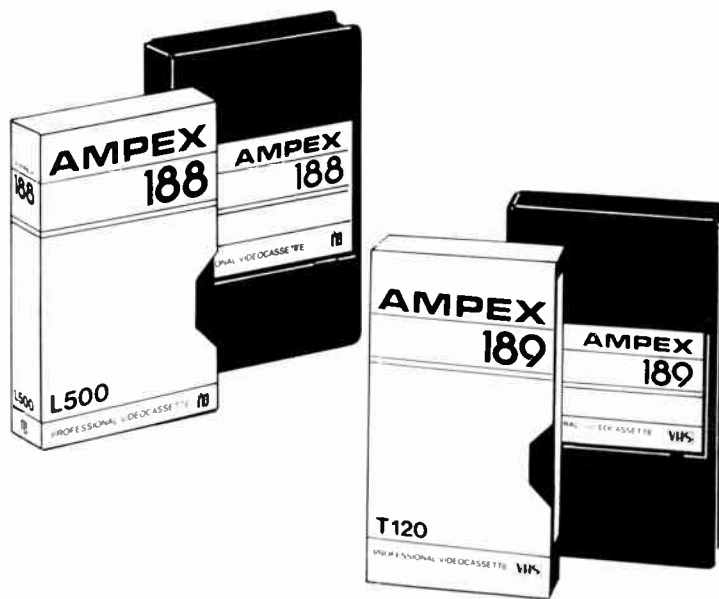
Catalog No.	Description	Ctn. Qty.	Price
198-BC-05A	Betacam, 5 min.	20	\$14.01
198-BC-10A	Betacam, 10 min.	20	17.03
198-BC-20A	Betacam, 20 min.	20	21.98
198-BC-30A	Betacam, 30 min.	20	28.05
198-BC-60LA	Betacam, 60 min.	10	72.29
198-BC-90LA	Betacam, 90 min.	10	98.98

BC - 1/2" Betacam - Shipper

198-BC-05S	Betacam, 5 min.	20	14.01
198-BC-10S	Betacam, 10 min.	20	17.03
198-BC-20S	Betacam, 20 min.	20	21.98
198-BC-30S	Betacam, 30 min.	20	28.05

BC - 1/2" Betacam - Bulk

198-BC-05B	Betacam, 5 min.	40	\$13.51
198-BC-10B	Betacam, 10 min.	40	16.53
198-BC-20B	Betacam, 20 min.	40	21.48
198-BC-30B	Betacam, 30 min.	40	27.55



BC - 1/2" Betacam SP - Shelf Box

298-BC-5MA	Betacam SP, 5 min.	10	\$ 45.81
298-BC-10MA	Betacam SP, 10 min.	10	52.60
298-BC-20MA	Betacam SP, 20 min.	10	58.31
298-BC-30MA	Betacam SP, 30 min.	10	63.82
298-BC-60MLA	Betacam SP, 60 min.	10	87.02
298-BC-90MLA	Betacam SP, 90 min.	10	135.94

1" Broadcast Helical Video Tape

196 Series

1" Broadcast Helical Ampex/Sony, A Wind (backcoated)

Catalog No.	Description	Ctn. Qty.	Price
196-1630EB	1633', 1" x 8" Prec. M, 34 min.	5	\$ 73.10
196-1630EP	1633', 1" x 8" Prec. M, 34 min.	5	78.60
196-3170CD	3169', 1" x 9" Prec. M, 66 min.	5	107.71
196-3170CP	3169', 1" x 9" Prec. M, 66 min.	5	113.21
196-4610HD	4610', 1" x 10 1/2" Prec. M, 96 min.	5	164.37
196-4610HR	4610', 1" x 10 1/2" Prec. M, 96 min.	5	169.87
196-5100HD	5100', 1" x 10 1/2" Prec. M, 106 min.	5	172.60
196-5100HR	5100', 1" x 10 1/2" Prec. M, 106 min.	5	178.10
196-6050NE	6050', 1" x 11 3/4" Prec. M, 126 min.	5	204.72
196-6050NX	6050', 1" x 11 3/4" Prec. M, 126 min.	5	213.22
196-7500FE	7500', 1" x 12 1/2" Prec. M, 156 min.	5	253.80
196-7500FX	7500', 1" x 12 1/2" Prec. M, 156 min.	5	262.30
196-9200KF	9200', 1" x 14" Prec. M, 192 min.	5	351.00
196-9200KX	9200', 1" x 14" Prec. M, 192 min.	5	359.50

196 Series

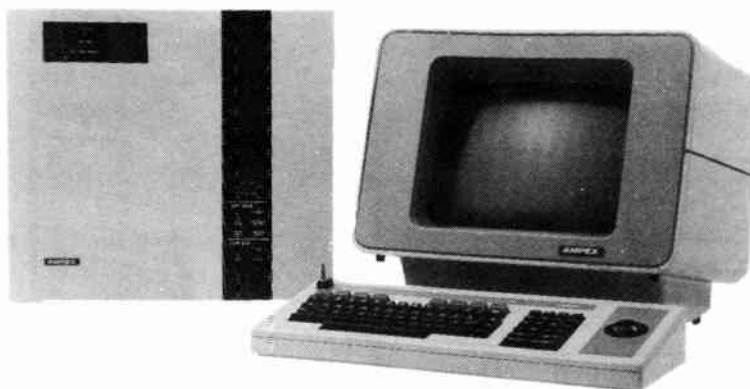
1" Broadcast Helical Bosch-Fernseh, B Wind (backcoated)

196-1630EP-B	1633', 1" x 8" Prec. M, 34 min.	5	\$ 78.60
196-3170CD-B	3169', 1" x 9" Prec. M, 66 min.	5	107.71
196-3170CR-B	3169', 1" x 9" Prec. M, 66 min.	5	113.21
196-4610HD-B	4610', 1" x 10 1/2" Prec. M, 96 min.	5	164.37
196-4610HR-B	4610', 1" x 10 1/2" Prec. M, 96 min.	5	169.87
196-5100HD-B	5100', 1" x 10 1/2" Prec. M, 105 min.	5	172.60
196-5100HR-B	5100', 1" x 10 1/2" Prec. M, 105 min.	5	178.10
196-6800JE-B	6800', 1" x 12" Prec. M, 141 min.	5	259.11

Prices and Specifications Subject to Change Without Notice.

AMPEX CORP.

Graphic Composition/Storage System



ESS-5G

ESS-5G Graphic Composition and Storage System

- Internal palette for mattes, borders, key fills, character colors, etc.
- Chroma and linear luminance keyers
- Cut and paste with rectangle, circle, oval, or diamond shapes
- Scissors mode for cutting irregular shapes
- Variable compression and positioning
- Character generator with font scan-in capability
- Hard and soft edges for borders and image overlays
- Variable opacity of colors and image overlays
- Selective defocus
- Internal grid generator
- Frame grab or field grab with frame interpolation
- Programmable cuts, dissolves and wipes
- Variable compression and positioning with key signal output
- On-line cataloging and search with ID#, category, date and description
- On-line list building
- List editing in text or small-picture mode
- Browse stills 12 at a time
- 160M byte internal disk drive included
- 4:2:2, 13.5MHz component coding
- Composite input and composite and RGB outputs
- Fixed or removable media storage expandable to 4 external disk drives plus 160M byte internal disk drive
- Modular "framestore-on-a-board" design

ESS™-5G is a single-user, electronic image store/recall and graphics compose system. It is designed to be used as a production workstation and storage center for images utilized by television news, weather and graphics departments, as well as for the formulation of art cards and conceptual materials in post-production facilities. The ESS-5G system's compact size, optional removable disk media, and streamer tape make it ideal for broadcasters, post-production houses, or corporate video facilities.

Storage media includes a built-in 160M byte Winchester disk drive capable of storing 200 NTSC or 160 PAL images. The SMD standard drive controller is also capable of supporting four additional outboard drives to increase on-line storage capacity. An optional internal tape streamer for hard disk back-up is available.

A comprehensive on-line cataloging function which allows the user to store and recall images by ID number, alpha title, category and date is provided, as well as a list management system that allows lists to be viewed as text or represented by 1/16 size pictures.

The ESS-5G system's compose mode offers the user a 10 color palette with a choice of 16,000 colors, cut and paste, luma and chroma keying, scissors, text, grid, defocus, and font-record (text generation).

The ESS-5G system is pack-compatible with ESS-5 and ESS-3 systems, and with the Ampex AVA-3 Video Art system.

The ESS Graphic Composition and Image Storage Systems: ESS-3, ESS-5 and ESS-5G deliver graphics, keying and still-storage with superb video quality. What's more the range of ESS systems lets you choose exactly the right one for your application, and your budget.

If you need a fast and secure way to store and recall still images, the ESS-5 will do a superlative job and keep you within your budget limits, too.

If you also need composition capabilities to add to your graphics for news, presentation slides, art cards, or client-winning conceptals, the ESS-5G is perfect for you.

And if you need all this, plus up to ten stations that allow users to simultaneously and independently store and recall, the ESS-3 is the system you'll want to look at.

Optional Accessories

- Backup tape streamer
- Remote Access Station (RAS)
- Standards conversion kits
- CDC 9710 removable cartridge drive
- CDC 9710 disk pack
- CDC 9715 fixed disk drive (340M bytes)
- CDC 9771 fixed disk drive (825M bytes)
- External SMD drive cable kit
- Printer cable kit

Specifications

Power	50/60Hz AC, 90-130V or 180 - 260V	
Video	525/60NTSC or 625/50 PAL	
Inputs		
Composite Reference	1V p-p ± 3dB at 75 ohms Color black or composite video loop	
Outputs (per channel)		
Composite (2 each)	1.0V p-p at 75 ohms	
RGB (1 connector each for R, G and B)	0.7V p-p at 75 ohms	
Sync	4.0V p-p at 75 ohms	
Signal Performance		
Differential Phase	≤ 1.0°	
Differential Gain	≤ 1.0%	
Chroma Delay	≤ ± 10nS	
K Factor (2T)	≤ 1.0%	
Frequency Response	0 to 5.0MHz ± 5dB	
Image Storage		
Image Size	NTSC = 786K bytes	PAL = 939K bytes
Access Time	≤ 0.8 sec.	
Drive Capacities	525	625
CDC RSD80	101 images	84 images
CDC FSD160	207 images	173 images
CDC FSD340	433 images	362 images
CDC FSD515	609 images	509 images
CDC FSD800	1003 images	839 images

ESS-5G Composition and Storage System

ESS-5 Storage and Recall System

ESS-3 Ten Station Composition and Storage System

AMPEX CORP.**Digital VTR****VPR-300 D2 Composite Digital VTR****The Ampex VPR-300. It Makes Sense Right Now.**

D2 Composite Digital provides all the benefits you'd expect from a digital format: better picture, better sound, easier operation, higher reliability.

But there's another reason the format makes so much sense.

Compatibility. All it takes to put a VPR-300 on line in your composite analog facility are the BNC video and XLR audio cables you already have in place.

An easy operation, but with a major impact.

The improvement in picture quality will be instantly obvious. Velocity errors, impact errors and moire are eliminated. Chroma noise is imperceptible, and other VTR color errors are eliminated entirely.

And no one has to tell you what digital recording will do for your multi-generation work. With a VPR-300, you can count on twenty transparent generations. Which makes post-production, especially compositing, significantly faster—while tying up fewer machines.

Superb Sound: Four Digital Audio Channels.

The 48kHz digital audio sampling frequency used by the VPR-300 is actually higher than the digital sampling rate used for compact disc mastering. There are four 16 bit digital audio channels with totally independent editing on each track. So you'll be able to do more of your audio work right on the VPR-300, instead of going off-line.

And when you layback sound using the digital interface, the integrity of your work is perfectly preserved.

The VPR-300 will record and play back on 32, 94 or 227 minute cassettes.

Digital Technology Makes the VPR-300 Inherently Easier to Operate.

Compatibility and performance are not the only benefits. The VPR-300 is also easier to operate. Since it's a cassette machine, tape is automatically threaded. Since the digital electronics are drift-free, no time-consuming set-up is required.

Controls on the VPR-300 are simple and straightforward and they afford you the uncompromising flexibility your kind of work demands.

And to make operation easy, a large status display provides comprehensive operational information, in plain English.

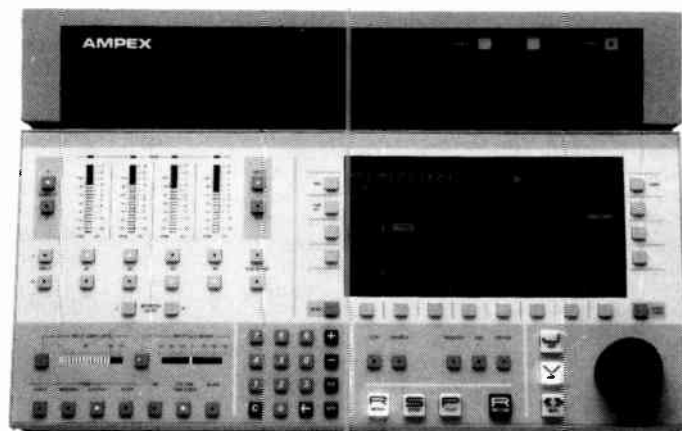
This remarkable display helps eliminate human error by leading you step-by-step through operational procedures.

But more importantly, it allows you to take full advantage of all the machine's capabilities.

If Time is Money, Spend a Moment with these Specifications.

The VPR-300 will load and thread a cassette, ready for record or playback, in under four seconds. It will recue a thirty-second spot in under 3.5 seconds. And playback lock-up time with scanner up to speed is under 20ms.

The machine's high speed pinchrollerless transport is a descendant of our Emmy Award winning VPR-3. It uses air guide technology to deliver unmatched speeds, gentle tape handling, and durability that's measured in years, rather than in hours.



VPR-300

Full Featured Editing, and Flexible Machine Interface.

As an editing tool, the VPR-300 interfaces with major professional editing systems, as well as other analog and composite digital VTRs.

The VPR-300 will search to a field, jog field by field, and run at 60X play speed with viewable color pictures.

And the automatic and manual assemble, insert, and animate editing modes are engineered to ease your most complex editing tasks.

If your work involves time-compression/expansion or fit/fill, an AST™ automatic tracking system lets you vary play speed continuously from -1 to +3X normal.

Picture bounce and blur are precluded by digital signal processing.

And a computer monitors the machine's operation and reports on status and trends. So you can optimize performance, schedule maintenance, and eliminate costly downtime.

We've Made No Compromises.

The VPR-300 is an exquisitely crafted, high end, no nonsense machine, and it's backed by the most professional service and support organizations in the industry.

Get All the Performance the Format Has to Offer.

The D2 Composite Digital format was developed by Ampex. So we had a head start when it came to developing a digital video tape that could consistently deliver outstanding video quality and reliable performance.

Designed specially for D2, our new cassettes use metal particle tape. So you get higher signal output, better SNR, and shorter wavelength response.

To help prevent dropouts, the cassette shells are molded in special anti-static plastics that reduce the attraction of dust. We combined state-of-the-art plastics technology with our patented low friction hub design to create debris-free precision hub-bearing surfaces. And clamshell door completely protects the tape outside the machine.

AMPEX CORP.

Video Tape Recorder

VPR-3 C-Format Video Tape Recorder Turbo (Real-Time) Animation

The VPR-3's speed and accuracy allows it to do animation in a play-speed, real-time relationship. Unlike stationary mode recording, the VPR-3 does not require the complex (and often picture-degrading) pre-processing of the video signal to rearrange the video frequencies before recording. The VPR-3's play-speed recording is purely a video edit. With an 18 frame pre-roll, 3 frame post-roll and a re-cue, the VPR-3 can accomplish a 6 frame animation sequence in only 1.6 seconds (required for 1 cell) plus only a tenth of a second longer to complete the remaining 5 frames.

True Auto-Assembly with Field Accuracy

The combination of a 20ms lock-up time, 500"/sec acceleration, and speed transitions comparable to disk devices allows a 30 second spot to be recued-to-play in < 2 seconds.

The VPR-3 brings to editing the super-fast speeds required for uninterrupted recording of source material. You can perform single-field edits from the front panel or from the serial port.

Edits will be dead-accurate because a built-in Sc/H circuit gives the VTR immediate comparison between the input and the off-tape signal phasing, thereby ensuring perfect frame edits.

When there is a mismatch between input and off-tape signals, the VPR-3's Sc/H phasing control allows the operator to apply an offset for correction. (And to make editing even easier, an indicator just above the Sc/H meter shows the operator that a wrong frame edit is being attempted).

The VPR-3's machine-to-machine editing capability from a single machine control panel eliminates the requirement for an expensive external edit controller in many facilities. The combination of the full-time synchronized transport and the SMPTE communication bus is the basis for this exclusive feature. Even the most complex split edits can be previewed, trimmed, shifted, performed and then reviewed using only the simple, single-function controls on the record VPR-3.

Zeus™ Video Processing

Integrated with the VPR-3, the Zeus Advanced Video Processor provides revolutionary improvements in the quality and production flexibility of videotape recording.

Production and post-production facilities will especially appreciate the superb video processing and greater creative video control capabilities of the Zeus. Its unique ability to extend practical multi-generation limits of Type C recording improves their product, and saves time and money.

Key Features of Zeus Processing

- No compromise 4Fsc, 9-bit digital system
- Drift and adjustment-free velocity compensation dramatically improves compensation accuracy and multi-generation video performance
- Exclusive frame averaging velocity compensator function reduces head impact error visibility
- Superior spatial-averaging dropout compensation
- Exclusive Multi-Gen Setup mode greatly improves multi-generation video performance
- Unique Decode mode allows replay of non-color framed edits with no picture shift
- Video time compression and expansion with no picture bounce or blur
- Full frame storage on command
- Comprehensive interface with VPR-3 menu control system
- Available full-function serial remote control panel

Multi-Gen Setup

Multi-Gen Setup is accomplished through a series of play-record-play-record recirculations through the VPR-3 and Zeus processor. From pre-recorded 1" generation reference material (i.e., color bars) the VPR-3/Zeus system generates and displays, in real-time, a sequence that quickly duplicates 10 tape generations. This 10-generation sequence is continuously repeated, so that errors are clearly displayed, and can be quickly corrected by proper system adjustment.

Multi-Gen Setup supports an increase in both the number of tape generations routinely used, and the quality of the finished video product.

Professional Audio Quality

The VPR-3's audio system provides phase compensated electronics to improve stereo broadcast performance, and automatic computer set-up of all record parameters by means of a built-in audio test oscillator, audio distortion, analyzer, and digital voltmeter. This allows quick optimization for different tape types, and three complete set-ups can be stored for immediate re-call.

Field-Accurate Automatic Scan Tracking (AST™) System

Taking a precision reference from the direct-coupled capstan tachometer, the VPR-3's AST system knows exact tape position under all conditions and applies the necessary correction factors to produce a stable, disturbance-free picture. In the time compression and expansion modes, this system allows speed variations as small as one second per hour (up to $\pm 15\%$) to be entered.

Field Rate Color-Framer

An integral part of the video signal system is a field rate color-framer which determines the precise parking position when the tape transport is stopped. This color-framer is designed to separate one field out of four in the NTSC system or one field out of eight in the PAL system. This permits the machine, even with its "instant" start capability to operate in a fully synchronous mode at all times.



Microprocessor-Based Control

The VPR-3 control system is based on dual Z80 microprocessors. One of these processors is responsible for system control and the second controls the various input/output functions. The dual RS-422A serial communications ports allow control interface of the VPR-3 to a variety of serial machine controllers, including the Ampex ACE series editors and the VRC-2.

Status-At-A-Glance™ Displays

As a further enhancement of the VPR-3's operational interface, its Status-At-A-Glance system provides a summary, one page, English language video character display of all critical VTR operational status parameters. A second page displays all major Zeus operational parameters. Either page may be easily selected for display on the VTR video monitor.

Accessories

Sync Channel

An option to permit all vertical sync information to be recorded according to the SMPTE/EBU Type C formats.

Four Channel Audio

This EBU option provides a fourth high quality audio channel in the track space normally allotted to the sync channel.

Mounting Configurations

The VPR-3 is available in a variety of physical configurations to suit individual facility requirements.

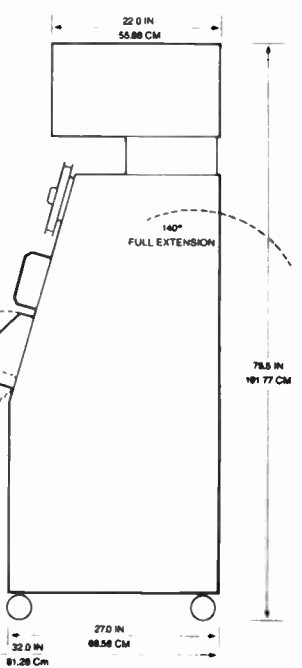
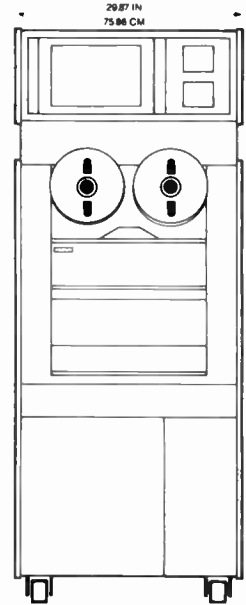
AMPEX CORP.

Video Tape Recorder

VPR-3 Cont'd

Specifications:

VIDEO AND SYNC	NTSC/PAL-M 525/60	PAL/SECAM 625/50
Bandwidth	Flat to 4.2 MHz ± 0.5 dB -3 dB at 5.0 MHz	Flat to 5.0 MHz ± 0.5 dB -3 dB at 6.0 MHz
S/N (IEEE Standard 818-1984) using Zeus	-47 dB peak-to-peak video to RMS noise on interchange basis	-44 dB peak-to-peak video to RMS noise on interchange basis
LF Linearity	2% blanking to white (maximum)	2% blanking to white (maximum)
Differential Gain	4% blanking to white (maximum)	4% blanking to white (maximum)
Differential Phase (40 IEEE units of subcarrier through Zeus)	4° at 3.58 MHz off-tape (max)	4° at 4.43 MHz off-tape (max)
Chrominance/Luminance Delay	20 n sec (maximum)	25 n sec (maximum)
2T sin ² Pulse & Bar	1% K-factor maximum	1% K-factor maximum
More	-40 dB color bars 75% amplitude 3.58 MHz subcarrier	-36 dB color bars 75% amplitude 4.43 MHz subcarrier
AUDIO (Channels 1, 2, & 3)		
Frequency Response (400 Hz Ref)	± 1 dB 200 Hz to 12 KHz ± 2dB 50 Hz to 16 KHz	
S/N (with respect to 8 dB above reference level) 20 Hz to 20 KHz	-56 dB Audio 1 and 2 -54 dB Audio 3 (Note 1)	-56 dB Audio 1 and 2 -54 dB Audio 3 (Note 1) + Audio 4
Distortion (measured at 1 KHz) (3HD)	@ 100 nWb/m reference level (+8 dBm)	1% maximum
	@ 251 nWb/m peak level (+16 dBm)	3% maximum
	With predistortion at 200 nWb/m (+14 dBm)	1% maximum
Depth of erasure on its own recording	-70 dB	
Wow & Flutter	07% NAB unweighted (flutter tape)	07% DIN weighted (R/P)
Playback Crosstalk (Audio 1 & 2) 1 KHz referenced to +8 dBm or 100 nWb/m	-80 dB maximum	
SIGNAL INPUTS		
Video Input (75 ohm) BNC	0.5 to 2 volts peak-to-peak	
Ref Video (75 ohm) BNC		
Comp sync	0.7 to 4 volts	
Comp video	0.5 to 2 volts	
Audio line inputs	-24 to +24 dBm, +8 dBm nominal	
Impedance, Transformerless, True Differential	balanced; 85 K ohm resistive	
SIGNAL OUTPUTS		
Video Output (75 ohm) BNC	1.0 Volt peak-to-peak	
Audio Line Outputs, Transformerless, True Differential	+8 dBm nominal; balanced +24 dBm maximum (Note 3)	
Impedance	less than 20 ohms	
Headphone Audio Monitor	0 dBm to drive 600 ohms	
Audio Meter Circuits Switchable VU or PPM		
GENERAL		
Record Time	190 minutes nominal; 9200 feet of tape on 14" reel	
Shuttle Time	less than 72 seconds for 60 minute tape, 3.6 minutes for a 3 hour tape	
Tape-Timer Accuracy (Control track updated)	± 0.1 Field with continuous control track	
Tape Speed	244 ± 0.5 mm/sec 9.606 ± 0.02 in/sec	239.8 ± 0.5 mm/sec 9.44 ± 0.02 in/sec
Video Writing Speed	1009 in/sec nominal	842 in/sec nominal
FM Carrier Frequencies	79 MHz blanking 10.0 MHz peak white	768 MHz blanking 8.9 MHz peak white
Audio Equalization	15 microseconds 3180 microseconds	15 microseconds
Lock-up time from Ready Mode	20 milliseconds	Lock-up time from Scanner Off 3 seconds



Note 1: Audio 3 channel has wide-band capability for Time Code (S/N WB-30 dB)
 Note 2: All specifications are based on Ampex 196 Tape or equivalent.
 Note 3: Can be readjusted downward by 12 dBm.

Ampex reserves the right to make product and specification changes at any time without notice.

PHYSICAL DIMENSIONS			
	Rack Mount	Table Top	Studio Console w/ Monitor Bridge & TBC
Height	29.75 in 75.56 cm	30.5 in 77.47 cm	75.5 in 191.77 cm
Width	19.0 in (Note #4) 48.26 cm	22.0 in 55.88 cm	29.875 in 75.86 cm
Depth	25.75 in 65.4 cm	26.5 in 67.31 cm	32.00 in (Note 5) 81.26 cm
Weight	270 lb 122.47 kg	275 lb 124.74 kg	650 lb 294.84 kg
TEMPERATURE & HUMIDITY			
Temperature	0-45°C		
Humidity	10%-90% RH (non-condensing)		
POWER INPUT			
Power Line Frequency	50 & 60 Hz single phase		
Input voltages	95/105/115/125/135 Volts AC ± 5% 190/210/230/250/270 Volts AC ± 5%		
Input Current (Table Top)	115 vac Nominal 3.5 Amps † 230 vac Nominal 1.8 Amps † 115 vac Nominal 1.4 Amps * 230 vac Nominal 7.0 Amps †		

Note 4: +2" Front Mounting Trim & Control Panel
 Note 5: Removable Control Panel reduces depth to 27"
 * Additional 12 Amp 1 sec shuttle start surge
 † Additional 6 Amp 1 sec shuttle start surge

Prices and Specifications Subject to Change Without Notice.

AMPEX CORP.

Video Tape Recorder

VPR-6 Type-C Video Tape Recorder

- All machine operational configuration from control panel
- Status-At-A-Glance display enhances human interface and speeds operation
- Full range variable play speeds (-1 to +3X play)
- Automatic Scan Tracking™ (AST) with True Frame is standard
- Zeus™ decode mode allows replay of non-color framed edits without picture shifts
- Multi-Gen setup and Zeus video processor dramatically improve multi-generation video performance
- Shuttle speeds approach 500 ips with viewable picture
- Gentle tape handling for reel sizes from spot to two hours
- Video and audio record confidence playback
- Optional sync channel
- Optional fourth audio channel (EBU systems)
- Extensive non-standard and fault condition detection and reporting system

The VPR-6 makes "stand-up" 2-machine editing simple. Built-in machine intelligence guides the operator through the editing process and alerts the operator to any conditions which will detract from the quality of the editing program. The editing features of the VPR-6 include:

- Pushbutton selection of insert or assemble modes
- Auto-Edit permits editing from preselected cues
- Edit optimize mode automatically rephases scanner tach to on-tape video signal for perfect interchange edits
- Pushbutton selection of entrance and exit edit points off tape
- Keypad entry of edit points and edit duration
- Pushbutton display of edit duration
- Auto tag feature transfers old exit point to new entrance point and recomputes duration
- "Split" button allows audio and video channels to be edited separately
- "XFR" button allows contents of any edit point register to be quickly transferred to another register
- Preview mode permits rehearsal of video and audio edits prior to edit recording
- "+/-" buttons permit edit point to be trimmed by any number of frames
- "Jog" buttons allow single frame jog in either direction for precise pinpointing of edit points
- Continuous diagnostic system warns of many nonstandard conditions which can affect edit, such as: "not color framed; excessive edit phase error; auto record—edit off; exit before enter; cue point not found; not cued"

Status-At-A-Glance

The Status-At-A-Glance display provides a simple 2-page English language video character display of all VPR-6 operational setup parameters, and a simple interactive menuing system that allows the operator to change setup parameters.

The Status-At-A-Glance feature also displays VPR-6 Servo, System and Machine fault messages as concise English language messages inserted into the VTR monitor video feed.

Multi-Gen Setup

Multi-Generation video performance degradation only significantly exhibits itself after it's too late to correct it. The VPR-6, when equipped with the Zeus Advanced Video Processor, provides an exclusive Multi-Gen Setup mode which helps eliminate operational setup errors—the major contributors to multi-generation performance degradation.

Superior Audio

The VPR-6 Audio System is designed to meet the needs of broadcasting, production and post-production environments. Features include:

- Full audio confidence on all longitudinal tracks
- Optional EBU fourth audio channel
- Dual channel stereo monitoring
- Adjustable azimuth alignment for stereo playback
- Excellent crosstalk performance
- Selectable peak or VU metering response
- Audio processing ports for interface with noise reduction or compression/expansion devices
- Integral speaker and headphone jack

Options and Accessories

A number of options and accessories are available to expand the operational capabilities of the VPR-6. These may be purchased with the machine or added after as operational needs change.

Sync Channel. Permits all vertical sync information to be recorded according to the SMPTE/EBU Type-C formats.



VPR-6

4-Channel Audio. Provides a fourth high quality audio channel in the track space normally allotted to the sync channel.

Time Code Generator/Reader and Character Display with Status-At-A-Glance. Adds longitudinal time code generation and reading, character display and Status-At-A-Glance capabilities to the VPR-6. Total control of these features is available at the control panel.

Vertical Interval Time Code. Adds VITC capabilities to the time code generator/reader and character display accessory.

Parallel Remote Interface. Provides comprehensive, 75-pin connector, parallel remote control pin—compatible with Ampex VPR-2Bs and VPR-80s.

Serial Remote Interface. Provides RS-422A compatible connection to the serial control bus of serial machine controllers such as Ampex ACE Editors and the VRC-2.

Diagnostic Probe. Standard diagnostics capability in the VPR-6, consisting of wake-up and background tests, can identify system malfunctions to assembly or subassembly level. The accessory diagnostic probe allows the maintenance engineer to diagnose all of the integrated circuits which are in communication with the microprocessor.

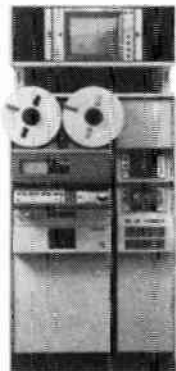
VRC-2. The VRC-2 is a flexible machine controller that uses RS-422A serial communications to remotely control a combination of up to four VTRs.

Mounting Configurations. The VPR-6 is available in a variety of physical configurations to suit individual facility requirements.

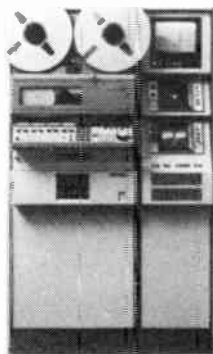
AMPEX CORP.

Video Tape Recorder

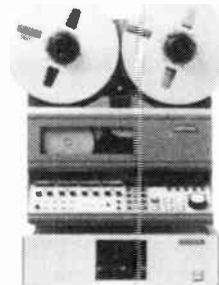
VPR-6 (Cont'd)



**Overhead
Bridge
Console**



**Sidecar
Console**



**Tabletop or
Rackmount**

VPR-6 SPECIFICATIONS

VIDEO AND SYNC

Bandwidth
S/N (Rhode & Schwarz unweighted with bandpass filter) using TBC-6
LF Linearity
Differential Gain
Differential Phase .40 IEEE units of subcarrier through TBC-6)
Chrominance/Luminance Delay
2T sin² Pulse & Bar
Moire

AUDIO (Channels 1, 2 & 3)

Frequency Response (400 Hz Ref)
100 nWb/m reference level
S/N (with respect to 8 dB above reference level) 20 Hz to 20 KHz

Distortion (measured at 1 KHz) (3 HD)
at 100 nWb/m reference level (-8 dBu)
at 251 nWb/m peak level (+16 dBu)
With predistortion at 200 nWb/m (+14 dBu)
Depth of erasure on its own recording
Wow & Flutter
Playback Crosstalk (Audio 1 & 2)
1 KHz referenced to +8 dBm or 100 nWb/m

SIGNAL INPUTS

Video Input (75 ohm) BNC
Rel Video (75 ohm BNC)
Comp sync
Comp video
Audio line inputs
Impedance

SIGNAL OUTPUTS

Video Output (75 ohm) BNC
Audio Line Outputs
Impedance
Headphone Audio Monitor
Audio Meter Circuits Switchable
VU or PPM (EBU)

GENERAL

Record Time
Shuttle Time
Tape Timer Accuracy (control track update)
Tape Speed
Video Writing Speed
FM Carrier Frequencies
Audio Equalization
Lock-up Time from Ready Mode (color framed)

NTSC/PAL-M 525/60

Flat to 4.2 MHz -0.5 dB
3 dB at 5.0 MHz
46 dB peak-to-peak video to RMS noise on interchange basis
2% blanking to white (maximum)
4% blanking to white (maximum)
4 degrees at 3.58 MHz off tape (max)
20 nsec (maximum)
1% K-factor maximum
40 dB color bars 75% amplitude
3.58 MHz subcarrier

+1 dB 200 Hz to 12 KHz
+2 dB 50 Hz to 18 KHz
56 dB Audio 1 and 2
54 dB Audio 3 (note 1)
ANSI A* weighted 60 dB

1% maximum
3% maximum
1% maximum
70 dB
08% NAB unweighted
60 dB maximum

0.5 to 2 volts peak-to-peak
0.7 to 4 volts
0.5 to 2 volts
14 dBu to -24 dBu
balanced 50 K ohm 50 Hz to 15 KHz

1.0 Volt peak-to-peak
-8 dBu nominal balanced
+25 dBu maximum
less than 50 ohms
0 dBm to drive 600 ohms

124 minutes nominal 6000 feet of tape on 1 1/4" reel
less than 100 sec for 60 minute tape
-1 frame with continuous control track
244 ±0.5 mm/sec
9606 ±0.02 in/sec
1009 in/sec nominal
7.9 MHz blanking
100 MHz peak white
15 microseconds
3180 microseconds
3 seconds

PAL/SECAM 625/50

Flat to 5.0 MHz ±0.5 dB
-3 dB at 6.0 MHz
-43 dB peak-to-peak video to RMS noise on interchange basis
2% blanking to white (maximum)
4% blanking to white (maximum)
4 degrees at 4.43 MHz off tape (max)
25 nsec (maximum)
1% K-factor maximum
-36 dB color bars 75% amplitude
4.43 MHz subcarrier

+1 dB 200 Hz to 12 KHz
+2 dB 50 Hz to 18 KHz
56 dB Audio 1 and 2
54 dB Audio 3 & 4 (note 1)
CCIR/AR* weighted 60 dB

1% maximum
3% maximum
1% maximum
-70 dB
10% DIN weighted
-60 dB maximum

0.5 to 2 volts peak-to-peak
0.7 to 4 volts
0.5 to 2 volts
-14 dBu to -24 dBu
balanced 50 K ohm 50 Hz to 15 KHz

1.0 volt peak-to-peak
-8 dBu nominal balanced
-25 dB maximum
less than 50 ohms
0 dBm to drive 600 ohms

124 minutes nominal 6000 feet of tape on 1 1/4" reel
less than 100 sec for 60 minute tape
-1 frame with continuous control track
239.8 ±0.5 mm/sec
944 ±0.02 in/sec
843 in/sec nominal
7.68 MHz blanking
8.9 MHz peak white
15 microseconds
3 seconds

PHYSICAL DIMENSIONS

	Rack Mount	Table Top	Console with Monitoring	Side Car Monitoring Console	Overhead Monitoring Console
Height	21.0 in 533 mm	22.0 in 558.8 mm	70.5 in 1791 mm	56.4 in 1433 mm	74 in 1880 mm
Width	19.0 in 482.6 mm	22.0 in 558.8 mm	22.0 in 558.8 mm	33.0 in 838 mm	33.0 in 838 mm
Depth	21.0 in 533 mm	22.0 in 558.8 mm	26.5 in 673 mm	26.5 in 673 mm	26.5 in 673 mm
Weight	143 lb 65 kg	150 lb 68 kg	317 lb 144 kg	545 lb 247 kg	670 lb 304 kg

TEMPERATURE & HUMIDITY

Temperature 0-45 °C
Humidity 10%-90% RH (non-condensing)

POWER INPUT

Power Line Frequency 50 & 60 Hz single phase
Input Voltages 100/110/120, 230 Volts AC ±10%
200/220/240, 260 Volts AC ±10%
Input Current (Table Top) 115 vac Nominal 5.0A
230 vac Nominal 2.5A

Note 1 Audio 3 channel has wide-band capability for time code (S/N WB-30 dB)

Note 2 All specifications are based on Ampex 196 Tape or equivalent

Ampex reserves the right to make product and specification changes at any time without notice

AMPEX CORP.**Video Tape Recorder****VPR-80 C-Format Video Tape Recorder****The VPR-80/TBC-6 Package**

The VPR-80 and its digital time base corrector, the TBC-6, were designed to make your production and editing easier and faster.

Automatic Scan Tracking™ (AST) is a standard feature on the VPR-80. The AST system insures tracking and allows you to vary playback speed from still frame through slow motion to 1½ times play speed — with no picture breakup and no need to adjust.

A complete editing package is standard, too. It's easy to understand, fast and simple to operate, and frame-accurate. It even lets you preview and trim your edits prior to recording.

The exclusive AST tracking system enables the VPR-80 to deliver broadcast quality pictures at any play speed — from stop through slow motion to 1½ times normal forward speed. By providing accurate auto tracking at all tape speeds, AST insures stable, perfect pictures. And, the AST system further improves the quality of your normal playback by automatically servoing the video head to the exact center of the video track.

Gentle Tape Handling, Even at 30X Play Speed

Whether you need two hours of recording and playback time, or just enough tape for a 30 sec. spot, the VPR-80's "intelligent," high-response servo system gently handles reels of any size from 11¾" down to the smallest, lightest spot reel.

Sophisticated Electronics Let You Work Fast and Efficiently

Dual microprocessors are the key to the VPR-80's power and operating simplicity. By dividing the workload, the VPR-80 can respond faster and more efficiently.

One microprocessor manages the VTR control system while the other is dedicated to all the servo subsystems. The result is accurate, dependable performance of all the machine's operations — and instantaneous response to your commands.

All this power has an additional benefit; it makes the VPR-80 simple to operate. Everything from setup to servicing can be done with a minimum of technical skill.

Power Failures Won't End Your Day

If the power fails, a backup battery and voltage regulator system continue to power your machine's memory. Tape time, control panel setup and edit functions are all held until power is restored.

Sophisticated Editing

Sophisticated editing is simple, fast and frame accurate. And, built-in machine intelligence helps guide you through the process.

- Insert and Assemble can be selected by pushbutton
- Auto-Edit permits automatic editing from preselected cues
- Entry and Exit edit points can be selected by pushbutton
- Your edits can be trimmed, frame by frame, on the keypad or by jogging the tape
- Both audio and video edits can be previewed prior to final recording
- A transfer feature automatically sets the next scene's edit entrance point

"No-Fault" Operation Standard on this Machine

The VPR-80 advises you of any system faults or non-standard conditions that could affect machine performance. Status verification and diagnostic routines are performed automatically when the machine is turned on.

The VPR-80 checks for power failure in any of the subsystems, scanner stall, over-heating or absence of control track. It even lets you know when an editing procedure is incorrect — or when there's no video input.

If a fault or non-standard condition is detected, you're immediately alerted. And, the VPR-80 pinpoints the problem and indicates it, specifically, on the control panel display. If the problem could cause tape damage, the machine automatically shuts down.

**VPR-80****Audio**

There are three fully independent audio channels on the VPR-80. Channels 1 and 2 are optimized for use as a stereo pair, and channel 3 has wideband capability for time code.

Individual level meters are standard, and separate level controls are provided for audio record and playback.

Flexible System Interface

A simple five function remote control interface lets you run your VPR-80 from up to 100' away. For 2-machine editing, there's a single, plug-in connector. There's even a monitor jack that lets you keep an eye on critical video and control waveforms. And, parallel remote and serial remote PWAs are optionally available to give your VPR-80 even more flexibility.

The VPR-80 can also be teamed with our ADO™ effects, PictureMaker 3D animation, ACE™ and ACE Micro editors and Ampex switchers in a complete post-production editing system.

In order to provide consistent performance over a wide range of time base error inputs, we've packaged the VPR-80 with the TBC-6 digital time base corrector.

The 28-line correction window in the TBC-6 will handle the wildest gyroscopic errors you can throw at it. And in shuttle, its circuitry provides viewable pictures at 30X play speed, in forward and reverse.

Full color dropout compensation and velocity error correction are built in. And, the SCH phased sync generator includes fully adjustable horizontal and vertical blanking circuitry.

You're in full control of composite video signal adjustments on the TBC-6, with independent video and chroma gain controls, as well as chroma gain controls, as well as chroma phase, subcarrier phase, horizontal phase and black level controls. And primary controls are all remotable via an optional TBC-6 remote control panel.

You can even time share your TBC-6. It's designed to operate with heterodyne recorders, so you get maximum service out of a single piece of equipment.

For applications that don't require the broadcast quality variable speed capabilities of the TBC-6, the low cost TBC-40 is available.

Like the TBC-6, the TBC-40 will time share with other VTRs. It provides all the video signal control of the TBC-6 and, if ever needed, can be easily upgraded to TBC-6 performance specs.

AMPEX CORP.

Digital Effects Systems

ADO-1000/2000/3000 Digital Effects Systems

Common Features and Effects

- A/B video inputs • Continuously variable compression and expansion • Variable aspect ratio
- Horizontal and vertical mirrors • GPI control input • Independent picture and key cropping
- Highly adjustable mosaics • Posterization and solarization • Luma and chroma reversal • Picture blur • Field or frame freeze • Adjustable soft key border edges • Multi-panel, multi-channel software • Logical keyframe programming
- Straightforward numerical programming • Comprehensive CRT display • Channel identification • Global motion control • Auto cube mode • Selectable motion types
- Forward/reverse run modes • Alphanumeric effect storage • Disk copy function • Serial editor interface • Frame-based processing for highest possible performance (ADO-2000 and 3000 only) • 30 on-line effects with one or two button execution (ADO-1000 and 2000 only) • Serial switcher interface (ADO-1000 and 2000 only)
- Color border generator (ADO-2000 and 3000 only) • Full-frame manipulation of frozen video (ADO-1000 only)

All three ADO systems share many of the same basic features, but there are also some significant differences.

The right ADO model depends on your application. And what level of signal performance best matches your system.

Do you plan on using your ADO system live, on-air?

Do you need a 3D system with rotation and perspective? Or will a 2D model meet your needs?

The ADO-1000 is designed for broadcast and production facilities that want award-winning effects—on a budget.

By combining field-based processing for moving video with frame-based processing for frozen images, we were able to keep the ADO-1000 system affordable. And since it employs all the other unique signal processing techniques of the 2000 and 3000, its picture is superior to systems costing much more.

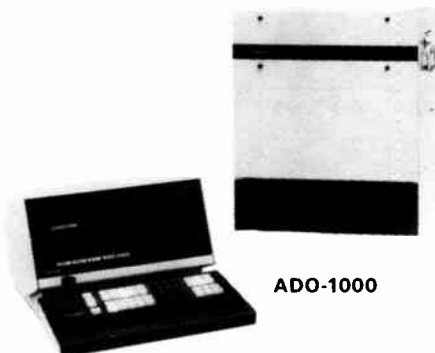
Even the basic ADO-1000 model has a wide range of standard features. Since it stores 30 pre-programmed effects for instant recall, it's ideal for on-air use. And with upgrades like 3D rotation and perspective, Digi-Trail and Digi-Matte, it can be a great production tool.

The ADO-2000 combines frame-based processing with the unique ADO architecture and filtering to deliver the finest picture in the industry.

The 2000 model provides the same superior picture quality the ADO-3000 system provides.

With both the ADO-1000 and 2000 systems operators can incorporate zooms, flips and tumbles into live programming with a single key stroke.

There are also some features on-air producers will really appreciate.



ADO-1000



ADO-2000

Like the ADO-1000 system, the 2000 stores 30 on-line pre-programmed effects for instant recall.

Operators can build their own effects, then store them on inexpensive floppy disks for use on-air.

The ADO Combiner digitally combines signals from multiple channels.

An option for ADO-1000 and 2000 models, the Combiner is available for either two or four-channel systems. It digitally combines channels, then routes a single output back to your switcher, so only one keyer is used.

Channel priorities can be set either manually, or automatically positioned properly in 3D space.

The ADO-3000: combines superior features and picture quality with optional capability and effects that no other system can match.

The Concentrator: digitally combines channels for the ADO-3000 system.

A Concentrator digitally combines and prioritizes multiple channels like the ADO Combiner, but with some important additional features.

Transparency/opacity of each channel is independently variable while a programmable light source adds an illusion of depth to your effects.

With its ability to do unity gain linear keys and digital dissolves, the Concentrator functions like a digital switcher—providing super clean keys, especially with graphics.

Infinity™: it lets you pass frames, planes or objects through each other.

And as these planes and objects are flown through space, rotation and other effects can be simultaneously incorporated.

Swirls, trails and sparkles—with or without decay—are also included in the package.

By keeping track of all pixels in X, Y and Z space, the Infinity option is able to do effects that previously could only be done on film—optical effects that draw production customers, and give your station a sophisticated on-air “look”.

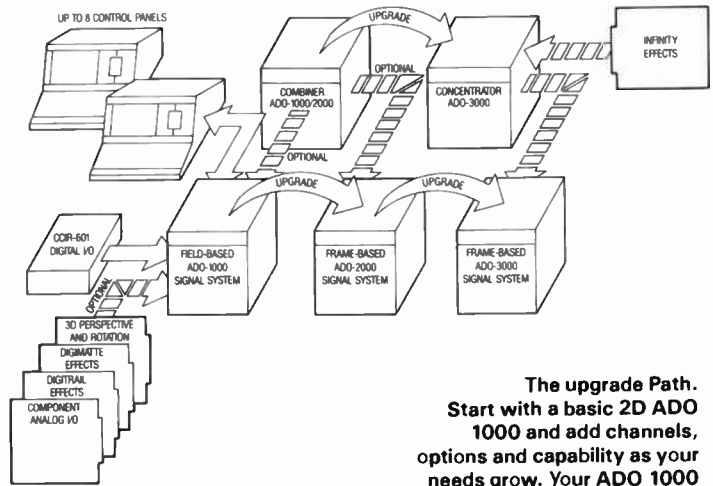
Optional Features and Effects

	ADO-1000	ADO-2000	ADO-3000
True 3D Rotation and Perspective	X	X	X
Digi-Matte™ Key Processing	X	X	X
Digi-Trail™ Target Framestore	X	X	
Component Analog (RGB, YUV) Kit	X	X	X
SMPTE/EBU CCIR-601 (4:2:2) Digital Interface	X	X	X
Up to 8 Control Panels	X	X	X
Up to 4 Signal Systems	X	X	X
Digital Combiner	X	X	
Digital Concentrator for Mixing, Keying in Digital Domain			X
Infinity Special Effects Package for Concentrator			X

ADO 1000, 2000, and 3000 Cont'd
Comparative Chart

System Basics	ADO 1000	ADO 2000	ADO 3000
Field-based processing	X		
Frame-based processing		X	X
30 on-line effects	X	X	
Digi-Matte option	O	O	O
Digi-Trail Option	O	O	
Combiner Interface	X	X	
Concentrator Interface			X
Infinity for Concentrator			O

X = Standard O = Option



The upgrade Path.
Start with a basic 2D ADO 1000 and add channels, options and capability as your needs grow. Your ADO 1000 system can grow to become a 3000, and all modifications can be done right in your own facility.

Specifications for ADO 1000, 2000 and 3000

Performance

Luminance

Frequency

Response: NTSC ± 0.5dB to 4.2MHz; +0.5 - 1.0dB to 5.0MHz
PAL ± 0.5dB to 4.5MHz; +0.5 - dB to 5.0MHz

Input Video

Level Range: +2dB

Digital Signal Sampling

Luminance

Sampling

Rate: 13.5MHz

Signal System Interconnects

Video Inputs: Two, BNC 75 ohm, 1V, composite, analog encoded

Key Inputs: Two, BNC 75 ohm, composite or non-composite, analog encoded (white or black in key hole)

Video Outputs: Two, BNC 75 ohm, 1V, composite, analog encoded

Digital Signal

Data: To combiner: Balanced ECL digital data, 15' max., multi-wire cable supplied with concentrator

Digital Control

Data: RS-422, 4-wire plus shield, 9-pin 'D' connector communication line. Remoteable 2000' (600 meters between control panel and signal system)

Control System

- 1) Detachable keyboard with 3-axis joystick
- 2) 9" CRT for data display
- 3) Mini-floppy disk drive for effect archiving
- 4) Remote data display output (non-synchronous)
- 5) GPI trigger input
- 6) Serial control — ACE interface

Power

Consumption: 110-120VAC, 60Hz or 220-240, 50Hz—single phase

(ADO 1000 and 2000)

Signal system: 1400W

Control System: 100W

(ADO 3000)

Signal System: 1700W

Control System: 100W

Physical

Signal System

Chassis: Dimensions: 22.72" H x 17.5" W x 22" D

Weight: 200 lb. (90 kg.)

Can be mounted in 19" equipment rack or free-standing as a tabletop unit

Control System: Monitor housing contains 9" CRT and mini-floppy disk drive

Dimensions: 11.75" H x 15.25" W x 14.5" D

Weight: 30 lb. (13.5 kg.)

Keyboard:

Dimensions: 3.25" H x 15.25" W x 7.75" D

Weight: 8 lb. (3.6 kg.)

AMPEX CORP.**Digital Effects Systems Accessories****ADO™ 1000, 2000 and 3000 Cont'd
Options and Accessories****ADO Combiner**

The Combiner is a digital mixer/keyer capable of combining the outputs of up to four channels of ADO digital special effects. Digital video and key information from each channel are routed through the Combiner, where the operator has complete control over channel priorities. A single digitally combined image is directed from the Combiner back to each of the ADO channels for final composite conversion and output. No external patching, and no system timing adjustments are required. Because separate signals from up to four channels are combined into a single video and key output, only one input into a switcher—and only one keyer in the switcher—is required for even the most complex multi-channel effects. And because all mixing and keying is done in the digital domain, the results are clean, precise, and endlessly repeatable.

The Combiner is an option for ADO 1000 and 2000.

**ADO Concentrator with Infinity™
Multi-Channel Effects Package for ADO-3000**

The Concentrator is a digital mixer/keyer capable of combining the outputs of up to four channels of ADO digital special effects. Digital video and key information from each channel is routed through the Concentrator, where the operator has complete control over signal mixing and channel priorities. The Infinity™ effects package included as a standard feature of the Concentrator even allows you to pass planes, frames, and solids through each other, while the full range of other ADO effects is simultaneously incorporated into each channel's separate image. A single digitally combined image, including any of the unique Infinity effects that may have been added, is directed from the Concentrator to each of the ADO channels for final composite conversion. No external patching, and no system timing adjustments are required. With the ADO Concentrator, separate video and key signals from up to four channels are combined into a single video and key output. That means only one input into a switcher—and only one keyer in the switcher—is required for even the most complex multi-channel effects.

ADO Digital Interface

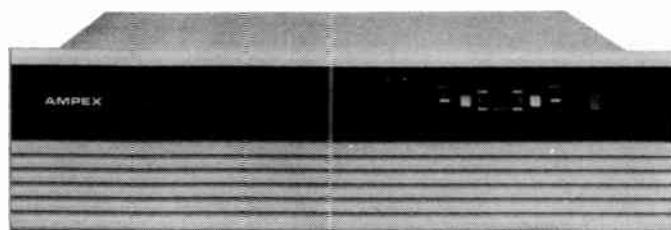
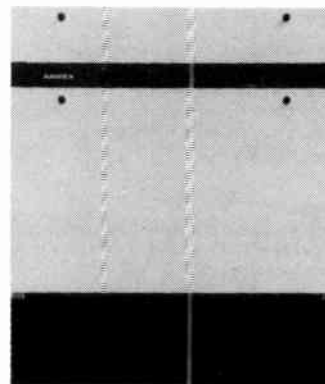
The Digital Interface is an optional accessory which expands the system flexibility of new and existing ADO units by providing SMPTE/EBU standard component digital input/output ports. With the Digital Interface, any ADO system can be directly connected with other CCIR-601 equipment. Examples are graphics production and storage devices, and component digital tape transports. The Digital Interface allows the user to take full advantage of the superb ADO effects capabilities while maintaining degradation-free signal interchange.

ADO Digi-Trail™ Target Framestore

The Digi-Trail Target Framestore is an optional hardware and software kit which enhances the creative flexibility of an ADO 1000 or 2000 system. With it, a user can create various types of trails and sparkles behind moving images, or "smear" motion within live video. The Digi-Trail kit also provides a matte generator for internally keying ADO images over colored backgrounds. Trails and sparkles can even be different colors than ADO borders. Its unique composite mode gives the user separate access to the high-quality internal framestore. With composite mode, ADO images can be internally keyed over stored backgrounds, and multi-level graphics can be easily built using the unmatched positioning capabilities of the ADO system.

**ADO DigiMatte™ Key Signal Effects
Processor for ADO 1000, 2000 and 3000**

The DigiMatte option provides separate channel of dedicated processing specifically for black and white key signals. The key input fed to an ADO system is simultaneously manipulated through three dimensional space in exactly the same way as the video input. When they're both fed back to a switcher or to a Combiner/Concentrator the DigiMatte key output and video output are precisely aligned for keying.

**Digital Interface****Combiner**

With its full 8-bit resolution, DigiMatte processing can be used to manipulate the detailed key outputs of paint systems or the soft-edged signals from specialized keyers like Ampex Spectrakey™ or an Ultimatte system. Such faithful key reproduction is especially important to achieving quality results from a linear keyer. Key edges can be softened for more natural looking effects. And position can be controlled with a resolution of four nanoseconds. One major feature of the DigiMatte processor is its ability to handle out-of-time inputs. Timing differences usually exist between video sources and key sources. Even in a two channel system, every time the second channel is used for key processing, it must be retimed. And this can be time-consuming. With the DigiMatte processor, re-timing of the key or video sources is eliminated, giving you more time to concentrate on your work.

AVC/ADO Integration System

The AVC/ADO Integration System consists of two separate elements which tie the Ampex AVC™ Standard and Century Series switchers together with the ADO digital effects system. The first element is a 38.4K baud communication link which unites the powerful video handling capabilities of AVC Series video switchers with the unequalled effects capabilities of the ADO special effects system. This communication link allows full integration and control of effects generated on an ADO system from the control console of the AVC Switcher. In essence, the ADO unit becomes an integral part of the wipe pattern system in the AVC switcher. The second element is a mechanical integration package which places the AVC and ADO control panels together in a single compact and efficient layout. Provisions are included for mounting AVC options such as the AVC Audio System, AVC Aux Bus Controllers, and the AVC X-STAR Panel Memory System, so all of your video signal manipulation controls are visually united, at the hands of a single operator. The AVC/ADO Integration System gives you the best of both worlds for on-air and live-to-tape productions—the unequalled power of the AVC Series switcher and spectacular ADO effects. Its design allows even the most dazzling effects to be performed by a single operator with a simple button push. In fast-paced production environments, complex effects can be performed accurately day after day, giving your operations the polished, professional look you would expect from some of the finest video tools available.

AVC Vista™ Series Compact Switchers**Standard Features**

• 10 or 18 inputs including color, black and color background • Powerful mix/effects unit • Downstream mixer keyer with master fade-to-black • Flip-flop operating format • Integrated switcher status display • 5 independent matte generators • 4 auxiliary buses (2 with full re-entries) • Available in NTSC, PAL or PAL-M video standards • Powerful preview system will even preview patterns

Keying

• Three linear keyers capable of Luminance, RGB Chroma, Composite Chroma and ISO keys • Key memory system stores setups for each source, recalls to any keyer • Unikey™ additional DSK external linear gain key • Key masking system • Optional Spectrakey™ advanced chroma key system • Optional flexible borders: 4 shadow styles and border-modify

Patterns

• 32 patterns including rotary wipes and random pixel dissolve • Full screen adjustable borders • 4 pattern border types (hard, soft, soft halo and half halo) • Border width can track pattern size • Pattern can be positioned with auto-panning capability

Microprocessor Features

• Panel memory with event transition and automatic sequencing • RS-232, RS-422 and GPI control ports • AVC audio system compatibility • User-programmable switcher configuration

Options

• RGB chroma keyer/ISO key input matrix • Analog key border generator • Digital effects interface • AVC audio system • Assignable auxiliary bus controllers • Extended panel memory system

AVC Vista Series switchers are available in ten or eighteen input configurations (including black and color background).

The mix/effects system is capable of virtually any combination of transitions involving two keys and two backgrounds. Both keyers can do every type of key — they each have full length, independent source buses as well as operator-assignable automatic isolated hole cutting. Keys may appear over the A or B bus, both buses, or in any combination. And key transitions are selectable at any time as part of — or independent of — the transition system.

A full function downstream system provides two additional levels of keying (one full capability, one ISO only) as well as mix and fade capabilities.

A versatile preview system quickly and easily monitors the video available at any point in the switcher, and even allows pattern previews without tying up the M/E.

The Vista is ideal for small production facilities, editing suites, mobile applications, or any broadcast or post production situation where space is at a premium. The console measures 12 1/4" tall, while the electronics require only 14" of rack space. Since communications between the two are serial, a simple dual twisted-pair cable is all it takes.

A unique electro-luminescent display shows operating status of transition times, memory set-ups, diagnostics and other essential operational information.

Vista will store and recall 24 switcher set-ups, as well as eight different sequences involving any combination of the 24. Sequences can call other sequences, loop, or be paused at any time.

You can design any transition between set-ups, then automatically execute the sequence linearly, or in a variety of non-linear transitions.

Auto transitions can be specified in seconds, tenths of seconds, or frames. And an optional extended memory system lets you save it all on disk.

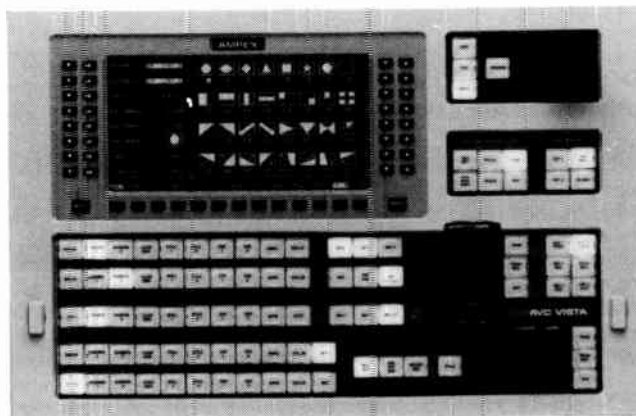
The Spectrakey chroma keyer lets you chroma key from any color, as well as smoke, glass and transparent objects.

The Spectrakey system is an exceptionally high quality RGB system that uses a patented chroma-nulling process. Its low noise edges make chroma keyed scenes difficult to distinguish from the real thing.

The Spectrakey system is fully integrated into the switcher, so it eliminates the cumbersome problems of external timing compensation or signal routing, and all Spectrakey setups can be stored in the Vista switcher's memory.

The Vista switcher's virtually transparent digital effects interface provides you full-scale creative potential.

A unique digital effects loop has been designed into Vista that allows Ampex ADO™ or other digital effects to be inserted into the video path of the key or bus row, without the need for auxiliary switching. ADO effects can be selected and run from the Vista control panel, saving both time and space.

**Input Characteristics**

Primary Input: Loopthrough bridging: 1.0V p-p composite video
RGB Chroma Key Inputs: 0.7V p-p video with or without composite sync
Reference Video Input: Composite sync and subcarrier loop through burst flag (PAL only) loopthrough
Extended Inputs: Aux. 1, Aux. 2, Key 1, Key 2, ADO loop Ch. 1, ADO loop Ch. 2, all loopthrough
Other Inputs: UNIKEY key in and video in, external key mask in, ext H and V modulation in, ISO 1 through 16, all non-looping
Return Loss: > 40dB at subcarrier with external 75 ohms termination

Output Characteristics

Output Impedance: 75 ohms all outputs
Outputs: Line out-2 outputs, preview monitor, M/E monitor-1 output, auxiliary buses-2 outputs each, four buses
Return Loss: ≥ 37dB at subcarrier frequency

ADO Loop

Outputs: Video and key channel 1, video and key channel 2
Inputs: Video and key channel 1, video and key channel 2

Video Performance

Frequency Response: ± 0.2dB; 100kHz — 5MHz + 0.2
 -0.5dB; 5MHz — 8.0MHz
 Smooth rolloff above 8.0MHz

Line Tilt (IEEE Window Signal): ≤ 1.0%
Field Tilt (IEEE Window Signal): ≤ 1.0%
Chrominance/Luminance Gain Inequality: < 1.0dB
Chrominance/Luminance Delay Inequality (12.5T Modulated Pulse): < 25 ns. max.

Differential Gain: ± 1.5%, 10-90% APL
Differential Phase: ± 1.5°, 10-90% APL
Dynamic Gain: ± 1.0%, 10-90% APL
Signal/Noise Ratio: > 60dB p-p video [1.0V reference to RMS noise (unweighted), 10kHz to 5MHz]

Crosstalk: ≥ 55dB at subcarrier frequency
Path Length Accuracy: 1.5° at subcarrier frequency
Video Switch: Approximately 1μs during vertical interval
K Factor (2T Pulse): ≤ 1.0%

Crossfade Gain Linearity: ± 0.5% luminance, ± 1.5% chrominance
Crossfade Phase Linearity: ± 1.5°

Power Input: 100/110/220/240VAC
 50Hz or 60Hz
Power Consumption: < 600W
Tally Relay: 1 form C 24V, 1A contacts

AVC™ Series Video Production Switchers

With an AVC Series switcher, you can perform complex transitions involving two video backgrounds and three keys of any type, all on a single M/E. AVC Series switchers give you three unrestricted, full capability keyers per M/E. Up to 32 video inputs, plus two external inputs, can be key sources. Each keyer can introduce any type of key: RGB chroma key, character generator and digital effects keys, luminance keys, and as an option, encoded chroma keys. You can mix from one RGB chroma key to another RGB chroma key while adding a title key. Or wipe from one chroma key scene to another behind a third chroma key scene—all on one M/E bank.

Key Memory System

After you've set up and adjusted your key sources, you can store your setup in "Key Memory." Once stored, that key can be called up instantly, and appear perfectly adjusted on any other keyer in the switcher—regardless of the keyer location. Key Memory can hold up to four key setups for each key source. Since every primary input to the AVC can be a key source, Key Memory can store up to 128 key setups on a 32-input switcher.

Pattern System

AVC Series switchers come with 164 standard wipe patterns, including rotating and matrix wipes. Independent pattern systems are dedicated to each M/E. Pattern borders can be either hard or soft, or change from hard on one side to soft on the other. An auto pan feature can even automatically center any positioned wipe for you as it grows to fill the screen, for unique, swooping 3-dimensional effects. Borders are exceptionally clean, even when the pattern is made very small. Borders can also be made exceptionally wide, even filling the screen. This can give the appearance of two wipes with a single fader movement. Plus, all patterns except matrix wipes can be positioned and rotated. With Ampex pattern modifiers, you can change border hue over time, create multi-hued or rainbow borders, rotate, spin or oscillate patterns, and change border width proportionately to pattern size.

Independent Matte Generators

While other switchers combine matte functions in just a few matte generators, the AVC has separate, independent matte generators for each matte function. That means you'll never be locked into one matte color because it is the complement of another color already in use. You can have any color, on any matte function, at any time. To further ease your workload, the AVC switcher's microprocessor monitors all matte generator outputs and automatically prevents colors from upsetting transmitters and VTRs.

Power Backup

All AVC Series switchers are supplied standard with dual power supplies in both the signal system and control console. These power supplies are redundant, so that if one should fail, the other will automatically assume the load without so much as a "glitch" in your production. The AVC Series switchers come with backup batteries in both the signal system power supplies. These batteries hold memory registers and current switcher settings for about eight hours, so you'll never have to start from scratch if power is interrupted during production.

The many options available for the AVC Series switchers extend its already powerful capabilities and make operation even simpler.

Panel STAR™ Memory

Panel STAR Memory is a panel-oriented memory system which can store and recall up to eight complete switcher setups. With the Panel STAR option, you can swap or transfer setups from one M/E to another. When complex production requirements and heavy time pressures are involved, this can be an invaluable time and frustration saver. Panel STAR Memory will also make smooth interpolations of size and position between the setups you've stored in memory. You can transition between setups involving up to three M/Es and the downstream keyer individually, simultaneously or in any combination, at the same or at different rates. This kind of powerful control makes any type of production faster, easier and more flexible.

X-STAR™ Memory

X-STAR Memory is a dual micro-floppy disk system which can store 400 complete switcher setups on one disk, greatly extending the power of Panel STAR Memory. With two disks in operation, over 800 setups can be stored and available for immediate recall. Dual drives mean that disks can be checked, edited, formatted and copied in-house using standard 3 1/2" disks. X-STAR can also store the contents of the AVC Key Memory, for even greater production simplicity. Worst-case access to any AVC X-STAR setup is about ten seconds, with typical access requiring less than five seconds.

ADO™ 2000 System Interface

Designed primarily for live, on-air use, the ADO interface lets you select, trim and run ADO effects from the console as though the ADO were an integral part of the AVC pattern system. The switcher can control up to four ADO channels at once. It even allows you to use the full AVC pattern border capability around ADO pictures. A special "Quad Bus" option is available to route signals—including M/E outputs—to the ADO inputs. The Quad Bus and ADO interface let you build up extremely complex effects that can then be controlled quickly and easily by a single button push at the AVC console. Since the whole AVC/ADO setup can be stored in Panel STAR Memory, the AVC switcher will set up a three M/E effect involving ADO keys and moves, select inputs to the ADO, and set up all other switcher parameters and effects. The ADO moves can then be done using AVC faders or auto-transitions, or it can be part of a complex transition of the entire AVC from one memory to another.

Spectrakey™ Chroma Key System

Spectrakey is an exceptionally high quality RGB chroma key system that uses a patented chroma-nulling process. It lets you key from any color. Spectrakey is fully integrated into the AVC system, so it eliminates the cumbersome problems of external timing compensation or signal routing, and all Spectrakey setups can be stored in Key Memory. The Spectrakey system's low gain edges and patented techniques make chroma key scenes that are difficult to distinguish from real scenes. Chroma keys involving smoke, glass and other transparent objects present no problems for Spectrakey.

Analog Key Border Generator and Encoded Chroma Keyers

This option gives you a smooth, high quality analog key border generator capable of making borders or drop shadows with any luminance value, colored outlines and, on effects keyers, drop shadows which can be varied from zero up to 14 lines deep. Key insert video can be decayed and delayed up to 14 lines for very dramatic effects from even simple graphics. Each key border generator option also includes an encoded chroma keyer. The encoded chroma key portion is fully integrated and fully timed in the AVC. No external rack units or timing devices are required.

Switcher Status Display Output

Every parameter of AVC switcher status can be displayed in easy-to-read bar graphs with this option. Fader status, direction and travel are shown along with pattern modifier menus, error and operating messages. A switch in the signal system converts the status output to a diagnostic display output to help with maintenance and troubleshooting.

Clock/Timer/Safe Area Display

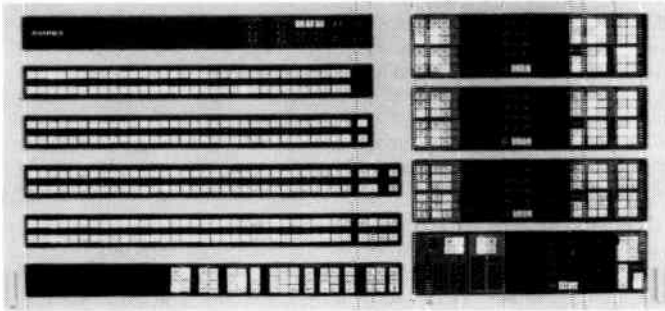
This option is a valuable aid for both live and post production. It provides up to two Clock/Timer displays, and a safe title display keyed over the preview monitor. The Clock/Timer displays can be made to count up or down from any preset time, manually or automatically. The Safe Area display shows SMPTE Safe Title and Safe Action areas (Safe Title only in PAL), plus centering and alignment cursors.

Auxiliary Buses

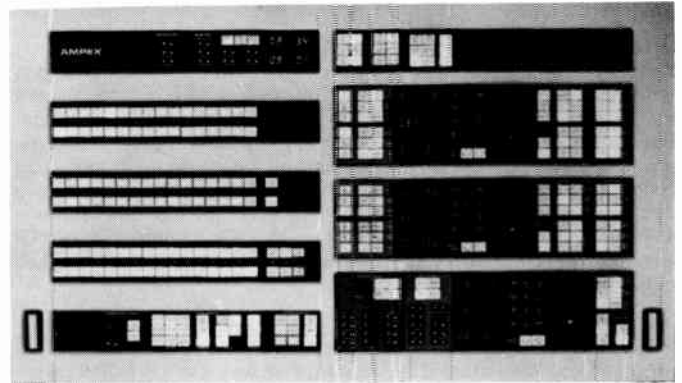
All AVC Series switchers can accommodate up to 16 auxiliary buses. Auxiliary buses can be video-only, audio-follow-video or audio breakaway. Aux buses can select from all primary switcher inputs plus all M/Es and Program output (fully timed). Numerous control systems are available.

AMPEX CORP.

Production Switchers



AVC-33



AVC-21

AVC Series Video Production Switchers Cont'd**Specifications:****Input Characteristics**

Primary Input
 RGB Chroma Key Inputs
 Reference Video Input
 Return Loss

Loop-through bridging; 1.0V p-p composite video
 0.7V p-p video, with or without composite sync
 1.0V p-p composite video; non-loopthrough input, 75 ohms termination
 > 40dB, at subcarrier frequency, with external 75 ohms termination

Output Characteristics

Output Impedance
 Line Outputs
 Monitor Outputs

75 ohm, all outputs
 PGM, 2 outputs; Master black, 1 output; DSK black, 1 output
 M/Es, 3 outputs (A-bus, B-bus, M/E output) PGM bus, 1 output PST bus (PGM B), 1
 output quad split (when Q/S system installed), 1 output key PVW system
 2 outputs per aux bus
 ≥ 37 dB, at subcarrier frequency

Aux Bus Outputs
 Return Loss

Video Performance

Frequency Response

± 0.2 dB; 100KHz - 5MHz
 ± 0.2 ,-0.5dB; 5MHz -8.0MHz
 Smooth rolloff above 8.0MHz

Line Tilt (IEEE window signal)

≤ 1.0 %

Field Tilt (IEEE window signal)

≤ 1.0 %

Chrominance/Luminance Gain Inequality

< 1.0 dB

Chrominance/Luminance Delay Inequality
 (12.5T Modulated Pulse)

< 25 ns max.

Differential Gain

± 1.5 %; 10-90% APL

Differential Phase

± 1.5 °; 10-90% APL

Dynamic Gain

± 1.0 %; 10-90% APL

Signal/Noise Ratio

> 60 dB p-p video (1.0V reference to RMS noise (unweighted), 10kHz to 5 MHz)

Crosstalk

≥ 55 dB at subcarrier frequency

Path Length Accuracy

1.5° at subcarrier frequency

Video Switch

Approximately 1 μ s during vertical interval

K Factor (2T Pulse)

≤ 1.0 %

Crossfade Gain Linearity

± 0.5 % luminance, ± 1.5 % chrominance

Crossfade Phase Linearity

± 1.5 %

Power

Power Supply

Diode coupled, dual redundant power supply with battery back-up

Battery Back-up

5 days, nominal

Input

100/110/220/240VAC; + 10%, -15% plug programmable

60Hz ± 2 %

50Hz ± 2 %

Power Consumption

Ferro-resonant transformer

AVC-33: approximately 1.4kW

AVC-31: approximately 1.3kW

AVC-23: approximately 1.2kW

AVC-21: approximately 1.0kW

Tally

Relay

1 Form C; 24V, 2A contacts

Tallied Inputs

All primary plus 2 external key inputs plus ME tally

AMPEX CORP.**Computerized Editing Systems****ACE™ Computerized Editing Systems**

Because the ACE Editor is both software-based and modular, it is a superior long-term investment—for both the editor and the engineer. Software enhancements improve the system's capabilities without making the hardware obsolete. Modularity allows you to start out with exactly the system you need, and add capability as your business grows.

A Family of Editors Lets You Choose the Best System for Your Application

From a very affordable interformat system, all the way to a 16-device control system with 6000-line edit list capacity, the ACE Computerized Editing family consists of powerful editors—designed to fit almost any of your editing requirements.

A Systems Approach to Post-Production

When an ACE Editor is the centerpiece of a system in which the major components are Ampex products, you're in charge of a Creative Command Center™. Within the Creative Command Center, ACE has superb control of Ampex switchers, VTRs, Ampex Zeus™ advanced video processors, and even ADO™ special effects systems. RS-422 serial communications and compatible software throughout make machine interfacing a smooth road.

The Creative Command Center offers enough flexibility to satisfy any post-production requirement. Select your switcher from the Ampex 4100 Series, or from the Ampex AVC Series, including the powerful AVC Century or the compact Vista™ switchers. Choose from Ampex's complete line of Type C VTRs. For small format work, Ampex offers a selection of Betacam and Betacam SP™ VCRs. Choose from three versions of ADO systems for digital effects. ACE Editors control them all—via the speed and efficiency of serial communications.

Of course, ACE interfaces with products from other manufacturers, too. RS-422 compatibility, general purpose interface (GPI), superb disk input/output capabilities, and ACE's Trigger Screens help make ACE the right choice for any equipment configuration.

Dedicated Keyboard: Soft Key Superiority

The ACE system offers a choice of human interfaces. The first is the ACE dedicated keyboard, which features a logical, uncluttered layout that positions clusters of keys according to function and frequency of use. It's easy to learn and easy to master.

The true power of the ACE Editor is contained within eight soft keys, grouped at the top of the keyboard. These soft keys provide direct access to the powerful software features ACE Editors offer.

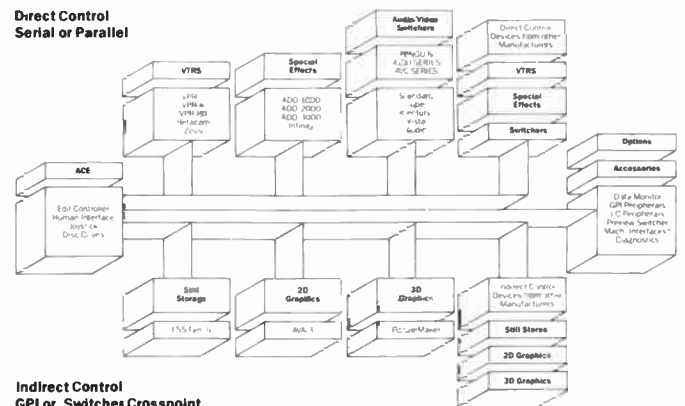
The Second Interface Choice is TouchScreen: Silent Lightning

The TouchScreen: silent, efficient, powerful, and extremely rapid. Instead of keyboarding your inputs, you merely point your finger at an entry on the menu monitor. It provides the editor all the power and features of a keyboard, but allows greater operating comfort and speed.

TouchScreen data is displayed "double spaced," making it easy to move quickly from one command to another. Whenever numbers are required, a keypad display appears. It is arranged much like a standard 10-key array on a keyboard, but with many extra custom features for easy numerical entry, trimming, and storage.

ACE Software: The Power Behind the Screen

One of the unique features of ACE software is the ability to configure menus to an editor's preference. You can display as little or as much data as desired on your Edit Construction List (ECL) or Edit Decision List (EDL). Simplify the menu for a "cuts-only" session, or add important switcher data for a challenging multiple M/E session. ACE does not impose its menus on the user. It lets you custom tailor the display to match your creativity and style.

**ACE****Direct Control
Serial or Parallel****Indirect Control
GPI or Switches Crosspoint****ACE Triggers: The Power of the Pulse****ACE Provides Four Unique Trigger Types: EIPI, Multiple M/E, Zeus, and Panel Memory**

All triggers are indented from the program line for an easy visual cue, with concise titles reading the four information columns. Triggers are fully listed in the EDL—easy to read and easy to modify.

GPIs can be triggered at entry plus, entry minus, or record absolute, with variable pulse durations easily set.

Joystick Control

The multi-function joystick is standard with many ACE models, and complements both TouchScreen and keyboard operation. This is no ordinary joystick, but rather a key element in the synergy of a Creative Command Center. The Joystick not only controls transports, but also controls the EDL and the switcher fader arm.

AMPEX CORP.**Computerized Editing Systems****ACE™ Computerized Editing Systems Cont'd****ACE 200 Editor**

ACE 200 is an NTSC, PAL, and PAL-M compatible distributed processing electronic editor which controls up to 20 GPIs and 16 devices. These devices include VTRs, ATRs, Ampex Zeus advanced video processors, Ampex switchers, ADO special effects systems, as well as equipment from other manufacturers.

ACE Micro Editor

The ACE Micro Editor is an NTSC, PAL, and PAL-M compatible distributed processing electronic editor which provides full computing power and editing versatility at an affordable price. ACE Micro Editors have excellent functionality in broadcast, industrial, interformat, and second suite applications. ACE Micro controls one video switcher, and up to 4 GPIs and 4 VTRs, including type C, 3/4", Betacam and Betacam SP. A printer and one human interface are also supported.

Common Features and Functions**System Startup/Initialization**

- Direct access to initialization parameters • Event number 1-9999
- Individual reel number range 1-9999 • Preroll, Postroll, reaction times • Event out-time in EDL • Event duration in EDL • Channel assignment • Separate audio/video crosspoint assignment • Program duration • Set T.C. generator • PAL pairing indicators • PAL auto 4-field correction, auto 8-field correction • PAL 4-field checking • Save/recall system configuration on disk, multiple hardware files • Save/recall initialization configuration on disk, multiple user files • Save/recall EDL on disk, multiple EDL files, EDL file names • Save/recall programmable key contents on disk, multiple programmable key files

Device/Source/Channel Selection

- 16 total transport (ACE-200) • 4 total transports (ACE Micro) • "R" VTR/ATR • "A" through "O" source VTR/ATRs (ACE 200) • "A" through "C" source VTR/ATRs • Software-assignable AUX source crosspoints • AUX 1, AUX 2, AUX 3 • Black, bars, color • Audio channels 1, 2, 3 and 4

Motion Controls-Keyboards

- Rewind • Fast forward • Jog forward • Jog reverse • Play • Stop • Allstop • Cue • Search (entry-time) • Search (exit-time) • Mark-in, mark-out • Slo-mo set-in/Edit (Single-speed, forward or reverse, with auto shrink/stretch listed in EDL)

Remote Motion Controls/Joystick Controls

- Remote control standard • Rewind • Fast forward • Variable shuttle • Play • Variable play • Jog forward • Jog reverse • Stop • Search (entry-time) • Search (exit-time) • Joystick Slo-mo learn (Single-speed, forward or reverse, editable, listed in EDL) • Mark-in, mark-out • Machine select from Joystick • Joyscroll ECL and EDL

Edit Transition Functions

- Cut, dissolve, wipe, key • Split cut-in, split cut out • Split audio, 1, 2, 3 and 4 • Split cut, mix in • Split cut, mix out • Switcher preview mode (preview dissolve, wipe, key, ADO from joystick—effect and duration) • Delayed effects (dissolve, wipe, key) • Key in (dissolve/cut) • Key out (dissolve/cut) • Wipe keys • Enhanced multiple M/E control from keyboard

Time Code Functions

- 525 full and drop frame • 625 full frame • Set in/set out • Set duration • Trim in/trim out • Trim duration • Undo function • Mark in/mark out • Transfer sets/trims/durations • Tagging (match frame calculations—source tag, reel tag, EDL tag) • Auto set-in of matched in-time • "Pick/put" time code transfer from EDL to ECL • "Pick/Put" copy event from EDL to ECL • Recall last event • Fill mode • Time code storage registers • Jam sync

Switcher Effects

- Switcher preview mode (preview dissolve, wipe, key, ADO from joystick—effect and duration) • Partial effects, set-in, joystick mark-in (dissolve, wipe, key, ADO) with Ampex AVC, Century, Vista, 4100, and Penguin switchers • ADO/DVE control from keyboard • Switcher memory triggers, full EDL listing • Full multiple M/E control (AVC and Century series switchers only) • Enhanced switcher breakaway modes

General Purpose Interface (GPI)/Triggers

- GPI pulse • 4 GPI (standard) • 20 GPI maximum (4 standard plus two 8-closure GPI boards ACE-200) • 32 GPI triggers per event • Single GPI, multiple pulse per edit • AVC series (Standard, Super, Century) multiple M/E triggers • AVC series (Standard, Super, Century) panel memory triggers • GVG 300 E-mem triggers • Full trigger EDL listing (GPI, Multiple M/E, Panel Memory, E-mem)

Perform Edit/Preview Edit Functions

- Frame accuracy with time code • Time code or tape position editing • Multiple record VTRs supported • Insert or assembly • Open ended edits • Replay • Multi-tasking • VVV, VVB, VBV • VV entrance only, exit only • Effect only preview (switcher preview mode) • Multiple VTR sync roll

Filing System

- 4 distinct filing areas • Operator files—system initialization, times, menu configuration • Hardware files—ILC chan., transport configuration, Aux. crosspts. • EDL files • Macro key files • Multiple files per disk in each of the 4 filing areas • User-definable filenames

List Management

- 6000 line EDL (ACE-200) • 300 line EDL (Ace Micro) • Record start time • Modify (re-edit) • Insert, Append, Delete • Ripple, Slide • Copy, Move • Renumber • Clean tails • Sort by record entry • Sort by event number • Set record indicator, clear record indicator • Scroll EDL • User configuration display • EDL logging (write to disk after each edit) • Read in/write out CMX 340x EDL format

Auto Assembly

- Sequential assembly • Checkerboard assembly • Continuous R-VTR roll capability • Lookahead A-mode • Lookahead B-mode • Enable events, disable events • Preview assembly • Resume assembly • Replay assembly • Prompt for reel change

Learn (Macro) Keys

- 4 learn keys on-line • 100 keystrokes per learn key • 300 total keystrokes between the 4 on-line learn keys • Learn keys saved on disk • Changing of learn keys supported • Recursive learn keys supported • Learn key pause with manual "continue" • Learn key titles

Power

- 90-130VAC, 200-265VAC, 50-60Hz

Communications

- RS-422 serial control to all interfaces, 38.4k Baud • RS-232C serial control to a printer and paper tape punch, adjustable baud rate

Human Interfaces/Options

- 15" touchscreen (Ace-200) • Dedicated keyboard • Joystick control unit standard • 15" data monitor • TouchScreen option (ACE Micro) • Integral comments keyboard standard with keyboard or TouchScreen • Aux. standalone comments keyboard optional*

Edit Controller (Standard) ACE-200

- 16-card chassis • LSI 11/73 CPU • Timing generator board • Power line monitor • Phase detector board (multi-standard) • 2M byte RAM • Character generator board • Printer/4-closure GPI board • Extender board

Hard Disk System (Standard) ACE-200

- 8" floppy disk (single) • 20M byte Winchester • Hard disk cable assembly

Edit Controller (Standard) ACE Micro

- Card chassis with Q-bus • LSI 11/23 CPU • Timeline ILC (3 standard) • Dual 8" disk drive • Phase detector board • 256K RAM • Character generator board • Disk I/O board • Printer/4-closure GPI board

* Available upon release

ACE-25 Computerized Editing System

ACE-25 is an NTSC, PAL, and PAL-M computer-based editor, which controls up to 4 VTRs (3 source and 1 record), and 3 GPIs. ACE-25 is a modular editing system; the standard chassis provides slots for optional internal switchers, 1 audio, 1 video.

Standard Features

- 80286 CPU • One (1) Megabyte of on-board RAM • 1000 line SMPTE EDL, battery-backed • Dedicated keyboard with multi-function rotary knob • Two (2) 3.5" disk drives • Floppy disk controller • Monochrome Display Adaptor (MDA), high resolution • 8-channel Intelligent Line Controller (ILC) • Color framer with GPI • Extender board • Internal audio and video switcher capability • Four (4) GPI output ports • On-screen VU meters and EQ bar-graphs with internal audio switcher • Auto-assembly and list management

Functions**System Startup/Initialization**

- Direct access to initialization parameters • Edit number 1-9999 • Individual reel number range 1-9999 • Preroll, postroll • Reaction times • Edit out-time in EDL • Program duration • PAL and PAL-M pairing indicators • PAL and PAL-M auto 8-field, 4-field, 2-field correction • PAL and PAL-M 8-field, 4-field, 2-field checking • NTSC auto 2-field correction • NTSC 2-field checking • Color frame learn • Save/recall system configuration on disk • Save/recall EDL on disk, multiple files, file names • Auto clean tail—on/off • Auto sort—on/off

Device/Source/Channel Selection

- Four (4) total transports • "R" VTR • "A" through "C" source VTRs • 1 "spare" VTR port • Software-assignable audio/video cross-points • AUX 1, AUX 2, AUX 3, black • Audio channels 1 and 2

Motion Controls

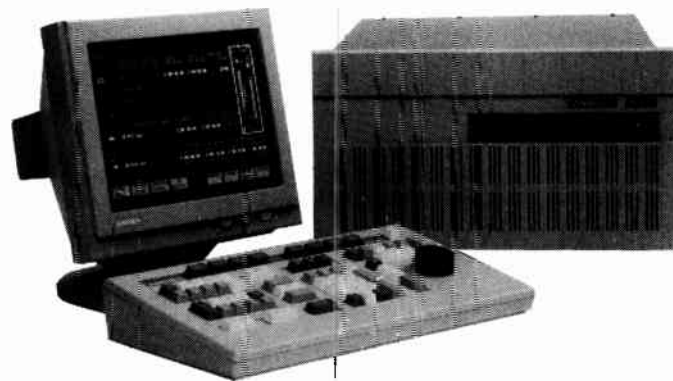
- Rotary knob standard • Variable shuttle (rotary knob) • Jog forward, jog reverse (rotary knob) • Variable play (rotary knob) • Play • Rewind, fast forward • Stop, allstop • Cue, search entry, search exit • Mark-in, mark-out • Slo-mo set-in/edit (single-speed, fwd. or rev.) • "All" button controls all txpts, any function • Manual txpt control capability during preview and edit pass

Edit Transition Functions

- Cut, dissolve, wipe, split, key (with ext. video switchers) • Cut, dissolve, key, split (with int. video switchers) • Cut, dissolve, split (with int. audio switcher) • Split video • Split audio 1 and 2 • Split cut in, split cut out • Split mix in, mix out • Split cut, split mix • Delayed effects • Key cut in, cut out • Key mix in, mix out • Key mix in and mix out (single edit) • Downstream key effects • Downstream fade to black (with int. video switchers) • Downstream fade to quiet (with int. audio switcher) • Wipe keys (with ext. video switchers) • Switcher preview mode (preview dissolve, wipe, key from rotary knob—effect and duration) • Partial effects, set-in, rotary-knob mark-in (dissolve, wipe, key) • Manual mode-enable (V, A1, A2) capability during preview and edit pass

Timecode Functions

- 525 full and drop frame • 625 full frame • Set in, set out, set duration • Trim in, trim out, trim duration • Trim all • Mark in, mark out • Undo function • Transfer sets, trims, durations • Tagging (match frame calculations—source tag, reel tag, EDL tag, sync tag) • Auto set-in of matched in-time (auto-tag) • "Pick/put" timecode transfer from EDL to ECL • "Pick/put" copy edit from EDL to ECL • "Pick/put" copy GPI trigger from EDL to ECL • Recall last edit • Fill mode • Constant register



ACE-25

General Purpose Interface (GPI)

- Four (4) GPI ports standard • Ten (10) GPI triggers per edit • Single GPI, multiple pulse per edit • Full GPI EDL listing

Perform Edit/Preview Edit Functions

- Frame accuracy with timecode • Timecode or tape position editing • Insert or assemble modes • Open ended edits • Multi-tasking • VVV, BVB, VBV • VV entrance only, exit only • Effect only preview (switcher preview mode) • Replay • Multiple VTR sync roll

Filing System

- 1 operator file—system initialization, times • 1 hardware file—transport configuration, xpts • Multiple EDL files, user-definable file names (8 characters plus 3 character extension) • Battery-backed RAM stores operator/hardware file

List Management

- 1000 line EDL, battery-backed • Record start time • Recall edit • Delete edit • Ripple • Slide • Copy, move • Renumber • Clean tails • Sort by record entry • Set record, clear record indicator • Scroll EDL via rotary knob • Write to disk after each edit • Print after each edit • Read in/write out CMX 340x EDL format

Auto Assembly

- Sequential assembly • Preview assembly • Resume assembly • Replay assembly • Prompt for reel change

Communications

- 8 SMPTE serial ports (keyboard, VTRs, external switchers), 9-pin "D" • 2 RS-232C serial ports (peripheral devices), adjustable baud rate, 25-pin "D" • 1 parallel printer port, standard IBM printer interface, 25-pin "D" • 4 independent general purpose interface lines (GPI), 25-pin "D" • 2 monochrome data monitor outputs, MDA compatible, 9-pin "D", drivers for cables up to 30 meters

Human Interfaces/Options

- Dedicated keyboard with rotary knob • 14" high-resolution data monitor option • Rackmount monitor option • Standalone comments keyboard option • Composite video data output option

Physical

- Editor chassis, rackmountable, top accessible: 10.5" H x 19" W x 19.5" D • Keyboard: 1.53" H (front), 3.39" H (back) x 17.5" W x 9.69" D; slope: 10.35° • Data monitor (optional): 13.5" H x 12.5" W x 12.5" D

AMPEX CORP.*Betacam ENG Camcorder***CVR-505 Betacam SP ENG Camcorder**

The CVR-505 Camcorder combines all the benefits of a full featured CCD camera with a portable VTR capable of studio quality video and audio.

The CVR-505 Consists of the CVC-5 CCD Camera and the CVR-5 Video Tape Recorder

The CVC-5 3-CCD Camera is rugged, reliable and operates under conditions that are difficult or impossible for other camera types.

The CVR-5 VTR is compact, versatile and can be used in a number of composite and component configurations. And, since it records and plays both Betacam and Betacam SP formats, the CVR-5 is ideal for a wide range of ENG applications.

The CVC-5 Camera**Superior Picture Quality**

In high contrast settings, the CVC-5 allows you to compress high lights with a switchable Dynamic Contrast Control.

And, CCD technology eliminates lag, burn-in and microphonic noise while delivering excellent resolution and exceptional sensitivity. The camera is highly resistant to EMI.

No Registration Hassles

CCD image geometry eliminates the need for registration adjustments — and virtually eliminates registration error in all zones.

A Full Range of Operational Conveniences

- Automatic iris control
- Automatic white/black balance
- 2 white balance memories for each filter position
- Linear matrix
- 2H delay image enhancement
- Shading compensation for lens extender
- Built-in effects microphone
- Automatic white level compression
- 3200° white preset

Viewfinder Displays Provide:

- Record status
- Filter position
- Video level
- Audio level and control (CH. 1)
- Gain setting
- White/black balance status, battery status, tape remaining

Stand-Alone Versatility

When combined with a CA-3A adaptor the CVC-5 can be operated in a stand-alone configuration. It will feed either component or composite video to a remote VTR via a 26-pin connector. An RM-P3 operator control panel may be connected.

Rugged Construction

The CVC-5 features a compact, lightweight, diecast magnesium alloy frame, and is both dust and moisture resistant.

The CVR-5 Portable VTR

The CVR-5 can be configured as an integral part of an Ampex Betacam SP Camcorder, or operated as a stand-alone recorder.

The CVR-5 can also be configured to record input from most existing cameras — in either the component or composite domain.

The CVR-5 records and plays both oxide and metal particle tape, up to the 30 minute size cassette.

Excellent Picture Quality — with 2 Playback Modes — 8 Heads

Luminance or Compressed Time Division Multiplex (CTDM) chrominance pictures can be seen in the camera viewfinder either during recording, using the confidence playback mode, or later, using the normal playback mode.

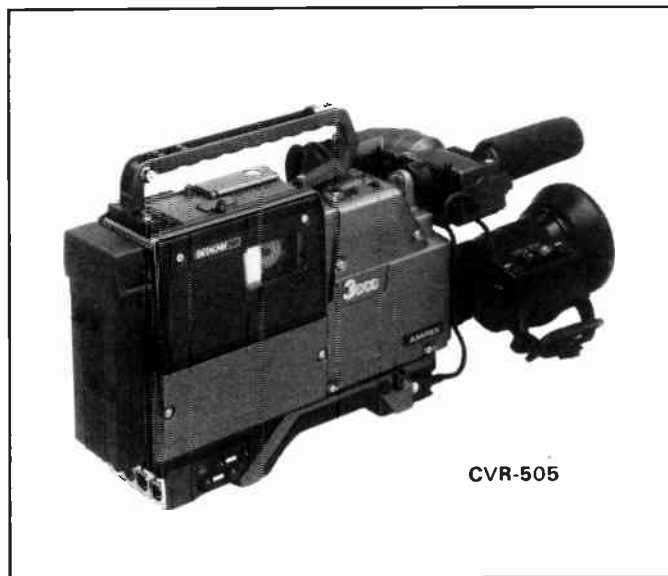
Four Audio Channels with Performance to Match the Video

With the Betacam SP format the CVR-5 can deliver true studio quality audio performance.

In addition to two high performance AFM tracks, specifications have been improved on the longitudinal channels. Dolby C noise reduction is also provided on the longitudinal channels to further improve sound quality.

And, as with the video capability, you also have audio confidence playback while recording.

Besides recording directly from the camera's microphone, the CVR-5 has four XLR inputs for external microphones or audio lines.



CVR-505

Full Bandwidth Playback Capability

The CVR-5, when combined with an optional CVA-500 playback adaptor, will output at full video bandwidth in color plus 1 channel of audio for recording check or microwave transmission.

Recording Review Function

For a quick confidence check the CVR-5 will rewind and playback the final few seconds of the previous recording, then automatically recue for the next recording.

Multifunction Time Code Generator/Reader with Genlock

CVR-5 offers both Vertical Interval Time Code (VITC) as well as SMPTE/EBU longitudinal track format. VITC is line selectable.

The versatile CVR-5 Time Code System of the CVR-5 includes presettable user bits, free-run or record-run modes, and genlock for setting/synchronization to an external time code master generator.

And, to complement the CVR-5 longitudinal playback capabilities, the time code system now has a built-in reader.

Frame Accurate Automatic Backspace Editing

To eliminate picture breakup between sequences, the CVR-5 provides a backspace assemble editing function. It automatically rewinds at the end of a sequence when the record button of the CVC-5 is pushed, then recues the tape at a clean edit point. Backspace editing can be performed from either the standby or save modes.

Phantom Power Supply

A Phantom Power Supply is built into the CVR-5. It's designed to power a professional quality condenser microphone, providing audio input on Channel 1.

Adaptors Let You Configure Your CVR-5 for a Variety of Applications

- CVA-5 allows the CVR-5 to accept either component or composite input from a wide range of cameras
- CVA-1 allows the CVR-5 to accept component input from a wide range of cameras
- CVA-500 allows color playback at full bandwidth

Designed for Operational Convenience

Two VU meters and controls are provided so you can accurately adjust record and playback levels on all four audio channels.

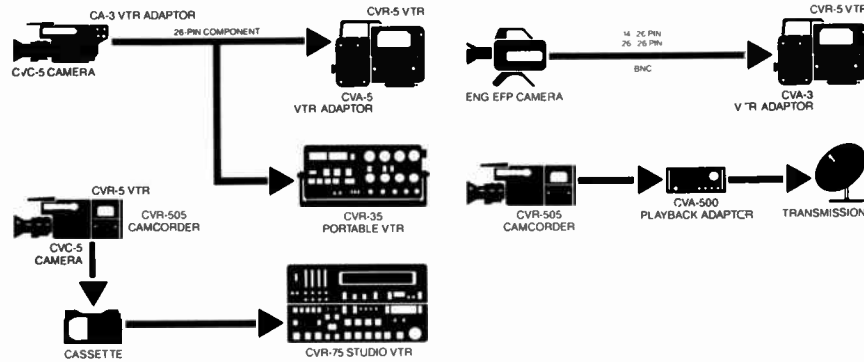
Other Features Include:

- Time code/tape time display
- Video input level display
- Battery status display

Warning indicators are also provided for status of:

- RF
- Servo lock
- End of tape
- Tape slack
- Condensation
- Low battery

TYPICAL SYSTEM CONFIGURATION



CVR-505 Cont'd

CVR-5 RECORDER SPECIFICATIONS (Playback on CVR-75)

		NTSC	NTSC	PAL/SECAM	PAL/SECAM
VIDEO	Bandwidth, luminance	OXIDE TAPE 30 Hz to 4.1 MHz +0.5/-6.0 dB	METAL PARTICLE TAPE 30 Hz to 4.5 MHz +0.5/-3.0 dB	OXIDE TAPE 25 Hz to 4.0 MHz +0.5/-6.0 dB	METAL PARTICLE TAPE 25 Hz to 5.5 MHz +0.5/-3.0 dB
	Chrominance, R-Y/B-Y	30 Hz to 1.5 MHz +0.5/-3.0 dB	30 Hz to 1.5 MHz +0.5/-3.0 dB	25 Hz to 1.5 MHz +0.5/-3.0 dB	25 Hz to 1.5 MHz +0.5/-3.0 dB
	S/N Luminance	48 dB	51 dB	46 dB	50 dB
	Chrominance, amplitude	50 dB	53 dB	49 dB	50 dB
	Chrominance, phase	50 dB	53 dB	49 dB	50 dB
	K-factor (2T pulse)	Less than 3%	Less than 2%	Less than 3%	Less than 2%
	Differential gain	Less than 3%	Less than 2%	Less than 3%	Less than 2%
	Differential phase	Less than 3°	Less than 2°	Less than 3°	Less than 2°
	Chrominance/luminance	Less than 20 nsec	Less than 20 nsec	Less than 20 nsec PAL Less than 50 nsec SECAM	Less than 20 nsec PAL Less than 50 nsec SECAM
	Delay	Less than 3%	Less than 2%	Less than 3%	Less than 2%
AUDIO	Frequency response	LONGITUDINAL: OXIDE TAPE 50 Hz to 15 KHz ±3 dB	LONGITUDINAL: METAL PARTICLE TAPE 50 Hz to 15 KHz +1.5/-3 dB	AFM METAL PARTICLE TAPE 20 Hz to 20 KHz +0.5/-2.0 dB	
	S/N	50 dB (3% distortion level, without NR system)	54 dB (3% distortion level, without NR system)		
	Dynamic range	N/A	N/A	More than 85 dB	
	Distortion (1 KHz ref. level)	Less than 2%	Less than 1.5%	Less than 0.5%	
	Wow and flutter	Less than 0.15% rms	Less than 0.15%	N/A	
	Crosstalk	N/A	-50 dB	-65 dB	
	Depth of Erasure	More than 70 dB	More than 70 dB	N/A	
SIGNAL INPUTS	Video: Luminance	1.0V p-p, 1 K Ohms unbalanced			
	Chrominance	R-Y/B-Y: 0.7V p-p, 1 K Ohms unbalanced			
	Audio: Ch. 1/2/3/4	-60/+4 dBm selectable High Impedance, balanced			
	Time code	1.0V p-p, 75 Ohms			
SIGNAL OUTPUTS	Video (for TC)	1.0V p-p, 75 Ohms			
	Audio	Speaker, Earphone: -20 dBm max (variable) (for 8 Ohm earphone)			
	Time code output, BNC	1.0V p-p, 75 Ohms			
GENERAL	Record time	30 min./NTSC	34 min./PAL/SECAM		
	Operating time	50 min. with NP-1A (with CVC-5 camera)			
	Operating position	Horizontal or vertical			
	Tape speed	11.86 cm/sec/NTSC	10.14 cm/sec/PAL/SECAM		
	Rewind time	Less than 3.5 min. for 30 min. cassette			
	Phantom power (A1)	45 VDC			
	Dimensions	223 mm (8.8 in) H x 242 mm (9.5 in) W x 110 mm (4.3 in) D			
	Weight	3.3 kg (7.3 lb)			
	Temperature, Operating	0° C to +40° C (32° F to 104° F)			
	Storage	-20° C to 60° C (-4° F to 140° F)			
	Humidity	Less than 85% RH			
	Power requirements	DC 12V (11.0V to 17V) NP-1A, BP-90 Battery or optional AC/DC adaptor			
	Power consumption	13W (12V, 830 mA), 2.4W in power-save mode			
Supplied accessories	3 Screws, 50-pin cap, Shoulder strap, DC-510 Battery Case, Operation/maintenance manual				

CVC-5 CAMERA SPECIFICATIONS

CAMERA	Pick-up device	3-chip 2/3" MOS CCD
	Active picture elements	510 (H) x 492 (V) NTSC; 500 (H) x 582 (V) PAL
	Optical system	F1.4 prism system, RGB
	Built-in filters	1:3200° K, 2:5600° K + 1/4ND, 3:5600° K, 4:5600° K + 1/16 ND
	Lens mount	Special bayonet mount
	Video output	1.0V p-p, sync negative, 75 Ohms 2 outputs: TEST OUT, VTR connector
	Horizontal resolution	550 TV lines
	Registration	0.05% all zones (exclusive of lens error)
	Geometric distortion	Less than 1%
	Sensitivity	2000 lux with F5.6, 90% reflectance (NTSC) 2000 lux with F5.0, 90% reflectance (PAL)
Minimum illumination	Approx 15 lux (with f1.4 lens) +18 dB gain (NTSC)	} +24 dB gain available
	Approx 20 lux (with f1.4 lens) +18 dB gain (PAL)	
S/N Ratio	NTSC: 58 dB, PAL: 55 dB	
Connectors	VTR: 50-pin, TEST OUT: BNC, LENS: 12-pin	
VIEWFINDER	Picture tube	1.5 inch monochrome, BRIGHT control, CONTR control, TALLY switch, AUDIO control, ZEBRA on/off switch
	Resolution	500 TV lines
GENERAL	Power requirements	DC 12V (10.5V to 17V)
	Power consumption	10.5W NTSC/PAL, 12W SECAM
	Warm-up time	3.5 seconds from pre-heat condition
	Operating temperature	-20° C to +45° C (-4° F to 113° F)
	Storage temperature	-20° C to +50° C (-4° F to 122° F)
	Microphone	Sharp-directional
	Supplied accessories	Extension board, tripod adaptor, Extractor, rain cover, 50-pin cap, mount cap, carrying handle
	Weight	236 mm (9.2 in) H x 102 mm (4 in) W x 478 mm (18.8 in) L Approx 3.2 kg (7 lb, 1 oz) with viewfinder

AMPEX CORP.*Betacam Cameras*

CVC-50



The CCU-350 camera control unit remotely controls all functions of the CVC-50 including the speed of the electronic shutter.

CVC-5/CVC-50 Betacam Cameras

Common Features

- Automatic iris control • Automatic white/black balance • 2 white balance memories for each filter position • High resolution, adjustable viewfinder • Genlock capable • Microphone
- Automatic white level compression • Color bar generator

Viewfinder Displays Provide:

- Record status • Tape remaining • Filter position • Video level • Audio level and control (CH1) • Gain position • White/black balance • Battery condition • Shutter speed (CVC-50)

The CVC-5 Camera

Superior picture quality for ENG, even under adverse conditions.

CVC-5 allows you to compress the high light signal with switchable Dynamic Contrast Control.

CCD technology eliminates lag, burn-in and microphonic noise. Imaging geometry eliminates the need for registration controls—the camera is always optimally registered.

The CVC-5 has a lightweight, diecast magnesium alloy frame and is dust and moisture resistant.

The durable solid-state image sensors are shock resistant, too. And, they're unaffected by outside magnetic or electrical interference.

You'll also enjoy longer recording times because power consumption is about half that of a conventional camera.

The CVC-50 Camera

The CVC-50 combines all the durability and convenience of the CVC-5 with the picture dynamics you demand for sports, EFP and high-quality ENG production.

Frame Interline Transfer CCD sensors reduce vertical smear to such a degree that it's no longer visible in most shooting situations.

A switchable electronic shutter makes the CVC-50 especially effective for sports and action news. It allows you to select any of seven shutter speeds: $\frac{1}{100}$ through $\frac{1}{2000}$ NTSC, $\frac{1}{60}$ through $\frac{1}{1600}$ PAL. The speed is displayed in your viewfinder.

The viewfinder can be shifted back and forth as well as right and left for a more comfortable shooting position. And, an adjustable chest brace has been added to both cameras to help balance long lenses and ease fatigue.

A Wide Selection of Equipment and Options

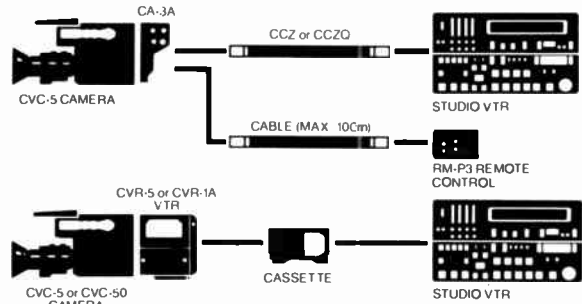
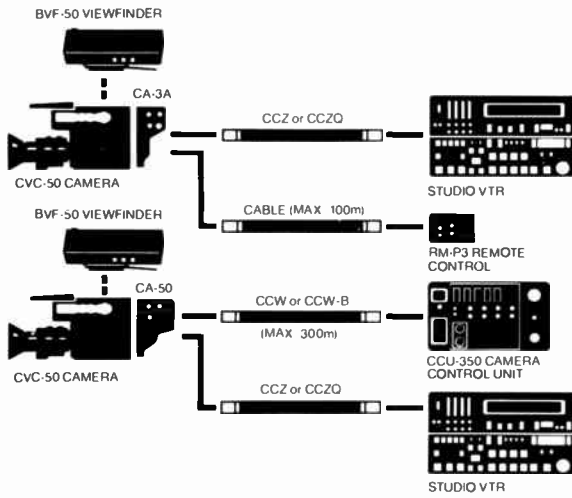
You can assemble a high-performance camcorder by combining either camera with a CVR-1A or CVR-5 on-board VTR.

Or, add a CA-3/CA-3A stand-alone adaptor and feed component or composite video directly to a remote VTR. An RM-P3 Remote Control Unit can be connected to the CA-3A to allow simple remote control.

And for an expanded system, add a BVF-50 5" black and white viewfinder and CA-50 adaptor to your CVC-50 camera and run it all with our CCU-350 camera control unit.

CVC-5/CVC-50 Cont'd

TYPICAL SYSTEM CONFIGURATIONS



CVC-50/CVC-5 CAMERA SPECIFICATIONS

CAMERA	Imaging device format Imaging array density Optical system Built-in filters Gain select Lens mount Video output	3-chip-2/3" CCD (New FIT type—CVC-50) 510 (H) x 492 (V) NTSC; 500 (H) x 582 (V) PAL F1.4 prism system 1:3200°K, 2:5600°K + 1/4ND, 3:5600°K, 4:5600°K + 1/16 ND <0° + 9° + 18 dB (+ 24 dB available) Special bayonet mount 1.0V p-p, sync negative, 75 Ohms 2 outputs: TEST OUT, VTR connector 550 TV lines (Center) 0.05% all zones (Excluding lens error) Less than 1% 2000 lux at F5.6, 90% reflectance (NTSC) (Shutter off CVC-50) 2000 lux at F5.0, 90% reflectance (PAL) (Shutter off CVC-50) NTSC - 15 lux; PAL - 20 lux (with f1.4 lens, + 18dB gain) CVC-5 - NTSC: 58 dB, PAL: 55 dB; CVC-50 - NTSC: 60 dB, PAL: 57 dB (CVC-50 only) Less than 0.0002% (Shutter off) (CVC-50 only) NTSC: 1/100, 1/125, 1/175, 1/250, 1/500, 1/1000, 1/2000 (sec.) PAL: 1/60, 1/100, 1/150, 1/200, 1/400, 1/800, 1/1600 (sec.)
	Horizontal resolution Registration Geometric distortion Sensitivity	VTR: 50-pin; TEST OUT: BNC; LENS: 12-pin; Remote: 6-pin (CVC-50)
	Minimum illumination S/N ratio Smear (Y) Electronic shutter	1.5 monochrome, BRIGHT control, CONTR control, TALLY switch, AUDIO control, ZEBRA on/off switch 500 TV lines
VIEWFINDER	Picture tube Resolution	
REMOTE CONTROL	Functions	CVC-50 and CVC-5 with optional CA-3A and RM-P3: Gain, Output Mode, Iris Auto/Man., Iris, Master Pedestal, R/B Pedestal, R/B level, W/B Balance, Lock. CVC-50 with optional CA-50 and CCU-350: Gain, Output Mode, Iris Auto/Man., Iris, Master Black, Master Gamma, R/B Black, R/B Levels, Black Balance, White Balance, Master Knee On/Off, Master Knee, Detail, Cable Comp., Panel Active, Headset Level, Camera Call, Shutter On/Off, Shutter Speed, SCH Phase, H Phase, Intercom Mode.
	Distance	RM-P3: 100 Meters (10M cable supplied) CCU-350: 300 Meters (25, 50, 100 M cables available)
GENERAL	Power requirements Power consumption Warm-up time Operating temperature Storage temperature Microphone Supplied accessories Dimensions Weight	DC 12V (10.5V to 17V) CVC-5 - 10.5 W; CVC-50 - 11.5 W 3.5 seconds from pre-heat condition - 20°C to + 45°C (- 4°F to 113°F) - 20°C to + 50°C (- 4°F to 122°F) Sharp-directional Extension board, tripod adaptor, chest brace, extractor, rain cover, 50-pin cap, mount cap, carrying handle, op. maint. manual 236mm (9.2 in) H x 102mm (4 in) W x 478mm (18.8 in) L CVC-5 - Approx 3.2 kg (7 lb, 1 oz); CVC-50 - 3.4 kg (7 lb, 8 oz) with viewfinder

AmpeX reserves the right to make product specification changes at any time without notice.

AMPEX CORP.**Camcorder****CVR-200 Betacam SP Camcorder**

The CVR-200 combines an advanced 3-CCD chip camera and Betacam SP VTR in a single compact unit.

The CVR-200 is lightweight, simple to operate and features low power consumption for long operating times.

Advanced CCD imaging technology allows the camera to deliver superior picture quality for ENG, particularly under adverse conditions.

The newly designed miniaturized VTR accepts both Betacam SP particle tape or conventional Betacam oxide tape, giving you the flexibility to match tape to your application.

The one-piece configuration makes the CVR-200 compact, lightweight and rugged enough to meet the demands of almost any ENG or field production environment.

Camera

550-line resolution, high sensitivity and a specially designed enhancement system deliver camera response that's optimally matched to the onboard Betacam SP VTR.

The camera's high sensitivity makes it possible to shoot in extremely low-light locations.

Clear pictures are also possible in high contrast situations by compressing the high light signals with the Dynamic Contrast Control.

This auto knee control is on/off selectable and extends the dynamic range of the camera.

The solid-state CCD sensors in the CVR-200 are bonded directly to the prism block, forming a shock resistant, permanently aligned assembly that eliminates the need for registration adjustment.

CCD technology also eliminates lag, burn-in and microphonic noise and is unaffected by outside magnetic or electrical interference.

Automatic Functions

Basic automatic operational features include:

Automatic Iris Control

The iris responds quickly and automatically without overshoot.

Automatic White/Black Balance

A dual white balance memory is provided for each filter. Color temperature is memorized during white balance adjustment and displayed in the viewfinder.

Viewfinder

The 1.5" monochrome viewfinder employs a magnetic focus-type CRT to deliver resolution of 550 TV lines.

Adjustable dual edge peaking correction is provided for a crisp picture.

The viewfinder rotates and adjusts forward, back and laterally for comfortable shooting in various positions.

A large diameter viewfinder lens makes it possible for operators to see the full CRT—including the corners—even when standing back from the viewfinder.

The unit itself is compact, lightweight, consumes less power than previous models and requires only a 1 second warm-up—eliminating the need for a preheat mode.

Viewfinder displays include the following machine status indications:

- RF • Servo • Humid • Slack • Tape remaining • Tape end • Battery • Record status • Audio level (CH1) • Video level (Zebra control) • White/black balance • Filter indicator • Gain • Color temperature

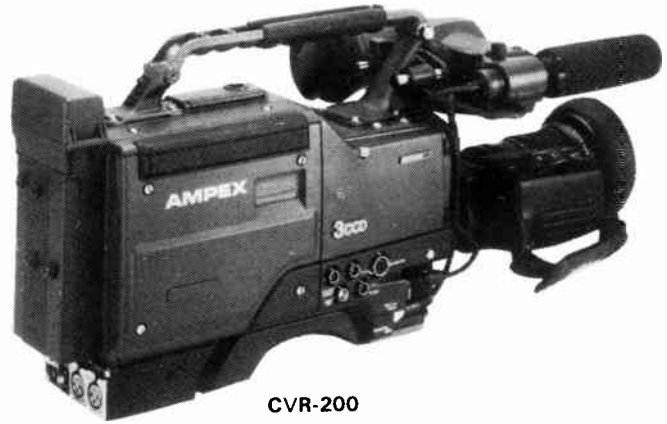
VTR

A miniaturized tape transport and drum assembly, as well as smaller, higher density circuit boards help reduce the size of the VTR.

The one-piece configuration of the CVR-200 also eliminates the main harness connection between the VTR and the camera, which further reduces weight.

The CVR-200 accepts cassettes of up to 30 minutes in length in either metal particle or the conventional Betacam oxide tape. The Betacam SP metal particle tape provides improvements in the luminance bandwidth, SNR and the pulse and bar response in both the luminance and chrominance channels.

Viewfinder playback in the CVR-200 includes video (luminance or CTDM chrominance) and longitudinal audio.

**CVR-200**

A Record Review function is also provided. It automatically rewinds two seconds of tape and plays it back for review, stopping precisely at the previous position. Review time can be extended to up to 10 seconds if desired.

A built-in time code generator/reader automatically records SMPTE time code on a dedicated time code track. VITC can be inserted and the insertion position can be selected by the operator.

The CVR-200 can also be locked to an external time code—or provide time code for other machines—through the camera's external inputs and outputs.

An LCD display provides time code, user bits, tape time and VTR status. Two channels of audio and battery status are displayed on bar graphs incorporated in the LCD.

Audio

Four channels of audio are provided on the CVR-200: two AFM channels as well as two longitudinal channels with Dolby® Type C noise reduction.

A specially designed microphone is provided that can easily be detached from the body of the CVR-200. When used with an optional extension cable it's ideally suited for interviews and other remote mike applications. A two channel phantom power supply and dual XLR connectors provide power for two remote mikes.

A built-in speaker allows the operator to monitor mixed channel audio, single channel audio, or alarm tone during recording. Separate monitor level and alarm tone level controls are provided.

Operation

The CVR-200 is well balanced and extremely easy to operate. For convenience and comfort both the shoulder pad and the viewfinder are adjustable. Controls are simplified to help avoid mistakes. The play, rewind, fast forward, stop and eject buttons are located under a safety lid on the top of the CVR-200. All keys are automatically locked during record mode.

Options and Accessories

Optional equipment designed exclusively for the CVR-200 makes it an extremely flexible camcorder for a variety of applications.

CVA-500 Field Playback Unit

The CVA-500 is a compact, lightweight adaptor designed to mate with the CVR-200 through a 20-pin interface. It provides full color playback along with one channel of audio (single channel or mixed). Both composite and VHF outputs are provided for microwave transmission and/or recording check on television receivers. An interface for an external TBC is also provided.

RM-P3 Remote Control Unit

For remote control of basic camera functions. Interface via a 6-pin connector.

Battery Cases

Optional auxiliary battery cases are available for either the BP-90 or for an additional NP-1A.

*Dolby is a trademark of Dolby Licensing Corporation.

AMPEX CORP.

Betacam Portable
Recorder/Player**CVR-35 Betacam SP Portable VTR**

Through advanced circuit design and semiconductor technology, power consumption for the CVR-35 is kept to a minimum.

You can choose between NP-1A or BP-90 batteries for up to 120 minutes of recording on one set of batteries.

An AC-500 Power Adaptor is also available for AC operation.

Excellent picture quality — with two playback modes

Now you can insure that you have recorded the picture you need. Luminance or Compressed Time Division Multiplex (CTDM) monochrome pictures can be seen in the camera viewfinder, either during recording using the confidence playback mode, or later using the normal playback mode. In addition, color pictures can be viewed on a monitor during normal playback.

Four audio channels, with performance to match the video

With the Betacam SP format the CVR-35 can deliver true studio quality audio performance.

In addition to two high performance AFM tracks, specifications have been improved on the longitudinal channels. Dolby* C noise reduction is also provided on the longitudinal channels to further improve sound quality.

And as with the video capability, you also have audio confidence playback while recording, to assure that those valuable scene sounds are being captured.

Frame accurate backspace editing and an RS-422 interface makes field editing easier

Automatic frame accurate backspace editing and nearly instantaneous starts on the CVR-35 provide smooth, continuous recording without break-up between sequences.

The CVR-35 is designed to also act as a high quality video/audio "feeder" source for an editing VTR. During the editing process the CVR-35 can be controlled by the editing VTR through the RS-422 serial interface.

Multifunctional time code generator/reader with genlock

Now you can have a choice of time codes for post-production on Betacam SP. In step with the extended performance of Betacam SP, the CVR-35 brings the advance of Vertical Interval Time Code (VITC) as well as the SMPTE/EBU longitudinal track format.

The versatility of the Time Code System of the CVR-35 includes pre-settable User Bits, free-run or record-run modes, and genlock for setting/synchronizing to an external time code master generator.

To complement the CVR-35 playback capabilities, both Time Code Systems now have built-in readers.

TBC interface adds versatility

Through a time base corrector, the CVR-35 is capable of studio-quality color playback for re-recording, microwave, satellite, or on-air transmission.

Advanced video/sync and subcarrier inputs are provided for use with an Ampex TBC-40 or other TBC.

Complete professional connector panel

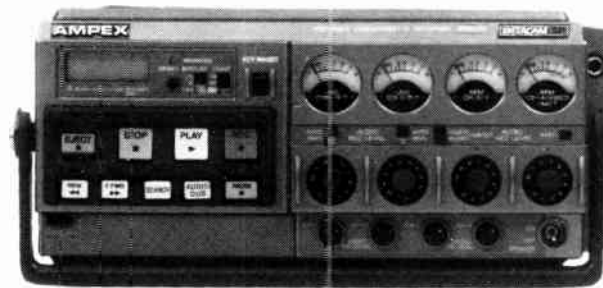
Although compact in size, the CVR-35 provides a full featured connector panel that allows you to configure a system that meets your specific applications.

Composite and component video inputs and outputs are provided along with audio interfaces, allowing the CVR-35 to be connected to a wide variety of ENG/EPF equipment.

Designed for operational convenience

Independent VU meters and controls are provided so you can accurately adjust record and playback levels on all four audio channels. Other features include:

- Built-in RF modulator
- Time code/tape time display
- Video input level display
- Battery status display



CVR-35

**Specifications
(Playback on CVR-75)**

	NTSC Oxide Tape	NTSC Metal Particle Tape
Video		
Bandwidth,		
Luminance:	30Hz to 4.1MHz +0.5/-6.0dB	30Hz to 4.5MHz +0.5/-3.0dB
Chrominance, R-Y/B-Y:	30Hz to 1.5MHz +0.5/-3.0dB	30Hz to 1.5MHz +0.5/-3.0dB
S/N Luminance	48dB	51dB
Chrominance,		
amplitude:	50dB	53dB
Phase:	50dB	53dB
K-factor (2T pulse):	< 3%	< 2%
Differential Gain:	< 3%	< 2%
Differential Phase:	< 3°	< 2°
Chrominance/ Luminance Delay:	< 20nsec	< 20nsec
LF Linearity:	< 3%	< 2%
Audio		
Longitudinal:		
Oxide Tape	Longitudinal:	Longitudinal:
Metal Particle Tape	50Hz to 15KHz ± 3dB	50Hz to 15KHz + 1.5/-3dB
Frequency Response:	50dB (3% distortion level, without NR system)	54dB (3% distortion level, without NR system)
S/N Ratio:	N/A	N/A
Dynamic Range:		
Distortion (1KHz ref. level)	< 2%	< 1.5%
Wow and Flutter:	< 0.15% RMS	< 0.15% RMS
Crosstalk:	N/A	N/A
Depth of Erasure:	> 70dB	> 70dB
Signal Inputs		
Video: (75 ohms)		
BNC Connector:	1.0V p-p (VBS)/4.0V p-p (SYNC)	
Camera: (75 ohms)	(26 pin connector)	
Composite:	1.0V p-p	
Component Y:	1.0V p-p	
B-Y/R-Y:	0.7V p-p	
SC (75 ohms) BNC:	2.0V p-p ± 6dB	
Audio Ch.		
1/2/3/4 XLR:	-60dBm/-20dBm/+4dB selectable. High impedance, balanced	
Time Code: BNC:	0.5V -18V p-p, 10K ohms	
Signal Outputs		
Video 1/2, BNC (75 ohms):	Composite video 1.0V p-p	
Dub 12-pin:		
Luminance Y:	1.0V p-p, 75 ohms	
Chrominance		
B-Y/R-Y:	0.7V p-p, 75 ohms (75% color bars)	
Audio, XLR, Ch. 1/2/3/4:	+4dBm, low impedance, balanced	
Time Code BNC:	2.2V p-p ± 3dB, 75 ohms	
Headphone:	Max. -20dBm, 8 ohms	
Earphone:	Max. -20dBm, 8 ohms	
VHF (F-Connector):	Ch-3/4, NTSC	

*Dolby is a registered trademark of DOLBY LABORATORIES LICENSING CORPORATION.

AMPEX CORP.

Betacam Players

CVR-60/65 Betacam SP Studio Players**Common Features**

• Built-in time base corrector provides broadcast quality video while eliminating any other signal processing requirements • TBC remote control interface • High speed picture-in-shuttle up to 24x normal speed in monochrome, either forward or reverse • Jog function allows tape movement in either direction, one frame at a time • Versatile editing interfaces: with a CVR-75 or similarly controlled VTR; with an Ampex VRC-2 video recorder controller; with an ACE™ or ACE Micro™ editor • Versatile Time Code System: Vertical Interval Time Code (VITC) and SMPTE/EBU • Two composite outputs • Two dub/component outputs: Y, R-Y, B-Y or Compressed Time Division Multiplexed (CTDM) output for high-quality component editing • Color framing: superior color framing operation, using both the CF flag and the Vertical Interval Subcarrier (VISC) system when operating in a composite environment • Studio-quality audio performance: Four channels: two longitudinal, two AFM; separate playback levels for each channel; low impedance audio monitor outputs for separate or mixed output; Dolby C noise reduction on longitudinal channels • Multi-function hours meter • Headphone jack with volume control • Built-in character generator: time code, system status or setup menus displayed in video monitor output

**CVR-60 Betacam SP Studio Player**

The CVR-60 studio player delivers all the performance of the Betacam SP format in an economical playback machine.

The CVR-60 is compact, lightweight and can be installed in either standard 19" EIA racks or consoles in studios and OB vehicles.

The CVR-60 is ideal for high-quality ENG/EFP and broadcast replay, feeding an editing system in either the composite or component domain, all with a choice of oxide or metal particle tape.

CVR-65 Betacam SP Studio Player

The CVR-65 studio player delivers all the performance of the Betacam SP format with features such as AST™ automatic tracking, dynamic motion control, viewable pictures in shuttle, a built-in time base corrector and a time code reader.

The CVR-65 is compact, lightweight and can be installed in either standard 19" EIA racks or consoles in studios and OB vehicles.

The CVR-65 provides high-quality ENG/EFP and broadcast applications, using either oxide or metal particle tape. It is also ideal for feeding both composite and component editing systems. Interfaces are provided for control of the CVR-65 by other VTRs, an Ampex VRC-2 video recorder controller or an ACE or ACE Micro editor.

Specifications

VIDEO	NTSC OXIDE TAPE	NTSC METAL PARTICLE TAPE	AFM METAL PARTICLE TAPE
Bandwidth luminance	30 Hz to 4.1 MHz +0.5 -6.0 dB	30 Hz to 4.5 MHz -0.5 -3.0 dB	20 Hz to 20 kHz +0.5/ -2.0 dB
Chrominance R-Y-B-Y	30 Hz to 1.5 MHz +0.5 -3.0 dB	30 Hz to 1.5 MHz +0.5 -3.0 dB	N/A
S/N Luminance	48 dB	51 dB	N/A
Chrominance amplitude	50 dB	53 dB	N/A
Phase	50 dB	53 dB	N/A
R factor (2T pulses)	Less than 3%	Less than 2%	More than 85 dB
Differential gain	Less than 3%	Less than 2%	-10 degrees at 20 kHz
Differential phase	Less than 3	Less than 2	Less than 0.5%
Chrominance luminance delay	Less than 20 nsec	Less than 20 nsec	65 dB
			N/A
AUDIO	LONGITUDINAL OXIDE TAPE	LONGITUDINAL METAL PARTICLE TAPE	AFM METAL PARTICLE TAPE
Frequency response	50 Hz to 15 kHz +3 dB	50 Hz to 15 kHz 1 -2 dB	20 Hz to 20 kHz +0.5/ -2.0 dB
S/N	50 dB (3% distortion level without NR system)	54 dB (3% distortion level without NR system)	N/A
Dynamic range	N/A	N/A	More than 85 dB
Phase difference	N/A	-20 degrees at 15 kHz	-10 degrees at 20 kHz
Distortion (1 kHz ref level)	Less than 2%	Less than 1%	Less than 0.5%
Wow and flutter	Less than 0.10% rms	Less than 0.10% rms	N/A
Crosstalk	N/A	65 dB	65 dB
Depth of Erasure	More than 70 dB	More than 70 dB	N/A
SIGNAL OUTPUTS			
Video 1 (75 ohms)	1.0V p-p sync negative		
Video 2 (75 ohms)			
Composite video	1.0V p-p sync negative		
Non composite video	0.714V p-p NTSC		
Video 3 (75 ohms)			
Composite video	1.0V p-p sync negative (monitor out with character insertion)		
Dub/component (75 ohms)	(12 pin connector)		
Luminance	1.0V p-p sync negative		
Chrominance R-Y-B-Y	0.7V p-p		
Component (75 ohms)	(3 BNC connector)		
Y	1.0V p-p sync negative		
R-Y-B-Y	0.7V p-p		
Audio Ch. 1-2-3-4			
Monitor Ch. 1-3 Ch. 2-4			
Time code			
GENERAL			
Record/playback time	90 min /NTSC		
Shuttle time	Less than 3 min with 90 min cassette (± 32X play speed)		
Search speed, Shuttle	Still, 1/30, 1/10, 1/5, 1/2, 1, 2, 5, and 24 times normal forward and reverse		
Variable (CVR-65)	1, 1/2, 1/5, 1/10, 1/30 still, 1/30, 1/20, 1/5, 1/2, 1 and 2 times normal speed, forward/reverse		
Jog	Frame-by-frame forward and reverse		
Servo Lock	Less than 0.5 seconds from Stand-by mode		
Tape speed	11.98 cm/sec/NTSC		
Dimensions	9.4" (237 mm) H x 15.8" (427 mm) W x 20.5" (520 mm) D		
Weight	62 lb (28 kg) (CVR-65) 59 lb (27 kg) (CVR-60)		
Temperature, Operating	5° to +40° C (41° F to 104° F)		
Storage	-20° C to 60° C (-4° F to 140° F)		
Humidity	Less than 80% RH		
Power requirements	AC 90V to 285V, 48 to 64 Hz		
Power consumption	175W (CVR-66) 180W (CVR-60)		
Supplied accessories	AC power cord, Extender Boards, RCC-5G, 9-pin remote control cable Operator/maintenance manual		

AMPEX CORP.**Betacam Recorder/Players****CVR-70 Betacam SP Studio Recorder/Player**

Full featured editor: Assemble and insert Edits for Video, Audio 1 and 2, and time code; Preview/review allows check of edit accuracy; In/Out marks may be trimmed either direction on a frame-by-frame basis • Dynamic motion control: the CVR-70 can memorize rehearsed playback speeds of a connected CVR-65 or CVR-75 over their tracking range (-1 to +2x normal), and then command the CVR-65 or CVR-75 to reproduce these speeds in subsequent editing operations • Versatile time code system: Vertical Interval Time Code (VITC) and SMPTE/EBU longitudinal track format; presettable user bits, free-run or record-run modes; genlock for setting/synchronizing to an external time code master generator; built-in code generator/reader

The CVR-70 studio VTR combines the performance of Betacam SP with features such as dynamic motion control, viewable pictures in shuttle, a full-featured editing system, a built-in time base corrector and a versatile time code system.

The CVR-70 is compact, lightweight and can be installed in either standard 19" EIA racks or consoles in studios and OB vehicles.

The CVR-70 is ideal for high-quality ENG/EFP and broadcast replay, feeding a composite editing system, or post-production recording/editing in the component domain, all with a choice of oxide or metal particle tape.

Versatile interfaces allow the CVR-70 to control other VTRs without an edit controller. An RS-422 interface is also provided for external control by an Ampex VRC-2 video recorder controller or an ACE or ACE micro editor.

CVR-75 Betacam SP Studio Recorder/Player

Automatic Scan Tracking™ (AST) with dynamic motion control • Integrated TBC with remote control • SMPTE/EBU time code generator/recorder for LTC, VITC or User Bits • Built-in character generator • Capstan override capability • Built-in Sc/H phase indicators • Record inhibit switch with indicator • Multifunction hours meter • Four channels: 2 longitudinal, 2 AFM • Separate record and playback level controls for each channel • Four discrete audio level bargraphs with selectable Peak/VU indicators • Integrated mixer for channels 1 and 2 • Low impedance audio monitor outputs for separate or mixed output • Dolby C noise reduction on longitudinal channels

The CVR-75 studio VTR combines all the performance of Betacam SP with features like AST and Dynamic Motion Control.

The unit itself is compact, lightweight and includes a full featured, flexible editing system.

One of the most important features on the CVR-75 is its extended playtime. With the larger cassettes, up to 90 minutes (100 minutes PAL) recording and playback time is available.

These features, when combined with the performance of Betacam SP, make the CVR-75 ideal for high quality ENG/EFP, broadcast replay, feeding a composite editing system, or post-production recording in the component domain.

**CVR-75****Specifications**

VIDEO	NTSC	NTSC
	OXIDE TAPE	METAL PARTICLE TAPE
Bandwidth, luminance	30 Hz to 4.1 MHz +0.5/-6.3 dB	30 Hz to 4.5 MHz +0.5/-3.0 dB
Chrominance, R-Y/B-Y	30 Hz to 1.5 MHz +0.5/-3.0 dB	30 Hz to 1.5 MHz +0.5/-3.0 dB
S/N Luminance	48 dB	51 dB
Chrominance, amplitude	50 dB	53 dB
phase	50 dB	53 dB
K-factor (2T pulse)	Less than 3%	Less than 2%
Differential gain	Less than 3%	Less than 2%
Differential phase	Less than 3°	Less than 2°
Chrominance/luminance delay	Less than 20 nsec.	Less than 20 nsec.
AUDIO	LONGITUDINAL	LONGITUDINAL
	OXIDE TAPE	METAL PARTICLE TAPE
Frequency response	50 Hz to *5 kHz ±3 dB	50 Hz to 15 kHz 1/-2 dB
S/N	50 dB (3% distortion level, without NR system)	54 dB (3% distortion level, without NR system)
Dynamic range	N/A	N/A
Phase difference	N/A	±20 degrees at 15 kHz
Distortion (1 kHz ref. level)	Less than 2%	Less than 1%
Wow and flutter	Less than 0.10% rms	Less than 0.10% rms
Crosstalk	N/A	-65 dB
Depth of Erasure	More than 70 dB	More than 70 dB
SIGNAL INPUTS		
Video (75 ohms)	Composite video 1.0V p-p	
Ref Video (75 ohms)	1.0V p-p ±0.3V	
Dub/component (75 ohms)	(12-pin connector)	
Luminance	1.0V p-p sync negative	
Chrominance, R-Y/B-Y	0.7V p-p	
Component (75 ohms)	(3 BNC connector)	
Y	1.0V p-p sync negative	
R-Y/B-Y	0.7V p-p (75K% color bars)	
Audio Ch. 1/2/3/4/ Low	-60 dB, 3K ohms balanced	
High	±4 dB 600 ohms, 10 K ohms balanced	
Time code	0.5V to 18V p-p, 10K ohms balanced	
GENERAL		
Record/playback time	90 min./NTSC	
Shuttle time	Less than 3 min. with 90 min. cassette (±32X play speed)	
Variable play speed (CVR-75)	-1 thru still to ±2X play speed (with AST)	
Search speed, Shuttle	Still, 1/30, 1/10, 1/5, 1/2, 1, 2, 5, and 24 times normal forward and reverse	
Variable (CVR-75)	-1, -1/2, -1/5, -1/10, -1/30, still, 1/30, 1/10, 1/5, 1/2, 1 and 2 times normal speed, forward/reverse	
Jog	Frame-by-frame forward and reverse	
Servo Lock	Less than 0.6 seconds from Stand-by mode	
Tape speed	11.86 cm/sec/NTSC	
Dimensions	9.4" (237 mm) H x 16.8" (427 mm) W x 20.5" (520 mm) D	
Weight	66 lb (30 kg.)	
Temperature, Operating	5° to +40° C (41° F to 104° F)	
Storage	-20°C to 60°C (-4°F to 140°F)	
Humidity	Less than 80% RH	
Power requirements	AC 90V to 265V, 4+ to 64 Hz	
Power consumption	225W	
Supplied accessories	AC power cord, 12-pin dubbing cable, (CVR-75) Extender Boards, RCC-5G 8-pin remote control cable, Operation/maintenance manual.	

AMTEL SYSTEMS, INC.

Post Production Management System

Transform-1 Post Production Management System

- The ability to use conventional videotape editing controllers for electronic film post production
- A complete production logging system that allows both data and pictures to be stored for all original material
- The power to accurately conform video edit decision lists to lists suitable for the assembly of the final release media i.e. conform to film, videotape, digital, audio, etc.
- A central edit decision list database with full list management and multi-user capabilities
- The ability to accept and generate video edit lists in all industry formats

Transform-1 is a computerized post production management system designed to integrate all film and videotape editing functions within a facility.

A key element is its ability to work within existing industry equipment. No specialized support hardware of any kind is required to adapt the system to existing facilities.

Multi-User Capabilities

The addition of two remote terminals allows simultaneous, independent access to the system by three users. A single main computer can integrate into three separate logging/editing workstations within a post production facility. Each workstation can be interfaced with total independence to existing hardware.

Production Logging System

The system provides a logical means of storing all pertinent information relating to any number of productions. Random access to all data simplifies information retrieval and speeds the overall production process.

The transfer logging functions allow the user to record detailed information describing the relationship between each reel of film and the corresponding videotape. This allows the system to accurately conform video edit decision lists to film cut lists. The logging system also provides for the transfer of all original dialogue including wild and post sync sound, and can accommodate the conforming of dialogue on other audio post production media, such as digital audio.

The duplication logging function allows information for both the master and working copy tape reels to be stored. This allows the system to make the necessary changes in off-line edit lists when they are used for auto assembly of the original master tape reels.

The descriptive logging function allows information to be stored for each take shot in a particular production. All pertinent information such as tape reel, scene, slate, original camera and sound rolls as well as the time code location of the particular take area stored in the log. The system also provides a field for storing notes regarding the content of the take.

Electronic Story Board

Provides the ability to store a single black and white image for each slate or camera setup shot for a production. The stored images may be recalled to provide the editor with a quick visual representation of the material to be edited. In a simple recall mode, it can display 16 images simultaneously on a monitor.

The images may also be recalled and interactively re-arranged on screen to establish a visual sequencing of an edited segment. Thus, the user is able to create an electronic "storyboard" of a segment prior to editing.



Transform-1

The System provides the ability to accurately conform video edit decision lists to lists suitable for assembly of the final release media. Individually conformed lists for both picture and sound may be created by the system. The production log serves as the basis for referencing each edit decision to original source material.

For film releases, the System generates cut lists for both picture and sound for direct use by an assistant or negative cutter. The system completely accounts for the 3:2 relationship as it conforms time coded video edit lists to foot/frame cut lists. Extensive error checking is performed on all cut lists to identify possible assembly problems such as missing material, holes, overlaps, as well as re-used picture and sound.

If the production is to be released on tape, the System can provide CMX compatible lists optimized for on-line auto assembly.

Using the duplication and descriptive log information the system makes any necessary changes in the off-line edit lists while checking for on-line assembly errors such as video holes and "B-roll" requirements. It provides the ability to generate an audio conform list enabling the dialogue to be rebuilt from original audio material. This list will provide a synchronous dialogue track for either tape or film releases.

Specifications

Main Computer:

Intel 80286 processor, 4M byte internal memory

Operating Environment:

Xenix System V

Storage Media:

5 1/4" Floppy Disk Drive, 1.2M byte capacity

5 1/4" Winchester Disk Drive, 60M byte capacity

I/O Connections

Console Monitor

Output: 9-pin "D" type

Console Keyboard

Input: 5-pin DIN connector

Printer Output:

25-pin "D" connector, Centronix type interface

Terminal/Editor

Serial Ports: 25-pin "D" connector, 4 standard

Logging VTR

Video Input: 9-pin "D" type, 1V p-p 75 ohm switch selectable

Picture/VTR

Video Output: 9-pin "D" type, 1V p-p 75 ohm impedance

SMPT/EBU:

RCA connector, unbalanced

Time Code Input:

-12dBm to +6dBm

Drive Expansion

Interface: 50-pin ribbon connector

Transform-1 \$16,995.00

AMTEL SYSTEMS, INC.

List Manager

Transform-LM List Manager

The List Manager adds sophisticated list management power to virtually any video editing controller. With the List Manager, the user can generate compatible, "on-line" ready edit decision lists, regardless of the editing controller he may presently own. The List Manager provides tremendous economies by allowing all sophisticated list processing to take place prior to "on-line."

Editor Compatibility

The List Manager works with SMPTE time code based editing controllers which have an RS 232 serial port, including single event controllers. Now you can create CMX compatible eight inch disks from your present editing controller.

List Management

The List Manager contains a full array of list management features including add, delete, recall, replace, ripple, tag, and block moves. More importantly, the system allows you to vastly expand the power of your editing controller by offering high level functions such as list cleaning, unlimited level list tracing, list merging, and auto-assembly list optimization.

List Format Conversion

The system will convert an edit decision list prepared in one format to virtually any other industry format. List formats which are presently supported include: CMX, Sony, ISC/GVG, Ampex, Videomedia, Convergence, and Paltex. You may also create your own custom list formats for proprietary use.

List Comments

The List Manager will allow you to add comments to your edit decision lists from its keyboard. You can also process lists with comments, GPI triggers, and motion memory information in all formats.

Built-In Time Code Reader

Allows you to automatically load time code numbers into an edit decision list from a VTR. You can also use the system as a manual entry station for edit lists.

Storage Media

The List Manager comes with a built-in 8" floppy disk drive, and two 3 1/2" drives. Optional storage media choices include an outboard 5 1/4" floppy disk drive and a 3 1/2", 20M byte hard disk.

Audio Manipulations Of Your EDL

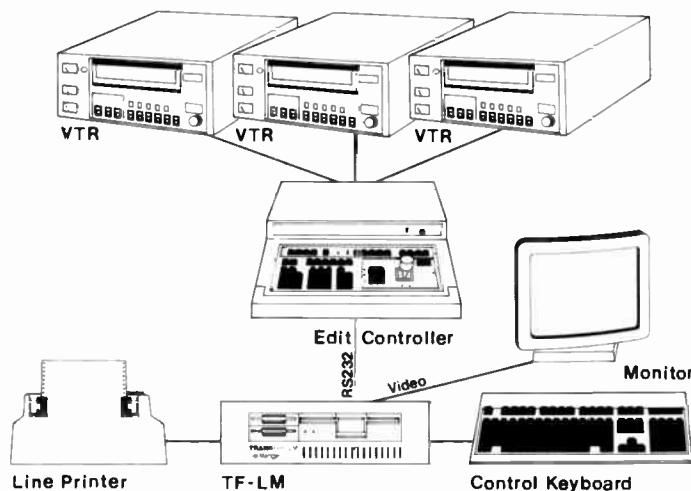
The system will create an audio only edit decision list for audio sweetening, and will perform an Audio Ping Pong. Audio Ping Pong is a unique function with allows you to easily create overlaps on a dialogue track.

Film Conform

An optional film conform package will enable you to accurately conform video edit decision lists to film cut lists. This allows you to take advantage of the speed and convenience of electronic editing while retaining the ability to release on film. The List Manager is a totally self-contained hardware and software device. In addition to the built-in disk drives and time code reader, the unit features a composite video display output, two serial interface ports, and a parallel printer port.



This system diagram illustrates a typical configuration of The List Manager in a video edit suite.



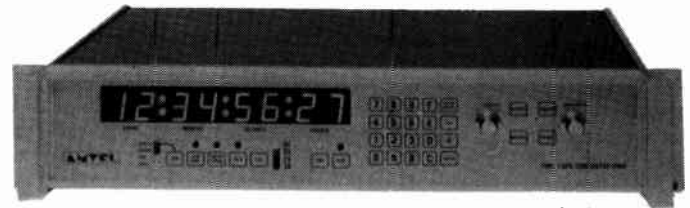
Main Computer:	8086 based CPU, 640K RAM
Operating Environment:	MS DOS based, single user single tasking
Storage Media:	8" floppy disk drive, 1.2M byte capacity, compatible with CMX and ISC/GVG formats; 2-3 1/2" floppy disk drives 720K capacity
Serial Interface Ports:	25 pin D connector, 2 standard
SMPTE Time Code Reader Input:	-12dBm to +6dBm, 600 ohm input impedance, balanced or unbalanced
Control Keyboard Input:	5 pin DIN connector
Display Output:	Monochrome composite video display output, 1V p-p, 75 ohm output impedance
Physical:	5 25" H x 19" W x 16" D
Power:	110/220VAC, 60/50Hz, 2.0A
5 1/4" Floppy Disk Drive Option:	Outboard 5 1/4" floppy disk drive, 1.2M byte capacity
Physical:	3.5" H x 19" W x 16" D
3 1/2" Hard Disk Option:	Internal 20M byte hard disk drive
Transform-LM	\$5995.00

AMTEL SYSTEMS, INC.

Time Code Equipment

6000 Time Code System

- NTSC/PAL time code generator which generates code in 30, drop-frame, 24, and 25 frames per second
- Variable Speed Time Code Reader (to 5X play, forward and reverse) with both momentary and continuous jam sync
- High resolution character inserter with 9 different character display modes and complete raster positioning
- Large (0.8") front panel LED display with variable intensity
- Front panel keyboard entry of time code and user bits
- Two isolated time code outputs
- Parallel input/output of time code and user bits
- Color framing capability
- Generator hold function
- All functions controlled from front panel



600

Specifications

- Dimensions:** 3.5" H x 19" W x 13" D
Weight: 8 lbs. (3.63kg)
Power: 117/235VAC ± 20%, 47-440Hz, 20W
Environmental: 0-60°C, rel. humidity 0-95%, no condensation
Reference Sync: Composite sync or video loopthrough, .5-4.0V p-p
Code Input: -30 to +30dBm, balanced line, 20,000 ohms bridging
Character Keyer: Video input -1V p-p loopthrough. Video output (2) —Unity gain 75 ohms
Color Frame In: AC coupled 15Hz, negative pulse indicating field 1 of 4 field sequence, 2-8V, active on falling edge
Parallel In/Out: 32 TTL compatible signal lines, 2 ground lines, positive logic

6000POR



TCR-500



Rear Panel Connections/Controls

TCR-500 Time Code Reader/Character Inserter

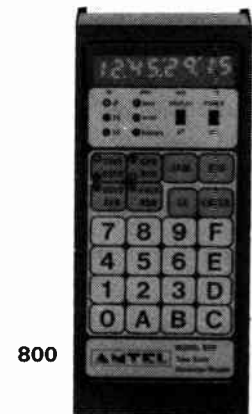
- Characters displayed are 16 scan lines per field in height. External controls for complete horizontal and vertical positioning of display and character level. User selectable display of time code, user bits, or both. Characters may be white with black border or vice versa. Drop-frame, non-drop frame, and reading error indicated in display
- Two isolated video outputs containing video input with or without character display. The outputs are source terminated into 75 ohms and provide unity gain from the video input
- Composite video 2V p-p (not terminated). Looping input via BNC connectors
- Balanced or unbalanced input of SMPTE time code at a signal level from -30 to +40dBm, at tape speeds of 0.1 to 5X play (tape machine dependent). XLR connector

The TCR-500 provides an excellent low cost solution to the recovery and video display of SMPTE time code. The unit contains a high resolution character keyer which inserts the time code display into the active video picture. The compact, rugged design makes the TCR-500 a perfect choice for off-line or field time code reading and "burn-ins."

Specifications

- Power:** 9 to 12VDC at approximately 300mA. An external power transformer is supplied with the unit
Dimensions: 1.6" H x 7" W x 6.6" D
Weight: 2.7 lbs.
Environmental: 0°C to 55°C operating temperature, 0 to 85% relative humidity (no condensation)

TCR-500 \$995.00



800

800 Portable SMPTE Time Code Generator

- Generates time code in 30, drop frame, and 25 fps
- Video sync lock, code error, battery low indicators
- High intensity LED display with blanking capability
- Built-in play speed reader with jam sync
- Generator hold and reader hold functions
- Long battery life
- Large, easy to read keypad
- Full user bit capability, including hexadecimals
- Generator preset function
- Automatic start/stop function for generator

The 800 portable time code generator is the perfect solution to field time code needs. A compact rugged design ensures the unit will withstand the rigors of constant EFP usage. A built-in play speed reader with jam sync offers advantages not found in other portables. The 800 is truly the price/performance leader in its class.

800 \$1395.00

AMX CORP.**Time Base Corrector/Switcher****ATS-550 Digital Time Base Corrector**

- Handles signals of > 450 lines resolution
- Full frame correction window
- Frame and field freeze
- Selectable composite and Super (YC358) inputs and outputs
- 58dB S/N ratio
- 1% K factor in Super mode, 2% in composite
- 13.5MHz sampling frequency
- 8 bits sampling-Y and C
- D/G D/P; 2% 2°
- Built-in chroma control circuit
- Easy-to-replace PCBs
- Slim, attractive, rackmountable

S-VHS and ED Beta have created a new concept in low-cost, high-performance video production. The ATS-550 with its sophisticated signal processing, Super (YC358) inputs and outputs (as well as standard composite video), plus > 450 lines signal processing capability, make it the ideal Digital Time Base Corrector to be used with these tape handlers.

High S/N ratio, low K factor, low D/G and D/P and 8 bits sampling enable the ATS-550 to process signals to the most exacting standards. With Automatic Chroma Control (ACC) as standard, the ATS-550 offers the features expected of a truly high grade TBC.

In addition to the special input and output connectors for S-VHS and ED Beta, the ATS-550 also has composite inputs and outputs to enable it to time base correct conventional signals from U-matic or any type of VHS, Beta and 8mm VCRs.

Flexibility is enhanced by incorporating an infinite correction window that can handle signals from even domestic VCRs and satellite or microwave feeds. This feature produces signal stabilization, and produces automatic freeze on the last frame if the video signal is disconnected. ATS-550 comes complete with a full set of proc amp controls allowing adjustment of video and chroma levels, hue and set-up.

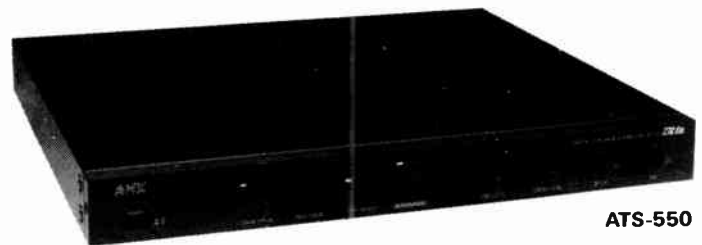
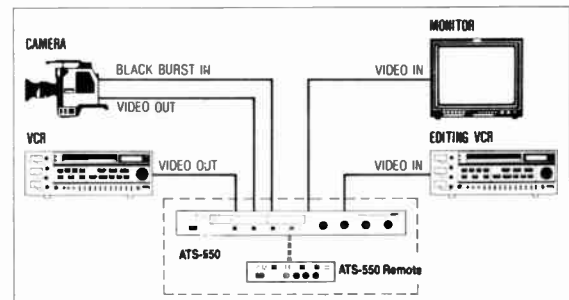
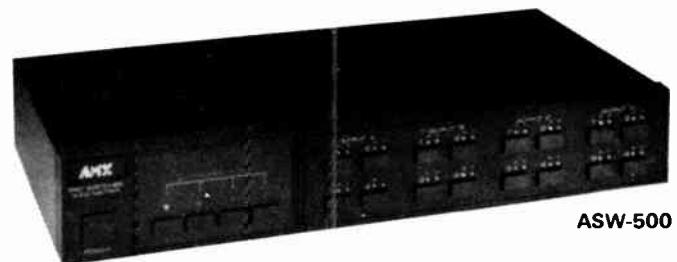
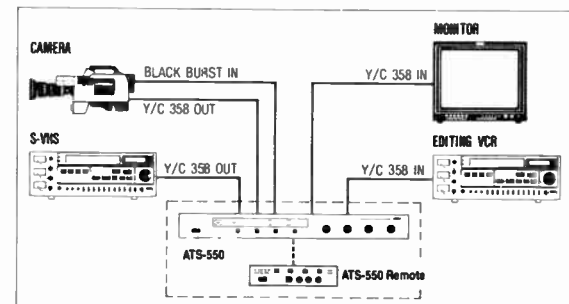
ATS-550 \$3995.00

ASW-500 Audio/Video Switcher

- 4x4 A/V matrix switching
- RS-232 compatible
- Vertical interval switching
- Test mode
- Audio breakaway
- Full stereo audio compatibility
- BNC video connectors
- AMX SX system compatible
- Rackmountable
- Black finish

True matrix switching means any combination of four video and stereo audio inputs can be assigned to any combination of four video and stereo audio outputs. Four independent operations occur simultaneously for maximum switching power.

The ASW-500 is easily integrated with a complete AMX SX Remote Control System and may be used in many ways. As a distribution amp, it routes any of the input signals to all four outputs with full bandwidth and strength. As a routing switcher, it chooses from multiple sources during editing or presentations. Inputs or outputs can be added to an existing

**ATS-550****Composite Signal Editing System****S-Signal Editing System****ASW-500**

patch bay or production board. Use the ASW-500 off-line in lieu of a production board to mix different audio and video inputs. And, because the ASW-500 features vertical interval switching, it provides excellent direct cuts.

The ASW-500 is easily controlled with a personal computer via its RS232 port for automated operations. You can route signals with the touch of a button and use the front panel LEDs for visual confirmation. A built-in test mode makes it easy to check for proper operation. And battery back up is not needed, since the microprocessor-controlled non-volatile memory means your settings are retained even after "power-down."

Up to sixteen ASW-500s can be "daisy-chained" without signal degradation. You can create a patch-bay with up to 64 inputs and outputs, all under PC or AMX SX system control.

ASW-500 \$630.00

SX Series Media Control Systems

The SX Series Control System has been designed as a universal remote control system for media and environmental equipment found in conference rooms, training centers, auditoriums, teleconferencing areas and other types of presentation sites. All functions of slide and film projectors, audio and video tape decks, volume, lights, drapes, screens etc. may be controlled wirelessly (up to 150' away) or by wired control panels in walls or podiums.

Based around the SX 16+ Relay Controller, the SX System will interface with virtually any type of equipment controllable by a contact closure, logic level signal or serial data. Up to 16 control functions may be dedicated to each SX 16+.



SX 16+

SX16+ Programmable Relay Controller

Control, data, and interconnect center of the SX Series Control System.

- Programmable • Rackmountable enclosure with 16 relays • Front panel controls and channel status indicators • Link up to sixteen SX-16+ 's to form systems with up to 256 functions • SX16+ Controllers may be controlled using AMX SoftWire® Multiplexed Control Panels • Wireless (RF) Control Panels, MX Series two and four button transmitters or most computers with serial outputs \$1010.00

SX-DCU Programmable Serial Control Unit

Controller for consumer infrared controlled TVs, VCRs, tape decks, CDs, laser discs etc.

Can also be used for 2-wire control of professional VCRs, audio tape decks or laser disks.

Each SX-DCU can store up to 32 serial commands which can be "played back" using AMX Wireless Controls, SoftWire Control Panels or Personal Computers.

Each unit has the following ports:

- (3) Serial outputs, 1 auxiliary logic output • (1) RS232C port • (1) AMX SX System Bus Interface • (1) Wireless (RF) input \$675.00

SX-IRE Infrared Emitter

Used to emit infrared commands from SX-DCU. Connects to 1 of 3 serial output ports. 12' cable has Infrared LED on end which may be attached to sensor of any Infrared controlled device \$37.50

SX Series Wireless Control Panels

Portable or surface mounted RF transmitter panels will control SX 16+ Relay Controllers from up to 150'. All functions on panel are grouped and engraved to specifications. Requires use of SX-RM Radio Receiver Module.

- TX08 8 button transmitter \$ 240.00
- TX12 12 button transmitter 315.00
- TX16 16 button transmitter 390.00
- TX24 24 button transmitter 570.00
- TX32 32 button transmitter 720.00
- TX40 40 button transmitter 870.00
- TX48 48 button transmitter 990.00
- TX56 56 button transmitter 1110.00
- TX64 64 button transmitter 1230.00

Note: TX24-TX32 transmitters are shipped in Satin Black wooden enclosures unless otherwise specified.

SX-RM Radio Receiver Module

Receives coded radio signal from transmitters. Will drive up to thirty-two SX 16+ Relay Controllers. Built-in tuning LED maximizes range and reliability \$150.00

SX-RI Ratio Interface Module

Allows multiple SX-RMs to be used in a single system \$225.00

SX-WPO Wired Option for Control Panels

Provides security and reliability of a hardwired control system without multiple conductor cable. For control only (no feedback). One end of 2-conductor cable plugs into transmitter housing, the other end into data connector on SX16+. \$150.00

SW-SP16 SoftWire® Control Panel

3-wire multiplexed control and status panel can control from one to sixteen SX 16+ Relay Controllers. Basic panel includes 16 buttons with LEDs and all engraved panel legends. Up to 64 buttons and legends may be arranged on compact, 5.25" x 10" panel. \$1495.00

SW-CP64 SoftWire Control Panel Interface

Converts custom or existing hardwired control panel to 3-wire multiplexed system. Sixty-four switch and lamp connections on compact board allows control of up to thirty-two SX16+ Relay Controllers. \$1050.00

SX-DM SoftWire Panel Driver Module

Provides balanced differential inputs and outputs for long control line runs (over 100') between SoftWire Panels and SX16+ Relay Controllers. Also provides convenient connection point for control and feedback lines of multiple SoftWire Control Panels. \$225.00

Accessories

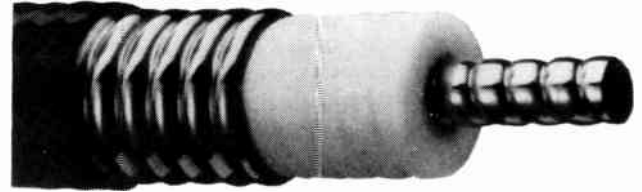
- VX-1 Stereo, line level volume control \$367.00
- VX-PRO Hi-Fi volume control 675.00
- M320 2400W incandescent light dimmer 675.00
- M320 WP2 2 button dimmer wall plate 98.00
- M320 WP4 4 button dimmer wall plate 128.00
- PC 1 1200W AC power switcher 142.00
- PC 1 (NEMA) Heavy-duty 20A power switcher 292.00
- PC 2 Dual 500W/outlet AC power switcher 195.00
- MC 1 Bi-directional motor controller 225.00
- MC 1 (NEMA) MC1 in 10" x 8" x 4" NEMA enclosure 360.00
- RX 1 Relay expander 180.00
- RS 1 Relay sequencer 292.00
- FR 1 Foil tape reader 142.00
- SX-RK SX16+ rack kit 45.00
- AC-RK Accessory rack kit 60.00
- SX-CL Logo engraved on control panel. 120.00
- SX-CC Custom transport interface cables POR
- SW-WB Custom Satin Black Wooden enclosure for SoftWire Panels 300.00
- TX16-WB Custom Satin Black Wooden enclosure for TX08-TX16 60.00

Helix® Foam Dielectric Coaxial Cables

Helix flexible coaxial cables are ideal for broadcast use because they are supplied in continuous lengths, permitting a one-piece installation. Because only two flange junctions exist in the entire Helix transmission line system, a lower system VSWR can normally be achieved. Helix cables readily accommodate thermal expansion/contraction cycles eliminating the need for spring hangers and expansion loops. The result is a lower installed cost. All Helix cables are supplied with a black polyethylene jacket which makes them suitable for direct burial or installation in corrosive environments.

Helix cables are designed for efficient transmission of RF energy at broadcast frequencies. The cables range in size from 1/4" to 1 5/8" for foam-dielectric versions. Helix foam-dielectric cables for not require pressurization and are recommended for most low power applications.

The dielectric materials used in Helix cables have been extensively evaluated to assure reliable and trouble-free service during continuous high-power operation. Helix cables are conservatively rated for power handling capability and include allowances for premature voltage breakdown.



Helix Foam—
Dielectric Coaxial Cable

Coaxial Transmission Lines and Connectors

Nominal Size	75 Ohm Helix Cable		50 Ohm Helix Cable			
	1/2"	7/8"	1/2"	7/8"	1 1/4"	1 5/8"
Standard Type Number	LDF4-75A	FHJ5-75	LD4F-50A	LDF5-50A	LDF6-50	LDF7-50A
Low VSWR Type Number	—	—	—	—	—	—
Electrical Characteristics						
Impedance, ohms	75	75	50	50	50	50
Velocity, percent	88	79	88	89	89	88
Peak Power, kW	13	29	19	44	90	145
Max. Frequency, GHz	10	4.9	8.8	5.0	3.3	2.5
Average Power Rating, kW, Condition A † (Condition B)						
1MHz	13	29.0	19	†	—	—
100MHz	1.45	3.30	1.88	5.4	9.3	13.4
1000MHz	0.421	.808	.53	1.5	2.64	3.69
Attenuation, dB/100' (dB/100m)						
1MHz	0.060 (0.197)	0.038 (0.123)	0.066 (2.216)	0.035 (0.115)	0.026 (0.086)	0.021 (0.069)
100MHz	0.623 (2.04)	0.428 (1.40)	0.685 (2.25)	0.369 (1.21)	0.275 (0.901)	0.225 (0.740)
1000MHz	2.14 (7.02)	1.75 (5.74)	2.34 (7.68)	1.31 (1.97)	0.967 (3.17)	0.819 (2.69)
Mechanical Characteristics						
Diameter, in. (mm)	0.64 (16)	1.08 (27.5)	0.64 (16)	1.10 (28)	1.60 (40)	2.00 (50)
Weight, lb./ft. (kg/m)	0.14 (0.21)	0.44 (0.65)	0.16 (0.24)	0.33 (0.49)	0.66 (0.98)	0.92 (1.36)
Minimum Bending Radius, in. (mm)	5 (125)	10 (250)	5 (125)	10 (250)	15 (380)	20 (508)
Connectors						
7/8" EIA	—	45AR-75	L44R	L45R	L46S	—
7/8" EIA with Gas Barrier	—	—	—	—	—	—
1 5/8" EIA	—	—	—	—	L46R	L47R
1 5/8" EIA with Gas Barrier	—	—	—	—	—	—
3 1/8" EIA	—	—	—	—	—	—
3 1/8" EIA with Gas Barrier	—	—	—	—	—	—
6 1/8" EIA	—	—	—	—	—	—
6 1/8" EIA with Gas Barrier	—	—	—	—	—	—

†Specify 6MHz band.

‡There are two standard power ratings for air-dielectric cables. Condition A is recommended for installations in extreme climates where there may be continuous exposure to high ambient temperatures. Condition B is recommended for installations in more moderate climates where exposure to high ambient temperatures is of limited duration.

Heliax® Air Dielectric Coaxial Cables

Heliax flexible coaxial cables are ideal for broadcast use because they are supplied in continuous lengths, permitting a one-piece installation. Because only two flange junctions exist in the entire Heliax transmission line system, a lower system VSWR can normally be achieved. Heliax cables readily accommodate thermal expansion/contraction cycles eliminating the need for spring hangers and expansion loops. The result is a lower installed cost. All Heliax cables are supplied with a black polyethylene jacket which makes them suitable for direct burial or installation in corrosive environments.

Heliax cables are designed for efficient transmission of RF energy at broadcast frequencies. The cables range in size from 1/2" to 5" diameter for air-dielectric versions.

Heliax air-dielectric cables are recommended for medium and high power applications. The dielectric materials used in Heliax cables have been extensively evaluated to assure reliable and trouble-free service during continuous high-power operation. Heliax cables are conservatively rated for power handling capability and include allowances for premature voltage breakdown.



**Heliax Air—
Dielectric Coaxial Cable**

Coaxial Transmission Lines and Connectors

Nominal Size	7/8"	1 5/8"	3"	4"	5"
Standard Type Number	HJ5-50	HJ7-50A	HJ8-50B	HJ11-50	HJ9-50
Low VSWR Type Number	—	42140†	42141†	42144†	42142†
Electrical Characteristics					
Impedance, ohms	50	50	50	50	50
Velocity, percent	91.6	92.1	93.3	92	93.1
Peak Power, kW	44	145	320	490	765
Max. Frequency, GHz	5.2	2.7	1.64	1.22	0.96
Average Power Rating, kW, Condition A ‡ (Condition B) ‡					
1MHz	44 (44)	145 (145)	320 (320)	490 (490)	765 (765)
100MHz	6.4 (9.9)	14.4 (22.3)	37 (52)	56 (78.5)	73 (113)
1000MHz	1.85 (2.9)	4.3 (6.7)	9.30 (13)	15 (21.0)	20 (31)
Attenuation, dB/100' (dB/100m)					
1MHz	0.035 (0.115)	0.020 (0.066)	0.013 (0.043)	0.010 (0.033)	0.0074 (0.024)
100MHz	0.57 (1.21)	0.207 (0.679)	0.14 (0.459)	0.113 (0.371)	0.079 (0.259)
1000MHz	1.27 (4.17)	0.70 (2.30)	0.560 (1.84)	0.430 (1.41)	0.285 (0.935)
Mechanical Characteristics					
Diameter, in. (mm)	1.11 (28.2)	2.00 (51)	3.02 (76.6)	4.00 (102)	5.20 (133)
Weight, lb./ft. (kg/m)	0.54 (0.80)	1.04 (1.55)	1.78 (2.6)	2.50 (3.72)	3.3 (4.9)
Minimum Bending Radius, in. (mm)	10 (250)	20 (508)	30 (762)	40 (1016)	50 (1270)
Connectors					
7/8" EIA	75AR	87S	—	—	—
7/8" EIA with Gas Barrier	75AR	87SG	—	—	—
1 5/8" EIA	—	87R	—	—	—
1 5/8" EIA with Gas Barrier	—	87G	—	—	—
3 1/8" EIA	—	—	78ARF*	81RF*	—
3 1/8" EIA with Gas Barrier	—	—	78AGF*	81GF*	—
6 1/8" EIA	—	—	—	42896**	79R
6 1/8" EIA with Gas Barrier	—	—	—	42986**	79G

‡There are two standard power ratings for air-dielectric cables. Condition A is recommended for installations in extreme climates where there may be continuous exposure to high ambient temperatures. Condition B is recommended for installations in more moderate climates where exposure to high ambient temperatures is of limited duration.

*Inner connector not included. Order type 15093A, if required.

**Inner connector not included. Order Type 18902, if required.

†Specify 6MHz band.

ANDREW CORP.*Waveguides/Cable/Connectors***FSJ1-50 1/4" Superflexible Heliax® Cable**

This 1/4" superflexible Heliax foam-dielectric cable offers the small bending radius of braided solid dielectric cable with the lower attenuation and superior shielding characteristics of a continuous solid-sheath copper outer conductor. A polyethylene jacket provides abrasion protection. The cable is ideal for patch cord and jumper cable applications, where bending to a tight radius is a prime consideration, and in long lengths for temporary tactical or restoration systems, where cable must be handled quickly and easily to provide reliable connections. It is also well suited for use in densely arranged equipment rooms. The cable is suitable for installation down to -40°F (-40°C) and for operation up to 176°F (80°C).



FSJ1-50

FSJ4-50B 1/2" 50 ohm Heliax Superflexible Cable

This 1/2" superflexible Heliax foam-dielectric coaxial cable with seam-welded corrugated copper outer conductor, features low attenuation and superior shielding characteristics. A polyethylene jacket provides abrasion protection. The cable is ideal for patch cord and jumper cable applications where repeated flexing is a prime consideration, and in long lengths for temporary tactical restoration systems where cable must be handled quickly and easily to provide reliable connections. It is also well suited for use in densely arranged equipment rooms. The cable is suitable for installation down to -40°F (-40°C) and for operation up to 176°F (80°C).



FSJ4-50B

Connector seals keep moisture out, providing reliable performance. The connector design simplifies assembly, provides excellent electrical contact, and is highly resistant to connector pull-off and twist-off.

41SNS SMA Jack (Female) Mates with SMA Plug

41SWS SMA Plug (Male) Mates with SMA Jack

41 SNS



41 SWS

**EW20 1.9-2.7GHz Heliax Elliptical Waveguide**

The Heliax elliptical waveguide is precision formed from high conductivity corrugated copper tubing and includes a black polyethylene jacket for protection. It is available in long continuous lengths and can be cut to specified lengths.

The EW20 is designed for use in the 1.9-2.7GHz ITFS band.



EW20

EW63 and EWP63**5.850-7.125GHz Heliax Elliptical Waveguide**

The Heliax elliptical waveguide is precision formed from high conductivity corrugated copper tubing with a black polyethylene jacket for protection. It is available in continuous lengths that can be cut to specified lengths.

The EW63 and EWP63 are designed for use in the 5.850-7.125GHz frequency band. Tunable and non-tunable connectors are available for factory-fitted and field-fitted assemblies. Pre-tuned connectors for field-fitted applications eliminate the need for field tuning.

Assemblies of low VSWR EWP63 waveguide with tunable or pre-tuned connectors are recommended for long-haul or high channel density systems. Assemblies of EW63 standard waveguide with non-tunable connectors are recommended for short- and medium-haul radio relay systems with low and medium channel densities and medium-haul color television microwave systems.



EW63

EW132 and EWP132**11.0-15.35GHz Heliax Elliptical Waveguide**

The Heliax elliptical waveguide is precision formed from high conductivity corrugated copper tubing with a black polyethylene jacket for protection. It is available in continuous lengths that can be cut to specified lengths.

Types EW132 and EWP132 are designed for use in 11.0–15.35GHz frequency band and offer low attenuation. Tunable and non-tunable connectors are available for factory-fitted and field-fitted assemblies. Assemblies of low-VSWR EWP132 waveguide with tunable connectors are recommended for long-haul or high channel density systems. Type EW132 uses non-tunable connectors and is recommended for short- and medium-haul radio relay systems with low and medium channel densities.

EW132 is ideal for 14.0-14.5GHz band earth station receive applications.



EW132

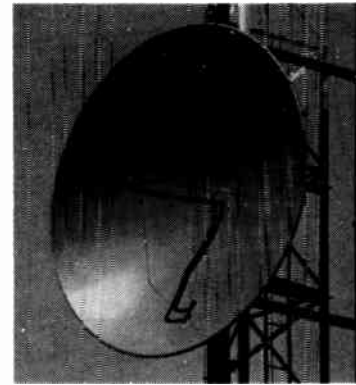
Prices and Specifications Subject to Change Without Notice.

B-131

Standard Antennas (P and PL Series)

Includes a standard or low-VSWR feed, a vertical tower mount and unshielded reflector. They are economical and reliable for use where frequency planning or coordination within or between systems does not require a high degree of back or side radiation suppression. The low-VSWR versions minimize the noise contributed by echo distortion. Radomes are ordered separately for standard antennas.

"F" Series antennas for 2.45-2.50GHz and LDF Series foam-dielectric Heliac® cables provide a completely weatherproof, unpressurized antenna system for transportable, low channel density applications. The system is high in quality yet low in cost because pressurization equipment is not required.



Standard

Frequency GHz	Flanges Mate with	Type Number	Diameter ft (m)	Gain, dBi			Beamwidth Degrees	Cross Pol. Disc., dB	F/B Ratio dB	VSWR max. (R.L., dB)
				Bottom	Mid-Band	Top				
Standard Antennas, F-Series Unpressurized										
1.7-2.11*	"F"	P6F-17C	6 (1.8)	27.7	28.6	29.5	6.0	30	36	1.20 (20.8)
Single	Flange	P8F-17C	8 (2.4)	30.2	31.1	32.0	4.5	30	39	1.15 (23.1)
Polarized	Male	P10F-17C	10 (3.0)	32.1	33.1	34.0	3.7	34	42	1.15 (23.1)
		P12F-17C	12 (3.7)	33.7	34.6	35.5	3.0	30	45	1.15 (23.1)
Low VSWR Standard Antennas, Air Dielectric										
1.7-2.11*	7/8" EIA	PL6-17C	6 (1.8)	27.8	28.7	29.6	6.0	30	36	1.10 (26.4)
Single	50 ohm	PL8-17C	8 (2.4)	30.3	31.2	32.1	4.5	30	39	1.06 (30.7)
Polarized		PL10-17C	10 (3.0)	32.2	33.2	34.1	3.7	34	42	1.06 (30.7)
		PL12-17E	12 (3.7)	33.8	34.7	35.6	3.0	30	45	1.06 (30.7)
		PL15-17D	15 (4.6)	35.7	36.6	37.5	2.4	30	48	1.06 (30.7)
Low VSWR Standard Antennas, Air Dielectric										
1.85-1.99	7/8" EIA	PL8-18	6 (1.8)	28.5	28.8	29.1	6.0	30	36	1.10 (26.4)
Single	50 ohm	PL8-18	8 (2.4)	31.0	31.3	31.6	4.5	30	39	1.06 (30.7)
Polarized		PL10-18	10 (3.0)	33.0	33.3	33.6	3.7	34	42	1.06 (30.7)
		PL12-18	12 (3.7)	34.5	34.8	35.1	3.0	30	45	1.06 (30.7)
1.85-1.99†	7/8" EIA	PXL8-18C	8 (2.4)	31.0	31.2	31.5	4.6	28	43	1.08 (28.3)
Dual	50 ohm	PXL10-18C	10 (3.0)	32.9	33.1	33.6	3.7	28	46	1.08 (28.3)
Polarized		PXL12-18C	12 (3.7)	34.5	34.7	35.2	3.0	28	48	1.08 (28.3)
Low VSWR Standard Antennas										
6.425-7.125	CPR137G	PL6-65D	6 (1.8)	39.3	39.8	40.2	1.7	30	47	1.06 (30.7)
Single	and	PL8-65D	8 (2.4)	41.9	42.3	42.8	1.3	30	49	1.04 (34.2)
Polarized	PDR70	PL10-65D	10 (3.0)	43.6	43.9	44.3	1.0	30	52	1.04 (34.2)
		PL12-65E	12 (3.7)	45.2	45.6	46.1	0.8	30	53	1.04 (34.2)
		PL15-65D	15 (4.6)	46.8	47.1	47.6	0.7	30	54	1.04 (34.2)
6.425-7.125	CPR137G	PXL6-65D	6 (1.8)	39.1	39.4	39.9	1.7	30	47	1.07 (29.4)
Dual	and	PXL8-65D	8 (2.4)	41.6	42.0	42.4	1.3	34	52	1.06 (30.7)
Polarized	PDR70	PXL10-65D	10 (3.0)	43.6	44.0	44.4	1.0	34	58	1.06 (30.7)
		PXL12-65E	12 (3.7)	45.0	45.4	45.9	0.8	30	62	1.06 (30.7)
		PXL15-65E	15 (4.6)	46.6	46.9	47.3	0.7	30	54	1.06 (30.7)
Standard Antennas										
6.425-7.125	UG-344/U	P4-65D	4 (1.2)	35.8	36.3	36.7	2.5	30	43	1.10 (26.4)
Single	UAR70	P6-65D	6 (1.8)	39.3	39.8	40.2	1.7	30	47	1.10 (26.4)
Polarized	and	P8-65D	8 (2.4)	41.9	42.3	42.8	1.3	30	49	1.10 (26.4)
	PAR70	P10-65D	10 (3.0)	43.6	43.9	44.3	1.0	30	52	1.10 (26.4)
		P12-65E	12 (3.7)	45.2	45.6	46.1	0.8	30	53	1.10 (26.4)
		P15-65D	15 (4.6)	46.8	47.1	47.6	0.7	30	54	1.10 (26.4)
Standard Antennas										
12.2-13.25	WR75	P4-122D	4 (1.2)	41.2	41.5	41.9	1.4	30	49	1.10 (26.4)
Single	choke	P6-122D	6 (1.8)	44.7	45.1	45.4	0.9	30	53	1.08 (28.3)
Polarized	and	P8-122D	8 (2.4)	47.2	47.6	47.9	0.7	30	55	1.08 (28.3)
	cover	P10-122E	10 (3.0)	48.4	48.8	49.1	0.6	26	57	1.08 (28.3)
		P12-122E	12 (3.7)	50.6	50.9	51.2	0.5	30	58	1.08 (28.3)
12.2-12.7	WR75	PX4-122C	4 (1.2)	40.5	40.7	40.9	1.4	25	52	1.10 (26.4)
Dual	choke	PX6-122C	6 (1.8)	44.6	44.8	45.0	0.9	25	51	1.10 (26.4)
Polarized	and	PX8-122C	8 (2.4)	47.1	47.3	47.5	0.7	30	54	1.10 (26.4)
	cover	PX10-122C	10 (3.0)	48.4	48.5	48.7	0.6	30	57	1.10 (26.4)
		PX12-122C	12 (3.7)	50.5	50.6	50.8	0.5	25	58	1.10 (26.4)
12.7-13.25	WR75	PX4-127C	4 (1.2)	40.9	41.0	41.2	1.4	25	52	1.10 (26.4)
Dual	choke	PX6-127C	6 (1.8)	45.0	45.1	45.3	0.9	25	52	1.10 (26.4)
Polarized	and	PX8-127C	8 (2.4)	47.5	47.6	47.8	0.7	30	54	1.10 (26.4)
	cover	PX10-127C	10 (3.0)	48.7	48.8	49.0	0.6	30	57	1.10 (26.4)
		PX12-127C	12 (3.7)	50.8	50.9	51.1	0.5	25	58	1.10 (26.4)



Teglar Radome



R8E

Flexible Planar Radomes

All Andrew shielded antennas and horn-reflector antennas include a flexible planar radome stretched across the opening of the shield. The radome flexes slightly in the wind and readily sheds ice and snow in most environments.

Using a polymer-coated fabric of extreme durability, the Teglar™ long-life radome excels in resistance to heat, rain, snow, fungus, ice accumulation, corrosive atmosphere and ultraviolet light. The polymer surface readily sheds water and dirt. Performance under normal conditions is equal to or better than other designs, and under severe conditions is significantly better.

The Teglar long-life radome is included as standard with certain shielded antennas. Others include a Hypalon radome, and the Teglar radome is optional at extra cost.

Planar radomes are included as part of the antenna. The standard color is aviation white. Aviation orange is available as an option for some antenna types. Note that the Teglar radome cannot be painted.

Molded Radomes

Optional molded radomes are available for most Andrew standard antennas to protect against accumulation of ice, snow and dirt and to reduce windloading. Depending on antenna size or type, molded ra-

domes are either conical or parabolic in shape, and are clamped or bolted to the rim of the reflector. Molded radomes are highly resistant to ultraviolet rays and provide high reliability under severe environmental conditions.

Unheated radomes offer suitable protection for most installations. In areas subject to severe sleet or heavy snow, heated radomes are recommended. These have nichrome wires molded between layers and an air-sensing thermostat to energize the heaters in the critical icing range 22°F to 38°F (-6°C to +3°C).

Except for the special 890-2300MHz versions, the heating wires are laid in a helical pattern to eliminate the need for polarization alignment, and to accommodate dual-polarized operation with negligible added loss.

Attenuation and system VSWR effects are listed in the table below. To determine the maximum VSWR across the band for the antenna/radome combination, add the figure from the table to the maximum antenna VSWR.

The standard color is dark gray. Aviation white and aviation orange are available on request.

Molded Radome Attenuation and VSWR

Diameter ft (m)	Attenuation*				Add to Antenna VSWR			
	2 GHz	6 GHz	11 GHz	13 GHz	2 GHz	6 GHz	11 GHz	13 GHz
STANDARD RADOMES								
2 (0.6)	0.1	0.4	1.0	1.2	0.02	0.03	0.03	0.03
4 (1.2)	0.1	0.4	1.2	1.5	0.02	0.03	0.03	0.03
6 (1.8)	0.1	0.5	1.4	1.7	0.02	0.03	0.03	0.03
8 (2.4)	0.1	0.6	1.5	1.8	0.02	0.03	0.03	0.03
10 (3.0)	0.2	0.9	1.8	2.1	0.02	0.03	0.03	0.03
12 (3.7)	0.2	1.0	1.9	2.2	0.02	0.03	0.03	0.03
EXTRA STRENGTH RADOMES								
6 (1.8)	0.2	0.8	1.8	2.1	0.02	0.03	0.03	0.03
8 (2.4)	0.2	0.9	1.8	2.1	0.02	0.03	0.03	0.03
10 (3.0)	0.3	1.2	2.0	2.2	0.02	0.03	0.03	0.03
12 (3.7)	0.3	1.4	2.0	2.3	0.02	0.03	0.03	0.03

* Guaranteed within 0.15 dB.



14x9



14x8

Lenses for ENG and EFP 2/3" Cameras

14 x 9 Lightweight, compact, rugged, razor sharp lens for demanding 2/3" ENG and EFP assignments

specifications	14x9		14x9 with wide angle attachment		14x9 with retro-zoom		14x9 with tele-attachment	
		with 2x extender		with 2x extender		with 2x extender		with 2x extender
focal length	9-126 mm	18-252 mm	5.8-8 mm	11.6-16 mm	7.2-101 mm	14.5-202 mm	60-210 mm (note 1)	30-420 mm
zoom range	14x	14x			14x	14x	3.5x (note 1)	14x
maximum aperture (see curves below)	f/1.6-f/2 T 1.8-T 2.2	f/3.2-f/4 T 3.5-T 4.4	f/1.6 T 1.8	f/3.2 T 3.5	f/1.6-f/2 T 1.8-T 2.2	f/3.2 - f/4 T 3.5-T 4.4	f/1.6-f/2 T 1.8-T 2.2	f/3.2-f/4 T 3.5-T 4.4
image diagonal	11 mm	11 mm	11 mm	11 mm	11 mm	11 mm	11 mm	11 mm
minimum focusing distance	0.80 m 31"	0.80 m 31"	0.15 m 5.9"	0.15 m 5.9"	0.47 m 18 1/2"	0.47 m 18 1/2"	2 m 6 1/2"	2 m 6 1/2"
minimum focusing distance in macro position	0 mm 0"	0 mm 0"	0 mm 0"	0 mm 0"	0 mm 0"	0 mm 0"	—	0 mm 0"
horizontal field angle	52°-4°	27°-2°	76°	41 1/2°	63°-5°	31°-2 1/2°	8 1/2°-2 1/2°	16 3/4 - 1 1/4
vertical field angle	40°-3°	21°-1 1/2°	60°	31°	49°-3 3/4°	25°-1 3/4°	6 1/4°-1 3/4°	12 1/2°-1°
smallest object to fill the screen	39x52 mm 1.5x2"	19x26 mm .7x1"	222x296 mm 8.7x11.6"	111x148 mm 4.4x5.8"	32x42 mm 1.2x1.7"	16x21 mm .6x .8"	65x86 mm 2.5x3.4"	32x43 mm 1.2x1.7"
smallest object to fill the screen in macro	40x54 mm 1.6x2.1"	20x27 mm .8x1"	68x90 mm 2.7x3.5"	34x45 mm 1.3x1.8"	68x90 mm 2.7x3.5"	34x45 mm 2.7x3.5"	—	61x81 mm 2.4x3.2"
weight (include servo zoom and iris)	1.4 kg 3.1 lbs	1.5 kg 3.3 lbs	1.9 kg 4.2 lbs	2 kg 4.4 lbs	2.4 kg 5.3 lbs	2.5 kg 5.5 lbs	2.4 kg 5.3 lbs	2.5 kg 5.5 lbs

note 1 limited for reason of size and weight

14 x 8 Extremely wide angle, razor sharp and lightweight lens with all the features for demanding 2/3" ENG and EFP assignments

specifications	14 x 8		14x8 with wide angle attachment	
		with 2x extender		with 2x extender
focal length	8-112 mm	16-224 mm	4.8-6.7 mm	9.6-13.4 mm
zoom range	14x	14x		
maximum aperture (see curves below)	f/1.6-f/2 T 1.8-T 2.2	f/3.2-f/4 T 3.5-T 4.4	f/1.6 T 1.8	f/3.2 T 3.5
image diagonal	11 mm	11 mm	11 mm	11 mm
minimum focusing distance	0.8 m 31"	0.8 m 31"	40 mm 1.6"	40 mm 1.6"
minimum focusing distance in macro position	0 mm 0"	0 mm 0"	0 mm 0"	0 mm 0"
horizontal field angle	58°-4 1/2°	30 3/4°-2 1/4°	85°	43°
vertical field angle	45°-3 1/4°	23 1/4°-1 3/4°	69°	35°
smallest object to fill the screen	46x61 mm 1.8x2.4"	23x30 mm .9x1.2"	139x192 mm 5.5x7.5"	70x96 mm 2.8x3.8"
smallest object to fill the screen in macro	51 x 68 mm 2x2.7"	25x34 mm 1x1.3"	90x128 mm 3.5x5"	45x64 mm 1.8x2.5"
weight (include servo zoom and iris)	1.8 kg 3.9 lbs	1.8 kg 3.9 lbs	2.4 kg 5.3 lbs	2.4 kg 5.3 lbs

ANGENIEUX CORP. OF AMERICA

1/2" CCD ENG/EFP Lenses



Lenses for ENG/EFP 1/2" CCD Cameras

14 x 7 Lightweight, rugged, for high performance 1/2" CCD Cameras

specifications	14x7		14x7 with wide angle attachment		14x7 with retro-zoom		14x7 with tele-attachment	
		with 2x extender		with 2x extender		with 2x extender		with 2x extender
focal length	7-98 mm	14-196 mm	4.5-7.5 mm	9-15 mm	5.6-78 mm	11.2-156 mm	40-183 mm	23-326 mm
zoom range	14x	14x			14x	14x	4x (note 1)	14x
maximum aperture (see curves below)	f/1.4-f/1.6 T 1.6-T 1.8	f/2.8-f/3.2 T 3.2-T 3.6	f/1.4 T 1.6	f/2.8 T 3.2	f/1.4-f/1.6 T 1.6-T 1.8	f/2.8-f/3.2 T 3.2-T 3.6	f/1.4-f/1.6 T 1.6-T 1.8	f/2.8-f/3.2 T 3.2-T 3.6
image diagonal	8.5 mm	8.5 mm	8.5 mm	8.5 mm	8.5 mm	8.5 mm	8.5 mm	8.5 mm
minimum focusing distance	0.80 m 31"	0.80 m 31"	0.02 m .75"	0.02 m .75"	0.47 m 18 1/2"	0.47 m 18 1/2"	2 m 6 1/2"	2 m 6 1/2"
minimum focusing distance in macro position	0 mm 0"	0 mm 0"	0 mm 0"	0 mm 0"	0 mm 0"	0 mm 0"		0 mm 0"
horizontal field angle	52°-4°	27°-2°	76°	41 1/2°	63°-5°	31°-2 1/2°	8 1/2°-2 1/2°	16 3/4°-1 1/4°
vertical field angle	40°-3°	21°-1 1/2°	60°	31°	49°-3 3/4°	25°-1 3/4°	6 1/4°-1 3/4°	12 1/2°-1°
smallest object to fill the screen	39x52 mm 1.5x2"	19x26 mm .7x1"	83x111 mm 3.3x4.4"	41x55 mm 1.6x2.2"	32x42 mm 1.2x1.7"	16x21 mm .6x.8"	65x86 mm 2.5x3.4"	32x43 mm 1.2x1.7"
smallest object to fill the screen in macro	40x54 mm 1.6x2.1"	20x27 mm .8x1"	65x86 mm 2.6x3.4"	32x43 mm 1.3x1.7"	68x90 mm 2.7x3.5"	34x45 mm 1.3x1.8"		61x81 mm 2.4x3.2"
weight (include servo zoom and iris)	1.4 kg 3.1 lbs	1.5 kg 3.3 lbs	1.9 kg 4.2 lbs	2 kg 4.4 lbs	2.4 kg 5.3 lbs	2.5 kg 5.5 lbs	2.4 kg 5.3 lbs	2.5 kg 5.5 lbs

note 1 : limited for reason of size and weight

14 x 6 Extremely wide angle, razor sharp and lightweight lens, for high performance 1/2" CCD Cameras

specifications	14x6		14x6 with wide angle attachment	
		with 2x extender		with 2x extender
focal length	6-84 mm	12-168 mm	3.6-6 mm	7.2-12 mm
zoom range	14x	14x		
maximum aperture (see curves below)	f/1.4-f/1.6 T 1.6-T 1.8	f/2.8-f/3.2 T 3.2-T 3.6	f/1.4 T 1.6	f/2.8 T 3.2
image diagonal	8.5 mm	8.5 mm	8.5 mm	8.5 mm
minimum focusing distance	0.8 m 31"	0.8 m 31"	0 m 0"	0 m 0"
minimum focusing distance in macro position	0 mm 0"	0 mm 0"	0 mm 0"	0 mm 0"
horizontal field angle	58°-4 1/2°	30 3/4°-2 1/4°	85°	43°
vertical field angle	45°-3 1/4°	23 1/4°-1 3/4°	69°	35°
smallest object to fill the screen	46x61 mm 1.8x2.4"	23x30 mm .9x1.2"	90x128 mm 3.5x7.5"	45x64 mm 1.8x2.5"
smallest object to fill the screen in macro	51x68 mm 2x2.7"	25x34 mm 1x1.3"	90x128 mm 3.5x7.5"	45x64 mm 1.8x2.5"
weight (include servo zoom and iris)	1.9 kg 4.2 lbs	1.9 kg 4.2 lbs	2.5 kg 5.5 lbs	2.5 kg 5.5 lbs

Prices and Specifications Subject to Change Without Notice.

ANGENIEUX CORP. OF AMERICA

1" / 1 1/4" Lenses



Zoom 15X HP



Zoom 18X HP

Lenses for 1" / 1 1/4" Cameras
 15x13 HP and 15x17 HP
 High Performance
 Multipurpose Lenses

15x13 HP

Specifications	15x13 HP	15x13 HP w/1.7x extender
Focal Length	13-195 mm	22-330 mm
Zoom Range	15x	15x
Maximum Aperture	f/1.5 F 13-130 mm f/2.1 F 195 mm	f/2.5 F 22-220 mm f/3.5 F 330 mm
Image Diagonal	16 mm	16 mm
Minimum Focusing Distance	0.80 m 31"	0.80 m 31"
Horizontal Field Angle	53° - 3 3/4°	32 1/2° - 2 1/4°
Vertical Field Angle	40 1/2° - 2 3/4°	24 1/2° - 1 3/4°
Smallest Object To Fill The Screen	52x69 mm 2x2.7"	31x41 mm 1.2x1.6"
Weight Of Lens Package (full servo version with diascope and cover)		25 kg 55 lbs.

18x16.5 and 18x12.5
 Superb Optical Performance and
 High Operational Flexibility Lenses

18x16.5

Specifications	18x16.5	18x16.5 w/1.6x extender	18x16.5 w/2.5x extender
Focal Length	16.5 - 300 mm	26.5 - 480 mm	40 - 750 mm
Zoom Range	18x	18x	18x
Maximum Aperture	f/2 F 16.5 - 180 mm f/3.2 F 300 mm	f/3.2 F 26.5 - 290 mm f/5.1 F 480 mm	f/5 F 40 - 450 mm f/8 F 750 mm
Image Diagonal	21.4 mm	21.4 mm	21.4 mm
Minimum Focusing Distance	0.6 m 24"	0.6 m 24"	0.6 m 24"
Horizontal Field Angle	54 1/2° - 3 1/4°	35 1/2° - 2°	23° - 1-1/3°
Vertical Field Angle	41 3/4° - 2 1/2°	26 3/4° - 1 1/2°	17 1/4° - 1°
Smallest Object To Fill The Screen	37 x 50 mm 1.4 x 2"	23 x 31 mm .9 x 1.2"	15 x 20 mm .6 x 8"
Weight Of Lens Package (full servo version with diascope and cover)		27 kg 60 lbs.	

15x17 HP

Specifications	15x17 HP	15x17 HP w/1.7x built-in extender
Focal Length	17-255 mm	30-450 mm
Zoom Range	15x	15x
Maximum Aperture	f/2 F 17-170 mm f/2.8 F 255 mm	f/3.4 F 30-300 mm f/4.7 F 450 mm
Image Diagonal	21.4 mm	21.4 mm
Minimum Focusing Distance	0.60 m 31"	0.80 m 31"
Horizontal Field Angle	53° - 3 3/4°	32 1/2° - 2 1/4°
Vertical Field Angle	40 1/2° - 2 3/4°	24 1/2° - 1 3/4°
Smallest Object To Fill The Screen	52x69 mm 2x2.7"	31x41 mm 1.2x1.6"
Weight Of Lens Package (full servo version with diascope and cover)		22 kg 55 lbs.

18x12.5

Specifications	18x12.5	18x12.5 w/1.6x extender	18x12.5 w/2.5x extender
Focal Length	12.5 - 225 mm	20 - 360 mm	31.5 - 565 mm
Zoom Range	18x	18x	18x
Maximum Aperture	f/1.5 F 12.5 - 135 mm f/2.4 F 225 mm	f/2.4 F 20 - 215 mm f/3.8 F 360 mm	f/3.7 F 31.5 - 335 mm f/6 F 565 mm
Image Diagonal	16 mm	16 mm	16 mm
Minimum Focusing Distance	0.6 m 24"	0.6 m 24"	0.6 m 24"
Horizontal Field Angle	54 1/2° - 3 1/4°	35 1/2° - 2°	23° - 1-1/3°
Vertical Field Angle	41 3/4° - 2 1/2°	26 3/4° - 1 1/2°	17 1/4° - 1°
Smallest Object To Fill The Screen	37 x 50 mm 1.4 x 2"	23 x 31 mm .9 x 1.2"	15 x 20 mm .6 x 8"
Weight Of Lens Package (full servo version with diascope and cover)		27 kg 60 lbs.	



40 x 9.5



40 x 14

LENSES FOR 2/3" AND 1" CAMERAS

Zoom 40x Lenses – Microprocessor Controlled

This lens is incredibly small, very lightweight 43 lbs. (19.5 kg), yet it has a remarkably fast relative maximum aperture. The limitations of minimum object distance no longer exist because of microprocessor control, focusing is now possible at any distance.

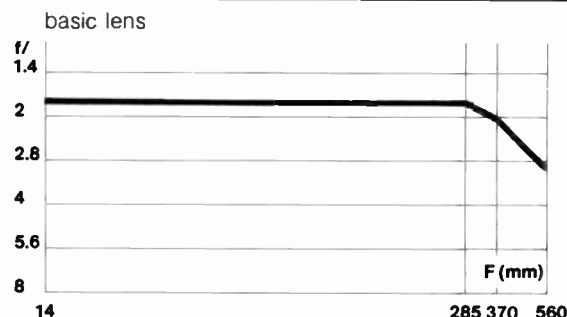
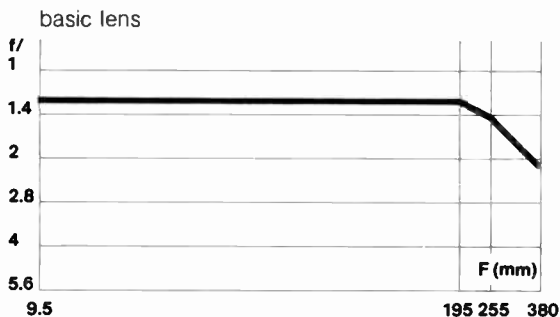
The 40x is a lens with high transmission, minimum iris ramping, superior MTF (Modulation Transfer Function) and reduced chromatic aberrations.

The 40x is a multipurpose lens, it will cover all the angles from a wide 49.75° to a tight 1.33° and more, with the standard 2.1x extender and optional 1.45x extender.

Advanced three lamp diascope, a modular PC board layout, circuit breakers, ribbon cable wiring, interchangeable servo modules and a heater are standard. Even the operational ease has been taken into account with external LED readouts for zoom position, iris position, and extender/diascope position.

Also adding to the operational ease of the 40x are an easily accessible electronic back focus adjustment with a lock, a manual back focus adjustment and manual overrides for the iris and the extender/diascope turret.

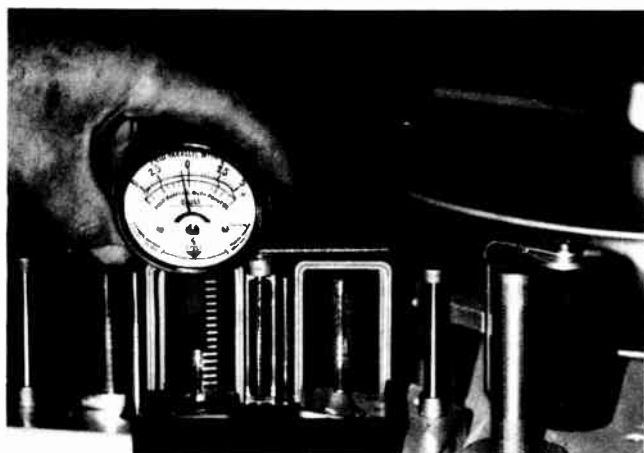
Specifications	Zoom 40 x 9.5 – f/1.3 for 2/3" Cameras			Zoom 40 x 14 – f/1.9 for 1" Cameras		
	40x9.5	40x9.5 with 1.45x extender (optional)	40x9.5 with 2.1x extender (standard)	40x14	40x14 with 1.45x extender (optional)	40x14 with 2.1x extender (standard)
focal length	9.5-380mm	13.8-550mm	20-800mm	14-560mm	20-800mm	30-120mm
zoom range	40x	40x	40x	40x	40x	40x
maximum aperture (see charts below)	f/1.3 F 9.5-195mm f/1.4 F 255mm f/2.1 F 380mm	f/2.1 F 13.8-375mm f/3 F 550mm	f/3 F 20-540mm f/4.4 F 800mm	f/1.9 F 14-285mm f/2 F 370mm f/3 F 560mm	f/3 F 20-550mm f/4.4 F 800mm	f/4.4 F 30-800mm f/6.4 F 1200mm
Image diagonal	11mm	11mm	11mm	16mm	16mm	16mm
minimum focusing distance	0m 0"	0m 0"	0m 0"	0m 0"	0m 0"	0m 0"
horizontal field angle	49 3/4° - 1 1/3°	34° - 1°	24° - 1/2°	49 3/4° - 1 1/3°	34° - 1°	24° - 1/2°
vertical field angle	37 3/4° - 1°	26 1/4° - 3/4°	18° - 1/2°	37 3/4° - 1°	26 1/4° - 3/4°	18° - 1/2°
minimum object area at object distance 8.2' (2.5m)	41.5x55mm 1.6x2.2"	28.6x38mm 1.1x1.5"	19.8x26.2mm 0.8x1"	41.5x55mm 1.6x2.2"	28.6x38mm 1.1x1.5"	19.8x26.2mm 0.8x1"
distance 8.2' (2.5m) weight of lens package (full servo version with diascope and cover)	43 lbs. (19.5 kg)	43 lbs. (19.5 kg)	43 lbs. (19.5 kg)	43 lbs. (19.5 kg)	43 lbs. (19.5 kg)	43 lbs. (19.5 kg)



Refer to Green Section for Addresses and Telephone Numbers.

R.B. ANNIS CO.

Magnetometers/Demagnetizers



Audiophile Han-D-Kit

Check Magnetism in Recorder Components

The Annis Pocket Magnetometer quickly and accurately measures residual magnetism levels in recorder heads, drive capstans or tape guides. Indicates when it's time to demagnetize and lets you know when it's again safe to use the recorder.

Demagnetize Components When Necessary

Whenever the Magnetometer indicates any appreciable level of magnetism in a tape transport component, you can demagnetize it effectively with the powerful Annis Han-D-Mag before it causes permanent damage to recorded tapes.

Valuable audio and video tapes can be damaged when played on equipment that is not thoroughly and regularly demagnetized. Magnetism can easily build up in capstans, tape guides or recorder heads to a point where it will degrade the magneti-

cally recorded signal on tapes passing over them. Tape damage is first apparent as a loss of recorded high frequencies and a progressive increase in background noise each time they are played on magnetized equipment.

Until recently, there has been no easy way to tell when demagnetizing was needed, and most Demagnetizers on the market were far too weak to be effective, particularly on offending hardened steel guides or capstans, etc. Now, with the introduction of the Audiophile Han-D-Kit, both measurement and correction problems can be solved easily at modest cost.

Here in one convenient package is everything needed to measure magnetic levels quickly, along with a handy, powerful unit to demagnetize components completely before they can spoil valuable tapes.

Annis Pocket Magnetometer
Measures level of magnetism in components.
Calibrated to read directly in gauss.
Model 20/B5 shown.

Test Strips
One of these sensor strips is magnetically soft and the other magnetically hard. For experiments and testing your demagnetizing technique.

Clip-On Extension Probe
Extension probe is 1³/₄" long. Can be formed with fingers. Improves checking of magnetism in hard to reach components.



"Notes On Demagnetizing" Etc.

Explains causes of magnetism, with particular reference to tape recorders. How to measure it accurately and how to eliminate it. Interesting experiments also included.

Annis Audiophile Han-D-Mag
A rugged, dual-use Demagnetizer having a powerful, sine wave demagnetizing field strength of over 350 oersteds 1/4" beyond the tip of the 2 1/4" long probe.

Standard Han-D-Kit K20/B5

Includes all items listed above. Model 20 Magnetometer has polarity indicating center zero scale, calibrated to read 5-0-5 gauss.

Deluxe Han-D-Kit K25/S5

Same as K20/B5 except for the Magnetometer. This kit includes the larger, more rugged Model 25 jewelled Magnetometer with ten times the calibration stability of standard Model 20.

How Recorder Components Become Magnetized

Magnetism is everywhere. It is often found as residual magnetism in iron or steel objects. Magnetic tape recorder components such as heads, steel capstans and tape guides generally become magnetized through use and sometimes from accidental exposure to external magnetic field sources, such as loud speakers, transistor radios or meter type photometers, all of which contain strong permanent magnets. Heads, normally made of magnetically "soft" material, pick up magnetism readily but are easily demagnetized. Capstans and guides are made of harder steels which are more difficult to magnetize, but retain such magnetism and are much harder to demagnetize.

Why Demagnetizing is Necessary

The magnetic coating on recording tape is very sensitive to extraneous magnetism since the recorded signal itself is only a modulation of the residual magnetism retained in the thin layer of magnetic coating compound. Exposure to subsequent magnetic fields of any consequence degrades the recorded signal. Such degradation is noticeable as a loss or attenuation of the higher recorded frequencies, as well as an increase in unwelcome "hiss" or background noise which can amount to several dB. Unless offending tape transport components are demagnetized, the condition worsens each time the tape is played. The only way to correct this condition effectively is to measure magnetism levels regularly, and then demagnetize offending components whenever necessary.

How to Measure Magnetism in Components

The lower (test) edge of the Annis Pocket Magnetometer is placed in contact with the component being tested. If troublesome magnetism is present, the pointer will instantly deflect, showing magnetic polarity and a scale reading proportional to the level of magnetism in the component at that point. The higher the reading, the stronger the magnetic field. Magnetometer scale readings relate to magnetic field strength, in gauss, at the staff of the instrument which has been calibrated in a standard, uniform field source traceable to National Bureau of Standards. Use of the Clip-On Probe considerably improves the ability to

HAN-D-MAG can also be used for occasional bulk erasing of tapes



The opposite, flush pole end of the Han-D-Mag has a demagnetizing field strength of over 800 oersteds at 1/4". It is so powerful it can be used for limited bulk demagnetization of reels or cassettes with oxide tapes up to 1/4" wide, if a regular bulk eraser is not available.

detect magnetism present in recessed components but does reduce the Magnetometer reading as compared to direct contact. Additional details on Magnetometers may be found in our "Pocket Magnetometers" bulletin.

How to Demagnetize

First: Turn off the recorder. Make sure all tapes are at least 12" away from the energized Demagnetizer.

Second: Plug the Han-D-Mag into any convenient 115VAC outlet.

Third: Approach the component to be demagnetized with the plastic jacketed probe. It is rarely necessary to actually touch the part. Just bring the probe tip to within 1/8" or 1/4", wave sideways slightly then withdraw slowly, while still energized, at a rate no faster than 3" to 4" per second; to a distance of at least 12".

Fourth: Disconnect Han-D-Mag from its power source.

For maximum demagnetizing efficiency, the Han-D-Mag is rated for practical intermittent duty. It may be left connected to power for six to eight minutes at a time without overheating. If, by accident, you should forget to disconnect this powerful Demagnetizer, an internal calibrated thermal protector will permanently open the circuit, thus eliminating a fire hazard. Such "forgotten" units can be repaired at a modest cost. VU meters, etc. are safe as long as the energized Han-D-Mag is not brought closer than 1" distance to the meter movement. After demagnetizing is completed, you may use your Magnetometer again to check your proficiency.

Two Magnetometer models offered for tape recorder use

The 5-0-5 gauss Pocket Magnetometer is the optimum range for Audiophile use, though a number of other ranges are available. Standard Model 20, 2" diameter shown on the left. Deluxe Model 25, 2 1/2" diameter, on the right.



Annis Han-D-Mags are available in 8 different models. The "thin probe" models (.315" thick as compared to .415") are still the most powerful probe type, head demagnetizers, plus their having a husky 2000 gauss flush pole face.

Prices for complete Han-D-Kits are shown for the particular Han-D-Mag desired. Most orders are for the first listed standard model 115-S. Complete kit designation should also include the Han-D-Mag model number as: (K25/115-S), plus the price.

Han-D-Kits include your selected Han-D-Mag, a Pocket Magnetometer, a Clip-On Extension Probe plus a set of Steel Test Strips and instructions. For professional or serious users, we recommend the K 25 kit due to superior stability and accuracy of the Model 25 instrument.

Note: All 220V Han-D-Mags become continuous rated on 115V.

Han-D-Mag Designation	Description of Han-D-Mag		Han-D-Mag Order Only	Standard Kit (K20)	Deluxe Kit (K25)
50/60Hz					
115-S	Short probe (2 1/4")	115V	\$31.00	\$51.00	\$83.00
220-S	Short probe for	220V	34.00	54.00	86.00
115-L	Long probe (4 1/4")	115V	38.00	58.00	90.00
220-L	Long probe for	220V	41.00	61.00	93.00
115TS	Thin, short probe	115V	35.00	55.00	87.00
220TS	Thin, short probe	220V	38.00	58.00	90.00
115TL	Thin, long probe	115V	42.00	62.00	94.00
220TL	Thin, long probe	220V	45.00	65.00	97.00
20/5	Range 5 gauss	\$16.50	Clip-on extension probe		\$3.50
25/5	Range 5 gauss	49.00	Set of steel test strips		2.00
115-S/400					\$51.00
Special 400 cycle Han-D-Mags					
115-TS/400					.55.00

ANTON/BAUER, INC.

Batteries

Snap-On® NiCad Batteries

• Snap-On batteries feature • Quick change design for instant camera mounting without cables or connectors • Premium fast charge cells and exclusive all-cell sensing • Batteries are individually computer tested and shipped with a print-out • Accessories are available for mounting Snap-On batteries on belts, VTRs, monitors, and other portable equipment

Pro Pac® 14 4AH, 14.4V Snap-On NiCad Battery. Fast or slow charge. 4³/₄ lbs. Typical run time: 2 hours at 25W, 3 hours at 18W, 4 hours at 13W\$525.00

Pro Pac 13 4AH, 13.2V Snap-On NiCad Battery. Fast or slow charge. 4¹/₄ lbs. Typical run time: 2 hours at 24W, 3 hours at 16W, 4 hours at 12W\$505.00

Trim Pac® 2AH, 12V, Compact Snap-On NiCad Battery. Fast or slow charge. 2¹/₂ lbs. Recommended for applications drawing under 15W. Typical run time: 1¹/₂ hours at 12W.\$250.00

Recommended Battery Applications: The Pro Pac 13 is a universal battery that will power virtually all ENG/EFP cameras, VTRs, and monitors. However, the Pro Pac 14 will yield superior performance and capacity on those cameras that can accept the higher voltage.

Pro Pac 14/Com Pac 14	Pro Pac 13	Trim Pac
Ikegami	Panasonic	JVC KY-1900
RCA	Bosch	Sony BVP-110
Sharp	Hitachi	
Thomson	Ampex	
Philips	JVC	
	Sony	
	NEC	

Pro Pac® 90 Professional VTR Battery

The Pro Pac 90 is a premium professional version of the Sony BP-90 type VTR battery. Unique features include: • Special fast charge premium cells • Printed circuit board design instead of wiring • Individual cell sensing system • Low temperature protection circuit • Special Tri-conn® 3-conductor connector (eliminates need for separate fast charge cable) • Accessible fuse with spare fuse • Heavy duty molded housing and steel reinforced molded strain relief on cable • Can be charged directly with all Lifesaver Chargers • Can also be charged with other brand conventional chargers but without benefit of the individual cell sensing protection system

Pro Pac 90. 4AH, 12V NiCad VTR Battery. Fast or slow charge. 3¹/₂ lbs. Typical run time: more than 3 hours at 14W\$330.00

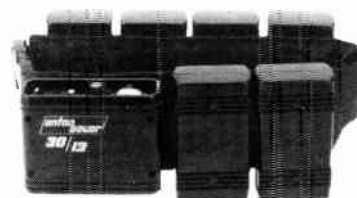
T-SO-90. Pro Pac 90 to Snap-On Adaptor. Allows Pro Pac 90 to fit any Anton/Bauer Snap-On Bracket; i.e., for on camera mounting or for wearing on a belt with UniPac holder. Adapts Pro Pac 90 to charge on the mobile fast charger\$195.00

NP-1A. High Capacity (1.7AH) 12V NiCad VTR/Camera Battery. Direct replacement for NP-1 type battery applications. Can be charged with any NP-1/NP-1A charger. Typical run time one hour at 18W ...\$85.00

Power Strap. A multi-purpose battery strap designed for use with all portable video recorders and low voltage portable lighting equipment • Can be worn as a belt for lighting applications • At 12V, 4AH, the Power Strap will continuously run a VO-6800 recorder for 3 hours or power a 25W Ultralight bulb for 2 hours • User accessible 8A circuit breaker • Made of 1000 denier Cordura • Supplied with a nylon strap for belt mounting and a 14-16 hour overnight charger • Can be fast or quick charged with any Anton/Bauer Lifesaver® charger with the optional CA-30 charge cable. Accessory cables are available for most DC power requirements\$395.00



Pro Pac 90



30/13 Battery Belt



Power Strap



DBH. Dual Battery Holder



Pro Pac 13/14



PPSA-D. Perpetual Power Belt

CC-68 Cable. VTR coiled cable with right angle connector to power most popular recorders. 4-pin DC input\$70.00

Universal NiCad Battery Belts/holders

The ultimate battery belt. Powers virtually all portable equipment, including 30V lights, all 13V cameras and VTRs, and UltraLight Modular Lighting System. Unique construction features include: • Leather belt • Lexan® battery modules • Quick release military buckle • Anatomical design • Can be worn around the waist, over the shoulder or bandolero style • 30V, 4AH or 13.2V, 8AH switchable • Built-in 115/230V overnight charger • Voltage display • Charge indicator • Input and output circuit breakers • Multiple charge sensors • In low voltage lighting applications 80W maximum total light output (one or two bulbs)

30/13 Battery Belt. • 30V, 4AH or 13.2V, 8AH switchable • Built-in 115/230V overnight charger • One hour fast charged • 10A circuit breaker • Waist size: 32" to 48" adjustable • Wt. 11¹/₂ lbs. .\$.885.00
CA-30. Fast Charge Cable. Connects 30/13 belt to Lifesaver 1 hour fast charger (LSFC)\$65.00

PPSA-D. Perpetual Power Belt-Automatic. • Accepts two Snap-On batteries of any type • When first battery is depleted, the belt automatically draws from the second • First battery may be replaced and the process repeated providing uninterrupted power • Leather belt • Quick release aircraft buckle • Lexan control module with voltage display • Circuit breaker • 2 output connectors for powering a camera and a VTR simultaneously\$335.00

DBH. Dual Battery Holder. • Accepts a pair of either 2 Pro Pac 13 or Pro Pac 14 Snap-On NiCad batteries • Provides 8AH of continuous power to run a typical camera 4 hours • Control module monitors battery capacity and switches automatically to the second battery when the first is depleted • First battery may be replaced and the process repeated, providing uninterrupted power • Low-battery warning LED • 5A circuit breaker • Universal 5-pin XLR output • Size: 5¹/₂" x 3" x 6" Wt. 1¹/₂ lbs.\$295.00

ANTON/BAUER, INC.

Battery System/Chargers

Silver Battery System

• Silver Zinc batteries will operate equipment approximately three times longer than NiCad batteries of equivalent size and weight. In many cases the SV-13 Silver Battery will operate a camera for an entire day • Fully compatible with Anton/Bauer Snap-On accessories and Snap-On mounts, and will power all video cameras and VTRs • Not recommended for lighting applications • Silver batteries can only be charged with the Anton/Bauer SVDC-13 Silver Battery Charger

SV-13. 12AH, 13.5V Snap-On Silver Battery. • Expected life: 80-100 charge/discharge cycles (one year maximum) • Typical run time: 6 hours at 25W • Wgt. 4 1/2 lbs. • Individually computer tested and packaged with computer printout. **.POR**

SVDC-13 Digital Control Silver Charger. • Charges two SV-13 Silver Batteries simultaneously and independently • Overnight or 6 hour charge rate, selectable • Dual protection circuits • Charge rate indicators and green ready lights • Size: 8 1/2" x 5 1/2" x 10 1/2" • Wgt. 14 1/2 lbs. • 115/230V, 50/60Hz **\$1985.00**

SVSC. Silver System Shipping/Carrying Case. • Heavy-duty case features custom foam interior that holds one SVDC-13 Charger and two SV-13 Silver Batteries • Rugged hardware and an outer shell of high density polyethylene fully protects battery charger during shipment • Size: 18" x 11" x 16 1/2" **\$295.00**

Lifesaver® NiCad Chargers

The first 100% safe charging systems. Lifesaver circuit safely maintains fully charged battery indefinitely. All Lifesaver chargers feature • 3 automatic charge rates • Logic controlled charge monitor circuit • Battery coupled cell sensing system with hot and cold temperature protection • Integral Anton/Bauer Snap-On bracket directly accepts Snap-On type batteries • Special Triconn 3-conductor connector accepts Pro Pac 90 and other BP-90 type VTR batteries

LSFC. Lifesaver Fast Charger. • Single position, one hour charger • Accepts all Anton/Bauer 4AH Snap-On, Pro Pac 90, NiCad batteries • And all Anton/Bauer battery belts • Size: 7 1/2" x 6 1/4" x 4" • Wgt. 4.4 lbs. • 115/230V, 50/60Hz **\$595.00**

LSQC. Lifesaver 8 Hour Single. • Single position, 8 hour quick charger • Accepts all Anton/Bauer 4AH Snap-On, Pro Pac 90, and Pro Pac 60 NiCad batteries • Charges other brand BP-90 type batteries at the overnight rate • Size: 6 1/2" x 4 1/8" x 3 5/8" • Wgt. 5.5 lbs. • 115/230V, 50/60Hz **\$395.00**

LSQ4. Lifesaver 8 Hour Quad. • Four position 8 hour quick charger • Independent charge circuits and LED indicators for each position • Accepts any combination of Anton/Bauer 4AH Snap-On, Pro Pac 90 and Pro Pac 60 NiCad batteries • Charges other brand BP-90 type batteries at overnight rate • Size: 10 1/4" x 3 5/8" x 7" • Wgt. 5 lbs. • 115/230V, 50/60Hz. **\$995.00**

MP-8 Lifesaver 8 Position Microprocessor Charger. • Automatically identifies any combination of battery • Equalizing routine restores batteries to full capacity • Red and green LED's for each position • 24 character two line LCD provides detailed charge information for each battery. **\$3370.00**

MP-4 Lifesaver 4 position microprocessor charger **\$2370.00**

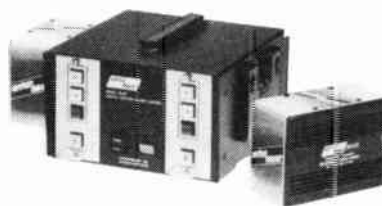
PROBE Programmed Battery Evaluator. • Diagnostic and Rejuvenation access for MP-8 and MP-4 chargers **\$795.00**

Special Purpose Charger

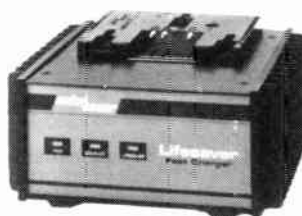
MFC. Mobile Fast Charger. • Single position universal one hour fast or 16 hour, overnight charger • Operates from most vehicles with or without engine running • Accepts all Anton/Bauer Snap-On NiCad batteries and Pro Pac 90 batteries using TSO-90 XLR adaptor • Protection circuit that disconnects charger if vehicle voltage becomes too low • Operates on 10-15VDC input • Size: 6" x 7 1/2" x 3 1/2" • Wgt. 2 3/4 lbs. **\$595.00**

Micro Chargers

Micro Chargers are designed for travel or as back up chargers and are not recommended as a primary charge system. Prolonged use of Micro Chargers may contribute to premature battery aging.



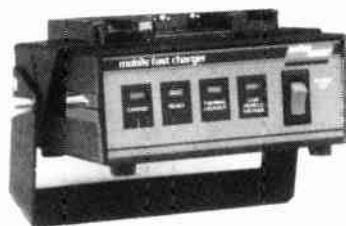
Silver System Batteries and Charger



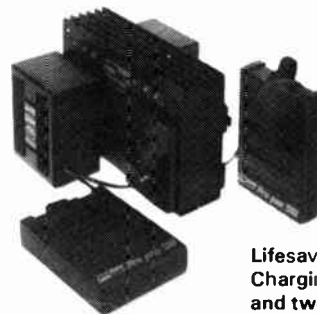
Lifesaver Fast Charger



SVSC Shipping Case (shown with Silver System)



Mobile Fast Charger



Lifesaver 8 Hour Quad Charging the Pro Pac 13 and 14, and two Pro Pac 90 batteries



MP-8

MC-14. Micro Charger 14 Volts. Miniature wall mount overnight (16-18 hours) charger for Pro Pac 14. Must not be used with 13V or 12V batteries. For 115VAC only **\$95.00**

MC-13. Micro Charger 13 Volts. Miniature wall mount overnight (16-18 hours) charger for Pro Pac 13. Must not be used with 14V or 12V batteries. For 115VAC only **\$95.00**

TPMC-12. Trim Pac Micro Charger. Compact overnight charger for 12V Trim Pac battery. Full charge in 16-18 hours. For 115VAC only . . . **\$95.00**

U-12MC. Micro Charger 12 Volts. Miniature wall mount overnight (16-18 hours) charger for the Power Strap. Must not be used with 14V or 13V batteries. For 115VAC only **\$95.00**

CPMC-14. ComPac Micro Charger 14 Volts. Miniature wall mount overnight (16-18 hours) charger for the ComPac 14 battery only. Not to be used with any other battery types. For 115VAC only **\$95.00**

ANTON/BAUER, INC.**Accessories/Power Supplies****Snap-On Accessories**

Snap-On accessories will accept both Anton/Bauer Snap-On NiCad and Silver batteries except as noted.

UP. UniPac Single Snap-On Battery Holder. • Accepts any Anton/Bauer Snap-On battery • Includes loops (for any size pants belt) • Integral power cable with female XLR-4 DC input connector • Cameras and VTRs not equipped with an XLR-4 DC input require SO/XLR adaptor \$130.00

UL-UP. UltraLight[®] UniPac. • As above with XLR-2 DC input connector for new UltraLight system • NiCad only \$130.00

SO/XLR. Snap-On Bracket to XLR-4 Adaptor. • Fits any Anton/Bauer Snap-On Bracket • Provides universal 4-pin male XLR DC input connection to any camera or other device with an Anton/Bauer Snap On bracket \$95.00

ULPA. Light Tap[™] Power Adaptor. • Allows camera battery to power UltraLights, and camera simultaneously • Maximum 85W total light output (one or two bulbs) • Accepts 12-14V Snap-On NiCad batteries • Operates 12-14V bulbs. NiCad only \$130.00

PSXLR5. Snap-On Battery to XLR-5 Adaptor. • Compact adaptor snaps onto any Anton/Bauer Snap-On battery or power supply converting it to a 5-pin XLR female power output connector \$95.00

TSO-9Q. Pro Pac 90 to Snap-On Adaptor. • Allows Pro Pac 90 to fit any Anton/Bauer Snap-On bracket; i.e., for on camera mounting or for wearing on a belt with UniPac holder • Will not accept other brand BP-90s \$195.00

PPSA-D. Perpetual Power Belt-Automatic. • Accepts two Snap-On batteries of any type \$335.00

Gold Mount[®] Quick Release Brackets

QRG. Universal Snap-On Quick Release Bracket. • This is the basic bracket that is the standard of the video industry and included as standard equipment with virtually all ENG cameras. Includes: • Metal to metal electrical contacts, internal wire connections • 4 mounting screws (6x32) • Designed to be installed on any portable device allowing use of any Anton/Bauer Snap-On battery • Bracket measures 4^{11/16}" x 3^{5/8}" \$95.00

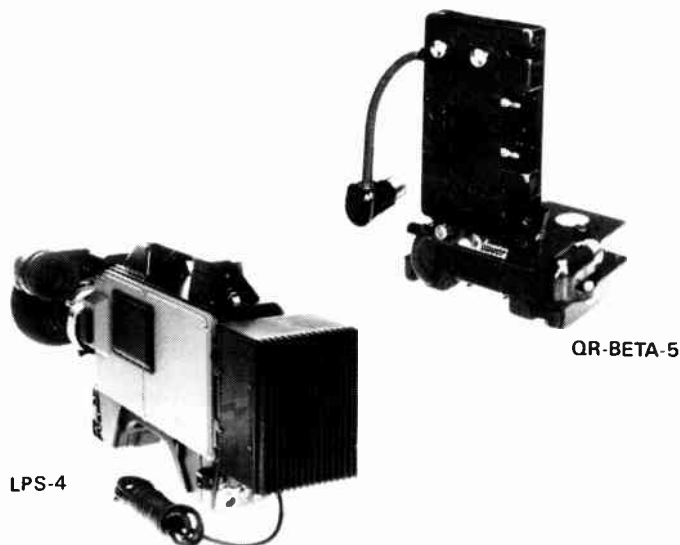
QRGC. Universal Snap-On Compact Bracket. • Designed for the new smaller cameras • Fully compatible with all Snap-On products • Includes electrical contacts • Internal wire connectors and 4 mounting screws (6x32) • Bracket measures 4^{11/16}" x 3" \$95.00

QR-BVP-3. Snap-On Quick Release Bracket. • With integral power connector and plate for custom mounting on Thomson 601/701 and Sony BVP-300 Series cameras • No camera modifications required \$125.00

QR-DXC-M3. Snap-On Quick Release Bracket. • As above, but for Sony DXC-M3 camera • Built-in circuit operates low battery level indicator in viewer \$145.00

QR-DXC-M3A. Snap-On Quick Release Bracket. • With integral power connector and plate for custom mounting on Sony DXC-M3A, DXC-M2, BVP-150 and BVP-3 (with CA-3/CA-30 adaptor) cameras • No camera modifications required \$130.00

QR-DX-3000. Snap-On Quick Release Bracket. • For custom mounting on the rear of the Sony DXC-3000 camera • With integral power connector. \$130.00



LPS-4

QR-BETA-5

QR-777. Snap-On Quick Release Bracket. • With integral power connector for custom mounting on the rear of Panasonic 777, 888, or 555 camera • No camera modifications required. (Same as Panasonic WV-PS355 bracket) \$145.00

QR-BETA-3. Snap-On II Quick Release Bracket. • With integral power connector and plate for custom mounting on Sony/Thomson Betacam camera/recorders • No camera modifications required \$150.00

QR-BETA-5. Snap-On II Quick Release Bracket. • Features a unique dual mounting system for the Sony BVW-105 camera/recorder • Rear mount when used on tripod • Under mount for field use (Same as QR-BETA-3 Bracket) \$195.00

QR-BETA Back Mount. • Snap-On II Quick Release Bracket with integral power connector and plate for custom mounting on the back of Sony/Thomson Betacam camera/recorder or to power the recorder alone \$125.00

SP-BETA Kit. Snap-On Quick Release Bracket. • Mounting system for the new "SP" series AMPEX and Sony cameras/recorders . . . \$195.00

Charge Adaptor Cables

CA-30. Fast/Quick Charge Cable. • Connects the 30/13 belt to Lifesaver Fast Charger (one hour) only • The UltraKit 12V U12VCO Clip-On battery to Lifesaver Fast Charger (one hour) • Lifesaver Quick Charger (8 hour) or Quad Charger 4 position (8 hour) • And to Mobile Fast Charger \$65.00

TCA-30. Tektronix Fast Charge Cable. • Connects Tektronix BP1 battery (Waveform Monitor DC power source) to Lifesaver 1 hour Fast Charger) \$65.00

Power Supplies

The Anton/Bauer SPS-3 is an advanced switching-type power supply and the LPS-4 is a linear regulator with a toroidal transformer. Superior filtering techniques and design make these power supplies the coolest, most efficient and noise-free units available to the video industry. The integral Snap-On mount allows these supplies to be conveniently snapped onto the rear of any camera just like a battery pack.

SPS-3. Advanced Switching Type 3 Amp Power Supply with Snap-On Mount. • Output: 13V at 3A (max.) • Input: 115VAC only . . . \$495.00

LPS-4. Linear Power Supply 4 Amp with Snap-On Mount. • Output: 12V at 4A (max.) • Input: 115/230VAC \$595.00

ANTON/BAUER, INC.**Battery-Operated Lights****UltraLight® System**

The UltraLight System provides compact, lightweight, and versatile portable lighting. UltraLights become fill, spot or flood lights according to the selection of quick-change bulbs, filters, and focus adaptors. The removable lighthead module allows bulb changes in the field without direct handling. A working system requires one or more of the power cables/adaptors listed below as well as a bulb of corresponding voltage.

ULS. UltraLight Single. • Single base and head module with single power input • Includes one BAB 24W bulb. \$195.00

ULD. UltraLight Dual. • Dual base with two head modules • Two switches and single power input • Includes two BAB 25W bulbs Bulb voltages must be matched • Total power draw not to exceed 100W \$350.00

UL-HM. UltraLight Head Module • Extra quick-change rugged aluminum module to house alternate or spare bulbs \$75.00

UltraKit® Complete 12 Volt Lighting Kit

- UltraLight Single
- UltraLight Dual

Kits include the following:

- 12V Power Strap NiCad fast charge battery pack with integral belt loop and detachable ULC-L power cable • Wall-type Micro Charger • One (Single UltraKit) or two (Dual UltraKit) 12V BAB 25W flood bulb • Heavy duty shipping case with custom fit foam interior (extra spaces allowed for accessories).

Filters, spare head modules, and power adaptors/cables may be purchased separately if required. Lifesaver fast charge (LSFC) with the optional CA-30 charge cable adaptor.

Single \$595.00
Dual. 750.00

Power Adaptors

ULPA. UltraLight Light Tap Power Adaptor. • Allows camera battery to power UltraLight(s) and camera simultaneously • Maximum 85W total light output (one or two bulbs) • NiCad only.

. \$130.00

ULAC. UltraLight AC Power Supply. • Compact AC power supply allows use of low voltage bulbs (12-14V) where AC power is available • Maximum 90W of light output (one or two bulbs) • 115/230V, 50/60Hz, 12-14VAC for lighting applications only • (Requires ULC-LAC cable) \$265.00

UL-UP. UltraLight UniPac. • Compact Anton/Bauer Snap-On bracket with integral belt loops and 5' cable with XLR-2 DC input connector • Maximum 85W total light output (one or two bulbs) • NiCad only \$130.00

Adaptors/Filters

UL-WA. UltraLight Wide Angle Adaptor. • Optical device that provides a smooth, even pattern that will cover the widest angle zoom lenses • Can also be used with flood bulbs to smooth out uneven bulb patterns \$55.00

UL-DF. UltraLight #1 Diffuser. • For use with spot bulbs • Lowers light output by one "F" stop (50%) while softening the edges of the beam pattern. 55.00

UL-DC. UltraLight Dichroic Filter. • Converts output of all bulbs to match 6000°K daylight • Must be used when using UltraLight for daylight fill or cool white fluorescent fill 98.00

UL-BD. UltraLight Barn Door Kit. • Includes two hinged barn doors to fit UltraLight. 75.00



UltraLight Single with
UL-WA Focus Adaptor



UltraLight Dual



UltraKit



ULPA Power Adaptor allows
battery to power UltraLight and
camera simultaneously



UltraLight head module
with Adaptors and Filters



ULAC

Brackets

These brackets are used for quick mounting the UltraLight on all popular cameras. The UltraLight can be mounted to any 5/8" stud mount or light stand in either a horizontal or vertical position (facing down.)

BR STUD 1/4. For all cameras with 1/4-20 threaded accessory hole. \$55.00

BR STUD 3/8. For all cameras with 3/8-16 threaded accessory hole. 55.00

BR SHOE. For all cameras with microphone/accessory shoe 55.00

BR UNIV. Universal mount that clamps onto the handle of virtually any camera 55.00

BR U2. Similar to BR UNIV but permits mounting of two UltraLight Singles or one stud may be replaced by a microphone holder to allow operation of UltraLight Single or Dual with a microphone. 75.00

UL-HH. UltraLight handle with 5/8" stud for off camera hand-held applications. 55.00

Cables

ULC-L. 5' cable for 12-14V application. 5 pin male to 2 pin XLR female \$60.00

ULC-30. 5' cable for 30V applications. 2 pin male to 2 pin XLR female 60.00

ULC-110. 8' 110V cable. Wall plug to 2 pin XLR female 50.00

ULC-LAC. 8' cable for operating UltraLight from ULAC power supply. 2 pin male to 2 pin XLR female 60.00

ULC-BETA. 2' cable for operating UltraLight directly from QR-BETA brackets. Eliminates need for UltraLight power adaptor (ULPA). 4 pin male to 2 pin XLR female 60.00

ANTON/BAUER, INC.

Test Equipment/Light Kit/Accessories

Diagnostic and Service Equipment

Data-Tap™ Battery Testing and Monitoring Device. Gives the user accurate information on the constant state of discharge of their battery pack • Measures 1/2" thick and sandwiches between the existing Anton/Bauer Snap-On® camera bracket and Pro Pac® system battery • Equipped with a digital read-out in ampere hours • This device monitors power consumption • Weighs 12 oz.

Data-Tap \$375.00

ADM (Automatic Discharge Module) Designed to be used in conjunction with Data-Tap to calibrate/discharge Anton/Bauer Snap-On, Pro Pac or Pro Pac 90 VTR type batteries (12-14V), giving the user accurate information as to the battery's ampere hour capacity. Can also be used as a stand-alone to discharge NiCad or silver batteries which may not have been fully depleted during operation • The unit has a 2-position switchable automatic cut-off circuit • LED indicates when discharge is complete • Will discharge a standard 4AH battery in 2 hours • Weighs approximately 2 1/2 lbs.

ADM \$295.00

SCD. Silver Cell Equalizer. This unit is designed to enhance silver cell battery life through equal discharging of the individual cells • Digital voltmeter capable of monitoring individual cell voltages • 9 LED display which indicates the discharge status of each individual cell

SCD \$595.00

Extend. Extender board of servicing SVDC-13 silver charger control boards. \$45.00

UltraKit® 30V Light Kit

30V light kit combines either a single or dual Ultralight system with the 30/13 battery belt in a heavy duty shipping case with custom fit foam interior for protection. The kit includes a ULC-30 5' cable with 2 pin Amphenol male to 2 pin XLR female connectors. Single kit has one spare 30V bulb and the dual comes with 2 spare 30V bulbs.

Filters and spare head modules may be purchased separately. 30/13 battery belt may be charged in 1 hour with the Lifesaver fast charger using the CA-30 cable.

Single \$1265.00

Dual 1395.00

Bulbs for Ultralight

Triple Purpose Low Voltage Bulbs — The ESX, EYR and EYF/FPA bulbs provide three beam/output options.

1. Spot (15°)-plain bulb. 2. Medium Spot (approximates 21°)-with #1 diffuser (UL-DF). 3. Flood (36°)-with wide angle adaptor (UL-WA) this bulb covers most zoom lenses down to 9mm length (for 2/3" tube cameras).

Dual Purpose Low Voltage Bulb — The EXZ bulb provides two beam/output and is a good all around bulb.

1. Medium Flood (24°)-plain bulb. 2. Full flood (36°)-with wide angle adaptor.

Single Purpose Low Voltage Flood Only Bulbs — The BAB, EYP, and EYC bulbs provide full flood (36°)-plain bulb.

Results of extensive testing have shown that the 25W ESX bulb used with the wide angle adaptor or the plain BAB bulb provide the most pleasing lighting conditions for most indoor interviews in the typical 3' to 6' range.

Bulb	Watts	Spot	Med.	Flood	Amps	Run Time w/4AH Battery	Price
ESX	25	200	85*	30**	1 2/3	120 min.	\$28.00
EYR	50	400	170*	60**	3 3/4	60 min.	28.00
EYF/FPA	85/75	700	300*	120**	6 1/4	35 min.	28.00
EXZ	60	—	175	70**	4 1/2	45 min.	28.00
BAB	25	—	—	35	1 2/3	120 min.	28.00
EYP	50	—	—	65	3 3/4	60 min.	28.00
EYC	85	—	—	125	6 1/4	35 min.	28.00

Note: All above data measured at 14V.

*With #1 Diffuser (ULDF)

**With wide angle adaptor (ULWA), wattage ratings shown above are higher than those indicated by bulb manufacturer; when bulbs are used at higher voltages (13.2 or 14.4), the wattage ratings increase to those shown above.



Data-Tap



ADM



Ultrakit



UltraLight head module securely holds bulbs. Removable lighthouse module permits field changes without direct handling of bulb.

30V Bulbs. While the first low voltage bulbs offer maximum versatility, the following bulbs can be used with 30V battery belt to provide excellent results in certain applications.

Bulb	Watts	Amps	Footcandles at 5'	Run Time w/4AH Battery	Price
EXS	200	6 2/3	400	35 min.	\$28.00
EKP/ENA	80 Note 1	2 1/2	140	90 min.	28.00
ENZ	50 Note 1	1 2/3	90	140 min.	28.00

Note 1: Bulbs ELB and ENZ must be used with UL-WA Wide Angle Adaptor. The beam pattern of the plain bulbs is unacceptable.

115/230VAC Bulbs

The UltraLight will directly accept several 115 and 230V bulbs. However, while AC powering is desired, we recommend using the low voltage bulbs powered with the model ULAC 115/230VAC power supply. Anton/Bauer does not offer 230V bulbs.

Bulb	Watts	Volts	Footcandles at 5'	Price
FMG	150	115	300	\$20.00

Video Cables

Anton/Bauer stocks the 5-pin XLR universal cable for purchase with open end (customer installs equipment connector) or with dedicated connector.

CC-U2. Coiled 1 to 6', 2 conductor, open end cable. Specify one of these cables when ordering connector-type. Price includes cable.

CC-U2.	\$ 50.00
CC48 4-pin DIN male	70.00
CC75 4-pin Hirose female	70.00
CC76 Bendix female	140.00
CC77 7-pin female	70.00
CC79 5-pin female	70.00
CC88 4-pin XLR female	70.00

APHEX SYSTEMS LTD.

Audio Processors

The Compellor Compressor/Leveler/Limiter • Delivers invisible compression • Leveling • Peak limiting simultaneously • Ideal for broadcast pre-processing microphone control • Audio production • Tape duplicating • Live sound and film dubbing

The control circuits are actually analog computers that constantly monitor the input, adapt and control a single VCA per channel for minimal signal path.

Compellor intelligently varies all the parameters for you. All you need to do is set input level to control the amount of processing, adjust output level, and set the balance between compression and leveling.

Cat. No. 300 Compellor Stereo \$1195.00
 Cat. No. 301 Compellor Mono 795.00

Compellor/Aural Exciter A single, one rack height package combining two of your favorite tools. A monaural Compellor for completely automatic gain control, and the circuitry of the Aural Exciter to produce dramatically improved clarity, dimension and detail.

Once the Compellor/Aural Exciter is installed and set up in a PA or other sound system, no user adjustments are needed. The Compellor section will remain consistent regardless of the source material or who is operating the system. The Aural Exciter increases intelligibility and penetration...even at reduced power levels, or in highly reverberant rooms, or under high ambient noise conditions. An indispensable flexible tool for basic paging systems or complex touring sound systems.

Cat. No. 303 \$949.00

Studio Dominator The Studio Dominator is an intelligent 3-band peak processor with a proprietary circuit which varies the threshold for limiting. A unique transient enhancement circuit increases the perception of transients while maintaining absolute peak limiting.

Tunable crossover frequencies, plus high and low frequency drive controls allow the user to create different effects. Limiting can be preshaped to match the medium's saturation characteristics for maximum S/N performance, as well as for broadcast pre-emphasis.

The Studio Dominator is ideal for use in any situation where clipping is a problem, such as digital audio, disc mastering, video post production and optical film.

Cat. No. 700 Stereo \$1195.00

- Options**
 702 The 700 plus matrix/de-matrix add \$200.00
 703 The 700 plus pre/de-emphasis card add 200.00
 704 The 700 plus pre/de-emphasis card/low-pass add 600.00
 510 Interface Cards to Optimode (Trademark) 8100A pr./158.00

Note: All options listed are factory installed

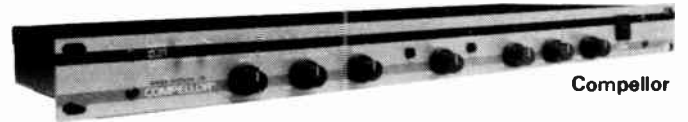
Aural Exciters A family of Aural Exciters, all utilizing a unique proprietary audio processing device that makes use of highly advanced psychoacoustic principles to effectively restore and enhance audio presence, brightness and intelligibility. The patented psychoacoustic process creates the perception of an increase in mid and high frequency energy, with no actual increase in power or level.

The Aural Exciter can produce dramatically improved clarity, dimension and character in any sound system or application. It can also reduce distortion in PA and sound reinforcement applications by providing increased penetration and audibility at reduced power levels. The device can be added to virtually any new or existing system with no danger of overloading other components or triggering compressors or limiters.

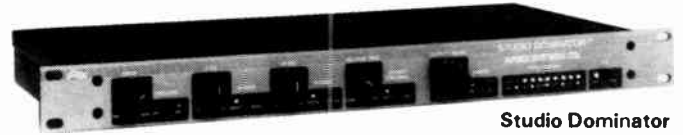
The Aural Exciter is a single-ended process, requiring no decoder. Once encoded, copies made from a processed tape sound as good as the original.

Aural Exciter II-S (Studio) • Allows complete control of enhancement parameters with a wide array of controls • Controls the amount of drive to the side chain • Tuning set the corner frequency of the high pass network • Damping adjusts the damping ratio of the side chain filter network • Timbre varies the spectral quality of the generated harmonics • Limiter prevents "splashiness" • Mix set the amount of side chain output added into the total output and may be bypassed to allow output of the side chain only • All controls are duplicated for each channel

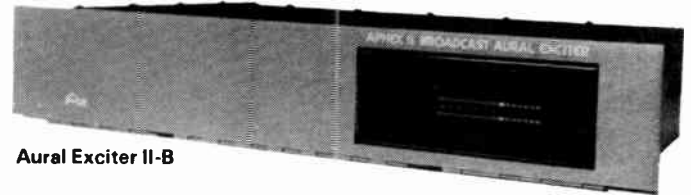
Cat. No. 201 \$1995.00



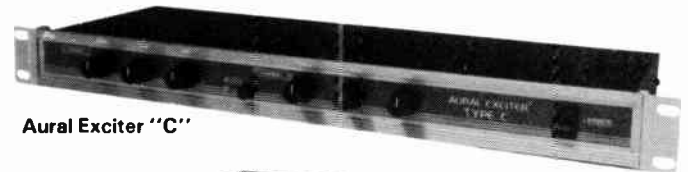
Compellor



Studio Dominator



Aural Exciter II-B



Aural Exciter "C"



Aural Exciter "E"

Aural Exciter II-B (Broadcast) Complete RF shielding and safety bypass relays in the event of power failure. Designed specifically for on-air use, this unit provides AM stations with the clarity and brightness of FM, while restoring to FM the naturalness and openness normally lost due to processing.

The most impressive aspect is the fact that the lower the quality of the playback system, the better the comparative benefit derived. The sound of your broadcast will satisfy the most demanding audiophile, and at the same time grab the attention of the rush-hour commuter.

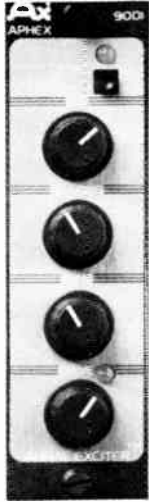
Cat. No. 211 \$1995.00

Aural Exciter Type C The Exciter Type C utilizes the same psychoacoustic principles of the II-B made possible with an Aphex designed monolithic chip. The Type C is a little less flexible than the larger unit with fewer operating controls. Compared to its predecessor, the Type B, the Type C offers improved performance, including a greatly improved drive window for input tolerance. All this makes genuine aural excitement available to small clubs, studios, halls, restaurants, musicians, tape duplicators and sound contractors operating on a more modest budget...while retaining the most important features of its bigger brother. Phone and RCA jack inputs and outputs. Comes with detachable rack ears.

Cat. No. 103A \$299.95

Aural Exciter Type E The Type E is designed expressly for the performing musician. Instruments or mikes can be plugged directly into the Type E for stage, recording and P.A. use without the necessity of a preamp or mixer. In fact, the Type E can serve as a low noise, high quality preamp and direct box while enhancing the sound. The Type E features "High Z" ins and outs, plus line level ins and outs. Optional rackmounts are available for mounting one or two units in a standard 19" equipment rack. Like all Aural Exciters, the Type E generates musically related harmonics to restore natural clarity, detail and brightness. Aural Exciters actually recreate missing harmonics. The effect is especially helpful for digital audio effects, samplers and synthesizers because they are digitally constructing the sound which is bandwidth limited by the sampling rates.

Cat. No. 110 \$149.95



- Allows track by track enhancement control — no more compromises
- Fits dbx F-900 rack
- Peaking control for extra versatility
- Jumper selectable for -10, 0, +4, or +6dBm operating levels
- Uses latest Aphex hybrid technology for improved performance
- Balanced input

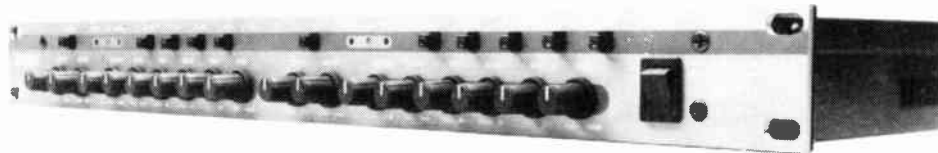
Modular Aural Exciter™

It is no longer necessary to compromise on one setting for all parts of a mix. With a rack of 9001's you now have complete creative control on every track. For that difficult vocal, stubborn drum, or mushy string section, you can select exactly the right enhancement for all tracks simultaneously, and you don't have to add yet another rack system to your facility.

The modular Aural Exciter uses patented psychoacoustic principles to restore missing harmonic detail, giving a natural brightness, presence and intelligibility to your sound, and does it without affecting overall level or EQ.

The modular Aural Exciter is also perfect for live use, allowing individual settings for each voice and instrument mike, so that male or female, bass drum or cymbal, each derives the maximum from the Aural Exciter.

Cat. No. 9001 \$199.00



612 Expander/Gate

- Key Filters — Variable high and low pass filters allow the 612 to respond only to a desired band of frequencies
- Filter Switch — Switches the key filters completely out of the circuit for flat frequency response if desired, as well as eliminating the circuit in the control path which would slow down response
- External Key Switch — Allows use of a rear panel jack input to the key circuits so the 612 can be controlled from an external source
- Key Listen — Switches the key signal to the main output making adjustment of the filters and key controls very easy
- LED Function Display — Three LED "Traffic Light" display instantly shows status of each channel of the 612, whether above threshold (open), holding or below threshold (closed)
- Threshold — Adjustable from -50 to +20dBm for exceptional range
- Attack Time — Variable from an incredible 2µs (with no clicks) to 10ms
- Hold — Allows a programmed delay of 10ms to 4s before the release function is activated

- Release Time — Adjustable from 40ms to a full 4s
- Ratio — The ratio of downward expansion may be varied from 1:1 (off) through low ratios for accentuating musical dynamics to 20:1 for gating
- Range — Sets the amount of expansion, from 0 to 100dB
- In/Out — Each channel of the 612 may be individually switched in or bypassed
- Master/Slave Switch — Allows one channel to follow and be controlled by the other for true stereo operation from one audio or key input
- Servo-Balanced Inputs And Outputs — For highest quality signal path, maximum common-mode hum and noise rejection and short-circuit proof outputs that can instantly be used single-ended or balanced
- Key In And Out Jacks — For maximum flexibility
- Multi-Voltage Operation

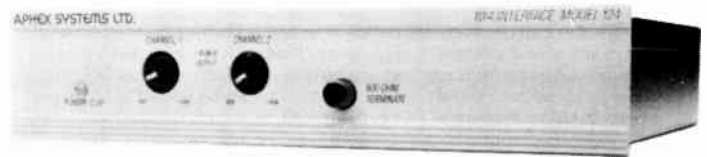
612 \$795.00

124 10/4 Audio Level Interface

- Low distortion
- Low noise
- All I/Os active buffered
- Full RF protection
- Servo-balanced inputs and outputs (high level)
- Low output impedances
- Selectable 600 ohm input termination
- Compact 1/2 rack package (rackmountable)

The 124 10/4 Box will easily interface consumer audio equipment with professional studio and broadcast facilities. Active, servo-balanced circuitry converts +4dBm (or +8dBm) line levels to -10dBm (IHF hi-fi) levels, and back again. XLR and RCA-type connectors enable quick hookup.

Strict attention to details such as good common-mode rejection, flawless squarewave response, exceptionally wide bandwidth and dynamic range and low distortion make the 10/4 box ideal for connecting digital disc and tape machines in the studio. Other examples of semi-pro and



consumer devices that may be used in professional environments are: videocassette recorders, audio cassette recorders, graphic equalizers, reverb and ambience devices, noise reduction systems, electronic crossovers and power amplifiers.

The differential high level inputs are RF protected and jumper selectable for +4 or +8dBm operation. They are servo-balanced to prevent high common-mode voltages from affecting input headroom. A front panel switch provides 600 ohm termination.

124 \$219.00



Aries 16

Aries 16 Multi-track Recording Console

All mike inputs are electronically balanced and have 20dB pads available. Phantom power at 48V can be switched on or off. Equalizers are ± 14 dB, switchable to 60 or 120Hz; sweepable from 350Hz to 7kHz; and switchable from 6kHz to 12kHz. Switchable filters are shelving, sweepable filters are peaking.

There are 8 group outputs and 16 monitor/FX returns—8 with 2 band EQ. There are 4 aux sends per channel which are switchable pre/post. High quality 100mm long throw faders are standard, and the meter bridge is adjustable for the most comfortable viewing angle. Both solo and mute facilities are standard. The power supply is remote, and rackmountable for convenience.

The Aries 16 is available with either 16 or 24 inputs.

Input Channel

- Mike Input: 1K ohm, electronically balanced input
- Mike Gain: +20 to +60dB
- Mike Pad: -20dB
- Phantom Power: +48V with on/off switch
- Mike/Line: Input select
- Equalizer: HF ± 14 dB at 6kHz or 12kHz (switchable); Mid frequency ± 14 dB at 350kHz to 7kHz (sweepable); Low frequency ± 14 dB at 60Hz or 120Hz (switchable)
- Insert Point: Post EQ-prefader
- Auxiliary sends: 1, 2 and 3, 4 are switchable pre/post fader
- Mute: aux sends and outputs to group and remix
- PFL: Prefade listen
- Overload Indicator: Illuminates 3dB before clipping

Group/Monitor Section

- PFL: Prefade listen
- Insert Point: Stereo prefade
- Tape: Selects tape returns (switch in) or group outputs as monitor source
- Level and Pan: Routes control level of monitor mix to stereo bus
- Auxiliary Sends: Aux 1 is prefade for headphone mixes. Aux 3 selected by depressing Aux 3 switch. Aux 2 is postfader and allows effects to be added to monitors without affecting tape sends. Aux 4 may be selected by depressing Aux 4 switch
- FX Return: When depressed,

signals present on fader are added to the remix. When using "Tape" and "FX" switches together, any signal that is present at the tape inputs is routed through the monitor level control and pan pot to the group fader and the remix

- Monitor Equalizer: 8 extra line level inputs with 2 band equalizer are available on the monitor section. HF ± 14 dB at 6kHz; LF ± 14 dB at 120Hz
- Metering: 16 meters follow the monitor source select switch. There are separate L and R and PFL meters

Master Section

- Insert Point: Prefade
- Auxiliary Returns: Two returns with PFL routing to group and remix. Aux 1 is prefade and Aux 2 postfade
- Auxiliary Masters: Overall level control for all 4 aux outputs with AFL monitoring
- Talkback: Level can be routed to all groups (slate) and aux buses with XLR input for low impedance microphones
- Monitors: Control room output level
- Mix: Selects the stereo bus as monitor source
- St. Tape: Routes stereo master machine to monitors
- Mono: Sums L and R monitor signals for mono capability checks
- Dim: Reduces monitor output by 20dB
- PFL/AFL LED: Indicates if AFL/PFL switch is depressed
- Level: Control room monitor level control
- Headphones: Stereo jack
- PFL to Monitor: Overrides headphone amplifier and stereo meters for solo function

Technical Specifications

- EIN > -126dBV (200 ohm source)
- CMRR > -70dB
- THD: < .03% at +4dB output
- IM Distortion: < .01%
- Frequency Response: ± 1 dB 20Hz to 20kHz
- Noise Level: < -80dBV (group and mike)
- Max. Output: +20dBV
- Operating Level: -10 or +4dBV
- Adjacent Channel Crosstalk: -80dB
- Input Impedance: Mike 1kHz, others 10kHz
- Output Impedance: 50 ohm
- Dimensions: 16 input 39 $\frac{1}{2}$ " x 26" x 8"; 24 input 50 $\frac{1}{2}$ " x 26" x 8"
- 16 x 8 x 16 \$6895.00
- 24 x 8 x 16 \$8595.00

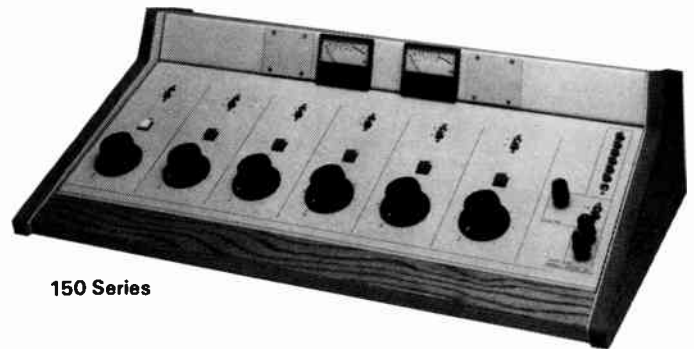
ARRAKIS SYSTEMS, INC.

Audio Consoles

150 Series 6 Channel Consoles

- Ideally suited for small on air production or newsroom studios • 6 channels • 18 balanced inputs (150SC-6), 22 inputs (150SC-8)
- Balanced program output with mono mix standard • VCA level controls—stereo tracking within 1dB • DC controlled audio—no audio on faders or switches • NE5532 integrated circuits • Regulated open frame power supply • Solid oak end panels and armrest • Taut band VU meters • Motherboard construction eliminates unreliable wiring
- 10W/channel monitor amp • 2W earphone and cue amp per channel • Telephone mix minus standard

Inputs:	2 per channel, channels 1 - 6, all A inputs may be mike or line level 1 remote select switch — 7 inputs 18 total balanced inputs to 6 channels Low level — 1000 ohms, -50dBm typical input level Trim pot adjustable level, -60 to -30dBm input levels High level — 100,000, 0dBm typical input level, 30dB trim adjustable A and B inputs
Program Outputs:	600 ohms balanced + 27dBm maximum output
Monitor Amp:	Selectable between program, and external input, 10W per channel at 8 ohms, THD .1% at 1W. Line out for external amps
Cue Amp:	Selected by detent on the individual volume pot. 2WRMS at 8 ohms stereo
Earphone Amp:	Selectable between program, external and cue. 2WRMS at 8 ohms per channel
Meters:	Taut band, VU response. Meters are buffered and adjustable
Muting Relay:	3 Pole Double Throw (3PDT) 5A, 110VAC relay contacts are provided for On The Air light or telephone



150 Series

Dimensions:	8" H x 30" W x 17" D Console
Weight:	38 lbs.
Finish:	Aluminum sheet metal, screened enamel, oak sides and armrest
Faders:	Rotary, 100,000 operation
Switches:	Schadow by ITT, Morn. - 100,000 Op. Interlock 50,000 Op.
Frequency Response:	± .5dB over 20Hz to 20,000Hz
Hum and Noise:	Mike -70dB below +8dBm (-50dBm In), Line -100dB below +18dBm
Total Harmonic Distortion:	.02% typical
Stereo Tracking:	± 1dB over a 40dB range
Crosstalk:	Normal levels, into the noise at 1kHz
DC Power Supply:	± 15V regulated, modular
AC Power Supply:	110VAC, 210VAC (optional)

150SC-6M (mono)	\$1895.00
150SC-6S (stereo)	1995.00

500 Series 8 Channel Consoles

- 25 balanced inputs total • Balanced program and audition outputs with mono mix down standard • VCA level controls — stereo tracking to within 1dB • DC controlled audio — no audio on pots or switches • NE5532 integrated circuits • External regulated power supply • Solid oak end panels and armrest for lasting beauty • VU meters monitor program and audition simultaneously • Plug-in PC boards for ease of service • Motherboard construction eliminates unreliable wiring • Remote start standard • Telephone mix minus bus standard • 40W/channel monitor amp (optional) • Designed for on the air production or portable broadcast applications

Inputs:	2 per channel — any "A" input is mike or line level selectable 1 remote select switch with 7 inputs 25 total balanced inputs to 8 channels Lo level — 1000 ohms, -50dBm typical input level Trim pot adjustable from -60 to -30dBm High level — 100,000 ohms, trimpot adjustable from -20 to +10dBm
Program, Audition Outputs:	Identical 600 ohm balanced + 27dBm maximum output
Monitor Amp:	Selectable between program, audition, and 4 unbalanced external inputs. 10WRMS at 8 ohms per channel. Line level output for external amp
Cue Amp:	Selected by detent on the individual volume pot. 2WRMS at 8 ohms stereo
Earphone Amp:	Selectable between program, audition, cue and external. 2WRMS at 8 ohms per channel
Meters:	Taut band, VU response, separate sets for program and audition. Meters are buffered and adjustable
Muting:	Jumper selection enables any of the 8 channels to mute the monitor and cue amp to prevent mike feedback. Muting is electronic, 3PDT muting relay
Remote Start:	Each of the inputs has a ground closure for start. Jumpers determine momentary or sustained action. A and B inputs start independently



500 Series

Electrical:	1 channel on, fader -15dB
Frequency Response:	± .5dB, 20Hz to 20kHz
Hum and Noise:	Mike -70dB below +8dBm (-50dBm input), line -100dBm below +18dBm
Total Harmonic Distortion:	.02% typical at +8dBm
Stereo Tracking:	± 1dB over a 40dB range
Crosstalk:	All buses into the noise at 2kHz
DC Power Supply:	± 15VDC 1.5A, + 15VDC 3.0A regulated and external 110VAC, 220VAC (optional)
AC Power:	± 15VDC 1.5A, + 15VDC 3.0A regulated and external 110VAC, 220VAC (optional)
Dimensions:	7" H x 30" W x 17" D
Weight:	Console — 38 lbs., power supply — 17 lbs.
Finish:	Aluminum sheet metal, screened enamel, solid oak sides
Faders:	Allen Bradley Mod Pots or equivalent 100,000 operation minimum
Switches:	Schadow by ITT, Morn. — 100,000 operations, interlock — 50,000
Input/Output Connectors:	Electrovert screw terminal strips, internal

500SC-8M (mono)	\$2999.00
500SC-8S (stereo)	2999.00

ARRAKIS SYSTEMS, INC.

Audio Consoles

600 Series Deluxe 8 Channel Consoles

• Engineered to combine the ultimate in mechanical reliability with the remarkable sound and performance of todays high tech consoles
 • Penny and Giles rotary faders • 28 balanced inputs total • Balanced program and audition outputs with mono mix down standard • VCA level controls — stereo tracking to within 1dB • DC controlled audio — no audio on pots or switches • NE5532 integrated circuits • External regulated power supply • Solid oak end panels and arm rest for lasting beauty • VU meters monitor program and audition simultaneously • Plug-in PC boards for ease of service • Motherboard construction eliminates unreliable wiring • Remote start standard • Telephone mix minus bus standard • 40W/channel monitor amp (optional) • ESE clock and timer standard

Inputs: 2 per channel — any "A" input is mike or line level selectable
 2 remote select switch with 7 inputs
 28 total balanced inputs to 8 channels
Lo level — 1,000 ohms, -50dBm typical input level
 Trim pot adjustable from -60 to -30dBm
High level — 100,000 ohms, trim pot adjustable from -20 to +10dBm

Program, Audition Outputs: Identical 600 ohm balanced +27dBm maximum output

Monitor Amp: Selectable between program, audition, and 4 unbalanced external inputs. 10WRMS at 8 ohms per channel. Line level output for external amp

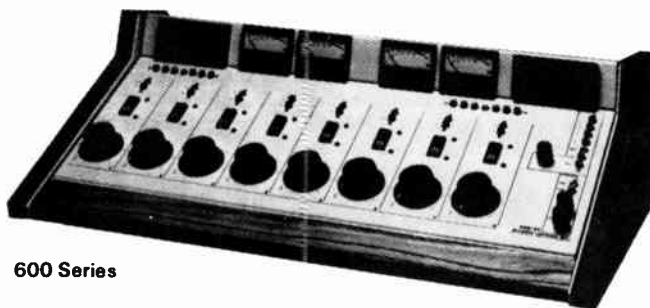
Cue Amp: Selected by detent on the individual volume pot. 2WRMS at 8 ohms stereo

Earphone Amp: Selectable between program, audition, cue and external. 2WRMS at 8 ohms per channel

Meters: Taut band, VU response, separate sets for program and audition. Meters are buffered and adjustable

Muting: Jumper selection enables any of the 8 channels to mute the monitor and cue amp to prevent mike feedback. Muting is electronic, 3PDT muting relay

Remote Start: Each of the inputs has a ground closure for start. Jumpers determine momentary or sustained action. A and B inputs start independently



600 Series

Electrical: 1 channel on, fader -15dB
Frequency Response: ±.5dB, 20Hz to 20kHz
Hum and Noise: Mike -70dB below +8dBm (-50dBm input), line -100dBm below +18dBm

Total Harmonic Distortion: .02% typical at +8dBm
Stereo Tracking: ±1dB over a 40dB range
Crosstalk: All buses into the noise at 2kHz
DC Power Supply: ±15VDC 1.5A, +15VDC 3.0A regulated and external
AC Power: 110VAC, 220VAC (optional)
Dimensions: 7"H x 30"W x 17"D
Weight: Console — 38 lbs., power supply — 17 lbs.
Finish: Aluminum sheet metal, screened enamel, solid oak sides

Faders: Penny and Giles rotary
Switches: Schadow by ITT, Morn. — 100,000 operations, interlock — 50,000

Input/Output Connectors: Electrovert screw terminal strips, internal

600SC-8S (stereo) \$3995.00

2000 Series 12 Channel Consoles

• Designed for ease of operation, uncompromising performance, and maximum durability • 24 balanced inputs total • Balanced program and audition outputs with mono mix downs standard • Penny and Giles slide faders • VCA level controls — stereo tracking within 1dB • DC controlled audio — no audio on pots or switches • NE5532 integrated circuit • External regulated power supply • Solid oak end panels and armrest • VU meters monitor program and audition simultaneously • Motherboard construction eliminates unreliable wiring • Remote start standard • Telephone mix minus bus standard • 40W/channel monitor amp (optional)

Inputs: 1 per channel — any channel is jumper selectable mike or line level
 2 remote select switches — 7 inputs each
 24 total balanced inputs to 12 channels — all channels are trim pot level adjustable
Lo level — 1000 ohms, -50dBm typical input level
 Trim pot adjustable level -60 to -30dBm input levels
High level — 100,000, -10 to +20dBm trim pot adjustable input levels

Program, Audition Outputs: Identical 600 ohms balanced +27dBm maximum output

Monitor Amp: Selectable between program, audition and 4 external inputs. 10WRMS at 8 ohms per channel. Line level output for external amp

Cue Amp: Selected by detent on the individual volume pot. 2WRMS at 8 ohms, per channel, stereo

Earphone Amp: Selectable between program, audition, cue, and external. 2WRMS at 8 ohms per channel

Meters: Taut band, VU response separate sets for program and audition meters are buffered and adjustable

Muting Relay: 3 Pole Double Throw (3PDT) 5A, 110VAC relay contacts are provided for On The Air light or telephone. Any or all channels may be muted via jumper

Remote Start: Each of the 12 channels has a set of 2PST reed relay contacts for start/stop. Jumpers determine momentary or sustained action



2000 Series

Electrical: 1 channel on, fader -15dB
Frequency Response: ±.5dB, 20Hz to 20kHz
Hum and Noise: Mike -70dB below +8dBm (-50dBm input), line -100dB below +18dBm

Total Harmonic Distortion: .02% typical at +8dBm
Stereo Tracking: ±1dB over a 40dB range
Crosstalk: All buses into the noise at 2kHz
DC Power Supply: ±15VDC 1.5A, +15VDC 3.0A regulated external
AC Power: 110VAC, 220VAC (optional)
Dimensions: 8"H x 30"W x 17"D console
Weight: Console — 38 lbs.; power supply — 17 lbs.
Finish: Aluminum sheet metal, screened enamel, oak sides and armrest

Faders: Penny and Giles 3000 Series
Switches: Schadow by ITT, Mom. -100,000 Op. Interlock 50,000 Op.

2000SC-12M (mono) \$4495.00
 2000SC-12S (stereo) \$4695.00

Refer to Green Section for Addresses and Telephone Numbers.

ARRAKIS SYSTEMS, INC.

Audio Consoles

2100 Series 12 Channel Consoles

• 34 balanced inputs • Balanced program and audition outputs with mono mix down standard • Penny and Giles slide faders • VCA level controls — stereo tracking within 1dB • DC controlled audio — no audio on pots or switches • NE5532 integrated circuit • External regulated power supply • Solid oak end panels and armrest • VU meters monitor program and audition • Motherboard construction eliminates unreliable wiring • Remote start standard • Telephone mix minus bus standard • 40W/channel monitor amp (optional)

Inputs: 2 per channel, channels 1 - 10; channels 11 and 12 are 7 inputs each.
 "A" inputs are selectable mike or line
 2 remote select switches — 7 inputs each for channels 11 and 12
 34 total balanced inputs to 12 channels
Low level — 1000 ohms, -50dBm typical input level
 Trim pot adjustable level from -60 to -30dBm
High level — 100,000, -20 to +10dBm trim pot adjustable

Program, Audition Outputs: Identical 600 ohms balanced + 27dBm maximum output

Monitor Amp: Selectable between program, audition and 4 balanced external inputs. 10WRMS at 8 ohms per channel. Line level output for external amp

Cue Amp: Selected by detent on the individual volume pot. 2WRMS at 8 ohms per channel

Earphone Amp: Selectable between program, audition, cue and external 2WRMS at 8 ohms per channel

Meters: Taut band, VU response, program and audition selectable. Meters are buffered and adjustable

Muting Relay: 3 Pole Double Throw (3PDT) 5A, 110VAC relay contacts are provided for On The Air light or telephone

Remote Start: Each of the 12 channels has a ground closure for start. Jumpers determine momentary or sustained action. A and B inputs start independently



2100 Series

Electrical: 1 channel on, fader -15dB
Frequency Response: ± .5dB, 20Hz to 20kHz
Hum and Noise: Mike -70dB below +8dBm (-50dBm input), line -100dB below +18dBm

Total Harmonic Distortion: .02% typical at +8dBm
Stereo Tracking: ± 1dB over a 40dB range
Crosstalk: All buses into the noise at 2kHz
DC Power Supply: ± 15VDC 1.5A, + 15VDC 3.0A regulated, external 110VAC, 220VAC (optional)
AC Power:
Dimensions: 8" H x 30" W x 17" D console
Weight: Console — 38 lbs., power supply — 17 lbs.
Finish: Aluminum sheet metal, screened enamel, oak sides and armrest
Faders: Penny and Giles 3000 Series
Switches: Schadow by ITT, Mon. - 100,000 Op. Interlock 50,000 Op.

2100SC-12M (mono) \$5495.00
 2100SC-12S (stereo) \$5695.00

5000 Series 16 Channel Modular Consoles

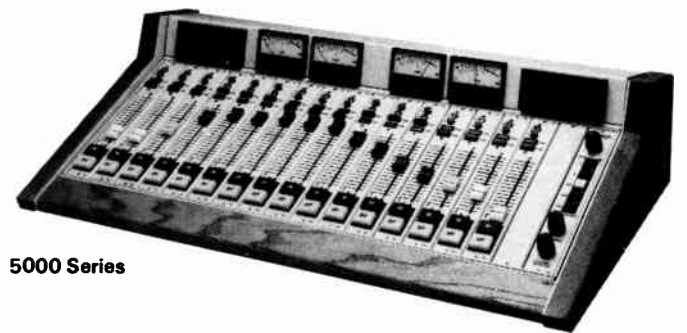
• 16 channels — modular • 2 balanced inputs per channel • Balanced program and audition outputs with mono mix down standard • Penny & Giles slide faders • VCA level controls — stereo tracking within 1dB • DC controlled audio — no audio on pots • Clock and timer standard • NE5532 integrated circuit • External regulated power supply • Solid oak end panels and armrest • VU meters monitor program and audition • Motherboard construction eliminates unreliable wiring • Remote start and stop plus remote module control • Telephone mix minus bus standard

The mainframe features 16 channels plus a channel for accessory modules and the standard Control Room Monitor module. The meter bridge boasts meters for both Program and Audition stereo outputs, and clock and timer. The power supply is external, regulated, and protected. The entire modular front panel hinges up and back to expose the input/output terminal strip connectors. All wiring is performed from the front of the console. The compact 30" W by 17" D mainframe is ideal for efficient studio design.

Specifications

Electrical: 1 channel on, fader -15dB
Frequency Response: ± .5dB 20Hz to 20kHz
Hum and Noise: Mike -70dB below +8dBm (-50dBm input)
 Line -100dB below +18dBm

Total Harmonic Distortion: .02% typical at +8dBm
Stereo Tracking: ± 1dB over a 40dB range
Crosstalk: All buses into the noise at 2kHz
DC Power Supply: ± 15VDC 1.5A, + 15VDC 3.0A regulated, external 110VAC, 220VAC (optional)
AC Power:
Dimensions: 8" H x 30" W x 17" D console
Weight: Console — 38 lbs., power supply — 17 lbs.



5000 Series

Finish: Aluminum sheet metal, screened enamel, oak sides and armrest
Faders: Penny and Giles 3000 Series
Switches: Schadow by ITT, Mom. - 100,000 Op. Interlock 50,000 Op.

5000-MF Mainframe — complete minus only
 preamp modules \$3499.00
 5000-PM1 Preamp module 1 \$399.00
 5000-SM1 Studio monitor module \$399.00
 5000-EQ1 Equalization module \$399.00
 5000-RS1 Remote selector module (16 input x 4
 output stereo) \$995.00
 5000-BK Blank module \$25.00

ARRAKIS SYSTEMS, INC.

Audio Routing Switchers

RS Series — Audio Routing Switchers

- All switchers come complete with all input and output connection sockets and pins
- Rack or table mount
- Remote controllable
- Terminal strip inputs and outputs on back
- Expandable
- Signetics NE5532 ICs
- Modular regulated computer grade power supply
- 1,000,000 operation thumbwheel select switches
- All ICs socketed

The RS Audio Routing Switcher is the professional alternative to patch panels, mechanical switches, and distribution amps. Ultrareliable—the power supply is regulated, protected and has a 10 year meantime before failure. LSI integrated circuits reduce parts count to a minimum. All ICs are socketed for ease of replacement. The thumbwheel control switches are 1,000,000 operation. Due to the ultrareliable design redundant power supplies are unnecessary. These switchers may be used in the most critical sections of the audio chain with total confidence.

The 100RSM features plug-in cards accessible from the front panel. A motherboard on the back contains the bus and input/output terminal strips. The other models use an ultradense 5" by 16" PC board that contains all circuitry and input/output terminal strips. This motherboard is on the back of the unit and provides instant access to plug-in ICs for service. The front panel holds the control switches and is removable to provide access to the power supply. The switcher need never be unwired or removed from the rack for service.

These switchers are transparent to audio. Flat within .1dB and with a distortion typically of .02% they don't color your sound.

Routing switchers perform many applications that are difficult with other technologies. A single audio line with remote control can link a satellite system to a studio. This replaces several DAs and a massive cable bundle. Studios can be linked together and to the transmitters. The larger models can switch an entire studio. The 1100A-RSS 16 by 4 stereo model is ideal for an audio preselector for 4 tape recorders. The possibilities are limited only by the imagination.

Specifications

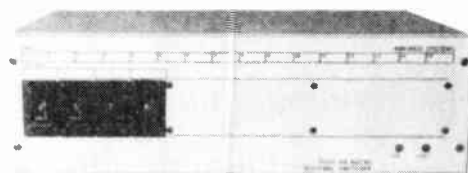
Gain:	Unity, non-adjustable
Input Level:	+ 24dBm maximum
Output Level:	+ 24dBm maximum
Total Harmonic Distortion:	.1% maximum + 8dBm (.02 typical)
Frequency Response:	20Hz to 20kHz ± .1dB
Noise:	85dB below + 8dBm (100RSM -70dB)
Input Impedance:	100,000 ohms balanced (100RSM - 4,400 ohms)
Output Impedance:	600 ohms balanced
Crosstalk:	-85dB typ. at 16kHz (100RSM -65dB)
Bus Loading:	.1dB maximum
Control:	4 bit binary with enable
Size:	5 1/4" x 19" rackmount
Power:	110VAC input (DC — ± 15VDC regulated)

1100A-RSS and RSM Routing Switchers

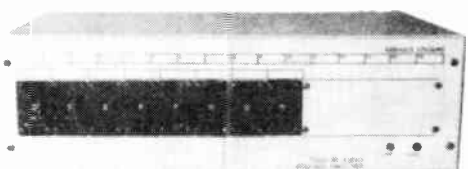
- 16 inputs by 4 outputs • Control by 4, 16 position binary thumbwheels. One per output • Size — 5 1/4" x 9" rackmount • Expandable in and out • Remote control — 4 bit binary plus enable
- 1100A-RSM (mono) \$895.00
- 1100A-RSS (stereo) 995.00

1100B-RSM and RSS Routing Switchers

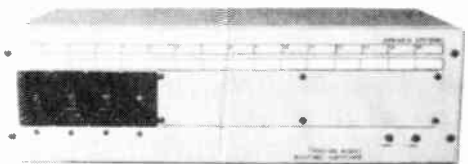
- 16 inputs by 8 outputs • Control by 8, 16 position thumbwheels. One per output • Size — 5 1/4" x 19" rackmount • Expandable in and out • Remote control — 4 bit binary plus enable
- 1100B-RSM (mono) \$1195.00
- 1100B-RSS (stereo) 1695.00



1100B-RSS



1100A-RSS



2100A-RSM

2100A-RSM Routing Switcher

- 32 inputs by 4 outputs • Control by 4, 16 position thumbwheels and 4 A/B select switches. One each per output • Size — 5 1/4" x 19" rackmount • Expandable in and out • Remote control — 4 bit binary plus enable
- 2100A-RSM (mono) \$1695.00

2100B-RSM and RSS Routing Switchers

- 32 inputs by 8 outputs • Control by 8, 16 position thumbwheels and 8 A/B select switches. One each per output • Size — 5 1/4" rackmount (RSM) 10 1/2" rackmount (RSS) • Remote control — 4 bit binary plus enable
- 2100B-RSM (mono) \$1695.00
- 2100B-RSS (stereo) two 2100B-RSM units 3495.00

Remote Controls (for audio routing switchers)

- 16TH-1T Single—16 position thumbwheel — table mount (16 input switchers) \$ 75.00
- 32TH-1T Single—A/B 16 position thumbwheel — table mount (32 input switchers) 105.00

Broadcast Studio Cabinetry

Arrakis Systems is a full line manufacturer of broadcast studio cabinetry. Contact factory for a custom quotation, or our off the shelf "Modulux Series"

ARRAKIS SYSTEMS, INC.

Studio Cabinetry/Storage Racks

BSC Series Broadcast Studio Cabinetry

• Full line of studio furniture • Hardwood plywood only • Solid oak trim • Matching tabletop cart racks and rack cabinets • Durable, warm and attractive • Custom quotes encouraged

All wiring is easily accessible. Extensive built-in equipment rack space often removes the need for expensive freestanding equipment racks. Solid oak trim and cabinet edges combine with heavy-duty plastic laminate to make for a long lasting and attractive appearance. Construction is exceptional with oak veneered plywood.

While the BSC series is designed to fit the needs of the average studio, we realize that many stations have unique requirements for space and operation. Arrakis therefore provides a custom furniture service.

Broadcast Studio Cabinetry

- BSC-LP** Left pedestal — 29" H x 24" W x 37 1/2" D
17" rack space 19" width \$514.00
- BSC-RP** Right pedestal — 29" H x 24" W x 37 1/2" D
17" rack space 19" width \$514.00
- BSC-CC** Connecting counter — 37 1/2" D x 44 1/2" W \$228.00

The left and right pedestals combine with the connecting counter to form a table 29" H x 7'8 1/2" W x 37 1/2" D. This forms the base for a horseshoe furniture studio. The table can be used stand alone or combined with the slope face cabinet and turntable return to form a horseshoe studio. There is 17" of rack space in each pedestal.

- BSC-SF** Slope face rack cabinet
29" H x 24" W x 24" D — 21" rack space

This cabinet provides 21" of equipment rack space and is very useful for processing equipment, modulation monitors, etc. \$546.00

- BSC-TT** Dual turntable return
29" H x 48" W x 24" D — 2 10 1/2" rack spaces

This cabinet provides a base for 2 turntables. Two 10 1/2" equipment rack spaces in the cabinet provide space for mounting auxiliary equipment such as preamps. \$748.00

Tabletop 19" Equipment Racks

- BSC-TR5** 5 1/4" tabletop rack cabinet \$199.00
- BSC-TR10** 10" tabletop rack cabinet \$245.00
- BSC-TR17** 17" tabletop rack cabinet \$285.00

These freestanding tabletop equipment racks provide convenient mounting for cart machines, patch panels, and other equipment that requires tabletop access. Other sizes available.

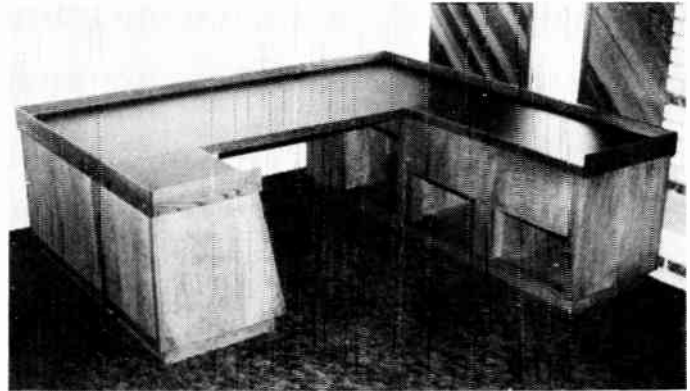
Cartridge Racks

- BSC-TC20** Cart rack — 20 cartridges oak — 25 1/8" x 5 7/8" \$ 45.00
- BSC-TC40** Cart rack — 40 cartridges oak — 25 1/8" x 10 3/8" 75.00
- BSC-TC100** Cart rack — 100 cartridges oak — 25 1/8" x 23 7/8" 155.00

These matching oak cartridge racks can be tabletop or wall mounted.

BSC 100 Series Wall Cart Racks

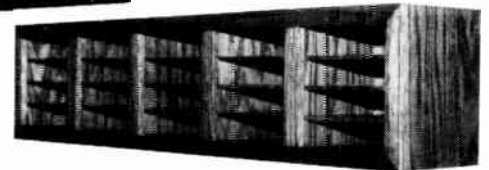
• High quality and durable • Constructed entirely of plywood • Will not warp, twist, split, or sag • Corners are mitered (not butt joints) while construction is dado-rabbit jointing • Real wood veneered plywood



BSC Series Standard Model



BSC 100 Series



Model	Carts	W/H Rows	Size	Price
BSC 20	20	5 x 4	25 1/8 x 5 7/8	\$ 21.00
BSC 40	40	5 x 8	25 1/8 x 10 3/8	38.00
BSC 60	60	5 x 12	25 1/8 x 14 7/8	56.00
BSC 100A	100	5 x 20	25 1/8 x 23 7/8	81.00
BSC 50	50	5 x 10	25 x 12 5/8	47.00
BSC 250T	250	5 x 50	25 1/8 x 66	213.00
BSC 500T	500	10 x 50	50 1/4 x 66	416.00
BSC 1000T	1000	20x50	100 1/2 x 66	815.00

BSC 100 Series Record and Tape Storage Racks

• Shares all the construction features as the wall and cart racks.

Model	Size	Capacity	Dimensions W x D x H	Price
Records				
BSR1000A	7"	1000	24 x 7 1/2 x 84	\$326.00
BSR1500A	7"	1500	36 x 7 1/2 x 84	388.00
BSR3000A	7"	3000	48 x 7 1/2 x 84	465.00
BSR750B	12"	1500	24 x 12 3/4 x 84	350.00
BSR1000B	12"	1500	36 x 12 3/4 x 84	407.00
BSR1500B	12"	1500	48 x 12 3/4 x 84	475.00
Tapes				
BST500TB	7"	500	40 x 7 3/4 x 84	\$430.00
BST200TC	10 1/2"	200	28 x 11 1/4 x 84	478.00
BST400TC	10 1/2"	400	40 x 11 1/4 x 84	450.00

Please specify — Light Walnut or Dark Walnut

Special sizes, colors and laminates are available for an additional charge.

ARRIFLEX CORP.

Lighting Kits/Accessories

ARRILITE Kits

Are available in the following configurations. Components may also be individually selected for a variety of custom lighting packages.

ARRILITE 600/3 Compact Kit

Qty.	Description	Catalog No.
3	ARRILITE 600	L1.77250.A
3	Four Leaf Barndoor	L2.77261.0
3	AS-1 Stand	570-052
3	DYS 600W Lamp	571-640
1	Heavy-Duty Compact Case	571-693
571-905		.\$1290.00

ARRILITE 600/4 Kit

Qty.	Description	Catalog No.
4	ARRILITE 600	L1.77250.A
4	Four Leaf Barndoor	L2.77261.0
4	AS-01 Stand	570-051
4	DYS 600W Lamp	571-640
1	Heavy-Duty Four Light Case	571-690
571-910		.\$1670.00

ARRILITE 650/3 Kit

Qty.	Description	Catalog No.
3	ARRILITE 650	L1.76700.F
3	Four Leaf Barndoor	L4.76973.0
3	AS-2 Stand	570-050
3	FAD 650W Lamp	571-140
1	4 Light Carry Case	571-190
571-920		.\$1340.00

ARRILITE 650/3 Compact Kit

Qty.	Description	Catalog No.
3	ARRILITE 650	L1.76700.F
3	Four Leaf Barndoor	L4.76973.0
3	AS-01 Stand	570-051
3	FAD 650W Lamp	571-140
1	3 Light Compact Case	571-193
571-915		.\$1315.00

ARRILITE 650/4 Kit

Qty.	Description	Catalog No.
4	ARRILITE 650	L1.76700.F
4	Four Leaf Barndoor	L4.76973.0
2	Full Single Scrim	571-150
2	Half Single Scrim	571-151
4	AS-2 Stand	570-050
4	FAD 650W Lamp	571-140
1	4 Light Carry Case	571-190
571-930		.\$1820.00

ARRILITE 650/4 With Heavy-Duty Case

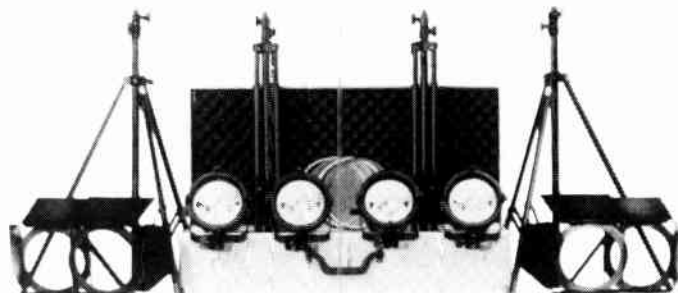
Qty.	Description	Catalog No.
4	ARRILITE 650	L1.76700.F
4	Four Leaf Barndoor	L4.76973.0
4	AS-2 Stand	570-050
2	Full Single Scrim	571-150
2	Half Single Scrim	571-151
4	FAD 650W Lamp	571-140
1	Heavy-Duty Case	571-195
571-931		.\$1950.00

ARRILITE 1000/3 Compact Kit

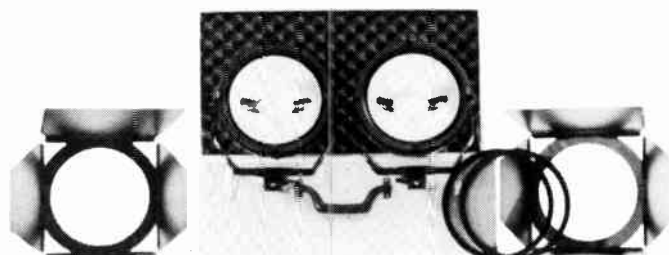
Qty.	Description	Catalog No.
3	ARRILITE 1000	L1.76900.F
3	Four Leaf Barndoor	L4.76973.0
3	AS-01 Stand	570-051
3	DXW 1000W Lamp	571-145
1	3 Light Compact Case	571-193
571-925		.\$1365.00

ARRILITE 1000/4 Kit

Qty.	Description	Catalog No.
4	ARRILITE 1000	L1.76900.F
4	Four Leaf Barndoor	L4.76973.0
2	Full Single Scrim	571-150
2	Half Single Scrim	571-151
4	AS-2 Stand	570-050
4	DXW 1000W Lamp	571-145
1	4 Light Carry Case	571-190
571-950		.\$1895.00



650/4 Kit



2000/2 Kit

ARRILITE 1000/4 Kit With Heavy-Duty Case

Qty.	Description	Catalog No.
4	ARRILITE 1000	L1.76900.F
4	Four Leaf Barndoor	L4.76973.0
4	AS-2 Stand	570-050
2	Full Single Scrim	571-150
2	Half Single Scrim	571-151
4	DXW 1000W Lamp	571-145
1	Heavy-Duty Case	571-195
571-951		.\$2010.00

ARRILITE 2000/2 Kit

Qty.	Description	Catalog No.
2	ARRILITE 2000	L1.76500.F
2	Four Leaf Barndoor	L4.76522.0
1	Full Single Scrim	571-250
1	Half Single Scrim	571-251
2	FEY 2000W Lamp	571-240
1	Case	571-290
571-970		.\$1360.00

ARRI Stand Tube Kit

Qty.	Description	Catalog No.
2	AS-3 Stands	570-004
1	ARRI Stand Tube	570-190
571-971		.\$300.00

ARRILITE Stands and Grip Equipment

570-052	AS-1 stand for ARRILITE 600 (2.5 lbs.)	.\$ 80.00
570-051	AS-01 lightweight stand for ARRILITE 600/650/1000 (2.75 lbs.)	.80.00
570-050	AS-2 stand for ARRILITE 600/650/1000 (2.9 lbs.)	.90.00
570-004	AS-3 stand for ARRILITE 2000 (4.7 lbs.)	100.00
570-003	Backlight stand (2.2 lbs.)	.20.00
570-032	ARRI autopole, extends to 146" (4.8 lbs.)	.85.00
570-076	Autopole, extends to 106" (4 lbs.)	.75.00
570-034	Autopole extension, 59" (1.1 lbs.)	.25.00
570-035	Super Clamp with light stud (1 lb.)	.30.00
570-038	Double Super Clamp (1.9 lbs.)	.50.00
570-043	Gaffer Grip (1.3 lbs.)	.30.00
570-143	Magic Arm (2.4 lbs.)	.70.00
570-190	Stand tube for (2) AS-3 stands (9 lbs.)	125.00
570-111	ARRI umbrella (.75 lbs.)	.60.00
570-026	Umbrella adaptor (.75 lbs.)	.12.00

ARTEL COMMUNICATIONS CORP.

Fiber Optic Systems

SL3000 Series

Frequency Modulated Fiber Optic Systems

- For simultaneous transmission of broadcast quality video, audio and data
- More than a 40km range without repeaters
- More than a 130km range with repeaters
- Wide range of audio subcarriers, including microwave compatible frequencies
- On-line self-diagnostics and metering
- 75 ohm or 124 ohm (balanced) input/output
- 840/1300nm multi-mode LED transmission
- 1300/1550nm single mode laser transmission
- Coaxial input/output equalization adjustments
- Very transparent video and audio
- Flexible modular construction
- Easy user operation and maintenance
- Single mode fiber

Optional Features

- Automatic Protection Switch Module (A-3400)
- Automatic alarming (remote and remote)

The SL3000 Series exceeds the stringent EIA-250B short haul broadcast quality video and audio transmission standards. The system's bandwidth is a full 20MHz, allowing simultaneous transmission of wideband video and multiple audio subcarriers over a single optical fiber. Audio frequency response is ± 0.1 dB from 20Hz to 20kHz, with better than 70dB signal-to-noise ratio and less than 1.0% total harmonic distortion.

Transmission of video, audio and data is performed by audio subcarriers and video transmitters/receivers separately packaged on compact plug-in modules. Up to eight video, audio or data modules can be housed in a single 19" card cage. The video receivers can be configured for high resolution (up to 20MHz) video or for standard video plus two or more audio subcarriers. Subcarrier modules are switch selectable for either audio or data transmission and can be incrementally added to the rack as needed. All modules are easy to change and to troubleshoot with self-diagnostic indicators on the front of each module.

The SL3000 Series offers several transmitter/receiver pairs for broadcast quality video and several subcarrier modules for broadcast audio or serial TTL data. The SL3000 Series can transmit or receive a video signal plus as many as six subcarrier frequencies on a single optical fiber.

The distinguishing characteristics of single mode fibers are their very small optic cores (roughly $9\mu\text{m}$ versus the $50\mu\text{m}$ for graded index multi-mode fiber cores) and enormous bandwidth distance capacity.

Rear panel video connections are made via BNC female connectors. Transmitter inputs are DIP switch selectable for unbalanced (loop-through) connections or balanced (on-board terminated) 124 ohms. Receiver outputs are also switch selectable to provide two 75 ohm unbalanced outputs, or a single 124 ohm balanced output.

T3050-00 Short distance (0-4km) transmitter—840 multi-mode/APD. Used with audio/data modules

T3060-00 Medium distance (0-10km) transmitter—1300 multi-mode/APD. Used with audio/data modules

T3065-20 Medium distance (0-25km) single-mode transmitter with biconic connectors. Used with R3060/3061 receiver

T3065-30 Medium distance (0-25km) single-mode transmitter with FC connectors

T3070-00 Long distance (10-30km) transmitter with biconic connectors (1300nm single-mode laser/PIN). Used with audio/data modules

T3075-00 Extra long distance transmitter with biconic connectors (1500nm single-mode laser/PIN). Used without audio/data modules

R3050-00 Short distance (0-4km) receiver—840 multi-mode/APD. Used with audio/data modules

R3051-00 Short distance (0-4km) receiver—840 multi-mode/APD. Used with T3050-00 transmitter without audio/data modules



SL3000 Series

R3060-00 Medium distance (0-10km) receiver—1300 multi-mode/APD. Used with audio/data modules

R3060-20 Medium distance (0-25km) single-mode receiver with biconic connectors

R3060-30 Medium distance (0-25km) single-mode receiver with FC connectors

R3061-00 Medium distance (0-10km) receiver—1300 multi-mode/APD. Used without audio/data modules

R3061-20 Same as R3061-00 except single-mode/biconic connectors

R3061-30 Same as R3061-00 except single-mode/FC connectors

R3070-00 Long distance (10-30km) receiver with biconic connectors (1300nm single-mode laser/PIN). Used with audio/data modules

R3071-00 Same as R3070-00 except used without audio/data modules

T3111-00 Audio/data (11MHz) modulator module

T3114-00 Audio/data (14MHz) modulator module

T3118-00 Audio/data (18MHz) modulator module

T3120-00 Audio/data (20MHz) modulator module

R3111-00 Audio/data (11MHz) demodulator module.

R3114-00 Audio/data (14MHz) demodulator module

R3118-00 Audio/data (18MHz) demodulator module

R3120-00 Audio/data (20MHz) demodulator module

Microwave Subcarrier Modules*

T3158-00 R3158-00

T3164-00 R3164-00

T3175-00 R3175-00

*Subcarrier modules require roofing filter:

LP3500-00 mounts in a rack

LP3500-01 free standing unit

Racks (Used with SL3000 Series)

C5001-00, 120VAC

C5001-01, 240VAC

C5001-02, 20-67VDC

Options

Alarm Control Units (Monitor Major, Minor, Main and Backup Power Supply)

ACU2400-00, 120VAC

ACU2400-01, 240VAC

ACU2448-00, 20-67VDC

Wavelength Division Multiplexers

WDM3001-00, 1300/1550nm transmitters to one single-mode fiber

WDM3002-00, two 1300/1550nm transmitters to two single mode fibers

Repeaters

RPT3013-00 optical repeater for 1300 ± 30 nm systems (3060/3070)

RPT3015-00 optical repeater for 1550 ± 30 nm systems (3075)

11 and 7 Series Color Monitors

- Ideal as a master monitor or studio monitor at broadcasting stations, for supervising video quality at field pick-up stations, as a VTR monitor or for installation in field van
- There are two series of color monitors to meet with every monitoring need. Whether you choose from the model CMM20-11/CMM14-11 having high-resolution shadow mask CRT's or model CMM20-7/CMM14-7 adopting the in-line black stripe system, you'll find all your specific requirements in a color monitor have been fully realized
- Fully unitized construction and systematic plug-in unit design assures complete unit interchangeability in respective series

11 Series Color Monitors

These CMM20-11 and CMM14-11 high-performance color monitors are designed to supervise color video signals, and have high-resolution shadow-mask CRT's. As they maintain excellent performance, they can be used for various purposes: such as master monitors at broadcasting stations, studio monitors, video-quality surveillance at field pick-up stations, VTR's and picture monitors.

They feature compact, lightweight design and the use of IC's makes them shock resistant to make installation possible even in field vans. The CMM20-11 and CMM14-11 are available in series to meet specific requirements.

Adoption of a CRT of high fineness has greatly upgraded resolution; with up to 600 lines at the center of the picture and up to 550 lines around its center, clear pictures are reproduced without moire patterns.

Also, the black-matrix (BM) system is incorporated for maximum control in bright locations.

In addition to the NTSC system, two other (PAL or SECAM) systems or all three of these can be built into the CMM20-11 series. Using a separate device these system changes are also possible on the CMM14-11 series models. As a result, all of these models are ideal for signal source surveillance.

7 Series Color Monitors

The compact CMM20-7 and CMM14-7 high-performance color monitors are designed to supervise color video signals. With a low price, they maintain the excellent performance of conventional color monitors. And they serve a variety of purposes: including master monitors at broadcasting stations, laboratories and TV production lines for supervising video quality. Due to their low power consumption, they are ideal for installation in field vans as VTR's.

Choose from the ordinary or high-resolution CRT (HR type). With the HR-type you'll find resolution has been upgraded; with up to 600 lines at the center of the picture and up to 550 lines around its center, crystal clear pictures reproduced without moire patterns.

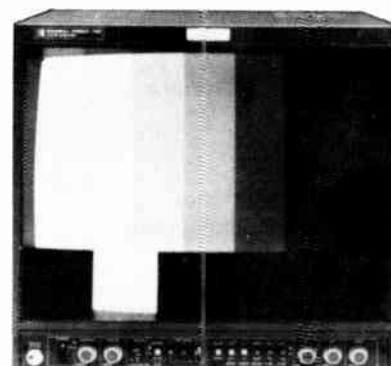
Also, the in-line black stripe system is incorporated for maximum contrast control in bright locations.

Normal CRT and high-resolution CRT (HR type) are available. The HR type CRT has a built-in comb filter which greatly upgrades resolutions with a clear picture reproduced without moire patterns.

The comb filter is optionally available for models with a normal CRT. And due to the adoption of the in-line black stripe tube, high-quality picture contrast can be obtained even in bright locations.

NTSC

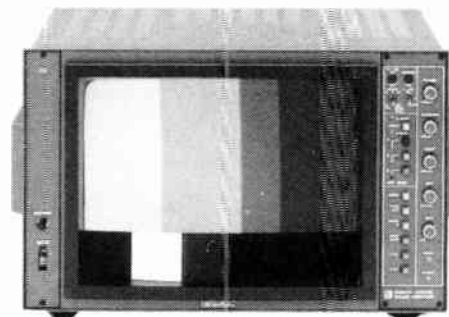
CMM 20-11 20" Delta/Shadow Mask CRT	..... \$7695.00
CMM 14-11 HR 14" Delta/Shadow Mask CRT	..... 7480.00
CMM 20-7 20" HR Dot Matrix In Line CRT	..... 5200.00
CMM 14-7 14" Dot Matrix In Line CRT	..... 4990.00
CMM 26-7 26" HR Dot Matrix In Line CRT	..... 6500.00
CMM 99A HR 9" Dot Matrix CRT	..... 3145.00
Rackmount Kits	..... 195.00



CMM20-11



CMM20-7 HR (U)



CMM14-7 HR (U)

ASTON ELECTRONICS, INC.**Character Generator****Aston 4 Video Character Generator**

- Software anti-aliasing
- 10ns effective resolution
- Typographic excellence
- Library of over 1600 typefaces
- Fonts in any size from 10 to 100 lines
- Multi-colored logos in any size from 10 lines to full screen
- Diagonal writing
- Optional second multi-layer background
- Plane displays
- Multi-layer background plane for graphics
- Up or down roll and multi-row left or right crawl
- Timed roll or crawl
- Caption management system
- Remote disk drives
- Multiple keyboard option
- Dual channel option

The Aston 4 provides clean, clear text copy. Large and small characters are provided without flicker or stairstepping. With the optional LogoMaster, flicker free multi-colored logos and symbols can be merged to provide a smoothness which pleases the graphic designer, director and customer.

Basic Video Character Generator Includes:

- 1 Keyboard
- 2 Disk drive units mounted in mainframe
- 5 Typeface master disks selected from Aston 4 standard typeface library
- 1 Display font disk
- 1 Page store disk
- 1 Software disk
- 1 Set of technical manuals and operating instructions

Aston 4 \$32,500.00

Aston 4 With Dual Channel Option 47,500.00

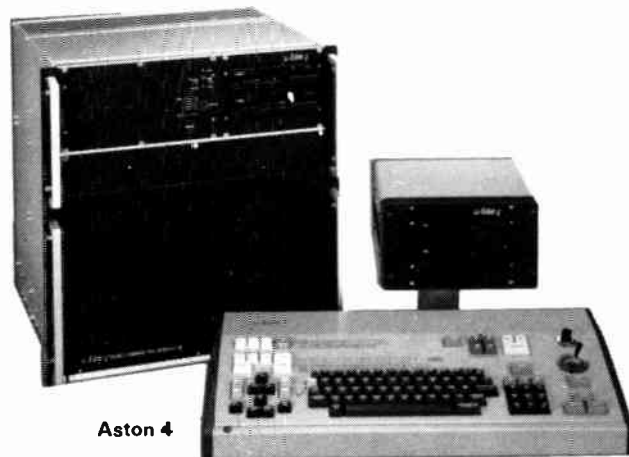
Optional Accessories

- Remote DDU Case \$ 325.00
- Additional DDU 250.00
- Additional Keyboard 4,500.00
- LogoMaster 4,500.00
- Additional Typeface Masters selected from our Standard Typeface Library 250.00
- Shaded Backgrounds 1,700.00
- Hard Disk Drive Option 2,900.00

Specifications**Characters**

High resolution: Characters specified by 74ns x 1 TV line pixels, 8 anti-alias levels (tones) per pixel, providing an effective resolution of 10ns.

(The Aston 4 pixel width of 74ns is chosen to be compatible with the sampling rate used in the international digital television standard (CCIR 601) for direct interfacing of digital component systems).

**Aston 4**

- Character Height:** 10 to 100 TV lines (height of capital H) in 1 line increments
- Italics:** Variable from 4 to 30° slope
- Edging:** 8 angles of variable-thickness drop shadow, and variable-thickness all-round edge
- Diagonal:** Variable in 1° steps from vertically up, through horizontal, to vertically down
- Kerning:** Automatic
- Inputs**
- Syncs:** 2 to 4V mixed syncs or standard color black, looped through via BNC connectors. Internal non-broadcast sync source provided, when external source not present
- AC Power:** Mainframe: 184V to 256V, 50Hz. Consumption 1000VA (absolute maximum rating for dual channel machine with full set of peripherals). 102V to 128V, 60Hz available to special order. Keyboard: 194V to 256V, 50Hz. Consumption 125VA (absolute maximum rating including remote disk drives). IEC Power Connectors
- Interface Connections**
- Keyboards:** Two 2Mbit/second bi-directional data links, Manchester encoded, using dual code driver. Each 4V p-p (nominal) into 75 ohms (BNC connector). Maximum distance is 300 meters. A total of 6 keyboards can be connected
- Serial Ports**
- Port A:** Full RS232-C serial port, providing all handshake lines for full modem capability. All lines may be optionally configured for RS422 levels. Programmable number of stop bits plus parity. Data speed programmable in standard steps from 45.5 to 38400 baud
- Port B:** RS232-C serial port supporting RTS/CTS handshake only. All lines may be optionally configured for RS422 levels. Programmable number of stop bits plus parity. Data speed programmable in standard steps from 45.5 to 38400 baud
- Parallel Port:** 16-bit unidirectional or 8-bit bi-directional with handshake. Fully programmable
- Outputs**
- Program:** RGB, Red, Green and Blue, 0.7V p-p non-composite into 75 ohms. BNC connectors
- Key:** 0.7V p-p non-composite linear key signal into 75 ohms. BNC connector
- Edit:** RGB, Red and Blue are 0.7V p-p non-composite. Green is 1V p-p composite ("syncs-on-green") or 0.7V non-composite, user preset. BNC connectors. The edit output displays safe title area, cursor, characters and (by switch option) system status information
- "Add-Edit"**
- Input:** 75 ohms 1V p-p. Output from color encoder. BNC connector

ATLAS/SOUNDOLIER

Microphone Stands/Boom Attachments

Microphone Floor Stands

• Long lasting, rust resistant, chrome plated • Seamless upright steel tubing • Standard 5/8"-27 threads for microphone or microphone holder • Wear-proof clutches for positive locking control • Low silhouette bases with edge-concentrated one-piece base weights for maximum stability • Self-leveling shock absorbing pads to protect desk, table or floor • Textured charcoal bases finished in baked epoxy

MS-4 Special Height Stand • Three section tube assembly with two grip-action clutches • Adjusts from standard to extra low heights for seated performers or children • Height: 25"-65" • Base: 10" dia., charcoal • Weight: 11 lbs.

MS-4\$55.98

MS-11C General Purpose Stand • Grip-action clutch • Low-profile chrome base with added weight for extra stability • Height: 34"-62" • Base: 10" dia., chrome • Weight: 12 lbs.

MS-11C\$42.55

MS-12C General Purpose Stand • Same profile and stability as MS-11C • Textured charcoal base

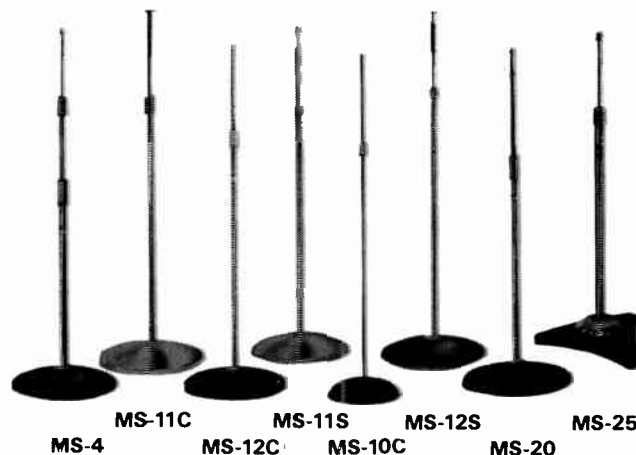
MS-12C\$35.48

MS-11S Automatic Clutch Stand • Effortless, instantaneous changes in height by grasping of decorative control sleeve and raising or lowering the microphone • Removing hand automatically locks stand height • Low silhouette chrome base • Height: 39"-62" • Base: 10" dia., chrome • Weight: 13 lbs.

MS-11S\$92.68

MS-10C Floor Stand • Circular, cast iron base, textured charcoal finish • Height: 35"-63" • Base: 10" dia., charcoal • Weight: 10 lbs.

MS-10C\$35.48



MS-12S Automatic Clutch Stand • Identical to MS-11S with low silhouette base in textured charcoal finish • Height: 39"-62" • Base: 10" dia., charcoal • Weight: 12 lbs.

MS-12S\$87.25

MS-20 Heavy-Duty Professional Stand • Grip-action clutch • Extra height, oversize 1 1/8" dia. tube assembly with 5/8"-27 thread top adaptor • Low contour base • Height: 37"-66" • Base: 12" dia., charcoal • Weight: 14 lbs.

MS-20\$69.43

MS-25 Stage and Studio Floor Stand • Integral air suspension system to counterbalance microphone weight • Extra heavy triangular base with concave sides • Extra height, over-size 1 1/8" dia. tube assembly with 5/8"-27 thread top adaptor • Height: 38"-67" • Base: 17" dia., charcoal with chrome cover • Weight: 23 lbs.

MS-25\$114.80

Boom Attachments

BB-77 Microphone Boom Attachment with Integral Counterweight • Single action positive locking • Easy grip knob to control motion and positioning • Durable diecast universal swivel for screw mount to any 5/8"-27 threaded microphone or desk stand • Finished in durable baked ebony epoxy • Chrome tube 34" L • Weight: 2.08 lbs.

BB-77\$26.03

PB-1 Standard Termination for Microphone Holder • Clamp on diecast swivel in nonreflective ebony epoxy finish • Adjustable tapered counterweight for precision balance • Attaches to any microphone stand terminating in 5/8" dia. • Tubing or adaptor 31" L • Weight: 4 lbs.

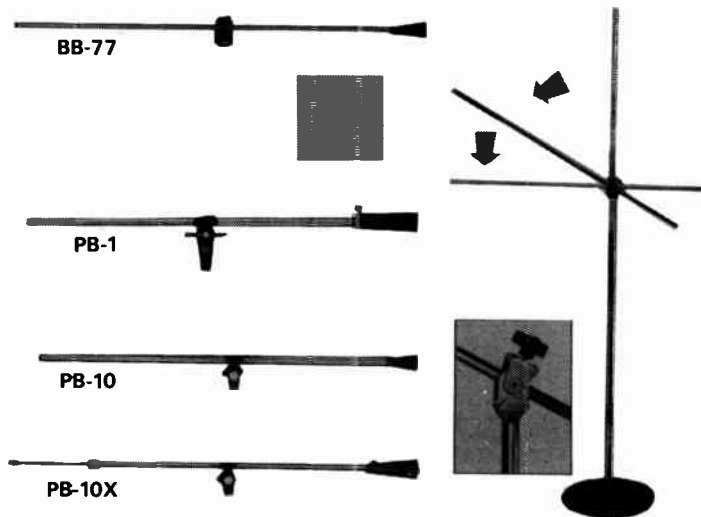
PB-1\$32.88

PB-10 Professionally Styled Fixed Length Porta-Boom • Diecast ebony epoxy swivel • 5/8"-27 female thread to facilitate screw type fastening for optimum stability • Over-sized hardware with individual high impact plastic knobs allow free or sliding control of motion and stationary positioning • Integral tapered counterweight finished in ebony epoxy • 34" L • Weight: 1.9 lbs.

PB-10\$32.88

PB-10X Extendable Porta-Boom • Adjusts from 32 1/2" to 55 1/2" in length for optimum application flexibility • Swivel in ebony epoxy finish • 5/8"-27 thread on mounting and over-sized knobs to control motion and positioning • Integral counterweight finished in ebony epoxy • 32 1/2"-55 1/2" L • Weight: 3.2 lbs.

PB-10X\$41.98



"Two In One" Stand

MSB-21 Microphone Stand/Boom • "Two-In-One" converts easily from conventional floor stand to stand-with-integral microphone boom without disassembly • Heavyweight diecast base for optimum stability • 40"-70" H • Boom extension to 30" L • Weight: 14.5 lbs.

MSB-21\$67.80

ATLAS/SOUNDOLIER

Microphone Stands/ Booms

Porta-Series Stands

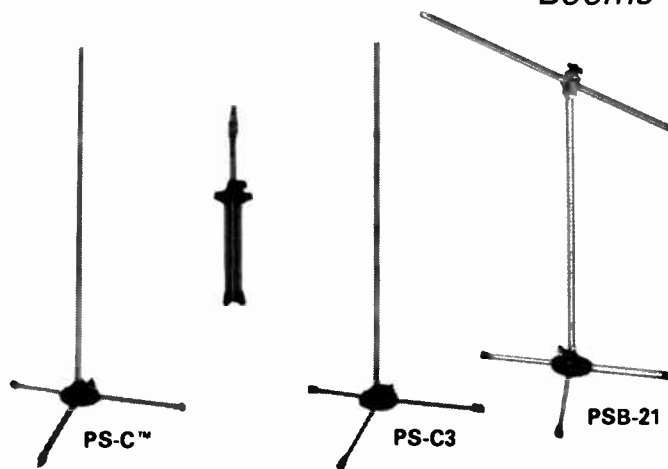
PS-C Telescopic Stand • Fully portable and foldable, tripod microphone floor stand designed for the performer • All-metal grip-action clutch • $\frac{5}{8}$ "-27 termination for U.S.-standard microphone holders • Charcoal diecast base • Height: 35"-63" (89-160cm) • Base Spread: 25" (63cm) • Storage/Shipment Length: 32" (81cm) • Weight: 4.5 lbs. (2kg)

PS-C\$51.10

PS-C3 Special Height Stand • Three section telescoping vertical tube assembly • Two all-metal grip-action clutch assemblies • $\frac{5}{8}$ "-27 termination for microphone holders • Height: 26"-66" (66-168cm) • Base Spread: 25" (63cm) • Storage/Shipment Length: 22" (56cm) • Weight: 4 lbs. (1.8kg)

PS-C3\$59.80

PSB-21 "2 in 1" Stand Porta-Stand/Boom • Portable • "Two-in-one" stand • Microphone boom/stand combination with folding tripod base for maximum portability and flexibility • Requires no assembly or dis-



assembly for use or transportation • 35" to 65" H • Boom extension to 30" L • Weight: 5.0 lbs.

PSB-21\$60.45

Ebony Stands and Booms

• Contemporary professional microphone stands and boom attachments • Non-reflective surfaces specifically designed to eliminate the specular visual effects of high intensity lighting • Recommended for use by performers whenever appearance is a major consideration • All "E" (Ebony) model microphone stands and horizontal booms are supplied with an attractive electrostatically-applied, baked powdered epoxy coating that withstands the rigors of transportation and assures prime appearance even after repeated use.

MS-10CE Microphone Floor Stand • Recommended for use in schools, clubs, lecture halls, and restaurants, wherever sound systems are utilized • 35" to 63" height

MS-10CE\$37.13

MS-12CE General Purpose Floor Stand • Wearproof grip action clutch and low silhouette base • For stage and studio applications and for use in auditoriums, meeting rooms, churches, hotels, indoors and outdoors

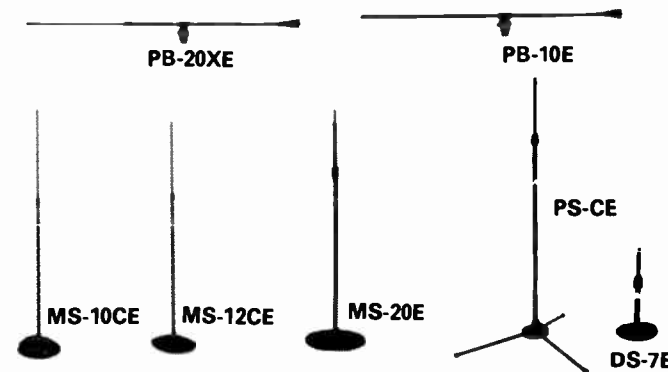
MS-12CE\$37.13

MS-20E Heavy-Duty Professional Stand • Oversized grip action clutch • Extra height • Oversized $1\frac{1}{8}$ " dia. tube assembly with $\frac{5}{8}$ "-27 thread top adaptor • Low contour base height 37"-66" • Base 12" dia. • Weight: 14 lbs.

MS-20E\$72.35

PS-CE Portable Single Unit Tripod Floor Stand • For fast and instant setup • Shipment length: 32"; 35"-63" height

PS-CE\$52.63



DS-7E Adjustable Desk Stand • $\frac{5}{8}$ "-27 U.S. standard microphone thread termination • 8" to 13" height

DS-7E\$21.50

PB-20XE Expandable Length Porta-Boom • Integral counterweight for microphone placement flexibility • $\frac{5}{8}$ "-27 thread on mounting • Easily adjusts from 25 $\frac{1}{2}$ " to 44 $\frac{1}{2}$ " L • Weight: 2 lbs.

PB-20XE\$35.15

PB-10E Fixed Length Porta-Boom • Standard single length microphone boom attachment • $\frac{5}{8}$ "-27 thread on mounting • Oversized controls • 34" L • Weight: 1.9 lbs.

PB-10E\$34.43

Studio Stands and Boom Attachments

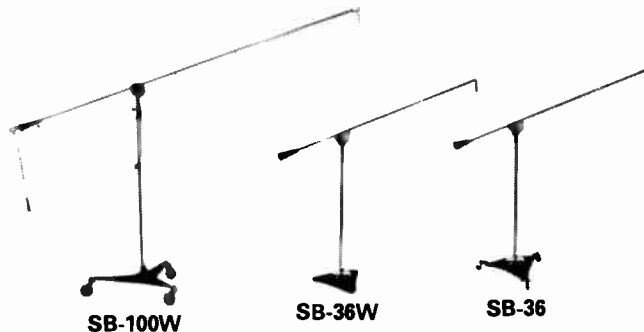
SB-100W Studio-Quality Mobile Microphone Boom • With 110" (279cm) horizontal arm • Integral operator-controlled 350° arc microphone-follower • Adjustable upright height from 61 $\frac{1}{2}$ " to 91 $\frac{1}{2}$ " (156-235cm) • Includes tapered counterweight for precision balance • Cable guide clips • Cable hanger • Heavy-duty rubber wheels with locks • Base Dia.: 34" (86cm) • Weight: 47.2 lbs. (21.5kg)

SB-100W\$821.2B

SB-36W Mobile Model • Same as SB-36 • With rubber casters for mobility • Weight: 40 lbs. (18kg)

SB-36W\$299.65

SB-36 Professional Boom Stand • Grip-action clutch with integral air suspension system to counterbalance boom weight • $\frac{5}{8}$ "-27 thread at microphone end • Boom length 62" (157cm) • Adjustable vertical height from 48" to 72" (122-183cm) • 17" (43cm) dia. triangular



base • Textured charcoal base with chrome cover • Furnished with cable hangers • Weight: 36 lbs. (16kg)

SB-36\$254.40

ATLAS/SOUNDOLIER

Microphone Desk Stands/Accessories

Microphone Desk Stands

DS-1 Executive Stand • Non-adjustable 3" high chrome tube • Luxurious, 5" x 7", polished white Carrera marble base to complement appearance of desk or conference tables • Weight: 2 lbs.

DS-1\$34.48

DS-2 Vibration-Isolating Stand • Non-adjustable 3" high chrome tube • Integral tension-variable mount • 4" x 6" diecast base in non-reflective charcoal finish • Weight: 2 lbs.

DS-2\$26.80

DS-4 Lightweight Stand • Non-adjustable 4" high chrome tube • 5" dia. phenolic beige base • Weight: 1/2 lb.

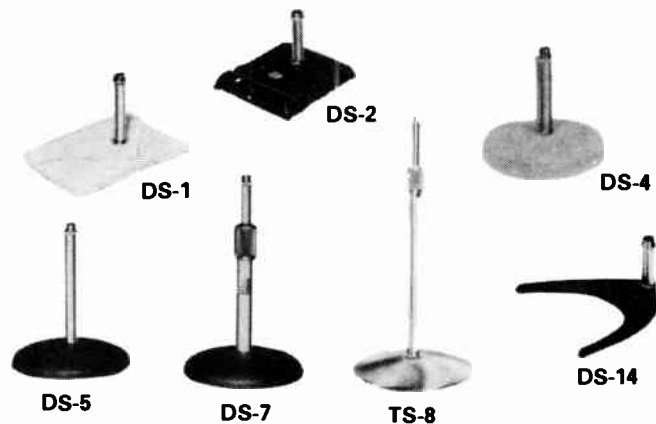
DS-4\$9.45

DS-5™ General Purpose Stand • Non-adjustable 4" high chrome tube • 6" dia. cast iron charcoal base • Weight: 2 lbs.

DS-5\$13.85

DS-7™ Adjustable Desk Stand • Chrome tube assembly • Adjustable height 8" to 13" • Grip-action clutch • 6" dia. charcoal base • Weight: 3 lbs.

DS-7\$20.05



DS-14 Contemporary Stand • For professionally styled microphones • Non-adjustable 3" high chrome tube • Charcoal base • Weight: 2 lbs.

DS-14\$18.40

TS-8 Adjustable Banquet Stand • Chrome tube assembly • Height 14 1/2" to 26" • Grip-action clutch • 8" dia. low-silhouette chrome base • Weight: 5 1/2 lbs.

TS-8\$41.98

Accessories

GN & GNS Flexible Goosenecks • Attach to any Atlas Sound stand or adaptor • 5/8"-27 male and female threads • Standard models, .338" I.D.

GN-6 Gooseneck; 6" long\$6.65

GNS-6 "Slimline" Gooseneck; (.212" I.D.) 6" long6.65

GN-13 Gooseneck; 13" long9.30

GN-19 Gooseneck; 19" long12.80

CO-1B Connect-On Swivel • For installation at any height level of a second 5/8"-27 thread microphone on 5/8" or 7/8" dia. tube of any floor or desk stand • Charcoal finish

CO-1B\$14.43

SO-1B/LO-2B Snap-On/Lock-On Accessories • For instantaneous fastening or disconnect of microphone holder or boom attachment • Use with standard 5/8"-27 thread stand

SO-1B\$10.70

LO-2B12.55

CH-1B Cable Hanger • Essential for neat appearance of microphone cable, moving and storage of every complete microphone stand • Fits all tube assembly sizes • Single screw mounting • Chrome finish

CH-1B\$11.40

BC-1 Bracket Clamp • For table, desk, counter top • Non-adjustable 6" high chrome tube • 5/8"-27 thread • Weight: 1 lb.

BC-1\$16.20

TM-1 Twin Mount • Designed for horizontal mounting of two or three microphones on any stand or podium-top installation • Fits all 5/8"-27 thread microphones • 8 3/4" wide • Chrome finish

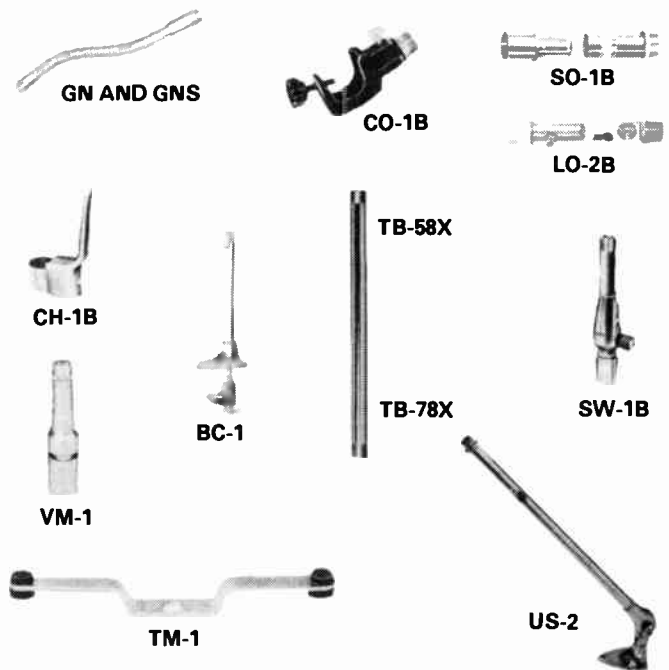
TM-1\$18.40

SW-1B Gyromatic Swivel • Permits microphone adjustment to any angle • Locks in position with single knob • Chrome finish

SW-1B\$16.98

VM-1 Shock-Mount Accessory • Greatly reduces external mechanical vibration pick-up microphones • Fits all 5/8"-27 thread microphones • 4 3/4" high • Chrome finish

VM-1\$21.80



TB-58X Extension Tube • 31" additional height or length for 5/8" diameter tube • Use with AD-5B adaptor

TB-58X\$8.70

TB-78X Extension Tube • 31" additional height or length for 7/8" diameter tube • Use with AD-6B adaptor

TB-78X\$10.08

US-2 Flange-Mounting Microphone Support • For learning labs, lecterns, consoles, control racks • 12 3/4" long boom on spring loaded swivel with cable feed-through • 180° vertical cable feed-through • Weight: 1 lb.

US-2\$32.43

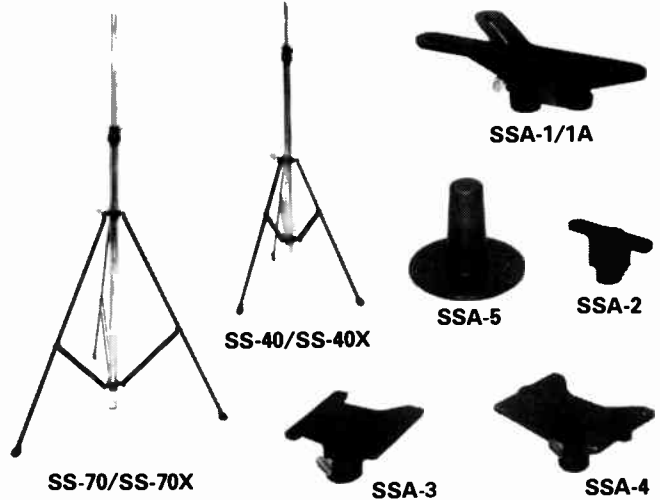
ATLAS/SOUNDOLIER

Loudspeaker Stands/ Adaptors/Fittings

Loudspeaker/Equipment Stands

Comparative Chart

	SS-40	SS-40X	SS-70	SS-70X
Height:	To 40" (102cm)	From 48" to 72" (122 to 183cm)	To 55" (140cm)	From 60" to 96" (152 to 244cm)
Tripod Dia.:	40" (102cm)	40" (102cm)	48" (122cm)	48" (122cm)
Storage Ht.:	44" (112cm)	49" (125cm)	48" (122cm)	53" (135cm)
Tubing Dia.:	1 3/8" (3.4cm)	1 3/8" (3.4cm) 1" Upper (2.5cm)	1 3/8" (3.4cm)	1 3/8" (3.4cm) 1" Upper (2.5cm)
Weight:	15 lbs. (6.8kg)	19 lbs. (8.6kg)	20 lbs. (9.0kg)	24 lbs. (10.9kg)



SS-40/SS-40X Portable Loudspeaker Stand Bases • To improve sound distribution and facilitate operation • Optional fixed height (SS-40) • Adjustable model (SS-40X) with vertical adjustment by brake shoe tube locking system • Stable tripod designed for fast setup and disassembly in temporary or stationary, indoor or outdoor applications • To support extended range, professional, monitor and column loudspeakers, music amplifiers and industrial consolettes • Chrome-plated tubing • Charcoal finish steel legs • Accommodate complete range of matching top adaptors (not included)

SS-40 \$102.40
SS-40X \$134.23

SS-70/SS-70X Professional Multi-Function Stand Base • For indoor and outdoor applications • Heavy-duty tripod designed for optimum stability • Recommended for fast setup and take-down of loudspeaker/equipment in conjunction with commercial sound systems, professional audio, AV presentations, exhibits and displays, performance enhancement on stage, at civic and sporting events, etc. • Fixed height (SS-70) • Adjustable model (SS-70X) with vertical adjustment by brake shoe tube locking system • Attractive chrome tube plating • Complete range of matching top adaptors (not included)

SS-70 \$130.25
SS-70X \$156.33

Adaptors

SSA-1/1A Universal "X" Base Equipment Mount Adaptor • Surface mounting to accommodate a wide variety of equipment sizes and configurations • SSA-1 for 1" dia. extendable upper tube of SS-40X and SS-70X • SSA-1A for 1 3/8" dia. tubing of SS-40 and SS-70

SSA-1 \$62.50
SSA-1A \$62.50

SSA-2 Bar-Mount Adaptor • For SS-40X/SS-70X variable height stand bases • Used with loudspeaker cabinets, monitor consolettes, portable lighting, (Atlas Sound SS-2 top adaptor)

SSA-2 \$16.38

SSA-3 Surface-Mount Adaptor • For SS-40/SS-70 fixed height bases • Recommended for amplifier equipment support and mounting of "C" Series column speakers, (Atlas Sound CSS-100 top adaptor)

SSA-3 \$26.38

















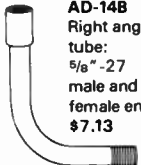


SSA-4 High Stability Platform-Mount Adaptor • For SS-40X/SS-70X variable height stands • Designed to support professional loudspeaker systems, and control or monitor equipment

SSA-4 \$26.38

SSA-5 Recessed Flange Adaptor • For use with all Atlas Sound stand bases • Eliminates transportation and storage space requirements of surface-mounted adaptors • For airtight pre-installation within loudspeaker and equipment cabinets • Precision machined, diecast dual inside diameter of 1" and 1 3/8"

SSA-5 \$39.78

Adaptors and Fittings

 AD-1B 5/8"-27 female to 1/2" pipe thread male. \$4.28	 AD-2B 1/8" pipe female to 5/8"-27 male. \$3.58	 AD-3B 1/8" pipe female to 5/8"-27 female. \$4.00	 AD-4B 3/4" long, 5/8"-27 male running thread. \$3.15
 AD-9B 7/8"-27 female to 5/8"-27 female. \$4.43	 AD-10B 5/8"-24 female to 5/8"-27 female. \$5.55	 AD-11B™ Flange, 5/8"-27 female. Base diameter 1 3/4". \$4.28	 AD-12B™ Flange, 5/8"-27 male. Base holes on 1 1/4" mounting centers. \$4.55
 AD-17 Mounts any paging speaker onto 1/2" diameter threaded pipe. \$6.40	 AD-18B Heavy-duty triangular flange; 5/8"-27 female. \$7.13	 AD-19B 45° angle tube: 5/8"-27 male and female end. \$6.85	MSC-K Blister packaged service parts kit for all 7/8" clutch assembly stands. Includes clutch, lock rings, inserts. \$9.40
 AD-5B 5/8"-27 female to 5/8"-27 female, coupling. \$3.58	 AD-6B 7/8"-27 female to 7/8"-27 female, coupling. \$5.73	 AD-7B 3" long tube 5/8"-27 male each end. \$4.28	 AD-8B 6" long tube 5/8"-27 male each end. \$4.28
 AD-13B 7/8"-27 male to 5/8"-27 female. \$4.43	 AD-14B Right angle tube: 5/8"-27 male and female end. \$7.13	 AD-15B Cable feed-thru adaptor: 5/8"-27 male and female end. \$7.58	 PB-K Designer-Styled Microphone Boom Attachment Swivel for use with 5/8" dia. tubing. \$19.05

NOTE:
Thread sizes specified as 1/8" pipe is I.P.S. (Electrical fitting) measures approx. 3/8" dia. All adaptors chrome finished.

751 Tape Loader

The 751 Tape Loader is available in various types to load blank and pre-recorded cassettes, 8-track, reels and NAB carts. This ruggedly built machine has been engineered to perform with virtually no maintenance. Almost every wear part is easily replaced in the field. It is simple to operate. Because of the versatility of the 751, it can be specially modified to handle many different tape loading requirements.

751-C

Our basic cassette loader designed to produce an average of 75 to 80 C-60s per hour, 500 or more per day on one shift. Like all of our loaders; you choose any length you wish and the bulk tape of your choice. A digital counter reads in minutes and seconds, or footage if requested, and a built-in memory repeats the same setting until you either change it or turn off the power.

751-C\$2975.00

751-CT

The same as above, but with a digital lock waveform analyzer cue tone sensor and no counter. Designed to load pre-recorded tape only.

751-CT\$3075.00

751-C + CT

Combines both versions listed above permitting you to load blank as well as pre-recorded tape. Use the counter for blank tape or stop on cue-tone and the counter shows the amount of playing time loaded.

751-C + CT\$3375.00

751-D 1/4"

Designed to spool blank 1/4" tape on disks for 8-track and broadcast (NAB) carts. Time counter can be set for either of two combinations: (1 7/8 ips and 3 3/4 ips) or (1 7/8 ips and 7 1/2 ips). A footage counter is available if preferred. Has EIA takeup. Reversing switches are not provided.

751-D 1/4"\$3075.00

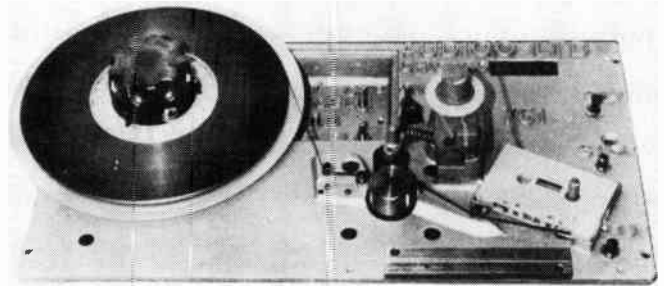
751-CD Cassette and 1/4" Combination

Incorporates the qualities of the 751-C and 751-D to permit loading blank cassettes or blank 8-track and broadcast disks. Includes reversing switches and two sets of tape guides.

751-CD\$3125.00

Special Outboards

These are available to load larger Fidelipac (B and C) disks or 1/4" tape from pancakes to 5" and 7" reels.



751-V

An audio cassette tape loader that can be expanded at a later time to also load VHS, Betamax and U-matic video cassette housings; the same loader can be equipped to load 8-track and broadcast carts and nagra reels. Even though the loader has an annual capacity of over 100,000 audio cassettes per single shift, it can generally be cost justified for users with requirements of about 5,000 cassettes per year. When loading video cassettes, output per shift is 40,000 to 60,000 annually. Also available are other video qualities to rewind and wipe tape in existing cassettes and to remove old tape so the housings can be reloaded without taking them apart.

751-V\$3975.00

751 Specifications

Running Speed:	134.98 ips (60Hz mains)
Accuracy:	± 2" per 100'
Readout:	Light emitting diode display
Operating Controls:	Pushbutton
Capstan:	Non-magnetic stainless steel
Braking:	Dynamic, zero tension on tape
Motors:	Heavy-duty precision ball bearing
Pinch Roller:	Self-aligning ball bearing
Pay-off:	Equipped with "Quick Lock" hub (NAB)
Case	
Construction:	Heavy wall, ribbed castings
Weight:	58 lbs. net.
Power:	105-130VAC, 60Hz, 70W average consumption, 500W maximum (braking surge .2 second)

AUDICO, INC.

Tape Rewinders/Impulsing System



200-9

200-2 Cassette Tape 2 Position Rewinder

Each position operated independently by 2 direct drive DC motors — one for each spindle. Rewinds a C-60 in 17 seconds. No strain on the tape or the pins because a special sensing system distinguishes the tape from the leader and brakes the cassette to a gentle stop. Senses jams by stopping automatically if there is any slowing down of the tape. Since each position operates independently at high speed, the 200-2 will operate faster than other makes with 4 to 6 stations

200-2 \$520.00

200-8 Cassette Tape Rewinder/Exerciser

As a rewriter the 200-8 operates exactly the same as the 200-2. In addition each position can also be used as a continuous exerciser—or tester—to run the tape back and forth until the cassette breaks down. The counter, working automatically, counts to 9,999 and then starts over. 3 position switches on each station permit you to control both torque and tension. The 200-8 lets you test the pins, the tape, the friction, etc.

200-8 \$730.00

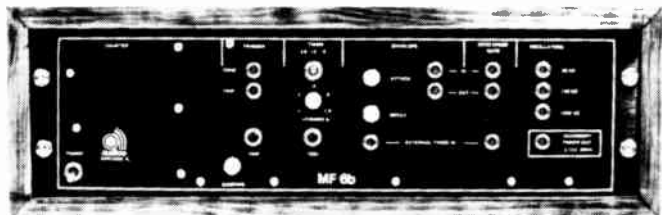
200-9 Cassette Tape Rewinder/Exerciser/Timer

In this mode, one station operates in exactly the same way as the 200-8, permitting you to rewind or exercise the cassettes. The other station works either as a rewriter or a timer. The timer counter reads in 5 digits—minutes, seconds and tenths of seconds. It is accurate to within 1 second per 100' of tape or 3 seconds per C-60...and it times a C-60 in just 17 seconds. It does not time the leader—only the tape.

200-9 \$940.00

Common Specifications (200 Series)

• Size: 4" H x 12 1/2" W x 8 1/2" D • Power: 115VAC, 50/60Hz • Weight: 10 lbs. • Built on a rigid aluminum casting and contained in heavy gauge steel • The electronics are all modular, plug-in type (NOTE: The exercising function will not operate with leaderless cassettes.)



MF-6B

MF-6B Impulsing System

The MF-6B Impulsing System is a complete impulser which can be front panel "patched" to generate the majority of the Audio-Visual formats in use today and most importantly, to accurately and precisely generate the 50Hz format pulses. It is equipped with several modularized functions:

Triggering of the unit can be pushbutton, external contact closure, to a tone impulse applied to the tone trigger input. The inputs are buffered to prevent false trips from electrical noise, glitches and editing noise on a recorded pulse track, and contact bounce of external trip devices.

Time length of the pulse to be generated is continuously adjustable from less than .024 seconds to 3.0 seconds. The digital readout can be used to display the precise length of a pulse being generated or even previously recorded.

An envelope generator with separate attack and decay controls can be used to produce bell tones or other audible markers without objectionable instantaneous turn-on—turn-off effects. The bell tones are free from conventional bell percussion and thus avoid over-recording the tape.

A zero crossing detector and gate permit the recording of tones most importantly 50Hz, which have no turn-on spike or turn-off spike, no ringing or fading in/fading out characteristics. The Gate has a 120dB on/off ratio to insure no continuing reduced level tone.

Three self contained precision Wein Bridge Oscillators, normally provided at 50Hz, 150Hz and 1,000Hz. The 50Hz oscillator is equipped with a buffered output to provide absolute protection of the frequency and waveform. You may use any general purpose audio oscillator in conjunction with the MF-6B.

Two relay contacts (normally open) are provided for actuating projectors directly from the MF-6B. The relay will withstand high voltage solenoid trip mechanisms used in some projectors. The relay is separately timed so that its closure period will not exceed .2 seconds. This prevents multiple tripping of slide projectors which might malfunction on a 440ms pulse such as in the 50Hz format.

Both the envelope generator and the zero cross systems function simultaneously from the timer allowing for making both formats in one pass. Remote timer jacks are provided for each function should they need to be operated separately.

A 3 digit counter is included in the MF-6B and frame and number (sequence count).

The F-74 filter circuit is included in the MF-6B and is available on three phono (pin) jacks at the rear of the unit.

Two high impedance input, low impedance output buffer pre-amps are available at the rear of the MF-6B for use as desired. They are not connected to the MF-6B except for power. Their outputs may be tied in parallel and their gains independently set for fixed mixing applications.

A test button is provided which yields continuous tone output from both the envelope generator and the zero cross gate to permit easy setting of levels. This button also resets the counter to zero.

A ± 15V output is provided for operation of various op amp based filters, oscillators or preamplifiers.

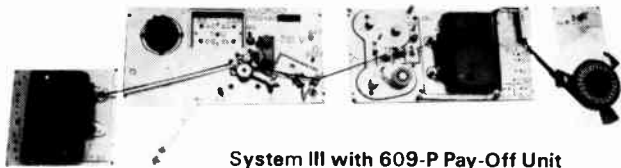
Specifications

• Power: 115VAC, 50/60Hz • Size: 5 1/8" H x 19" W x 5 5/8" D • Optional Wooden Case: 6 3/4" H x 20 1/2" W x 7 1/8" D

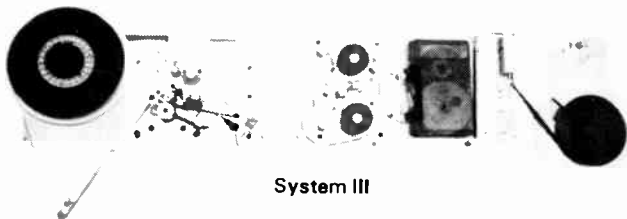
MF-6B \$1295.00

AUDICO, INC.

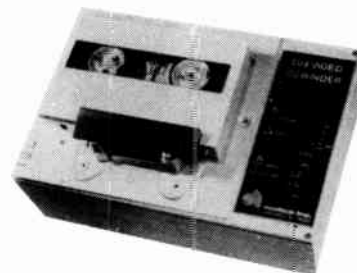
Tape Loading Systems/Accessories



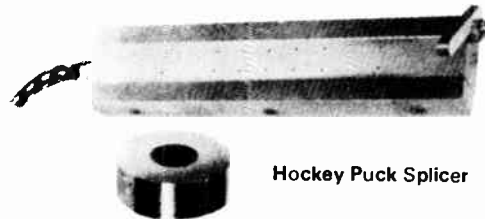
System III with 609-P Pay-Off Unit



System III



609-R Rewinder



Hockey Puck Splicer

Video Tape Loading Systems

U-matic, VHS and Beta

System can be equipped to load and reload U-matic, VHS, Beta, 8mm, M-II, Betacam and 19mm video cassettes and cookies, plus load 1" and Nagra reels and audio cassettes, carts, and reels. Video cue-tone available. Tape loading speed is 135" per second. Counter allows selection of exact tape length desired. Built-in cleaner can wipe video tape during loading or rewinding.

All systems consist of a 751-V delivery unit and an 829 receiving unit with one interchangeable take-up module. Systems II and III also include the 29R unloading unit. The 829 receiving unit, which contains a processor that continuously monitors in-path tape loading tension, may be upgraded: System I or II to System II or System III.

Systems I and II require only one take-up module for both VHS and Beta; System III requires separate modules for each format. U-matic modules handle both KCA and KCS housings. When ordering, specify desired module—U-matic or 1/2" on System I or II; U-matic, VHS or Beta on System III.

System I Video Loader Loads new tape into new cassette housing \$6,800.00

System II Video Loader/Reloader Has additional feature that automatically removes old tape from cassette housing without taking them apart, and thus allows for their convenient reuse. 7,800.00

System III Video Loader/Reloader/Rewinder Adds ability to rewind and fast-forward cassettes, and to wipe tape while rewinding. When re-loading, tape can be removed from either reel 8,100.00

Take-up Modules Extra interchangeable modules (in addition to one selected with Receiving Unit).

Load (All Systems) 500.00

Load/Reload (Systems II and III) 625.00

Load/Reload/Rewind (System III) 750.00

Audio Tape Loading Options (1) Audio Cassettes, (2) Type-A Broadcast and 8-track Carts, and (3) Nagra Reels.

First Option 375.00

Second and Third Option (each) 75.00

609-P Pay-off Unit Used with video loader to transfer tape directly from a cassette housing or cookie into another housing. Mounts to left of Delivery Unit which counts desired length. Stops on leader and indicates length loaded. VHS unit transfers tape from VHS housing to both VHS and Beta housings.

U-matic or VHS \$ 975.00

U-matic and VHS 1,175.00

Economy Video Loader Loads new tape into new cassette housings. Includes 751-V Delivery Unit and 609-T Take-up Unit with tape wiper and one Take-up Module, either 1/2" (VHS and Beta) or U-matic, Audio tape loading options also available \$5,000.00

Second Take-Up Module 500.00

Video Cassette Rewinder, Cyclor, Counter, Unloader

609-R Video Cassette Rewinder, Cyclor, Counter, Unloader Rewinds and fast-forwards U-matic, VHS and Beta Cassettes. Cyclor fast-forwards tape to leader and then automatically rewinds it. Counter displays tape length in cassette in feet. These units can also be used as pay-off unit or as take-up unit on Economy Loader.

609-R Rewinder/Cyclor—One format: U-matic, VHS, or Beta \$1,125.00

Each additional format 700.00

609-RC Rewinder/Cyclor/Counter—One format: U-matic, VHS or Beta. 1,400.00

Each additional format 975.00

29-R Unloader—When added to 609-R or 609-RC, removes old tape from housings so they can be reused 950.00

Video Tape Splicers

Hockey Puck Splicer Tape and leader are butted together and held in place by vacuum holes in tape slot. Splicing tape is placed on top of block across ends to be spliced. The "puck", a precision fitting, hardened metal roller, is rolled down the slot and cuts and applies splicing tape in one motion.

1/2" Tape \$600.00

3/4" Tape 600.00

Vacuum Source The Hockey Puck Splicer requires a vacuum source for tape hold-down, either a small vacuum pump or a compressed air source connected through a venturi.

Venturi Kit Consists of venturi, flow control and fittings to generate vacuum from compressed air source \$100.00

Vacuum Pump 150.00

Costs for various formats and features, including optional Hockey Puck Splicer(s) and vacuum pump.

Economy Loader	System I	System II	System III
U-matic (or one 1/2" format on System III)			
\$5,750.00	\$7,550.00	\$8,550.00	\$8,850.00
VHS and Beta			
\$5,750.00	\$7,550.00	\$8,550.00	\$9,600.00
U-matic, VHS and Beta (two Hockey Puck Splicers)			
\$6,850.00	\$8,650.00	\$9,775.00	\$10,950.00

Above System III for U-matic, PLs:
U-matic Pay-off Unit \$9,825.00
VHS/Beta System II Load/Reload Module, and 1/2" Hockey Puck Splicer \$10,075.00

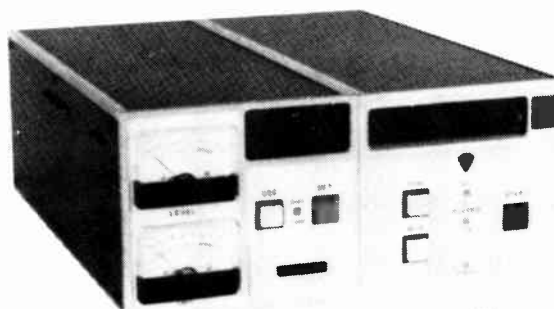
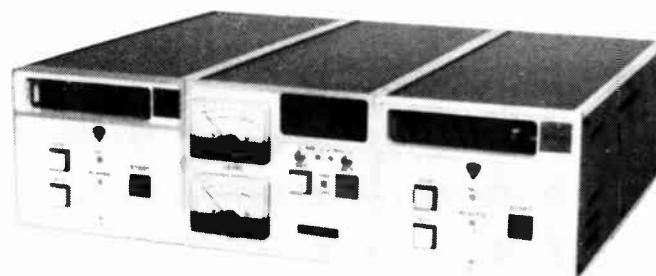
Add \$375.00 to above prices for audio cassette or broadcast cart loading option; add \$450.00 for both.

Subtract \$50.00 from above prices for Venturi Kit instead of Vacuum Pump.

Prices and Specifications Subject to Change Without Notice.

AUDI-CORD CORP.**Recorders/Reproducers****DL Series Cartridge Recorders and Reproducers**

- Replay lock-out and reminder to prevent accidental replay errors. Manual or automatic muting of output audio (from SEC cue operation). Status indicator lamps show at a glance cue tones presence, both SEC and primary. Latched lamps verify that both have been sensed
- Mute lamp to indicate audio on or off status
- Automatic motor turn-off if selected conserves power and heat
- Full +8dBm output ability with 12dB of headroom
- Cart holding system (over top for stereo) for positive location of the cartridge
- Slide back cover design allows for quick and easy access for cleaning
- Complete remote control connections. Plugs are furnished
- Front access tone editing and line level controls are in the mini-drawer
- The optional digital recording timer is available for accurate timing
- Full VU meters for accurate level monitoring
- Bias and tone presence indicators
- Automatic meter switching from record to replay
- Recording shut-off with the end of SEC tone option is provided
- 100% solid state design with high noise immunity CMOS logic
- Extensively modular design with plug-in circuit cards
- Heavy-duty deck and head mounts that stay adjusted
- Pressure roller regulating system that insures best phase performance
- Many selectable operating features to adapt to individual needs
- Easy to use instruction book and readily available renewal parts used throughout
- Internal cue tone play level metering
- Internal level sensing LED's for visual indication of bias on each channel
- Alterable recording timer option displays SEC-tenths or min-SEC
- Selectable 600/150 ohm balanced transformer outputs
- Bridging 5K ohm recorder input
- Internal resistance pads alterable to match needed levels
- Dual adjustable equalizers both play and record
- Regular single deck recordings, made on the right hand deck. Left deck may be playing as needed
- Dual recordings, load the cartridge and push the buttons
- Copies (dubs), place cartridge to be copied in left deck and select dub mode, make a perfect copy in the right deck, all switching is automatic
- Composites are easily performed in dub mode using 1kHz inhibit facility provided
- Stereo to mono mix dubs, special models on request with 1 deck of each
- All models meet or exceed the 1976 NAB Cartridge Standards
- All models are equipped with 1kHz primary and 150Hz secondary cues as standard

**Play****Record-Play****Dual Transport Record-Play****"DL" Series Playbacks**

Model	Description	Weight	Price
DL-PM	Mono, 2 cue	(Desk cabinet - Wt. 16 lb.)	\$ 839.00
DL-PS	Stereo, 2 cue	(Desk cabinet - Wt. 16 lb.)	919.00

"DL" Series Record-Playbacks

DL-RM	Mono, 2 cue	(Desk cabinet - Wt. 21 lb.)	1199.00
DL-RM-5	Mono, 2 cue with timer	(Desk cabinet - Wt. 21 lb.)	1279.00
DL-RS	Stereo, 2 cue	(Desk cabinet - Wt. 21 lb.)	1389.00
DL-RS-5	Stereo, 2 cue with timer	(Desk cabinet - Wt. 21 lb.)	1469.00

"DL" Series Dual Transport Record-Playbacks

DL-DM	Mono, 2 cue	(Desk cabinet - Wt. 34 lb.)	2099.00
DL-DM-5	Mono, 2 cue with timer	(Desk cabinet - Wt. 34 lb.)	2179.00
DL-DS	Stereo, 2 cue	(Desk cabinet - Wt. 34 lb.)	2459.00
DL-DS-5	Stereo, 2 cue with timer	(Desk cabinet - Wt. 34 lb.)	2539.00

185-0005	Timer accessory assembly with instructions	90.00
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185-0006	Rack shelf assembly	59.00
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AUDI-CORD CORP.

Recorders/Reproducers

Cartridge Recorders and Reproducers**S Series Playback**

- All front access controls in pull-out drawer
- Dual play equalization—Hi & Lo
- Replay lock-out to prevent accidental replays*
- Off speed motor lock-out to prevent start WOW*
- Automatic motor shut-off for long idle periods*
- Off cue indicator avoids un-cued carts
- SEC & TER signal lines
- Selectable 600 or 150 ohm outputs with internal pad space
- Full +8dBm output, +20dBm clipping
- All solid-state control system of modern CMOS and linear IC's
- Thick aluminum deck, overlaid with stainless steel for wear
- Very rugged head mounts with top adjustments that stay put
- Split polished stainless steel tape guides that are individually adjustable and reversible for wear, offer ultra precise internal guiding
- Pressure roller regulating system insures proper pressure and indent to reduce tape (phase) skew
- Complete remote facilities (plugs furnished)
- Attractive textured vinyl clad cabinet with slip/lift cover for easy cleaning access
- Polycarbonate panel inserts with permanent control markings
- Extensive use of plug-ins and easy maintenance access
- *Indicates customer selected options

S Series Recorder

- Plug-in companion to any similar playback. Easily field exchanged to distribute transport wear if desired
- All front access operator controls in pull-out drawer
- Multi-function meter system with automatic switching from record to replay
- Dual recorder equalization—Hi & Lo
- Internal three tone response check facility
- Bias and tone recording indicators
- Record shut-off with end of SEC tone
- Timed tone bursts with manual override
- Recording timer selectable for min-sec or sec-tenths mode, front or end of SEC tone stop action
- 5K ohm bridging transformer input with internal pad space
- Complete remote control facilities (plugs furnished)
- Compatible with all known automation encoders
- Polycarbonate panel inserts and control markings
- Extensive use of plug-in's and easy maintenance access
- Attractive textured vinyl clad cabinet with slip/lift cover

TDS Series Twin Deck Reproducer

- The lower deck is an adjustable slide-out assembly for easy maintenance
- Extensively modular design with plug-in circuit cards thru-out
- Most electronic and renewal parts same as the "S" Series family
- Front panel controls attractively and functionally placed for easy operation
- Attractive vinyl-clad cabinet and polycarbonate panel inserts
- SEC, TER & PLAYED signal lines for each deck
- Replay reminder system with full selectable use options
- Dual reproduce equalizers—Hi & Lo frequencies
- Selectable 600 or 150 ohm balanced transformer audio outputs
- Full +20dBm clipping point audio amplifier system
- Complete remote control facilities
- Automatic motor shut-down when both carts have played
- Audi-Cords heavy-duty deck and head mounts with split tape guides
- Side azimuth adjustment (lower deck only)
- 100% solid-state design with high noise immunity CMOS logic
- Dimensions: 7 1/2" H x 8 1/4" W x 14" D



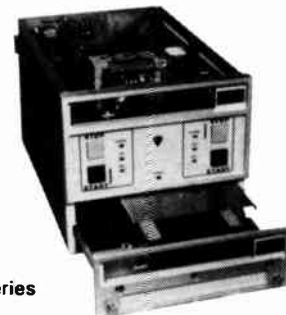
Reproducer
(Desk Cabinet)



Record-Reproducer
(Shown in Stereo Model S26)
(Desk Cabinet)



TDS-Series

**S Series Premium Playbacks**

Model	Description	Weight	Price
S11	Mono, 3 Cue	(Desk Cabinet—22 lbs.)	\$1059.00
S11R	Mono, 3 Cue	(Rackmount—34 lbs.)	1059.00
S16	Stereo, 3 Cue	(Desk Cabinet—22 lbs.)	1149.00
S16R	Stereo, 3 Cue	(Rackmount—34 lbs.)	1149.00

S Series Premium Twin Deck Playbacks:

TDS-1	Mono, 3 Cue	(Desk Cabinet—32 lbs.)	\$1509.00
TDS-6	Stereo, 3 Cue	(Desk Cabinet—32 lbs.)	1719.00
502-0039	Rackmounting Shelf	(holds 2 units in 8 3/4" of 19" rack space—15 lbs.)	59.00

S Series Premium Record Playbacks:

S21	Mono, 3 Cue and Timer	(Desk Cabinet—33 lbs.)	\$1779.00
S21R	Mono, 3 Cue and Timer	(Rackmount—40 lbs.)	1779.00
S26	Stereo, 3 Cue and Timer	(Desk Cabinet—33 lbs.)	1969.00
S26R	Stereo, 3 Cue and Timer	(Rackmount—40 lbs.)	1969.00

S Series Delay Machines:

S32	Mono Network Delay, 3T and Timer	(Desk Cabinet—37 lbs.)	\$1889.00
S32R	Mono Network Delay, 3T and Timer	(Rackmount—44 lbs)	1889.00

Refer to Green Section for Addresses and Telephone Numbers.

AUDIO DIGITAL, INC.

Audio Processors

TC-2 Digital Delay Processor

The TC-2 offers exceptionally clean and natural sounding audio performance, even at delay times of over 2 full seconds. With full 16kHz bandwidth you can now have low distortion, low noise and no unwanted artifacts that are sometimes prevalent in digital audio equipment.

Entertainers use the TC-2 to create effects that no other digital delay can offer such as:

- Simultaneous positive and negative flanging
- Deep "analog-sound" flanging
- Pitch-controlled flanging and chorusing—a dramatic new effect
- Triple tracking through the use of the TC-2s second ("aux") delay output
- Independent control of initial echo and repeat delay times
- Over 2 seconds of delay time (with accessory memory expansion) with no degradation of bandwidth, noise, or distortion
- Real time display of delay times in all modes

The TC-2 features over one second of delay at full bandwidth. The memory expander option enables delay time to be extended to over 2 full seconds—without degradation. The real time four digit display indicates the actual delay time at any moment under all operating modes.

TC-2 \$1095.00



TC-2



TC-4



TC-5

TC-3 Pre-Reverb Digital Processor

- 20-20kHz bandwidth
- Less than .1THD + noise at 1kHz
- 90dB dynamic range (A-weighted)
- Balanced inputs/outputs
- Delay time factory expandable to 520ms; user expandable to 1040ms after factory expansion
- Input display and separate adjustments for input, output gain—as well as regeneration, mixing
- One rack space

The Pre-Reverb Digital Processor is useful in studio applications requiring enhancement of a mechanical reverb system. Because of its flexibility it will also perform as a stand alone studio quality digital delay. Delay time is selectable in 1ms increments up to 260ms, with a 20kHz bandwidth, and 90dB dynamic range. Built-in mixing and regeneration controls enhance the TC-3 as a stand alone processor in live as well as studio applications.

TC-3 \$649.00



ADX-2000

TC-4 Broadcast Digital Processor

- 20-15kHz bandwidth
- Less than .2THD + noise at 1kHz
- 85dB dynamic range (A-weighted)
- Balanced inputs/outputs
- Input gain display, as well as independent control of input and output gain
- Display of active and catch-up status
- Dump system is remotable to your system
- One rack space

The TC-4 Broadcast Digital Processor is a state-of-the-art advancement in broadcast profanity delay. It features delay time of 6.8 seconds, with a 15kHz bandwidth and 85dB dynamic range. The optional (user-installable) auxiliary card allows memory dump in less than 2 seconds, as well as a delay time catch-up feature to allow starting in near real time. Two TC-4 processors can be linked together with a factory installed stereo synch option for a stereo system.

TC-4 \$1395.00

TC-4A Catch-up Option 250.00

Stereo Sync Option 70.00

TC-5 Industrial Digital Processor

- 20-20kHz bandwidth
- Less than .1THD + noise at 1kHz
- 90dB dynamic range (minimum)
- Parallel and couple jacks for expanding number of outputs
- 500ms delay time standard
- Delay time internally expandable to over 1 second
- Input display and separate adjustments for input/output gain
- Adjustable in .5ms steps
- One rack space

The Industrial Digital Processor is the first delay intended for permanent installation that features a 20kHz bandwidth, up to 1 second delay time—and expandable for more outputs.

TC-5 \$649.00

Memory Expansion Module 250.00

Security Cover 15.00

ADX-2000 Digital Signal Processor

- Install any combination of up to 6 input modules and 40 output modules
- Programmable delay time, channel on/off and gain (optional)
- Page mode for setting and storing multiple configurations in non-volatile memory (12 pages standard, 24 pages optional)
- Switch selectable input and output bus assignments, output channel number unity or front-panel controlled input gain and input meter display
- RS-232 port for remote terminal control
- Displays delay in time (milliseconds) or distance (feet)
- Active balanced XLR inputs and outputs
- Roadworthy steel chassis
- Security lock-out code

The ADX-2000 is a versatile digital signal processor designed for any application where numerous inputs and outputs are desired. The first module available performs delay, gain and on/off functions making the ADX-2000 ideal for cluster alignment, touring sound and distributed system synchronization.

ADX-2000 \$3500.00

ADX-2001 Input Module

Occupies one expansion slot space **\$349.00**

ADX-2002 Output Module

Includes 261ms delay time standard, expandable to 1048ms. Occupies one expansion slot space **\$549.00**

ADX-2000 Slave Chassis

Slave chassis with eight expansion slots and power supply. Requires three standard rack spaces (19" x 5.25") **\$299.00**

Cables for Slave Chassis

Required for slave chassis operation; custom made for your system configuration. **POR**

MS38 DM Dual Mode Line Level, Active Matrix for Post Production/MS380 TX Stereo Microphone Preamp with Dual Mode Matrix for Production and Post Production

Both models feature an exclusive dual mode matrix circuit. This makes it easy to manipulate the stereo width of program material during any phase of production. The MS mode retains its unique combination of discrete mono compatibility, easily adjustable stereo perspective and automatic ambience control.

MS38 DM Line Level Matrix Processor May be inserted into the signal chain at any point after the mike preamps. It may be used in real time or post production situations. Either MS or conventional signals may be input. Stereo width, from mono through stereo to hyper-stereo, is under single knob control.

MS380 TX In addition to our dual mode matrix, this unit has balanced and floating microphone inputs using Jensen transformers for consistent performance even in high RF areas. Both phantom and AB (T) microphone powering are provided. A quality two stage mike preamp with adjustable gain is followed by a switchable three pole high pass filter. Patch points are available at these outputs and at the matrix inputs and outputs.

The master outputs provide additional gain, a stereo level control and +25dBm transformer isolated balanced outputs. A matrix bypass mode, for operation directly from the mike preamps, is front panel switch selectable.

A.C. or battery power, convenient operation, quality performance and rugged construction make the MS380 TX an ideal choice for many stereo applications.

MS38 DM \$ 495.00
MS380 TX 1695.00



Characteristics	380 TX Mic preamp to insert	380 TX matrix input to master outputs	MS38 DM matrix line input to output
Inputs			
Impedance in Ohms	1.1 k minimum, 1.4 k max.	30 k	10 k
Circuit Type	Balanced & floating	Unbalanced	Active differential
CMRR	>70 dB	Not applicable	Not applicable
Connectors	Switchcraft E3F	Switchcraft 1/4" stereo jack	Switchcraft 1/4" TRS jack
Polarity	Pin two is high ref. pin 3	Erect, tip is left, ring is right	Tip is high, ring is low
Mic Power	48 V phantom, 12 V AB (T)	Not applicable	Not applicable
Outputs			
Impedance in Ohms	Mic Pre & Matrix Outputs	Main Outputs	
Circuit Type	150 source, ≥600 for load	150 of which 75 is resistive	75 Ohm at tip unbalanced
Levels (dbm) at load Z	Unbalanced	Balanced & floating	75 Ohm from ring to ground
Connectors	+19 into 600 & +21 into 10k	+25 into 600, +27 into 150	+16/ 600, +21/ 5 k Ohm
Polarity	Switchcraft 1/4" stereo jack	Switchcraft E3M	Switchcraft 1/4" stereo jack
	Erect, tip is left, ring is right	Pin two is high ref. pin three	Tip is high, 75 ohms ring
Performance			
Gain in dB	+24 to +64 trim, -20dB pad	0 in matrix, +21 in master	Nominal unity gain
Frequency Response			
-1/2 dB points	10 Hz /30 kHz, -3 @80kHz	<10 Hz/30 kHz, -3 @ 80kHz	-3 dB at 2 Hz and 100 kHz
-1 dB point ---- w/ high	110 Hz or 50 Hz	No high pass filter	No high pass filter
-3 dB point ---- pass in	80 Hz (std.) 40 Hz (option)	No high pass filter	No high pass filter
Overshoot 1kHz step	0 %	0%	0%
THD+N at +8 dBm out reference conditions	≤ .04 % at maximum gain	≤ .04 % at maximum gain	≤ .01 % at +10 dBu
	50-20 kHz, ≤ .15% @20 Hz	20-20 kHz	20 -20 kHz
Noise (20-20kHz) reference conditions	-127 dB EIN	-90 dB	-90 dBu
	150 Ohm source, max gain	+ 4 dBm out and unity gain	0 dBu @ 10 k Ohm load
CMRR, 20 - 20 kHz	>50 dB, > 90 dB at 120 Hz	Unbalanced inputs	>40 dB
Control electronics description d.c. input	Grey aluminum, 8.2 x 9.5 x 1.7 inches, weight 3.85 lbs.		Grey, 2.4x 5.3x 8.5", 1.2 lbs
	±15 V d.c. @ 90 mA for +4 dBm, +48 V d.c. @ 24 mA max		±18 V d.c. @19 mA, noLED
A.C. Pwr. Supply	Input		
	Switchable 115 or 230 V a.c. at 50/60 Hz, 12 VA maximum		120 V a.c. 60 Hz, 5 VA max
	Output		36 V a.c. center tapped
	Physical		Black, 1 lb. 3' cable in, 6'out
Battery Supply	Physical		Grey aluminum, weight 1 lb.

Prices and Specifications Subject to Change Without Notice.

AUDIO KINETICS, INC.**Machine Controllers/Synchronizers/
Editing Systems****Q•LOCK****Professional Machine Controllers, Synchronizers and Editing Systems**

- 2, 3, 4 or multi-machine systems
- EBU/SMPTE time code based
- 2 levels of control for different budgets and applications
- Interfaces to virtually all tape transports
- Synchronizes video, audio and film machines
- Integral time code generator and readers

All Q•LOCK machine control systems use standard EBU/SMPTE time code as the reference for synchronization, and each configuration includes as standard a time code generator capable of delivering 24, 25, 30 fps and drop-frame codes.

Event control of remote equipment is available, with two levels of central system control.

Full Central Control**The Q•LOCK 4•10 Series**

For most aspects of post-production, some type of central control is required, where the system, in whole or in part, is always under the direct control of the engineer.

Speed is of the essence, and time is money. Q•LOCK has been designed to keep post-production time to a minimum.

The Q•LOCK 4•10-A Series is just such a system. Based on the enormously successful Q•LOCK 3•10 products, the 4•10-A System consists of a computer frame and the Alpha Controller.

The 4•10-E Series uses the Eclipse Editor, an intelligent controller with a clear, multiline display of system status and messages.

The 4•10 frame contains the main control electronics—machine interfaces, time code generator, time code readers for each machine, and the main processor card governing the synchronizing routines. Four full machine interfaces may be installed. In addition, there are several relays accessible to the operator, with connections via the "services" socket on the rear of the frame.

Event Relays. Three single "make" relays for firing external equipment from time code addresses.

"On Air" Relay. A change-over relay which closes when a record command is issued, and opens when the un-record is fired.

Sync Unmute. This relay only closes when all machines are cued, or in synchronized play, which means audio can be muted at other times.

The integral time code generator has separate feeds to all machines, and may be referenced to either the internal crystal or an external source such as video syncs.

Selection of whether a machine is designated master or slave is made via switches on the front of the cards in the frame—there is no need to recable any machines just for master status.

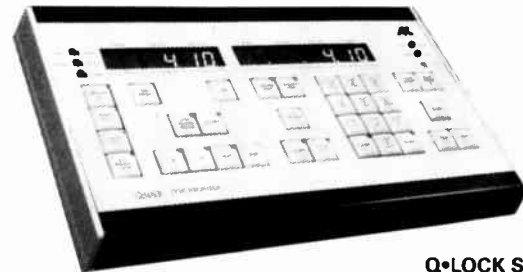
Q•LOCK 4•10 + Alpha

The Alpha Controller will control and synchronize 2 or 3 machines out of the maximum "pool" of 4 (the 4th machine is selected to be "off line").

Full transport control of individual machines or the whole group is provided, with industry standard locator functions and 10 locate/numeric memories. The integral time code generator may be preset to any desired value, and genlock software allows code to be restriped or generated for consistency, in time code value and rate, with existing tapes.

A special version of the Alpha Controller, the Beta, has been specifically designed for flush mounting in a mixing console, with a width of 160mm (typically 4 modules).

Offset calculations can be performed by the system automatically, while automatic record drop-in and drop-out can be programmed on-the-fly or from an edit list.

**Q•LOCK Synchronizer****Eclipse Editor**

Specialist software is available for particular tasks which demand repetitive routines, such as dialogue replacement (dubbing or looping). Each package reduces to single keystrokes routines which normally would require several. Such software is available (as an option) for Sound Effects Assembly (Q•SOFT-SFX), Dialogue Replacement (Q•SOFT-ADR), Audio/Video Conforming (Q•SOFT-CONFORM), and Automatic Machine Selection (Q•SOFT-RELAY).

A typical setup for the Q•LOCK 4•10 is with a U-matic Video Machine as master, a multitrack machine as Slave 1 and a 2-track audio machine as Slave 2. This configuration is typical of that used in video-audio post-production, where music, sound effects and dialogue are transferred from the twin-track, or direct, onto the multitrack in sync with picture, for later mix-down and layback onto video.

Q•LOCK 4•10 + Eclipse

The Eclipse Editor may be used as the central controller for either the 4•10 computer, giving full four machine editing or combined with a future family of synchronizers expandable up to 32 machines on the SMPTE studio bus system.

Eclipse offers 12 user-programmable keys so that engineers derive a routine of keystrokes and execute it with one key depression.

Dual tasking may be performed: any single machine may be accessed for other functions while the group is editing, saving possibly large amounts of on-line studio time—for example, some sound effects may be spotted while an audio tape is being laid back to video.

Each event relay with the 4•10 frame may be associated with 3 time code cue points.

Up to 100 loop memories are available, each loop containing the data for Loop Start, Loop End, Record-In, Record-Out, and machine configuration and offsets.

AUDIO KINETICS, INC.

Synchronizer/Generator Resolver

**Pacer and Pacer Pad 2
Synchronizer Generator/Resolver**

Pacer is a self-contained two machine synchronizer that can be used for any chase lock requirements within the audio and video post production environment. The unit has an integral time code generator. A wide range of machine interfaces are available; the machine file is selected by externally mounted switches. Pacer Pad 2 provides remote control of all functions plus a time code display. Pacer is an efficient, easy to use, professional product for standalone chase synchronizer applications.

Facilities

Each Pacer has an independent EBU/SMPTE multi-standard time code generator; output level can be adjusted from the front panel. The generator can be started from a programmed time code value or jam-synced to an incoming code source. The unit can be referenced to an external video sync source or frame rate TTL pulses from a standards converter such as the AK Gearbox.

Offsets, which can be trimmed by frames or sub-frames, are entered automatically or pre-programmed from the Pad 2. The slave machine can be dynamically slewed in both frame and sub-frame increments.

The system is calibrated for tach pulses per time code second which allows very precise locate performance. Calibration is carried out by Pacer automatically when the routine is enabled.

Synchronization

Two high speed code readers monitor master and slave positions. When no code is present (for example when tape is lifted during fast wind) Pacer switches automatically to read tach and direction information.

Three lock modes are selectable; frame, auto and phase. Frame-lock constantly compares master and slave time code. Auto-lock references to frame edges after initial time code synchronization allowing the use of discontinuous time code. Phase-lock synchronization uses frame edge and phase information only; this allows use of external video sync references for genlock and resolve applications.

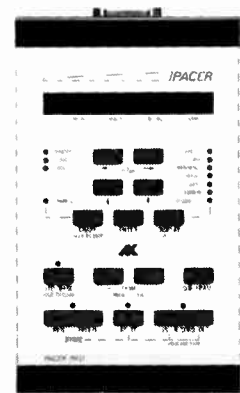
All interface information is held in software and is selected from a bank of DIL switches mounted on the back panel.

Pacer Pad 2

The Pad provides a time code display for master and slave time code data as well



Pacer



Pacer Pad

as remote control of all of Pacer's functions. The Pad permits entry of generator start, offsets, record in and out points and a locate memory. An additional offset function calculates the offset between a stored slave time code value and the current master machine position. In addition the slave machine transport functions can be controlled from the Pad, including record.

Communication to Pacer is via an RS232/422 serial interface using an AK ASCII protocol which is published in the manual. This interface allows a high-speed serial interface between Pacer and external devices such as personal computers, video editors and disk based editing systems.

GPI Port (Option)

The Pacer GPI port provides a simple method of interfacing Pacer to external control units such as video editors. A 15-pin connector on the rear of the unit provides TTL logic level signals for commands and tallies to the external device.

**Specifications
Pacer and Pacer Pad 2**

Outputs	
LTC output balanced	XLR 3-pin socket
Serial port	15-way "D" plug
GPT parallel port	15-way "D" socket

Inputs	
Master time code in balanced	XLR 3-pin plug
Slave time code in balanced	XLR 3-pin plug
Master tach and direction	9-way "D" plug
Slave control cable	25-way "D" plug
Sync — composite video or frame rate	BNC plug
Mains 110V or 240 + 10%/-25%, selectable, fused, filtered input	
Consumption	20W

Physical: Pacer	
Height	1.75" (44.5mm) 1U rackmounting
Width	19" (482.6mm)
Depth	13" (330mm)
Weight	17 lbs. (8 kg)

Physical: Pacer Pad 2

Height	8" (205mm)
Width	5" (130mm)
Depth	1.375" (35mm)

General

Accuracy of lock	± 1/2 subframe
Lock stability	± 50µsec or better
Time code reader	1/20th to 80 times, bi-directional
Bandwidth (in terms of play speed)	bi-directional
Input level	-30dBm to +10dBm, balanced XLR
Offset adjustment	In frames, and units of 1/100 frame
Generator output	0.17V p-p, balanced XLR
Wow and flutter	< 0.02% added to slave

Pacer Synchronizer/Generator Resolver Module (Specify 110V model), including Pacer Pad 2 remote keyboard option. \$3350.00

GPI Port Option

(Add on internal PCB, with current Pacer only) 300.00

AUDIO KINETICS, INC.

Time Code Equipment

Striper Time Code Generator And Reader With "Quickstripe"

- Multistandard time code generator
- Code output at 1X, 2X and 4X playspeed
- Reads time code and user bits
- Genlock facility, in forward and reverse
- Presettable generator start times
- Auto preroll generation

The Striper can output code at 2 or 4 times playspeed; simply switch the machine to the higher speeds and record time code in a half or even a quarter of the time.

For example, if your machine has speeds of 15 and 30 ips, and you want code on tape at 15 ips, set the machine to 30 ips, Striper to 2X speed and save half the time.

The generator can be referenced to internal crystal, or external pulse such as video syncs or the frame rate output of the Audio Kinetics Gearbox unit. It is also compatible with the revised EBU/SMPTE format with the included parity bit.

This combination offers a sophisticated time code standards conversion system.

Striper can also be preset to any hour start from 0 to 10 hours, with an option to automatically start with a 15 second preroll. The generator level is user adjustable on the front panel.

Striper can also be set to read time code, or user bits, and so new code can be generated from bad code.

An intelligent time code reader front-end detects time code direction and sets the generator direction to the same when the JAM command is given, so code can also be generated backwards to, for example, extend code at the start of material to provide pre-roll for synchronizers. This is easily achieved by turning the tape over and feeding the existing code into Striper, pressing JAM and recording the extending code over the end (start) of the old code. The reader can also display User Bits, and a run/stop key allows the display to be held. A "good code" LED shows whether incoming code is suitable for jamming.

The run/stop key can also stop the generator, and then continue from the same point.

Striper also has a comprehensive self-diagnostic program, so in the unlikely event of IC failure, the display will show which IC is faulty.

Striper \$1785.00

Gearbox Electronic Time Code Reshaper and Reference Converter

Gearbox is a 1U 19" rackmounting unit which provides two functions—a time code reshaper and a standards converter. A remote connector provides access to all operating controls.

Reshaper

Poor quality code can be reshaped and jittery time code relocked; input phase and output shape are adjustable from the front panel. The output time code is distributed on three connectors, each with its own front panel level control. Output 3 can be switched from re-



shaped time code to a 50 or 60Hz sine wave derived from the internal reference.

Standards Converter

The gearbox section references itself to one of six input sources: time code, video syncs, FM pilot tone, Pulse, AC Mains, or the internal crystal. Gearbox can then generate an output frequency absolutely locked to the incoming signal. A flywheel circuit compensates for any input instability and dropouts.

Gearbox is capable of converting the referenced input frequency to an output of a different standard. For example a 25 frame input can be altered to a 30 frame output while remaining referenced to the speed of the original time code.

The outputs for the gearbox section are on BNC connectors and provide a frame and field (twice frame) rate reference for an external time code generator, such as that used in the AK Striper or ES 1.11.

Using the frame rate reference Gearbox can be used to restripe a tape which has an incorrect code standard but is still related to the original code speed.

Gearbox \$1785.00

VTL Translator

The VTL Translator is designed for real time conversion of Vertical Interval Time Code (VITC) to Longitudinal Time Code (LTC). VITC is essential for video editing as it is the only way that code may be accurately read in still frame. Additionally, VITC eliminates the need to utilize a VTR audio channel for the time code reference track. The LTC produced by VTL is a direct, phase locked replica of the decoded VITC so that time code striped onto a slave machine is automatically resolved to the original video material. VTL's time code output can be used for any device that requires LTC for its operation, such as video editors, and Audio Kinetics ES 1.11 and Pacer synchronizers.

The VTL has two modes of operation, Translator and Editor, selected by an external switch.

Reader

VTL accepts PAL or NTSC composite video signals with encoded VITC; the standard is selected from the front panel. The range of the VITC reader is from 0 to approx. 20X play

speed, which is outside the capabilities of most video machines. An external sync input has been provided to assist in the continuous recovery of VITC when the video signal itself is of poor quality or intermittent, or from a video machine that outputs artificial blanking pulses in pause mode.

A front panel display for the Vertical Interval Time Code has a facility for freezing time code values and user bit information.

LTC output from a rear mounted XLR is continuous in the Editor mode as long as valid VITC is being received, which is indicated by a front panel LED. A serial communications port provides an additional output from the VITC decoder which operates at 9600 baud and broadcasts code values, user bits and code validity information. This can be used by an external computer to assemble an automatic EDL.

VITC Windows

VTL can define a "window" to enable the detection of code from within a specific set of video lines, between 6 and 22 for PAL signals, or 10 and 20 for NTSC. Several sets of VITC can be encoded on a single tape; for example, edited code may be left intact for the creation of an EDL, while fresh continuous code is encoded on a different set of lines for synchronization use. An automatic mode is provided which accepts the first valid VITC lines transmitted to VTL. Selection of a window of lines 19 and 21 illuminates a front panel LED for instant visual confirmation that this standard has been selected.

Translator Mode

In the "Translator" mode, the VTL's words progress forwards or backwards depending on the direction of the video, providing the correct type of code for use with synchronizers. Video recorders provide sufficiently good video in shuttle wind to allow VTL to output periodic snatches of deciphered code for synchronizers to follow when in chase mode. To avoid confusing intelligent synchronizers, the VTL has hysteresis built into the LTC output in the form of a "flywheel" effect. The LTC generator ignores changes in the direction of an input VITC until it reaches a rate of 3 frames per second in the opposite direction.

VTL \$2235.00

AUDIO KINETICS, INC.

Synchronizer

ES 1.11 Synchronizer

The ES 1.11 is a 1U rackmounting synchronizer/generator/emulator which can be bused to form an ESBUS local area network of up to 256 machines. The ESBUS controller's capabilities define the number of controlled machines that can be accessed within a system. Two switchable ESBUS network ports are provided on each ES 1.11 supporting separate controller sites or allowing different synchronizer configurations without re-cabling.

Each ES 1.11 can optionally take advantage of the enhanced AK-ESBUS specification which provides a one cable solution for control networking, sync referencing and system time code distribution. The system code can be used to drive console automation systems such as Audio Kinetics Reflex and MasterMix or ADR cueing devices such as Audio Kinetics Wiper.

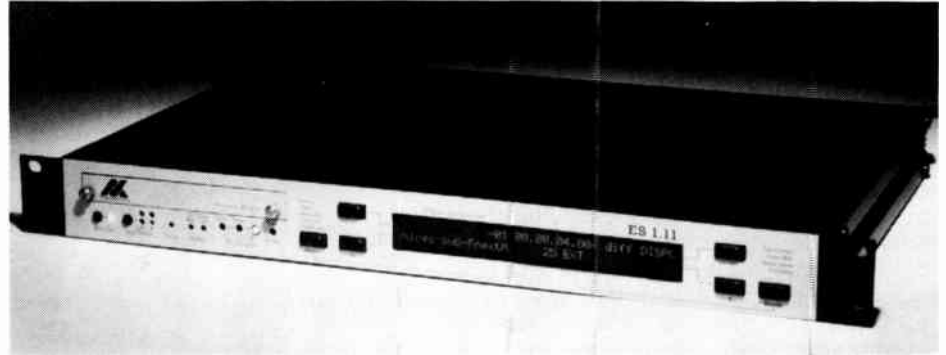
Facilities

Each ES 1.11 has an independent EBU/SMPTE multi-standard time code generator; output level and shape can be adjusted from the front panel. An AK custom gate array, DAK010, handles all time code processing; a Vertical Interval time code (VITC) reader option can be retrofitted.

ES 1.11 automatically identifies TC standards and machines with different time code standards can be freely mixed and synchronized within a system. Four softkeys provide manipulation of all system and machine setups which are menu accessed and displayed on an 80 character LED backlit LCD screen. Specific machine parameters can be "fine tuned" utilizing the softkeys; the unit's parameters are stored in battery backed RAM. The system and machine parameters can also be accessed by an ESBUS controller like ES Eclipse. All popular audio, video and film machine interface parameters are held on EPROM in a front panel program module which can be updated without powering down. Selection of an interface file is made automatically when a machine cable is connected. ES 1.11 can also interface to machines which require serial control.

An Emulation mode converts the ESBUS A port to either Ampex or Sony protocols which allows direct control by a video editor.

MIDI control is possible when an Audio Kinetic's ES SSU system services unit is added to the ESBUS.



ES 1.11

Synchronization

Each ES 1.11 has two processors to maximize comms speed and machine control. The first dedicated processor handles all the system commands and ESBUS communications allowing the second to deal exclusively with servo control.

Lock performance is enhanced by the timeline bus which provides a system wide reference to which all machines lock when in synchronous play. As every machine is effectively resolved to the timeline bus system lock times are determined by the ramp up time of the slowest machine in the system, typically 1 to 2 seconds. 24-bit servo resolution allows ES 1.11 to deal with a wide range of machine requirements, especially those associated with film machine interfacing.

When a machine incapable of servo control or a vari-speed master is required, the timeline is effectively "locked" to that master with the rest of the group following the timeline. The system code may also be locked to the time code of the master machine. A crash record bus is provided for rhythmical manual punch into and out of record. Although the "Live" ESBUS serial command delays are minimal, the Crash Record bus provides direct parallel control for instantaneous record entry and exit.

Specifications

Inputs	Connector
AK-ESBUS A (RS 422, 38.4K baud)	15-way "D" plug
AK-ESBUS B (RS 422, 38.4K baud)	15-way "D" plug
500mA at 8V is externally switchable onto PIN 18 for small ESBUS controllers	
Machine Time Code	All XLR 3-pin plugs standards -35dBm to +15dBm with up to ± 5VDC 1/50-150 x play speed, bi-directional

VITC—Composite Video (25 or Drop-Frame)	BNC plug
Syncs—Composite Video or Frame Rate	BNC plug
Mains -110V or 240 + 10%/-25%, selectable switched, fused, filtered input	IEC plug
Consumption	40W
Outputs	
AK-ESBUS A Linked from input	15-way "D" socket
AK-ES bus B Linked from input 500mA at 8V is externally switchable on to PIN 18 for small ESBUS controllers	15-way "D" socket
LTC Output—All standards front panel adjustable for level 1-17V p-p 10K ohms shape	XLR 3-pin socket
VITC—Composite Video Linked from input	BNC plug
Syncs—Composite Video or frame rate linked from input	BNC plug
Parallel Machine Control	37-way "D" socket
Serial Machine Control (RS 422)	9-Way "D" socket
Physical	
Height	1.75" (44.5mm (1U rack)
Width	19" (482.6mm) (rackmounting)
Depth	280.0mm
Weight	5.6K
ES 1.11	\$3950.00

AUDIO KINETICS, INC.

ES Bus Controller

ES Eclipse 16 Machine ES Bus Controller

ES Eclipse—a 16 machine controller designed for advanced audio post production applications. This EBU/SMPTE bus controller is based on the original Audio Kinetics Eclipse and reflects the latest developments in machine control technology. When used with Audio Kinetics ES 1.11 synchronizers the ES Eclipse represents an innovative step forward in remote systems control.

Physical

A high resolution 40 character 20 line electroluminescent display provides clear monitoring of all functions; a composite video output is provided for remote screens.

System

The ES Eclipse is selectable between 8 or 16 machine control utilizing any ES-bus synchronizer such as the Audio Kinetics ES 1.11. When combined with the ES SSU systems services unit, sophisticated events manipulation is provided.

Dual tasking allows manipulation of an off-line machine during synchronous group operations. A and B groups instantly reset the system into two separate on-line machine configurations.

The ES Eclipse supports all time code standards as well as feet and frames for film work.

Machine Control

Accessing the machine screen provides control of individual transport functions as well as all status information, including a label identifying the machine. Additionally, a start point value can be programmed for film machines.

Variable crawl and jog is provided; system crawl is determined by the speed of the slowest machine.

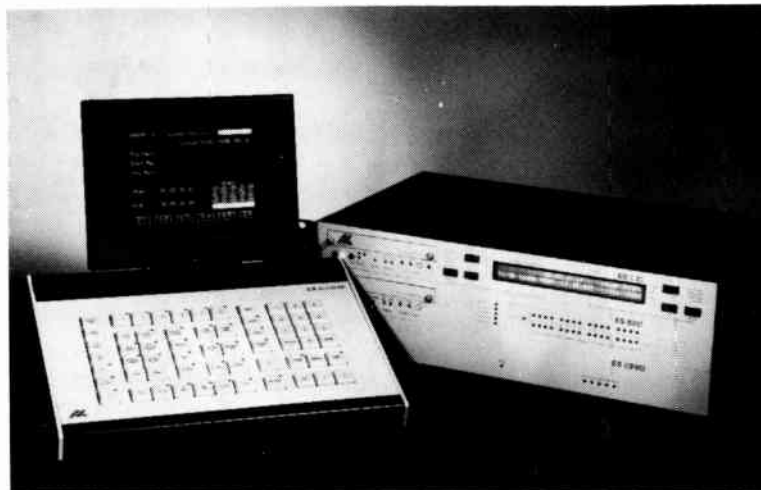
Head and tail stop limits can be programmed for the group and individual machines with display warnings when being approached. This enables confident remote machine room operation.

Offsets

The offset screen provides various operational offset options, including an auto offset key; offsets can be trimmed to frame and sub-frame resolution.

Loops

The loop mode is capable of storing 100 loop memories, each containing loop start and end, record in and out, machine offsets and machine on-line/record enable status. Each loop can be labelled with up to 10 characters for



ES Eclipse Shown with ES 1.11, and ES CPSU

easy reference. "Next" and "Last" keys provide rapid EDL sequencing.

Events

80 sequential events can be programmed to sub-frame resolution. Each event can trigger relays individually or as a group; these are provided by the Audio Kinetics System Services Unit ES SSU.

Q. Keys

12 Q-keys allow users to program command sequences for specific applications such as ADR and SFX assembly; these can be easily edited and labelled.

Off-Line

The ELQ software package supports MS-DOS disc storage for all ES Eclipse loop, offset, event and Q-key information. ELQ can also be used for the off-line entry, editing and labelling of loops to assemble an Edit Decision List (EDL). All the ES Eclipse event memories can be preset. Q-Keys can be written and reconfigured onto a separate Q-key disc for instant entry of operator setup parameters. ELQ utilizes an IBM or compatible computer which is connected to the system via the ELQ port provided on the Controller Power Supply Unit (CPSU).

Specifications

Inputs

CPSU link (RS422 + DC)	25-way "D" socket
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Outputs

Composite video	BNC socket
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Physical

Controller Computer	
Height	37mm
Width	320mm
Depth	249mm
Display	

Height	164mm
Width	206mm
Depth	39mm
Overall	
Height	217mm
Width	320mm
Depth	249mm
Overall	
Weight	4.5kg

CPSU—Relevant Technical Data

Inputs

Mains 110V or 240V + 10%/-25%, selectable switched, fused, consumption 25W	IEC
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Outputs

ES Eclipse link RS422 + DC	37-way "D" socket
ELQ RS232 port	25-way "D" socket
AK Ebus (loopthrough connectors)	15-way "D" socket 15-way "D" plug

Physical

Height	1U (44.5mm)
Width	445mm (19" rackmount)
Depth	130mm
Weight	3kg

ES Eclipse \$7995.00

CPSU—Power Supply for ES Eclipse (Specify 240V/110V model) \$795.00

AUDIO KINETICS, INC.

System Service Unit

ES SSU System Services Unit

ES SSU is a self-contained system services unit which provides an EBU/SMPTE bus with all the auxiliary features required within a machine control network. The module provides event and system relays as well providing a system time code source to drive external equipment such as console automation. This unit will operate on any EBus system but when utilized with the AK-ESbus various time code and sync source references can be distributed throughout the bus.

Interfacing

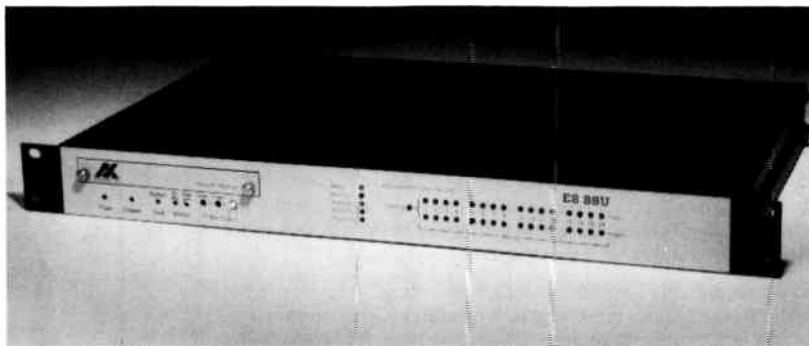
The ES SSU has a time code bus input port which can be used for the input of an external time code generator; the AK-ESbus can then be used for network distribution of the external time code reference. The System Services Unit can also be used to reference the system timeline bus; if no ES 1.11 synchronizer is assigned as the reference master the ES SSU takes over this function automatically.

A time code bus output allows distribution of time code to external devices such as Audio Kinetics MasterMix and Reflex automation systems, time code inserters (Wiper) or musical instruments within a MIDI system. The time code on this bus may be sourced from an ES 1.11 synchronizer's reader or generator without any external patching allowing any machine to be the system time code master.

Similarly, composite video syncs or a video frame rate can be distributed for system wide referencing of the ES 1.11 generators.

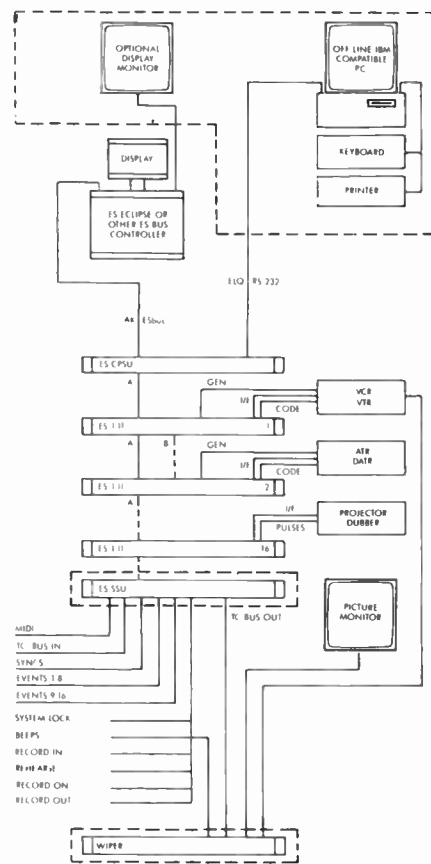
System

The ES SSU provides 16 changeover relays which are able to execute an eighty event sequence. A relay group can be defined to allow multiple outputs for one programmed event. Additional relays provide status indication of record in and out points, record enabled, rehearsing, system lock, and audio beeps. The Beeps relay has a coincident audio output of clicks or beeps. The relays can be programmed to sub-frame or millisecond accuracy. Additional event units can be added to a system to expand the relay capability.



Specifications

Inputs	Connector
AK-ESbus (RS422, 38.4K baud)	15-way "D" plug
AK-ESbus time code bus -30dBm to +10dBm .02-300 x play speed, bi-directional	XLR socket
Syncs - composite video or frame rate	BNC plug
MIDI-in	DIN 5-pin socket
Mains 110-240V + 10/-25% AC externally selectable. Switched, fused, filtered input	IEC plug
Consumption	40W
Outputs	
AK-ESbus (RS422, 38.4K baud)	15-way "D" socket
AK-ESbus time code bus 10K ohm Level adjustable front Panel 1-17V Shape adjustable front panel	XLR plug
Syncs - composite video or frame rate Linked from output	BNC plug
MIDI thru Linked from input	DIN 5-pin socket
MIDI out	DIN 5-pin socket
Audio beeps/clicks Internally adjustable, factory set +4dBm	DIN 5-pin socket
Relays 1-8 - changeover	25-way "D" plug
Relays 9-16 - changeover Services	25-way "D" plug
Record IN - changeover	25-way "D" socket



Rehearse Record ON	Relays (200mA at 5V is available on this connector)
Record OUT	
Beeps	
System lock	
Physical	
Height	1.75" (44.5mm) (1U rackmounting)
Width	19" (482.6mm)
Depth	11 1/2" (290mm)
Weight	11 1/4 lbs. (5.1kg)
ES SSU	\$3950.00
(Specify 240V/110 Model)	

AUDIO KINETICS, INC.**Computer Assisted Mixing Systems****MasterMix Computer Assisted Mixing Systems**

- Floppy disk based • Time code referenced • Automatic mix merging
- Interfaces to most consoles • VCA faders available for retrofit • Integral time code generator • Extremely simple to use

MasterMix interfaces with most automation ready consoles, including Amek, DDA, MCI JH600 and complete packages with VCA faders for Neotek, Neve, Soundcraft and Trident, and many more.

One of the prime reasons for MasterMix's operational simplicity is the fact that whatever updates are made to a mix, the whole current version of the mix is available for replay—there is no need for labelling and assembling sections of mixes.

The mixes are stored in one of four memories on the floppy disk, and reference is taken from standard SMPTE/EBU time code recorded on the multitrack.

Each pass of the mix is stored in the next memory in sequence. Even if only the middle two minutes of a long mix are updated, the whole mix, with its updates, is always transferred to the next memory.

Being disk based, the traditional disadvantages of tape-based systems are eliminated, these being accumulative delay of mix data, using at least two tracks of tape, corruption of data on tape and cost of making archive copies.

- **Disk based** — Storage of mixes is faster, cheaper, more convenient
- **Independent level and mute** — MasterMix allows level and mute data to be written independently giving instant retrieval of level information should a channel be un-muted after a mute has been programmed. (This is console dependent, and may not be available on some DC grouping consoles).
- **Automatic on line edit and merge**
- **Full interface with digital grouping** — When used with Digital Grouping Consoles, the unlimited grouping facilities are supported, with console grouping structures recorded with the mix data
- **Integral time code generator** — The MasterMix MX644 is a complete system incorporating a bidirectional multistandard time code generator. Reverse running code may be generated to extend preroll at the start of a mix
- **Independent of console** — MasterMix systems are available for Digital Grouping and DC Grouping automation ready consoles, or for consoles not prepared for automation
- **Disk-to-disk copying** — Archive copies of mixes may be made on a separate disk
- **Off-line splice** — An option within the software allows sections of a mix stored in memory A, say, to be merged with other parts of a mix stored in memory D, and the resulting mix stored in memory B, for example. This way, preferred sections of two mixes can be quickly merged, off-line
- **Instant mix comparison** — The Compare mode allows instant A/B replay of two stored mixes

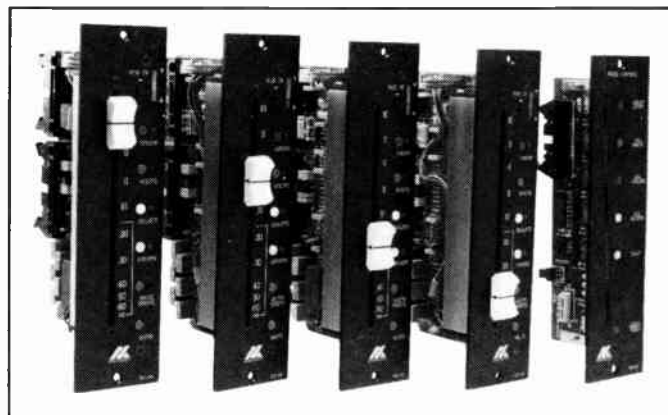
System Configurations

MasterMix Consoles Interfaces are available in two forms:

Digital Grouping consoles, where the fader section, grouping and automation controls are under central processor control, and **DC Grouping** consoles, where only data lines for fader level Read and Write are provided, and the Mute command normally overwrites level data.



**Master Mix
MX644**



VCA Faders

The system components required will depend on the console to be fitted but will normally consist of:

MX644—Central Computer and Controller
MX700—Digital Grouping Interface, or MX800—DC Grouping Interface and where necessary, a Power Supply Unit.

Non-automation ready consoles also require the Audio Kinetics VCA Fader.

Interfaces may be fitted within the console if space permits, or supplied in a rackmounting enclosure.

TD-1B TAPE DEGAUSSER

- Erases audio, video, computer, data tape, magnetic films, cartridges and cassettes
- For tapes up to 3/4 inch
- Accommodates up to 10-1/2 inch NAB reels
- Provides a wide focused magnetic field to assure complete erasure
- Positive results every time with a simple two pass operation for broadcast NAB audio cartridges
- Transient protection to prevent permanent tape damage
- Internal fuse protection
- 115 and 220 volt, 50-60Hz models available

Power

Requirements: TD-1B 115VAC ± 10% 50-60Hz

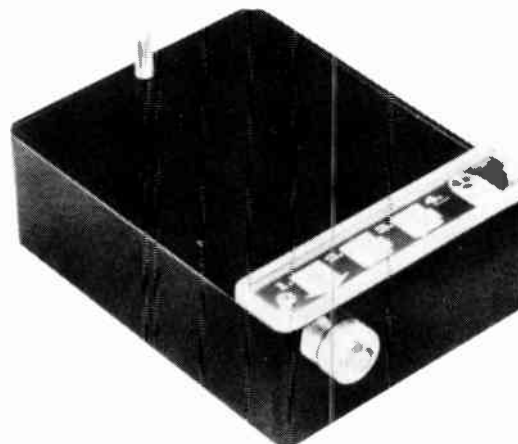
TD-1BF 230VAC ± 10% 50-60Hz

Duty Cycle: One minute ON — Three minutes OFF

Dimensions: 5-1/4" x 7-1/4" x 3"

Weight: Net: 9-1/2 lbs. Shipping: 10 lbs.

Reel Size: Up to 10-1/2" in diameter. Removable center post for large carts



TD-1B - \$125.00
(115V 50-60Hz)

TD-1BF - \$136.00
(230V 50-60Hz)

TD-4A TAPE DEGAUSSER

- Erases audio, video, data tapes, U-Matic cassettes up to 750 oersteds, reels to 16 inches in diameter. See performance chart
- Provides 2550 effective gauss field
- Built-in timer has adjustable "on" cycle and automatic shut-off
- Automatic cooling fan operation
- Overheat light with automatic thermal protection prevents exceeding duty cycle on "Hi" position. Thermal protection resets to normal operation automatically
- Hi-Lo operation allows continuous duty erasing on Lo position for most tapes. See performance chart
- Standard 5/16 inch center post with 3 inch NAB hub supplied
- Conservative design assures long, reliable performance

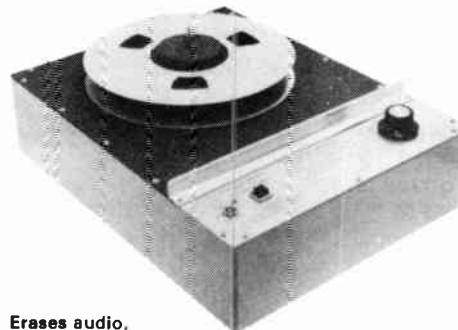
MODEL NUMBER	LINE VOLTAGE	LINE FREQUENCY	LINE CURRENT		MAXIMUM GAUSS		PRICE
			HI	LO	HI	LO	
TD-4A-115-60	110-125VAC	60Hz	8A	4A	2550	2000	\$895.00
TD-4A-115-50	110-125VAC	50Hz	8A	4A	2550	2000	920.00
TD-4A-230-60	220-250VAC	60Hz	4A	2A	2550	2000	955.00
TD-4A-230-50	220-250VAC	50Hz	4A	2A	2550	2000	955.00

Duty Cycle: Hi position 50%, 20 minutes. Lo position — continuous

Dimensions: 13" x 17" x 4"

Shipping

Weight: 46 lbs.



Erases audio, video, computer, and cartridge tape.

TD-5 TAPE DEGAUSSER

- Erases audio, video, data U-Matic cassettes up to 1100 oersteds and 16" diameter
- Provides 3700 effective gauss field
- Built-in timer has adjustable "On" cycle and automatic shut-off
- Automatic cooling fan operation
- Overheat light and automatic thermal protection prevents exceeding duty cycle on "Hi" position, resets to allow normal operation
- Hi-Lo selectable operation allows continuous duty erasing on Lo position for many tapes. See performance chart
- Standard 5/16" center post with 3 NAB hub supplied
- Conservative design assures long reliable performance

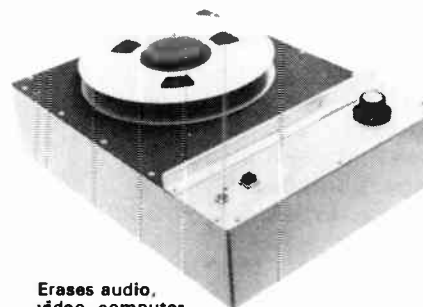
MODEL NUMBER	LINE VOLTAGE	LINE FREQUENCY	LINE CURRENT		MAXIMUM GAUSS		PRICE
			HI	LO	HI	LO	
TD-5-115-60	110-125VAC	60Hz	10	4	3700	2600	\$1080.00
TD-5-115-50	110-125VAC	50Hz	10	4	3700	2600	1140.00
TD-5-230-60	220-250VAC	60Hz	5	2	3700	2600	1170.00
TD-5-230-50	220-250VAC	50Hz	5	2	3700	2600	1170.00

Duty Cycle: Hi position 50%, 20 minutes. Lo position — continuous

Dimensions: 13" x 17" x 4"

Shipping

Weight: 46 lb.



Erases audio, video, computer, and cartridge tape.

AUDIO LTD.

Wireless Microphones

RMS2000 HIGH FREQUENCY WIRELESS MICROPHONE

Size: 3 1/2" x 2 1/2" x 3/4"

RF Freq.: 150-216MHz

Deviation: Max. FCC allowable

Power Output: Max. FCC allowable

Two frequencies switchable transmitter and receiver

Microphone dynamic and electret ± powered

Overload protection to 0dB on all gain setting

8 x 4dB switched gain setting for mikes

2 x 4dB gain settings for 600 ohm line input

Mike switched LF cut

Power Switch: Both on/off and plug

Transmitter shows 80dB on RF level meter

Transmitter shows battery power on receiver

Overall system distortion: .15%

System Signal-to-Noise: < 100dB

Power: 9V MN1604 mallery

Audio compander compression and indicator

Audio response 40-15000kHz ± 1.5dB

Input plug 6 wire lemo

Modulation: FM

The Receiver:

Size: 5 1/2" x 4 1/2" x 1 1/2" with battery compartment

Power Supply: Pack on back with dovetail; 12VDC (8AA cells) or 8 1.2V rechargeable cells—replacing DC pack with 110VAC pack or receiver can also operate without supply pack on an external 9 15V from a Nagra or Video recorder

Outputs: Low impedance mike level (150 ohms) on XLR 3 male plug

Headphone output (+ 10dB) on separate volume control and switch

High impedance output at -10dB on lemo power plug.

This permits getting power from Nagra and putting Audio into middle position of Nagra on one adaptor cable

Meters: Battery and RF level—Switchable to transmitter battery voltage

Harmonic Distortion: .2%

Signal-to-Noise Ratio: -100dB down at 100%

1/2 IF Frequency: 85dB down

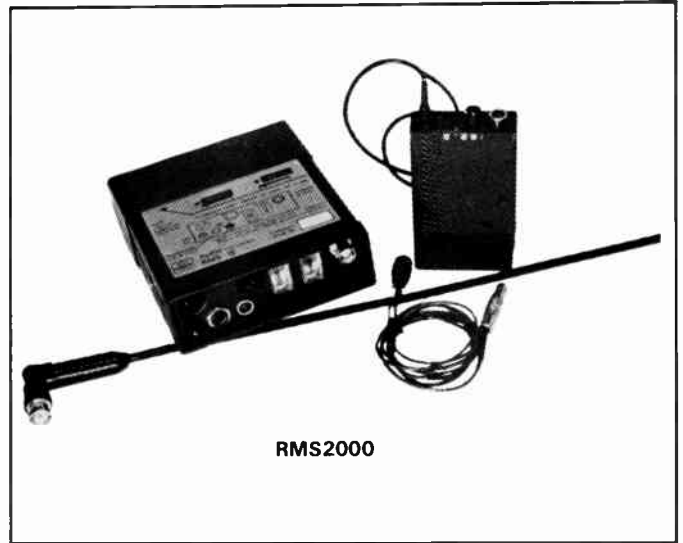
Image Frequency: In excess of 90dB, this gives no chance of crosstalk

RF Signal-to-Noise Ratio: 40dB at 2.5µV

RF Sensitivity: .3µV

Antenna Impedance: 75 ohms, BNC plug

Circuitry: Two printed circuit boards, one RF and one Audio, Mute and Meter circuits. They each plug into the chassis for easy repair and replacement. This also makes for easy advanced circuit changes.



RMS2000

Available Models

- RMS2000** Complete receiver, transmitter, antennas, case and Tram TR50 LAB lavalier, freq. 150-216MHz Dual frequency \$2500.00
- RMS2000U** Complete UHF freq. 450-451MHz, 455-456MHz 3000.00
- RMS2000H** Same as RMS2000 but has handheld transmitter with Shure SM78 microphone 2700.00
- RMS2000UH** Same as RMS2000U but has handheld Shure SM78 microphone. 3200.00
- RMS14FD** Dual receiver and two transmitters on different frequencies, two lavaliers and case. Single frequency transmitter. 3800.00
- RMS2000D** Diversity receiver, all other items and freq. same as RMS2000. . . 3900.00

Accessories

- RMS Receiver only** \$1100.00
- Receiver right angle or straight antenna BNC connector 40.00
- Receiver 110VAC power supply 165.00
- Receiver complete battery pack 40.00
- Battery pack insert to hold batteries 7.00
- Receiver battery slide 17.00
- Receiver ground plane antenna. 250.00
- Receiver rubber ducky antenna 22.00
- Transmitter only with one antenna 1100.00
- Transmitter antenna 15.00
- Transmitter adaptor cables. 60.00
- Transmitter battery clips 5.00
- Transmitter battery cover 5.00
- Tram TR50 LAB lavalier 185.00
- Tram TR50 LABXL lavalier with own plug-in power supply 295.00
- Receiver RMS14 only 1900.00
- Receiver RMS14 adaptor yoke for audio output XLR5 to two XLR3 plugs 80.00

AUDIOPAK, INC.

Broadcast Cartridges

Audiopak Broadcast Cartridges

Time/ Length Empty	A-2 Catalog Number	Sugg. List Price	AA-4 Catalog Number	Sugg. List Price
10 Sec (5.5')	27-200-001	\$3.00		
10 Sec (5.5')	27-210-001	4.50	27-400-010	\$6.40
20 Sec (13')	27-220-001	4.50	27-400-020	6.40
35 Sec (22')	27-235-001	4.50	27-400-035	6.40
40 Sec (25')	27-240-001	4.50	27-400-040	6.40
50 Sec (32')	27-250-001	4.50	27-400-050	6.40
65 Sec (41')	27-265-001	4.50	27-400-065	6.40
70 Sec (44')	27-270-001	4.50	27-400-070	6.40
90 Sec (57')	27-290-001	4.50	27-400-090	6.40
100 Sec (63')	27-210-101	4.50	27-400-100	6.40
140 Sec (88')	27-214-101	5.00	27-400-140	7.10
2.5 Min (94')	27-202-511	5.00	27-400-150	7.10
3.0 Min (113')	27-203-011	5.00	27-400-180	7.10
3.5 Min (132')	27-203-511	5.00	27-400-210	7.10
4.0 Min (150')	27-204-011	5.00	27-400-240	7.10
4.5 Min (169')	27-204-511	5.00	27-400-270	7.10
5.0 Min (188')	27-205-011	5.70	27-400-300	8.60
5.5 Min (207')	27-205-511	5.70	27-400-330	8.60
6.0 Min (225')	27-206-011	5.70	27-400-360	8.60
6.5 Min (244')	27-206-511	5.70	27-400-390	8.60
7.5 Min (282')	27-207-511	5.70	27-400-450	8.60
8.5 Min (318')	27-208-511	5.70	27-400-510	8.60
10.5 Min (394')	27-210-511	5.70	27-400-630	8.60

Replacement Parts

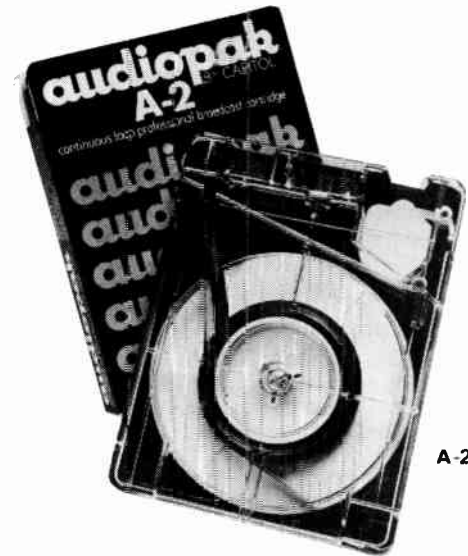
Base with Screw				
Insert	C5-245-996	\$1.85	C5-245-934	\$2.65
Brake Spring	C8-785-040	.25	N/A	N/A
Brake Arm	C8-360-030	.25	N/A	N/A
Teflon Washer	C8-440-015	.10	C8-440-015	.10
Fixed Hub and				
Flange	C5-582-010	1.50	C5-552-010	1.50
Pressure Pad	C8-030-582	.15	N/A	N/A
Front Pressure				
Pad	N/A	N/A	C5-030-833	.25
Side Pressure Pad	N/A	N/A	C8-030-833	.20
Cover	C5-545-995	1.40	C5-545-934	1.85
Screw	C5-620-055	.08	C8-820-055	.08
Label (Sheet				
of 10)	C7-212-051	.25	C7-212-051	.25
"O" Ring	C9-000-999	.05	C9-000-999	.05

Lubricated Tape

Formula 17	A-Z Catalog Number	
7" x 1800' Reel	17-918-100	\$13.50
4200' Hub	17-942-605	16.25
8400' Hub	17-984-605	25.80
Q17 HOLN		
7" x 1800' Reel	17-618-613	15.80
3600' Hub	17-636-613	24.10

Note: The AA-3 cartridge is available on a replacement basis only.

The key feature of the AA-4 is the new SGS-4 broadcast mastering tape. When recorded on a high quality cartridge recorder, the SGS-4 tape can produce virtually identical copies of the best analog or digital master tapes. The SGS-4 tape, available exclusively in AA-4 cartridges, offers nearly 5dB higher saturation headroom at 16kHz (7 1/2ips) compared to the HOLN tape in AA-3 cartridges. No bias adjustment is usually necessary when recording on machines optimized for HOLN or other "hot" tapes. If the high end is overly bright, a touch up of record equalization will restore flatness and further improve the signal to noise ratio. The new binder formulation used in the SGS-4 tape also has improved physical properties, which result in longer life, less maintenance and a cleaner sound than is obtainable with most other broadcast cartridges. The AA-4 cartridge consists of SGS-4 tape loaded into the reliable and time proven AA-3 plastic case. The plastics are tinted to a lighter blue shade than AA-3 to provide a clear distinction between the two products. The combination of the SGS-4 tape and AA-3 plastics results in unbeatable recording performance and the longest life with the same ruggedness and exceptional phase stability as the AA-3.



A-2



AA-4

SGS-4 Specifications

Physical Properties

Base Material:	Polyester
Tape Width:	0.248"
Width Tolerance:	+ 0.000"
	- 0.002"
Thickness	
Base:	0.85 mils
Magnetic Coating:	0.36 mils
Lubricant Coating:	0.04 mils
Overall:	1.25 mils

Magnetic Properties

Coercivity (Hci):	350 oersteds
Retentivity (Br):	1400 gauss
Remanence (Br):	0.80 maxwells/1/4"

Electromagnetic Properties

Reference Tape:	Q17 HOLN
Reference Bias:	0
Relative Sensitivity, 1kHz:	+ 0.5dB
Relative Sensitivity, 10kHz:	+ 2.5dB
Relative Sensitivity, 16kHz:	+ 3.5dB
Maximum Output Level, 1kHz	
at 3% THD:	+ 1.0dB
Maximum Output Level, 10kHz:	+ 3.0dB
Maximum Output Level, 16kHz:	+ 5.0dB

Refer to Green Section for Addresses and Telephone Numbers.

AUDIO TECHNICA US, INC.

Microphones

800 SERIES MICROPHONES

AT801 Electret Condenser (Omni)

• Sensitivity: -48dBm • Impedance: 600 ohms • Frequency Response: 40-18,000Hz • Max. Input SPL: 125dB, 1% THD • S/N: 50dB/ μ bar • Battery: 1.5V AA Type, 6 month life • Switch: on/off • Connector: XLRM

AT801 \$115.00

AT802 Moving Coil Dynamic (Omni)

• Sensitivity: -56dBm • Impedance: 600 ohms • Connector: XLRM • Frequency Response: 50-15,000Hz

AT802 \$110.00

AT803a Sub-Miniature**Clip-On Electret Condenser (Omni)**

• Sensitivity: -49dBm • Impedance: 400 ohms • Max. Input SPL: 130dB, 1% THD • S/N: 45dB/1kHz/1 μ bar • Battery: 1.5V N Type, 4 month life • Switch: on/off audio/battery • Connector: XLRM • Frequency Response: 30-20,000Hz

AT803a \$126.00

Note: Also operates on 9-52V phantom power

AT805A Miniature Clip-On Electret Condenser (Omni)

• Sensitivity: -57dBm • Impedance: 600 ohms • Frequency Response: 50-15,000Hz • Max. SPL: 130dB, 1% THD • S/N: 50dB/ μ bar • Battery: 1.4V Mercury cell, 600 hours life • Switch: on/off • Connector: XLRM

AT805A \$77.00

AT811 Electret Condenser (Uni-Cardioid)

• Sensitivity: -57dBm • Impedance: 600 ohms • Frequency Response: 50-20,000Hz • Max. Input SPL: 130dB, 1% THD • S/N: 50dB/ μ bar • Battery: 1.5V AA Type, 6 month life • Switch: on/off • Connector: XLRM

AT811 \$125.00

AT812 Moving Coil Dynamic (Uni-Cardioid)

• Sensitivity: -60dBm • Impedance: 600 ohms • Frequency Response: 50-15,000Hz • Switch: on/off • Connector: XLRM

AT812 \$135.00

AT813 Electret Condenser (Uni-Cardioid)

• Sensitivity: -55dBm • Impedance: 600 ohms • Max. Input SPL: 125dB, 1% THD • S/N: 50dB/1kHz/1 μ bar • Battery: 1.5V AA Type, 6 month life • Switch: on/off • Connector: XLRM

AT813 \$138.00

AT813/XLR 141.00

AT813R Remote-Powered**Electret Condenser (Uni-Cardioid)**

• Sensitivity: -49dBm • Impedance: 200 ohms • Max. Input SPL: 141dB, 1% THD • S/N: 50dB/1kHz/1 μ bar • Power Requirement: 9-52VDC phantom power • Connector: XLRM • Frequency Response: 30-20,000Hz

AT813R \$198.00

AT814a Moving Coil Dynamic (Uni-Cardioid)

• Sensitivity: -56dBm • Impedance: 250 ohms • Connector: XLRM • Frequency Response: 50-16,000Hz

AT814a \$159.00

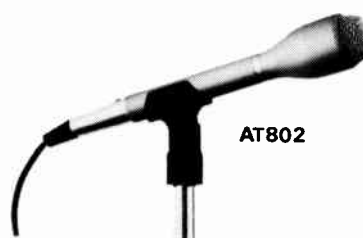
AT814a/XLR 164.00

AT815a Electret**Condenser/Line/Gradient (Uni-Directional)**

• Sensitivity: -44.5dBm • Impedance: 600 ohms • Max. Input SPL: 115dB, 3% THD • S/N: 50dB/1kHz/1 μ bar • Battery: 1.5V AA Type, 4 month life • Switch: flat/roll off • Connector: XLRM • Frequency Response: 40-20,000Hz

AT815a \$260.00

AT815/XLR 265.00



AT802



AT803a



AT813R



AT831a



AT835



AT836

AT815R Electret Condenser Line/Gradient (Uni-Directional)

• Sensitivity: -43dBm • Impedance: 200 ohms • Max. Input SPL: 140dB, 1% THD • S/N: 50dB/1kHz/1 μ bar • Power Requirement: 9-52VDC phantom power • Frequency Response: 40-20,000Hz

AT815R \$330.00

AT831a Sub-Miniature Clip-On Electret Condenser (Uni-Cardioid)

• Sensitivity: -50dBm • Impedance: 400 ohms • Max. Input SPL: 130dB, 1% THD • S/N: 45dB/1kHz/1 μ bar • Battery: 1.5V N Type, 4 month life • Switch: on/off audio/battery • Connector: XLRM • Frequency Response: 40-20,000Hz (close); 70-20,000Hz (distant)

AT831a \$150.00

AT835 Electret Condenser Line/Gradient (Uni-Directional)

• Sensitivity: -44.5dBm • Impedance: 600 ohms • Max. Input SPL: 115dB, 3% THD • S/N: 50dB/1kHz/1 μ bar • Battery: 1.5V AA Type, 4 month life • Switch: flat/roll off • Connector: XLRM • Frequency Response: 40-20,000Hz

AT835 \$235.00

AT836 Moving Coil Dynamic (Uni-Cardioid)

• Sensitivity: -56dBm • Impedance: 250 ohms • Connector: XLRM • Frequency Response: 50-17,000Hz

AT836 \$147.00

AT836/XLR 152.00

AT838G Moving Coil Dynamic (Uni-Cardioid)

• Sensitivity: -63dBm • Impedance: 600 ohms • Connector: XLRM • Frequency Response: 100-10,000Hz

AT838G \$99.00

AUDIO TECHNICA US, INC.

Microphones

UniPoint™ Series Microphones
AT837 and AT859

Common Features

Frequency Response: 40-18,000Hz (close)
70-18,000Hz (distant)

Battery: NEDA Type 910 ("N-Type")

Switch: On-Off (battery only)

Phantom Power Requirements: 9-52VDC (2mA)

Output Connector: 3-pin XLRM, phased and balanced

AT837 Designed specifically for permanent sound reinforcement installation, the AT837 mounts directly to any podium, pulpit, or table surface. From the microphone, 9'9" (3 meters) of shielded cable is terminated by a screw-on mini-plug for positive connection to the AT8504 power module.

• Output Impedance: 600 ohms with or without power module • Signal to Noise Level: >40dB at 1kHz/0.1Pa • Weight (microphone less cable): 5 oz. • Microphone Length: 14¹/₁₆" above mounting surface • Accessories Furnished: AT8102 Windscreen, AT8504 Power Module, Battery

AT837\$150.00

AT859 The AT859 lets you instantly vary the length from 11" to 19" with its telescoping wand. It fits any standard A-T stand mount for use on podiums, floor, or desk stands.

• Output Impedance: 400 ohms • Signal to Noise Level: >45dB at 1kHz/0.1Pa • Weight (microphone less cable): 3.6 oz. • Microphone Length: 11⁷/₁₆" to 18²/₆₄" • Accessories Furnished: AT8102 Windscreen, AT8405 Stand Clamp, Battery

AT859\$190.00

AT853, AT855, AT857AM and AT857QM

Common Features

Frequency Response: 30-20,000Hz

Sensitivity: -50dB (0dB = 1mW/Pa)

Output Impedance: 400 ohms with power module, 600 ohms without module (AT857QM 400 ohms)

Signal to Noise Level: >47dB at 1kHz/0.1Pa

Battery: NEDA Type 910 ("N-Type")

Switch: On-Flat/On-Roll-off/(Off-battery only) (AT857QM Flat/Roll-off recessed)

Phantom Power Requirements: 9-52VDC (2mA)

Output Connector: 3-Pin XLRM, phased and balanced

AT853 This tiny microphone is barely over 1³/₁₆" long, < 1/2" in diameter, and weighs just 1/2 oz. Comes with two mounting methods, cable hanger or stand adaptor.

• Cable: 25' permanently attached to microphone, TA3F output connector • Accessories Furnished: AT8102 Windscreen, AT8505 Power Module, Battery, Desk Stand Adaptor, Steel Hanging Adaptor

AT853\$210.00

AT853W White finish version of AT853.\$240.00

AT855 For those installations where the flexibility of a gooseneck is not desired, the AT855 with fixed tube is offered. Ideal for both speech and full-range music applications.

• Cable: 9'9" permanently attached to microphone TA3F output connector • Accessories Furnished: AT8102 Windscreen, AT8505 Power Module, Battery

AT855\$210.00

AT857AM The AT857AM is similar in size to the AT857QM, except that it has a separate power module. It directly mounts to any 5/8"-27 desk or floor stand, or to the threaded surface adaptor included.

• Cable: 9'9" permanently attached to microphone, TA3F output connector • Accessories Furnished: AT8102 Windscreen, AT8505 Power Module, Battery

AT857AM\$250.00



AT857QM Intended for both quality sound reinforcement and professional recording and broadcasting, the AT857QM provides virtually ruler-flat response for both voice and music, with a low frequency roll-off option built-in. Almost 14" in length, the microphone plugs into any standard XLR surface or cable connector. Supplied with the AT8102 windscreen.

AT857QM\$220.00

AT857QML 19" long version of AT857QM\$238.00

AT871 UniPlate™ Unidirectional Boundary Microphone

The AT871 is a wide range condenser microphone with a hemi-cardioid (half-space cardioid) polar pattern. It is useful in surface mount applications such as high quality sound reinforcement, professional recording, television, and other demanding sound pickup situations. The AT871 incorporates a specially modified UniPoint microphone capsule.

• Element: Fixed charge condenser • Polar Pattern: Half-cardioid (cardioid in hemisphere above mounting surface) • Frequency Response: 30-20,000Hz • Impedance: 400 ohms • Battery Type: Use only "leak-proof" N.E.D.A. type 910 batteries • Switch: Off, Flat, "roll-off" ("off" only for battery operation) • Phantom Power Requirements: 9-52VDC • Output Connector, Power Module: Integral 3-pin XLRM, phased • Cable: 25' (7.6m) long, 1/8" (3.2mm) diameter 2-conductor, shielded cable with TA3F connectors • Accessories Furnished: AT8505 power module, battery, vinyl carrying case

AT871\$260.00

Prices and Specifications Subject to Change Without Notice.

AT4071/AT4073 40 Series Line and Gradient Capacitor Microphones

Common Features:

- Element: Externally polarized (DC bias) capacitor • Polar pattern: Lobar (AT4071) Narrow Directional (AT4073) • Frequency response: 30-20,000Hz • Impedance: 250 ohms balanced, transformerless • Hi-pass filter (lo-cut): 150Hz, 12dB/octave • Power Requirements: 12-48VDC Phantom • Current Consumption: 2.9mA • Accessories Furnished: AT8405 snap-in clamp for standard 5/8" — 27 threaded stands • Protective carrying case

The AT4071 and AT4073 are transformerless, externally-polarized capacitor microphones. These highly-directional, precision transducers have been specially created to meet the critical long-distance pickup demands of broadcasting, film/TV sound, professional recording and theater sound reinforcement.

Extended, Flat Response — On or Off Axis

Each of the two Line + Gradient microphones features a broad-band, linear on-axis frequency response, with maximum rejection of sounds from both the sides and the back of the microphone. Off axis, the response remains highly uniform. The resultant lack of sound coloration on and off axis makes these microphones particularly useful for miking dynamic action in film/TV audio as well as in "spot" miking techniques in the music studio or theater.

Unrestricted Sonic Purity Through Transformerless Output

Each of the 40 Series microphones delivers its balanced output without the use of a transformer. The result is a cleaner output even under high-output conditions.

Higher Output — Lower Noise

The AT4071 and AT4073 provide extremely high output and a noise floor so low it is hardly measurable, much less audible. The result is microphones that can be used with unreserved confidence in distant miking applications and even under the stringent demands of today's digital recording systems.

Unprecedented Lighter Weight, Shorter Length

Overall length of the AT4071 is 15⁹/₁₆" while the shorter AT4073 is only 9¹/₈". The AT4071 weighs 5.8 oz. and the AT4073 4.2 oz., adding practically no noticeable weight to the end of a fishpole or the top of a mini-cam.

Innovative Capsule/Interference Tube Design Offers Two Real Benefits

An ordinary line microphone has its capsule positioned immediately at the rear of the interference tube. The AT4071/4073 capsule is located entirely within the tube. Both the diaphragm and the side ports are exposed to the same acoustic environment.

One significant result is that the 40 Series Line + Gradient microphones are noticeably less sensitive to noise caused by wind turbulence or the "encounter" noise of panning action.

The second benefit is a marked reduction in proximity effect. This means that recordings made at varying distances will remain more consistent in response, making both production and editing quicker, easier, and less costly.

Built-in, Selectable High-Pass Filter

An integral 150Hz high-pass filter may be selected to "roll-off" the low frequency response, thereby attenuating unwanted sounds such as noise from traffic or air-handling systems.

Convenient Powering

The AT4071 and AT4073 will operate in conjunction with any remote "phantom" or "simplex" power source supplying from 12 to 48VDC. This voltage not only powers the microphone's impedance converter, but is stepped-up to a higher voltage internally to polarize the capacitor element.

AT4071 \$900.00
AT4073 750.00



AT4031 40 Series Cardioid Capacitor Microphone

- Element: fixed-charge, permanently polarized capacitor • Polar Pattern: unidirectional (cardioid) • Frequency Response: 30-20,000Hz; • Sensitivity: -44dBm (0dB = 1mW/Pa*) • Impedance: 100 ohms balanced • Signal to Noise Ratio: > 50dB at 1kHz, 0.1 Pa* • Power Requirements: 9-52VDC • Current Consumption: 4mA typical, 9-52VDC • Hi-pass Filter: 3dB down at 80Hz, 12dB/octave • Weight (less cable and clamp): 4.8 oz. (136g) • Dimensions: 6⁵/₁₆" (159.5mm) long, 1³/₁₆" (21mm) body diameter

The AT4031 is a pressure-gradient capacitor microphone with a uniform cardioid polar pattern. The frequency response is smooth over an extended 30-20,000Hz range, with a slight rise occurring in the high-frequency region. It is recommended for professional recording and critical applications in broadcast.

The AT4031 combines low self-noise, high output and a very high SPL (sound pressure level) handling capability, facts that contribute much to the ease with which it may be used to record or reinforce sound sources of extremely wide dynamic range. The AT4031 may be subjected to SPL's as high as 140dB before producing even 1% THD.

And, while the AT4031 delivers uncompromised studio performance, its rugged construction makes it a reliable choice to meet the tough physical demands of sound reinforcement or field recording. The case of the AT4031 is turned brass, not thin-wall aluminum, and the surface is plated in black chrome for durability and low reflectivity.

AT4031 \$325.00

Accessories:

AT8202 In-line Attenuator \$39.00
AT8314 2-conductor, shielded, vinyl-jacketed, broadcast type cable with XLR connector at microphone end, XLRM connector at equipment end. Available in 10', 25', 30', 50' and 100' lengthsPOR
AT8407 Universal "clothes-pin" stand clamp 14.95
AT8415 Shock Mount for boom or stand operation 40.00
AT8506 48V Microphone Power supply 150.00

* 1 Pascal = 10 dynes/cm² = 10 microbars

AUDIO TECHNICA US, INC.**Production Mixer****AT4462 Stereo Field Production Mixer**

The AT4462 has four input channels. Channels 1 and 2 are mono, and continuously pannable. Channels 3 and 4 are true stereo inputs; each dual-concentric control adjusts the level of a pair of inputs, such as a stereo microphone, a pair of microphones, or external tape. This combination of mono and stereo inputs will accommodate practically any set-up for field production mixing.

Every exterior surface on the AT4462 is 1/16" sheet metal. Corners are rounded to prevent cable hangups and protect adjacent equipment. Additional side flanges of 1/16" steel add structural integrity and extend forward to protect all front-panel controls from impact damage.

Weighing only 74 oz., the AT4462 can be comfortably carried for long periods. When used in the supplied protective bag, the impact-absorbing inserts rest against the body for added comfort, while the shoulder strap evenly distributes the weight.

The AT4462 operates from two readily-available 9V alkaline batteries. An optional third battery works with these to supply 12V phantom power. Battery life, at maximum load, is a full four hours.

The AT4462 will accept any external power from 12 to 18VDC. A special circuit allows the mixer to accept external power of either polarity. Battery pack, an automotive battery, auxiliary power feed from a VCR, or virtually any AC adaptor—the AT4462 operates from all these sources.

Inputs

Each XLR-type channel input on the AT4462 will accept either mike or line level signals, by setting the associated switch to Line or Mike. When a channel is set to the Line position, phantom power cannot be applied to that channel.

An additional switch next to each input reduces incoming signal levels by 20dB, in either the Line or Mike position. When switched in, the attenuator decreases overload distortion potential when miking close, or when mixing high-level line signals. Full gain is preferred for distant miking, or normal line signals.

Each input features a selectable lo-cut filter, for reduction of microphone handling noise and general ambient low-frequency noise. The filters operate at 6dB per octave with a 3dB down point of 150Hz.

Outputs

Both Left and Right program outputs are transformer-coupled balanced. An individual switch for each output selects mike or line level. The Output Mode switch converts the stereo outputs to dual mono. In the Mono mode, the AT4462 can mix up to 6 inputs; the summed signal is available at either output.

The AT4462 output is remarkably quiet, with an equivalent input noise level < -127dBV.

A built-in oscillator provides amplitude-equalized reference tones at 1kHz, 400Hz, or 4.5kHz. The Master level control adjusts the output level of the oscillator. The different frequencies ensure quick verification of telco line equalization.

**AT4462**

Pressing and holding the Slate button activates a one-second tone, with the same selectable frequencies as the tone oscillator. When the tone is finished, an internal omnidirectional electret condenser microphone becomes live for track and cueing announcements. The internal mike is good enough to use as an emergency back-up broadcast mike.

Turning any input channel level control fully counterclockwise activates a pre-fader cue which disconnects that channel from the mixer and bus outputs. The cue mix is available only at the headphone output. This allows off-air monitoring of auxiliary signals, and allows the mixer operator to be fully aware of any important upcoming information.

The AT4462 has two automated circuits. A true stereo limiter and Lev-Alert.

The limiter operates in one of two modes—Sync or Sep. In the Sync mode, any excessive signal on either channel will activate limiting on both channels. This prevents collapse of the stereo image. The SEP mode engages two discrete limiters—one for each output channel, for situations where the left and right outputs are handling unrelated material.

The limiter action is very rapid, to maintain maximum signal integrity; attack time is 3ms, and release time is 500ms. The limiter threshold is user-adjustable.

Lev-Alert is a unique Audio-Technica circuit that is an audible analog of the peak LED display. When the Lev-Alert circuitry is active, a tone is heard, only at the headphone output, whenever peaking or limiting occurs. This can alert the mixer operator to an overload situation without having to continually watch the VU meters. An internal trim adjusts the output level of the Lev-Alert tone oscillator.

Multiple AT4462s may be interconnected with a single cable, at the 1/4" stereo Bus In and Bus Out jacks. The buffered signal at the Bus Out jack is a premaster mix of all input signals, and presents a very low source impedance (15 ohms), allowing operation into virtually any load impedance.

AT4462 \$1295.00

AUDIO TECHNICA US, INC.

Phono Cartridges/Cables

**ATP-1, ATP-2 and ATP-3
Broadcast Phono Cartridges**

Common Features:

• Output at 5cm/sec 5.3mV • Channel balance 1.5dB • Tracking force 3-5g ATP-1 and 2, 2-3g ATP-3 • Vertical tracking angle 20° (IEC/DIN standards) • Recommended load impedance 47,000 ohms • Cartridge inductance 600mH • DC resistance 500 ohms • Terminals .050" diameter • Cartridge weight 7.2g

ATP-1

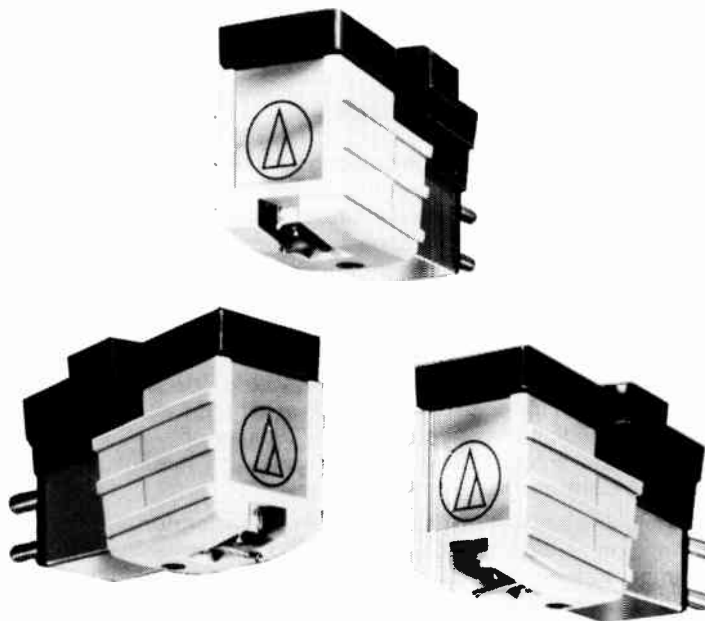
• Frequency Response 20-20,000Hz • Channel Separation 1kHz/10kHz 21/16 • Stylus tip size 6 mil spherical • Stylus assembly color white/red • 3-5g, separation 21dB

ATP-1\$45.00
ATP-N1 Replacement stylus25.00

ATP-2

• Frequency response 15-20,000Hz • Channel separation 1kHz/10kHz 23/17 • Stylus tip size 4 x 7 mil elliptical • Stylus assembly color white/blue • 3-5g, separation 23dB

ATP-2\$60.00
ATP-N2 Replacement stylus35.00



ATP-3

• Frequency response 15-25,000Hz • Channel separation 1kHz/10kHz 23/17 • Stylus tip size 3 x 7 mil nude elliptical • Stylus assembly color white/bronze • 2-3g, separation 23dB

ATP-3\$80.00
ATP-N3 Replacement stylus50.00

Supercable Cable Assemblies

Microphone Cables

Model Number	Length	Connectors	Price
AT8314-10	10'	XLRF-XLRM (Lo-Z)	\$20.70
AT8314-20	20'	XLRF-XLRM (Lo-Z)	25.20
AT8314-25	25'	XLRF-XLRM (Lo-Z)	28.05
AT8314-30	30'	XLRF-XLRM (Lo-Z)	30.45
AT8314-50	50'	XLRF-XLRM (Lo-Z)	43.20
AT8314-100	100'	XLRF-XLRM (Lo-Z)	63.60
AT8312-10	10'	XLRF-1/4" (Hi-Z)	19.05
AT8312-20	20'	XLRF-1/4" (Hi-Z)	23.10
AT8312-20S	20'	XLRF-1/4" (Hi-Z pin 3 hot)	23.10
AT8312-25	25'	XLRF-1/4" (Hi-Z)	25.20

Guitar Cables

AT8316-1	1'	1/4"-1/4" phone plug	\$10.50
AT8316-3	3'	1/4"-1/4" phone plug	11.40
AT8316-5	5'	1/4"-1/4" phone plug	12.60
AT8316-10	10'	1/4"-1/4" phone plug	14.70
AT8316-15	15'	1/4"-1/4" phone plug	17.40
AT8316-20	20'	1/4"-1/4" phone plug	19.50
AT8316-25	25'	1/4"-1/4" phone plug	23.40
AT8316-30	30'	1/4"-1/4" phone plug	24.90
AT8316-1R	1'	1/4"-1/4" 90°	12.00
AT8316-3R	3'	1/4"-1/4" 90°	13.05
AT8316-5R	5'	1/4"-1/4" 90°	14.10
AT8316-10R	10'	1/4"-1/4" 90°	16.20
AT8316-15R	15'	1/4"-1/4" 90°	18.90
AT8316-20R	20'	1/4"-1/4" 90°	21.00
AT8316-25R	25'	1/4"-1/4" 90°	24.90



Speaker Cables (16-gauge jacketed)

Model Number	Length	Connectors	Price
AT680-3	3'	1/4"-1/4" phone plug	\$12.60
AT680-5	5'	1/4"-1/4" phone plug	14.10
AT680-10	10'	1/4"-1/4" phone plug	16.05
AT680-15	15'	1/4"-1/4" phone plug	18.90
AT680-20	20'	1/4"-1/4" phone plug	21.30
AT680-25	25'	1/4"-1/4" phone plug	23.70
AT680-50	50'	1/4"-1/4" phone plug	35.85
AT680-15B	15'	1/4"-dual banana	19.80
AT680-25B	25'	1/4"-dual banana	24.75
AT680-50B	50'	1/4"-dual banana	36.75

Speaker Cables (18-gauge zip cord)

AT681-3	3'	1/4"-1/4" phone plug	\$ 9.90
AT681-5	5'	1/4"-1/4" phone plug	10.35
AT681-20	20'	1/4"-1/4" phone plug	12.90
AT681-25	25'	1/4"-1/4" phone plug	13.95
AT681-50	50'	1/4"-1/4" phone plug	19.95
AT681-25	25'	1/4"- dual banana	14.85

MIDI cables (priced and sold in bags of 12 only)

	Black	Red	Yellow	Blue		
AT8322	3'	-03BK	-03RD	-03YL	-03BL	\$2.85
AT8322	6'	-06BK	-06RD	-03YL	-03BL	3.60
AT8322	15'	-15BK	-15RD	-15YL	-15BL	5.25

AUDIO TECHNOLOGIES, INC.

Amplifiers/Interfaces

M-1000 Dual Microphone Amplifiers

• Transformer coupled inputs and outputs incorporate full electrostatic and magnetic shielding • XLR type input connectors • Low noise: -124dBm equivalent input noise (20kHz bandwidth) • High input overload: 125mVRMS minimum • High gain: 72dB, front panel adjustable • Low distortion: .2% maximum with input levels up to 100mVRMS • Flat response: ± 25 dB, 30 to 20,000Hz

M-1000-1 Dual, transformer outputs \$365.00
M-1000-2 Dual, balanced differential outputs \$365.00

Dual Microphone Amplifiers with Phantom Power

M-1000-1P Dual, transformer outputs 48V phantom power . . . \$395.00
M-1000-2P Dual, balanced differential outputs 48V phantom power . . . \$395.00

L-1000 Dual Line Amplifiers

• Balanced differential inputs: 30,000 ohm bridging, fully transient protected and RF suppressed • 80dB common mode hum rejection • High input overload capability: +24dBm bridging • Low noise: -107dBm equivalent input noise (20kHz bandwidth) • Low distortion: .2% max. (transformer output, .05% max. (direct outputs) • Flat response: ± 25 dB, 20 to 20,000Hz • 34dB voltage gain: front panel adjustable

L-1000-1 Dual, transformer outputs \$345.00
L-1000-2 Dual, balanced differential outputs \$345.00

Microphone and Line Amplifier/Mixers

ML-1000-1 Transformer outputs \$385.00
ML-1000-2 Balanced differential outputs \$385.00

P-1000 Stereo Phono Amplifiers

• High gain: 1mVRMS at 1kHz for +8dBm output. Front panel adjustable, accepts any cartridge • High input overload: 320mVRMS at 1kHz, cannot be overloaded even by direct and digitally mastered disks driving high output cartridges • Lowest noise: 80dB S/N referred to 10mVRMS at 1kHz, cartridge source impedance • Flat response: RIAA curve $\pm .25$ dB • High boost switch • High cut switch • Active feedback 2 pole high pass filter blocks rumble, record warp and seismic pickup without loss of audio, 18dB to 26dB rejection in the 10 to 7Hz tone arm resonance range • Low distortion: .2% max. (transformer output) .05% max. (direct outputs) • Mounting: brackets supplied for internal turntable cabinet mounting

P-1000-1 Dual/stereo transformer outputs \$365.00
P-1000-2 Dual/stereo balanced differential outputs \$365.00



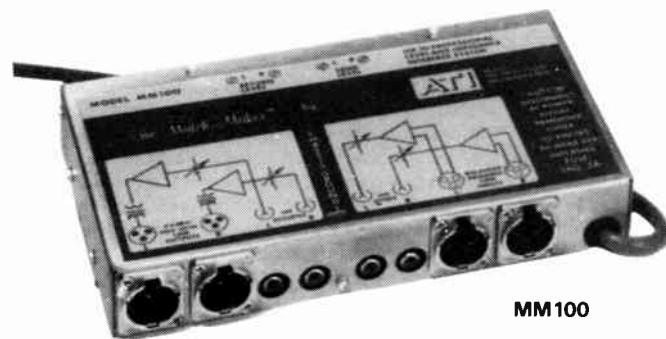
MA-1000 Stereo Power Amplifier

• 10W per channel—Stereo • 25W—mono bridged • Balanced bridging inputs • Front level control and headphone jack rear speaker terminals • Electronic output protection instantaneously limits output voltages and current to safe levels • Mode control switches both inputs and outputs for mono bridged operation • Ideal headphone booster or monitor amplifier for low output consoles. Balanced differential inputs allow internal console connection without causing ground loops.

MA-1000-1 Stereo 10W/Mono Bridged 25W \$385.00

Rackmount Kits

P/N 20021-501 Single unit, centered mount \$17.00
P/N 20024-501 Double, side-by-side mount \$22.00



MM100



DP100

MM100 — The Match Maker™

Bi-Directional IHF ↔ PRO Level/Impedance Interface

Interconnects consumer/industrial reel to reel and cassette recorders, graphic equalizers and noise reduction systems, audio effects processors and digital reverbs into professional 600 ohm balanced, +4dBm systems without loading distortion, hum loops, RF pickup or high frequency rolloff.

60dB line input CMR hum rejection, effective RF protection, adjustable IHF output level. True transformer balanced and protected line outputs drive +22dBm at under .01% THD, 20Hz to 20kHz with +0, -.25dB response and over 98dB dynamic range. Adjustable line outputs. Self-contained power supply, Velcro™ or rack panel mounting, one or two units in 1 3/4".

Match-Maker \$249.00
P/N 20273-501 Rackmount panel, single or dual \$22.00

DP100 — The Disc-Patcher™

Uni-Directional IHF → PRO Level/Impedance Interface

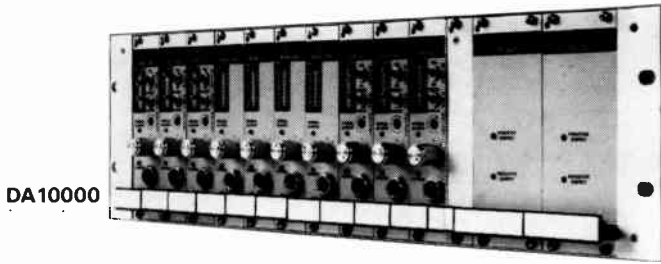
Interconnects compact digital audio disc players. Off-air monitor tuners, ENG cassettes, console audition outputs into professional 600 ohm balanced, +4dBm systems without loading distortion, ground loops, RF pickup or high frequency rolloff.

True transformer balanced, isolated and protected outputs with greater dynamic range (102dB), flatter response (+0, -.25dB) and lower nominal THD (.005%, 20 to 20,000Hz) than digital audio disc systems. Adjustable outputs, self-contained power supply, Velcro or rack panel mounting.

Disc-Patcher \$199.00
P/N 20273-501 Rackmount panel, single or dual \$22.00

AUDIO TECHNOLOGIES, INC.

Distribution Amplifier Systems



DA10000

MicroAmp Series

DA 10000 Modular Distribution Amplifier Systems

• Ten 1 x 6 DA modules in 5 1/4" • Dual redundant plug-in power supplies • Five interchangeable types of DA modules • Active balanced or transformer outputs • Metering and compressor options • Safe, attractive closed front design • Barrier block or mass termination connectors • State-of-the-art, high slew rate design

DA 100 Basic 1 In, 6 Out Distribution Amplifier

Single power stage drives six active balanced outputs at +22dBm each. Split and by-passed build-out resistors give protection against shorts and RF. Balanced bridging input. Single panel level control sets all outputs. Headphone monitor jack.

DA100 \$250.00

MDA100 Metered 1 x 6 Distribution Amplifier

Adds a LED bargraph VU meter to the basic amplifier described above. Measures -21 to +6 VU with 0 VU adjustable for outputs from 0 to +18dBm. Signal alarm indicator and output warns of dead channel.

MDA100 \$335.00

CDA100 Compressing 1 x 6 Distribution Amplifier

Adds a gated compressor to the MDA100. Controls on inputs above -30dBm. Compression slope adjustable up to 20:1. Input level sensor gates compressor gain recovery to prevent background noise build-up during program pauses. Meter is switchable to output or gain reduction levels. Switchable linear amplifier mode.

CDA100 \$395.00

IDA100-1 Independent 6 Output Distribution Amplifier

6 transformer outputs. Individual trimmers provided for each output along with a master level control. Headphone output.

IDA100-1 \$375.00

MIDA100-1RC

Metered Remote Control Distribution Amplifier

1 input to 4 independent transformer balanced outputs at +22dBm. Remote/Local VCA master gain control. LED bargraph meter.

MIDA100-1RC \$495.00

MIDA100-1

Metered Independent Output Distribution Amplifier

6 transformer outputs with independent level controls. LED bargraph meter switchable to all outputs

MIDA100-1 \$449.00

PS 100 Power Supply

A bi-polar unregulated 18VDC supply drives the system power bus through fused isolation diodes. Operates singly or as a redundant pair in the right hand positions of each rack frame. Front panel LEDs indicate low voltage and blown fuses. Power failure alarm relay contacts close for any power loss and can activate external alarm. Dual power transformers in each module run cooler and generate minimal hum field, 115 and 230VAC operation

PS100 \$299.00

RM100 Rack Frame Assembly

Mounts 10 amplifier modules and 2 power modules in a 5 1/4" high by 19" wide Eurocard specification enclosure 14 1/2" deep. All modules plug in from the front, are secured with captive hardware and present an attractive and safe closed front panel. Aluminum extrusion construction makes a strong and rugged enclosure and allows free convection for vertical air flow. The basic frame includes power bussing for all positions. Individual modules include mating connector assemblies which mount on the rear of the card frame and plug into the power bus. Connector assemblies provide barrier block connections with fanout strips for studio wiring, consult factory for alternate insulation displacement, mass termination connector systems which allow simple plug-on audio connections.

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RM100 \$299.00

DA1000 1 x 8 and DA2008 1 x 4 Mass Feed Distribution Amplifiers

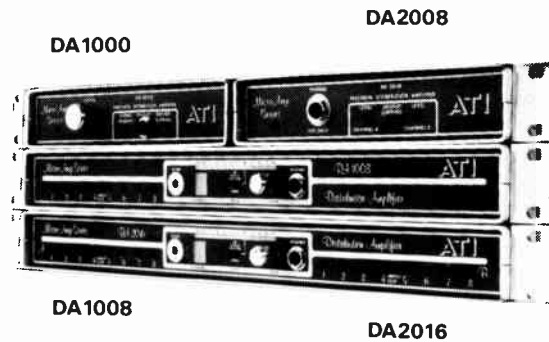
• +24dBm active balanced outputs • 70dB output isolation and full short circuit protection • Signal present LED (DA1000 only) • Output clipping LEDs • Front headphone or metering jack • 30K ohm balanced input bridges • +24dBm • 26dB loaded gain, front panel adjustment • Flat response, ±.25dB, 20–20,000Hz • Low distortion .2% max THD, 20-20,000Hz • Quiet, -70dBm maximum output noise

DA1000-1 1 input to 8 balanced outputs \$345.00

DA2008-1 Dual sections, each 1 by 4 \$365.00

P/N 20021-501 Single unit, centered mount \$17.00

P/N 20024-501 Double, side-by-side mount \$22.00



DA1000

DA2008

DA1008

DA2016

DA1008 1 x 8 and DA2016 2 x 16 MicroAmp Distribution Amplifiers

• MicroAmps provide individual adjustment for each output. Audio taper, hot molded, sealed, premium level controls eliminate noise and erratic operation • MicroAmps have exclusive SCAN monitoring and metering. SCAN pressure sensor switch is fully protected behind the panel. Touching SCAN marking on the panel scans the monitor circuit across all 16 outputs at two steps per second. LED digital readout indicates channel being monitored • MicroAmp DAs provide a high resolution, three color LED VU meter display. Front panel calibration switch selects +4, +8, or +18dBm outputs at 0 VU • MicroAmp headphone monitor provides two channel monaural drive for stereo headphones with front panel level control and phone jack • MicroAmp input overload indicators flash to indicate input signals which exceed the rated +24dBm maximum input level. Input impedance balanced differential inputs; 30,000 ohm bridging gain 24dB, front panel screw-driver adjustable power 115/230 VAC 10%, 47-63Hz. Size: 1 3/4" H x 17" W x 10 1/2" D, 10 lbs.

1 Input to 8 Individual Outputs

DA1008-1 +22dBm, transformer outputs \$ 850.00

DA1008-2 +22dBm balanced differential outputs \$755.00

DA1008-3 +30dBm, transformer outputs \$1095.00

DA1008-4 +30dBm, balanced differential outputs \$995.00

Dual 1 x 8, 2 Inputs to 16 Individual Outputs

DA2016-1 +22dBm, transformer outputs \$1195.00

DA2016-2 +22dBm, balanced differential outputs \$995.00

DA2016-3 +30dBm, transformer outputs \$1695.00

DA2016-4 +30dBm, balanced differential outputs \$1475.00

AUDIO TECHNOLOGIES, INC.

Audio Processing Equipment



EM1000

Emph' a Sizer Audio Processor

• Low noise microphone preamp • Balanced line input • Noise gate-adjustable background fade 0 to 80dB—fast or slow, inaudible recovery • Gates gain compressor-limiter, adjustable dynamic range, variable slope, individually settable fast attack and fast release thresholds • Four full range parametric equalizer sections • Internal adjustments with front panel in/out switching and selectable pre, post, or compressor side-chain equalizer positioning • DJ personality processor...for that unique sound • Remotes...crowd noise controller, compressor, line limiter and equalizer • Sound reinforcement...gated automatic level control prevents overloads, equalizers notch out critical room resonances to allow max levels without feedback • Bargraph output level and gain reduction displays

EM1000-1 Transformer output at +24dBm \$1395.00
EM1000-2 Active balanced output at +24dBm 1395.00

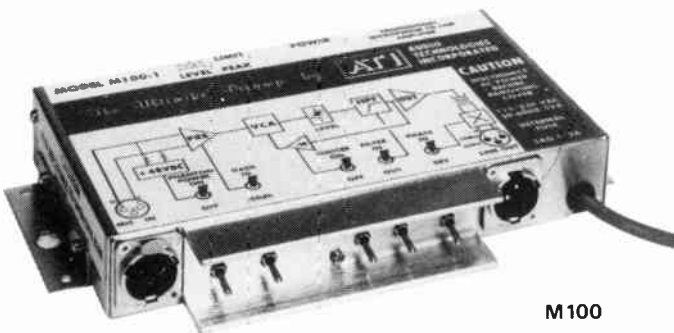
Rackmount Kits

P/N 20104-501 Single centered rackmount \$30.00
P/N20105-501 Dual side by side rackmounts 45.00

Encore Series™ P100S Turntable Amplifier

• Active balanced +18dBm outputs • Adjustable R and C cartridge loading • Active two pole subsonic warp filter • 750mV p-p input headroom • 80dB unweighted. S/N, 90dB "A" weighted • ±.5dB, 30–20,000Hz, old or new curve • .1% THD max., 20–20,000Hz • 13V/μs slew rate for min. TIM • Excellent RF protection

P100S Stereo \$269.00

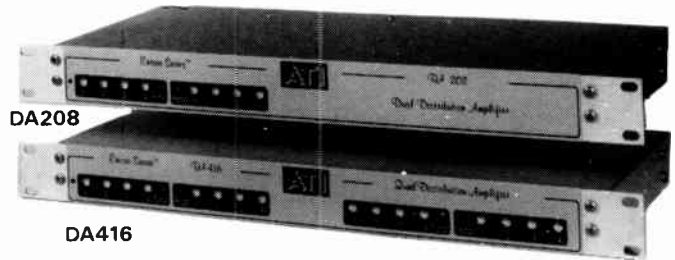


M100

M100 Ultimike Microphone Amplifier

• An extremely low-noise, high CMR, direct balanced input instrumentation amplifier with servo operating point stabilization drives a unique distortion-free, transformer isolated, line output ideal for driving long cable runs. Features a • Variable gain input • Switchable limiter • Two pole active low cut filter • 48VDC phantom power • Output phase reversing switch in a rugged, line powered fully shielded enclosure • Gain: Hi-adjustable 74 to 20dB • Lo-adjustable 54 to 0dB • Maximum input: Hi gain 0dBu; Lo gain: +20dbu • Distortion: .05% maximum THD, 20-20,000Hz at +22dBm out • Noise: -128dBm EIN • Response; +0/-25dB, 20-20,000Hz

M100 \$299.00
P/N 20273-501 Rackmount Panel single or dual 22.00



DA208

DA416

Encore Series Distribution Amplifiers

• 8 or 16 active balanced +18dBm output • Individual smooth log taper level adjustments • Combine channels by paralleling inputs for 1 x 8, 2 x 8 or 1 x 16 configurations • LED clipping indicators for each channel warn of any overdriven output • 20dB gain, .10% max THD, -75dBm maximum outputs noise, ±.25dB response, 30-20,000Hz • -70dB isolation and crosstalk • 30K ohm balanced inputs bridge +22dBm lines • High slew rate, 13V/μs for minimum TIM distortion • Excellent RF protection • Barrier block terminals with fanning strip • Rackmount in only 1 3/4"

DA208 Dual 1 x 4 \$329.00
DA416 Quad 1 x 4 469.00

VU1000 MicroAmp Line Switcher,

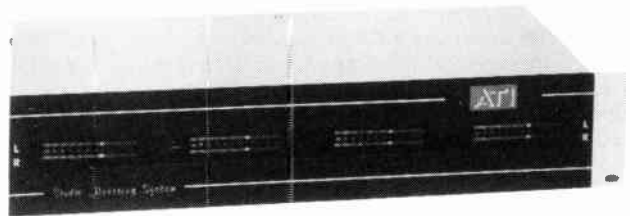
Meter and Monitoring Amplifier

• Eight active balanced inputs bridge +24dBm lines • Remoteable digital input selection mutes all audio during scan • 12 segment, 3 color LED meter has switchable VU, average and PPM ballistics • Range switch selects OVU meter reading at -10, 0, +4, +8 or +18dBm input • Line output drives +22dBm into 600 ohm balanced load, select 0, +4 or +8dBm output at OVU meter indication, +.25dB response, .1% max THD, 20-20kHz • Monitor, VU1000-1 drives 600 ohm headphones and external amplifier, VU1000-2 drives 6W into Lo-Z phones or external speaker, phones interrupt external feed • Mount singly or as stereo pair in 1 3/4"

VU1000-1 Drives external power amplifier \$625.00
VU1000-2 Internal 6W/8 ohm amplifier 725.00

Accessories

P/N 20209-501 Stereo interconnect cable \$15.00
P/N 20214-501 Remote control scan cable 12.00
P/N 20021-501 Rackmount, single, centered 17.00
P/N 20024-501 Rackmount, dual, side-by-side 22.00



VU-800

Micro-Meter Studio Metering System

• Useful tools in the studio for visually monitoring many audio lines simultaneously • Expandable AT1 Micro-Meters display one, two, three or four stereo signal pairs (eight channels) on bright, two color vacuum fluorescent bar-graph indicators with peak storage • Balanced bridging inputs prevent line loading and are individually switchable for OVU indication at -10, +4 or +8dBu • Compact 3 1/2" rackmount

VU200 One stereo display \$339.00
VU400 Two stereo displays 439.00
VU600 Three stereo displays 539.00
VU800 Four stereo displays 639.00

AUDIO TECHNOLOGIES, INC.**Broadcast Audio Consoles****BC12DSL****BC8DSR****Vanguard Series Broadcast Audio Consoles**

• Raised, silent, tactile feedback • Backlighted membrane switch control panel • Digitally scanned and stored • Five color graphics are protected by a seamless rugged polycarbonate overlay • 12 stereo inputs to 8 mixers (BC8) • 24 stereo inputs to 12 mixers (BC12) • Optional 5 x 2 input expander • Gain switched, high level instrumentation amplifier inputs accept +4, -10 or -20dBm nominal levels with excellent common mode hum and RF rejection • 2 mono mike preamps with internal pan pots are standard • May be wired to any input • Additional preamps (2) or full stereo preamps are optionally available • All faders and level controls drive DC operated voltage controlled amplifiers (VCA) • Dual, stereo +22dBm program outputs with dual mono sum program outputs and 2 switched analog VU meters • Optional 4 channel, 2 color vacuum fluorescent bargraph output displays • 5W cue amplifier • Stereo headphone amplifiers • Control room and studio muted monitor outputs for external optional power amplifiers • Modular amplifiers plug-in to mother board interconnection system • Punch-block type insulation displacement connections • Panel hinges forward 180° for full access • RF protection • External power module minimizes hum and isolates power line conducted RF pickup

BC8DSR AB type J rotary faders control dbx™ VCAs \$3395.00
BC8DSL 60mm, linear faders control dbx VCAs \$3395.00
BC12DSL 60mm, linear faders control dbx VCAs \$4995.00

VFD Vacuum Fluorescent Display

Two stereo, two color fourteen segment VU displays with peak storage. Replaces conventional VU meters and allows continuous metering of both stereo program outputs. \$175.00

EXP Input Expander

Increases console input capability with two banks of five self-indicating input switches wired to any two mixer inputs. Remote program cue capability \$275.00

SSS Stop/Start Switches

Eight momentary lighted pushbutton switches with terminal board for remote start-stop control of four tape decks, cart machines or turntables. Mounted into lower front panel between phone jacks and aligned with center mixers. (Lamps not included.) Two SSS options may be used with BC12DSL to control eight machines \$125.00

MIC Dual Microphone Preamplifier

Additional pair of 40dB microphone preamplifiers each with an on-board pan pot. Drive two stereo hi-level inputs with mono or use as stereo pair feeding a single mixer \$150.00

RLY Speaker Muting and Tally Light Relay

A two relay module board provides relay operated speaker muting and tally light control for the control room and one studio \$125.00

PLF Premium Linear Faders

Eight Penny and Giles 3010 65mm Travel \$600.00
 Twelve Penny and Giles 3010 65mm Travel. \$900.00

Maintenance Kits**SCK Semiconductor Kit**

Spare integrated circuits, transistors, diodes, LEDs, regulators and bridge rectifiers useful for local repair \$125.00

FDR-8 Replacement Rotary Fader Kit for BC8DSR

Quantity — Eight \$80.00

Replacement Linear Fader Kits for:**FDL-8 BC8DSL**

Quantity — Eight \$50.00

FDL-12 BC12DSL

Quantity — Twelve \$75.00

AUDIO-VIDEO SCIENCES CO.

Tape Eraser/Degausser

409 Tape Eraser

Precision Professional Equipment

Rugged, heavy construction provides stability. Erases all reel-to-reel magnetic tapes from 150 mil to 2" widths, as well as cartridges, cassettes, 16" reels, and all magnetic film stock.

Eraser Field Control

Erase field is electronically diminished at the end of each 20 second cycle, by the latest state-of-the-art tape control, minimizing residual noise caused by turn-off transients.

Overheat Protection

Complete electrical protection from overheating damage is provided by an overheat "start interlock" and continuous fan blower operation.

Erasure

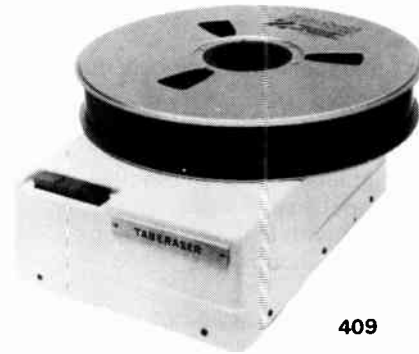
30Hz to 15kHz the depth of erasure is 90dB below saturation (from reference control tape)

Cycle Time Erase

20 seconds

Thermal Protection

At 150° to 170°F coil surface temperature, the automatic heat overload circuit activates internal blower circuit indicated by front panel red light.



409

Power

95-135VAC, 60Hz, 1 phase 210-230VAC 50Hz, 1 phase (both 3 wire)

The 409 Tape Eraser completely erases all audio, video, instrumentation tapes and magnetic films (widths over 1" must be turned over). Audio and video cartridges, as well as tapes on reels or in boxes, can be efficiently degaussed. Reel sizes up to 16" can be accommodated.

409 115V, 60Hz\$ 1295.00
 409 220V, 50Hz1295.00

1500M Automatic Tape Degausser

Precision Controlled Erasure

Automatically erases all tapes by moving the tape through a strong field while electronically diminishing the field over a precisely controlled decay of the erase field.

Easy Operation

Tape reels or film stock up to 2" wide including U-Matic, VHS, Ampex and RCA Quad carts are erased on the 1500H and tape reels or film stock up to 1 1/2" including metal tape, U-Matic, VHS are erased on the 1500M. The tape control mechanism either rotates the reels or conveys cassettes through the field while the electronics decay the field, thus providing the smoothest and deepest erasure yet accomplished.

Degaussing Efficiency

1500H-tape with coercivity up to 750 oersteds (depending upon the tape format) will be erased to a depth of 90dB. 1500M-metal tape with coercivity of 1500 oersteds will be erased to a depth of 85dB and 750 oersted tapes to a depth of 90dB as measured from a reference control tape.

Reel Size

Up to 19" reel of 2" video tape or audio tape or 1" instrumentation tape on the 1500H and 19" reels of 1" tape or 35mm film stock on the 1500M.

Cassette Video or Audio

Erases any size video cassette, VHS, U-Matic, 2" quad cartridge, audio cartridge or cassette on the 1500H and up to 1 1/2" width on the 1500M.

Erase Time

5 to 55 seconds depending on tape format and power configuration.



1500M

Thermal Overload

Thermal protection is accomplished by automatic shutdown of power circuit when coil surface temperature reaches the range of 105° to 170°F.

Power Requirements

Current requirement is a function of tape reel size and/or cassette/cartridge configuration. It will range from 25 to 45A on 115VAC units and half that on 220VAC units of the 1500H and 20 to 40A on the 1500M.

1500H 60Hz models\$5995.00
 1500H 50Hz models6495.00
 1500M 60Hz models6495.00

AUDITRONICS, INC.**On-Air Broadcast Control Consoles****200 Series On-Air Broadcast Control Consoles**

- VCA controlling faders, eliminating noise due to contamination or wear
- Noiseless hall-effect controlled CMOS muting
- Comprehensive user-oriented logic system
- On-board power regulation on each module
- + 30dBm output capability
- Control room monitor with 8 input selections
- Headphone amplifier with local EQ

The 200 Series offers a high degree of reliability together with simplicity of use in a compact, operator oriented package. It satisfies the requirements of both engineering and on-air personnel, while offering the station owner a very cost effective investment.

Consoles are available in four mainframe sizes to cover a range of applications from newsrooms to the largest multi-studio installations. The totally modular construction allows initial purchase of only the functions and accessories needed at the time, while allowing for simple future expansion.

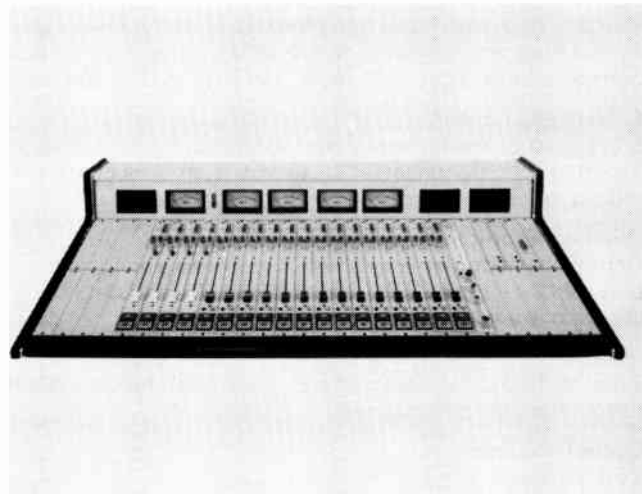
Signal level for all inputs, both mono and stereo, is controlled by tested and proven VCA (Voltage Controlled Amplifier) technology. This means that the fader is outside of the audio signal path, acting only to vary a DC control voltage input to the VCA, thus eliminating typical noise problems caused by contaminated or worn fader elements. The use of VCA's also ensures precise stereo tracking of the left and right channels within 1/4dB over a 90dB range.

Penny and Giles conductive plastic linear motion faders are used on all inputs. Each fader is equipped with an off position switch which may, depending on user preference, be used to turn the module on and off, to control external devices, or for automatic cueing.

Microphone inputs use high quality Jensen transformers, featuring wide bandwidth and low distortion characteristics. Stereo line inputs feature a unique, actively balanced input stage with separate internal gain trims for both "A" and "B" inputs on each channel, permitting perfect channel balance. Both microphone and line inputs exhibit an excellent common mode rejection ratio (the ability to reject extraneous external noise).

Input module off/on control is accomplished by CMOS logic controlled by hall-effect switches, ensuring high reliability, noiseless switching, and an extremely long life (five million cycles typically).

The comprehensive, flexible, and easy-to-use logic system provides a number of benefits for both technical and on-air personnel. The stereo line input modules may be configured to start an external device or to turn on via control of an external device. Microphone input modules may be disabled via an external cough button, or commanded on by the intercom function of the studio monitor module, completing an integral two-way communications system capable of interface with two studios. Logic for tally lamps is also provided. All logic circuitry is DC voltage controlled.



The stereo headphone amplifier provides ample power for use even with low impedance headphones. It also includes a two band equalizer, with in/out switch, which may be used for local equalization without affecting the program output. Source selection follows the control room monitor source or the cue bus, and both may be selected simultaneously, split between the left and right outputs.

Program, audition, and mono line outputs are transformer isolated and capable of + 30dBm, providing the user with extensive operational headroom, excellent phase response, low distortion, and short circuit protection. Control room and studio monitor outputs are balanced and transformerless and capable of + 24dBm.

Each module in the 200 Series includes on-board voltage regulation with current limiting, providing excellent signal isolation, the elimination of power sensing lines and simplification of powering requirements, and protection from mass failure due to individual module problems.

Careful system design has virtually eliminated hand wiring, enhancing the reliability of the console. Installation is simplified by the use of solderless, locking, strain relieved interface connectors which mount directly to the console's motherboard. Both the meter panel and console module/motherboard assembly flip up inside of the outer shell to facilitate easy installation and maintenance; all access may be obtained while seated in the operator's position.

Standard wood trim provided is solid mahogany; however, walnut, oak or cherry are optionally available at an additional charge if specified at time of order. Each console includes all mating connectors, installation tools, basic spare parts kit, and service manual at no extra charge.

Available with both mono and stereo outputs, and a wide choice of functions and accessories, the 200 Series is the logical choice for those progressive facilities needing to install equipment with provisions for future adaptability and growth.

200 Series Cont'd Specifications:

Mono Microphone Input

Source selectable from A or B input
 Source Impedance: 150 ohms, nominal
 Input Impedance: >1K ohms, 20 Hz-15KHz, balanced, transformer isolated
 Input Level: -65 dBm to -41 dBm, adjustable (ref 0.775V rms)
 Input Headroom: 22dB over nominal input level
 CMRR: >60 dB 10Hz to 100 KHz

Stereo Line Input

Source selectable from A or B stereo input
 Source Impedance: 600 ohms, nominal
 Input Impedance: >10K ohms, balanced, active differential
 Input Level: -12 dBm to +8 dBm, adjustable (ref 0.775V rms)
 Input Headroom: 20 dB over nominal input level
 CMRR: >60 dB 10 Hz to 100KHz

Stereo Program, Audition, and Mono Outputs

Load Impedance: 600 ohms, nominal
 Output Impedance: <50 ohms, balanced, transformer isolated
 Output Level: +8 dBm nominal, adjustable -10 dBm to +16 dBm (ref 0.775V rms)
 Maximum Output Level: +30 dBm (ref 0.775V rms)

Stereo Control Room and Studio Monitor Outputs

Load Impedance: 600 ohms, nominal
 Output Impedance: 600 ohms, balanced, active differential
 Output Level: 0 dBm nominal (ref 0.775V rms)
 Maximum Output Level: +24 dBm (ref 0.775V rms)

Stereo Headphone Output

Load Impedance: 8 ohms or greater
 Output Level: 2 watts per channel, maximum

Cue Output

Output Level: 4 watts maximum, into built-in speaker

Overall:

Frequency Response: 20 Hz - 20KHz +0, -1dB at +8 dBm output level, Mic or Line Input to Program or Audition Output

Signal to Noise Ratio, Microphone In to Program or Audition Output: >78 dB or -128.5 dBV equivalent input noise, 20 Hz - 20 KHz with 150 ohms source impedance at nominal gain settings

Signal to Noise Ratio, Line In to Program or Audition Output: >82dB, 20 Hz - 20KHz with 600 ohms source impedance at nominal gain settings

Distortion (THD)

Microphone In to Program or Audition Output at +24 dBm (ref 0.775V rms)

<.01% at 1KHz

<.15% 30 Hz -20KHz

Line In to Program or Audition Output at +24 dBm (ref 0.775V rms)

<.01% at 1KHz

<.1% 20 Hz - 20KHz

Distortion (IM)

Microphone or Line In to Program or Audition Output at +24 dBm (ref 0.775V rms)

<.02% SMPTE

Crosstalk

Program Left Output to Program Right Output, Mic or Line Input

<-74 dB at 1KHz

<-63 dB at 20KHz

Program Outputs to Audition Outputs, Mic or Line Input

<-85dB at 1KHz

<-83dB at 20KHz

Mains Requirement

115/230 VAC ± 10%, 50/60Hz

Approximate Shipping Weights

Model 206	80 lbs. (36Kg)
Model 212	100 lbs. (45Kg)
Model 218	120 lbs. (54Kg)
Model 224	140 lbs. (63Kg)
Model PS-60	35 lbs. (16Kg)

Console Mainframes (Note 1)

206-MF	Six input position mainframe	\$5,300.00
212-MF	Twelve input position mainframe	5,600.00
218-MF	Eighteen input position mainframe	6,600.00
224-MF	Twenty-four input position mainframe	7,400.00
200-TR	Alternate wood trim (Note 2)	100.00

Modules (14")

201-MIS	Microphone input module	\$700.00
202-SLI	Stereo line input module with mode selector switch	700.00
200-CSM	Communications/studio monitor module	575.00
200-B14	Blank panel—14" (must be ordered for all unused input positions)	20.00

Accessory Modules (7") (Note 3)

201-PEQ	Personality equalizer module, including one (1) 201-EQP plug-in card (Note 4)	\$425.00
200-SEQ	Sweep equalizer module (Note 4)	495.00
201-LS8	Stereo line selector—8 station (mounted on 7" blank) (Note 4)	310.00
200-LS8-14	Stereo line selector—8 station (mounted on 14" blank) (Note 4)	350.00
200-VC	Voice controller module (Note 4)	550.00
201-VC	Voice controller module, with recessed controls (Note 4)	530.00
200-TEL	Telephone interface module (Note 4)	595.00
200-TR5	Tape remote control module—5 buttons (unwired)	220.00
200-TR6	Tape remote control module—6 buttons (unwired)	260.00
200-UM	User modification module—blank top panel, chassis and connector	90.00
200-L13	Triple stereo input module (Note 4)	625.00
200-MX6	6 into 1 line level mixer module (Note 4)	525.00

Accessories

202-DTK	Digital timer kit—includes 202-TC timer control module and cable	\$495.00
	Digital clock	340.00
202-DC	Digital clock	340.00
201-EQP	Plug-in personal equalizer card for 201-PEQ	30.00
200-SRC	Studio remote control panel	95.00
200-RY2	Logic relay interface for warning lights	85.00
200-PB	Rackmount module patchbay—6 row, 156 jacks (unwired)	2,800.00
PC-2	Patchcord, 24", nylon sheathed cable	35.00
PSI-60	Rackmount power supply isolator, for redundant powering (Note 5)	265.00
200-PPS	Phantom power supply—for powering condenser microphones	90.00

Spares

200-CRM	Control room monitor module	575.00
201-SLO	Stereo line output amplifier module	350.00
201-MLO	Mono line output amplifier module	260.00
PS-60	Rackmount power supply	500.00
200-E7	Extender module—7"	55.00
200-E14	Extender module—14"	70.00
200-B7	Blank panel—7"	15.00

Note 1.

All console mainframes include two (2) 201-SLO stereo line output amplifiers, one (1) 201-MLO mono line output amplifier, one (1) 200-CRM control room monitor module, built-in cue speaker and amplifier, power supply, installation kit, extender boards, basic spare parts kit, operations/service manual, and blank panels for all unused accessory positions.

Note 2.

White oak trim is standard with a clear finish, or unfinished suitable for custom finishing on-site. Other species of wood available by factory quote. Must be specified at time of order.

Note 3.

Up to seven (7) accessory modules may be ordered with each six input mainframe, or up to nine (9) with each twelve, eighteen or twenty-four input mainframe.

Note 4.

Standard factory wiring supplied.

Note 5.

An additional PS-60 power supply is required.

AUDITRONICS, INC.**Audio Production Console****310 Series Audio Production Console****Standard Features**

- 4 or 8 outputs, plus discrete stereo and mono mix
- Output submastering, with mix-minus capability
- Mono and/or stereo inputs, with or without equalization
- Hi cut and lo cut filters on each input
- VCA level control on all inputs and stereo mix outputs
- VCA control of submaster and mono outputs, with external level and mute control capability
- VCA input grouping
- 4 auxiliary sends
- Auxiliary returns
- Built-in monitor mixer
- Control room monitoring
- Stereo solo system
- Aural phase check capability
- Cue system with built-in speaker, amplifier, and metering
- Stereo headphone monitoring
- External level and mute control capability
- Output metering
- Microphone phantom power supply
- Wide armrest trough area, for user customization
- Penny and Giles conductive plastic linear motion faders
- All tools and mating connectors required for installation

Options

- Comprehensive equalization for mono or stereo inputs
- Audio-follow-video capability

Accessories

- Complete studio monitoring with communications facilities
- Test oscillator
- Logic interface system, for control of or by external equipment
- Compressor/limiter/noise gates, for mono or stereo operation
- Telephone interface
- Multiple input selectors
- Remote controls
- Digital clocks and timers
- Redundant powering
- Audio distribution amplifiers
- External patchbay
- High output line amplifiers (+ 30dBm)

Designed specifically for stereo TV and larger radio production operations, the 310 series represents an advanced design in audio control technology. As the second generation of audio consoles in the highly acclaimed 300 series, the series 310 features leading edge technology, expanded functional capability and advanced ergonomic design.

The 310 series affords the value conscious broadcaster a user defined selection of functional features and a dynamic array of the most important options necessary for uncompromising performance.

Specific attention has been given to not only the audio quality, but to logically located and labeled controls. A comprehensive, built-in user-programmable logic system simplifies the operation of many internal and external functions. External control ports have been included to provide the possibility of interface to any of several types of external equipment, such as video switchers, editors, etc.

Designed as a modular system, the 310 series is easily expandable in capabilities, with no sacrifice in performance specifications. All input modules include multiple source selections, and each input has dedicated active balanced input circuitry for optimization of level, noise, common mode rejection, and crosstalk. All output bussing assignments are made via CMOS "load-lift" switching, thereby ensuring optimum noise specifications throughout the system at all times.



Several output configurations are assignable. Stereo mix may be fed from the console inputs or submaster outputs. Mono mix may be independently derived or summed from stereo, pre- or post-stereo master fader. Output submastering provides control of signals routed to a multichannel tape recorder, as well as allowing, in combination with the mono and stereo mix systems, for a multiplicity of grouping and mix-minus combinations. The built-in submixer includes complete monitor mixing capabilities with logical, easy to use, program/tape and overdub switching. The flexible auxiliary send systems, with multiple source and control possibilities, may be utilized for foldback or effects outputs, and auxiliary returns are assignable to any output.

Optional input equalization, available in mono or stereo tracking configuration, provides a wide range of signal shaping possibilities without the radical parameters which belong in rarely utilized outboard signal processing equipment. The standard Hi and Lo cut filters permit rejection of hiss, rumble, and other undesirable effects.

Complete monitoring and communications facilities are available. The stereo solo system, in combination with the aural phase check capability of the control room monitor module, permits total isolation and scrutiny of any stereo signal point in the console. The mono cue system, with built-in speaker, amplifier and metering, allows checking of input signal presence and level. Tape returns may be internally muted to both the input modules and monitoring for ease of installation and configuration. A stereo headphone output is provided with source selection of control room monitor follow and/or cue. Studio monitoring is optionally available and includes communications capabilities to both the studio and auxiliary sends.

Adequate space is reserved for accessory mounting, both in the operational area, where signal processing equipment, line selectors, or remote controls may be mounted, and under the console in conveniently located 19" equipment rack spaces.

Rugged mainframe is fabricated in our own inhouse metal facility. Quality components are used throughout. Ergonomic engineering, precision metal works, quality components, advanced circuitry, and superior mechanical design all add up to the outstanding performance required by the demanding broadcaster.

Standard metering is VU for multichannel/submaster, stereo mix, and mono outputs. Mono metering is selectable as mono mix, cue or external. Each meter is buffered to maintain signal integrity. PPM metering is optionally available.

All inputs and outputs, as well as optional insertion points, logic, and external control ports, are brought to the conveniently accessible termination panel. All audio connections are made via locking and strain relieved AMP connectors, while DC logic and remote level control connections are made via "D" connectors.

310 Series Cont'd Standard Mainframe Modules and Accessory Modules

Mono Input Modules

Mono input modules, and associated submaster assignment modules, provide input selection, level control, and processing of microphone or line level inputs, signal routing to multichannel, stereo mix, or auxiliary outputs, as well as solo, cue, and logic facilities.

Mono input modules include input selection for 1 microphone and 2 mono line level inputs. Each input is actively balanced and includes its own input amplifier and internal adjustments for absolute optimization of level and common mode rejection. An overload LED monitors the input level of the microphone source. Input level trims are provided in stepped course and continuously variable fine adjustments for microphone inputs, and fine adjustments for line inputs only. Audio polarity and accompanying LED indicator are also provided and are operable for all input selections.

Equalization is optionally available and includes 3 bands of reciprocal control. Hi and Lo bands each have 3 selectable frequencies (Hi: 5KHz, 8KHz, 13KHz and Off; Lo: 40Hz, 80Hz, 150Hz and Off) of shelving equalization with ± 12 dB of continuously variable frequency (400Hz to 4KHz) and ± 12 dB boost/cut control, as well as Hi/Lo Q selection. An equalizer In/Out switch and associated LED are provided to completely bypass the equalizer when desired. An overload LED monitors the internal operating level of the equalizer at all times.

Hi and Lo cut filters are standard on all module versions and provide 18dB/octave filtering at 8KHz and 80Hz, respectively.

Stereo panning is provided to the stereo mix bus and multichannel assignments. A stereo mix assign button routes the module output directly to the stereo busses. (The module output may also be routed to the multichannel outputs, and ultimately to the stereo or mono mix busses via the submaster faders and assignments.) Level control is by Penny and Giles conductive plastic linear fader controlling an on-board VCA, and channel On/Off is selected by a silent, illuminated switch. In addition to providing a visual on/off indication, the switch lamp will also flash to indicate invalid input selection.

Stereo solo is provided for a monitor solo of the channel output (with associated LED indicator), and mono cue with associated LED indicator is provided for monitoring of the channel input via the console's built-in cue monitor. The cue function may be internally programmed for manual operation, activation upon fader down, or for automatic cancellation on activation of fader up/channel on, then reinitiable at any time.

Four auxiliary outputs are provided for creation of foldback or effects mixes. Each includes its own level control, as well as pre/post fader source selection and on/off switching. Pre-fader selection is internally programmable for pre- or post-equalizer.

VCA input grouping is a standard feature and includes selection for control by any of 4 VCA group master faders.

Stereo Input Modules

Stereo line input modules and associated submaster assignment modules provide input selection, level control, and processing of stereo line level inputs, signal routing to multichannel, stereo mix, or auxiliary outputs, as well as solo, cue, and logic facilities.

Stereo line input modules include input selection for 2 stereo line level inputs. Each input is actively balanced and includes its own input amplifier and internal adjustments for absolute optimization of level and common mode rejection. A stereo tracking input level trim is provided for ± 6 dB adjustment, together with a right channel trim control to achieve input balance. Left input only audio polarity reverse with an accompanying LED indicator is also provided.

Stereo tracking equalization is optionally available and includes 3 bands of reciprocal control. Hi and Lo bands each have 3 selectable frequencies (Hi: 5KHz, 8KHz, 13KHz and Off; Lo: 40Hz, 80Hz, 150Hz and Off) of shelving equalization with ± 12 dB of continuously variable frequency (400Hz to 4KHz) and ± 12 dB boost/cut control, as well as Hi/Lo Q selection. An equalizer In/Out switch and associated LED are provided to completely bypass the equalizer when desired. An overload LED monitors the internal operating level of the equalizer at all times.

Stereo Hi and Lo cut filters are standard on all module versions and provide 18dB/octave filtering at 8KHz and 80Hz, respectively.

A mode selector selects input source of left only, right only, mono sum of both left and right, stereo or reverse stereo. A stereo mix assign button routes the module output directly to the stereo busses. (The module output may also be routed to the multichannel outputs, and ultimately to the stereo or mono mix busses via the submaster faders and assignments.) Level control is by Penny and Giles conductive plastic linear fader controlling on-board VCAs, and channel on/off is selected by a silent, illuminated switch. In addition to providing a visual on/off indication, the switch lamp will also flash to indicate invalid input selection. A VCA control port is provided for level or on/off control from an external source.

Stereo solo is provided for a monitor solo of the channel output (with associated LED indicator), and mono cue with associated LED indicator is provided for monitoring of the channel input via the console's built-in cue monitor. The cue function may be internally programmed for manual operation, activation upon fader down, or for automatic cancellation on activation of fader up/channel on, then reinitiable at any time.

Four mono auxiliary outputs are provided for creation of foldback or effects mixes. Each includes its own level control, as well as pre/post fader source selection and on/off switching. Pre-fader selection is internally programmable for pre- or post-equalizer.

VCA input grouping is a standard feature and includes selection for control by any of 4 VCA group master faders.

Submaster Control Module

Submaster control modules each include 2 submaster/multichannel output level controls and assignments, a submixer for each multi-channel output, and an auxiliary return. Submastering enables "output grouping" for rapid and accurate control of related signals or creation of simultaneous yet different mixed outputs, such as mix-minus or second language programs.

Two submaster control modules are provided as standard in a four output console, and four are provided as standard in an eight output console. Submaster level control is by Penny and Giles conductive plastic linear faders and are supplied with on-board VCAs, including VCA control ports for level or on/off control from an external source. Each submaster includes a line level (active balanced) multi-channel output which is active at all times, stereo pan, and assignment capability to the stereo mix or mono mix. Stereo solo is provided for a monitor solo of the submaster outputs.

A 4 into 2 (or 8 into 2, depending on the console output configuration) multichannel submixer with overdub capability is provided for the creation of a monitor mix, or for auxiliary mixes for foldback or effects use. The inputs to each mixer channel are selected from multichannel outputs or multichannel tape returns via a combination of the program/tape selector on the control room monitor and the individual illuminated overdub switches. Multichannel tape returns are interfaced directly to mono input module sources and internally routed to the submixer. Each multichannel submixer position includes level control, On/Off switch, overdub switch, and stereo pan.

The auxiliary return includes an active balanced line level input, level control, and stereo pan and is assignable to the stereo or mono mix busses, to the control room monitor for monitoring with echo, or to the multi-channel outputs via an associated submaster assignment module. Stereo solo is provided for the Aux return.

Stereo/Mono Master Module

The stereo/mono master module includes active balanced line level outputs and controls for the stereo mix, mono mix, and the four auxiliary outputs.

Stereo mix output level control is by a Penny and Giles conductive plastic linear fader controlling on-board VCAs. VCA control ports are provided for level or on/off control from an external source. Recessed trims are also provided for output level calibration.

Mono mix output level control is by a rotary conductive plastic fader. Mono mix source is selectable from pre- or post-stereo master fader summed to mono, or a discrete mono mix derived from the mono assignments on the submaster and auxiliary return outputs.

Four auxiliary outputs are provided, each with level control and source selection. Sources may be selected from the mono mix output, multichannel submixer output, or a mix derived from the auxiliary outputs of the input modules.

Control Room Monitor Module

The control room monitor module provides control of all control room monitoring, stereo headphone, and cue functions.

Control room monitoring sources are selectable from stereo mix, mono mix, auxiliary output pairs, an external stereo source, and the output of the multichannel submixer. A monitor level control is provided, as well as recessed trims for output level calibration and dim level preset. Dim or mute is activated during communications system use, or as commanded by the console's internal programmable logical system (LED indicators show status of mute or dim circuitry.) A solo level preset is also provided pre-control room monitor level, and a solo LED indicator signifies that the solo system is in use. Individual speaker On/Off buttons are provided, as well as an L + R sum switch for mono operation and a momentary audio polarity reversal switch on the left monitor source only to allow aural audio polarity checking of any monitored signal, including solo.

A cue level control and amplifier are included for the built-in cue speaker. Provisions are made for connection of an external cue amplifier, if desired, for cue metering pre-level control, and an LED indicator illuminates when in the cue mode.

The program/tape selector, with associated LED indicators, performs master source selection for the multi-channel submixer incorporated into the submaster control modules.

A stereo headphone amplifier is provided with a level control and input source selectors for control room monitor source follow or cue output. When both are selected simultaneously, the control room monitor source is summed to mono and routed to the left, while cue is sent to the right, ensuring that program monitoring is never lost.

VCA Group Master Modules

The VCA group master modules (310-GM2) each provide 2 master faders for use with input modules VCA input grouping switches. Each 310 console input module provides for VCA group selection of any of four groups.

Submaster Assignment Module

Provides multichannel assignment of input module or auxiliary return outputs to the submaster/multichannel busses via illuminated switches. Its source is selectable for mono or stereo odd/even assignment. Multichannel assignment modules are available in 4 and 8 output versions, depending on the console configuration. One module is required for each input position.

Provides multichannel assignment of input module or auxiliary return outputs to the submaster/multichannel busses via illuminated switches. Its source is selectable for mono or stereo odd/even assignment. Multichannel assignment modules are available in 4 and 8 output versions, depending on the console configuration.

310 Series Cont'd Accessory Modules

Communications/Studio Monitor Module (Optional)

The optional communications/studio monitor module (CSM) provides control of all studio monitoring and communications functions. Studio monitoring sources are selectable from stereo mix, control room monitor source selection, auxiliary output pairs, a spare stereo source, and the output of the multi-channel submixer. A monitor level control is provided, as well as individual speaker on/off buttons and an L + R sum switch for mono operation. Mute may be commanded by the internal programmable logic system of the console. Communications facilities include separate switches for activating voice and tone slating, a talkback switch for talking to the studio via the studio monitors, and facilities for talking to any of the auxiliary outputs. A built-in microphone is included with the independent recessed level controls for studio talkback and slate levels and a studio talkback on/off switch.

Communications/Studio 2 Monitor Module

The optional communications/Studio 2 monitor module (CSM2) provides source selection, level control, talkback and logic for a second studio operation.

Test Oscillator Module

The test oscillator accessory module provides a quality on-board oscillator for signaling or alignment purposes. It includes an on/off switch with LED indicator, 11 selectable frequencies, level control, assignment to the mono, stereo, or multi-channel buses, and an independent line level output with enable switch.

Power Supply Control Module

The power supply system is controlled and system status monitored with the power supply control module. Controls in the power system B section are intended to control an optional redundant supply.

Telephone Interface Module

The telephone interface accessory module provides handling, processing, and routing of incoming telephone calls without compromising other console functions. It interfaces with telephone lines through a commercially available hybrid and includes a 250Hz to 5kHz bandpass filter switchable into the incoming line, level control, announcers input (shared with a designated microphone source), and cue and solo functions. A direct stereo line level output is provided for feed to a delay or recorder.

Tape Remote Control Accessory

Available in 5 or 6 button versions, the 310-TRC features illuminated momentary switches terminated in connectors at the rear of the module for user installation as tape machine remote controls.

Compressor/Limiter/Noise Gate Module

The compressor/limiter/noise gate accessory module uses the VCAs incorporated in any of the console's inputs or outputs to accomplish either mono or stereo signal processing. It includes a section for compression and limiting with in/out, threshold, ratio, output level controls, and a gain reduction indicator. A separate section for noise gating includes in/out and threshold controls and a mute indicator. Internal adjustments are provided for variable attack and release times of each section. Versions are available both with (310-VCP) and without (310-VCN) operator accessible controls.

310-LS8 Stereo Line Selector Accessory

Allows up to 8 stereo sources to be pre-selected to an input of a stereo line input module.

Timer Control Accessory

Provides manual or automatic control of the timer. Remote S/S allows control from a user-installed remote location. Input on/off allows control by any stereo line input module wired for this function, and the operator may choose from either reset on start or reset on stop in this mode.

Specifications:

Microphone Inputs

Input Impedance: > 1.5K ohms, active balanced, bridging, transformerless
Nominal Input Level: -65dBV to -10dBV (ref. 0.775Vrms)
Equivalent Input Noise: < -129dBV, 20Hz-20KHz, at 65dB gain and with 150 ohms input termination
CMRR: < 60dB, 20Hz-20kHz

Line Inputs

Input Impedance: > 50K ohms, active balanced, bridging, transformerless
Nominal Input Level: -12dBV to +8dBV (ref. 0.775Vrms)
CMRR: > 80dB, 20Hz-20kHz

Line Outputs

Output Impedance: < 60 ohms, balanced, floating, and transformerless
Nominal Output Level: +4dBV (ref. 0.775Vrms)
Maximum Output Level: +24dBV (ref. 0.775Vrms)

Patch Points (Optional)

Send Impedance: 100 ohms, unbalanced
Return Impedance: > 10K ohms, active balanced, bridging, transformerless
Nominal Level: -2dBV (ref. 0.775Vrms), inputs
 -8dBV (ref. 0.775Vrms), output section

Stereo Headphone Output

Acceptable Load
Impedance: 8 ohms, or greater
Output Level: 1W per channel
Cue Output
Output Level: 3W, into built-in speaker

Overall

Frequency Response: +0, -1/2dB, 20Hz-20kHz
Signal to Noise Ratio: > 84dB, ref. +4dBV, at nominal settings
Distortion: < .01% THD, 20Hz-10kHz at maximum output level
 < .05% THD, 20Hz-20kHz at maximum output level
 < .05% IM/SMPTE, at nominal output level
Crosstalk: < -80dB, at 1kHz, ref. +18dBV
 < -65dB, 20Hz-20kHz, ref. +18dBV

Console Mainframes — 4 Output Systems (Note 1)

310-16-4 16 input/4 output mainframe system \$16,650.00
 310-24-4 24 input/4 output mainframe system 18,795.00
 310-32-4 32 input/4 output mainframe system 20,950.00

Console Mainframes — 8 Output Systems (Note 2)

310-16-8 16 input/8 output mainframe system 19,525.00
 310-24-8 24 input/8 output mainframe system 21,700.00
 310-32-8 32 input/8 output mainframe system 24,995.00

Input Modules

310-MIE Mono input module, with equalizer and VCA input
 grouping selection \$1,015.00
 310-MI Mono input module without equalizer, with VCA input
 grouping selection 895.00
 310-SLE Stereo line input module with equalizer and VCA input
 grouping selection 1,245.00
 310-SL Stereo line input module without equalizer with VCA input
 grouping selection 945.00
 310-8K Blank panel kit (input and assign sections) required for all
 unused input positions 40.00

Assignment Modules (Note 3)

310-BA4 4 channel sub-master assign module, for 4 output systems . . . \$100.00
 310-BA8 8 channel sub-master assign module, for 8 output systems . . . 120.00

Accessory Modules

310-CSM Communications/studio monitor module \$680.00
 310-CSM2 Communications/studio monitor module (Studio two) 670.00
 310-TO Test oscillator module 400.00
 310-VCP Compressor/limiter/noise gate (Note 4) 550.00
 310-VCN Compressor/limiter/noise gate, with recessed controls (Note 4) . . . 530.00
 310-TEL Telephone interface module (Note 4) 595.00
 310-LS8 Stereo line selector—8 station (Note 4) 310.00
 310-TR5 Tape remote control module—5 buttons (unwired) 220.00
 310-TR6 Tape remote control module—6 buttons (unwired) 260.00

Accessories

310-LI Logic interface sub-board (for mono or stereo
 line input modules) \$130.00
 310-DTK Digital timer kit, includes 310-TC timer control module and cable . . . 495.00
 310-DC Digital clock 340.00
 310-P8I Insert points wired to rear terminal panel, per input module 125.00
 1100-MFS 10 input distribution amplifier mainframe (unwired) 525.00

Spares

310-SM2 Sub-master module, sub-masters 1 and 2 \$ 830.00
 310-SM4 Sub-master module, sub-masters 3 and 4 830.00
 310-SM6 Sub-master module, sub-masters 5 and 6 (for 8 output
 systems only) 830.00
 310-SM8 Sub-master module, sub-masters 7 and 8 (for 8 output
 systems only) 830.00
 310-SMM Stereo/mono master module 805.00
 310-CRM Control room monitor module 705.00
 310-PS Power supply 2,300.00
 Note 1. Each 4 output mainframe system includes seven (7) VU meters, 310-SM2
 and 310-SM4 sub-master modules, two (2) 310-BA4 sub-master assign
 modules, 310-SMM stereo/mono master module, 310-CRM control room
 monitor module, 310-GM2 and 310-GM4 group master faders, built-in cue
 speaker and amplifier, power supply system, installation kit, extender
 boards, basic spare parts kit, operations/service manual, and blank panels
 for all unused accessory positions.

Note 2. Each 8 output mainframe system includes eleven (11) VU meters, 310-SM2,
 310-SM4, 310-SM6 and 310-SM8 sub-master modules, four (4) 310-BA8
 sub-master assign modules, 310-SMM stereo/mono master module, 310-
 CRM control room monitor module, 310-GM2 and 310-GM4 group master
 faders, built-in cue speaker and amplifier, panels for all unused accessory
 positions.

Note 3. Required with each input module.
 Note 4. Includes standard factory wiring.
 Auditronics Patchbays are available which are suitable for use with the 310
 series console.

QC66 Quality Control Three-Way Monitor

- 8 ohms impedance • 100W program power handling • Anechoic frequency response: 50-20kHz \pm 2dB • Sensitivity: 90dB 1W/1M
- Dimensions: 13 $\frac{1}{2}$ " H x 16 $\frac{1}{2}$ " W x 12 $\frac{1}{2}$ " D • Also available in black vinyl finish

Control room and mobile recording reference monitor, studio playback, mastering monitor, residential and commercial sound systems. Two 6 $\frac{1}{2}$ " (165mm) polypropylene cone woofers with rubber suspensions; 1 $\frac{1}{4}$ " (34mm) soft dome midrange-tweeter; $\frac{3}{4}$ " (19mm) polyamide fiber dome super tweeter.

QC66pr./\$595.00

T66 Compact Two-Way Monitor

- 8 ohms impedance • 100W program power handling • Anechoic frequency response: 55-18kHz \pm 2 $\frac{1}{2}$ dB • Sensitivity: 90dB, 1W/1M
- Dimensions: 12" H x 18" W x 12 $\frac{1}{2}$ " D • Also available in black vinyl finish

Near field control room reference and mixdown monitor, broadcast monitor, sound reinforcement and sound distribution system for small and midsize auditoriums, churches, classrooms, performer's or musician's monitor. Two 6 $\frac{1}{2}$ " (165mm) polypropylene cone woofers with foam suspension; 1 $\frac{1}{4}$ " (34mm) soft dome midrange-tweeter.

T66pr./\$495.00

T6 Sub-Compact Two-Way Monitor

- 8 ohms impedance • 80W program power handling • Anechoic frequency response: 60-20kHz \pm 3dB • Sensitivity: 88dB 1W/1M
- Dimensions: 14 $\frac{1}{2}$ " H x 9 $\frac{1}{2}$ " W x 10" D • Also available in vinyl finish

Near field control room auxiliary monitor for mixdown reference, broadcast monitor, residential high fidelity system, and commercial sound distribution where space is limited. 6 $\frac{1}{2}$ " (165mm) polypropylene cone woofer with foam suspension; 1" (25mm) soft dome tweeter.

T6pr./\$300.00

T5 Ultra-Compact Two-Way Monitor

- 8 ohms impedance • 40W program power handling • Anechoic frequency response: 90-20kHz \pm 3 $\frac{1}{2}$ dB • Sensitivity: 87dB 1W/1M
- Dimensions: 10 $\frac{1}{2}$ " H x 7" W x 7 $\frac{3}{8}$ " D

Neutral response small system reference monitor, A & R demonstration speaker, high quality extension speaker system for home and commercial applications. 5 $\frac{1}{4}$ " (133mm) polypropylene cone woofer with foam suspension; 1" (25mm) soft dome tweeter.

T5pr./\$225.00

RT5-V/RT6-V Rackmountable Monitors

- $\frac{3}{4}$ " W dispersion • Polyamide dome tweeter • 12dB per octave crossover network • Frequency response: 3dB from 70-20kHz
- Power handling: 40WRMS • 6 ohms impedance • Enclosure occupies 5 $\frac{1}{4}$ " vertical rack space; 16 $\frac{1}{2}$ " W x 8 $\frac{1}{2}$ " D

The RT6-V acoustic design is derived from the T6 Sub Compact Two-Way monitor, with the same 1" soft dome tweeter, 12 or 8dB per octave crossover network and nearly identical Thiele Small woofer parameters, except that the magnet structure is heavier and shielded against flux leakage. Frequency response is a quoted 2 $\frac{1}{2}$ dB from 60-20kHz, with 50WRMS power handling. 8 ohms impedance, and enclosure measures 8 $\frac{3}{4}$ " H x 16 $\frac{1}{2}$ " W x 9 $\frac{1}{2}$ " D

RT5-Vea./\$135.00

RT6-Vea./165.00

RM525 (Rackmounting kit for RT5-V)9.90

RMB75 (Rackmounting kit for RT6-V)11.85



5CV

5MCV Multi-Channel Video/Broadcast Monitor

- Anechoic on axis frequency response is 3 $\frac{1}{2}$ dB from 160Hz-12.5kHz
- Shielded magnets reduce flux leakage to minimize deflection of nearby CRT images • 8 ohms impedance • Program power handling is 30W per channel • 5 $\frac{1}{4}$ " H x 16 $\frac{1}{2}$ " W x 8 $\frac{1}{2}$ " D

The 5MCV is a shielded magnet three channel audio monitor for the Video/Broadcast and Recording industries. May be mounted in standard 19" relay racks with optional metal rack ears or placed on consoles, desks, stands or wall mounted horizontally or vertically. The 5MCV was developed specifically for radio broadcasters, to provide separate audio channels for a variety of feeds such as cue, program, emergency channel, talk back, news and sports.

5MCVea./\$150.00

RM525 (Rackmounting kit)9.90

5CV Super-Sound-Cube™ Ultra Compact Speaker System

- Maximum Power Rating: 30WRMS (60W peak at 150Hz) • Nominal Impedance: 8 ohms • Audible frequency response: 50-17kHz
- Enclosures are finished on all sides with an overlay of vinyl • Flush mounted recessed terminal cup

The Ultra Compact Speaker System is a true "Air-Suspension" design with sealed fiberglass insulated enclosures of super-low resonance Acousticwood. The heavy-duty 5" (127mm) high compliance drivers have massive 26 oz. (.74kg) magnet structures, heat resistant 1" (25mm) voice coils and half-roll treated cloth suspensions.

5CVpr./\$99.00

5CVB As above, all black vinyl finishpr./99.00

5CEQV Super-Sound-Cube, Equalized

- Black (5CEQVB) or woodgrain (5CEQVW) vinyl finish • 8 ohms impedance; 40W program power handling • Anechoic frequency response: 150-12.5kHz \pm 3 $\frac{1}{2}$ dB, • Sensitivity 85dB, • 1W/1M • 6 $\frac{1}{2}$ " H x 6 $\frac{1}{2}$ " W x 6 $\frac{1}{2}$ " D

5CEQVB Blackpr./\$117.00

5CEQVW Woodgrainpr./117.00

5CTV Super-Sound-Cube Two-Way System

- Black (5CTVB) or woodgrain (5CTVW) vinyl finish • 6 ohms impedance • 50W program power handling • Anechoic frequency response: 90-25kHz \pm 2 $\frac{1}{2}$ dB • Sensitivity 88dB, 1W/1M • 7 $\frac{1}{2}$ " H x 7 $\frac{1}{2}$ " W x 7 $\frac{1}{2}$ " D

5CTVB Blackpr./\$159.00

5CTVW Woodgrainpr./159.00

**IC-10, AC-8 and AC-6 Stereo/Mono Audio Consoles
Common Features**

Input Characteristics:

- Impedances: Microphone, 200. High level 10K ohm bridge or 600 ohm terminate • External monitor 10K ohm • Levels: Microphone: -65 to -50dBm. High level: -10dBm to +10dBm • External monitor: -10dBm to +10dBm • Noise: Program/audition: 120dBm • Monitor: 110dBm • Power source: 117 or 230VAC 50-60Hz single phase

Output Characteristics:

- Impedances: Program/audition 600 ohm balanced or unbalanced • Monitor 4-16 ohm unbalanced • Cue 4-16 ohm unbalanced • Levels: Program/audition or mono: +8dBm nominal: +24dBm maximum • Monitor: 15W RMS into 8 ohm load • Cue and headset: 1W into 8 ohm load • Frequency Response • Program/audition ±1dB 30 to 15kHz. Monitor ±1.5dB 30 to 15kHz • Distortion: Program/audition less than 0.5% THD • Monitors less than 1.5% THD • Tabletop with bottom or back entry cable • 10" H x 44" W x 20" D (25.4 x 50.8 x 118cm)

IC-10 Ten-Channel Stereo/Mono Audio Console

Input

- Sources: 28 stereo inputs* • 1 high level cassette

OUTPUT (depends on modules used)

- 1 stereo program • 1 stereo audition • 1 monophonic program • 2 monitor amplifiers • 2 headphone amplifiers • 1 cue amplifier

AC-8 Eight-Channel Stereo/Mono Console

Input

- Sources: 26 stereo inputs* • 1 high level cassette

Output (depends on modules used)

- 1 stereo program • 1 stereo audition • 1 monophonic program • 2 monitor amplifiers • 2 headphone amplifiers • 1 cue amplifier

AC-6 Six-Channel Stereo/Mono Audio Console

Input

- Sources: 23 stereo inputs* • 1 high level cassette

Output (depends on modules used)

- 1 stereo program • 1 stereo audition • 2 monitor amplifiers • 2 headphone amplifiers • 1 cue amplifier

*Customer's option as to use by plug-in modules.

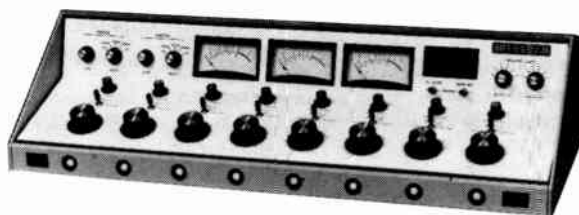
Model	Description	Price Each	Typical Stereo	Typical Mono
IC-10	Ten-Channel Console Shell less Modules	\$7001.00	\$8986.00	\$8141.00
AC-8	Eight-Channel Console Shell less Modules	\$5021.00	\$6830.00	\$6073.00
AC-6	Six-Channel Console Shell less Modules	\$3935.00	\$5495.00	\$4844.00

Options:

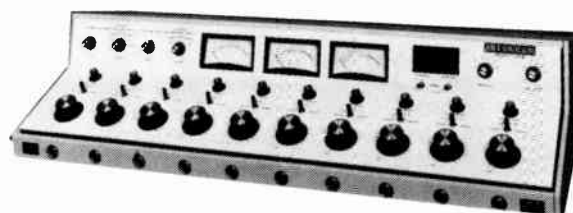
LA-1	Line Amplifier	\$62.00	\$310.00 (5)	\$124.00 (2)
LA-1	(Model AC-6 only)	62.00	248.00 (4)	124.00 (2)
MA-1	Monitor Amplifier	99.00	198.00 (2)	99.00
CA-1	Cue Amplifier	80.00	80.00	80.00
HA-1	Headset Amplifier	72.00	140.00 (2)	70.00
MPA-2	Mike Amplifier	99.00	198.00 (2)	198.00 (2)
MPA-1	(Model AC-6 only)	99.00	99.00	99.00
PS-1	Power Supply/Regulator	79.00	79.00	79.00



AC-6



AC-8



IC-10

Options Cont'd

Model	Description	Price Each	Typical Stereo	Typical Mono
MT-1	Matching Transformer (IC-10)	\$44.00	\$672.00 (16)	\$336.00 (8)
MT-1	(Model AC-8 only)	42.00	504.00 (12)	252.00 (6)
MT-1	(Model AC-6 only)	42.00	420.00 (10)	210.00 (5)
8A-1	Bridging Amplifier	67.00	(0)	(0)
BT-1	Bridging Transformer	44.00	(0)	(0)
MXA-1	Mixing Amplifier	68.00	272.00 (4)	136.00 (2)
XL-1	Microphone Connector	18.00	(0)	(0)

Options are interchanged with all models, except where indicated.

LC-10 Stereo/Mono Audio Console

Identical to the IC-10 console except with slide pots rather than rotary. The depth of the LC-10 is 21.75" (55.25cm).

LC-10 Typical stereo\$9,404.00
Typical mono*8,556.00

* Consoles are wired as stereo. Mono consoles may be upgraded to stereo by adding appropriate plug-in modules. Front panels are engraved.

AUTOGRAM CORP.

Audio Consoles

R/TV-12 and R/TV-20 Stereo Audio Console

Common Features:

- VCA level control • Electronic switching • No audio transformers
- Penny and Giles linear conductive plastic pots • Schadow selector switches • Engraved front panel • Pluggable miniature terminal strips
- Up to eight patchable microphone preamplifiers • Each channel remotely controllable • Easy input level selection • Optional interface card for logging to printer plus interfacing to Live Assist or Computer
- Optional autoclock or autocount

R/TV-12 Console Features

- 8 dedicated pots
- 4 pots with 4 inputs each

R/TV-20 Console Features

- 18 dedicated pots
- 2 pots with 8 inputs each

Specifications

Input Characteristics

Sources:

- 24 stereo inputs
- 4 or 8 microphone inputs (R/TV-12)
- 34 stereo inputs
- 4 or 8 microphone inputs (R/TV-20)

Impedances:

- Microphone, 150 ohm
- High level, 20K ohm bridge or 600 ohm terminate

Levels:

- External monitor, 20K or 600 ohm
- Microphone, -65 to -50dBm
- High level, -10 to +10dBm

SNR:

- Programs/Monitor, better than -90dB at +18dBm out
- Headphone/Cue, better than -80dB at 2W

Power

Source:

- 117 or 230VAC, 50/60Hz

Mounting &

Dimensions:

- Tabletop with bottom or back cable entry
- Height: 10" (25.4cm)
- Depth: 21.75" (55.25cm)
- 37.5" (95.25cm) (R/TV-12)
- 44" (118cm) (R/TV-20)

Output Characteristics

Outputs:

- 1 stereo program
- 1 stereo audition
- 2 mix minus
- 1 mono
- 2 line monitor
- 2 headphones
- 1 cue

Impedances:

- Programs/Monitor, 600 ohm balanced or unbalanced
- Phone/Cue, 2W at 8 ohm

Levels:

- Programs/Monitor, +8dBm nominal +24dBm maximum
- Headphone/Cue, 2W at 8 ohm

Frequency Response:

- Programs/Monitor, ±1dB 20-20kHz
- Headphone/Cue, ±.5dB 20-20kHz

Distortion:

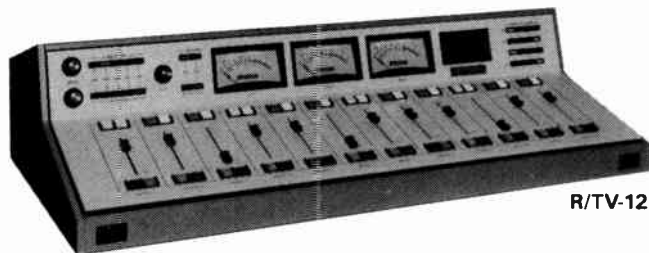
- Programs/Monitor, less than .05% THD and IMD
- Headphone/Cue, less than .05% THD and IMD

R/TV-12	.....	\$10,564.00
R/TV-20	.....	12,620.00

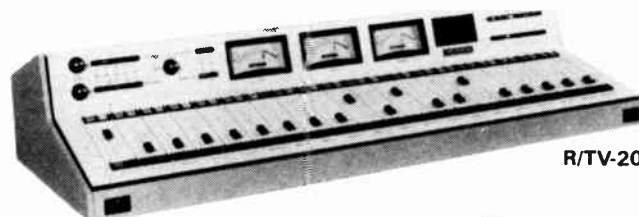
Options: Extra microphone preamplifier card (4 microphone preamplifiers)225.00

Autoclock359.00

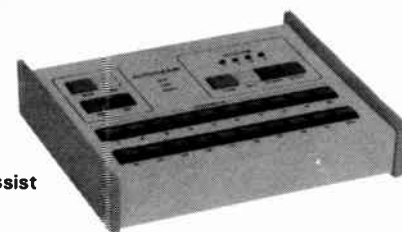
Autocount179.00



R/TV-12



R/TV-20



R/TV Live Assist

LiveAssist Package for R/TV Series Radio and TV Stereo Consoles

The Live Assist Package consists of:

- One microprocessor board
- One control panel
- One interface board with cable

It allows automatic operation of one bus while live work is being done on the other bus. It also enables the operator to program up to 32 sequential steps per program on each of four programs: a total of 128 steps.

The system offers complete and random selection of all console channels. It also allows remote control of each channel on the console using a small eight-wire cable.

The Live Assist Package is an option for use with the R/TV series stereo radio and TV audio consoles: the R/TV-12 offers 24 stereo inputs; the R/TV-20 offers 34 stereo inputs.

The Live Assist Panel plugs into the R/TV series console and offers full remote control plus four live assist programs. Each program contains up to 32 steps.

With Live Assist, the operator can:

- Start, stop and select audio bus for each console channel via remote control
- Pre-program the start time and program sequence with bus selection for each channel
- Activate and set silence sense timing for program and audition buses
- Observe live assist status at all times
- Monitor sources to transfer on EOM or silence-sense
- Use multiple live assist panels for tandem remote control
- Override live assist at any time
- Obtain limited real-time updates for program format control
- Repeat or chain live assist programs for longer walk-away time

The Microprocessor Board plugs into the console's card cage. It decodes logging from tapes encoded by the Autogram Production Center and collects and dumps channel usage data to an external printer.

The microprocessor board has:

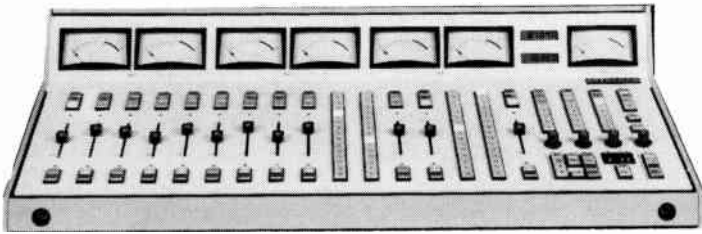
- A parallel printer port
- An RS232C port for communicating to either an external printer or a computer for optional computer control

Live Assist Package \$2,995.00

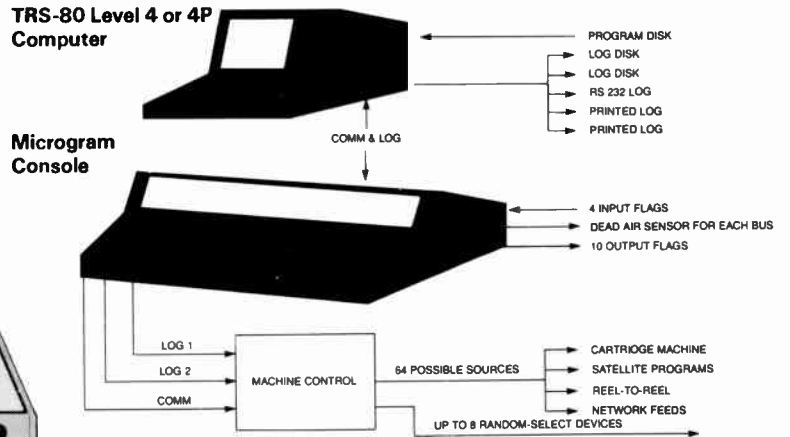
Note: The external printer or computer and related interconnect cables are not included in the Live Assist package.

AUTOGRAM CORP.

Audio Console/Autoclock



Microgram Audio Console



Microgram Audio Console Multimation System Inputs

• Sources: 64 stereo inputs max. • Impedances: Microphone, 200 ohm • High level, 10K or 600 ohm terminate • External monitor, 10K • Levels: Microphone, -65 to -50dBm (single input chassis only) • High level, -10dBm to +10dBm • Noise: -80dB at +18dBm outputs • Power source: 117 or 230VAC 50/60Hz single phase power supply (external)

Outputs

• 3 stereo buses • 1 mono program • 2 cue amplifiers • 2 headphone amplifier • 4 line output (feed external monitor amplifiers) • Impedances: Program and monitor, 600 ohm balanced or unbalanced • Headphone: 8 ohm unbalanced • Levels: Program and monitor, +8dBm nominal, +24dBm max. • Cue and headphone, 1W into 8 ohm load • Frequency response: Program and monitor, ±0.5dB, 30 to 15kHz • Cue and headphone, ±15dB, 30 to 15kHz • Distortion: Program and monitor, <0.5% THD • Cue and headphones, <1.5% THD

Dimensions:

11" above table (279.4mm)
33" D (838.2mm)
43" W (1092.2mm)

Programming Options:

• 5 front panels: 5 control sections max., including 1 monitor • Any combination of 4 single line or multiline sections • **Single line:** 4 microphone or hi level inputs • **Multiline:** 16 hi level inputs • Machine control for remote starts • RS 422 computer interface • Add external computer to automate up to two stereo audio buses • Add external printers and accessories for complete program logging • 12-hour clock display • Stop watch display

Basic with Live Assist 24 Inputs \$16,535.00
Basic with Automation 24 Inputs \$21,356.00



Stand-Alone Version

Autoclock

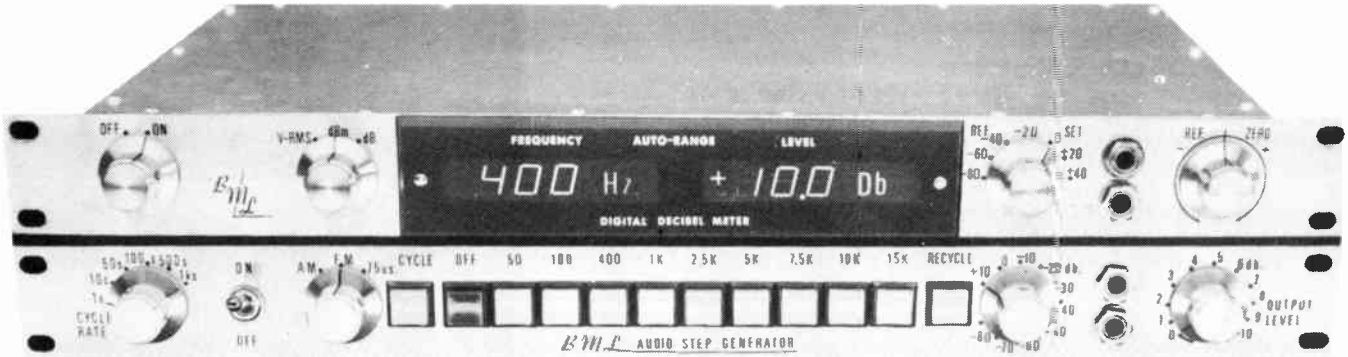
- **Time (HH MM SS):**
PM indicator, battery backed, top of the hour sync for maximum accuracy (WWV or Network)
- **Date (MM DD YY DOW):**
Automatic Leap Year Compensation, battery backed
- **Stopwatch (MM SS):**
0:00 to 99:59, functions include: Restart/Stop, Start/Continue, Reset
- **Count-Down (SS):**
Adjustable from 1 to 32 seconds for fixed count-down timings
- **Temperature (F/C):**
External probe, High of Day and Low of Day plus Time occurred
- **Autoclock:**
Syncs any number of Autoclock units for same Time/Date/ Temperature displays (Stopwatch and Count-Down controlled locally)

Autoclock

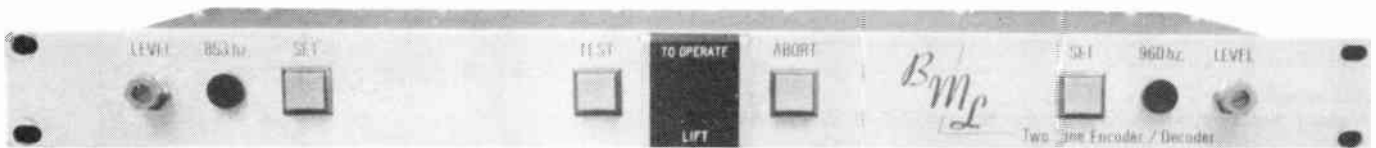
Console-Mounted Version 100C \$359.00
Stand-Alone Version 100D \$359.00

BALD MOUNTAIN LAB

Decibel Meter/Audio and EBS Generators



1760FM



BML 575A

781F Decibel Meter With Frequency Readout

- Auto-Ranging ≈ -90dBm to +40dBm
- dB Reference adjustable throughout above range
- Input—600 ohms balanced—floating
- Reference adjustment for dB measurement
- Fixed reference for dBm measurement
- Three place readout with sign
- Input by front panel jack or rear terminal strip

With the dedicated rackmountable instrument it is now possible to resolve either level differences, or absolute levels in 600 ohm audio circuits to one-tenth of a decibel.

Used as a companion unit to the 1760FM Audio Step Generator this instrument is useful in making audio equipment and line checks in broadcast and recording facilities.

781F (To be used as companion to the 1760 FM Audio Step Generator) **\$ 1795.00**

1760 FM Audio Step Generator

- Frequencies can be sequentially stepped one time, or repeatedly, making possible one man line checks. Stepping rates from one second to 1000 seconds are available
- Easier to use than sweep, because the frequency in use is always known at a remote location
- Very low distortion—difficult to obtain in sweep generators
- Frequencies cut off at 7.5kc for AM use
- Frequencies extend to 15kc for FM checks
- 75μsec roll off available for overall FM checks
- Continuously variable output attenuator
- Front panel output jack
- 1 3/4" Rackmount
- Output level + 20dBm in 600 ohms max.
- Frequency stability .01%
- Distortion < .05%
- Output impedance 600 or 150 ohms

An Audio Generator with nine precise crystal controlled frequencies instantly available. These frequencies correspond to those used in proof of performance measurements, and are pushbutton selectable.

1760FM **\$ 1795.00**

BML 575A Two Tone EBS Generator

- 1 3/4" Single unit rack height for minimum space
- Visual indication of tone presence by pressing test button. This test does not go on the air
- Complete isolation from audio line by way of a positive action reed relay when unit is in stand by
- Fail safe circuitry—digital or power supply failure cannot cause tone to be transmitted. Tone can only be transmitted by closing reed relay
- Designed for use in heavy RF fields such as found at transmitting sites
- Individual level control for each tone
- Positive abort will kill tone at any time
- Dual redundant encoders available

The 575A is designed to meet the exacting requirements of the two tone attention signal for the Emergency Broadcast System.

The regulations require tones of 853Hz and 960Hz to be transmitted for 20 to 25 seconds. The tones must be accurate to .5Hz and have distortion of less than 5%.

The tones in the 575A Generator are generated by digital division and filtering of two highly stable crystal oscillators. The 960Hz tone is further divided and gated to give an accurate 22.5 second timing interval.

Specifications

- Frequency Stability:** < 1Hz
- Output Impedance:** 600 ohms balanced or floating
- Output Level:** + 8 Maximum
- Distortion:** < 5%

Remote Control Requirements for Operate and Abort: Momentary contact

For Encoder and Decoder in Single 1 3/4" Rack Space:

BML575A **\$850.00**

BARCO INDUSTRIES, INC.

Color Monitors

CVS Series Broadcast Color Monitors

- Automatic set-up • Microprocessor based • Password protection
- American Standard Phosphor (ASP) • EBU Phosphor (optional) • Automatic Kinescope Biasing (AKB) • 2 Coded Video Inputs: loopthrough and floating • Quad decoder • RGBS input • Component video input (optional) • Internal test patterns • Notch filter/comb filter • Switchable color temperature • Front RGB switches • Simple or full remote
- Master remote for up to 48 monitors • Adjustable aperture correction • Presettable functions per input • Pulse cross
- Underscan/overscan • Safe area • Program display (optional)
- Rackmountable

Stable and matching pictures

Display controls such as contrast, brightness, saturation and hue are value-related. When set to identical values different monitors will display matching pictures.

AKB-circuitry maintains color temperature independent of tube-aging and ambient temperature.

Flexible set-up

Settings of display controls, display functions (INT/EXT sync, H&V delay, etc.) and decoder functions (mono, aperture etc.) can be memorized and recalled.

In calibrated position, pictures are displayed as recommended by the EBU and SMPTE.

In preset position, the settings of the display controls, display functions and decoder functions are user selected.

Flexible, easy color temperature alignment

While manual adjustment is provided for, three different standard color temperatures (6500°K, 3200°K, 9300°K) can be automatically aligned.

Flexible full modular design

CVS design reflects extreme modularity, independent boards exchange information over an analog and digital bus while a microprocessor controls all communications.

The standard monitor is equipped with an RGBS-input on the RGB-amplifier board and 2 coded inputs on the Quad-decoder board, thus leaving three slots empty. Here other options can be inserted at any time, while no hardware modifications are needed.

Flexible remote control facilities

As the CVS has full remote capabilities, Barco Industries developed a multi-monitor remote control. From this MMRC all settings of display controls, display functions and decoder functions can be accessed, for any or all CVS monitors of a production gallery.

Also, a handheld keyboard was designed to remotely control a single CVS monitor.

14" Monitors

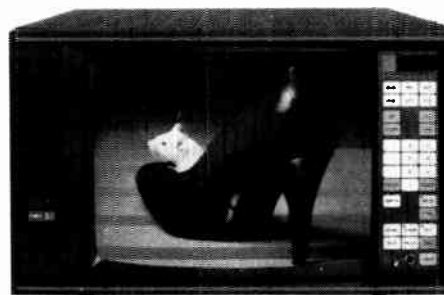
- CVS/37/PS/Q CRT Pitch .62mm (330 TV lines) . . . \$4,650.00
- CVS/37/IH/Q/ASP CRT Pitch .31mm (680 TV lines) . . . \$5,920.00

20" Monitors

- CVS/51/PS/Q CRT Pitch .68mm (480 TV lines) . . . \$4,990.00
- CVS/51/IM/Q/ASP CRT Pitch .43mm (700 TV lines) . . . \$6,320.00
- CVS/51/IH/Q CRT Pitch .31mm (900 TV lines) . . . \$6,900.00

CVS Options

- Single remote panel \$ 465.00
- Master remote panel 6,780.00
- Component input module (RGB, Y/R-Y/B-Y, Y/I/Q, Y/PR/PB) . . 650.00
- Input extension module (5 composite loopthrough inputs) . . . 555.00
- Service kit 195.00
- Program display 370.00
- Thoma color analyzer 6,250.00
- BI Light probe 2,050.00
- RM 37 Rackmount kit for CVS 37 295.00
- RM 51 Rackmount kit for CVS 51 370.00



CVS Series



CTVM4/37

CTVM 4 Series Broadcast Precision Color Monitors

- ASP • EBU phosphor (optional) • AKB • RGBS input • Component video input (optional) • Internal test patterns • Notch filter/comb filter
- Front RGB switches • Decoded RGBS and B-Y and R-Y outputs
- Pulse cross • Underscan/overscan

Cathode Ray Tubes

Delta Gun Dot Mask CRT (D): If accurate monitoring at every stage, when keen observation for the slightest error in color picture reproduction is vital, the monitor must be equipped with a delta gun dot mask picture tube.

In-line Gun Dot Mask CRT (I): Combining the advantages of in-line CRT (no dynamic convergence adjustments) with the resolution of delta gun tubes, the high resolution dot in-line CRT accurately displays every detail.

In-line Gun Slot Mask CRT (P): In broadcast situations where color monitors are used for picture identification, a slightly lower standard of reproduction can be accepted and sometimes it may be advantageous to employ monitors fitted with in-line gun slot mask picture tube.

14" Monitors

- CTVM4/37/IH/N2/ASP In-line Dot Mask CRT
CRT pitch .31mm (680 TV lines) . . . \$ 8,460.00
- CTVM4/37/DH/N2/ASP Delta Gun Dot Mask CRT
CRT pitch .31mm (750 TV lines) 10,690.00

20" Monitors

- CTVM4/51/IM/N2/ASP In-line Dot Mask CRT
CRT pitch .43mm (700 TV lines) . . . \$ 9,200.00
- CTVM4/51/DM/N2/ASP Delta Gun Dot Mask CRT
CRT pitch .43mm (775 TV lines) 10,950.00

26" Monitor

- CTVM4/66/PS/N2 In-line Slot Mask CRT
CRT pitch .82mm (530 TV lines) . . . \$9,890.00
- RM 37 Rackmount kit for CTVM 4/37 295.00
- RM 51 Rackmount kit for CTVM 4/51 315.00

BARCO INDUSTRIES, INC.

Monitors/Demodulators/Modulator

TVM 3/37 Master Control Monochrome Monitor

- Illuminant D phosphors (6500°K color temperature) • Switchable notch filter • Pulse cross and underscan • Front panel presets for brightness and contrast • Internal/external sync • Remote control • Modular design

The TVM 3/37 precision monochrome monitor is a measuring instrument for broadcast, industrial and educational applications where high quality, transparency and reliability are important. Derived from the CTVM master control monitors, the TVM 3/37 produces sharp, clear and stable pictures.

Applications

Any quality-oriented, monochrome application, such as program evaluation or viewing that does not require color information. The unit can also be used for camera and telecine alignment.

TVM 3/37 14" Monochrome Monitor	\$3650.00
RM/37 Rackmount for TVM 3 . . . . .	.295.00

VSD Series Television Demodulators

- High grade video and sound signals • Overall gain independent of picture content • Automatic Gain Control (AGC) eliminates the effects of variable field strength resulting from different input signals • Video and sound level meter • Relative indication of field strength on front panel meter • Excellent 2T and 20T pulse response • Modular, all solid-state design

VSD demodulators are used where high grade video and sound signals from a broadcast signal are needed. Three models are available: VSD1 Multi-channel, multi-standard; VSD2 Multi-channel single standard (VSD1 and VSD2 have five presettable channels); and the quartz-controlled VSD2/X single channel, single standard, which is available for any TV channel between 5 and 890MHz.

VSD 1000 BG/IF only	\$6850.00
VHF/IF Converter (47-225MHz)	1250.00
VHF/IF Converter (225-400MHz)	1250.00
UHF/IF Converter (400-900MHz)	1250.00
SPC/IF Converter (5-25MHz)	1650.00
Input Synthesizer	1625.00

Options

High stability quartz for the quartz controlled input converter . . \$110.00

Sound Trap Off (for measurements on the video output signal) \$1290.00

VSD 1 Multistandard, multi-channel TV demodulator with 5 presettable channels available in the following combinations: BGH, I, L, CF; BGH, DK, L, CF; BG, MN; BG, DK	\$2950.00
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VSD 1 Options

Input failure info outlet \$120.00

Combined VHF and UHF input 270.00

VSD 2 Single standard, multi-channel TV demodulator with 5 presettable channels available for all world systems: BG, DK, I, L, MN	\$3050.00
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VSD 2 Options

Additional IF input \$ 70.00

Input failure info outlet 120.00

Combined VHS and UHF input 270.00

VSD 2/X Single channel, single standard TV demodulator available for systems B, G, H, L, K, D, and MN (input channel to be specified)	\$3490.00
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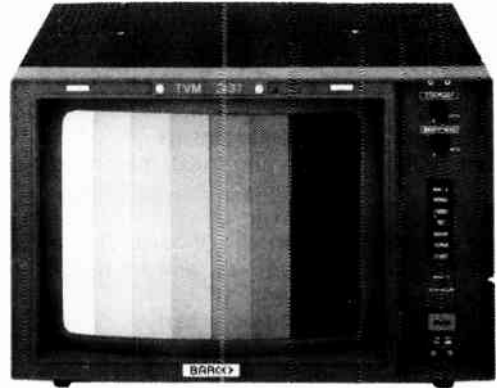
When IF only input (without channel to IF converter) 2250.00

VSD 2/X Options

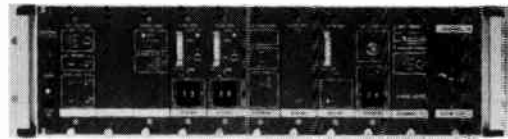
Input failure info outlet \$120.00

Combined video + 5.5MHz output (BG models only) 240.00

Combined video + 6MHz output (I models only) 270.00



TVM/3/37



VSBM 1000

VSBM 1000 IF Only Television Modulator

- Available for MN, BG, DK, and I • Sound Modulator generates the aural carrier and modulation of the audio on this carrier • Video processor pre-corrects the input video signal for group delay. DC-level and white limiting • Vision modulator generates the IF video carrier and ensures modulation of the video signal on the carrier • VSB+ COMBS V/S realizes vestigial sideband filtering on the video IF signal (through SAW filtering) and combines both aural and vision IF to the IF output signal • IF to channel converters converts the IF outputs frequency of the modulator to a specified RF channel (between 5 and 900MHz)

VSBM 1000 IF	\$6490.00
IF/VHF converter (50dBmV)	1250.00
IF/VHF converter (60dBmV)	1580.00
IF/UHF converter (40dBmV)	1250.00
IF/SPC converter (40dBmV)	1650.00
SPC = 1 channel between 5 and 25MHz.	1650.00

VSBM Options

Auto Selector	Enables automatic selection between two video and audio input signals . . . \$ 370.00
Phase Lock Module	Locks RF output channel on an external reference 1060.00
Sound Coder BG	Encodes both R and L input audio signals according to the German dual carrier sound system. 1160.00
2nd Sound Carrier BG (33.16MHz)	Generates 2nd aural carrier for stereo sound 720.00
2nd Sound Carrier DK (32.16MHz)	Generates 2nd aural carrier for stereo sound 720.00
High Stability Quartz	Increases the stability from 20 ppm to 3 ppm. Applies to the IF frequency and the output RF channel 110.00
Vision Carrier PLL	Locks the IF oscillator on the incoming video signal 530.00
OCXO-Board (Oven Controlled Crystal Oscillator)	Improves IF output frequency stability to .15 ppm. 1750.00
Character Inserter	Adds up to 40 characters to the standby video input signal 1160.00
Sound Intercarrier Input	Takes sound on intercarrier frequency to the sound modulator. Input may be stereo or mono sound 1160.00

BARCO INDUSTRIES, INC.

Color Monitors

CM 22 9" Professional High Resolution Portable Color Monitor

- Two composite video inputs, looped through and floating
- One RGBS input plus RGB fast insert
- Automatic Kinescope Biasing (AKB) maintains color temperature and black level stability
- Comb filter, switchable to notch
- AC or DC operation (external 12V battery)
- Built-in audio amplifier, speaker and front panel headphone output
- Pulse cross and underscan/overscan
- Blue-only for tape noise evaluation and for monitor adjustment using SMPTE color bars
- Front panel pre-set controls for hue, brightness, chroma and contrast
- Internal/external sync (fast or slow)
- Remote control and tally light
- Modular design: all active and passive components on plug-in boards
- RG off

CM 22 Applications

Television picture evaluation; preview of individual video sources; video/data combinations; systems for combined video and graphics display; background and character generators; and editing suites. The CM 22 is also ideal for ENG, EFP and other outside applications where high resolution and color temperature stability must be combined with compact size and portability.

CM 22 CRT pitch .30mm (420 TV lines) \$3050.00

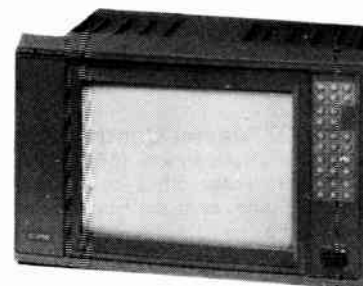
CM 22 Options

Rackmount tray for mounting of two CM 22s in a 19" rack **\$220.00**

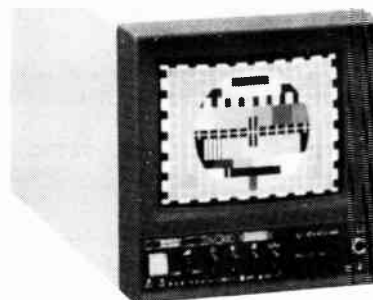
CVM Series Professional Color Monitors

- PAL (notch) or NTSC (comb) decoder
- Input configuration; 3 coded inputs or 2 coded inputs and 1 external sync input (loop through and floating)
- Fast/slow sync time constant
- RGB switches/blue only
- Size (underscan/overscan)
- H/V delay and pulse cross
- Aperture control
- Monochrome switch: Color—Monochrome filtered—monochrome full bandwidth
- Automatic manual degaussing
- Scan failure protection
- 2 tally lights
- Front panel control of geometry and colorimetry (protected)
- FS slot mask in-line gun CRT
- Supreme brightness
- Excellent screen uniformity
- Decreased reflection
- 15% more active screen area

CVM is a high quality monitor, available in two sizes: 14V and 20V. Like its big brother, CVS, it is fully micro-processor controlled. CVM is characterized especially by its excellent brightness, outstanding raster size stability and unmatched color temperature stability. It offers full broadcast features. In its price range it is the only monitor that combines so many advantages for the user.



CVM Series



CM 22

Excellent color temperature and raster size stability

The AKB-circuitry allows you to maintain color temperature independent of tube-aging and ambient temperature fluctuations. CVM features excellent raster size stability even under extreme brightness levels.

Fully modular design

With no active/passive components in the mainframe. Passive membrane control panel.

Affordable Intelligence

- Faster and more accurate picture matching. CVM has both a calibrated and preset control memory for all display parameters and control functions. Fast and easy control of monitor walls is the result.
- Full remote control. All display parameters and functions can be controlled remotely. You have the choice of two options: simple remote control for simultaneous control of up to 12 monitors, multi-monitor remote controller for up to 48 monitors, both CVS and CVM, which can be addressed individually, per group or in total
- Configuration flexibility. CVM has an option slot and is fully software driven. Consequently it gracefully accepts optional plug-in modules.

14" Monitor

CVM 37/FS/NTSC CRT pitch .55mm (500 TV lines, preliminary). **\$2930.00**

20" Monitor

CVM 51/FS/NTSC CRT pitch .75mm (500 TV lines, preliminary). **\$2980.00**

CVM Options RM CVM

19" rackmount kit for CVM 37 or CVM 51 **\$330.00**

BARDWELL & MCALISTER, INC.

Lighting Equipment

Slimline II 2000W Tungsten-Halogen Light

Lightweight and portable, designed for broad fill applications. It is ideal for TV, motion picture, and still photography, and provides a flat, even pattern of light over a wide area.

Slimline II comes with 4-leaf barndoors and accepts a wide variety of accessories. Lamping options include a complete range of 120/240V lamps for AC or DC operation.

For Television Studios

With 4-way barndoors, 36" long 3-wire hi-temp silicone-rubber cable; no switch; yoke with 3-way mounting bracket for 5/8" dia. male stud.

- TV29001 With 20A grounded pin plug \$299.00
- TV29003 With 20A grounded twistlock plug. 299.00

For Motion Picture and Still Studios

With 4-way barndoors, 25' long 3-wire detachable Neoprene rubber cable; in-line switch; yoke with 3-way mounting bracket for 5/8" dia. male stud

- MP29000 With 20A grounded twistlock plug. \$299.00
- MP29002 With fused half stage plug. 316.95
- 29106 25' replacement cable neoprene rubber with plug. 89.95

Scrim (10" Stainless Steel)

- 29304 Single 10.00
- 29305 Double 12.00
- 29307 Extended accessory holder (for 12" gel frame and scrims) 44.75
- 49369 Gel and diffusion frame 12" 23.75

Scrim - 12"

- 49148 Single 11.50
- 49149 Half single 11.50
- 49150 Double 13.50
- 49151 Half Double 13.50
- 49104 "C"-clamp assembly - for hanging M.P., or TV Model. 21.75

Stands

- LS116 Heavy-duty alum. light stand, 4-section with 5/8" spud (45" folded, 156" extended). 96.50
- S200 Standard lightweight folding stand with casters (41" folded, 96" extended). 114.95
- S203 Standard heavy-duty folding stand with casters (40" folded, 92 1/2" extended). 154.95

Recommended Lamps, (AC/DC) Tungsten-Halogen "Quartz" Lamps

- Double Ended - 5 5/8" M.O.L., 3200°K, CL Type**
- 91040 (FEY) 120V 2000W 300 hrs. \$121.00
 - 91041 (FER) 120V 1000W 300 hrs. 80.00
 - 91043 (DWT) 120V 1000W 2000 hrs. 93.85

Mini-Mac 650 and Mini-Mac 1000

Tungsten-Halogen Broad Lights

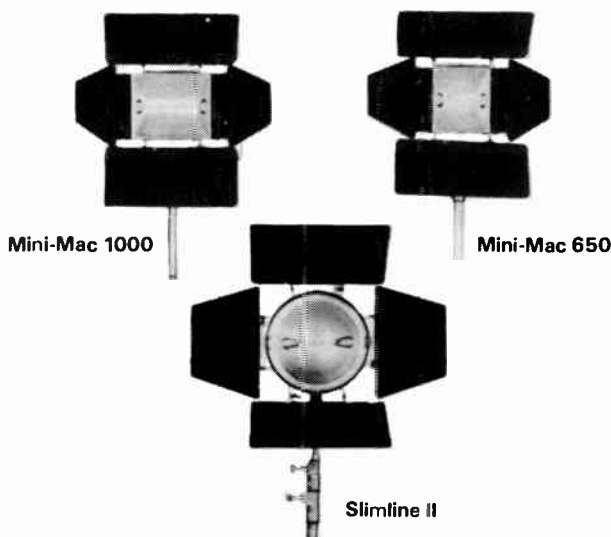
The Mini-Mac 650 and Mini-Mac 1000 Tungsten-Halogen Broad Lights feature a rugged, compact design ideal for general lighting applications. Mini-Macs provide a wide range of lamping options in different wattages and produce an even pattern of light over a wide area. 4-leaf barndoors included.

The Mini-Set 1000 flood and set light is indispensable anywhere a wide wash of light is required. It is available with stand or C-clamp mounting and comes with 2-leaf barndoors. Full range of lamping options available.

Mini-Mac 650

For Motion Picture and Still Studios

- MP18011 With 4-way barndoors, 25' long 3-wire Neoprene rubber cable; In-line switch and parallel blade, U-ground plug; yoke with 3-way mounting bracket for 5/8" dia. male pin \$168.95



Scrim (Stainless Steel)

- 18057 Single \$ 8.00
- 18058 Double 8.00
- 18059 Dichroic filter. 95.00
- 49104 "C"-clamp assembly 21.75
- 49028 Gator grip with 5/8" dia. pin 31.50

Stands

- LS116 Heavy-duty alum. light stand, 4-section, with 5/8" dia. spud (45" folded, 156" extended). \$ 96.50
- S200 Standard lightweight folding stand with casters 5/8" dia. pin, 41" folded, 96" extended. 114.95
- 63017 Stand adaptor, 5/8" male to 3/8" female. 11.95
- G123 Wall plate with 5/8" dia. pin 19.00

Recommended Lamps

Tungsten-Halogen "Quartz" Lamps

Double Ended - 3 1/8" M.O.L.

- | | | | | | | |
|--------------------------|------|------|--------|-----------|----|-------|
| 91010 (FAD) | 120V | 650W | 3200°K | 125 hrs. | CL | 29.95 |
| 91011 (FBX) | 120V | 650W | 3200°K | 125 hrs. | FR | 39.00 |
| 91012 (DWT) | 120V | 650W | 3400°K | 30 hrs. | CL | 40.50 |
| 91014 Q400T4/CL | 120V | 400W | 3000°K | 2000 hrs. | CL | 40.50 |
| 91015 (EHP or Q300T4/CL) | 120V | 300W | 3000°K | 2000 hrs. | CL | 45.50 |
| 91016 (DXX) | 240V | 800W | 3200°K | 80 hrs. | CL | 40.50 |

For Television Studios

With 4-way barndoors 36" long 3-wire Hi-Temp Silicone-rubber cable; no switch; yoke with 3-way mounting bracket for 5/8" dia. male pin.

- TV18003 With 20A grounded pin plug \$168.95
- TV18002 With 20A grounded twistlock plug. 168.95

For Motion Picture and Still Studios

- MP18001 With 4-way barn doors, 25' long 3-wire neoprene rubber cable; In-line switch and parallel blade, U-ground plug; yoke with 3-way mounting bracket for 5/8" dia. male pin \$168.95
- 49104 "C"-clamp assembly - for hanging M.P. or TV model (Mini-Set 1000 and Mini-Mac 1000) 21.75
- 49028 Gator grip with 5/8" dia. pin 31.50

Recommended Lamps

Tungsten-Halogen "Quartz" Lamps

Double Ended - 4 1/8" M.O.L., 3200°K

- | | | | | | |
|------------------------------|------|-------|----------|----|-------|
| 91030 (FCM or Q1000T3/4CL) | 120V | 1000W | 500 hrs. | CL | 34.75 |
| 91031 (FHM or Q1000T3/4) | 120V | 1000W | 500 hrs. | FR | 37.40 |
| 91032 (FDF or Q500T3/4CL) | 120V | 500W | 500 hrs. | CL | 35.95 |
| 91033 (FDN or Q500T3/4) | 120V | 500W | 500 hrs. | FR | 38.95 |
| 91034 (EJG or Q750T3/4CL) | 120V | 750W | 500 hrs. | CL | 45.50 |
| 91035 (Q750T3/4) | 120V | 750W | 500 hrs. | FR | 48.25 |
| 91036 (Q1000T3/3CL) | 120V | 500W | 100 hrs. | CL | 39.50 |
| 91037 (Q1000/650T3/4 WM-FWM) | 120V | 650W | 500 hrs. | CL | 39.50 |
| 91038 (Q800T3/4CL) | 240V | 800W | 250 hrs. | CL | 41.50 |
| 91039 (Q800T3/4) | 240V | 800W | 250 hrs. | FR | 44.25 |

BARDWELL & MCALISTER, INC.

Lighting Equipment

Mini-Set 1000

For Television Studios

With 2-way barndoors, 36" long 3-wire hi-temp silicone-rubber cable; no switch; yoke with 3-way mounting bracket for 5/8" dia. male pin.

- TV27001 Same as TV18003 \$158.50
- TV27002 Same as TV18002 167.00
- MP27000 Same as MP18001 but with 2-way barndoors . . . 167.00

Recommended Lamps

Tungsten-Halogen " Quartz" Lamps

Double Ended—4 11/16" M.O.L.

91030 (FCM or Q1000T3/4CL)	120V 1000W 3200°K	500 hrs.	CL	..	\$34.75
91031 (FHM or Q1000T3/4)	120V 1000W 3200°K	500 hrs.	FR	..	37.40
91032 (FDF or Q500T3/4CL)	120V 500W 3200°K	500 hrs.	CL	..	35.95
91033 (FDN or Q500T3/4)	120V 500W 3200°K	500 hrs.	FR	..	38.95
91034 (EJG or Q750T3/4CL)	120V 750W 3200°K	500 hrs.	CL	..	45.50
91035 (Q750T3/4)	120V 750W 3200°K	500 hrs.	FR	..	48.25
91036 (Q1000T3/3CL)	120V 500W 3350°K	100 hrs.	CL	..	39.50
91037 (Q1000/850T3/4 WM-FWM)	120V 650W 3200°K	500 hrs.	CL	..	39.50
91038 (Q800T3/4CL)	240V 800W 3200°K	250 hrs.	CL	..	41.50
91039 (Q800T3/4)	240V 800W 3200°K	250 hrs.	FR	..	44.25

Stands For Mini-Mac and Mini-Set

- LS116 Heavy-duty alum. light stand, 4-section, with 5/8" dia. spud (45" folded, 156" extended) . . . \$ 96.50
- S200 Standard lightweight folding stand with casters, 41" folded, 96" extended. 114.95
- 63017 Stand adaptor, 5/8" male to 3/8" female. 11.95
- G123 Wall plate with 5/8" dia. pin 19.00

Cyc Strip Lights

Available in 9 different models in a wide range of lengths and circuits. Cyc strips provide a clean, even illumination for cyclorama backgrounds. Cyc strips can be overhead or floor mounted and accept a full range of mounting hardware, gel frames, safety frames and plug connectors.

1000W and 1500W " Super Intensity" Single and Multi-Circuit Cyclorama Strip Lights

Note: Bardwell and McAlister now manufactures both 1000W and 1500W cyc strip models. The prices as listed are for the 1000W models. If you require 1500W models, use the same ordering code, indicating your choice. Input plugs of appropriate amperage will be provided.

One Light Cyc Strip, with Input Plug

- 25000 With 20A grounded twist plug. \$142.00
- 25013 With 20A grounded pin plug 142.00

One Light Cyc Strip, with Input and Output Plug

- 25001 With 20A grounded twist plugs \$157.75
- 25014 With 20A grounded pin plug 157.75

Accessories

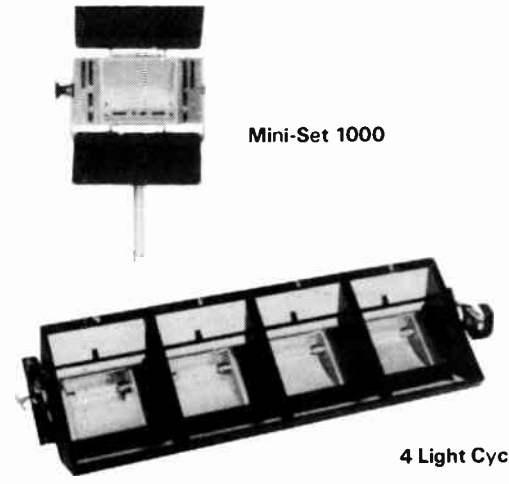
- 25050 One unit safety guard and color frame holder . . . \$68.75
- 49141 Safety steel cable assembly 9.75
- 25051 Color filter frame 18.75
- 25052 Safety frame 34.95
- 25053 C-clamp and hanger assembly (a pair) 67.00
- 25054 Floor mounting assembly (a pair) 67.00
- 25063 Yoke mount with C-clamp 40.75

Two Light Cyc Strip, One Circuit

- 25002 With 20A grounded twist plugs \$206.00
- 25015 With 20A grounded pin plug 206.00

Two Light Cyc Strip, Two Circuit, with Input and Output Plug

- 25016 With 20A grounded twist plugs \$231.50
- 25017 With 20A grounded pin plugs 231.50



Mini-Set 1000

4 Light Cyc

Accessories

- 25050 One unit safety guard and color frame holder (2 req'd) \$68.75
- 49141 Safety steel cable assembly. 9.75
- 25051 Color filter frame (2 req'd) 18.75
- 25052 Safety frame (2 req'd) 34.95
- 25053 C-clamp and hanger assembly (a pair) 67.00
- 25054 Floor Mounting Assembly (a pair) 67.00
- 25064 Yoke mount with C-clamp 48.50

Three Light CycStrip, Three Circuits, with Input and Output Plugs

- 25003 With 20A grounded twist plugs. \$298.00
- 25019 With 20A grounded pin plugs 298.00

Accessories

- 25060 Three unit safety guard and color frame holder \$130.00
- 49141 Safety steel cable assembly 9.75
- 25051 Color filter frame (3 req'd) 18.75
- 25052 Safety frame (3 req'd) 34.95
- 25053 C-Clamp and hanger assembly (a pair) 67.00
- 25054 Floor mounting assembly (a pair) 67.00

Four Light CycStrip, Two Circuits

- 25004 With 20A grounded twist plugs \$384.00
- 25018 With 20A grounded pin plugs 384.00

1000W and 1500W " Super Intensity" Single and Multi-Circuit Cyclorama Strip Lights (continued)

Accessories

- 25050 One unit safety guard and color frame holder (4 req'd or 1 with 3 unit holder) \$ 68.75
- 25060 Three unit safety guard and color frame holder (1 req'd with 1 unit holder) 130.00
- 25051 Color filter frame (4 req'd) 18.75
- 25052 Safety frame (4 req'd) 34.95
- 25053 C-clamp and hanger assembly (a pair) 67.00
- 25054 Floor mounting assembly (a pair) 67.00
- 49141 Safety steel cable assembly 9.75

Six Light CycStrip, Two Circuits

- 25006 With 30A grounded pin plugs \$560.00

Six Light CycStrip, Three Circuits

- 25020 With 20A grounded twist plugs \$585.00
- 25021 With 20A grounded pin plugs 585.00

Accessories

- 25060 Three unit safety guard and color frame holder (2 req'd) \$130.00
- 49141 Safety steel cable assembly 9.75
- 25051 Color filter frame (6 req'd) 18.75
- 25052 Safety frame (6 req'd) 34.95
- 25053 C-clamp and hanger assembly (a pair) 67.00
- 25054 Floor mounting assembly (a pair) 67.00

BARDWELL & MCALISTER, INC.**Lighting Equipment****Focusing Fresnel Spotlights**

Deliver a superior filament-free illumination and provide a smooth transition from flood to spot. Durable, well ventilated spotlights from 300 to 5000W. Their fresnel lenses from 3-13" make them ideal for TV and motion picture applications.

They accept a complete line of accessories including barndoors, scrims, gels, snoots, cables, hangers and stands.

Focusing Open-Face Lights

650	650W open-face focusing light with molded fiberglass housing that stays cool; comes complete with 14' rubber covered cable, in-line switch, parallel blade U-ground plug, and yoke with 5/8" mounting bracket	\$138.00
1000	1000W open-face focusing light with molded fiberglass housing that stays cool; comes complete with 14' rubber covered cable, in-line switch, parallel blade U-ground plug, and yoke with 5/8" mounting bracket	\$138.00
188	4-way barndoor; attaches either directly to light or on accessory holder	30.00
183	Accessory holder; accepts standard 6 5/8" dia. size diffusion	38.00
184	Dichroic filter for daylight conversion	93.50

Scrims

49144	6 5/8" dia. single scrim	\$ 8.00
49145	6 5/8" dia. 1/2 single scrim	8.00
49146	6 5/8" dia. double scrim	9.00
49147	6 5/8" dia. 1/2 double scrim	9.00
49143	Gel/diffusion frame (6 5/8" dia.)	22.50

Stands

LS112	Lightweight aluminum light stand, 4-section, with 5/8" spud, 27" folded, 90" extended	\$61.50
LS114	Medium duty aluminum light stand, 3-section, with 5/8" spud, 33" folded, 96" extended	61.50

Recommended Lamps**Tungsten-Halogen " Quartz" Lamps****Double Ended - 3 1/8" M.O.L.**

91010 (FAD)	120V 650W	3200°K	125 hrs.	CL	..	\$29.95
91011 (FBX)	120V 650W	3200°K	125 hrs.	FR	..	39.00
91012 (DWY)	120V 650W	3400°K	30 hrs.	CL	..	40.50
91014 Q400T4/CL	120V 400W	3000°K	2000 hrs.	CL	..	40.50
91015 Q300T4/CL	120V 300W	3000°K	2000 hrs.	CL	..	45.50
	or (EHP)					
91016 (DXX)	240V 800W	3200°K	80 hrs.	CL	..	40.50

Focusing Open-Face Lights

2000	2000W open-face focusing light with sheet steel housing; comes complete with 14' rubber covered cable, heavy-duty in-line switch, parallel blade U-grd. plug, and yoke with 5/8" mounting bracket	\$245.00
221	4-way barndoor; attaches either directly to light or on accessory holder	49.95
222	Accessory holder; accepts 10" dia. diffusion	60.00
223	Dichroic filter for daylight conversion	250.00

Scrims

49198	10" dia. single scrim	\$10.00
49199	10" dia. 1/2 single scrim	10.00
49200	10" dia. double scrim	12.00
49201	10" dia. 1/2 double scrim	12.00

Stands

LS116	Heavy duty aluminum light stand, 4-section with 5/8" spud, 45" folded, 156" extended	\$96.50
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Recommended Lamps**Tungsten-Halogen " Quartz" Lamps****Double Ended - 5 5/8" M.O.L., 120V, CL**

91040 (FEY)	2000W	3200°K	300 hrs.	..	\$121.00
91041 (FER)	1000W	3200°K	300 hrs.	..	80.00
91043 (DWT)	1000W	3000°K	2000 hrs.	..	93.85

**Baby Keg Spot****Baby Keg Spotlight with Barndoors**

This unit is pole operated and features an improved state-of-the-art medium bipost lamp socket. It has a focusing range of better than 10:1 and includes 4-leaf barndoors.

1000W "Baby Keglite" with 6" Dia. Fresnel Lens**For Television Studios**

Spot-light with 36" long 3-wire Hi-Temperature cable; no switch; yoke with 5/8" dia. female socket.

TVO6000	With 20A grounded pin plug	\$358.75
TVO6002	With 20A grounded twist lock	358.75

For Motion Picture Studios

MPO6001	Spot-light with 25' long 3-wire neoprene rubber cable; on-off switch and parallel blade, U-ground plug; yoke with 5/8" dia. female socket	\$362.95
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Barndoors

58005	4-way	51.00
58010	4-way—8-Leaf	91.50
49143	Gel and diffusion frame—6 5/8" dia.	22.50

Scrims (wire screen)—6 5/8" dia.

49144	Single	8.00
49145	Half Single	8.00
49146	Double	9.00
49147	Half Double	9.00

Snoots

10004	2" dia. opening	23.50
10005	3" dia. opening	23.50
10006	4" dia. opening	23.50

Stands

S200	Standard lightweight folding stand with casters, 41" folded, 96" extended	\$114.95
S203	Standard heavy duty folding stand with casters; 40" folded, 92 1/2" extended	154.95
63005	Hi-riser heavy duty folding stand with casters; 45" folded, 155" extended	219.00

Mounting and Hanging Equipment**Fresnel Lens (Replacement)**

06315	6" dia. Fresnel lens	\$ 16.50
06316	6" dia. Fresnel lens (for retrofit kit only)	22.50
06121	Low bracket (5/8" dia. pin)	37.50
63019	Boom arm assembly only	437.00
63020	Boom arm and heavy duty stand	630.50
49104	"C" clamp assembly with 5/8" dia. pin	21.75
G123	Wall plate with 5/8" dia. pin	19.00
49141	Safety steel cable	9.75
RK1000	Baby keg retrofit kit, complete with lens and new style lamp holder assembly	80.00
RK1001	Baby keg retrofit kit, new style lamp holder assembly only	62.40

Recommended Lamps**Tungsten-Halogen " Quartz" Lamps**

Medium Bi-post Base—2 1/2" L.C.L. Incandescent 120V, 3200°K, 50 hrs.

92010	(500T20/63 or DVG)	500W	\$62.50
92011	(750T24/16 or DVH)	750W	71.00

Medium Bi-Post Base—2 1/2" L.C.L.- Tungsten-Halogen " Quartz" 120V, 3200°K, 100 hrs.

92012	(EGN)	500W	\$74.95
92013	(EGR)	750W	80.00
92014	(EGT)	1000W	88.25

BARDWELL & MCALISTER, INC.

Lighting Kits

Lighting Kits

Mini Mac Kit Model #2600

Part #	Description	Quantity
650	650W open-face focusing light	2
188	4-way barndoors	2
183	Accessory holder	2
49144	Single scrim	2
49145	1/2 single scrim	2
49146	Double scrim	2
49147	1/2 double scrim	2
49143	Gel/diffusion frame	2
91010	650W FAD lamp, Q650T4/4CL	2
18011	Mini Mac 650 broad-light with 4-way barndoor	2
91011	650W FBX lamp, Q650T4/4	2
LS114	Light stand with 5/8" adaptor	3
63070	Grip Mac with 5/8" spud	1
	Carrying case	1

Kit Price\$1615.00

Flight Mac Kit Model #3300

Part #	Description	Quantity
650	650W open-face focusing light	2
188	4-way barndoor	2
183	Accessory holder	2
49144	Single scrim	2
49145	1/2 single scrim	2
49146	Double scrim	2
49147	1/2 double scrim	2
49143	Gel/diffusion frame	2
91010	650W FAD lamp, Q650T4/4CL	2
18001	Mini Mac 1000 broad-light with 4-way barndoor	2
91031	1000W FHM lamp, Q1000T3/4	2
LS114	Light stand with 5/8" adaptor	3
63070	Grip Mac with 5/8" spud	1
	Carrying case	1

Kit Price\$1625.00

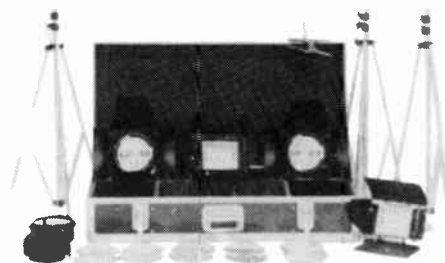
Pro Mac Kit Model #4000

Part #	Description	Quantity
1000	1000W open-face focusing light	2
188	4-way barndoor	2
183	Accessory holder	2
49144	Single scrim	2
49145	1/2 single scrim	2
49146	Double scrim	2
49147	1/2 double scrim	2
49143	Gel/diffusion frame	2
	1000W DXW lamp, Q1000T5/4CL	2
18001	Mini Mac 1000 broad-light with 4-way barndoor	2
91031	1000W FHM lamp, Q1000T3/4	2
LS114	Light stand with 5/8" adaptor	3
63070	Grip Mac with 5/8" spud	1
	Carrying case	1

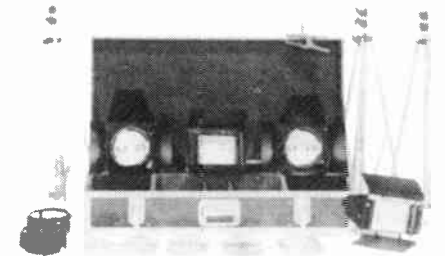
Kit Price\$1650.00

Super Mac Kit Model #5000

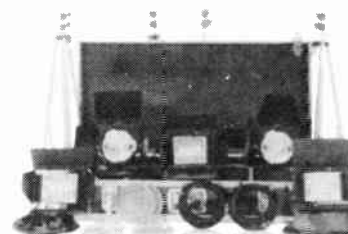
Part #	Description	Quantity
1000	1000W open-face focusing light	2
188	4-way barndoor	2
183	Accessory holder	2
49144	Single scrim	2
49145	1/2 single scrim	2
49146	Double scrim	2
49147	1/2 double scrim	2
49143	Gel/diffusion frame	2
	1000W DXW lamp, Q1000T5/4CL	2



Flight Mac



Pro Mac



Super Mac

18001	Mini Mac 1000 broad-light with 4-way barndoor	3
91031	1000W FHM lamp, Q1000T3/4	3
LS114	Light stand with 5/8" adaptor	4
63070	Grip Mac with 5/8" spud	1
	Carrying case	1
Kit Price		\$2025.00

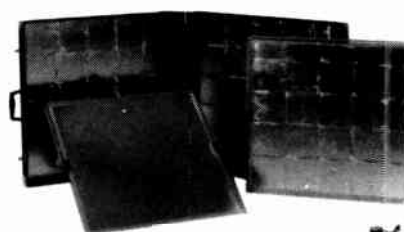
Power Mac Kit Model #7000

Part #	Description	Quantity
1000	1000W open-face focusing light	2
188	4-way barndoor	2
183	Accessory holder	2
49144	Single scrim	2
49145	1/2 single scrim	2
49146	Double scrim	2
49147	1/2 double scrim	2
49143	Gel/diffusion frame	2
	1000W DXW lamp, Q1000T5/4CL	2
18001	Mini Mac 1000 broad-light with 4-way barndoor	1
91031	1000W FHM lamp, Q1000T3/4	1
29000	Slimline II 2000W broad-light with 4-way barndoor	2
91040	2000W FEY lamp, Q2000T8/4CL	2
LS114	Light stand with 5/8" adaptor	2
LS116	Heavy duty light stand with 5/8" adaptor	2
63070	Grip Mac with 5/8" spud	1
2308	6" C-clamp with two 5/8" spuds	1
	Carrying case - lights	1
	Carrying case - stands	1

Kit Price\$2860.00

BARDWELL & MCALISTER, INC.

Light Control Media/Light Stands



R105

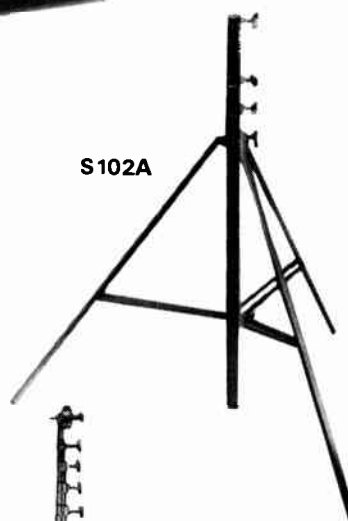


HOLLYWOOD SCENE DOCK

S102S



S102A



S111H



S110



Reflectors and Accessories

- R101 Regular lightweight reflector, 42" square, 3/4" thick panel, with yoke and 1" or 1 1/8" dia. pin. One side covered with aluminum leaf for "soft" diffused reflectance, the other side with aluminum foil for "hard" reflectance \$450.00
- F42S 42" square single reflector net 59.50
- F42D 42" square double reflector net 80.00
- B101-2 2-place box for R101 reflectors 261.00
- B101-4 4-place box for R101 reflectors. 280.00
- B101-6 6-place box for R101 reflectors. 345.00
- R104 Lightweight reflector, 24" square, 1/2" thick panel, with yoke and 5/8" dia. female socket. One side covered with aluminum leaf for "soft" diffused reflectance, the other side with aluminum foil for "hard" reflectance. 148.25
- R105 Reflector Kit: Consists of two (23) R104, 24" square reflectors with yokes, and one (1) carrying case which is leafed on both inside panels and un-hinges for use as hand reflectors 495.00
- F24S 24" square single reflector net. 35.00
- F24D 24" square double reflector net 39.00
- B104-2 2-place box for R104 reflectors. 147.00
- B104-4 4-place box for R104 reflectors. 175.00

Reflector Stands

- S102A **Combo Reflector/Lamp Stand** with collapsible legs, 2-risers and 1 1/8" dia. female socket, Aluminum. One leg has an extender, "Rocky Mountain Leg" for use on uneven terrain \$289.00
- S102S Same as above but in Steel 232.00
- S105A **Combo Reflector/Lamp Stand** with collapsible legs, 1-riser and 1 1/8" dia. female socket, Aluminum. One leg has an extender, "Rocky Mountain Leg", for use on uneven terrain \$228.00
- S105S Same as above but in Steel 204.00
- S108A **Low Combo Reflector/Lamp Stand**, with collapsible legs, 2-risers and 1 1/8" dia. female mounting socket, Aluminum. One leg has an extender, "Rocky Mountain Leg", for use on uneven terrain. \$265.00
- S108S Same as above but in Steel 235.00
- A110 Caster bracket adaptor for above Combo Stands 39.95
- 1655 Stand adaptor—1 1/8" to 5/8" 25.50
- S107 **Hi-Hi Combo Reflector/Lamp Stand** with collapsible legs, 3-risers and 1 1/8" dia. female mounting socket, Steel. One leg has an extender, "Rocky Mounting Leg", for use on uneven terrain \$269.95
- A111 Caster bracket adaptor for above Combo Stand 46.88
- S101 **Standard Reflector Stand** with folding spring-loaded legs, 1-riser with 1" clamp socket, leg extender, Steel. \$266.00
- S101-1 **Reflector Stand** with collapsible legs, 1-riser, with 1" clamp socket, leg extender, Steel \$259.00

Overhead Stands

- S110 **Medium Hi Stand** with collapsible legs, 3-risers with 4" dia. Combo Grip Head, no casters, Steel (14'). \$299.00
- S110C Same as above but with casters 347.00
- S115 **Hi-Hi Stand** with collapsible legs, 3-risers, with 4" dia. Combo Grip Head, no casters, Steel (20') . . . \$315.00
- S115C Same as above but with casters 366.00
- S113 **Medium Hi Stand** with folding legs, 3-risers, 4" dia. Combo Grip Head and casters, Steel (14') . . . \$349.00
- S-113-1 **Hi-Hi Stand** with folding legs, 3-risers, 4" dia. Combo Grip Head and casters, Steel (20') \$377.00
- S111 **Hi-Hi Stand** with removeable column and folding base with casters, 3-risers, Steel (20') \$475.00
- S111H **Super Hi-Hi Stand** with removeable column and folding base with casters, 4-risers, Steel (25') . . . \$499.00

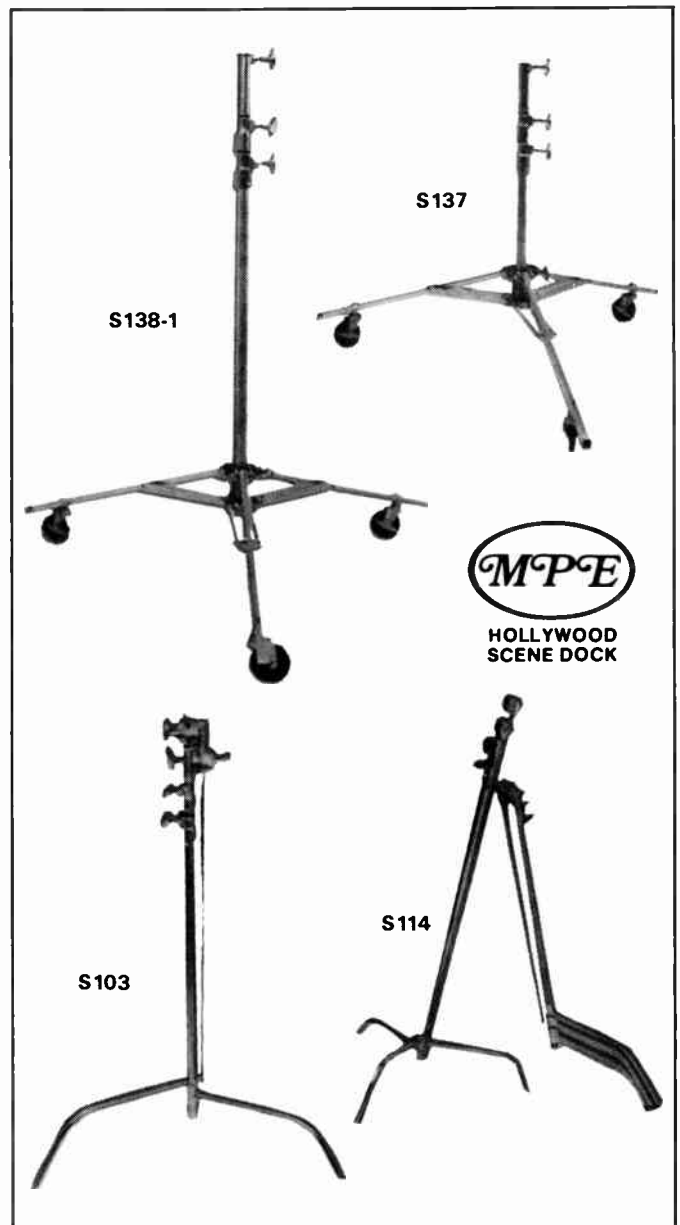
Refer to Green Section for Addresses and Telephone Numbers.

BARDWELL & MCALISTER, INC.

Light Stands

Light Stands

S135A	Lightweight Baby Stand with collapsible legs, 2-risers, 5/8" dia. top pin, no casters, Aluminum. One leg has an extender, "Rocky Mountain Leg", for use on uneven terrain	\$138.50
S135S	Standard Baby Stand Same as above but in Steel	129.95
S1355A	Standard Baby Stand Same as above but in Aluminum and Steel	134.00
S136A	Hi-Riser Lightweight Baby Stand with collapsible legs, 3-risers, 5/8" top pin, no casters, Aluminum. One leg has an extender, "Rocky Mountain Leg", for use on uneven terrain	188.00
S136S	High Riser Standard Baby Stand Same as above but in Steel	172.50
S134A	Lightweight Baby-Jr. Stand with collapsible legs, 2-risers, 5/8" top pin and casters, Aluminum	195.00
S134S	Standard Baby-Jr. Stand Same as above but in Steel	185.00
S134-1A	Hi-Riser Lightweight Baby-Jr. Stand with collapsible legs, 3-risers, 5/8" dia. top pin and casters, Aluminum	239.00
S134-1S	Hi-Riser Standard Baby Stand Same as above but in Steel	229.00
S133A	Itsy Bitsy Baby Stand with collapsible legs, 2-risers, 5/8" dia. top pin, no casters, Aluminum	109.95
S133S	Same as above but in Steel	99.95
S137	Low Jr. Stand with collapsible legs, 2-risers, 1 1/8" dia. female mounting socket and casters, Steel	275.00
S137-1	Standard Jr. Stand with collapsible legs, 2-risers, 1 1/8" dia. female mounting socket and casters, Steel	285.00
S137H	Hi-Riser Jr. Stand with collapsible legs, 3-risers, 1 1/8" dia. female mounting socket and casters, Steel	299.00
S138	Low Sr. Stand with collapsible legs, 2-risers, 1 1/8" dia. female mounting socket and casters, Steel	290.00
S138-1	Hi-Riser Sr. Stand with collapsible legs, 2-risers, 1 1/8" dia. female mounting socket and casters, Steel	280.00



Century Stands

S103	Standard 30" Century Stand with spring loaded folding legs, 2-risers, with 5/8" dia. male spud	\$155.00
S103SL	Sliding Leg 30" Century Stand with spring loaded folding legs, (1-sliding leg), 2-risers, with 5/8" dia. male spud	165.00
S103T	Turtle/Century Stand, 30" 2-risers, with removable spring loaded leg base, with 5/8" dia. male spud	160.00
S114	Standard 40" Century Stand with spring loaded folding legs, 2-risers, with 5/8" dia. male spud	145.00
S114T	Turtle/Century Stand, 40", 2-risers, with removable spring loaded leg base, with 5/8" dia. male spud	160.00
S114SL	Sliding Leg 40" Century Stand with spring loaded folding legs, (1-sliding leg), 2-risers, with 5/8" dia. male spud	180.00
S116	Standard 60" Century Stand with spring loaded folding legs, 2-risers, with 5/8" dia. male spud	175.00
S116SL	Sliding Leg 60" Century Stand with spring loaded folding legs (1-sliding leg), 2-risers, with 5/8" dia. male spud	193.50
S116T	Turtle/Century Stand, 60", 2-risers, with removable spring loaded leg base, with 5/8" dia. male spud	180.00

Accessories for Century Stands

A109-30	2 1/2" dia. grip head assembly with extension arm which also has a grip head attached, to mount directly on any 5/8" dia. pin—30"	\$49.95
A109-40	Same as above—40"	51.95
A109-60	Same as above—60"	53.95
G126	2 1/2" dia. grip head assembly only to mount directly on any 5/8" dia. pin	23.95
G127-30	Extension arm assembly with attached 2 1/2" grip head for gobo extension—30"	30.00
G127-40	Same as above—40"	33.00
G127-60	Same as above—60"	38.95
G133	4" dia. grip head with 1 1/8" dia. pin for mounting directly into female mounting stand sockets	77.00
G133-1	4" dia. combo grip head with 1 1/8" dia. pin and receptacle. Will mount directly into 1 1/8" female stand sockets, and enable light unit or gobo mounting	99.95

BARDWELL & MCALISTER, INC.

Light Control Media

Open End Scrims

F1824S	18" x 24"	Single Scrim	.....	\$35.50
F1824D	18" x 24"	Double Scrim	.....	40.00
F1824SK	18" x 24"	Silk Scrim	.....	35.50
F1824L	18" x 24"	Lavender Scrim	.....	35.50
F2430S	24" x 30"	Single Scrim	.....	41.65
F2430D	24" x 30"	Double Scrim	.....	49.95
F2430SK	24" x 30"	Silk Scrim	.....	41.65
F2430L	24" x 30"	Lavender Scrim	.....	41.65
F2436S	24" x 36"	Single Scrim	.....	42.25
F2436D	24" x 36"	Double Scrim	.....	49.95
F2436SK	24" x 36"	Silk Scrim	.....	42.25
F2436L	24" x 36"	Lavender Scrim	.....	42.25
F3636S	36" x 36"	Single Scrim	.....	47.50
F3636D	36" x 36"	Double Scrim	.....	55.75
F3636SK	36" x 36"	Silk Scrim	.....	48.00
F3636L	36" x 36"	Lavender Scrim	.....	47.50

Solid Frame Scrims

F4242S	42" x 42"	Single Scrim	.....	\$ 75.00
F4242D	42" x 42"	Double Scrim	.....	90.00
F4242SK	42" x 42"	Silk Scrim	.....	75.00
F4848S	48" x 48"	Single Scrim	.....	90.00
F4848D	48" x 48"	Double Scrim	.....	105.00
F4848SK	48" x 48"	Silk Scrim	.....	90.00

Flags and Cutters

F1824	18" x 24"	Solid Black Flag	.....	\$35.00
F2430	24" x 30"	Solid Black Flag	.....	39.00
F2436	24" x 36"	Solid Black Flag	.....	40.00
F3036	30" x 36"	Solid Black Flag	.....	47.95
F2448	24" x 48"	Solid Black Flag	.....	49.00
F1042	10" x 42"	Solid Black Flag/Cutter	.....	46.50
F1848	18" x 48"	Solid Black Flag/Cutter	.....	45.00
F2460	24" x 60"	Solid Black Flag/Cutter	.....	72.50
F3072	30" x 72"	Solid Black Flag/Cutter	.....	73.65
F4242	42" x 42"	Solid Black Flag/Cutter	.....	65.00
F4848	48" x 48"	Solid Black Flag/Cutter	.....	75.00
F2472	24" x 72"	Solid Black Flag/Cutter	.....	72.50

Flag and Scrim Boxes

2334	3-Place Flag/Scrim Box; will hold Flags/Scrims up to 24" W. Dimensions: 43" H x 28" W x 24" D	.....	\$355.00
2335	Castered base for above 3-Place Box	.....	225.00
2331	12" x 24" Flag/Scrim Box	.....	76.00
2332	18" x 24" Flag/Scrim Box	.....	80.00
2333	24" x 36" Flag/Scrim Box	.....	94.00
2336	30" x 36" Flag/Scrim Box	.....	99.00
2340	4 1/4" dia. Duro Diffusion Scrim Box	.....	31.95
2341	6 5/8" dia. Duro Diffusion Scrim Box	.....	37.50
2342	12" dia. Duro Diffusion Scrim Box	.....	42.50

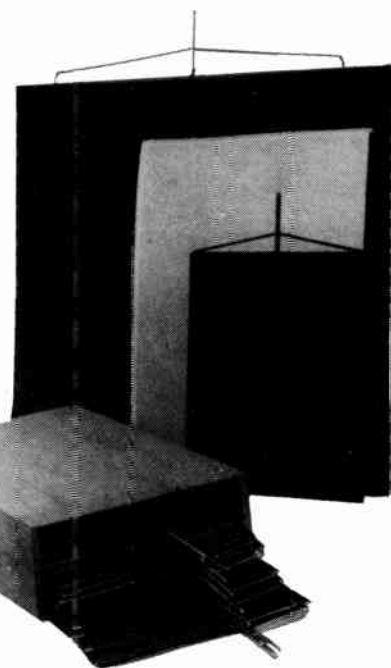
Celo and Wood Coocoloris (Kooks)

K1824C	18" x 24"	Celo Coocoloris	.....	\$ 73.00
K2436C	24" x 36"	Celo Coocoloris	.....	82.75
K4242C	42" x 42"	Celo Coocoloris	.....	93.75
K1824W	18" x 24"	Wood Coocoloris	.....	75.85
K2436W	24" x 36"	Wood Coocoloris	.....	98.00
K4848W	48" x 48"	Wood Coocoloris	.....	155.00



HOLLYWOOD SCENE DOCK

Flags and Scrims



FAS Flex Arm with Finger

Flex Arm

FAS 42" Flex Arm with ball joints and quick acting spring clamp for mounting on stands or pipe, with 1/4" dia. receptacle \$84.00

Dots

1225S	3"	Single Dot	.....	\$20.50
1225D	3"	Double Dot	.....	22.00
1255SK	3"	Silk Dot	.....	20.50
1225	3"	Solid Black Dot	.....	19.75
1225L	3"	Lavender Dot	.....	19.75
1226S	6"	Single Dot	.....	21.50
1226D	6"	Double Dot	.....	23.00
1225SK	6"	Silk Dot	.....	21.50
1226	6"	Solid Black Dot	.....	21.50
1226L	6"	Lavender Dot	.....	21.50
1227S	10"	Single Dot	.....	22.50
1227D	10"	Double Dot	.....	24.00
1227SK	10"	Silk Dot	.....	22.50
1227	10"	Solid Black Dot	.....	22.50
1227L	10"	Lavender Dot	.....	22.50

BARDWELL & McALISTER, INC.

*Fingers/Flex Arm Scrim
Butterflies/Overheads*

Fingers

1228S	3" x 12" Single Finger	\$23.00
1228D	3" x 12" Double Finger	24.50
1228SK	3" x 12" Silk Finger	24.50
1228	3" x 12" Solid Black Finger	23.00
1228L	3" x 12" Lavender Finger	23.00
1229S	4" x 14" Single Finger	23.50
1229D	4" x 14" Double Finger	25.00
1229SK	4" x 14" Silk Finger	23.85
1229	4" x 14" Solid Black Finger	23.50
1229L	4" x 14" Lavender Finger	23.50

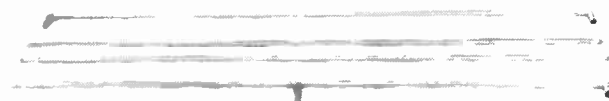


Dots, Fingers and Flex Arm Scrim

Flex Arm Scrim

FA912S	9" x 12" Single Scrim	\$26.75
FA912D	9" x 12" Double Scrim	31.65
FA912SK	9" x 12" Silk Scrim	26.75
FA912	9" x 12" Solid Black Flag	27.50
FA912L	9" x 12" Lavender Scrim	26.75
FA1218S	12" x 18" Single Scrim	33.75
FA1218D	12" x 18" Double Scrim	36.50
FA1218SK	12" x 18" Silk Scrim	33.75
FA1218	12" x 18" Solid Black Flag	33.75
FA1218L	12" x 18" Lavender Scrim	33.75

B6F Butterfly Frame

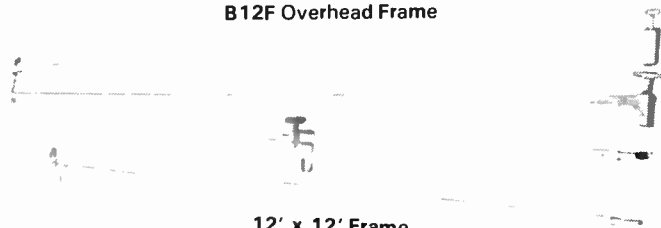


6' x 6' Frame

Butterflies

1266	5' x 5' Butterfly Set consisting of: 1-Frame; 1-Single Net; 1-Double Net; 1-Silk; 1-Solid Black and 1-Compartment Bag	\$525.75
B5F	5' x 5' Knockdown Frame of steel and aluminum round tubing and mounting pin	128.50
1265	Compartment Bag for 4-5' x 5' Butterflies	44.75
B5S	5' x 5' Single Net	83.75
B5D	5' x 5' Double Net	121.00
B5SK	5' x 5' Silk (China Silk)	75.50
B5B	5' x 5' Solid Black	75.50
1268	6' x 6' Butterfly Set consisting of: 1-Frame; 1-Single Net; 1-Double Net; 1-Silk; 1-Solid Black and 1-Compartment Bag	525.00
B6F	6' x 6' Knockdown Frame of steel and aluminum tube and mounting pin	140.00
1280	Compartment Bag for 4 6' x 6' Butterflies	41.75
B6S	6' x 6' Single Net	83.75
B6D	6' x 6' Double Net	121.50
B6SK	6' x 6' Silk (China Silk)	99.00
B6B	6' x 6' Solid Black	76.00

B12F Overhead Frame



12' x 12' Frame

1281	Compartment Bag for 3 12' x 12' Overheads	\$ 52.00
1282	Bag for Solid Black 12' x 12' Overhead	18.75
B12S	12' x 12' Single Net	243.50
B12D	12' x 12' Double Net	432.75
B12SK	12' x 12' Silk (China Silk)	280.00
B12B	12' x 12' Solid Black	224.50

Overheads

1259	12' x 12' Overhead Set consisting of: 1-Frame; 1-Single Net; 1-Double Net; 1-Silk; 1-Solid Black; 1-Bag for Solid Black and 1-Compartment Bag	\$1285.00
B12F	12' x 12' Knockdown Frame of square aluminum tubing complete with Sliding Bracket for attachment to Hi-Stand Grip Heads	302.00

Backings

1288	20' x 20' Single Net	\$ 659.50
1289	20' x 20' Double Net	1165.00
1286	20' x 20' Silk (China Silk)	715.00
1284	20' x 20' Solid Black	465.00
1285	20' x 30' Solid Black	630.00

BARDWELL & McALISTER, INC.

Mounting Equipment/Accessories

Mounting Equipment — Flag Hangers

- G131-1 Overhead Cutter Hanger—Meat Axe—with slide extension and C-Clamp for mounting on post, rail or pipe \$207.50
- G131-2 Overhead Cutter Hanger—Bear Trap—with slide extension and swivel C-Clamp for mounting on post, rail or pipe 207.50
- G131-3 Studio Overhead Grid Cutter Hanger and Diffusion Holder—with "pipe" C-Clamp and Extension Arm with standard 2 1/2" Grip Head 105.00
- 1925 Deck Pole Assembly complete with special 2" Grip Head, Rod Assembly and Wooden Dowel 73.25
- 1926 Deck Pole Clamp Assembly only 23.95
- 1928 Deck Pole Rod Assembly only 23.95

Mounting Equipment — Reflector Hangers

- G121 Reflector Hanger with 1" to 1", 1 1/8" to 1 1/8" or 1" to 1 1/8" Spud and Socket \$39.95

Mounting Equipment — Clamps

- 2307 4" C-Clamp with two 5/8" dia. Pins \$41.50
- 2308 6" C-Clamp with two 5/8" dia. Pins 47.50
- 2309 8" C-Clamp with two 5/8" dia. Pins 56.00
- 2306-6 6" Furniture Clamp with Sliding 5/8" Spud 35.95
- 2306-12 12" Furniture Clamp with Sliding 5/8" Spud 37.95
- 2306-18 18" Furniture Clamp with Sliding 5/8" Spud 39.00
- 2306-24 24" Furniture Clamp with Sliding 5/8" Spud 40.50
- 2303 Slide only with 5/8" Spud 13.50
- 8456 6" Jr. C-Clamp with 2-way 1 1/8" Socket 47.95
- 8458 8" Jr. C-Clamp with 2-way 1 1/8" Socket 56.75
- 63070 Grip Mac (Gaffer Grip) with 5/8" Spud 30.95
- 2337 Vise Grip with 5/8" Spud 30.75
- 2338 Chain Type Vise Grip with 5/8" Spud 43.65
- 2339 Scissor Clip with 5/8" Spud 8.00
- 2339-1 Scissor Clip with Cable Hook 10.00

Nail-On Plates

- G123 Baby Nail-On-Plate with 3" long 5/8" Stud \$19.00
- G123-6 Baby Nail-On-Plate with 6" long 5/8" Stud 24.00
- G123-12 Baby Nail-On-Plate with 12" long 5/8" Stud 21.85
- G123-RA Baby Nail-On-Plate with Right Angle 5/8" Stud 29.50
- G128 Jr. Nail-On-Plate with 1 1/8" dia. Socket 28.95
- G128-1 Jr. Set Wall Bracket with 1 1/8" dia. Socket 34.95

Mounting Equipment — Suction Cups

- 2322 Single Suction Cup with 5/8" dia. Spud \$53.00
- 2323 Double Suction Cup with 5/8" dia. Spud 93.50

Mounting Equipment — Extensions

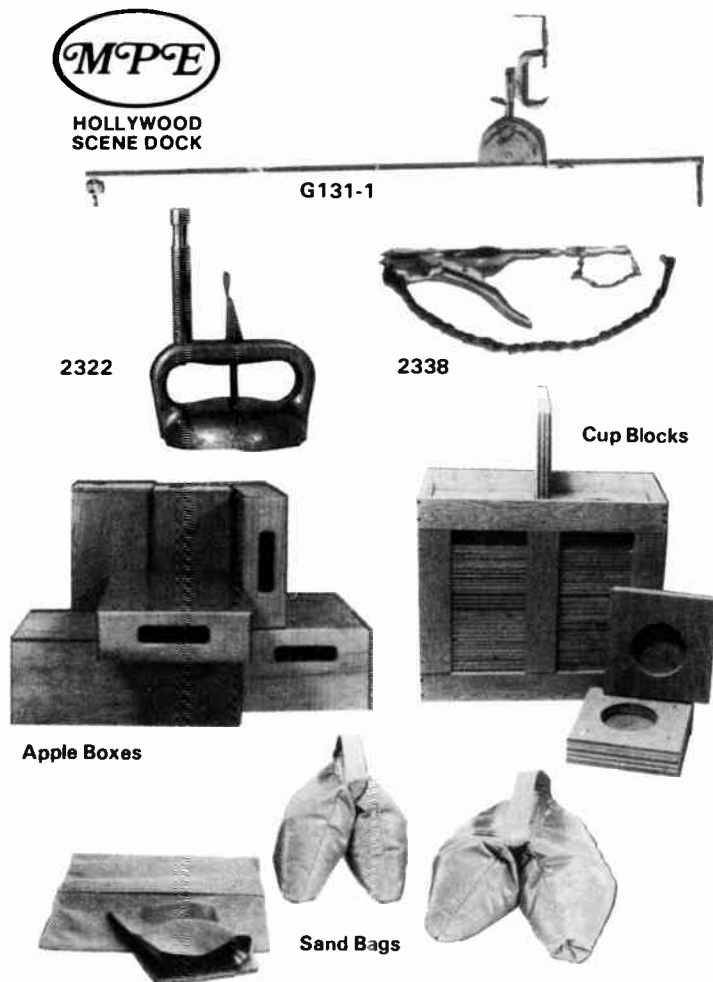
- G117B Baby Offset Arm with Double 5/8" dia. Spud \$ 28.50
- G117J Jr. Offset Arm with 1 1/8" dia. Socket 39.95
- G118 Double Header with two double 5/8" dia. Spuds and one 5/8" dia. Female Mounting Socket 40.50
- G119 Triple Header with two double 5/8" Spuds and one single 5/8" Spud and 5/8" Mounting Socket 49.50
- G120B Baby Stand Extension Riser—24" long 31.50
- G120J Jr. Stand Extension Riser—36" long 58.00
- G116B Baby Side Arm with 5/8" Double Spud 59.50
- G116J Jr. Side Arm with 1 1/8" dia. Socket 60.00
- G115B Baby Trombone with 5/8" dia. Double Spud 105.00
- G115J Jr. Trombone with 1 1/8" dia. Socket 109.00

Mounting Equipment — Wall Spreaders

- 2311 2" x 4" Wall Spreader Assembly for 2" x 4" wood . . \$52.00
- 2312 2" x 6" Wall Spreader Assembly for 2" x 6" wood . . 57.00



HOLLYWOOD SCENE DOCK



G131-1

2322

2338

Cup Blocks

Apple Boxes

Sand Bags

Apple Boxes

- 2301 Full Apple Box (12" x 20" x 8") \$29.00
- 2302 Half Apple Box (12" x 20" x 4") 29.00
- 2304 Quarter Apple Box (12" x 20" x 2") 29.00

Cup Blocks

- 2326-1 Wooden Cup Block (each) \$ 5.00
- 2326 Wooden Cup Block (set of 16 with case) 119.95

Sand Bags

		Filled	Empty
G125	Fly-A-Way Sand Bag (25 lb. approx.)	—	\$42.95
G129	15 lb. Sand Bag	\$24.95	12.50
G132	25 lb. Sand Bag	30.00	20.00
G130	50 lb. Sand Bag	43.00	33.00

"Empty" bags are Sand Bag shells sewn completely except for partially open side seam to allow filling and sewing-closed by purchaser and saves shipping charges.

Heavy-Duty Ballistics Nylon Sand Bags

- Fly-A-Way Sand Bag \$43.65
- 15 lbs. filled with sand 42.95
- 15 lbs. filled with lead 56.50
- 30 lbs. filled with sand 56.50

Umbrella and Stand

- 2328 6' dia. Sun Umbrella with adaptor for mounting on 1 1/8" dia. Female Socket \$107.00
- 2329 Bag for Sun Umbrella 33.00
- S112 Umbrella Stand with collapsible legs, 1-riser and 1 1/8" dia. Female Socket 153.00

Refer to Green Section for Addresses and Telephone Numbers.

BARDWELL & McALISTER, INC.

Duro-Diffusion Lamp Scrim

Duro-Diffusion All Metal Lamp Scrim

49431	4 1/4" dia. for Tiny Mac—Single Scrim	\$7.00
49432	4 1/4" dia. for Tiny Mac—Half Single Scrim	7.00
49429	4 1/4" dia. for Tiny Mac—Double Scrim	8.00
49430	4 1/4" dia. for Tiny Mac—Half Double Scrim	8.00

49436	5 1/8" dia. for Midget—Single Scrim	\$7.25
49437	5 1/8" dia. for Midget—Half Single Scrim	7.25
49438	5 1/8" dia. for Midget—Double Scrim	8.25
49439	5 1/8" dia. for Midget—Half Double Scrim	8.25

49144	6 5/8" dia. for Baby—Single Scrim	\$8.00
49145	6 5/8" dia. for Baby—Half Single Scrim	8.00
49146	6 5/8" dia. for Baby—Double Scrim	9.00
49147	6 5/8" dia. for Baby—Half Double Scrim	9.00

49186	8" dia. for Baby-Junior—Single Scrim	\$ 8.50
49187	8" dia. for Baby-Junior—Half Single Scrim	8.50
49188	8" dia. for Baby-Junior—Double Scrim	10.50
49189	8" dia. for Baby-Junior—Half Double Scrim	10.50

49190	8 1/2" dia. for Baby-Junior—Single Scrim	\$ 9.00
49191	8 1/2" dia. for Baby-Junior—Half Single Scrim	9.00
49192	8 1/2" dia. for Baby-Junior—Double Scrim	11.00
49193	8 1/2" dia. for Baby-Junior—Half Double Scrim	11.00

49194	9" dia. for Baby-Junior—Single Scrim	\$ 9.50
49195	9" dia. for Baby-Junior—Half Single Scrim	9.50
49196	9" dia. for Baby-Junior—Double Scrim	11.50
49197	9" dia. for Baby-Junior—Half Double Scrim	11.50

49198	10" dia. for Junior—Single Scrim	\$10.00
49199	10" dia. for Junior—Half Single Scrim	10.00
49200	10" dia. for Junior—Double Scrim	12.00
49201	10" dia. for Junior—Half Double Scrim	12.00

49148	12" dia. for Junior—Single Scrim	\$11.50
49149	12" dia. for Junior—Half Single Scrim	11.50
49150	12" dia. for Junior—Double Scrim	13.50
49151	12" dia. for Junior—Half Double Scrim	13.50

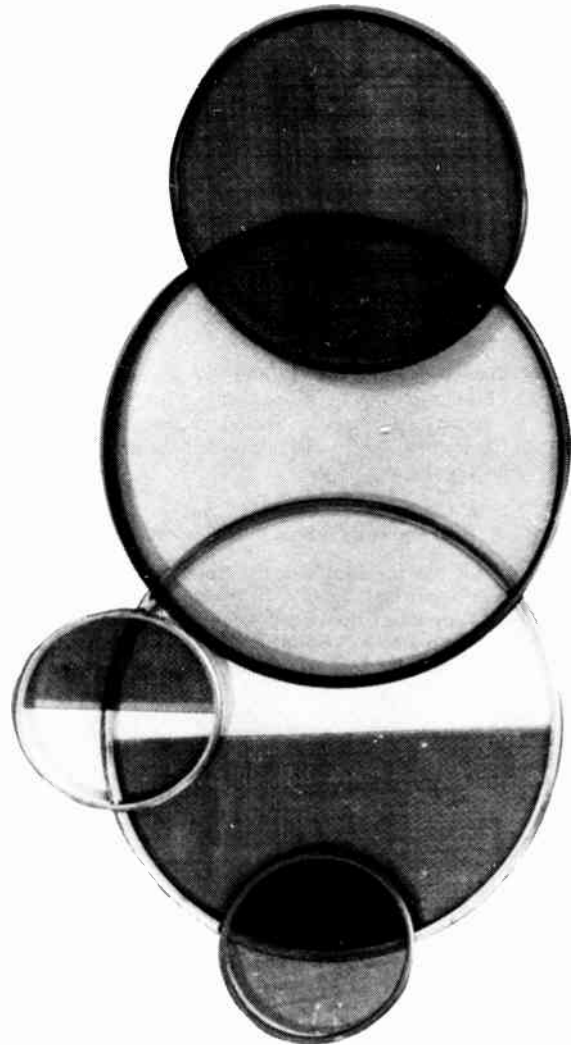
49152	15 1/2" dia. for Senior—Single Scrim	\$15.00
49153	15 1/2" dia. for Senior—Half Single Scrim	15.00
49154	15 1/2" dia. for Senior—Double Scrim	18.50
49155	15 1/2" dia. for Senior—Half Double Scrim	18.50

49156	21" dia. for 10K—Single Scrim	\$28.00
49157	21" dia. for 10K—Half Single Scrim	28.00
49158	21" dia. for 10K—Double Scrim	33.50
49159	21" dia. for 10K—Half Double Scrim	33.50

49160	29" dia. for Brute—Single Scrim	\$56.00
49161	29" dia. for Brute—Half Single Scrim	50.00
49162	29" dia. for Brute—Double Scrim	60.00
49163	29" dia. for Brute—Half Double Scrim	60.00

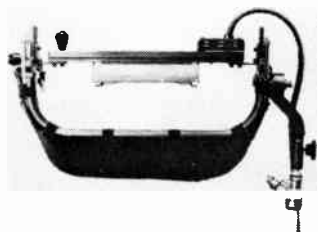


**HOLLYWOOD
SCENE DOCK**



BARDWELL & MCALISTER, INC.

Softlights



2111H



2121H

CONVERTIBLE SOFTLIGHTS

Rugged frame constructed of lightweight high stress aircraft tubing. Convertible design with non-removable soft reflector facilitates instant set up and knock down of fixture. High performance soft reflector coated with easy to clean, ultra high temperature white reflecting surface that resists color temperature shifts associated with conventional painted softlights. Rotating light bar provides ultimate control of light intensity and direction. Lamp reflectors designed for maximum lamp cooling. Wiring operates inside ventilated heat sink channel. Switches removed from lamp housing for cooler operation. Complete line of accessories.

2111H 1000W Handy Light

21" 1000W convertible softlight for multiple purpose location or studio operation. Supplied with inline switched 12.5' power cord and choice of plug.

- **Size:** 21" x 18"
 - **Weight:** 11.5 lbs. with cable
 - **Rating:** 8.3A maximum at 1000W. 120/240VAC or DC operation
 - **Cable:** 12.5' 3 conductor #16 AWG SO power cord with choice of plug
 - **Switching:** Single inline switch
 - **Lamp:** Single Tungsten-Halogen lamp
- 2111H\$345.00

2121H 2000W Handy Light

21" 2000W convertible softlight for multiple purpose location or studio operation. Supplied with inline switched 12.5' power cord and choice of plug.

- **Size:** 21" x 18"
 - **Weight:** 11.5 lbs. with cable
 - **Rating:** 16.6A maximum at 2000W. 120/240VAC or DC operation
 - **Cable:** 12.5' 3 conductor #14 AWG SO power cord with choice of plug
 - **Switching:** Single inline switch
 - **Lamp:** Single Tungsten-Halogen lamp
- 2121H\$349.00

2111S 1000W

21" 1000W convertible softlight for multiple purpose location or studio operation. Supplied with inline switched 25' power cord and choice of plug. Includes rotating light bar feature.

- **Size:** 21" x 18"
 - **Weight:** 18 lbs. with cable
 - **Rating:** 8.3A maximum at 1000W. 120/240VAC or DC operation
 - **Cable:** 25' 3 conductor #16 AWG SO power cord with choice of plug
 - **Switching:** Single inline switch
 - **Lamps:** Single Tungsten-Halogen lamp
- 2111S\$462.00

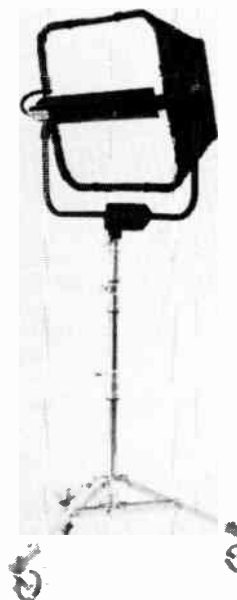
2121S 2000W

21" 2000W convertible softlight for multiple purpose location or studio operation. Supplied with inline switched 25' power cord and choice of plug. Includes rotating light bar feature.

- **Size:** 21" x 18"
 - **Weight:** 18 lbs. with cable
 - **Rating:** 16.6A maximum at 2000W. 120/240VAC or DC operation
 - **Cable:** 25' 3 conductor #14 AWG SO power cord with choice of plug
 - **Switching:** Single inline switch
 - **Lamps:** Single Tungsten-Halogen lamp
- 2121S\$462.00



2111S
2121S



2841G
2842G

2821S 2000W

28" 2000W convertible softlight for multiple purpose location or grid operation. Supplied with inline switched 25' power cord and choice of plug. Includes rotating light bar feature.

- **Size:** 28" x 24"
 - **Weight:** 21.5 lbs. with cable
 - **Rating:** 16.6A maximum at 2000W. 120/240VAC or DC operation
 - **Cable:** 25' 3 conductor #14 AWG SO power cord with choice of plug
 - **Switching:** 2 inline switches
 - **Lamps:** 2 Tungsten-Halogen lamps
- 2821S\$557.00

2841G 4000W

28" 4000W convertible softlight with rotating light bar for multiple purpose location or studio operation. Single 60A flush mount grounding pin plug provided for single circuit operation. Requires 0083 or 0083P header cable. Header cable not included in base price.

- **Size:** 28" x 24"
 - **Weight:** 18.5 lbs. without cable
 - **Rating:** 33.3A maximum at 4000W. 120/240VAC or DC operation
 - **Cable:** 1 25' 3 conductor #8 AWG SO header cable attachable to 60A flush mount grounding pin plug at switch box required.
 - **Switching:** 2 switches mounted in permanent switch box attached to pivoting yoke
 - **Lamps:** 2 lamps, individually switched
- 2841G\$745.00

2842G 4000W

28" 4000W convertible softlight with rotating light bar for multiple purpose location or studio operation. Two 20A flush mount grounding pin plugs provided for two circuit operation. Requires two 0143 or 0143P header cables. Header cables not included in base price.

- **Size:** 28" x 24"
 - **Weight:** 18.5 lbs. without cable
 - **Rating:** 33.3A maximum at 4000W. 120/240VAC or DC operation
 - **Cable:** 2 25' 3 conductor #14 AWG SO header cables attachable to 2 20A flush mount grounding pin plugs at switch box required
 - **Switching:** 2 switches mounted in permanent switch box attached to pivoting yoke
 - **Lamps:** 2 lamps, individually switched
- 2842G\$769.00

Prices and Specifications Subject to Change Without Notice.

BARDWELL & MCALISTER, INC.

Softlights

3541G 4000W

35" 4000W convertible softlight with rotating light bar for multiple purpose location or studio operation. Single 60A flush mount grounding pin plug provided for single circuit operation. Requires 0083 or 0083P header cable. Header cable not included in base price.

- **Size:** 35" x 30"
 - **Weight:** 22.5 lbs. without cable
 - **Rating:** 33.3A maximum at 4000W. 120/240VAC or DC operation
 - **Cable:** 1 25' 3 conductor #8 AWG SO header cable attachable to 60A flush mount grounding pin plug at switch box required
 - **Switching:** 2 switches mounted in permanent switch box attached to pivoting yoke
 - **Lamps:** 2 lamps, individually switched
- 3541G\$850.00

3542G 4000W

35" 4000W convertible softlight with rotating light bar for multiple purpose location or studio operation. Two 20A flush mount grounding pin plugs provided for two circuit operation. Requires two 0143 or 143P header cables. Header cables not included in base price

- **Size:** 35" x 30"
 - **Weight:** 22.5 lbs. without cable
 - **Rating:** 33.3A maximum at 4000W. 120/240VAC or DC operation
 - **Cable:** 2 25' 3 conductor #14 AWG SO header cables attachable to 2 20A flush mount grounding pin plugs at switch box required
 - **Switching:** 2 switches mounted in permanent switch box attached to pivoting yoke
 - **Lamps:** 2 lamps, individually switched
- 3542G\$875.00

3561G 6000W

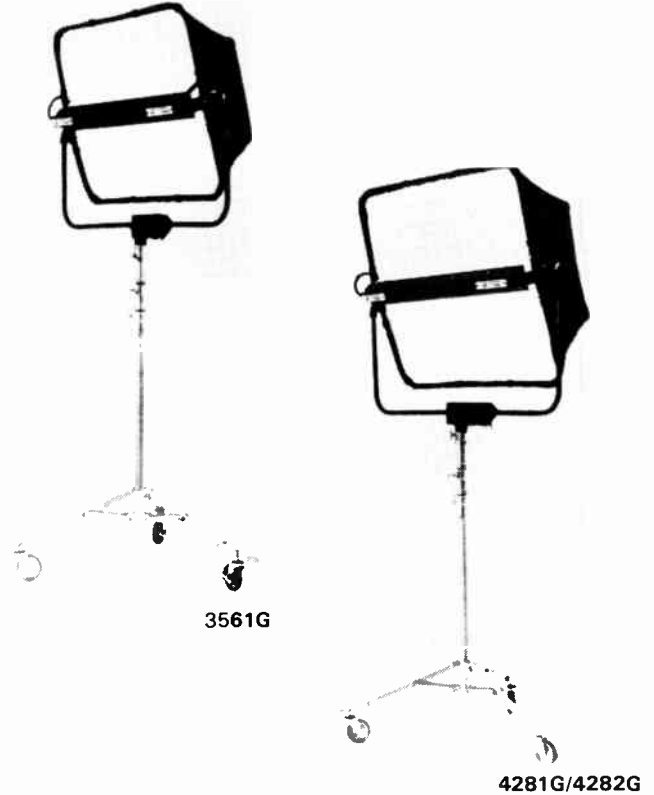
35" 6000W convertible softlight with rotating light bar for multiple purpose location or studio operation. Single 60A flush mount grounding pin plug provided for single circuit operation. Requires 0063 or 0063P header cable. Header cable not included in base price.

- **Size:** 35" x 30"
 - **Weight:** 22.5 lbs. without cable
 - **Rating:** 50A maximum at 6000W. 120/240VAC or DC operation
 - **Cable:** 1 25' 3 conductor #6 AWG SO header cable attachable to 60A flush mount grounding pin plug at switch box required
 - **Switching:** 2 switches mounted in permanent switch box attached to pivoting yoke
 - **Lamps:** 3 lamps with center lamp switched independently of two outboard lamps
- 3561G\$960.00

4281G 8000W

42" 8000W convertible softlight with rotating light bar for multiple purpose location or studio operation. Single 100A flush mount grounding pin provided for single circuit operation. Requires 0043 or 0043P header cable. Header cable not included in base price.

- **Size:** 42" x 36"
 - **Weight:** 27 lbs. without cable
 - **Rating:** 66.6A maximum at 8000W. 120/240VAC or DC operation
 - **Cable:** 1 25' 3 conductor #4 AWG SO header cable attachable to 100A flush mount grounding pin plug required
 - **Switching:** 4 switches mounted in permanent switch box attached to pivoting yoke
 - **Lamps:** 4 lamps, individually switched
- 4281G\$1395.00



4282G 8000W

42" 8000W convertible softlight with rotating light bar for multiple purpose location or studio operation. Two 60A flush mount grounding pin plugs provided for two circuit operation. Requires two 0083 or 0083P header cables. Header cables not included in base price.

- **Size:** 42" x 36"
 - **Weight:** 27 lbs. without cable
 - **Rating:** 66.6A maximum at 8000W. 120/240VAC or DC operation
 - **Cable:** 2 25' 3 conductor #8 AWG SO header cables attached to 2 60A flush mount grounding pin plugs required
 - **Switching:** 4 switches mounted in permanent switch box attached to pivoting yoke
 - **Lamps:** 4 lamps, individually switched
- 4282G\$1449.00

4284G

Similar to 4282G except 4 20A flush mount grounding pin plugs provided for four circuit operation. Requires four 0143 or 0143P header cables (not included).

- 4284G\$1469.00

B & B SYSTEMS, INC.

*Phase Monitors/Audio Meter Panels/
Signal Display*

AM-1B Phase Monitor

- CRT X/Y display with calibrated graticule for phase and studio operating level • SMPTE time code display of phase and genlock • CRT display of individual channel levels, with calibrated graticule for studio operating level • ANSI calibrated VU meters and peak meters for each channel • Self-contained in 3 EIA rack units • Magnetic shielding

Designed for Post Production—Real time monitoring of stereo audio phase, program average and peak levels, and SMPTE time code phase/genlock.

A quick glance by the operator gives a complete "picture" of the stereo audio signal. Audio level monitoring, both PPM Peak and VU and the CRT display allows you to easily avoid out-of-phase stereo signals and prevent peak audio distortion.

The AM-1B includes the B & B TC Monitor—a single pushbutton gives you an instant real time display of SMPTE time code for quick and easy verification of phase and genlock.

AM-1B \$2800.00



AM-1B



AM-2

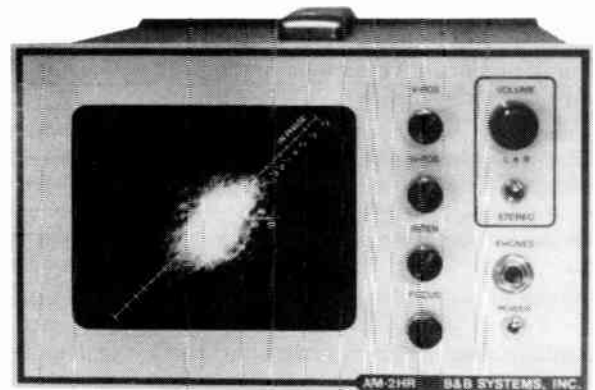
AM-2 and AM-2B Phase Monitors

- CRT X/Y display with calibrated graticule for phase • ANSI calibrated VU meters and peak meters for each channel • Self-contained in 3 EIA rack units (AM-2), or 2 EIA rack units for the AM-2B • Magnetic and EMI/RF shielding

Designed for all stereo audio applications. Real time monitoring of stereo audio phase, program average and peak levels. The AM-2 is available as the compact AM-2B where space is at a premium.

AM-2 \$2100.00

AM-2B 1800.00



AM-2HR

AM-2HR Phase Monitor

- A cost effective and space efficient solution to the "real world" needs of today's broadcasters and post production facilities • Requires only one half of a standard side-by-side rack adaptor • Built-in audio power amplifier for headphones or speakers with rear balanced line outputs • Front panel selection of listening in stereo or L + R

AM-2HR \$995.00

AM-3B Phase Monitor

- For all stereo audio applications • Real time visual and audible monitoring of stereo phase, program VU levels, peak threshold levels, including L + R or AUX • Two sets of 3-channel inputs • Front panel volume control of balanced line outputs and internal audio amplifier driving headphones or speakers

AM-3B \$2100.00



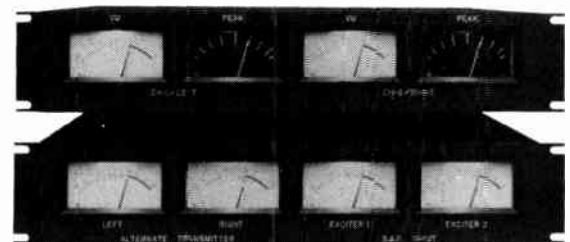
AM-3B

MP-4 Audio Meter Panels

- Four independent input circuits • Precision buffered, balanced, active, bridging amplifiers • Any combination of VU or PPM styles available. 4VU, 4PPM, or 2VU and 2PPM are standard packages • VU meters meet ANSI 16.5-1954 specifications for accurate consistency • PPMs meet BBC or EBU specifications

A complete, cost-effective metering package, the MP-4 is four independent VU or PPM meters. The self-powered MP-4 has four rear panel XLR connectors tied to precision, active, buffered, balanced, bridging amplifiers. These amplifiers drive either VU or PPM illuminated meters, all contained in one 3 1/2" package. And, the MP-4 is available engraved to your specifications.

MP-4 \$995.00



MP-4

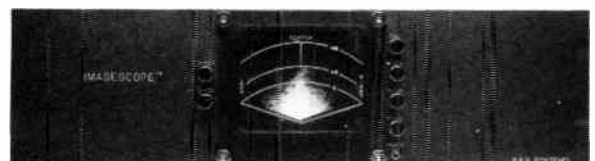
Imagescope™ IM-1 Audio Signal Display

- Mono compatibility • Stereo separation • Stereo balance • Stereo image/perspective • Image levels • Not an "X/Y" display

For all stereo audio applications. Real time monitoring of stereo audio phase, program average and peak levels.

The ideal tool for any television stereo production and post-production facility, film sound studio, stereo radio broadcaster, or recording studio. The Imagescope gives you a CRT display of the audio signal showing both left/right direction and level—in real time.

IM-1 \$1495.00



Imagescope

BCD-4000 Professional Video Controller

- One expansion slot
- Tape and disc
- Disc and disc
- Tape and tape
- Full function control variable speed
- Edit function select 2 VTR editor option
- RS-422 SMPTE protocol
- 2 VTR SMPTE code
 - Read and write
 - Non-drop frame
 - Drop frame
 - EBU 25 fps (optional)
- Vertical interval video switching
- 4 "GPI Triggers"

The BCD-4000 Professional Video Controller for slot-compatible IBM PC type computers controls virtually all industrial and broadcast video tape and disc machines as well as many other video devices.

The controller can simultaneously control a pair of Industrial or Broadcast video tape or video disc machines with full variable speed, and function select. RS-232 and RS-422 SMPTE protocols are available for 1", Betacam, M-II and other sophisticated devices. The unit can be equipped with a built-in 2-machine editor.

The main CPU board occupies one expansion slot in the computer with no adaptors, making it suitable for advanced "AT" and 386 machines. The board is short enough to fit small computers.

For Interactive Video Systems, the controller responds to the same command protocol as BCD's VIPc with the added capability of interrupting the host computer on the user's choice of interrupt lines.

For video editing and animation support, the unit may be equipped to read and write SMPTE Time Code: Drop Frame, Non-Drop Frame, or 25 fps EBU Time Code.

The optional internal video editor can control any two appropriate video tape or disc machines for straight-cuts editing. BCD's EDL-4000 Edit Decision List Management system takes full advantage of all the features.

The unit is currently at home in production, post-production and video animation environments.

Supported Machines**Sony Disc**

LDP-1000, 2000, 180

Sony Tape

Type V, VII, IX, BVU, BVH, SLO-383, SLO-305, SLO-325

Panasonic Disc

TQ-2023F, TQ-2024F

Panasonic Tape

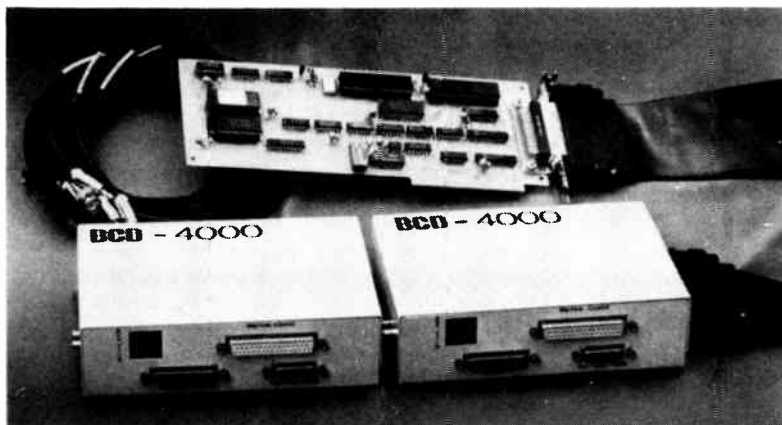
NV-8200, 8170, 9240, 9600, 8500, AU-700, M-II, AG-6100, 6200, 6300, 6500, RECAM with adaptor

JVC Tape

CR-850U, CR-8250, BR-8600, BR-6400, BP-5000

Pioneer Disc

LD-V 1000, 2000, 3000, 4000, 6000, 6010, LP-700, CLD-900, 909

**Hitachi Disc**

VIP-9500, 9550

Philips Disc

LD-935/17

MAST/Keystone Slide

System 2 Random Access

Specifications**Video Machine Control I/O****Parallel Outputs**

- 26 Open Collector
- 40 ma. current sink
- 15V max.

Analog Output

0-10VDC

Parallel Inputs

16 LSTTL Schmitt Trigger 14V max.

Serial I/O

- RS-232
- RS-422
- Sony Type V, VII, IX

Auxilliary Trigger

4 GPI Opto-Isolator

Video Audio Signal Control**Inputs**

- 2 audio line level Ch. 1 and Ch. 2
- 2 video 1V p-p 75 ohm unterminated
Player and Aux.
- 1 tape address code, line level

Outputs

- 2 audio line level, Ch. 1 and Ch. 2
- 1 video 1V p-p into 75 ohm, selectable
Player/Aux./Off
- 1 tape address code, line level

BCD-4000 Standard System

- 1 Machine Control with SMPTE Read \$1750.00
- 1 Machine Animation Option 295.00

Second Machine Control Option

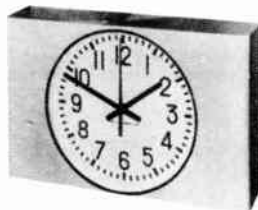
- Includes SMPTE Read \$1100.00
- 2 Machine Video Editing Option 495.00
- SMPTE Generator Option (per machine) 395.00

EDL-4000 Edit Decision List Software \$595.00

BEAVERONICS, INC.

Master Clock Systems

MODULAR DESIGN FACILITATES FUTURE EXPANSION

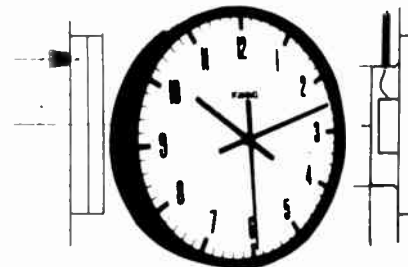


Type 141 Illuminated



Tabletop

NUMEROUS SECONDARY CLOCKS ARE AVAILABLE INCLUDING THOSE WITH SILENT OIL-BATH MOVEMENTS



Surface Mtg.

Flush Mtg.



Decorative Secondary-Clocks

Extra-Flat Secondary Clock



6 Digit Digital Displays Available



Typical Slave Clock Prices (Sec-Impulse Types)

3"	Panel Mtg.	3200.066	\$265.00
12"	Oil Bath	3200.040*	435.00
16"	Oil Bath	3200.052*	460.00
10 1/2"	Oil Bath (Illum.)	141-2*	820.00
12"	Single Face Quartz Battery Clock	3304.005E	70.00
12"	Double Face Quartz Battery Clock with Mtg. Bracket	3304.005D	155.00
*Indicates Silent Operation			
2"	Panel Mtg.		\$205.00
10"	Extra-flat	3201.002	235.00
12"	Extra-flat	3201.003	250.00
16"	Extra-flat	3201.004	270.00

PR 80 Microprocessor Controlled Programmer

Provides for 255 permanent commands and 127 temporary commands over six separate output circuits. Varying duration commands may occur; daily, daily except Sat. and Sun., daily except Sun., or on a specific week-day. PR 80 contains its own timebase or may be driven from a Master Clock \$1,620.00

QMS-1 Master Clock with OS Precision Oscillator Module and LS Driver Module

Provides a basic accuracy of better than one second per year; includes 1AH reserve battery backup. Provides expansion capabilities including ability to synchronize to external signal. Modular Design. \$5,825.00

2QMS-2 Dual Master Clock

Automatic changeover to second timebase upon demise of first. Includes all features of QMS-1 plus second isolated LS Driver Module and heavy-duty 9.5AH reserve battery backup. \$17,015.00



BELAR ELECTRONICS LABORATORY, INC.

**FM Modulation Monitors/
RF Amplifier**

FMM-2 FM Modulation Monitor

- Ultra-linear digital discriminator
- Digitally selectable peak indicator, adjustable in 1% increments from 1 to 199%, independent of modulation polarity
- Built-in voltmeter for AM and FM noise measurements
- Carrier alarm with front panel indicator
- Two wideband outputs
- True peak or semi-peak metering
- Separate fixed 100% modulation indicator
- High visibility rear-illuminated meter

The FMM-2 FM Modulation Monitor is a precision wideband, all solid-state FM monitor, designed to measure the total modulation characteristics of monaural as well as multiplexed FM transmitters. The FMM-2 is also used as a low distortion and low noise FM demodulator to drive the companion stereo and SCA monitors, as well as providing audio outputs for aural monitoring and proof of performance measurements.

The FMM-2, which utilizes such advanced design features as an ultra-linear digital discriminator, an almost distortionless and absolutely flat baseband signal is produced to ensure precise stereo and SCA decoding.

In addition to the normal FCC defined semi-peak metering, the FMM-2 incorporates a sample-hold peak modulation meter circuit, independent of modulation polarity, to allow the meter to respond accurately to program peaks.

FMM-2 **\$1450.00**



FMM-2



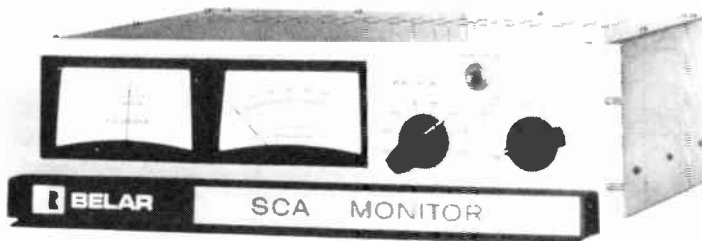
FMS-2

FMS-2 FM Stereo Modulation Monitor

- Two independent semi-peak modulation meters for simultaneous monitoring of left and right channels
- Front panel switchable deemphasis for noise measurements
- Pilot alarm with front panel indicator
- Outputs for audio proof-of-performance measurements
- Two auto-ranging voltmeters with LED displays for 0 to -80dB range measurements
- Stereo separation measurement capability of over 70dB at 15kHz
- High visibility rear-illuminated meters

The FMS-2 Stereo Modulation Monitor is an all solid-state precision stereo monitor designed to operate in conjunction with the Belar model FMM-2 baseband modulation monitor. The FMS-2 is also used for test functions in conjunction with the FMM-2 to ensure the proper performance of FM stereo transmitters. The test and measurement capability of the FMS-2 is further enhanced by the integration of two independent auto-ranging voltmeters allowing automatic measurement of channel separation and crosstalk, along with subcarrier suppression and noise. For example, depressing the left and right channel buttons automatically registers the wanted and unwanted channel for instant separation measurements. A front panel hold button can be used to lock the autorange to the displayed range.

FMS-2 **\$1650.00**



SCM-1

SCM-1 SCA Frequency and Modulation Monitor

The SCM-1 SCA Frequency and Modulation Monitor, when added to the FMM-2 Modulation Monitor, provides complete monitoring and test functions for SCA storecasting, data transmission and remote telemetering applications. Up to four crystal switch positions allow four channels to be operated and tested.

Features include three deviation ranges for optimum operation of a particular subcarrier. Narrow deviation (2kHz deviation) is for remote telemetering applications and selective call systems. Normal operation (6kHz deviation) is for storecasting and other background programming applications; 4kHz deviation is for simultaneous stereo operation. The discriminator is wideband for minimum distortion. Maximum versatility is thus provided for future applications as well as present needs.

The SCM-1 features unlimited SCA frequency selection by incorporating interchangeable crystals into its unique design. Select the one to

four frequencies best suited to your application. Plug in the appropriate crystals. Monitor four channels by means of pushbutton selection. To test other frequencies or to change frequencies, merely plug in new crystals. The separate SCA peak flasher is independent of SCA modulation polarity. The front panel pushbutton modulation calibrator allows the calibration accuracy to be checked at any time.

SCM-1 **\$1695.00**

RFA-1 FM RF Amplifier

The RFA-1 FM RF Amplifier is a sensitive, high gain, all solid-state preamplifier designed for off-air monitoring of both monaural and multiplexed FM transmitters.

The RFA-1 amplifies the signal to a level suitable for the input requirements of Belar FM modulation monitors. The RFA-1 utilizes an IF bandwidth of 400kHz to assure low distortion of a multiplexed signal, while IF selectivity is such that an adjacent channel, 800kHz removed, is attenuated 50dB. The dynamic range of the amplifier is such that no adjustments are necessary over an input range of 100µV to 0.5V.

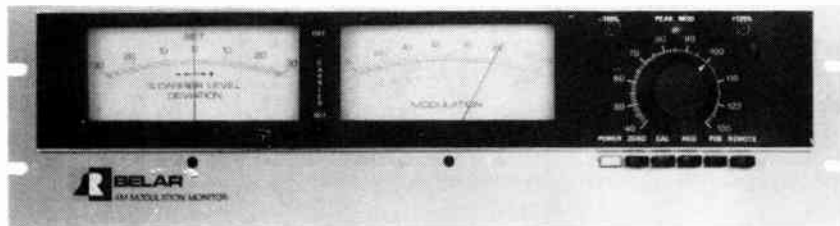
RFA-1 **\$575.00**

Accessories

- MP-3** Remote Meter Panel for FMS-1 **\$275.00**
- MP-3** Remote Meter Panel for SCM-1 **275.00**
- MP-8** Combined Remote Meter Panel for FMM-2 and FMS-2 **350.00**
- MJ-10** Yagi Antenna, Used with RFA-1 **95.00**

BELAR ELECTRONICS LABORATORY, INC.

AM/TV Modulation Monitors



AMM-2B AM Modulation Monitor

The AMM-2B Modulation Monitor is an all solid-state AM demodulator designed to measure the total modulation characteristics of AM Broadcast Transmitters. Since the input circuitry is non-frequency discriminating, the AMM-2B is suitable for measuring shortwave and VHF transmitter modulation. Metering provisions allow direct measurement of carrier level deviation and modulation. An adjustable peak modulation flasher is provided along with fixed 125% peak positive and 99% peak negative indicators. A modulation calibrator is also provided as well as a carrier level alarm. The AMM-2B is a direct replacement for the Model AMM-2A.

AMM-2B \$1195.00

AMM-3 AM Modulation Monitor

The AMM-3 Modulation Monitor is a precision, all solid-state AM demodulator designed to measure AM Transmitter Modulation characteristics over a frequency range of 200kHz to 160MHz. Utilizing true ratio-type peak indicators and unique modulation cancellation circuitry, modulation peaks are referenced to unmodulated carrier for extremely accurate program peak indication. Two meters are provided for simultaneous positive and negative modulation, along with individual thumbwheel programmable peak flashers. Fixed 125% peak positive and 100% peak negative indicators are also provided. Metering of carrier level as well as AM noise is provided, as well as a built-in modulation calibrator and remote outputs for all indicators.

AMM-3 \$1450.00

AMM-4 Frequency Monitor

The AMM-4 AM Frequency Monitor is a digital frequency deviation monitor designed for use in the 10kHz to 50MHz frequency range. An LED readout displays a range ± 1999 Hz deviation from the assigned channel. Front panel indicators warn of low RF level, loss of carrier and ± 10 Hz/ ± 20 Hz off frequency conditions. Logic outputs duplicate all front panel indicators, and an optional relay circuit assembly is available for ease of interface for ATS and alarm requirements.

AMM-4 \$1095.00

RFA-2 AM RF Amplifier

The RFA-2 AM RF Amplifier is a sensitive solid-state unit designed to provide the required signal level for Belar AM Modulation and Frequency Monitors when the monitors are located remotely from the transmitter site. The RFA-2 requires a suitable antenna such as a whip or loop. (The Belar LP-1 Loop Antenna is recommended). The outstanding feature of the RFA-2 is the AGC range—more than 30dB—which allows proper operation of the monitors when transmitter power or antenna patterns are changed.

RFA-2 \$595.00

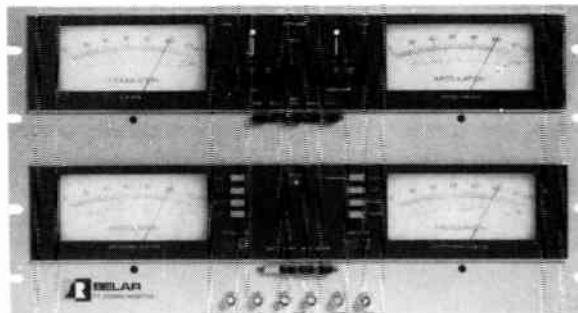
AM Equipment

- MP-6A** Remote Meter Panel for AMM-2A, AMM-2B \$250.00
- MP-7** Remote Meter Panel for AMM-3 275.00
- LP-1** Shielded Loop Antenna 250.00
- LP-1A** Shielded Loop Antenna, built-in
Pre-amplifier for RFA-2 315.00
- OPTION 01 Power Supply for LP-1A 65.00
- AS-1** Audio Sentry 250.00

TVM-1 TV Modulation Monitor

TVM-1 Television Modulation Monitor is a wideband, all solid-state TV monitor designed for measuring the monophonic aural carrier modulation characteristics of TV transmitters in the 54 to 890MHz frequency

TVM
220



AMM-2B TVM
210

range. The TVM-1 is also a low distortion, low noise FM demodulator for driving audio monitor amplifiers and SCA monitors. Metering and testing provisions include a peak reading total modulation meter, an adjustable peak modulation indicator, and a deviation type modulation calibrator. Outputs include an aural output for monitoring, distortion meter test point, and a wide band output for driving an SCA monitor.

TVM-1 \$2295.00

TVM-2A & TVM-3A TV Frequency Monitors

Models TVM-2A (VHF) and TVM-3A (UHF) are digital TV frequency monitors designed expressly to measure TV visual carrier and aural carrier or aural intercarrier deviations. Since the units incorporate true frequency counter circuits that are multiplexed between aural and visual carriers, the aural and visual carrier frequencies may be measured independently. The monitors also incorporate inhibited off frequency alarm drivers. The input to the monitors may be from either a composite visual-aural signal or the output of a Belar RFA-3 RF Amplifier.

TVM-2A \$2595.00

TVM-3A 2795.00

TVM-100 TV Modulation Monitor (Mono-Stereo Compatible)

TVM-100 Television Aural Modulation Monitor is a precision wide band monitor designed to measure the total modulation characteristics of mono as well as multi-channel television audio. Utilizing split sound and quasi-parallel detection modes, automatic deviation calibrators for 25kHz (mono) and 73kHz (BTSC Stereo) and a digital display for indication of actual deviation, the TVM-100 satisfies all requirements for mono and stereo baseband monitoring and test.

TVM-100 \$2995.00

TVM-200 BTSC Stereo TV Modulation Monitor

The TVM-200 TV Stereo Modulation Monitor System consists of two separate units: the TVM-210 BTSC Reference Monitor and the TVM-220 BTSC Program Monitor.

The TVM-210 is designed to operate in conjunction with the Belar TVM-100 TV Aural Monitor or other precision wide band demodulators. The TVM-210 may be used separately from the TVM-220 for the setup, test, and measurement of BTSC Stereo TV Transmission Systems, as well as providing accurately decoded left and right channel audio outputs. Two auto-ranging voltmeters allow easy measurement of total modulation, channel separation, signal-to-noise ratio, L + R modulation, L-R modulation, pilot level and 2H rejection level, along with decoded left and right audio levels. A professional dbx decoder card is used to assure optimum stereo separation.

The TVM-220, as used with the TVM-210, provides full time monitoring of L+R and composite signal modulation levels. Both functions include digitally selectable peak indicators along with fixed 100% peak modulation indicators. An exclusive microprocessor programmed Peaks-of-Frequent Recurrence mode allows extremely accurate (no overshoot) indications of pre-selected L + R and composite modulation peaks occurring within a moving one minute window.

TVM-200 \$4595.00

TV Equipment


- RFA-3** TV RF Amplifier \$750.00
- MP-4** Remote Meter Panel for TVM-1 175.00

BELDEN WIRE AND CABLE


Sound, Broadcast & Audio Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths		Std. Unit Lbs. ea.	(Strand- ing)	Insulation Thickness		Jacket Thickness		Nominal O.D.		Color Coding	Nominal Capacitance			
			ft.	m			Inch	mm	Inch	mm	Inch	mm		* pF/ft.	* pF/m	** pF/ft.	** pF/m


22 Gage
Stranded Conductors (7x30)
PVC Insulated

 Spiral Shield 97% Shield Coverage	8737†	1	100	30.4	2.4	(7x30)	.015	.38	.025	.64	.180	4.57	Black Red	40	131	70	230
	2095		250	76.2	5.2												
	300V		U-500	U-152.4	10.2												
	80C		500	152.4	10.0												
			U-1000	U-304.8	19.5												
	1000	304.8	20.3	Product Description: Tinned copper, PVC insulated, twisted pair, tinned copper spiral wrapped shield, chrome PVC jacket.													


20 Gage
Stranded Conductors (7x28)
PVC Insulated

 Spiral Shield 89% Shield Coverage	8759†	1	100	30.4	2.8	(7x28)	.016	.41	.025	.64	.199	5.05	Black Red	47	154	79	259
	2095		U-500	U-152.4	12.7												
	300V		500	152.4	13.3												
	80C		U-1000	U-304.8	24.6												
			1000	304.8	25.4												

18 Gage
Stranded Conductors (7x26)
PVC Insulated

 Spiral Shield 82% Shield Coverage	8790†	1	100	30.4	4.1	(7x26)	.020	.51	.028	.71	.241	6.13	Red White	53	173	92	302
	80C		U-500	U-152.4	17.9												
			500	152.4	17.9												
			U-1000	U-308.8	34.8												
			1000	304.8	35.7												

16 Gage
Stranded Conductors (19x29)
PVC Insulated

 Spiral Shield 89% Shield Coverage	8780†	1	100	30.4	4.8	(19x29)	.023	.58	.030	.76	.266	6.76	Black White	57	187	98	321
	80C		U-500	U-152.4	21.7												
			500	152.4	22.4												
			U-1000	U-304.8	42.4												
			1000	304.8	46.3												

†Passes the VW-1 Vertical Wire Flame Test.
*Capacitance between conductors.
**Capacitance between 1 conductor and other conductors connected to shield.


BELDEN WIRE AND CABLE

Sound, Broadcast, Audio & Instrumentation Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths		Std. Unit Lbs. ea.	Insulation Thickness		Jacket Thickness		Nominal O.D.		Nominal Capacitance			
			ft.	m		Inch	mm	Inch	mm	Inch	mm	* pF/ft.	* pF/m	** pF/ft.	** pF/m


20 Gage


Stranded Conductors (7x28)

 Z-Fold Beldfoil 100% Shield Coverage	9154 2464 300V 80C	1	U-500	U-152.4	11.9	.013	.33	.031	.79	.198	5.03	60	197	100	328
			500	152.4	11.6	Product Description: Tinned copper, PVC insulated , twisted pair, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, beige PVC jacket. Color code: Black, Red.									
			U-1000	U-304.8	22.8										
			1000	304.8	23.6										

18 Gage


Stranded Conductors (16x30)

 Z-Fold Beldfoil 100% Shield Coverage	8760 2092 300V 60C	1	250	76.2	7.5	.018	.45	.028	.71	.222	5.64	24	79	44	144
			500	U-152.4	13.7	Product Description: Tinned copper, polyethylene insulated , twisted pair, Beldfoil aluminum-polyester shield, 20 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code: Black, Clear.									
			U-1000	U-304.8	14.8										
			1000	304.8	27.4										
			2000	609.6	28.7										
			5000	1524.0	58.7										
					148.2										

 Z-Fold Beldfoil 100% Shield Coverage	9460 2092 300V 60C	1	U-500	U-152.4	14.5	.018	.46	.026	.66	.222	5.64	27	89	49	161
			U-1000	U-304.8	28.0	Product Description: Tinned copper, polyethylene insulated , twisted pair, Beldfoil aluminum-polyester shield, 20 AWG stranded tinned copper drain wire, chrome PVC jacket. The jacket and shield are bonded so both can be removed on automatic stripping equipment. Drain wire is on the inside of foil shield. Color code: Black, Clear.									


16 Gage

Stranded Conductors (19x29)

 Z-Fold Beldfoil 100% Shield Coverage	8719 2106 600V 60C	1	U-500	U-152.4	24.1	.032	.81	.032	.81	.304	7.72	23	75	44	144
			500	152.4	25.0	Product Description: Tinned copper, polyethylene insulated , twisted pair, Beldfoil aluminum-polyester shield, 18 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code: Black, Clear.									
			U-1000	U-304.8	47.2										
			1000	304.8	51.2										
			2000	609.6	104.3										
			5000	1524.0	247.8										


14 Gage

Stranded Conductors (19x27)

 Z-Fold Beldfoil 100% Shield Coverage	8720 2106 600V 60C	1	U-500	U-152.4	32.5	.032	.81	.035	.89	.340	8.64	24	79	47	154
			500	152.4	33.4	Product Description: Tinned copper, polyethylene insulated , twisted pair, Beldfoil aluminum-polyester shield, 16 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code: Black, Clear.									
			1000	304.8	70.5										
			2000	609.6	137.9										

12 Gage

Stranded Conductors (19x25)

 Z-Fold Beldfoil 100% Shield Coverage	8718 2106 600V 60C	1	U-500	U-152.4	48.4	.037	.94	.040	1.02	.400	10.16	25	82	49	161
			500	152.4	52.4	Product Description: Tinned copper, polyethylene insulated , twisted pair, Beldfoil aluminum-polyester shield, 14 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code: Black, Clear.									
			1000	304.8	102.8										
			2000	609.6	206.8										

*Capacitance between conductors.


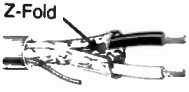



**Capacitance between 1 conductor and other conductors connected to shield.

BELDEN WIRE AND CABLE


Sound, Broadcast, Audio & Instrumentation Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths		Std. Unit Lbs. ea.	Insulation Thickness		Jacket Thickness		Nominal O.D.		Nominal Capacitance			
			ft.	m		Inch	mm	Inch	mm	Inch	mm	* pF/ft.	* pF/m	** pF/ft.	** pF/m



22 Gage
Stranded Conductors (7x30)

 Z-Fold Beldfoil 100% Shield Coverage	9462† 2464 300V 80C	1	100	30.4	2.2	.013	.33	.031	.79	.178	4.52	50	164	90	295
			U-500	U-152.4		9.7	Product Description: Tinned copper, PVC insulated , twisted pair, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code: Black, Red.								
 Z-Fold Beldfoil 100% Shield Coverage	8761 2092 300V 60C	1	U-500	U-152.4	9.0	.016	.41	.025	.64	.175	4.45	24	79	47	154
			500	152.4	8.7	Product Description: Tinned copper, polyethylene insulated , twisted pair, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, chrome PVC jacket. 100% shield coverage. Color code: Black, Clear.									
 Z-Fold Beldfoil 100% Shield Coverage	9461 2092 300V 60C	1	U-500	U-152.4	8.8	.016	.41	.026	.66	.180	4.57	24	79	47	154
			U-1000	U-304.8	16.2	Product Description: Tinned copper, polyethylene insulated , twisted pair, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, chrome PVC jacket. 100% shield coverage. The jacket and shield are bonded so both can be removed on automatic stripping equipment.									
 Z-Fold Beldfoil 100% Shield Coverage	8451† 105C	1	100	30.4	1.7	.008	.20	.020	.51	.135	3.43	34	111	67	220
			250	76.2	3.5	Product Description: Tinned copper, polypropylene insulated , twisted pair, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, paper wrap, gray or black PVC jacket. 100% shield coverage. Belden's Miniature Type Broadcast Audio and Instrumentation Cables occupy 1/2 to 2/3 less space than standard cables. Suggested working voltage: 200. Color code: Black, Red.									
 Z-Fold Beldfoil 100% Shield Coverage	9451† 105C	1	U-500	U-152.4	7.0	.008	.20	.017	.43	.135	3.43	34	111	67	220
			500	152.4	7.0	Product Description: Tinned copper, polypropylene insulated , twisted pair, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, gray PVC jacket. The jacket and shield are bonded so both can be removed on automatic stripping equipment. Drain wire is on the inside of foil shield. Belden's Miniature Type Broadcast Audio and Instrumentation Cables occupy 1/2 to 2/3 less space than standard cables. Suggested working voltage: 200. Color code: Black, Red.									

20 Gage
Solid Conductors

 Shorting Fold Beldfoil 100% Shield Coverage	9802 80C Direct Burial	1	500	152.4	10.6	.013	.33	.035	.89	.190	4.83	25	82	46	150
			1000	304.8		19.7	Product Description: Tinned copper, polypropylene insulated , conductors cabled, Beldfoil aluminum-polyester shield, 22 AWG solid tinned copper drain wire, black high density polyethylene jacket. Suggested working voltage: 350. Color code: White, Black.								

20 Gage
Stranded Conductors (7x28)

 Z-Fold Beldfoil 100% Shield Coverage	8762 2092 300V 60C	1	100	30.4	2.6	.016	.41	.028	.71	.204	5.18	27	89	49	161
			250	76.2	6.3	Product Description: Tinned copper, polyethylene insulated , twisted pair, Beldfoil aluminum-polyester shield, 22 AWG stranded tinned copper drain wire, chrome PVC jacket. Color code: Black, Clear.									
 Z-Fold Beldfoil 100% Shield Coverage	9464 2092 300V 60C	1	U-500	U-152.4	12.6	.016	.41	.030	.76	.204	5.18	27	89	49	161
			U-1000	U-304.8	24.3	Product Description: Tinned copper, polyethylene insulated , twisted pair, Beldfoil aluminum-polyester shield, 20 AWG stranded tinned copper drain wire, chrome PVC jacket. The jacket and shield are bonded so both can be removed on automatic stripping equipment. Drain wire is on the inside of foil shield. Color code: Black, Clear.									

†Passes the VW-1 Vertical Wire Flame Test.

*Capacitance between conductors.

**Capacitance between 1 conductor and other conductors connected to shield.


BELDEN WIRE AND CABLE

Control and Audio Cables

Description	Trade & U.L. Style Number	No. of Cond.	Standard Lengths		Std. Unit Lbs. ea.	Insulation Thickness		Jacket Thickness		Nominal O.D.	
			ft.	m		Inch	mm	Inch	mm	Inch	mm

22 Gage
Solid Conductors
Polyethylene Insulated


Product Description
Bare copper, polyethylene insulated, conductors cabled, rose gray PVC jacket.

	8794 2093	3	U-500 U-1000 1000	U-152.4 U-304.8 304.8	9.0 18.2 18.9	.016	.41	.022	.56	.168	4.27
	Color code: Green, Red, Yellow.										
300V 60C	9794 2094	4	U-500 U-1000 1000	U-152.4 U-304.8 304.8	10.5 19.0 19.5	.016	.41	.025	.64	.190	4.83
	Color code: Green, Red, Yellow, Black.										

**Control, Audio and Computer Cables
For EIA RS-232 Applications**

22 Gage
Stranded Conductors (7x30)
PVC Insulated

Product Description
Tinned copper, PVC insulated, conductors cabled. Chrome PVC jacket.

	8443† Power Limited Cable Class 2	3	100	30.4	2.1	.010	.25	.032	.81	.172	4.37
			U-500	U-152.4	9.0	Color code: Black, Red, Green.					
			500	152.4	8.9						
AWM2576 150V 75C	8444†	4	100	30.4	2.4	.010	.25	.032	.81	.182	4.62
			250	76.2	5.8						
			U-500	U-152.4	11.2						
	8445† Power Limited Cable Class 2	5	100	30.4	2.8	.010	.25	.032	.81	.194	4.93
			250	76.2	6.7						
			U-500	U-152.4	12.6						
			500	152.4	12.4						
			U-1000	U-304.8	25.1						
			1000	304.8	25.9						

†Passes the VW-1 Vertical Wire Flame Test.


BELDEN WIRE AND CABLE

Sound, Broadcast, Audio & Instrumentation Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Length		Std. Unit Lbs. ea.	Insulation Thickness		Jacket Thickness		Nominal O.D.		Nominal Capacitance			
			ft.	m		Inch	mm	Inch	mm	Inch	mm	* pF/ft.	* pF/m	** pF/ft.	** pF/m

24 Gage
Stranded Conductors (7x32)
Polyethylene Insulated

Product Description
Tinned copper, polyethylene insulated, twisted pair, Beldfoil aluminum-polyester shield, 24 AWG stranded tinned copper drain wire, chrome PVC jacket. The Beldfoil shield combines high cable reliability with ease of termination. Color code: Black, Clear.

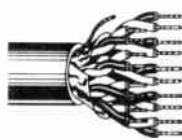
 Z-Fold Beldfoil 100% Shield Coverage	8641 2092 300V 60C	1	100	30.4	1.8	.016	.41	.025	.64	.168	4.27	22	72	42	138	
			U-500	U-152.4	7.7											
			500	152.4	7.4											
			U-1000	U-304.8	14.4											
			1000	304.8	15.1											
			2000	609.6	28.6											

Computer Cables
Low Capacitance Cables For EIA RS-232 Applications

Description	Trade & U.L. Style Number	No. of Pairs	Standard Lengths		Std. Unit Lbs. ea.	Nominal D.C.R.		Nominal O.D.		Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance				††6 dbv Length Limit in Thnds. of ft.
			ft.	m		Conductor	Shield	Inch	mm			* pF/ft.	* pF/m	** pF/ft.	** pF/m	

24 Gage
Stranded Conductors (7x32)
Polypropylene Insulated

Product Description
Tinned copper, polypropylene insulated, twisted pairs, overall Beldfoil aluminum-polyester shield, 24 AWG stranded tinned copper drain wire, chrome PVC jacket.

 Beldfoil 100% Shield Coverage 2919 30V 80C	9680	3	100	30.4	4.2	24 (7x32)	16Ω/M'	.285	7.24	100	66%	15.5	50.8	27.5	90.2	2.1		
			500	152.4	19.5	24Ω/M'	52.5Ω/km											
			1000	304.8	40.3	78.7Ω/km												
	9681	4	100	30.4	4.9	24 (7x32)	15.2Ω/M'	.310	7.87	100	66%	15.5	50.8	27.5	90.2	2.1		
			500	152.4	23.0	24Ω/M'	49.9Ω/km											
1000			304.8	47.1	78.7Ω/km													
9682	6	100	30.4	6.0	24 (7x32)	13.8Ω/M'	.350	8.89	100	66%	15.5	50.8	27.5	90.2	2.1			
		500	152.4	28.9	24Ω/M'	45.3Ω/km												
		1000	304.8	61.4	78.7Ω/km													
9683	9	100	30.4	7.7	24 (7x32)	12.7Ω/M'	.395	10.03	100	66%	15.5	50.8	27.5	90.2	2.1			
		500	152.4	40.0	24Ω/M'	41.7Ω/km												
		1000	304.8	78.0	78.7Ω/km													
9684	12½ 12 pairs + 1 single	100	30.4	11.2	24 (7x32)	15.2Ω/M'	.460	11.68	100	66%	15.5	50.8	27.5	90.2	2.1			
		500	152.4	54.9	24Ω/M'	49.9Ω/km												
		1000	304.8	106.9	78.7Ω/km													

*Capacitance between conductors.
 **Capacitance between 1 conductor and other conductor connected to shield.
 ††6dbv length limit is the cable length at which 50% of the DC input volume appears across the load if the cable is terminated in its characteristic impedance.

BELDEN WIRE AND CABLE

Sound, Broadcast, Audio & Instrumentation Cables

Description	Trade & U.L. Style Number	No. of Pairs	Standard Length		Std. Unit Lbs. ea.	Insulation Thickness		Jacket Thickness		Nominal O.D.		Nominal Capacitance			
			ft.	m		Inch	mm	Inch	mm	Inch	mm	* pF/ft.	* pF/m	** pF/ft.	** pF/m


28 Gage

Solid Conductors

Geosol™ Insulated

Product Description

Solid copper, Geosol insulated (solderable—no stripping required), twisted pair, Beldfoil aluminum-polyester shield, 30 AWG solid tinned copper covered steel drain wire, white PVC jacket. Maximum operating temperature 105°C. Ideal for instrumentation and Audio Console Work where subminiaturization is required. The Beldfoil shield combines high cable reliability with ease of termination. Suggested working voltage: 100. Color code: Black, Red.

 Beldfoil 100% Shield Coverage	8640† 105C	1	250	76.2	1.5	.0025	.064	.020	.51	.090	2.29	55	180	105	344
			U-500 500	U-152.4 152.4	3.1 2.6										

Sound, Broadcast, Instrumentation and Computer Cables For EIA RS-232 Applications

Description	Trade & U.L. Style Number	No. of Pairs	Standard Length		Std. Unit Lbs. ea.	Nom. D.C.R.		Nominal O.D.		Nominal Capacitance‡			
			ft.	m		Conductor	Shield	Inch	mm	* pF/ft.	* pF/m	** pF/ft.	** pF/m

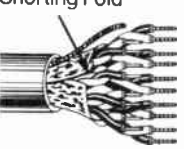
24 Gage

Stranded Conductors (7x32)

S-R PVC Insulated

Product Description

Tinned copper, S-R PVC insulated, twisted pairs, overall Beldfoil aluminum-polyester shield, 24 AWG stranded tinned copper drain wire, chrome PVC jacket.

 Shorting Fold Beldfoil 100% Shield Coverage 2464 300V 80C S-R PVC	9501†	1	100	30.4	1.7	24 (7 x 32)	18Ω/M'	.156	3.96	40	131	74	243								
			U-500	U-152.4	7.7	22.8 Ω/M'	59.1Ω/km														
			500	152.4	7.4	74.8 Ω/km															
			U-1000	U-304.8	14.3																
			1000	304.8	14.0																
	9502†	2	100	30.4	3.3	24 (7 x 32)	15 Ω/M'	.222	5.64	30	98	50	164								
			U-500	U-152.4	15.1	25 Ω/M'	49.2 Ω/km														
			500	152.4	15.8	82.0 Ω/km															
			U-1000	U-304.8	29.4																
			1000	304.8	30.3																
	9503†	3	100	30.4	3.3	24 (7 x 32)	15.2 Ω/M'	.232	5.89	30	98	50	164								
			U-500	U-152.4	14.7	23.5 Ω/M'	49.9 Ω/km														
			500	152.4	15.3	77.1 Ω/km															
			U-1000	U-304.8	28.7																
			1000	304.8	29.6																
	9504†	4	100	30.4	4.1	24 (7 x 32)	15.2 Ω/M'	.265	6.73	30	98	50	164								
			U-500	U-152.4	18.2	23.5 Ω/M'	49.9 Ω/km														
			500	152.4	18.9	77.1Ω/km															
			U-1000	U-304.8	35.5																
			1000	304.8	36.5																
	9505†	5	100	30.4	4.9	24 (7 x 32)	15 Ω/M'	.295	7.49	30	98	50	164								
			U-500	U-152.4	22.6	23.5 Ω/M'	49.9 Ω/km														
			500	152.4	23.4	77.1 Ω/km															
			U-1000	U-304.8	44.1																
			1000	304.8	48.5																

†Passes the VW-1 Vertical Wire Flame Test.

*Capacitance between conductors.

**Capacitance between 1 conductor and other conductors connected to shield.

‡At 1 KHz.

Prices and Specifications Subject to Change Without Notice.

BELDEN WIRE AND CABLE

Microphone Cables

Microphone Cables

Belden microphone cables are designed for flexibility, service and reliable signal transmission at audio frequencies. They are not only used for microphones, but also for home entertainment equipment, musical instruments, tape recorders, and shielded power supplies.

Shielded single conductor cables are used in high impedance systems, while multiple-conductor cables are generally used in low impedance applications.


All cables are precision engineered to transmit clear signals, while cancelling out hum and cross-talk interference. They're especially designed to withstand the flexing and normal abuse of studio, laboratory and home usage.

Plastic Cables Recommended for: Lower capacitance, lower loss, greater ozone and oil resistance, lighter weight, smaller diameter.
 Rubber Cables Recommended for: Greater abrasion and impact resistance and extra limpness so cable will lie flat on stage or studio floor.
 Neoprene and Hypalon Cables recommended for: Outside use, cold weather applications. Resistant to effects of sun, oil and ozone.

Rubber, Hypalon® or Neoprene Jacketed


Description	Trade & U.L. Style Number	No. of Pairs	Standard Length		Std. Unit Lbs. ea.	Insulation Thickness		Jacket Thickness		Nominal O.D.		Nominal Capacitance			
			ft.	m		Inch	mm	Inch	mm	Inch	mm	* pF/ft.	* pF/m	** pF/ft.	** pF/m

25 Gage
Stranded Conductors (7 x 33)

	8410 60C	1	25	7.6	1.2	(7 x 33)	.058	1.47	.030	.76	.245	6.22	—	—	33	118
			50	15.2	2.1											
			100	30.4	3.9											
			250	76.2	9.0											
			U-500	U-152.4	17.5											
			500	152.4	18.3											

Product Description: 3 strands copper, 4 strands tinned copper-covered steel, rayon braid, rubber insulated, rayon braid, 80% tinned copper braid shield, cotton yarn wrap, black EPDM rubber jacket. Suggested working voltage: 3000DC.


24 Gage
Stranded Conductors (45 x 40)

	8413	2	25	7.6	.6	(45 x 40)	0.17	.43	.025	.64	.199	5.05	30	118	55	213
			50	15.2	1.4											
			100	30.4	2.5											
			250	76.2	5.9											
			U-500	U-152.4	11.6											
			500	152.4	11.3											

Product Description: Tinned cadmium bronze, cotton serve, rubber insulated, cabled with fillers, 100% coverage conductive textile-wrap, 57% tinned-copper braid shield, cotton spiral, EPDM jacket. Color code: White, black. Suggested working voltage: 300. Jacket colors: black, red, yellow and blue.

60C	8406	3	100	30.4	3.3	(45 x 40)	.0175	.44	.025	.64	.223	5.66	30	131	55	230													
			U-500	U-152.4	15.4																								
			500	152.4	16.0																								
																	Product Description: Tinned cadmium bronze, cotton serve, rubber insulated, cabled with fillers, 100% coverage conductive textile wrap, 60.5% tinned-copper braid shield, cotton spiral, black EPDM rubber jacket. Color code: black, red, white. Suggested working voltage: 300.												
			9399	2	100												30.4	2.6	(45 x 40)	.017	.43	.025	.64	.200	5.08	30	98	55	246
					500												152.4	13.2											
1000	304.8	25.0																											
					Product Description: Bare cadmium copper conductor, cotton serve, rubber insulated cabled with fillers, 100% coverage conductive textile wrap, 70% tinned-copper braid shield, cotton spiral, brown EPDM rubber jacket. Color code: blue, red. Suggested working voltage: 300.																								

Soft, Flexible Brilliance™ Microphone Cables
in Matte Finish Colored Jackets

	1192A	4 2 blue 2 white	100	30.4	24 (40 x 40) bare copper 26 Ω/M' 87.2 Ω/km	.016	.41	.042	1.07	.245	6.22	39.2	128.6	57.4	188.3	
			500	152.4												18.38
			1000	304.8												35.27
			U-1000	U-304.8												34.29
			2500	762.0												90.73

Product Description: Bare copper, polyethylene insulated, conductors cabled, tinned-copper braid shield (96% coverage), matte PVC jackets in brown, red, green, orange, yellow, blue, violet, gray, white, ivory, chocolate brown, translucent and black — In actual use, it is a two conductor cable — the blue conductors are joined to form one conductor and similarly the two white conductors combine to form the second conductor. Conductors joined in this manner lower the possibility of induced noise.

BELDEN WIRE AND CABLE

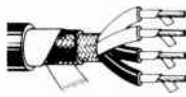
Microphone Cables

Rubber, Hypalon[®] or Neoprene Jacketed


Description	Trade & U.L. Style Number	No. of Cond.	Standard Lengths		Std. Unit Lbs. ea.	(Strand-ing)	Insulation Thickness		Jacket Thickness		Nominal O.D.		Nominal Capacitance			
			ft.	m			Inch	mm	Inch	mm	Inch	mm	* pF/ft.	* pF/m	** pF/ft.	** pF/m

20 Gage
Stranded Conductors (26x34)

Product Description
Tinned-copper, cotton-wrap, rubber-insulated, conductors cabled, rayon braid, tinned-copper braid shield, cotton wrap, jacket. 85% shield coverage. Color code: (1) White, (2) Black, (3) Red, (4) Green, (5) Blue, (6) Brown, (7) Yellow, (8) Orange. Suggested working voltage: 600.

 Multiple Conductor 60C	8412	2	25	7.6	1.5	(26x34)	.020	.51	.041	1.04	.262	6.65	30	98	55	180
			50	15.2	2.6											
			100	30.5	4.5											
			250	76.2	11.1											
			U-500	U-152.4	21.6											
			500	152.4	22.4											
			U-1000	U-304.8	42.3											
			1000	304.8	43.3											
EPDM jacket colors: Black, Red, Yellow and Blue.																
	8402†	2	100	30.5	5.0	(26x34)	.020	.51	.039	.99	.263	6.68	30	98	55	180
			250	76.2	11.8											
			U-500	U-152.4	23.1											
			500	152.4	24.0											
Brown Hypalon jacket.																
	8423	3	100	30.5	5.2	(26x34)	.020	.51	.040	1.02	.272	6.91	30	98	55	180
			250	76.2	13.1											
			500	152.4	24.7											
			1000	304.8	50.7											
Black EPDM rubber jacket.																
	8424∅	4	50	15.2	3.2	(26x34)	.020	.51	.041	1.04	.294	7.47	30	98	55	180
			100	30.5	6.3											
			U-250	U-76.2	15.1											
			250	76.2	15.7											
			U-500	U-152.4	29.1											
			500	152.4	30.0											
1000	304.8	60.1														
Black EPDM rubber jacket.																
	8425	5	100	30.5	7.3	(26x34)	.020	.51	.041	1.04	.318	8.08	30	98	55	180
			250	76.2	18.1											
Black EPDM rubber jacket.																
	8426	6	100	30.5	8.1	(26x34)	.020	.51	.038	.97	.344	8.74	30	98	55	180
			250	76.2	20.1											
Black EPDM rubber jacket.																
	8427	7	100	30.5	8.8	(26x34)	.020	.51	.043	1.09	.355	9.02	30	98	55	180
			250	76.2	23.0											
Black EPDM rubber jacket.																
	8418	8	100	30.5	10.1	(26x34)	.020	.51	.043	1.09	.381	9.68	30	98	55	180
			250	76.2	25.2											
Black EPDM rubber jacket.																

18 Gage
Stranded Conductors (41x34)

 60C	9395	1	U-500	U-152.4	18.4	(41x34)	.045	1.14	.040	1.02	.235	5.97	---	---	55	180
			500	152.4	19.0											
Product Description: Tinned-copper conductor, rubber-insulated, 100% coverage conductive textile shield, tinned-copper spiral shield. 71% coverage, paper tape, black neoprene jacket.																
	8428	2	100	30.5	6.1	(41x34)	.022	.56	.035	.89	.290	7.37	40	131	70	230
			U-500	U-152.4	28.5											
			500	152.4	28.3											
			1000	304.8	59.9											
Product Description: Tinned-copper, cotton wrap, rubber-insulated, conductors cabled, rayon braid, tinned-copper braid shield, cotton wrap, black neoprene jacket. 85% shield coverage. Suggested working voltage: 600.																

[®]DuPont trademark
 *Capacitance between conductors.
 **Capacitance between 1 conductor and other conductors connected to shield.
 †Passes the VW-1 Vertical Wire Flame Test.
 ∅Send for Technical Bulletin T/8-9.

BELDEN WIRE AND CABLE







Video Cable

75 ohm Precision Video Cables

The 9231 is a precision 75 ohm Video cable manufactured with rigid control of concentricity and all dimensional tolerances offering superior return loss characteristics, a quality Video transmission cable which provides exceptional picture definition and eliminates problems resulting from periodicity. It has a non-contaminating PVC jacket for more flexibility. The double braid 8281 75 ohm Video cable is made to tight tolerances for excellent return loss performance. Our 8279






miniature 75 ohm Video cable is for applications where space is critical. The gray PVC and black polyethylene jackets are made of non-contaminating, non-migratory compounds.

Typical Application: Video signal transmission in Color and Monochrome TV studios.
100% Sweep Tested.

Description	Trade & U.L. Type Number	Standard Lengths		Std. Unit Lbs. ea.	AWG (Stranding) Dia. in in. Nom. D.C.R.	Insulation & Nominal Core O.D.		Nominal O.D.		No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation		
		ft.	m			Inch	mm	Inch	mm				pF/ft.	pF/m	MHz	db/100 ft.	db/100 m
	9231 ⊕† 60C	500 1000	152.4 304.8	36.9 76.0	20 (Solid) .031 bare copper 9.9Ω/M' 32.5Ω/km	Poly-ethylene		.305	7.75	Tinned copper double braid 1.06Ω/M' 3.5Ω/km 98% shield coverage	75	66%	21	69.0	.01	.06	.2
						.198	5.03								1	.08	.3
	8281 ⊖ 80C	500♦ 1000♦	152.4 304.8	36.1 73.5	20 (Solid) .031 bare copper 9.9Ω/M' 32.5Ω/km	Poly-ethylene		.305	7.75	Tinned copper double braid 1.06Ω/M' 3.5Ω/km 96% shield coverage	75	66%	21	69.0	.01	.06	.2
						.198	5.03								1	.08	.3
	9141 80C	1000 1500	304.8 457.2	73.6 110.9	20 (Solid) .032 bare copper 10.3Ω/M' 33.8Ω/M'	Poly-ethylene		.305	7.75	Tinned copper double braid 1.06Ω/M' 3.5Ω/km 99% shield coverage	75	66%	20	65.6	.01	.06	.2
						.200	5.08								1	.08	.3
	8279 ⊖ 80C	100 250 500 1000	30.4 76.2 152.4 304.8	3.1 7.5 14.7 27.9	23 (7x32) .023 bare compacted copper 19.1Ω/M' 62.7Ω/km	Poly-ethylene		.220	5.59	Tinned copper 96% shield coverage 4.47 Ω/M' 14.6 Ω/km	75	66%	21	69.0	.01	.14	.5
						.146	3.71								1	.15	.5
	9209 80C	U-500 U-1000	U-152.4 U-304.8	14.2 27.1	23 (7 x 32) .023 bare compact- ed copper 23.1 Ω/M' 75.7 Ω/M'	Poly-ethylene		.220	5.59	100% Duofoil* + 96% tinned copper 4.5Ω M' 14.8Ω/km	75	66%	21	69.0	.01	.14	.5
						.146	3.71								1	.15	.5
	8299	Pkg. wt. ea. .3 lbs.		For use on 9231, 8281 and 9141. Adapter for use with PI-259 connector, 25 in box.													

†Passes the VW-1 Vertical Wire Flame Test.
⊖Request Technical Data Bulletin T/8-17 for connector information.
Request quotations of RG/U cables not listed.
♦Spoils are one piece, but length may vary + 20% -0 from length shown.

Computer, Instrumentation and Broadcast Cables

Description	Trade Number & U.L. Type	Standard Lengths		Std. Unit Lbs. ea.	AWG (Stranding) Dia. in In. Nom. D.C.R.	Insulation & Nominal Core O.D.		Nominal O.D.		No. of Shields & Material Nom. D.C.R.	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation		
		ft.	m			Inch	mm	Inch	mm			pF/ft.	pF/m	MHz	db/100 ft.	db/100 m
 Ethernet[▲]	89880 200C Subject 13 Non-conduit	100	30.5	20.8	Solid .0855 Tinned copper 1.42Ω/M' 4.66Ω/km	Foamed Teflon		.375	9.53	Aluminum/ polyester shield + 95% tinned copper braid + Duofoil® + 95% tinned copper braid 1.52Ω/M' 5.0Ω/km	80%	25	85.3	5 10	.37 .52	1.2 1.7
		500§	152.4	78.1		.247	6.27					Orange tint Teflon jacket.				
 RG-58/U Type	88240 200C Subject 13 Non-conduit	100	30.4	5.1	20 (Solid) .032 bare copper 10.2 Ω/M' 33.1 Ω/km	Teflon [§]		.175	4.52	Tinned copper 6.7 Ω/M' 13.5 Ω/km 95% shield coverage	69.5%	28.5	88.6	100 200 400 900	4.3 6.3 9.5 14.5	13.5 20.3 31.2 47.6
		500§	152.4	19.7		.112	2.85				Black tint Teflon jacket.					
 RG-59/U Type	88241 200C Subject 13 Non-conduit	100	30.4	6.1	22 Solid .025 bare copper covered steel 55.0Ω/M' 180.5Ω/km	Teflon		.206	5.23	Bare copper 2.6 Ω/M' 8.9 Ω/km 95% shield coverage	69.5%	21.0	68.9	100 200 400	3.4 4.9 7.1	11.2 16.1 23.3
		500§	152.4	24.7		.135	3.43				Black tint Teflon jacket.					
 RG-59/U Type	89108 200C Subject 13 Non-conduit	100	30.4	5.9	20 (Solid) .032 bare copper covered steel 26 Ω/M' 201.8Ω/km	Foamed Teflon		.206	5.53	Duofoil + 95% tinned copper braid 100% shield coverage	84%	16.5	54.2	50 100 200 500 900	1.8 2.6 4.0 6.1 8.8	5.9 8.8 13.1 20.0 27.2
		500§	152.4	23.7		.140	3.56				Black tint Teflon jacket.					
 RG-59/U Type	89259 200C Subject 13 Non-conduit	100	30.4	6.0	22 (7 x 30) .030 bare copper 61.5 Ω/M' 135.2 Ω/km	Foamed Teflon		.208	5.54	Bare copper 2.6Ω/M' 8.5Ω/km 95% shield coverage	73%	18.5	52.5	50 100 200 400 900	2.1 3.0 4.5 6.6 10.1	6.9 9.8 14.8 21.7 33.1
		500§	152.4	25.0		.146	3.70				Black tint Teflon jacket.					

[§]DuPont trademark





[▲]Xerox trademark

[§]Spools are one piece, but length may vary ± 10% from length shown.



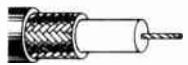
BELDEN WIRE AND CABLE

Coaxial Cable

Broadcast and Computer Cables

Description	Trade & U.L. Type Number	Standard Lengths		Std. Unit Lbs. ea.	AWG (Stranding) Dia. in In. Nom. D.C.R.	Insulation & Nominal Core O.D.		Nominal O.D.		No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation		
		ft.	m			Inch	mm	Inch	mm				pF/ft.	pF/m	MHz	dB/100 ft.	dB/100 m
 RG-58/U Type	9889 1354 60C	500 1000 2000	152.4 304.8 609.6	15.6 29.6 60.5	18 (Solid) .041 bare copper 7.5Ω/M' 24.6Ω/km	Cellular Polyethylene .116 2.95	.216 x .478	5.49 x 12.14	Duofoil® with 4/24 AWG tinned copper drain wires 25Ω/M' 82Ω/km	50 78%	26	85.3	50 100 300 500 1000	3.3 4.9 9.3 13.6 18.8	6.9 9.8 16.1 24.6 30.5 44.6 61.7		
 Dual RG59/U Type	9555 20063 300V 80C	100 500 1000 2000	30.4 152.4 304.8 609.6	8.1 39.0 74.7 150.1	23 (Solid) .023 bare copper covered steel 47Ω/M' 154.2Ω/km	Polyethylene .146 3.71	.238 x .478	6.04 x 12.14	Bare copper 2.57Ω/M' 8.4Ω/km 95% shield coverage	75 66%	20.5	67.3	100 200 400 700 900 1000	3.4 5.1 7.5 11.4 12.0 12.7	11.5 16.7 24.6 37.4 39.4 41.7		
 RG-59/U Type	9259 AWM 1354 60C Power Limited Cable Class 2	50 100 U-500 500 U-1000 1000	15.2 30.4 U-152.4 152.4 U-304.8 304.8	2.0 4.0 18.4 19.4 35.7 36.7	22 (7x30) .031 bare copper 15.0Ω/M' 49.2Ω/km	Cellular Polyethylene .146 3.71	.242	6.15	Bare copper 2.6Ω/M' 8.5Ω/km 95% shield coverage	75 78%	17.3	56.8	50 100 200 400 700 900 1000	2.1 3.0 4.5 6.6 8.9 10.1 10.9	6.9 9.8 14.8 21.7 29.2 33.1 35.8		
 RG-59/U JAN-C-17A	8241 AWM 1354 60C Power Limited Cable Class 2	25 50 100 U-500 500 U-1000 1000 2000 5000	7.6 15.2 30.4 U-152.4 152.4 U-304.8 304.8 609.6 1524.0	.9 2.2 4.3 18.5 19.2 36.0 77.5 192.0	22 (Solid) .025 bare copper covered steel 55Ω/M' 180.5Ω/km	Polyethylene .146 3.71	.242	6.15	Bare copper 2.7Ω/M' 8.9Ω/km 95% shield coverage	73 66%	21.0	68.9	50 100 200 400 700 900 1000	2.4 3.4 4.9 7.1 9.5 10.9 13.1	7.9 11.2 16.1 23.3 31.2 35.6 42.9		

Broadcast Cables





Description	Trade & U.L. Type Number	Standard Lengths		Std. Unit Lbs. ea.	AWG (Stranding) Dia. in In. Nom. D.C.R.	Insulation & Nominal Core O.D.		Nominal O.D.		No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation		
		ft.	m			Inch	mm	Inch	mm				pF/ft.	pF/m	MHz	dB/100 ft.	dB/100 m
 RG-59B/U MIL-C-17D	8263† 60C Power Limited Cable Class 2	U-500 500 U-1000 1000	U-152.4 152.4 U-304.8 304.8	18.1 18.8 35.2 36.1	23 (Solid) .023 bare copper covered steel 47Ω/M' 154.2Ω/km	Polyethylene .146 3.71	.241	6.12	Bare copper 2.6Ω/M' 8.5Ω/km 95% shield coverage	75 66%	20.5	67.3	50 100 200 400 700 900 1000	2.4 3.4 4.9 7.0 9.7 11.1 12.2	7.9 11.2 16.1 23.0 31.8 36.4 40.0		
 MIL-C-17F M17/29-RG59 QPL	9204† 80C	U-500 500 U-1000 1000	U-152.4 152.4 U-304.8 304.8	18.1 18.7 35.2 36.0	23 (Solid) .023 bare copper covered steel 47Ω/M' 154.2Ω/km	Polyethylene .146 3.71	.241	6.12	Bare copper 2.6Ω/M' 8.5Ω/km 95% shield coverage	75 66%	20.5	67.3	50 100 200 400 700 900 1000	2.4 3.4 4.9 7.0 9.7 11.1 12.2	7.9 11.2 16.1 23.0 31.8 36.4 40.0		
 RG-59/U Type	9659† 1354 60C Power Limited Cable Class 2	U-500 500 U-1000 1000	U-152.4 152.4 U-304.8 304.8	16.8 17.5 32.6 33.6	22 (7x30) .031 bare copper 15.0Ω/M' 49.2Ω/km	Cellular Polyethylene .146 3.71	.242	6.15	Bare copper 2.6Ω/M' 8.5Ω/km 95% shield coverage	75 78%	17.3	56.8	50 100 200 400 700 900 1000	2.1 3.0 4.5 6.6 8.9 10.1 10.9	6.9 9.8 14.8 21.7 29.2 33.1 35.8		

†Passes the VW-1 Vertical Wire Flame Test.
Request quotations of RG/U cables not listed.




BELDEN WIRE AND CABLE

Coaxial Cable

Broadcast Cables

Description	Trade & U.L. Type Number	Standard Lengths		Std. Unit Lbs. ea.	AWG (Stranding) Dia. in In. Nom. D.C.R.	Insulation & Nominal Core O.D.		Nominal O.D.		No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation		
		ft.	m			Inch	mm	Inch	mm				pF/ft.	pF/m	MHz	dB/100 ft.	dB/100 m
 RG-58A/U Type Triax Cable	9222 80C	100 U-500 500	30.4 U-152.4 152.4	4.5 19.6 20.4	20 (7x28) .037 tinned copper 9.46Ω/M' 31.04Ω/km	Poly-ethylene .114 2.90		.240	6.10	2 tinned copper Inner 4.73Ω/M' 15.5Ω/km Outer 4.30Ω/M' 14.1Ω/km 96% shield coverage	50	66%	30.8	101.0	50 100 200 400 700 900 1000	3.3 4.9 7.2 12.0 18.0 22.0 24.0	10.8 16.1 23.6 39.4 59.1 72.2 78.7
 RG-59/U Type Triax Cable	9267† 80C	100 500 1000	30.4 152.4 304.8	8.6 41.2 86.0	20 (Solid) .033 bare copper 10.1Ω/M' 33.1Ω/km	Cellular Poly-ethylene .146 3.71		.360	9.14	2 bare copper inner 2.5 Ω/M' 8.3 Ω/km Outer 2.6 Ω/M' 8.6 Ω/km 96% shield coverage	75	78%	17.3	56.8	1 50 100 300 400 700 900 1000	0.3 1.8 2.6 4.8 5.6 7.6 8.7 9.2	1.0 2.76 8.5 15.7 18.4 24.9 28.5 30.2
 RG-11/U Type Triax Cable	9192† AWM 1641 60C Power Limited Cable Class 2	500 1000	152.4 304.8	81.1 146.0	14 (19 x 27) .064 bare copper 2.98 Ω/M' 9.84 Ω/km	Cellular Poly-ethylene .312 7.92		.520	13.2	2 bare copper inner 1.57 Ω/M' 5.1 Ω/km Outer 1.69 Ω/M' 5.58 Ω/km 96% shield coverage	75	78%	17.3	56.8	50 100 200 300 400 700 900 1000	1.0 1.5 2.2 2.8 3.3 4.6 5.4 5.7	3.3 4.9 7.2 9.2 10.8 15.1 17.7 18.7
 RG-11/U Type Triax Cable	8233 80C	500 1000 2000	152.4 304.8 609.6	63.5 124.0 251.9	14 (Solid) .064 bare copper 2.5Ω/M' 8.2Ω/km	Cellular Poly-ethylene .285 7.24		.475	12.07	2 bare copper 1.4 Ω/M' 4.59 Ω/km Inner 1.5 Ω/M' 4.9 Ω/km Outer 1.5 Ω/M' 4.9 Ω/km 93% shield coverage	75	78%	17.3	56.8	50 100 200 300 400 900	1.0 1.5 2.2 3.3 3.3 5.2	3.3 4.9 7.2 9.2 10.8 17.1

Broadcast and Computer Cables

 RG-8/U Type Triax Cable	9888 80C	500 1000	152.4 304.8	72.8 142.4	11 (7x19) .108 bare copper 1.17Ω/M' 3.80Ω/km	Cellular Poly-ethylene .285 7.24		.480	12.19	2 bare copper Inner 1.2Ω/M' 3.9Ω/km Outer 2.1Ω/M' 6.9Ω/km 96% shield coverage	50	78%	26.0	85.3	50 100 200 400 700 900 1000	1.2 1.8 2.7 4.2 5.8 6.7 7.1	3.9 5.9 8.9 13.8 19.0 22.0 23.3
 RG-59/U Type Triax Cable	8232 80C	500 1000 2000	152.4 304.8 609.6	28.4 58.0 118.1	20 (Solid) .032 bare copper covered steel 34.5Ω/M' 113.2Ω/km	Cellular Poly-ethylene .143 3.63		.315	8.00	2 bare copper 2.6Ω/M' 8.5Ω/km Inner 2.5Ω/M' 8.2Ω/km Outer 2.8Ω/M' 9.2Ω/km 96% shield coverage	75	78%	17.3	56.8	50 100 200 300 400 900	1.8 2.6 3.8 4.8 5.6 8.4	5.9 8.5 12.5 15.8 18.4 27.6
 RG-11/U Type Triax Cable	9232† AWM 1641 30V 60C Power Limited Cable Class 2	500 1000	152.4 304.8	75.0 154.7	14 (19 x 27) .064 bare copper 2.98 Ω/M' 9.84 Ω/km	Cellular Poly-ethylene .312 7.92		.520	13.2	2 bare copper inner 1.57 Ω/M' 5.1 Ω/km Outer 1.69 Ω/M' 5.58 Ω/km 90% shield coverage	75	78%	17.3	56.8	50 100 200 300 400 700 900 1000	1.0 1.5 2.2 2.8 3.3 4.6 5.4 5.7	3.3 4.9 7.2 9.2 10.8 15.1 17.7 18.7




†Passes the VW-1 Vertical Wire Flame Test.
Request quotations of RG/U cables not listed.

Refer to Green Section for Addresses and Telephone Numbers.



BELDEN WIRE AND CABLE

Coaxial Cable

Broadcast and MATV Cables

Description	Trade & U.L. Type Number	Standard Lengths		Std. Unit Lbs. ea.	AWG (Stranding) Dia. in In. Nom. D.C.R.	Insulation & Nominal Core O.D.		Nominal O.D.		No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation		
		ft.	m			Inch	mm	Inch	mm				pF/ft.	pF/m	MHz	db/100 ft.	db/100 m
 RG-59/U Type	9244 AWM 1354 80C Power Limited Cable Class 2	U-500♦	U-152.4	15.9	22 (Solid) .025 bare copper covered steel 55.0Ω/M' 180.5Ω/km	Poly-ethylene		.240	6.09	Bare copper braid 4.5Ω/M' 14.8Ω/km 86% shield coverage	73	66%	21.0	68.9	50	2.4	7.9
		500♦	152.4	16.7		.146	3.71								Black PVC jacket.			100	3.4	11.2
		1000♦	304.8	30.8													
		1640♦	500	47.9											700	9.5	31.2
		3280	1000	98.2											900	10.9	35.6
															1000	11.5	37.7
 RG-59/U Type	B221 60C	U-500	U-152.4	3.8	22 (Solid) .025 bare copper covered steel 55.0Ω/M' 180.5Ω/km	Cellular Poly-ethylene		.242	6.15	Bare copper braid 2.6Ω/M' 8.5Ω/km 95% shield coverage	80	78%	16.3	53.5	50	2.0	6.6
		500	152.4	17.0		.146	3.71								Gray, white or black PVC jacket.			100	2.9	9.5
		U-1000	U-304.8	17.8													200	4.1	13.5
		1000	304.8	33.0											400	5.9	19.4
				33.9											700	7.8	25.6
															900	8.8	28.9
															1000	9.9	32.5
 RG-59/U Type	9240 60C	U-500♦	U-152.4	14.9	20 (Solid) .032 bare copper covered steel 61.5Ω/M' 201.8Ω/km	Cellular Poly-ethylene		.241	6.12	Bare copper braid 5.6Ω/M' 18.4Ω/km 80% shield coverage	75	78%	17.3	56.7	50	1.8	5.9
		500♦	152.4	14.3		.146	3.71								Black PVC jacket.			100	2.6	8.5
		U-1000♦	U-304.8	26.2													200	3.8	12.5
		1000♦	304.8	27.2											500	6.2	21.0
															900	8.4	27.6
															1000	8.8	28.9

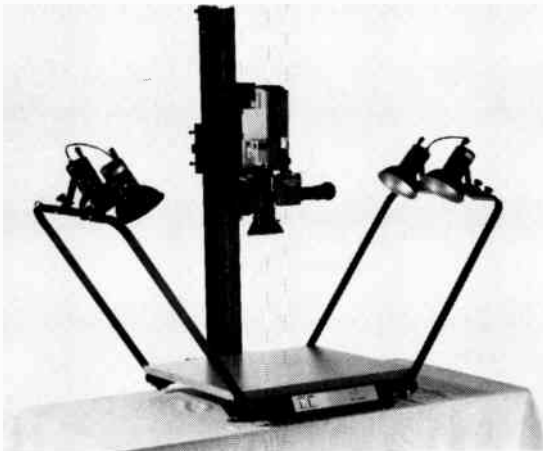
MATV Cables

Description	Trade & U.L. Type Number	Standard Lengths		Std. Unit Lbs. ea.	AWG (Stranding) Dia. in In. Nom. D.C.R.	Insulation & Nominal Core O.D.		Nominal O.D.		No. of Shields & Material Nom. D.C.R.	Nom. Imp. Ω	Nom. Vel. of Prop.	Nominal Capacitance		Nominal Attenuation		
		ft.	m			Inch	mm	Inch	mm				pF/ft.	pF/m	MHz	db/100 ft.	db/100 m
 RG-59/U Type	9233^P 80C	U-500	U-152.4	11.7	22 (Solid) .025 bare copper covered steel 55.0Ω/M' 180.4Ω/km	Cellular Poly-ethylene		.216	5.49	Duofoil® + drain 22.5Ω/M' 73.8Ω/km 100% shield coverage	80	78%	16.3	53.5	50	1.9	6.2
		500	152.4	11.7		.140	3.56								White, black PVC jacket.			100	2.7	8.8
		U-1000	U-304.8	21.0													200	4.0	13.1
		1000	304.8	22.0											500	6.5	21.3
															900	8.8	28.9
 RG-59/U Type	9291 60C	U-500♦	U-152.4	11.2	22 (Solid) .025 bare copper covered steel 55.0Ω/km 180.5Ω/km	Cellular Poly-ethylene		.242	6.15	Duofoil 40% aluminum braid 17.0Ω/M' 55.8Ω/km 100% shield coverage	80	78%	16.3	53.5	50	1.9	6.23
		500♦	152.4	12.1		.140	3.56								Black PVC jacket.			100	2.7	8.8
		U-1000♦	U-304.8	21.7													200	4.0	13.12
		1000♦	304.8	22.6											500	6.5	21.32
															900	9.0	29.53

^PBelden U.S. Patent 3,927,247, Canadian Patent #875,188.
♦ Spools are one piece, but length may vary ± 10% from length shown.
Request quotations of RG/U cables not listed.

BENCHER, INC.

Camera Stands



M3 Camera Stand - Table Model

Consists of • 4' M3 column • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 baseboard • M3 column/baseboard support base

430-02\$675.00

M3 Camera Stand - Table Model

Consists of • 5' M3 column • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 baseboard • M3 column/baseboard support base

430-04\$700.00

M3 Camera Stand - Wall Model

Consists of • 4' M3 column • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 wall mounting brackets

430-06\$575.00

M3 Camera Stand - Wall Mount - EX

Consists of • 5' M3 column • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 wall mounting brackets

430-08\$600.00

M3 Column & Carriage Only

Consists of • 4' M3 column • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly

430-80\$550.00

M3 Column & Carriage - EX

Consists of • 5' M3 column • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly

430-81\$575.00

M3 Quartz Camera Stand - Bench

Consists of • M3 column (4 1/2' net, 6' overall) • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 baseboard • Sidelight arms, pair • Sidelight arm braces, pair • Dual quartz copy lights, pair • Copy light control • Camera stand bench

430-15\$1650.00

M3 Quartz Camera Stand - Pedestal

Consists of • M3 column (4 1/2' net, 7' overall) • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 baseboard • Sidelight arms, pair • Sidelight arm braces, pair • Dual quartz copy lights, pair • Copy light control • Camera stand pedestal

430-16\$1825.00

M3 Strobe Camera Stand - Bench

Consists of • M3 column (4 1/2' net, 6' overall) • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 baseboard • Sidelight arms, pair • Sidelight arm braces, pair • Dual strobe copy lights with power supply • Camera stand bench

430-17\$2350.00

M3 Strobe Camera Stand - Pedestal

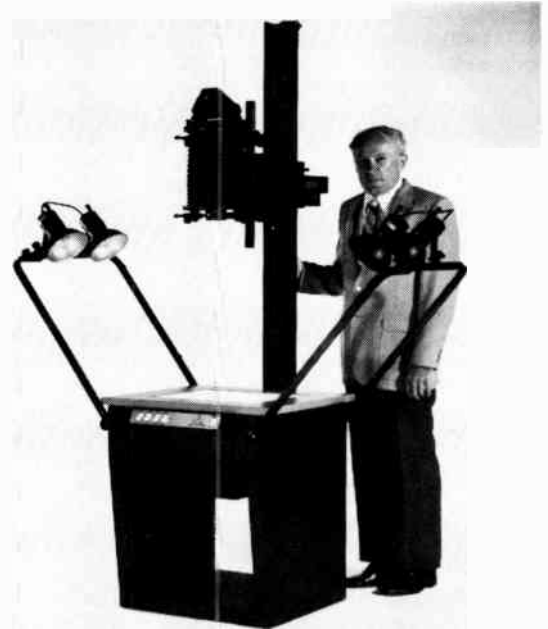
Consists of • M3 column (4 1/2' net, 7' overall) • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 baseboard • Sidelight arms, pair • Sidelight arm braces, pair • Dual strobe copy lights with power supply • Camera stand pedestal

430-18\$2500.00

M3 Quartz Illuma Stand - Bench

Consists of • M3 column (4 1/2' net, 6' overall) • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 illuma baseboard • 14 x 17" opal plexiglass • 14 x 17" clear glass • Quartz base illuminator assembly • Sidelight arms, pair • Sidelight arm braces, pair • Dual quartz copy lights, pair • Dual function copy light control • Camera stand bench

430-20\$2000.00



M3 Quartz Illuma Stand - Pedestal

Consists of • M3 column (4 1/2' net, 7' overall) • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 illuma baseboard • 14 x 17" opal plexiglass • 14 x 17" clear glass • Quartz base illuminator assembly • Sidelight arms, pair • Sidelight arm braces, pair • Dual quartz copy lights, pair • Dual function copy light control • Camera stand pedestal

430-21\$2150.00

M3 Strobe Illuma Stand - Bench

Consists of • M3 column (4 1/2' net, 6' overall) • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 illuma baseboard • 14 x 17" opal plexiglass • 14 x 17" clear glass • Strobe base illuminator assembly • Sidelight arms, pair • Sidelight arm braces, pair • Dual strobe copy lights with power supply • Camera stand bench

430-22\$2700.00

M3 Strobe Illuma Stand - Pedestal

Consists of • M3 column (4 1/2' net, 7' overall) • Auxiliary dual counterbalance springs • Column scale • M3 camera carriage assembly • M3 illuma baseboard • 14 x 17" opal plexiglass • 14 x 17" clear glass • Strobe base illuminator assembly • Sidelight arms, pair • Sidelight arm braces, pair • Dual strobe copy lights with power supply • Camera stand pedestal

430-23\$2825.00

M3 remote control motor drive options are availablePOR

BENCHMARK MEDIA SYSTEMS, INC.

Audio Distribution/ Amplification Equipment

System 1000 Modular Audio Distribution and Processing Package

- Direct connection of audio to the card edge connector via Amp Module connectors gives very high density. The wire wrap connector grid is now an audio patch panel. Amplifier systems may be reconfigured quickly at any time
- Signal wire drain is the center of a 3-pin, in-line housing, making polarity inversion a simple matter of inverting the connector
- Signal inputs may be series connected, outputs may be added with no fear of inadvertently shorting connector pins already in use
- Miniature audio cable—available as pigtails

- B-1000** (12-Card frame) \$550.00
- B-1000P** (9-Card frame with internal power supply) 995.00

System 1000 Modules

DA-101 Audio Interface Distribution Amplifier

- Mono audio interface with dual inputs • L, R, L+R, L-R or timecode distribution
- Variable gain, off to +20dB, or fixed unity
- 1kHz THD=0.0010%, 20kHz THD=0.0035%
- Output noise=-96dBu, S/N=100dB
- CMRR: 100dB to 1kHz, 80dB at 20kHz
- Max. in/out = +27dBu, dynamic range= 123dB
- Ten 60 ohm balanced plus two direct outs
- 40W at 8 ohms will drive up to 100 DA outputs
- Metering: 12 segment LED plus peak O/L indicator
- Compatible with all system 1000 daughter boards

- DA-101** \$297.00

DA-102 Stereo Distribution Amplifier

- Universal audio interface for stereo distribution
- Gain: variable, off to +20dB, or fixed unity
- 150kHz bandwidth
- 2kHz THD=0.0008%, 20kHz THD=0.0025%
- Output noise= -104dBu, S/N=108dB
- CMRR: 100dB at 2kHz, 80dB at 20kHz
- Crosstalk: 100dB at 2kHz, 80dB at 20kHz
- Max. in/out = +27dBu, dynamic range= 131dB
- Five 60 ohm balanced plus direct outs per channel
- Compatible with all system 1000 daughter boards

- DA-102** \$401.00

MDA-101 Microphone

Preamplifier Distribution Amplifier

- Six 60 ohm outputs
- Gain, variable from +12dB to +70dB
- Noise figure of less than 1dB i.e. with a gain of 40dB, noise out is -90dBV
- Differential bandwidth is 200kHz hence very low phase shift at 20kHz and extremely fine transient response
- A common mode choke—L/C filter virtually excludes RF from ever reaching the input of the preamp.
- -3dB at 26kHz, -60dB at 1MHz
- Provision for accessory daughter boards. i.e. remote gain control, a safety limiter, patch out and in for external processing

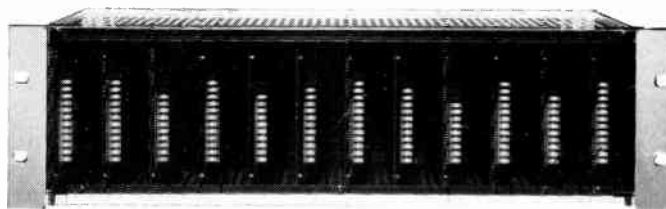
- MDA-101** \$325.00

DIA-1 and DIA-2 Differential Input Amplifiers

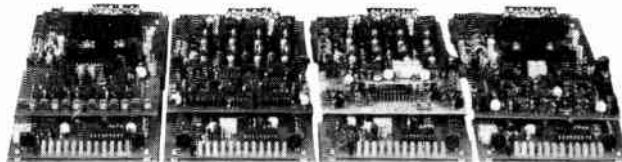
- Differential input eliminates ground loops
- THD = 0.0012% at 2kHz, 0.0025% at 20kHz typ.
- 102dB avg. & 118dB peak S/N ratio typ.
- 13V/μsec slew rate = TIM free operation
- FET op-amp, ferrite beads = no RF problems
- Bridging 100K differential input impedance
- Ruler flat response past 100kHz
- Derives power from host equipment
- Zener regulation allows wide supply range

DOA-1 and DOA-2 Amplifiers Line Level Input

- Balanced outputs
- Variable gain, -infinity to +26dB
- Ultra low distortion, 0.0009% at 2kHz and 0.0016% at 20kHz typical
- High slew rate, 18V/μsec typ.
- Ultra low noise, -92dBV out at A = +14dB at A = 0dB, -99dBV out typ.
- Ruler flat response past 100kHz
- 10K ohm input impedance minimum
- Low output impedance, 60 ohms balanced. (Drives long lines)



System 1000



Daughter Boards

Daughter Boards

RGC-02

- 2 channel remote gain control
- Stereo, mono, left/right distribution
- Logic level switching will computer interface

- RGC-02** \$215.00

MTX-02

- Stereo, mono, left/right, matrix distribution
- Encode and decode matrix from discrete stereo
- Channel reversal in discrete stereo mode
- Remote polarity reversal in all modes
- Logic level switching will computer interface

- MTX-02** \$215.00

OSC-01

- Ultra low distortion oscillator (0.001% THD)
- Use for level and THD spot checks
- Remote select normal DA input or oscillator
- External test signal input
- Logic level switching will computer interface

- OSC-01** \$145.00

EQ-02

- Dual 3 band "Semi-Parametric" EQ
- Variable cut/boost to 15dB
- Low band: variable frequency shelving filter
- Mid band: variable frequency "presence" EQ
- High band: variable slope 7kHz shelving filter
- Balanced insertion can be used as third input

- EQ-02** \$145.00

DIA-1, DIA-2, DOA-1 and DOA-2

	1-11	12 +
With XLR Connector	\$55.00	\$49.50
With 1/4" Connector	50.00	45.00
Without Connector	48.00	43.20

RPM-1 Remote Program Meter Card

- Peak or VU mode operation on VU meter
- Peak hold, to "catch" the highest peak over a given time interval
- System reference levels of 0, +4, or +8dBV (VU to Peak differential = +8cB)
- IEC time constants for the peak mode
- Peak overload indicator, may be mounted in the meter, +12 to +26dBV range
- Modes are locally and gang switchable
- Illuminated indicators of meter modes
- 100K ohm bridging differential input

	1-11	12 +
RPM-1	\$160.00	\$144.00

BEYER DYNAMIC, INC.

Studio Condenser Microphones/Microphone Systems

**MCM System Series
Studio Condenser Microphones**

Each unit contains both the powering module, which forms the body of the microphone, and an interchangeable microphone capsule. By changing the capsules on a matching power module, the user can create different microphones for a variety of applications. In addition, all components are available separately to insure individual adaption of the microphone to the relevant recording situation.

MCM Series Condenser Microphone Capsules

CK701 Omnidirectional Condenser Microphone Capsule • The high frequency emphasis of the free-field voltage response compensates for the attenuation of high frequencies occurring in the reverberant sound field • Can be used where no feedback can occur and a constant recording sensitivity is required all around • Frequency response: 40-20,000Hz \$255.00

CK702 Omnidirectional Condenser Microphone Capsule • Similar to CK701 but with elastic cartridge suspension of capsule system • Built-in protective wind and pop filter • It is therefore particularly insensitive to mechanical vibrations and wind and pop noises • Frequency response: 40-20,000Hz \$315.00

CK703 Cardioid Condenser Microphone Capsule • Very low feedback • Flat frequency response throughout the entire transmission range with a slight rise at the high end • As a directional microphone it permits excellent recording results even in acoustically unfavorable surroundings, as in the case of acoustic reverberation tending towards feedback and where disturbing ambient noise is present • Frequency response: 40-20,000Hz \$315.00

CK704 Cardioid Condenser Microphone Capsule • Similar to CK703, but with elastic cartridge suspension of capsule system • Built-in protective wind and pop filter • Ideal as a microphone for soloists, as it is particularly insensitive to handheld noise and popping • Frequency response: 40-20,000Hz \$330.00

CK706 Cardioid-lobe, "Short Shotgun" Condenser Microphone Capsule • 16.4cm in length • The CK706 is a combination of pressure gradient and interference tube • Its pick-up characteristic corresponds at low frequencies to that of a cardioid • At frequencies above 2kHz it changes into a lobe form • Permits high quality sound pick-up even under difficult conditions such as severe surrounding noise and room reverberation • Particularly suitable for soloists' recordings and for reporting • An additional protective windscreen is recommended for outdoor recording • Built-in protection from pop and breath noise • Frequency response: 40-20,000Hz \$540.00

CK707 Lobe, "Long Shotgun" Condenser Microphone Capsule • 43.4cm in length • The combination of interference tube and gradient principle results in a lobe form pick-up characteristic • Extremely high directivity factor • When recording outdoors or in the case of rapid swiveling movements of the microphone a windscreen is recommended • Frequency response: 40-20,000Hz \$650.00

CK708 Figure-Eight Condenser Microphone Capsule • High performance condenser microphone with a frequency independent, directional pick-up • Elastic suspension of the capsule system • The perfect microphone for difficult recording situations in studios \$600.00

Note: All condenser microphone capsules must be used with one of the powering modules from the MCM Series.

MCM Series Powering Modules

CV710P48 • Pre-amp powering module for the MCM Series • Permits use of any 48V phantom power • Built-in 10dB attenuation pad • Bass roll-off switch \$290.00

CV720PV • Pre-amp powering module for the MCM Series • Permits use of any 8-52V phantom power • Built-in 10dB attenuation pad • Bass roll-off switch \$340.00



CV750 • Pre-amp powering module for the MCM Series • Permits remote use of any capsule from the pre-amp powering module when used with the AV750 adaptor and MVK750 cable • Built-in 10dB attenuation pad • "Foot-fall" filter • Bass roll-off switch \$390.00

Note: All powering modules must be used with the MCM Series microphone capsules.

MCM Series Complete Microphone Systems

MC711	CK701 capsule plus CV710 pre-amp powering module	\$535.00
MC712	CK702 capsule plus CV710 pre-amp powering module	595.00
MC713	CK703 capsule plus CV710 pre-amp powering module	595.00
MC714	CK704 capsule plus CV710 pre-amp powering module	610.00
MC716	CK706 capsule plus CV710 pre-amp powering module	820.00
MC717	CK707 capsule plus CV710 pre-amp powering module	930.00
MC718	CK708 capsule plus CV710 pre-amp powering module	880.00
MC721	CK701 capsule plus CV720 pre-amp powering module	585.00
MC722	CK702 capsule plus CV720 pre-amp powering module	645.00
MC723	CK703 capsule plus CV720 pre-amp powering module	645.00
MC724	CK704 capsule plus CV720 pre-amp powering module	660.00
MC726	CK706 capsule plus CV720 pre-amp powering module	870.00
MC727	CK707 capsule plus CV720 pre-amp powering module	980.00
MC728	CK708 capsule plus CV720 pre-amp powering module	930.00

BEYER DYNAMIC, INC.**Studio Condenser Microphones/
Accessories****Studio Condenser Microphones**

MCE80 Condenser, unidirectional, vocal microphone with supercardioid polar pattern • Operable by 4.5V battery (supplied) or any 12-48V phantom power • Features on-off switch • Battery condition LED and built-in 'foot-fall' filter • The battery is automatically switched off when the mike is being fed by phantom power \$459.00

MCE81 Studio quality unidirectional condenser microphone with cardioid polar pattern • Internal shockmount reduces handling noise and vibration • Wide range frequency response • Multistage™ pop filter • Weight balanced • Slim profile \$299.00

MCE86 Shot Shotgun Microphone with condenser element and hypercardioid polar pattern • Designed for broadcast professionals who require a lightweight, high quality shotgun microphone • 95 grams • Frequency response is 50Hz-18kHz • Can be phantom powered generations 12-48V • Can be used in studio, on location for camera mount • Fishpole boom or handheld applications POR

MC734P48 Condenser, unidirectional, vocal microphone with cardioid polar pattern • Designed for handheld use in studio or on-stage • Features 3 position bass roll-off and built-in 'foot-fall' filters • Requires any 48V phantom power • Matte-nickel finish \$785.00

MC734PA Condenser, unidirectional, vocal microphone with cardioid polar pattern • Designed specifically for 'live' stage use • Features same as MC734P48 except the MC734PA can attain a 6dB higher audio level • Matte-black finish \$800.00

MC736P48 Condenser, cardioid-lobe, 'short shotgun' microphone • Features 12dB gain attenuation pad and bass roll-off switch • High signal-to-noise ratio and high sound pressure level capability • Requires 48V phantom power \$900.00

MC736PV Condenser, cardioid-lobe 'short shotgun' microphone • Features 12dB attenuation pad and bass roll-off switch • High signal-to-noise ratio and high sound pressure level capability • Requires 12-48V phantom power \$875.00

MC737P48 Condenser, lobe, 'long shotgun' microphone • Features 12dB attenuation pad and bass roll-off switch • High signal-to-noise ratio and high sound pressure level capability • Requires 48V phantom power \$950.00

MC737PV Condenser, lobe, 'long shotgun' microphone • Features 12dB attenuation pad and bass roll-off switch • High signal-to-noise ratio and high sound pressure level capability • Requires 12-48V phantom power \$950.00

MC740N(C) Studio quality, large diaphragm condenser microphone • Features 5 selectable polar patterns • Cardioid • Wide-cardioid • Hypercardioid • Omnidirectional and figure-eight • Includes 10dB attenuation pad and 2 position bass roll-off switch • Requires 48V phantom power \$1325.00

MC740N(C/5) Same as the MC740N(C) terminating in a special 5 pin XLR connector • Designed to interface with the MSG740 48V phantom power supply • The MSG740 will also permit remote selection of the 5 polar patterns \$1400.00

Power Supplies for Condenser Microphones

MSB9N(C) Battery power supply 9V for condenser microphone when using the CV720PV pre-amp powering module • Must be used with balanced inputs \$150.00

MSB9N(C).1 Same as the MSB9N(C) with • Built-in balancing transformer for unbalanced inputs \$165.00

MSB48N(C).1 Battery power supply (5 x 9V) for condenser microphones 48V phantom power • Built-in balancing transformer for unbalanced inputs • Battery condition LED and belt clip \$325.00

MSG248N(C) AC power supply providing 48V phantom power for up to 2 condenser microphones • Must be used with balanced inputs \$230.00

MSG248N(C).1 Same as the MSG248N(C) with • Built-in balancing transformer for unbalanced inputs \$260.00

MSG740N(C) AC power supply • Specifically for the MC740N(C/5) studio condenser microphone • Will supply 48V phantom power and remote polar pattern selection for up to 2 MC740N(C/5) microphones \$675.00



MC737PV

EA717



MC734



MC740



MCE81

Microphone Suspensions and Fishpole Booms

EA21 Elastic isolation suspension for microphones with 19-24mm shaft diameter • Nickel-plated finish \$150.00

EA21TV Same as the EA21 in matte-black finish \$150.00

EA25 Elastic isolation suspension for microphones with 23-27mm shaft diameter • Nickel-plated finish \$150.00

EA25TV Same as the EA25 in matte-black finish \$150.00

EA717MCM Elastic isolation suspension for the MC717 and MC727 'long shotgun' condenser microphones • Supplied with MZP767 'pistol-grip' handle or MZG1 stand/boom adaptor \$180.00

EA736MCM Rubber isolation suspension for the MC716, MC717, MC736P48 and MC736PV 'short shotgun' condenser microphones • Supplied with MZP767 'pistol-grip' handle or MZG1 stand/boom adaptor \$180.00

EA737 Rubber isolation suspension for the MC737P48 and MC737PV 'long shotgun' condenser microphones • Supplied with MZP767 'pistol-grip' handle or MZG1 stand/boom adaptor \$180.00

EA740 Elastic isolation suspension for the MC740N(C) studio condenser microphone \$150.00

MZA 716 Carbon fiber fishpole extends to 15' \$225.00

MZA 717 Lightweight aluminum fishpole. Adjustable 26" - 66" \$150.00

BEYER DYNAMIC, INC.

Electret Condenser Microphones

Acoustical Boundary Microphones

MPC40 Condenser "Half-Spherical" Polar Pattern Acoustic Boundary Microphone • 2 3/4" diameter • 5/8" high • Matte black • The power supply MES40VN(C) can supply battery power (9V) or act as pre-amp adaptor for any 48V phantom power • The CV750N(C) pre-amp can be used as an adaptor for any 48V phantom power. \$295.00

MPS40.1 • The MPC40 and MES40VN(C) power supply packaged together. \$550.00

MPS40.2 • The MPC40 and CV750N(C) pre-amp packaged together. . \$800.00

MPC50 • Same microphone found in the MPC40 mounted in an oak panel • 8 3/4" square • 5/8" high • Built-in pre-amplifier operable with 9V battery or any 12-48V phantom power • On/off switch and battery condition LED . . . \$700.00



MPC40 With Power Supply

Mini Clip-On Lavalier Condenser Microphones

MCE5 Condenser "Omnidirectional" Clip-On Lavalier Microphone • 7mm diameter • 23mm long • Matte black • Designed for use in TV and radio broadcasting and film and video production • Terminates in a 6-pin DIN connector to be used in conjunction with the MES5VN(C) power supply • Supplied with a 4' cable • WS5 windscreen and MKC5/1 tie-clip holder \$195.00

MCE5-3m • Same as the MCE5 • Supplied with 10' cable instead of 4' . . \$200.00

MCE5.1N(K) • Same as the MCE5 terminating in a 2-conductor 1/4" connector • The connector incorporates the power supply operable by a 5.6V battery (supplied) • Supplied with a 10' cable. \$295.00

MCE5.9 • Same as the MCE5 terminated open-ended for use with any wireless transmitter (with appropriate connector) • Supplied with a 10' cable . . \$180.00

MCE5.11N(C) • Same as the MCE5 terminated in 3-pin XLR connector • The connector incorporates the power supply operable by a 5.6V battery (supplied) or any 48V phantom power • Supplied with a 10' cable. \$375.00

MCE6 • Same as the MCE5 designed to handle high SPL up to 150dB for trumpet, saxophone and trombone sound reinforcement • When used with MTH5 horn suspension mount • Supplied with a 4' cable \$195.00

MCR6.1N(K) • Same as the MCE6 terminating in a 2-conductor 1/4" connector • The connector incorporates the power supply operable by a 5.6V battery (supplied) • Supplied with a 10' cable. \$295.00

MCE6.9 • Same as the MCE6 terminated open-ended for use with any wireless transmitter (with appropriate connector) • Supplied with a 10' cable . . \$180.00

MCE6.11N(C) • Same as the MCE6 terminated in a 3-pin XLR connector • The connector incorporates the power supply operable by a 5.6V battery (supplied) or any 48V phantom power • Supplied with a 10' cable. \$375.00

MCE10 Condenser "Hypercardioid" Clip-On Lavalier Microphone • 9mm diameter • 30mm long • Matte black • Designed for theater musicals • Live TV productions • Church installations • To be used when feedback problems exist from simultaneous sound sources • Terminated in a 6-pin DIN connector to be used in conjunction with the MES5VN(C) power supply • Supplied with a 4' cable and MKV5/1 tie-clip holder \$295.00

MCE10.1N(K) • Same as the MCE10 terminated in a 2-conductor 1/4" connector • The connector incorporates the power supply operable by a 5.6V battery (supplied) • Supplied with a 10' cable. \$395.00

MCE10.9 • Same as the MCE10 terminated open-ended for use with any wireless transmitter (with appropriate connector) • Supplied with a 10' cable . . \$250.00

MCE10.11N(C) • Same as the MCE10 terminating in a 3-pin XLR connector • The connector incorporates the power supply operable by a 5.6V battery (supplied) or any 48V phantom power • Supplied with a 10' cable. \$395.00

Power Supplies

MES5VN(C) Battery Operated Power Supply (9V) • For MCE5, MCE6 and MCE10 microphones • 6-pin DIN input and 3-pin XLR output • Can also be used as a pre-amp adaptor for any 48V phantom power. \$175.00

MES40VN(C) Battery Operated Power Supply (9V) • For the MPC40 • Mini 3-pin connector input and 3-pin XLR output • Can also be used as a pre-amp adaptor for any 48V phantom power \$250.00



MPC50



MCE5



MCE10

Accessories

- WS5** Black wiremesh windscreen for the MCE5 and MCE6 \$12.00
- ZWS5** Black polyurethane foam windscreen for the MCE5 and MCE6 \$4.00
- MKV5/1** Tie/lapel clip to hold one MCE5, MCE6 or MCE10 \$16.00
- MKV5/1D** Same as the MKV5/1 with a turnable mike clip for better microphone directionality \$40.00
- MKV5/2** Tie/lapel clip to hold two MCE5, MCE6 or MCE10 \$20.00
- MSV5/1** Stick pin to hold one MCE5, MCE6 or MCE10 \$10.00
- MSV5/2** Stick pin to hold two MCE5, MCE6 or MCE10 \$14.00
- MAG5** Acoustic guitar clip for MCE5, MCE6 or MCE10 \$26.00
- MGH5** Violin, viola or cello mount for MCE5, MCE6 or MCE10 \$45.00
- MFH5** Flute mount for MCE5, MCE6 or MCE10 \$60.00
- MTH5** Trumpet, saxophone or trombone suspension mount for MCE5, MCE6 or MCE10 \$45.00
- MHV5** Belt carrier-clip for the power supplies found on the MCE5.1N(K), MCE6.1N(K), MCE10.1N(K), MCE5.11N(C), MCE6.11N(C) and MCE10.11N(C). \$10.00
- ZHV5** Belt carrier-clip for the MES5VN(C) power supply \$7.00

BEYER DYNAMIC, INC.

Dynamic Microphones/Accessories

Studio and Instrumental Microphones

- M58 Omnidirectional moving coil dynamic microphone • Internal shock-mount • 40-20,000Hz \$199.00
- M69 Dynamic unidirectional studio microphone • Hypercardioid characteristic • 50-16,000Hz \$209.00
- M88 Dynamic unidirectional studio microphone • Hypercardioid characteristic • 30-20,000Hz 385.00
- M101 Dynamic studio microphone • Omnidirectional characteristic • 40-20,000Hz 230.00
- M130 Dynamic bi-directional studio microphone • Figure-eight characteristic • 40-18,000Hz • Double ribbon element 500.00
- M160 Dynamic unidirectional studio microphone • Hypercardioid characteristic • 40-18,000Hz • Double ribbon element 460.00
- M201 Dynamic unidirectional studio microphone • Hypercardioid characteristic • 40-18,000Hz 260.00
- M260 Dynamic unidirectional microphone • Hypercardioid characteristic • 50-18,000Hz • Ribbon element 270.00
- M260S Same as M260 • With lockable noise-free on/off switch . . 285.00
- M380 Dynamic directional microphone • Bi-directional characteristic • 15-20,000Hz • Figure-eight pick-up pattern 280.00
- M420 Dynamic unidirectional microphone • Hypercardioid characteristic • 100-12,000Hz 199.00
- M422 Dynamic unidirectional microphone • Supercardioid characteristic • 100-12,000Hz 135.00

Vocal and Instrumental Microphones

- M300 Dynamic unidirectional microphone • Cardioid characteristic • 50-15,000Hz \$179.00
- M300S Same as M300 • With lockable, noise-free on/off switch . . 189.00
- M400 (Soundstar MKII) Dynamic unidirectional microphone • Supercardioid pick-up pattern • 40-16,000Hz 225.00
- M400S Same as M400 • With lockable noise-free on/off switch . . 245.00
- M500 Dynamic unidirectional microphone • Hypercardioid characteristic • 40-18,000Hz 300.00
- M500S Same as M500 • With lockable noise-free on/off switch . . 320.00
- M600 (Soundstar MKII) Dynamic unidirectional microphone • Hypercardioid characteristic • 40-16,000Hz 335.00
- M600S Same as M600 • With lockable noise-free on/off switch . . 355.00
- M700 Dynamic unidirectional microphone • Hypercardioid polar pattern 275.00
- M700S Same as M700 • With lockable noise-free on/off switch . . 295.00

Dynamic PA and Sound Reinforcement Microphones

- M260.80 Dynamic unidirectional microphone • Hypercardioid characteristic • Similar to the M260 with built-in bass roll-off for high reverberation applications • 100-18,000Hz \$250.00
- M640 Dynamic unidirectional microphone • Cardioid characteristic • 100-12,000Hz 115.00
- M680S Same as M640 • With permanently attached gooseneck, 500mm long and 15mm diameter • On/off switch • Terminated in 3/8" female thread 200.00
- M682 Same as M640 permanently attached to 300mm long, 11mm diameter gooseneck • Without on/off switch • Terminated in 3/8" female thread 195.00
- M682N(C) Same as M682 • But gooseneck terminates with 3-pin male XLR connector on the bottom 200.00

Microphone Clamps

- MKV6 Clothespin type plastic clamp for cylindrical shafts with diameter from 19-32mm \$14.00
- MKV8 Swivel stand adaptor clamp for cylindrical and conical mike shafts with diameter from 22-32mm 15.00
- MKV9 Same as MKV8 but designed for 19-21mm shafts only 15.00

Cables

- MVK C-C/20 20' black Neutrik male XLR to black Neutrik female XLR \$20.00
- MVK C-C/25 Same as above but in 25' length 22.00
- MVK C-C/50 Same as above but in 50' length 30.00



Popscreens

- PS88 Open-cell polyurethane foam popscreen • Protects mike against explosive breath sounds • For M69 and M88 mikes • Dark gray color . . . \$16.00
- PS260 Same as above • For M260, M300 and M400 mikes 16.00
- PS500 Same as above • For M500 mike • Gray color 16.00
- PS500 Also available in yellow, red, green and blue 16.00
- PS600 Same as above • For M600 mike 16.00

Windscreens

- WS69 Open-cell polyurethane foam windscreen • Provides maximum wind noise suppression • Protects against mechanical shock for M69 and M88 mikes • Black color \$21.00
- WS69 Same as above • Available in red, blue, yellow and green . . . 24.00
- WS86 All metal wire mesh windscreen • Built-in elastic suspension for M69 and M88 195.00
- WS101 Same as WS69 • For M101 and M201 mikes • Black color . . 13.00
- WS101 Same as above • Available in red, blue, yellow and green . . 15.00
- WS260 Same as WS69 • For M130, M160 and M260 mikes • Black color 20.00
- WS260 Same as above • Available in red, blue, yellow and green . . 22.00

Carrying Case

- MZK5 Plastic vinyl carrying case for five microphones. \$50.00

BEYER DYNAMIC, INC.

Microphone Stands/Booms

- ST201/1 Adjustable floor stand** • From 36" - 63" with noiseless screw type locking device • 10" screw-in tubular legs • Chrome with matte black fittings \$56.00
- ST201/1 Black** Same as above in all matte black 56.00
- ST201A/1 Adjustable floor stand** • From 36 1/2" - 64" with noiseless screw type locking device • 13" heavy-duty screw-in tubular legs • Chrome with matte black fittings \$62.00
- ST201A/1 Black** Same as above in all matte black 62.00
- ST201/2 Adjustable floor stand** • From 35" - 63" with noiseless screw-in type locking device • 10" fold-away tubular legs • Chrome with matte black fittings \$54.00
- ST201/2 Black** Same as above in all matte black 54.00
- ST201A/2 Adjustable floor stand** • From 35" - 62 1/2" with noiseless screw type locking device • 13" heavy-duty fold-away tubular legs • Chrome with matte black fittings \$56.00
- ST201A/2 Black** Same as above in all matte black 56.00
- ST205A/1 Adjustable floor stand** • From 36" - 64 1/2" with noiseless screw type locking device • 13" fold-away legs • Chrome with matte black fittings \$48.00
- ST205A/1 Black** Same as above in all matte black 48.00
- ST210/1 Adjustable floor stand and boom** • Including the SCH211 boom • 36 1/2" - 64" stand adjustment with noiseless screw type locking device • 13" heavy-duty screw-in tubular legs • Chrome with matte black fittings \$86.00
- ST210/1 Black** Same as above in all matte black 86.00
- ST210/2 Adjustable floor stand and boom** • Including the SCH211 boom • 33 1/2" - 63" stand adjustment with noiseless screw type locking device • 13" heavy-duty fold-away tubular legs • Chrome with matte black fittings \$84.00
- ST210/2 Black** Same as above in all matte black 84.00
- ST220 Anti-shock adjustable floor stand** • From 35" - 62 1/2" with noiseless screw type locking device • 10" heavy-duty fold-away legs which incorporate a unique suspension that attenuates floor vibration • Chrome with gray metallic legs \$90.00
- ST234 Low profile adjustable floor stand** • From 14" - 24" that can be angled between 0-90° • Chrome stand with heavy-duty diecast matte black base \$72.00
- ST251 Adjustable floor stand** • From 23 1/2" - 61" featuring a 2 position noiseless screw type locking device • 13" heavy-duty fold-away legs • Chrome with matte black fittings \$70.00
- ST251 Black** Same as above in all matte black 70.00
- ST255 Low-profile, non-adjustable stand and boom combination** • Stand is 11 1/2" high with 12" fold-away tubular legs • The boom adjusts From 33" - 60" • Chrome with matte black fittings ... \$88.00
- ST255 Black** Same as above in all matte black 88.00
- SCH211/2 Adjustable boom arm** • From 22 1/4" - 38 1/2" • Slide adjustable with screw type locking device • Chrome with matte black fittings \$36.00
- SCH211/2 Black** Same as above in all matte black 36.00
- SCH212 Extra heavy-duty adjustable boom arm** • From 46" - 83" • Slide adjustable with screw type locking device • Chrome with matte black fittings \$100.00
- SCH212 Black Lightweight aluminum, adjustable boom arm** • Like the SCH212 in all matte black \$105.00
- ST401 Multi-purpose music/reading stand** • For both left and right use • Adjustable from 26" - 43" • Table measures 12 1/4" H x 16 1/2" W • Chrome with a brown table \$56.00



ST201/A/1



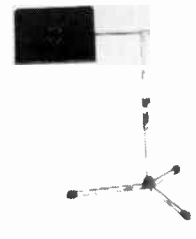
ST201/2



ST220



ST251



ST401



ST255



ST232



ST233

Accessories

- ST200** Heavy-duty angled table stand with cast alloy base. 1 1/4" H x 2 1/4" W x 5 1/4" L \$28.00
- ST232** 6" high table stand with 5" diameter black cast alloy base 40.00
- ST233** Adjustable height table stand from 13 1/4" - 21 3/4", 7 1/8" diameter black cast alloy base 46.00
- ST300** Lightweight plastic fold away tripod, 2" height ... 15.00
- 221C** 27/8" diameter table flange for microphone or gooseneck mounting. 3/8" top or side mounting possible 8.00
- 221D** 27/8" diameter table flange for microphone or gooseneck mounting 6.00
- 235** 7 1/2" fixed mounting rail for mounting two mikes at the top of a microphone stand. 15.00
- 237** Padded microphone clamp for tabletop mounting up to 1 3/4" thick 8.00
- 238** Clamp adaptor for mounting an extra microphone to a mike stand. 10.00
- ZMS-1** 8" adjustable mounting rail for mounting two mikes at the top of a microphone stand 12.00
- 160/1** Spring-type clip-on ashtray 6.00

Thread Adaptors

- 215** 5/8" outside to 3/8" inside diameter \$3.00
- 216** 3/8" outside to 5/8" inside diameter 3.00
- 217** 5/8" outside to 3/8" inside diameter 3.00
- 218** 3/8" outside to 1/2" inside diameter 3.00
- 219** 1/2" outside to 3/8" inside diameter 3.00

BEYER DYNAMIC, INC.

Headphones/Headsets/Cables

Special Purpose Headphones

DT 48A Dynamic headphones for audiometric use. Calibrated Reference Standards for acoustical measurements. Supplied with frequency response printout. 16-20kHz. Available only in 5 ohms with an open ended straight cable **\$320.00**

DT 48K* Dynamic headphone for professional applications. Considered the standard headphone for use in live recording, film monitoring, broadcasting and ENG work. 16-20kHz. Supplied with 3m straight (K), non-detachable, cable terminated in 1/4" connector **\$300.00**

DT 48WK* Same as the DT 48K supplied with 1.5m coiled (WK), non-detachable, cable terminated in 1/4" connector. **\$315.00**

***Note:** Specify straight (K) or coiled (WK) cable, stereo or mono wiring and impedance.

Stereo: 8, 25, and 200 ohms.
Mono: 16, 50, and 400 ohms.

DT 96AK* Dynamic, multi-purpose headphone used in many language labs. 30-17kHz. Supplied with 3m straight, detachable, open ended cable (K96.00) **\$140.00**

DT 96AWK* Same as the DT 96AK supplied with 1.5m coiled, detachable, open ended cable (WK96.00) **\$150.00**

***Note:** When ordering DT 96 specify straight (K) or coiled (WK) cable and 50 or 400 ohm impedance.

DT 100K* Dynamic, studio headphone used in audio recording and monitoring applications. 30-20kHz. Supplied with 3m straight, detachable cable terminated in 1/4" connector (K100.05 Mono/K100.7 Stereo). **\$165.00**

DT 100WK* Same as the DT 100K supplied with 1.5m coiled, detachable cable terminated in 1/4" connector (WK100.05 Mono/100.07 Stereo). **\$172.00**

DT 102K* Dynamic, single-muff communication headphone designed for monitoring broadcast, TV, theater and discos. 30-20kHz. Supplied with 3m straight, detachable cable terminated in 1/4" connector (K100.05 Mono) **\$115.00**

DT 102WK* Same as the DT 102K supplied with 1.5m coiled, detachable cable terminated in 1/4" connector (WK100.05). **\$122.00**

***Note:** When ordering the DT 100 and DT 102 specify straight (K) or coiled (WK) cable, stereo or mono wired and impedance. DT 102 Mono only.

Stereo: 8, 50, 100, 200, 400, 600, 800 and 2000 ohms
Mono: 16, 100, 200, 400, 800, 1200, 1600 and 4000 ohms

Professional Dynamic Headsets

DT 108K* Dynamic, single-muff headset with • Built-in dynamic boom mike (200 ohm) • Designed for live remote broadcasting, studio, film and TV, two-way communication • Standard headset for most intercom systems • Supplied with 1.5m straight, detachable, open ended cable (K109.0) **\$182.00**

DT 108WK* Same as the DT 108K but supplied with 3m coiled, detachable, open ended cable (WK 109.00) **\$189.00**

DT 108.4 Same as the DT 108 supplied with built-in amplifier for carbon-level mike inputs found on many ENG cameras. 200 or 600 ohm balanced mike line. Available in 400, 600, 2000 or 6000 ohm headphone impedance. Straight, non-detachable, open ended cable **\$214.00**

DT 108.5 Same as the DT 108.4 without built-in amplifier. Available in 6000 ohm headphone impedance only **\$190.00**

DT 109K* Same as the DT 108K in a dual-muff configuration . . **\$214.00**

DT 109WK* Same as the DT 108WK in a dual-muff configuration **\$221.00**

***Note:** For ordering purposes please specify straight (K) or coiled (WK) cable and impedance. DT 108 and DT 109 are available in the following impedance: 8, 50, 100, 200, 400, 800 and 2000 ohms.



DT 108



DT 109

DT 108 and DT 109
Available in Black or Light Gray



DT 48



DT 100

DT 109.4 Same as the DT 108.4 in a dual-muff configuration . . **\$268.00**

DT 109.5 Same as the DT 108.5 in a dual-muff configuration . . **\$240.00**

DT 209 Dynamic, dual-muff headset with built-in dynamic boom mike (200 or 600 ohm). Low cost alternative for broadcast and intercom communications. Available in 50 or 400 ohm headphone impedances. Straight, non-detachable, open ended cable. **\$150.00**

DT 505 Dynamic, mini earphone supplied with ear loop (OB 506) and straight, open ended cable. Mono only. Optional ST 505 'steto-clip' available for binaural listening. Available in 50 ohm impedance **\$35.00**

Accessory Cables

- K96.00** Straight 5' (1.5m) open ended cable for the DT96 **\$16.00**
- WK96.00** Coiled 5' (1.5m) (relaxed) version of the K96.00 . . **24.00**
- K96.05** Straight 5' (1.5m) cable with 1/4" phone jack wired mono for the DT96 **22.00**
- WK96.05** Coiled 5' (1.5m) (relaxed) version of the K96.05 . . **28.00**
- K96.07** Straight 5' (1.5m) cable with 1/4" phone jack wired in stereo. **22.00**
- WK96.07** Coiled 5' (1.5m) (relaxed) cable with 1/4" phone jack wired in stereo **28.00**
- K100.00** Straight 10' (3m) cable open-ended for the DT100 **22.00**
- WK100.00** Coiled 10' (3m) cable open-ended for the DT100 . . **28.00**
- K100.05** Straight 10' (3m) cable with 1/4" phone jack wired mono **25.00**
- WK100.05** Coiled 5' (1.5m) (relaxed) version of the K100.05 . . **32.00**
- K100.07** Straight 10' (3m) cable with 1/4" phone jack wired in stereo. **26.00**
- WK100.07** Coiled 5' (1.5m) (relaxed) version of the K100.07 . . **33.00**
- K109.0** Straight 5' (1.5m) cable open-ended for the DT108 and DT109 **22.00**
- K109.00** Straight 10' (3m) cable for the DT108 and DT109. . . **28.00**
- WK109.00** Coiled 10' (3m) open-ended cable for DT108 and DT109 **35.00**

BEYER DYNAMIC, INC.**Headphones****Lightweight Open Headphones**

DT990 Lightweight (8 oz.), circumaural, open design headphone • Extremely low mass diaphragm and moving coil assembly, resulting in exceptional transient response, found only in the best electrostatic models, and a reduction of non-linear distortion • The 5-35kHz frequency response is equalized to the Diffuse Sound Field • The DT990 offers excellent sound characteristics along with exceptional wearing comfort • 600 ohm impedance

DT990 \$199.00



DT990



DT880

Lightweight Semi-Open Headphones

DT880 Studio Lightweight (7 oz.), circumaural, semi-open design headphone • Similar to the DT880 supplied with wider frequency response 5-35kHz transducers and an uncorrected treble response • For recording engineers and serious semi-pro applications

DT880 Studio \$219.00

DT880 Lightweight (7 oz.), circumaural, semi-open design headphone • Low mass transducers combined with 'rare earth' magnets offer excellent transient response and highly detailed imaging • Wide 5-25kHz frequency response • Very comfortable for extended wearing periods • 600 ohm impedance

DT880 \$159.00

DT550 Lightweight (7 oz.), circumaural, semi-open design headphone • Low mass transducers combined with 'rare earth' magnets offer excellent transient response and high sound pressure level ability • Smooth frequency response 10-22kHz • Very comfortable and highly accurate • 600 ohm impedance

DT550 \$139.00

DT330 MKII Lightweight (7 oz.), circumaural, semi-open design headphone • Rare earth magnets combined with low impedance transducers offer high output with exceptionally low distortion • The wide 15-20kHz frequency response supplies detailed mid and high frequencies along with full bass response • 40 ohm impedance

DT330 MKII \$89.00

DT320 Extremely lightweight (3.75 oz.) circumaural, semi-open design headphone • The 20-20kHz frequency response offers transparent sound reproduction along with excellent bass response • 50 and 600 ohm impedance available • 1/4" and 'mini' connector available

DT320 \$75.00

Studio Quality Closed Headphones

DT770 Circumaural, closed design headphone • The DT770 combines the low mass transducer technology of the DT990 along with a 'Bass Reflex' system. As a result the bass response is pronounced yet accurate, while the sound image is well defined in the other frequencies • Wide 5-35kHz frequency response has been equalized to the Diffuse Sound Field • The DT770 supplies exceptional transient response along with complete isolation and comfort in a lightweight (9.25 oz.) headphone • 600 ohm impedance

DT770 \$179.00

DT220 Circumaural, closed design headphone • Wideband 20-20kHz transducers result in excellent impulse fidelity and sonic transparency even at high sound pressure levels • Comfort and isolation in a lightweight (9.25 oz.) headphone

DT220 \$129.00



DT770



DT220

BIMIX Legend Series – Recording Consoles

- Four-transistor discrete pre-amplifier stage, using 5532 and TLO72 op-amps throughout for high slew rate, low distortion and low noise (12BdBV EIN) operation
- 3 band EQ with all filters sweepable, EQ bypass switch and switchable high pass filter
- Four sends per input channel
- Tape returns with complete tape monitoring on each input channel
- Assignable, 12-segment high intensity meters on all inputs and all outputs
- Direct outputs and insert patch points on all input channels and group outputs
- Full solo capability on virtually every signal path
- Separate control room, studio and tape outputs
- Assignable internal talk-over microphone and oscillator
- Balanced group outputs and tape returns

The Legend In-Line mixing console is a highly compact, modular mixing system designed primarily for multitrack recording applications.

The Legend is available in three frame sizes ranging from B to 32 inputs and from 4 to 24 group outputs. Each unit consists of a communications module, a stereo mixdown module and multiple input/output modules. The external power supply is rackmounted and passively cooled for silent, reliable operation.

Compact In-Line Architecture

One of the first things you'll notice about the Legend is its size. The in-line architecture packs the most mixer into the least space. In the 20 input 16 group output configuration, you'll need less than 37" of wall space, only about 7 square feet of floor space. Compared to many recording consoles of comparable capability you'll have enough space left over for a couple of racks of equipment. And you'll find this compactness makes the Legend much easier for one man operation.

Digital Ready

The dynamic range of analog tape decks is typically in the range of 60 to 70dB. Digital Audio Recording, however, with a dynamic range of 90 to 95dB requires much more of a recording mixer. The Legend has a dynamic range well over 100dB.

Attention to Detail

The PS100 external power supply has fully discrete regulator circuits for low noise regulation with less than 1% voltage change from idle to full drive. All inputs, group outputs and tape returns are electronically balanced. Input transformers are available as an option.

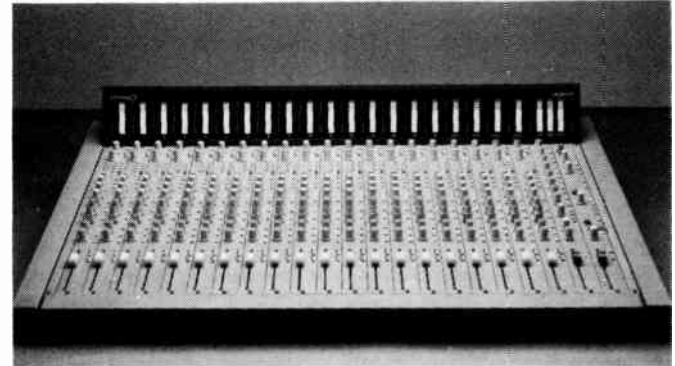
Sonic Excellence

The Legend uses a four transistor preamp with high slew rate, low noise IC's. The result is a preamp with a clean, undistorted signal which maintains a constant input impedance, common mode rejection ratio and frequency response regardless of where the trim control is set.

The EQ section uses true shelving high and low frequency filters resulting in transparent, uncolored equalization.

Specifications

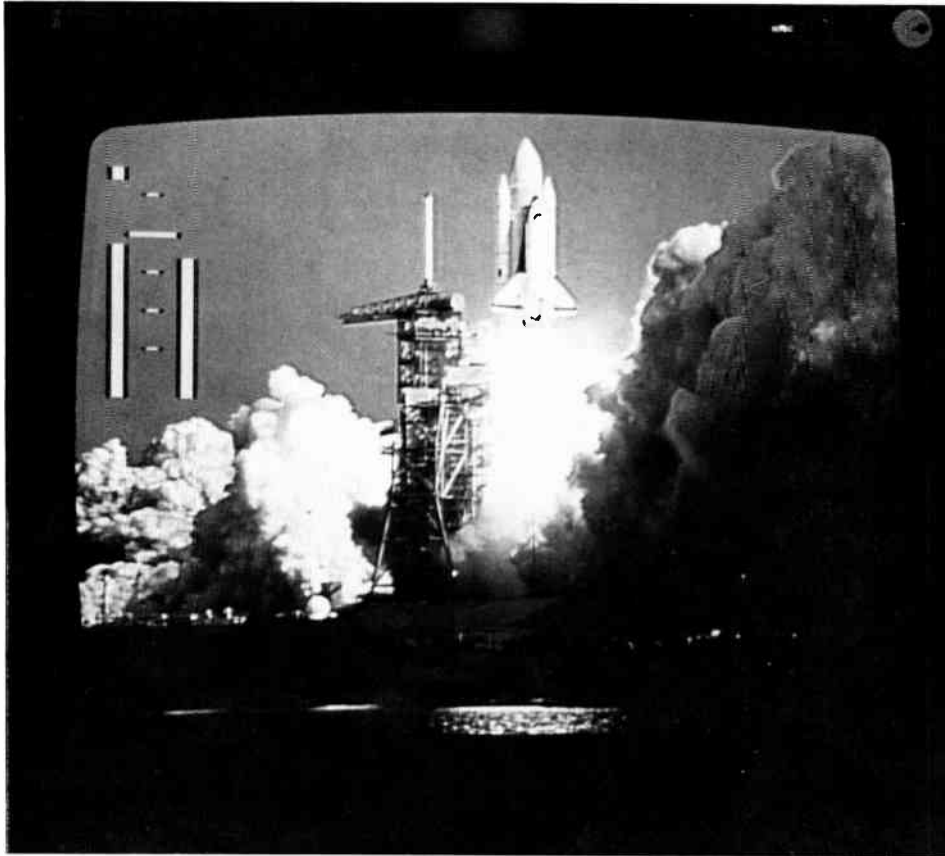
Frequency Response	
Mic Input:	40dB gain to direct out + 0 - .5dB 20Hz to 20kHz
Mic Input:	40dB gain to any output + 0-1dB 20Hz to 20kHz
Harmonic Distortion:	
Mic Input:	20Hz to 20kHz with 80kHz filter at + 4dBV output
Mic Input:	40dB gain to direct output .03 maximum .01 typical
Mic Input:	40dB gain to any output .04 maximum
THD (SMPTE):	
Mic Input:	+ 4dBV output
Mic Input:	40dB gain to direct output .03 maximum .01 typical
Mic Input:	40dB gain to any output .04 maximum



Legend

Hum and Noise:	Reference to 4dBV output level			
Mic Input Term.:	150 ohm 40dB gain			
		(weighted)	(unweighted)	
	Direct out	-89dB	-83dB	
	Track out	-89dB	-83dB	
	Eight channels assigned-unity gain-tape in assigned-2016		Sixteen channels assigned-2016	
Main Mix Out:	(from mix-down)	-88dB	-83dB	(weighted) (unweighted)
Residual Noise All Faders Down:	Main mix out	-100dB	-96dB	-85dB -80dB
Equivalent Input Noise				
Mic Input Termination:	150 ohm mic gain 52dB			
	-128dBv 20Hz to 20kHz			
Maximum Voltage Gain				
Mic Input to Track Output:	73dB			
Crosstalk:		1kHz		10kHz
		maximum	typical	maximum
				typical
Channel to Channel:	-86dB	-90dB	-86dB	-90dB
Group to Group:	-70dB	-80dB	-60dB	-70dB
Equalization				
HF Sweep Range:	2kHz to 15kHz shelving (cut and boost range ± 18dB)			
MF Sweep Range:	100Hz to 5kHz peaking (cut and boost ± 12dB, Q1.3)			
LF Sweep Range:	30Hz to 500Hz shelving (cut and boost ± 18dB) HF filter switch 18dB/octave 80Hz; EQ in-out switch bypasses EQ			
Metering Range:	Externally adjustable 0dB, ref. from -15dBV to + 4dBV switchable to channel input on each module			
Input Impedance:	Lo Z mic: 3K ohms Line input: 10K balanced, 5K unbalanced Patch input: 5K ohms, All other inputs: 10K unbalanced			
Output Impedance:				
	Main mix and mono floating and balanced XLRs: 225 ohms Maximum output: + 21dBV All other outputs: 50 ohms Maximum output: + 22dBV Headphone output: 2.7 ohms Maximum power: 8W stereo into 8 ohms			
Phantom Power:	+ 48V switchable on all mic inputs (with delayed turn on and off)			

B3224	.....	\$13,999.00
B2016	.....	8,599.00
B1280	.....	5,999.00



- *THE ORIGINAL uniVUer*
- *AUDIO BARGRAPH INTO VIDEO*
- *STEREO PHASE/POLARIY ERROR DETECTOR*
- *AVAILABLE WITH VU, PPM AND CUSTOM BALLISTICS*
- *COMPATIBLE WITH 525, 625 AND 1125 LINE SCAN RATE*
- *HORIZONTAL AND VERTICAL SIZE AND POSITION VARIABLE*
- *REMOTE CONTROL FUNCTIONS, INCLUDING BYPASS*
- *WIDE RANGE OF AUDIO INPUT LEVELS*
- *VARIABLE PEAK FLASHER AND SILENCE SENSE*

PRACTICAL AUDIO MONITORING

The uniVUer places a stereo audio bargraph meter into a video signal for display on a video monitor. It is the first truly practical means of monitoring audio program levels in the video environment. With the uniVUer it is even possible to monitor stereo phase coherency with the MonSter option.

Whatever your field, whether teleproduction, post-production, audio mixing, videotape duplicating or any of the many other uses where the video program monitor competes with audio for operator attention, the uniVUer can make it possible to give equal attention to the two equally important portions of the total program.

FOR THE MOST DEMANDING APPLICATIONS

The uniVUer has been designed with quality and precision in mind. We expect that in most cases the signal will be applied to a professional quality video monitor, therefore, we have made certain that it will not degrade video quality, nor will it "burn in" on the monitor. We also expect that you want accurate metering, not "consumer lookalikes", therefore, both the VU and PPM models have been designed to meet industry approved standards for ballistics, accuracy and graticle markings.

FLEXIBLE OR ANY APPLLICATION

The uniVUer is compatible with NTSC, PAL, and 1125 line HDTV video standards. It has both horizontal and vertical size and position adjustments which allow you to place the display anywhere on the screen at any size from "uselessly small to uselessly large." You can adjust the video level for viewing comfort, and there is even a black box "surround" which can be switched in for increased visibility. Of course there is an active bypass switch which removes the display from the screen, as well as a protective relay which automatically bypasses video in case of power supply failure, or removal from the rackframe. Both the active bypass and black surround can be remotely controlled.

The audio input can be calibrated to zero read at any level from -20dBu to +8dBu and is a balanced bridging type. We've even included peak flashers which are adjustable so you can monitor to your system headroom requirements. We've also included an adjustable silence sense to feed your off-the-air alarm system from a contact closure. In silence, the display area is set to black to indicate the duration of the audio dropout and also to protect your monitors when the system is not in use.

STEREO COHERENCY MONITORING

The MonSter option is a MONo-STEReo coherency evaluator which plugs into the uniVUer circuit board. This continuously monitors left-right energy coherency to provide an indication of out of tolerance material such as a phase delayed channel or, more commonly, a polarity flip. When an error condition occurs the bargraph display changes to a distinctive checkerboard pattern. You can still monitor levels, but will know something is wrong. Users have told us that this option has totally eliminated their concerns with system phase errors.

SEVERAL MODELS AND CONFIGURATIONS AVAILABLE

The uniVUer is available in both VU and PPM models. We understand, however, that sometimes you may have specialized applications which require another standard. Our engineers specialize in adapting our products to such unique requirements and have already produced numerous custom uniVUers for specialized needs.

The standard Rack Frame is 1 rack unit high, houses three uniVUers and contains the common power supply and bypass interface. For applications requiring large numbers of uniVUers, we also have a 3 rack unit high frame which houses 10 uniVUers and power supply.

Specifications:

	VU	PPM
Performance Spec.	ANSI CI6.5-1954	EBU3205-E BS4297: 1968
Input Impedence	50K ohms, balanced 25K ohms, unbalanced	50K ohms, balanced 25K ohms, unbalanced
Frequency Response 20-20KHz	± 0.3dB	± 0.3dB
Reference Level (0) Adjustment Range	-20 to +8dB	-6 to +22dB
Loading (600 ohm line)	0.1dB	0.1dB
Dynamic Measuring Range	30dB	30dB
Dynamic Response (5KHz Tone Burst @ REF Volts in)		100ms: 0dB 10ms: -2.5 ± 0.5dB 5ms: -4.0 ± 0.75dB 1.5ms: -9.0 ± 1.0dB
Response Time	300ms	10ms Integration Time
Fall Back Time (24dB Drop)	300ms	2.8 ± 0.3sec.
Peak Flasher Adjustment Range (Relative to Operating)	-33 to +18	-30 to +10
Reversability / Polarity Error	± 0.5dB	± 0.5dB
Resolution	Logarithmic, 1 to 5dB / Step	15 2dB Steps
Silence Sense ('C' contact closure)	Delay adjustable from 6-second to 1-minute	

Video Input (10K ohms, Bridging)	1Vp-p ± 10% 75 ohm term
Video Output (Into 75 ohms)	1.00Vp-p
Video Frequency Response	8MHz ± 0.5dB
Video Differential Phase	1°
Video Differential Gain	1%
Tilt	1%
Power Requirements	+ 12 ± 0.5VDC@ 100ma
Operating Temperature	0 to 50°C, 32°-122 °F
Stability (20°C, 5% Power)	± 0.5dB
2-Cards Stacked Together	4½" x 6½" x ¼" Thick
Edge Connector	22 Position (0.156")
Weight	10oz, 280g
Rack Frames (Mounts 3 uniVUers)	19" x 1¾" x 12" d (1-RU)
(Mounts 10 uniVUers)	19" x 5¼" x 10¾" d (3-RU)
Weight	4½ lbs., 2.025 kg (3) 12 lbs, 5.5 kg (10)
Power Requirements	115/230V, 50-60Hz 7VA (3) 20VA (10)
Input Voltage Tolerance	± 10%

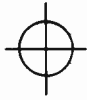


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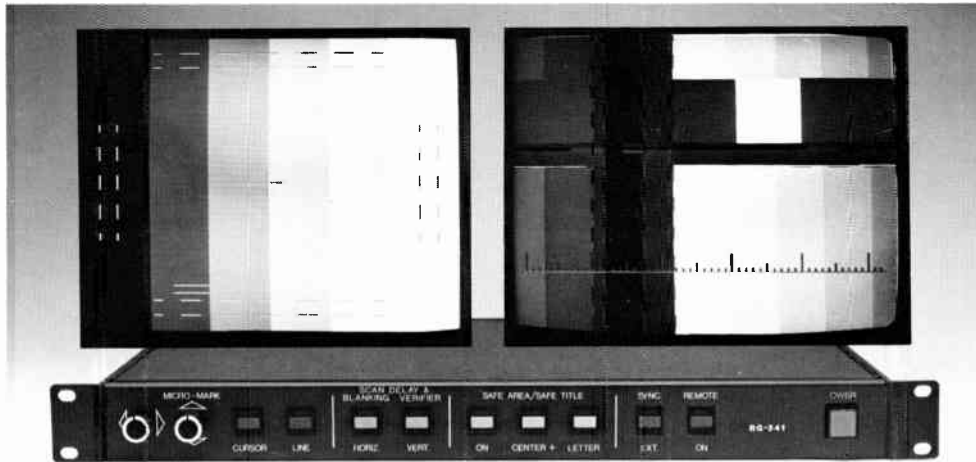
24386 Totuava Circle • Mission Viejo, CA 92691 • (714) 951-7557 • FAX: (714) 472-8885

2301B



BOLAND COMMUNICATIONS

RG341



- *PRECISION STAR (SAFE TITLE AREA RETICLE) GENERATOR*
- *PULSE CROSS GENERATOR WITH H AND V BLANKING VERIFICATION*
- *MICRO-MARK CURSOR FOR PRECISION MEASUREMENTS ANYWHERE ON THE SCREEN*
- *CONFORMS TO SMPTE SCREEN UTILIZATION SPEC'S*
- *3 SEPARATE "DRY" FEEDS OF STAR OUTPUT*

URNS YOUR VIDEO MONITOR INTO AN INFORMATION INTERFACE

The RG-341 produces Safe Title Area Reticle (**STAR**) markings and places them into a video signal for display on any monitor. Even an inexpensive monitor can be used as a precision titling monitor for graphics and camera shot alignment. The markings are in conformance with SMPTE Recommended Practices 27.3 and indicate 80% and 90% of picture area, and an exact center cross-hair. That standard also recommends a minimum character height for legibility and a separate marker is included in the display for that purpose.

The MICRO-MARK CURSOR display can be thought of as a horizontal ruler with 1-microsecond markings for measuring horizontal positioning. The Micro-Mark can be moved both vertically and horizontally anywhere on the screen. It is especially useful for locating titles and other graphics elements on the screen for repeatable setup.

EVEN INEXPENSIVE MONITORS CAN HAVE PULSE CROSS AND MEASUREMENT CAPABILITIES.

The precision pulse cross feature incorporated into the RG-341 creates both horizontal and vertical delay to place the pulse cross display into the monitor. It also raises the video brightness level to make the various blanking elements visible for measurement. Dashed line markings are generated at the 10.9 microsecond H-Blanking and 21 line V-Blanking points to give you a quick and simple means of verifying RS-170A blanking conformance. When shifted into the pulse cross mode the Micro-Mark display remains unshifted to provide a measuring tool to help determine exact blanking intervals.

FOR THE MOST DEMANDING APPLICATIONS

The RG-341 has been designed with quality and precision in mind. We expect that in most cases the signal will be applied to a professional broadcast quality video monitor, therefore, we have made certain that it will not degrade video quality. The rock stable, digitally generated measurement graticles themselves are calibrated to exacting standards.

REMOTE OPERATION AND EXTRA FEATURES

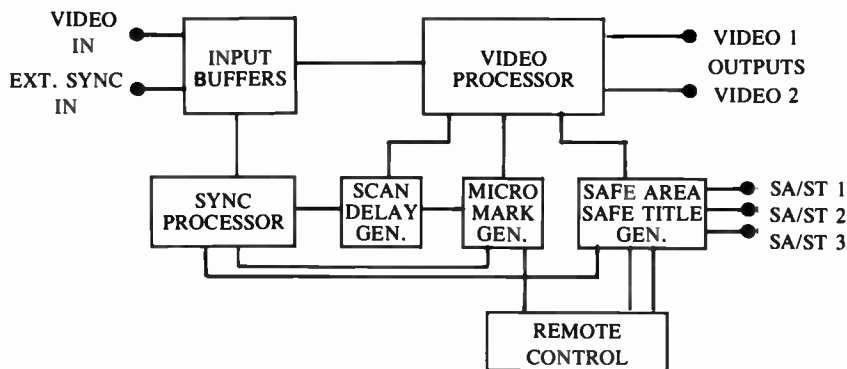
The STAR features and the Micro-Mark display can be remotely controlled with the optionally available console mount remote panel. This allows you to rack-mount the generator in your central equipment racks and control it from your production or editing console.

The RG-341 can take sync from input video, or you can externally sync it. It also provides three "dry feeds", that is, STAR output without video, can be mixed with camera viewfinder returns to provide framing references to production personnel, or sent to additional switcher preview buses.

Specifications:

RG341 Micro-Mark/Safe Area Generator

INPUTS	Video: 1V p-p, loop through differential input Ext. Sync: 1-8 V p-p, loop through		PATTERN	Vertical Line Thickness	200 nanosec. (100-white/100-black, internally adjustable to 100 nanosec. -50-white/50-black)
OUTPUTS	Video: Two video outputs 1 V p-p, 75 ohm with or without selected keyed-in pattern SA/ST: Three dedicated non-switchable composite outputs, 1 V p-p, 75 ohms, 60dB isolation between outputs.			Horizontal Line Thickness	2 TV Lines (one line white, one line black)
CONTROLS	1. Micro-Mark Cursor 2. Line 3. Horizontal Position 4. Vertical Position 5. Horizontal Scan Delay 6. Vertical Scan Delay 7. Safe Area/Title 8. Center Crosshair 9. Minimum letter size 10. External Sync 11. Remote 12. Power	On-Off (LED Indicator) On-Off (LED Indicator) Multi turn potentiometer Multi turn potentiometer On-Off (LED Indicator) On-Off (LED Indicator) On-Off (LED Indicator) On-Off (LED Indicator) On-Off (LED Indicator) On-Off (LED Indicator) On-Off (LED Indicator) On-Off (LED Indicator) On-Off (Incandescent Indicator)		Blanking Markers Horizontal Vertical Safe Area Limits Safe Title Limits	10.9 microsec. 20 TV Lines 90% of scanned image 80% of scanned image (conforms to SMPTEP 27.3, reaffirmed 1977) Independent of picture content
				Visibility	1 microsecond spacing with enlarged marks for 5 and 10 microsecond intervals.
				Micro-Mark	
VIDEO PERFORMANCE	Differential input with HUM rejection Frequency response Differential Phase Differential Gain K Factor Horizontal tilt Vertical tilt Signal-to-noise ratio	40dB + .15dB to 4MHz, -3dB @ 15 MHz 0.5° 0.5% 0.5% 0.5% 0.5% better than 60dB (measured with Rhode & Schwartz noise meter).	ENVIRONMENTAL	Temperature Non-operating Operating Altitude Non-operating Operating	-45°C to +65°C 0°C to 45°C to 50,000 feet to 15,000 feet
			POWER REQUIREMENTS	115 Volts AC or 230 Volts AC Main Voltage Line Frequency Power consumption	AC nominal (internally selectable) 104 to 126 Volts AC or 208 to 252 Volts AC 48 Hz to 62 Hz 35 W Max
			MECHANICAL	Electronics- Remote Control	1 3/4" Hx19"Wx14"D 1 3/4" Hx5"Wx3 3/4"D



AVAILABLE FROM:



BOLAND COMMUNICATIONS

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2302B

BIRD ELECTRONIC CORP.

Wattmeter/Plug-In Elements



**Model 43
THRULINE® RF DIRECTIONAL WATTMETER**

The Model 43 THRULINE Wattmeter is comprised of a line section and a direct-reading 3 scale meter housed in a rugged, corrosion-resistant aluminum case. QC (Quick Change) Type Connectors and a full range of Plug-In measuring elements (ordered separately now or later to meet your existing needs) give Model 43 amazing flexibility and adaptability. Two extra elements can be stored in the housing, one on each side. Easy to use and simple to service in the field.

Line Section: A precise 50 ohm coaxial air line is designed for insertion into the transmission line between transmitter and antenna or load. The line section is equipped with a socket into which the Plug-In element with the desired power and frequency range is inserted. It is also equipped with QC Connectors.

- **QC Type Connectors:** The Bird Model 43 is normally supplied with two Female N Connectors. However, at the time of ordering, other types of connectors may be specified including: Male or Female BNC, TNC, UHF, C, SC, LC, N, SMA, HN, LT, General Radio Type 874, 7/8" EIA Flanged and Mini-UHF. All of these QC Connectors are interchangeable in the field without affecting the instrument's calibration.
- **Indicating Meter:** A shock-mounted 30mA meter with three expanded scales of 25, 50, 100 unit calibration to permit full scale direct power reading from 100mW to 10,000W.
- **Plug-In Elements:** These elements read both forward or reflected power as indicated by the direction in which the arrow is pointing. Frequency range and full scale power are marked on each element. Use a lower power element (e.g. 10:1) for increased resolution of reflected power readings.
- **Remote Installation:** When it is more convenient, the RF line section can be easily removed from the Model 43 case and inserted at any desired point in the line. The meter may then be located at another point for optimum visibility. 32" of meter cable is supplied in the instrument housing for this purpose. Additional lengths available as required.
- **0.45-2300MHz • 0.1-10,000W • Impedance:** 50 ohms nominal
- **Insertion VSWR:** With N connectors 1.05 max.
- **Finish:** Light navy gray baked enamel
- **Nominal Size:** Including connector 67/8" x 51/8" x 35/8" (175 x 130 x 92mm)
- **Weight:** 3 lbs. (1.4kg)
- **Element Weight:** 3 oz. (85g)
- **Accuracy:** ± 5% of full scale
- **Optional Cases:** Cowhide Carrying Case CC-1, Plug-In Element Carrying Case EC-1

Table 1: Standard Elements (Catalog Numbers)

Power Range	Frequency Bands (MHz)					
	2-30	25-60	50-125	100-250	200-500	400-1000
5W		5A	5B	5C	5D	5E
10W		10A	10B	10C	10D	10E
25W		25A	25B	25C	25D	25E
50W	50H	50A	50B	50C	50D	50E
100W	100H	100A	100B	100C	100D	100E
250W	250H	250A	250B	250C	250D	250E
500W	500H	500A	500B	500C	500D	500E
1000W	1000H	1000A	1000B	1000C	1000D	1000E
2500W	2500H					
5000W	5000H					

Table 2: Low-Power Elements

1W	Cat. No.	2.5W	Cat. No.
30-35 MHz	030-1	30-40 MHz	030-2
35-40 MHz	035-1	40-50 MHz	040-2
40-50 MHz	040-1	50-60 MHz	050-2
50-60 MHz	050-1	60-80 MHz	060-2
60-80 MHz	060-1	80-95 MHz	080-2
80-95 MHz	080-1	95-150MHz	095-2
95-125MHz	095-1	150-250MHz	150-2
110-160MHz	110-1	200-300MHz	200-2
150-250MHz	150-1	250-450MHz	250-2
200-300MHz	200-1	400-850MHz	400-2
275-450MHz	275-1	800-950MHz	800-2
425-850MHz	425-1		
800-950MHz	800-1		

Table 6: Milliwatt Element

100mW	Cat. No.	250mW	Cat. No.	500mW	Cat. No.
72-76 MHz	430-2	70 MHz	430-34	72-76 MHz	430-33
105-120MHz	430-6	72-76 MHz	430-22	105-120MHz	430-26
125-136MHz	430-9	108-118MHz	430-24	240-290MHz	430-27
160-175MHz	430-10	130-150MHz	430-13	328-336MHz	430-28
328-336MHz	430-3	150-180MHz	430-15	455-470MHz	430-30
400-420MHz	430-7	328-336MHz	430-16	800-900MHz	430-109
450-470MHz	430-8	800-900MHz	430-108		
800-900MHz	430-107	1700-1750MHz	430-17		

Plug-In Elements: When ordering, specify catalog number and THRU-LINE model number.

Table 3: High-Frequency Elements (Catalog Numbers)

Power Range	Frequency Bands (MHz)			
	950-1260	1100-1800	1700-2200	2200-2300
1W	1J	1K	1L	1M
2.5W	2.5J	2.5K	2.5L	2.5M
5W	5J	5K	5L	5M
10W	10J	10K	10L	10M
25W	25J	25K	25L	25M
50W	50J			
100W	100J			
250W	250J			

Accuracy ± 8% o.f.s.

Table 4: Low-Frequency Elements (Catalog Numbers)

Power Range	Frequency Band .45 to 2.5MHz
1000W	1000P
2500W	2500P
5000W	5000P
10000W	10000P

**SERIES 4410****THRULINE® RF Directional Wattmeters**

4410A – Battery-powered portable

4411 – 115/230VAC 50/60Hz or battery portable

4410P – 115/230VAC 50/60Hz or battery 19" rackmount

4412 – 115/230VAC 50/60Hz or rechargeable NiCad battery operation

Inside the 4410 Series is an amplifier employing an inherently self-balancing measurement technique. A patented bridge circuit – with its four legs divided between the base and each of the proprietary plug-in elements – permits reading accuracies without equal in a directional wattmeter with a 5000-to-one dynamic element range, and unaffected by temperature extremes. The 4410 Series elements plug into the wattmeter's element socket and are simply rotated for either forward or reflected measurements. Each Element, however, provides seven power ranges instead of one, covering 0.01/0.03/.1/.3/1/3/10W, 0.1/0.3/1/3/10/30/100W, 1/3/10/30/100/300/1000W or 10/30/100/300/1000/3000/10,000W – with full rated accuracy of meter Reading from 20% to 100% of each scale of the seven overlapping ranges, i.e. a 37dB (5000 to 1) power range. The desired range is instantly selectable by a rotary switch on the front of the wattmeter.

This switch also includes a convenient battery test position.

APPLICATIONS

1. Field-service use where a single handful of Elements will now cover unparalleled power and frequency ranges under wide environmental conditions – and anywhere else where dozens of Elements used to be required.

2. Laboratory work where high accuracies and power levels as low as 2 milliwatts are required.

3. Any application where accurate THRULINE measurements at milliwatts, watts or kilowatts need to be performed simply, quickly and at minimum cost.

• **Power Range:*** 0.01-10W, 0.1-100W, 1W-1000W or 10W-10,000W full scale in one single Plug-in Element. Any Bird Series 4410- Element may be used.

• **VSWR:** with N Connectors 1.05 max. (4410P: 1.07 max.)

• **Frequency Range:*** 200kHz to 1000MHz, CW or FM.

• **Accuracy:** ± 5% of Reading, for any reading above 20% of the power range selected, for FM or CW signals without AM. This accuracy is maintained for a full 37dB dynamic range with each 4410 Element (except No. 4410-1 0.200-0.535MHz, which is accurate to ± 10% of reading).

• **Ambient Temperature Range:** Elements 4410-1 thru 8 and -10 thru 14 are temperature-compensated for rated accuracy from 32° to 122°F (0°C to 50°C), and 4410-20 thru 26 from 68° to 86°F (20°C to 30°C).

- **Over-Range Protection:** To 120% of nominal full scale (i.e. 12W, 120W, 1200W, or 12,000W). No damage or degradation to the unit will result, regardless of the Range Selector Switch position.
- **Nominal Impedance:** 50 ohms
- **Battery Life:** 4410A, 4410P, 4411: One standard 9V alkaline "transistor" battery (NEDA No. 1604A supplied). 24 hour operation minimum. (A Lithium battery with a minimum of 180 hours operation is available. Order Part No. 5-1576). 4412: 7 hours minimum, rechargeable.
- **AC Power:** 4410P, 4411, 4412: 105-125/210-250VAC, 50/60Hz with integral selector switch.
- **Connectors:**** QC Type (Female N normally supplied).
- **Finish:** Light Navy gray baked enamel
- **Weight:** 4410A, 4411, 4412: 3¹/₃ lbs. (1.5kg), 4410P: 5 lbs. (2.3kg).
- **Nominal Size:** Incl. Connectors 4410A, 4411, 4412: 6⁷/₈" x 5¹/₈" x 3⁵/₈" (175 x 130 x 92mm) 4410P: 19" x 5⁷/₃₂" x 3¹⁵/₁₆" (483 x 133 x 100mm).
- **Optional Carrying Case:** CC-1: For Wattmeter and 7 Elements. CC-3: For Wattmeter, 25W Load Model 8080 and 4 Elements. EC-1: For 12 Elements.

*Frequency Band and Power Range is determined by Plug-in Element selected. Only 4410 Series Elements can be used.

**Available Bird QC-Quick Change Connectors, which are interchangeable in the field, include Male or Female N, BNC, TNC, UHF, C, SC, LC, HN, LT and 7/8" EIA flange. Also SMA and new Mini-UHF.

**4410 Series Plug-in Elements
(Catalog Numbers)**

Full-Scale Power and Frequency (MHz) Ranges
of 4410 Elements

0-10, 30, 100, 300 milliwatts, 1, 3, 10 watts	0-100, 300 milli- watts 1, 3, 10, 30, 100 watts	0-1, 3, 10, 30, 100, 300, 1000 watts	0-10, 30, 100, 300, 1000, 3000 10,000 watts				
MHz	P/N	MHz	P/N	MHz	P/N	MHz	P/N
30-50	4410-20	25-80	4410-10	2-30	4410-3	0.2-	
50-88	4410-21	50-125	4410-11	25-80	4410-5	0.535	4410-1
100-150	4410-22	100-250	4410-12	50-200	4410-6	0.45-2.5	4410-2
150-250	4410-23	200-500	4410-13	144-520	4410-7	2-30	4410-4
225-400	4410-24	400-1000	4410-14	200-1000	4410-8		
400-800	4410-25						
800-900	4410-26						

BIRD ELECTRONIC CORP.**Wattmeter/Field Strength Measurement**

4304

4030
Element4041
Meter

4304 Wideband, Directional, THRULINE® RF Wattmeter

- Broadband Frequency Range: 25 to 1000MHz
- Four Built-In Power Ranges
- RF Sampling Port
- Low Insertion Loss
- Rugged Shock-Resistant Design
- Engineered to Handle Rough In-the-Field Conditions
- Field-Changeable SQC (Small-Quick-Change) Connectors
- Light Weight for Portability
- Sturdy Carrying Strap for Handling Security

Operation simplicity is a feature of Model 4304. The desired RF power range is selected with the right hand switch. Power is read directly and has a dependable accuracy of $\pm 6\%$ from 100 to 512MHz and $\pm 7\%$ from 512 to 1000MHz. In the low frequency range of 25 to 100MHz, a correction factor chart, provided on the back panel, keeps measurement tolerance below $\pm 7\%$. The entire length of the measurement scale is usable.

Unless otherwise specified, the Model 4304 meter comes equipped with two female UHF type SOC connectors (SO-239). Bird SQC connectors are also available in female N (Catalog No. 4100-014).

The RF Sampling port on the right side panel utilizes a female BNC output connector for easy attachment to low level inputs of a frequency counter or spectrum analyzer. The sample level is 43dB \pm 5dB below the actual power level in the transmission line. This means that no external attenuators are needed for most applications.

- Full Scale Power Ranges: 15, 50, 150, 500W
- Impedance: 50 ohms nominal
- Insertion VSWR: 1.05 max. from 25 to 512MHz, 1.10 max. from 512 to 850MHz, 1.15 max. from 850 to 1000MHz (with N Conn.), 1.2 max. from 800 to 1000MHz (with UHF Conn.)
- Insertion Loss: Less than 0.1dB to 1000MHz
- Accuracy: 25 to 100MHz, $\pm 7\%$ of F.S. with chart; 100 to 512MHz, $\pm 6\%$ of F.S.; 512 to 1000MHz, $\pm 7\%$ of F.S.
- RF Sample Output: 43dB \pm 5dB (BNC/F Conn.)
- Weight: 2 $\frac{1}{4}$ lbs. (1kg)

4030/4041 Relative Field Strength Measurements

- Frequency Range: 1 to 1000MHz
- Dynamic Range: 30dB min.
- Typical Sensitivity: Full scale deflection at 8 ft. (2 $\frac{1}{2}$ m) from a 1W source broadcasting at 150MHz through a quarter wave antenna
- Output Characteristics: (4030) compatible with 30 microampere meter instruments (e.g. models 43, 4431, etc.)
- Battery Life: 4030: 100 hours min. 4041: 200 hours min.
- Battery Type: 4030: Three 3V Lithium-Manganese Dioxide cells (Duracell DL2032 or equivalent); 4041: One 9V Alkaline "Transistor" battery (NEDA No. 1604A)
- Ambient Temperature Range: 0°C to +50°C
- Weight: (Incl. batteries) 4030: 3 oz. (85g), 4041: 10 oz. (283g)

4030 Relative Field Strength Element expands the usefulness of models 43, 4430, and 4431 Wattmeters to help you optimize the radiated signal of any transmitter from 2-1000MHz. Increase the reach of business or personal transceivers, extend the range of H.T.s. by tuning, adjusting, positioning antennas for maximum meter indication on THRULINE Wattmeters.

The 4030 Elements consist of a flexible receiving antenna, a high pass filter network, and a variable gain RF amplifier/detector. The amplifier is turned on automatically when the Element is plugged in. The amplifier's DC output drives the 30 microampere meter of the listed model THRULINE Wattmeters to indicate the presence of an RF field at the receiving antenna. A gain control adjust sensitivity of the device to various field intensities.

Since the 4030 responds to the field intensity at a particular location, it is easy to perform antenna-transmitter peaking simply by obtaining the maximum field intensity reading on the meter while optimizing antenna match.

If you prefer an independent instrument, the 4041 Relative Field Strength Meter performs exactly the same functions as the 4030 Element, plus a battery level test.

Typical 4041 sensitivity (or 4030 plugged into a model 43) with the gain control at a maximum is a full scale meter deflection with one watt of radiated power at 150MHz from a 2-meter H.T. at 8 ft. distance.

BIRD ELECTRONIC CORP.

Wattmeters/Signal Samplers

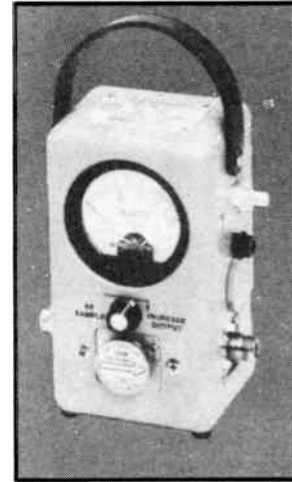
MODEL 4431

THRULINE® RF Directional Wattmeter

- Provides Model 43 Power Measurement Versatility
- Built-In, Variable RF Signal Sampler
- **Power Rating:** 5000W, 2-30MHz; 1000W, 30-1000MHz*
- **Insertion VSWR:** 1.07 to 1.0 max.* (with N Connectors)
- **Connectors:** QC Type (Female N normally supplied) (Female BNC RF output)
- **Insertion Loss:** 0.1dB max. (2-512MHz); 0.2dB max. (512-1000MHz)*
- **RF Coupling:** -15 to -70dB
- **Accuracy of Wattmeter:** ± 5% of F.S.

*Specifications above are applicable only if coupling used is less than 30dB.

The combination Model 4431 THRULINE Wattmeter provides the advantage of an RF signal sample (for use with counters, oscilloscopes, spectrum analyzers, etc.) at the same time a power measurement is made. Amplitude of the RF sample is readily adjusted by a depth-of-insertion control knob mounted on the front of the wattmeter case. Model 4431 uses the same plug-in elements as the Model 43 wattmeter within its frequency and power ratings.



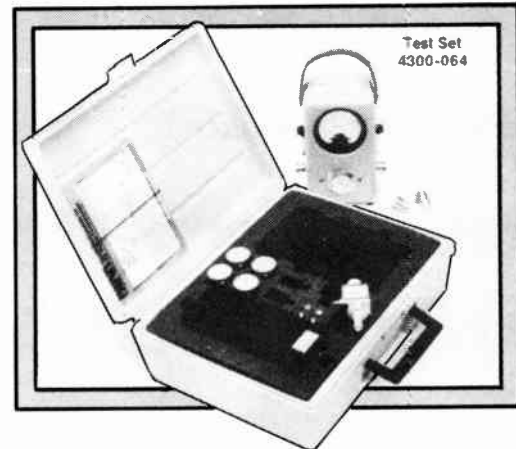
MODEL 4300-064

Mobile-Service Test Kit

Kit Includes:

- (1) Model 43 Thruline Wattmeter (Standard QC-NIF connectors)
- (1) Model 4275 100 RF Sampler with variable level control and mounting screws
- (1) Model 8164 100W "dry load" TERMALINE® Load Resistor (Standard QC-NIF connector)
- Instruction manual (P/N 4400-012)
- Cushion-fit inset equipped, one-piece, hi-density, Polyethylene carrying case (P/N 4300-061) with nests for seven plug-in elements and all other items listed above.

When purchasing test set, order as many or as few elements as your present needs dictate. They will be added to the price of the kit. To order case alone for your present equipment, order P/N 4300-061.



MODELS 4273 and 4275

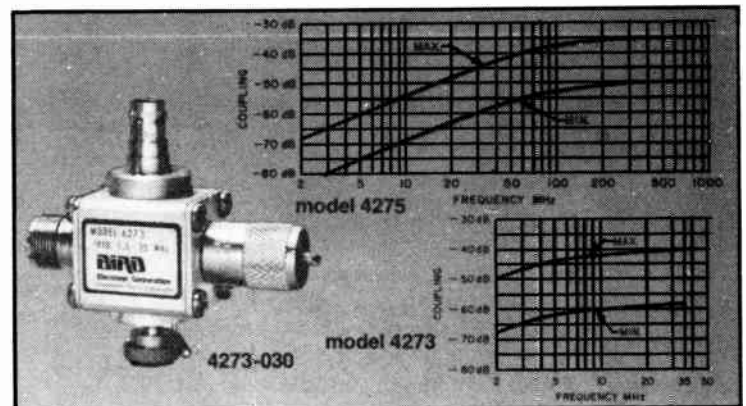
Variable RF Signal Samplers

- **Frequency Range:** 20-1000MHz (4275); 1.5-35MHz (4273)
- **Max. Power:** 1000W 4275/5000W 4273
- **Insertion VSWR:** 4275/1.1 max. 2-512MHz (with N connectors); 1.25 max. 512-1000MHz; Model 4273 1.07 max. (with N connectors)
- **Insertion Loss:** 0.1dB max. 2-512MHz (with N connectors); 0.2dB max. 512-1000MHz
- **Coupling:** Adjustable as shown ± 3dB
- **Connectors:** QC Type as specified
- **Weight:** 10 oz. (280g)

"Stand alone," wide-range, THRULINE RF coupling probes for spectrum analysis, RF signal observation on a scope, or frequency counting and control. They feature a very low VSWR throughout their broad frequency and attenuation range. Insertion loss is a negligible 0.1dB.

For low frequency RF sampling (between 1.5 and 35MHz), order a Model from the 4273 line. For frequencies between 20 and 1000MHz, order a 4275 Model. Note that, once it is adjusted, the setting can be locked.

Models 4273-100 and 4275-100 are accessory samplers which fasten directly to the input of QC equipped Bird TERMALINE, THRULINE and TENULINE® products. These Accessory Samplers eliminate the need for one connector pair and provide on-the-spot sampling.



Model/Part No.		
4273-020	4275-020	
4273-025	4275-025	
4273-030	4275-030	
4273-035	4275-035	

QC-Connectors
 N: Male/Female
 N: Two Female
 UHF: Male/Female
 UHF: Two Female

BIRD ELECTRONIC CORP.

Wattmeters

**Microprocessor-Based ThruLine®
RF Directional Wattmeters**
0.45-2300MHz, 0.1-10,000W

- Models for two-way communications, Avionics, C³, Radar, etc.
- Power range¹ 0.1W to 10kW full scale using Bird Plug-in elements.
- Accuracy not guaranteed with components not supplied by Bird • Usable over-range to 120% of nominal full scale (for compliance with FCC 110% regulations without the need to buy and use higher power elements) • Frequency Range¹ 0.45 to 2300MHz • Sampling rate 2 to 3 readings per second • Display 3 1/2 digit, .8" LED-strobed (4385, 4387) .3" LED-strobed (4381, 4383, 4391)

Accuracy

- Power readings $\pm 5\%$ of full scale • SWR $\pm 10\%$ of reading • Return loss $\pm 0.3\text{dB}$ to corresponding SWR value • Modulation Frequency 50-10,000Hz • AC power 100-130/200-260VAC 50/60Hz, 8W • Panel dimensions 19" x 5 7/32"

¹Frequency band and power range is determined by Plug-in element selected. Select two elements in a 10:1 power ratio.

²For pulse modulation the minimum parameters are: 50 microseconds pulse width, 100 pps repetition rate and 1% duty cycle, except for model 4391 the parameters are:

Minimum duty factor: 1×10^4

Minimum repetition rate: 25 pps

Minimum pulse width: 100-2300MHz 0.8 μsec
25-125MHz 1.5 μsec
2-30MHz 15 μsec

³4381, 4383: Specify voltage at time of order.

4385, 4387, 4391: Voltage is selected by integral switch.

At the push of a button, the digital RF Wattmeters with nine-mode system versatility read incident and reflected CW and FM power in watts of dBm, incident and reflected peak-envelope-power of SSB/DSB and symmetrical AM in watts, incident and reflected peak pulse power as narrow as 0.8 μ in watts (model 4391); calculate SWR, dB return loss, percent modulation; remember your peak and valley readings when you adjust for maximum or minimum signal levels; overrange at least 20% beyond nominal full scale, and will do all this with Plug-in elements you may already own from other ThruLine wattmeters.

Uses the same elements as the model 43 (Tables 1, 2, 3, 4, and 6) plus the following: Table 5.

High Power Elements (Peak Only)

Power Range	Frequency Bands (MHz)					
	25-60	50-125	100-250	200-500	400-1000	950-1260
500W						500J
1000W						1000J
2500W	2500A	2500B	2500C	2500D	2500E	2500J
5000W	5000A	5000B	5000C	5000D	5000E	5000J
10000W	10000A	10000B	10000C	10000D	10000E	

4381 is portable with a built-in coax line section, with an eight-hour battery and separate charger, optional carrying case.

4385 is the stationary, rackmounted version.

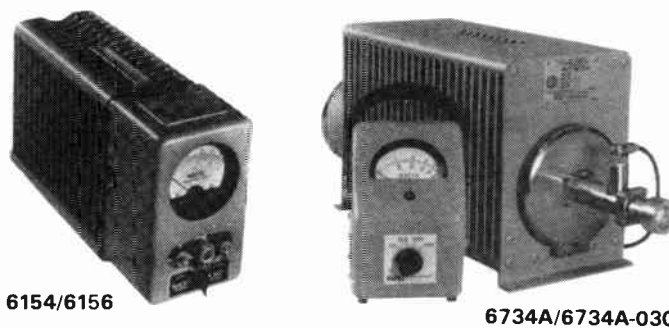
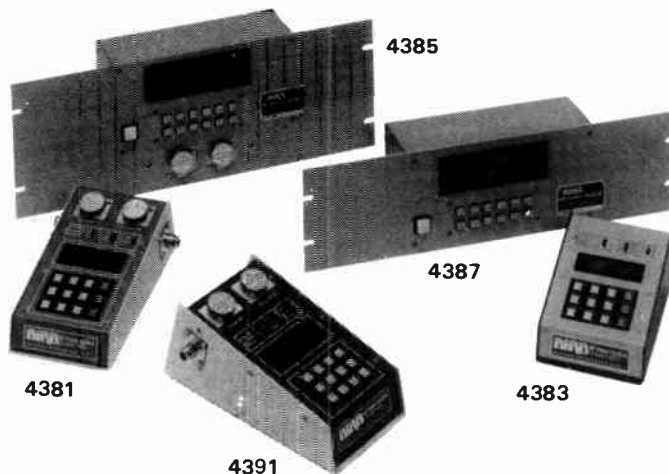
4383 is similar to the 4381, but without a coax line section.

4387 is the stationary, rackmounted version. These are intended for use with permanently installed line sections.

4391 is a portable Peak and CW Wattmeter with built-in coax line section, battery, international power supply, and charger. It is designed for pulsed systems such as avionics surveillance, collision avoidance and navigation, as well as CW, FM, AM, SSB/DSB transmissions.

Termaline® RF Absorption Wattmeters
50 ohms nominal
6104 60 Watts*

- Power Rating: 60W • Power Scales: 0-2/0-6/0-20/0-60W • VSWR: 1.1 max. DC to 512MHz • Frequency Range: 25-512MHz • Input Connector: Female N • Nominal Size: includes connectors 6 3/8" x 3 15/16" x 9 5/8" • Weight: 7 lbs. • Accuracy: $\pm 5\%$ of full scale 25-512MHz


6154/6156 150 Watts*

- Power Rating: 150W • Power Scales: 0-5/0-15/0-50/0-150W • VSWR: 1.1 max. DC to 1000MHz (to 512MHz, model 6156) • Frequency Range: 25-1000MHz (to 512MHz, model 6156) • Input Connector: Female N • Nominal Size: includes connectors 6 3/8" x 3 15/16" x 12 3/16" • Weight: 8 lbs. • Accuracy: $\pm 5\%$ of full scale 25-512MHz, $\pm 10\%$ of full scale 512-1000MHz

6732A 250 Watts*

- Power Rating: 250W • Power Scales: 0-10/0-50/0-250W • VSWR: 1.15 max DC to 1000MHz • Frequency Range: 25-1000MHz • Input Connector: QC type (female N normally supplied) • Nominal Size: includes connectors 8 1/2" x 5 15/16" x 12 5/8" • Weight: 16 lbs. • Accuracy: $\pm 5\%$ of full scale 25-512MHz, $\pm 10\%$ of full scale 512-1000MHz • **Meter:** 4 1/2" meter, shock mounted in aluminum carrying case with 10' (3m) shielded meter cable. Dimensions: 6 1/2" H x 5 9/16" W x 3 1 1/32" D

6734A 500 Watts*

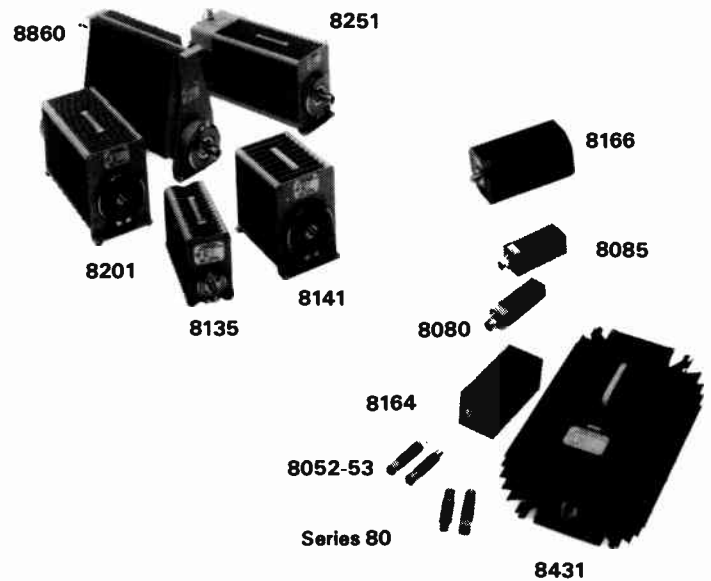
- Power Rating: 500W • Power Scales: 0-25/0-100/0-500W • VSWR: 1.15 max. DC to 1000MHz • Input Connector: QC type (Female N normally supplied) • Nominal Size: includes connectors 8 1/2" x 5 15/16" x 19 15/16" • Weight: 27 lbs. • Frequency Range: 25-1000MHz • Accuracy: $\pm 5\%$ of full scale 25-512MHz, $\pm 10\%$ of full scale 512-1000MHz

6734A-030 Watts*

- Frequency Range: 1.5 to 35MHz • Accuracy: $\pm 5\%$ of full scale 2-32MHz, $\pm 10\%$ of full scale 1.5MHz and 32-35MHz

*Meter Housing can be detached from load for convenient reading with 3" cable.

**Finish: Light navy gray enamel

**Termaline® RF Coaxial Load Resistors**

• 50 ohms nominal • Oil dielectric • VSWR: 1.1 max. DC to 1000MHz • Ambient air temperature range: -40° to +45°C • Operating position: horizontal only • Finish: light navy gray baked enamel • Input Connector: QC type (female N normally supplied for models 8135, 8141 and 8201); QC type (female LC normally supplied for models 8251 and 8860)

Termaline load resistors are used in place of the antenna during testing, adjustment and alignment of 50 ohm coaxial RF transmitters.

Their low VSWR (1.1 or less, at mobile radio frequencies) assures an excellent match and the absorption of at least 99.75% of the RF energy generated.

8135 150 Watts

• Power Rating: 150W continuous duty • VSWR: 1.2 max. 1000 to 2500MHz; 1.3 max. 2500 to 4000MHz • Nominal Size: includes connectors 6³/₈" x 3¹⁵/₁₆" x 9¹/₂" • Weight: 6 lbs.

8141 250 Watts

• Power Rating: 250W continuous duty • VSWR: 1.2 max. 1000 to 2500MHz; 1.3 max. 2000 to 2500MHz • Nominal Size: includes connectors 8¹/₂" x 5¹⁵/₁₆" x 9⁹/₁₆" • Weight: 10 lbs.

8201 500 Watts

• Power Rating: 500W continuous duty • VSWR: 1.25 max. 1000 to 2500MHz • Nominal Size: includes connectors 8¹/₂" x 5¹⁵/₁₆" x 16¹³/₁₆" • Weight: 21 lbs.

8251 1000 Watts

• Power Rating: 1000W continuous duty • VSWR: 1.25 max. 1000 to 2000MHz; 1.3 max. 2000 to 2400MHz • Nominal Size: includes connectors 8¹/₂" x 5¹⁵/₁₆" x 17¹⁵/₁₆" • Weight: 24 lbs.

8860 1500 Watts

• Power Rating: 1500W continuous duty • Nominal Size: includes connectors 13¹/₈" x 7¹/₂" x 17⁷/₁₆" • Weight: 28 lbs.

Termaline RF Coaxial Load Resistors

• 50 ohms nominal • Dry loads • VSWR: 1.1 max. DC to 1000MHz • Operating position: any, except model 8173 (horizontal only) • Finish: lusterless black enamel (Fed. Spec. TT-E-527) except Series 80-silver plated • Ambient air temperature range: -40° to +45°C

Series 80 5 Watts

• Power Rating: 5W continuous duty • VSWR: 1.2 max. 1000 to 3500MHz; 1.3 max. 3500 to 4000MHz • Input Connector: 80 F: female N, 80 M: Male N • Nominal Size: includes connectors 1¹/₁₆" Hex x 3³/₈" • Weight: 4 oz.

8052-53 10 Watts

• Power Rating: 10W continuous duty • VSWR: 1.2 max.; 1000 to 3500MHz • Input Connector: Female N (8052), Male N (8053) • Nominal Size: includes connectors 1¹/₁₆" Hex x 3⁷/₁₆" • Weight: 4 oz.

8080 25 Watts

• Power Rating: 25W continuous duty • VSWR: 1.25 max. 1000 to 3500MHz • Input Connector: QC type (male N normally supplied) • Nominal Size: includes connectors 1¹/₄" x 1¹/₄" x 5¹/₈" • Weight: 9 oz.

8085 50 Watts

• Power Rating: 50W continuous duty • VSWR: 1.25 max. 1000 to 3500MHz • Input Connector: QC type (Male N normally supplied) • Nominal Size: includes connectors 1³/₄" x 1³/₄" x 5¹/₈" • Weight: 15 oz.

8164 100 Watts

• Power Rating: 100W continuous duty • VSWR: 1.2 max. 1000 to 2500MHz • Input Connector: QC type (female N normally supplied) • Nominal Size: includes connectors 2³/₄" x 2³/₄" x 7" • Weight: 48 oz.

8166 150 Watts

• Power Rating: 150W continuous duty • VSWR: 1.2 max. 100 to 2500MHz • Input Connector: QC type (female N normally supplied) • Nominal Size: includes connectors 4" x 4" x 7¹/₂" • Weight: 96 oz.

8173 300 Watts

• Power Rating: 300W continuous duty • VSWR: 1.25 max. 1000 to 2000MHz • Input Connector: QC type (female N normally supplied) • Nominal Size: includes connectors 9⁹/₁₆" x 5¹⁵/₁₆" x 9³/₄" • Weight: 6¹/₄ lbs.

8431 600 Watts

• Power Rating: 600/500W* continuous duty • VSWR: 1.25 max. 1000 to 2500MHz • Input Connector: SQC type (female N normally supplied) • Nominal Size: includes connectors 8³/₈" x 9¹/₄" x 13¹/₈" • Weight: 13 lbs.

*Continuous power rating 600W in vertical position; 500W in horizontal position.

SQC type connectors, as used on models 8431, 8072 and all Minimonitor Thru-line Wattmeters, are available in Male N, Female N, UHF, C, SC, BNC

BIRD ELECTRONIC CORP.**RF Monitoring System/Power Monitor/Alarm****3170 HIGH-SPEED WATTCHER®
RF MONITORING SYSTEM**

Initiates instantaneous switchover to remote standby transmitter as a feed-back of signal drop-off.

Based on the accurate power level measurements of its reliable built-in THRULINE® Directional Wattmeter, the solid-state Wattcher System will...

- Provide a fast fault-response-time of 200 μ s for forward and reflected power monitoring
- Signal forward power drop-off below a set level (e.g. to conform with FCC part 21.107 specifications)
- Activate audible/visual alarms when reflected power increases
- Implement stand-by switchover in case of main transmitter malfunction
- Allow remote reset in event of false alarm or momentary disturbance which leaves transmission unimpaired

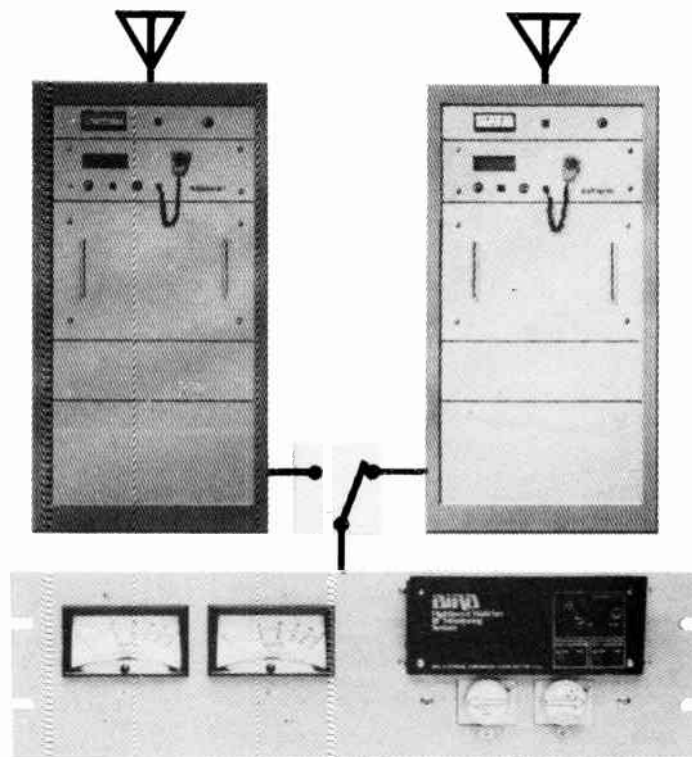
WATTCHER RF Monitoring System warns a remote operator of (1) low power due to detuning, component deterioration, or AC line difficulties (2) high VSWR due to antenna icing, transmission line problems, physical accidents, lightning strikes, etc.

With the addition of extraneous switching hardware, the system can be programmed to activate a back-up transmitter and antenna when primary equipment performance is below predetermined parameters. Because of the WATTCHER'S high reaction speed (250 times faster than other monitors), switching to standby equipment is inaudible to listeners.

If the disturbance is not catastrophic and equipment returns to acceptable operating status, the alarm system can be reset from many miles away. An engineer needs to be dispatched to the transmitter site only when the alarm cannot be deactivated by the remote reset.

- **Power Range:** 100mW to 10kW full scale*
- **Accuracy:** \pm 5% of full scale
- **Over-range (Alarms):** beyond 200% of scale
- **Response Time:** 25 μ sec. max.
- **Activate Forward Monitor Adjustable Delay:** 73 μ sec. to 50msec nominal
- **Inputs and Outputs:** TTL-compatible
- **Insertion VSWR:** With N Connectors 1.05 max. DC to 1GHz
- **AC Power:** 115/230VAC, 50/60Hz, 10W max.
- **Nominal Size:** 19" x 5 $\frac{7}{32}$ " (483 x 133mm)

*Frequency and Power Range determined by Plug-in Elements



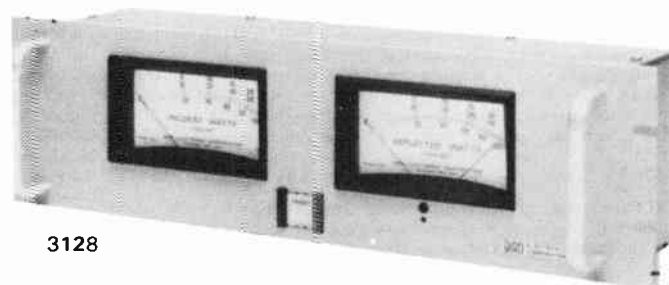
3170

3128 WATTCHER® RF POWER MONITOR/ALARM

- **Power Range:** 100mW to 10kW full scale*
- **Accuracy:** \pm 5% of full scale
- **Insertion VSWR:** With N Connectors 1.05 max. DC to 1GHz
- **AC Power:** 115VAC, 50/60Hz, 10W (230VAC optional)
- **Nominal Size:** 19" x 5 $\frac{7}{32}$ " (483 x 133mm)

Installations which do not require the fast response time and the forward-power drop-off alarm of model 3170 are protected from high VSWR by WATTCHER model 3128.

Abnormal load conditions quickly cause transmitter shut-down, a buzzer alarm and a change of illumination color of the reset button from green to red. Audible and visual alarms indicating system malfunction may be remotely. Fail-Safe or Non-Fail-Safe Modes are switch-selectable and the Reflected Power meter-relay has a front-adjustable trip-level.



3128

NOTE: Model 3170 incorporates a Line Section with sockets for two Plug-in Elements. For model 3128, a double-socket Line Section (e.g. P/N 4522-002), two Quick-Change Connectors (e.g. 4240-062 for Female N) and two 25 ft. cables (P/N 4220-097-10) must be ordered to complete the installation. Also select two Plug-in Elements for either model in a 10/1 power ratio to suit your power and frequency requirements.

BOGEN PHOTO CORP.

Tripods/Heads/Dollies



Fluid Heads

Mini Fluid Head Measuring just 5" x 5" x 5" (excluding handle), this lightweight, fluid-type damped tripod head pans a full 360° and features a camera platform that measures 2 3/4" x 3". The Mini Fluid Head comes with a versatile handle which is positionable on either side and can be separated into two individual segments, each 9" in length. The Mini Fluid Head can be tilted 45° up and 90° down continuously, with detent at -45°, and has separate pan and tilt locks. Vertical drag is continuously adjustable.

3063 \$145.95

Micro Fluid Head Only 2 lbs. including an adjustable handle. Perfect for light weight (up to 6 lbs.) VCR cameras. It measures 4 1/4" x 5 3/4" x 2 3/4" (excluding handle); pans smoothly a full 360°; can be tilted up or down 90°; has pan and tilt locks, and continuously adjustable drag. Platform has adjustable positioning slot designed so handle can be on either left or right side.

3126 \$73.50

Cine/Video Fluid Head This lightweight, professional quality, fluid-damped tripod head is designed for Cine and Video cameras weighing up to 22 lbs. The large, removable camera platform has a mounting stud that travels in a 3 1/2" slot and facilitates balancing at the camera's center of gravity. In addition, there are three locking detents for the platform, any of which can be used. Pans smoothly 360° and the panning drag can be adjusted by a large pawl-controlled lever. The tilting range is 60° up to 90° down. Detent can be set to limit the downward movement to 45°. Separate locks, independent of the drag system provide a positive hold in any position.

3066 \$355.95

XL Fluid Head Lightweight fluid head capable of handling cameras up to 9 lbs. Features a special "quick release plate" which lets you attach and detach the camera quickly and easily. The adjustable handle can be located on either the right or left side of the head.

3160 \$95.95

Ball Camera Leveler This is an ideal adjunct to the 3063 Mini Fluid Head. It works like a claw ball in that you mount it to your tripod, you can remove the camera and head quickly to mount on another tripod similarly equipped, and you can level your camera even if you haven't leveled the tripod. Ideal for use in the field on uneven terrain.

3115 \$39.95

Tripods with Fluid Heads

3170 Tripod with Micro Fluid Head Versatile, easy to handle and sets up quickly and easily. Sturdy legs are made of tubular hard-finish aluminum and each has sure-grip lever locks. Designed for VCR cameras (our 3001) can hold up to 6 lbs.

3170 \$134.95

3165 3011 Tripod with 3160XL Fluid Head 161.95

3124 Tripod With Micro Fluid Head A lightweight all-aluminum tripod (our 3011) that's sturdy, stable, versatile, easy to use and easy to carry. It weighs only 7 lbs. with our Micro Fluid Head (Order Code 3126) that features real, fluid-effect action.

3124 \$167.95

3122 As above but in black anodized finish 172.95

3129 3011 Tripod with 3126 Micro Fluid Head and 3127 Dolly 244.95

3145 Video Tripod Caddy 35.95

3149 3126 Micro Fluid Head with 3211 Tripod with black anodized finish and 3127 Dolly 256.95

3163 3160XL Fluid Head with 3011 Tripod 184.95

3164 As above plus 3127 Dolly 261.95

3046 Sturdy Tripod All aluminum double-braced, two section design weighs only 7 lbs., 4 oz. It extends to a full 73" with the Mini Fluid Head. 19" geared center post. Folds to a compact 32 1/2" for traveling. Legs are furnished with convertible cushion/spike tips.

3046 Cine/Video Tripod w/o head \$160.95

3140 Cine/Video Tripod with Mini Fluid head 299.95

3142 Same as above in black anodized finish 315.95

3068 Universal Cine/Video Tripod Weighs less than 12 lbs., extends to 66". Legs are furnished with convertible cushion/spike tips. For precise positioning, there is a centerpost which permits 9" of extension. The unique variable-angle center brace system on the tripod allows minimum elevation of the tripod platform as low as 16".

3068 \$263.95

3065 Universal Tripod with 3066 Fluid Head 613.95

3069 Universal Tripod with 3066 Fluid Head and 3067 Dolly 832.95

3118 Universal Tripod with 3063 Mini Fluid Head 393.95

3061 Heavy-Duty Cine/Video Tripod Ideal field tripod. Closed length is only 37 1/2", extends to a full 63". It can be set as low as 12". With its built-in claw ball, the camera head can be leveled quickly under all use conditions. The Heavy-Duty Tripod weighs just 17 lbs. 2 oz.

3061 \$317.95

3062 Heavy-Duty Cine/Video Tripod with 3066 Fluid Head 665.95

3064 Heavy-Duty Cine/Video Tripod, with 3066 Fluid Head and 3067 Dolly 886.95

Dollies

Deluxe Cine/Video Dolly Designed specifically for use with the Universal and Heavy-Duty Tripods. Individually braked wheels measuring 5" in diameter, and a unique leg locking system make it easy to assemble and disassemble for transporting. The tripod legs are captured in a 38" diameter circle and the doorway clearance needed for the fully assembled dolly is only 39 1/2".

3067 \$220.95

Portable Video Dolly Features sure-lock no rock system. Heavy-duty quick fastening rubber straps hold tripod in place. 20" radius, folds to a compact 22 1/2".

3127 \$79.95

Variable Leg Spread Dolly Has a special feature that allows you to adjust the radius from a max of 20" to as little as 12 1/2".

3137 \$97.95

Auto Dollies When you depress the centrally located foot pedal of either the Auto Dolly or the Folding Auto Dolly, you release all three wheels. When you lift the pedal, cam action raises the wheels free of the ground and the weight of the dolly and tripod rest on separate feet.

- The Auto Dolly weighs 6 lbs.
- Incorporates Shepherd Casters, and is easily assembled
- Spread from center to tripod leg socket is 18 1/2"
- The Folding Auto Dolly features 3" wheels • Weighs 9 3/4 lbs.
- Spread from center to tripod leg socket is 20"
- Folds to a compact 29"

On either dolly, mounting and dismounting the tripod is accomplished by cam operated kick-locks.

3056 Auto Dolly \$128.95

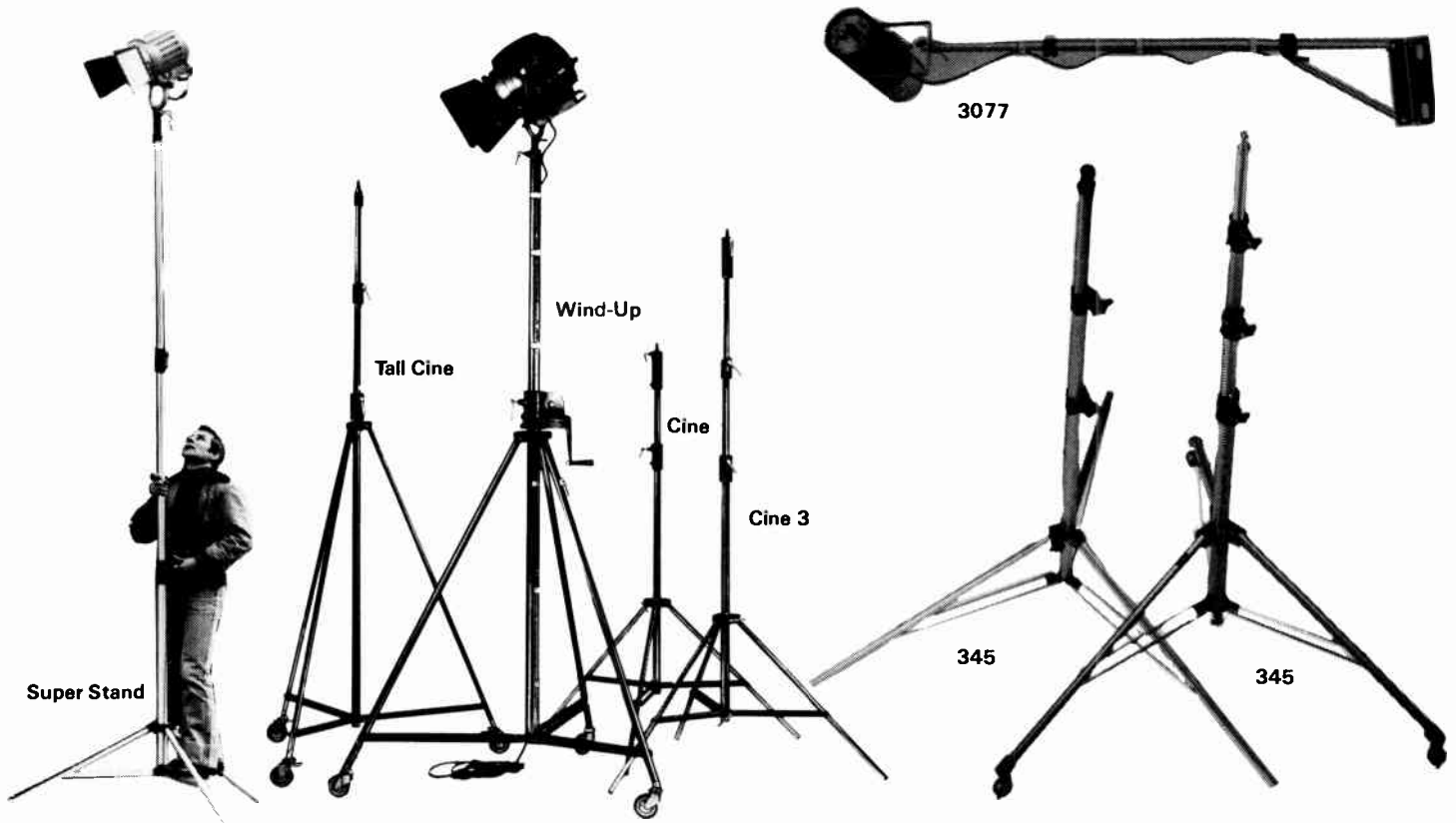
3156 Folding Auto Dolly 167.95

3254 8lack Folding Auto Dolly 185.95

Prices and Specifications Subject to Change Without Notice.

BOGEN PHOTO CORP.

Light Stands/Accessories



3079 Super Stand

The bigger your light, the more you need this strong, tall, stable stand. Made of aluminum, it's comparatively lightweight (slightly over 15 1/2 lbs.), yet will support large lighting units such as movie and TV floodlights, including 228mm sockets. Full extension is just under 12'. Standard 5/8" stud and 1/4-20 adaptor to take strobes, smaller professional Q.H. lights, and other lights. Clamp-on leveller can be ordered which keeps the Super Stand on an even footing, when the terrain isn't. For indoor use, there's an accessory set of 100mm casters.

- Closed length: 55.9" • Minimum elevation: 56.3" • Max. elevation: 143.3" • Diameter of base: 64.5" • Legs are 30mm diameter aluminum
- Sections are respectively, 50, 40, 30mm
- 3079** **\$240.00**

Accessories

- Extension Leveller** • 22mm diameter tube which clamps on to one of the legs of the Super Stand • Provides a 15" (40cm) range of adjustment so that the center column of the stand can be kept level on uneven ground.
- 3080** **\$51.00**
- Caster Set** • 100mm (3.9") diameter casters • Provides easier movement when the stand is used indoors.
- 3081** **\$40.00**

Cine Stands

Designed to hold heavy lights, reflectors and scrims. The Wind-up 2 and Wind-up 3, Cine and Cine 3 Stands, as well as the Super Stand all accept 1 1/8" (28mm) bushings and supplied with adaptors for 5/8" (16mm) and 1/2" female yoke sockets. The Tall Cine accepts 5/8" bushings and female yoke sockets.

345 Three Section Light Stand

• Extends to 13' • Closes down to 41 1/2" • Weighs 6 lbs. 4 oz. • Will support any of four Monolite units or lights of comparable weight • The 345 comes with Shepherd casters • Mounting stud is 5/8" for standard studio strobes with 1/4-20 thread adaptor.
- 3082 (345)** 13' light stand with casters . . **\$130.00**
- 3365** Same as above in black anodized finish **139.95**

251 The Workhorse for Portable Strobe and Q.H. Lighting

• Stable 8' stand • Weighs under 2 1/4 lbs. • Closed length is 34 1/4" • Mounting stud is 5/8" for standard studio lights with 1/4-20 thread adaptor • 42" diameter legs spread
- 3086 (251)** 8' light stand with 1/4-20 stud **\$59.95**
- 3361** Same as above in black anodized finish **63.95**
- 3088** Shepherd Casters, for use indoors . . . **30.50**

3089 Bantam Weight Stand

• 6' light stand • Lightweight for its size and relative sturdiness • For use with small strobes and quartz lighting units • Mounting stud is 5/8" diameter • Closed length is 24 3/4" • Minimum extension is 32" • Weight 2 lbs.
- 3089** **\$47.00**

Accessories

- 3077** Wall mounting boom arm **\$93.00**
- 3083** Clip on metal cable hooks for 3082 . . . **2.10**
- 3084** Adaptor to convert stand tips to accommodate 3/8" sockets **3.50**
- 3085** Boom assembly with adjustable arm counterbalance **95.95**
- 3092** Plastic clip on cable clamps, set of 6 . . **2.50**
- 3093** Plastic clip on cable clamps, set of 4 (large) **2.20**
- 3095** Back light stand **24.00**
- 3100** Broncolor adaptor **6.50**
- 3101** 5/8" socket converter **4.95**
- 3102** Rapid adaptor for 3/8" socket **8.95**
- 3103** 1/4-20 to Euro thread **2.10**
- 3104** Adjustable section for back light stand **20.00**
- 3105** Rapid adaptor for 1/4-20 socket **8.50**

CINE STANDS	Wind-Up 3	Wind-Up 2	Cine	Tall Cine	Cine-3
Order Code	3075	3070	3071	3072	3073
No. of Sections	3	2	2	3	3
Folded Length*	68 7/8"	59"	47 1/2"	61"	51"
Diameter of Base	50 3/8"	50.4"	46 3/4"	39.4"	46 3/4"
Minimum Height*	63 3/4"	53.5"	47 1/2"	57 1/2"	56"
Maximum Height*	147 5/8"	98.4"	90 1/2"	149 1/2"	128"
Approx. Load Capacity	66 lbs.	88 lbs.	66 lbs.	55 lbs.	48 lbs.
Weight	43 lbs.	37 lbs.	14 3/4 lbs.	19.6 lbs.	15 1/2 lbs.
Casters Available	(Included)	(Included)	(Included)	Use No. 3081	Use No. 3074

*Without Casters **\$640.00** **\$457.00** **\$168.00** **\$161.00** **\$160.00**

Refer to Green Section for Addresses and Telephone Numbers.

BOGNER BROADCAST EQUIPMENT CORP.

TV Broadcast Antennas

TV Transmitting Antennas (Low and Medium Power)

- Full broadcast quality and versatility
- Every unit fully tested
- Wide variety of standard patterns and gains

Bogner broadcast quality broadband slot antennas are designed for translator and low/medium power TV broadcasters. Bogner antennas are fully comparable in quality and versatility to the finest high-power antennas available to broadcasters today, but are substantially lower in cost. This is achieved through use of the inherently simple Bogner single slot per bay design, standardization of radiation patterns, and the utilization of modular construction and modern manufacturing techniques.

Antennas with any of twelve horizontal patterns, and a choice of vertical patterns, gains, and power input ratings up to 10kW, can be delivered in a very short period of time after order. These antennas are available for any High VHF (Band III) channel up to 8MHz wide (between 170 and 230MHz); for any one, or for any group of contiguous, UHF (Bands IV and V) channels up to 30MHz wide (between 470 and 890MHz); or for any SHF group up to 42MHz wide (1990 to 2700MHz).

MDS 2150 to 2163MHz Band, O and A Patterns

(other directional patterns 25% additional)

Model	Price
B4SO, B4SA	\$ 3,950.00
B8SO, B8SA	6,675.00
B16SO, B16SA	12,800.00
B24SO, B24SA	16,800.00

ITFS/MMDS 2500 to 2690MHz Band,

Any 42MHz Group

(1.25 max. VSWR over full 2500 to 2690MHz band 5% additional)

B4S ()	\$ 7,500.00
B8S ()	10,000.00
B16S ()	15,000.00
B25S ()	22,000.00

First null fill and electrical beam tilt available on all MDS and ITFS antennas, except (B4S ()) at no additional charge.

Combined MDS and MMDS and dual polarized antennas available. Consult factory.

UHF Slot Antennas *

Model	Power Rating	Price
B4U ()	(To 1 1/2 KW) †	\$ 5,995.00
B8U ()	(To 3 KW) †	12,100.00
B16U ()	(To 3 KW) †	20,200.00
B24U ()	(To 3 KW) †	28,500.00
B4U ()M	(To 3 KW) †	7,500.00
B8U ()M	(To 6 KW) †	14,700.00
B8U ()H	(To 10 KW) †	17,700.00
B16U ()M	(To 10 KW) †	24,000.00
B24U ()M	(To 10 KW) †	32,500.00
B16U ()H	(To 15 KW) ††	29,900.00
B24U ()H	(To 30 KW) ††	44,500.00
Deicers for B4U ()		1,350.00
Deicers for B8U ()		2,700.00
Deicers for B16U ()		4,300.00
Deicers for B24U ()		4,800.00
LPS, LPS2, LPS3, LPS4	(to 1 KW)	4,850.00

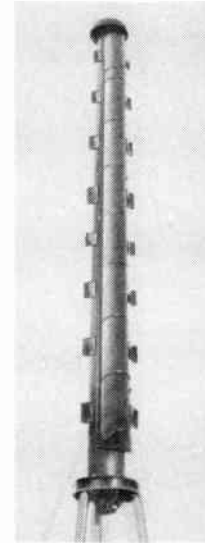
First null fill and electrical tilt available on B8U, B16U, and B24U models at no additional charge.

VHF Hi Band Slot Antennas (CH 7-13) **

Model	Power Rating	Price
B2V ()	(To 3 KW) †	\$ 10,950.00
B4V ()	(To 3 KW) †	24,750.00
B6V ()	(To 3 KW) †	35,500.00
B2V ()M	(To 5 KW) †	13,500.00
B4V ()M	(To 10 KW) †	27,250.00
B6V ()M	(To 10 KW) †	39,000.00
B6V ()H	(To 30 KW) ††	45,750.00

B-250

Refer to Green Section for Addresses and Telephone Numbers.



Deicers for B2V ()	\$ 2,000.00
Deicers for B4V ()	4,000.00
Deicers for B6V ()	6,000.00

Electrical beam tilt on B4V and B6V models, and first null fill on B6V models, available at no additional charge.

VHF Lo Band Dipole Antennas (CH 2-6 and FM)

Model	Price
BVP	\$ 2,500.00
B2VP	6,350.00
B4VP	13,950.00
B6VP	21,400.00
B2VM/N	13,950.00
B4VM/N	28,850.00
B6VM/N	44,950.00
B2VK/L	21,400.00
B4VK/L	43,650.00
B2VJ	28,850.00
B4VJ	58,300.00
B6VJ	88,150.00

Dipole arrays include dipoles, interconnecting cables and power divider for installation on customer supplied tower.

† Peak visual input power, plus 20% aural at 40°C ambient

†† Peak visual input power, plus 10% aural at 40°C ambient

For special horizontal patterns or higher input power consult factory.

Lightning rod \$125.00 (not available for dipoles)

LPS Series have 7/8" EIA input standard - B1 bracket #200

*** UHF Slot Antenna Options**

Multichannel Coverage

Standard	VSWR under 1.10:1 over one 8MHz channel; no additional charge
Option A	VSWR under 1.30:1 over 30MHz; total additional charge \$1,200.00 for B4U (), \$2,150.00 for B8U (), \$4,300.00 for B16U (), \$5,000.00 for B24U ()
Option B	VSWR under 1.20:1 over 30MHz; total additional charge \$1,750.00 for B4U (), \$3,250.00 for B8U (), \$6,500.00 for B16U () \$7,500.00 for B24U ()
Option C	VSWR under 1.30:1 over greater than 30MHz band but under 8% band (ratio of highest to lowest frequency under 1.08); total additional charge \$2,700.00 for B4U (), \$5,400.00 for B8U (), \$10,800.00 for B16U (), \$12,000.00 for B24U ()
Option D	VSWR under 1.30:1 over greater than 30MHz band but under 15% band (ratio of highest to lowest frequency greater than 1.08 but under 1.15); total additional charge \$3,800.00 for B4U (), \$7,000.00 for B8U (), \$14,000.00 for B16U (), \$16,000.00 for B24U () (This option available for O and A patterns only)

**** VHF Slot Antenna Options (CH 7-13)**

Option E	Multichannel coverage for up to 3 adjacent channels with VSWR under 1.20:1 add 20%
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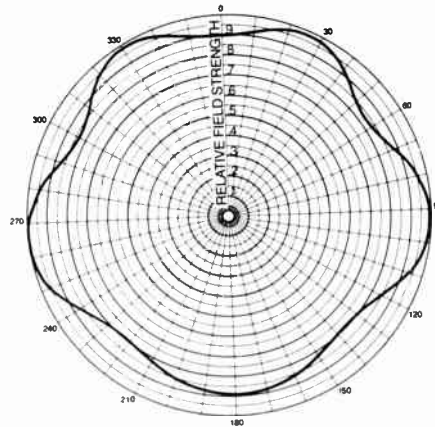
Harsh Environment Package

Option F	Steel fully hot dip galvanized supporting pipe and director elements, stainless steel slot cavity corrosion resistant coatings and completely copper feed system; additional charge: B4U (), \$1000.00 B8U (), \$2000.00 B16U (), \$3500.00 B24U (), \$5500.00 B2V (), \$2000.00 B4V (), \$4000.00
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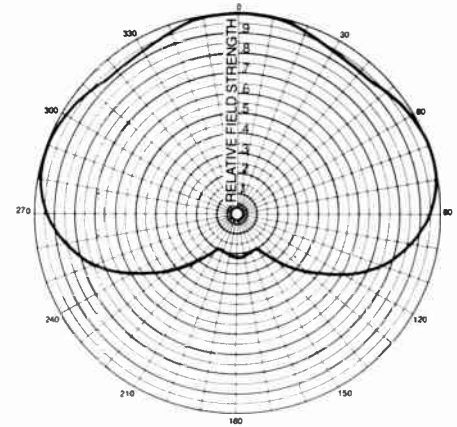
BOGNER BROADCAST EQUIPMENT CORP.

TV Broadcast Antennas

PATTERN O—360° COVERAGE
(Omnidirectional ± 1.5 dB Max.)



PATTERN A—220° COVERAGE



High VHF-Band III UHF-Bands IV and V SHF-ITFS, MDS and ENG

Standard models: Horizontal plane radiation patterns. Letter M or H after model number designates medium power models; all antenna specifications remain the same except for power handling.

High VHF (Band III) 170 to 230 MHz.

UHF (Bands IV and V) 470 to 890 MHz.

SHF (ITFS, MDS and ENG) 1990 to 2700 MHz.

PEAK GAIN VALUES

(Average values listed under specifications)

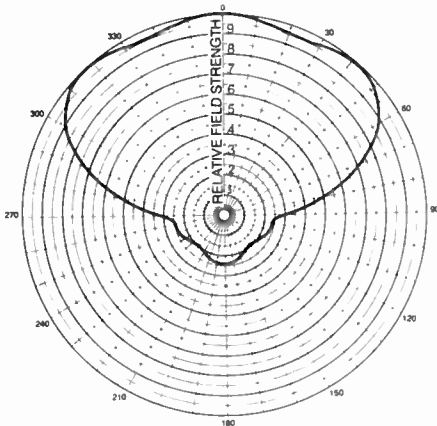
MODEL	POWER GAIN (above dipole)	dB GAIN (above isotrope)
B2VO	2.8 (= 4.5 dB)	6.7
B4VO	5.6 (= 7.5 dB)	9.7
B6VO	8.5 (= 9.3 dB)	11.4
B4UO	5.6 (= 7.5 dB)	9.7
B6UO	11.3 (= 10.5 dB)	12.7
B16UO	22.6 (= 13.5 dB)	15.7
B4SO	5.6 (= 7.5 dB)	9.7
B8SO	11.3 (= 10.5 dB)	12.7
B16SO	22.6 (= 13.5 dB)	15.7

PEAK GAIN VALUES

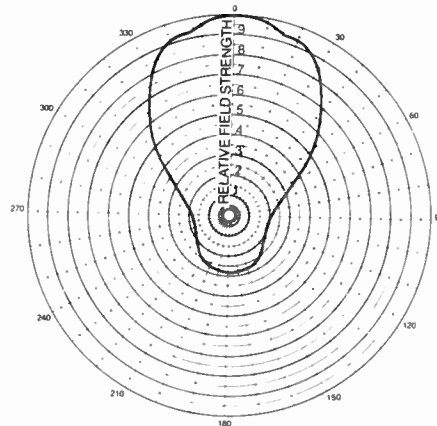
(Average values listed under specifications)

MODEL	POWER GAIN (above dipole)	dB GAIN (above isotrope)
B2VA	3.9 (= 5.9 dB)	8.2
B4VA	8.0 (= 9.0 dB)	11.2
B6VA	12.1 (= 10.8 dB)	12.9
B4UA	8.0 (= 9.0 dB)	11.2
B8UA	16.0 (= 12.0 dB)	14.2
B16UA	32.0 (= 15.1 dB)	17.2
B4SA	8.0 (= 9.0 dB)	11.2
B8SA	16.0 (= 12.0 dB)	14.2
B16SA	32.0 (= 15.1 dB)	17.2

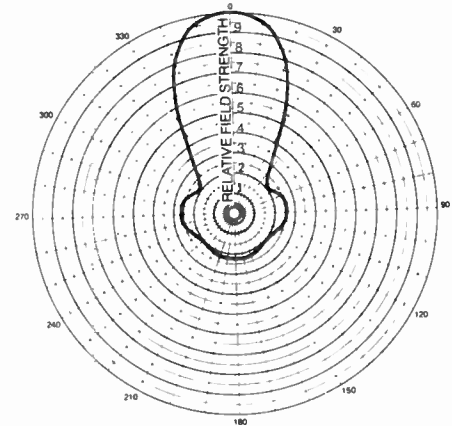
PATTERN B—140° COVERAGE



PATTERN C—80° COVERAGE



PATTERN D—45° COVERAGE



PEAK GAIN VALUES

(Average values listed under specifications)

MODEL	POWER GAIN (above dipole)	dB GAIN (above isotrope)
B2VB	5.8 (= 7.6 dB)	9.9
B4VB	11.7 (= 10.7 dB)	12.9
B6VB	17.7 (= 12.5 dB)	14.6
B4UB	11.7 (= 10.7 dB)	12.9
B8UB	23.5 (= 13.7 dB)	15.9
B16UB	47.0 (= 16.7 dB)	18.9
B4SB	11.7 (= 10.7 dB)	12.9
B8SB	23.5 (= 13.7 dB)	15.9
B16SB	47.0 (= 16.7 dB)	18.9

PEAK GAIN VALUES

(Average values listed under specifications)

MODEL	POWER GAIN (above dipole)	dB GAIN (above isotrope)
B2VC	9.7 (= 9.9 dB)	12.1
B4VC	19.7 (= 12.9 dB)	15.1
B6VC	29.8 (= 14.7 dB)	16.8
B4UC	19.7 (= 12.9 dB)	15.1
B8UC	39.5 (= 16.0 dB)	18.1
B16UC	79.0 (= 19.0 dB)	21.1
B4SC	19.7 (= 12.9 dB)	15.1
B8SC	39.5 (= 16.0 dB)	18.1
B16SC	79.0 (= 19.0 dB)	21.1

PEAK GAIN VALUES

(Average values listed under specifications)

MODEL	POWER GAIN (above dipole)	dB GAIN (above isotrope)
B2VD	13.6 (= 11.3 dB)	13.6
B4VD	27.8 (= 14.4 dB)	16.6
B6VD	42.5 (= 16.3 dB)	18.3
B4UD	27.8 (= 14.4 dB)	16.6
B8UD	55.4 (= 17.4 dB)	19.6
B16UD	110.9 (= 20.4 dB)	22.6
B4SD	27.8 (= 14.4 dB)	16.6
B8SD	55.4 (= 17.4 dB)	19.6
B16SD	110.9 (= 20.4 dB)	22.6

Prices and Specifications Subject to Change Without Notice.

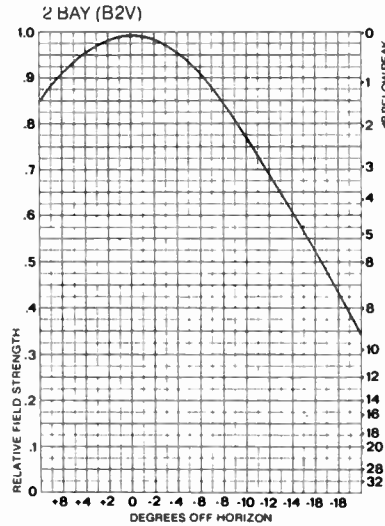
BOGNER BROADCAST EQUIPMENT CORP.

TV Broadcast Antennas

Vertical Plane Radiation Pattern

Patterns are shown for 0° downtilt. Bottom scale may be shifted to the left for desired tilt up to -3° (models noted only).

Patterns are shown for 0° downtilt. For models B4V, B6V, B8U, B16U, B16S, B24V, B24S, bottom scale may be shifted to the left for the desired tilt.

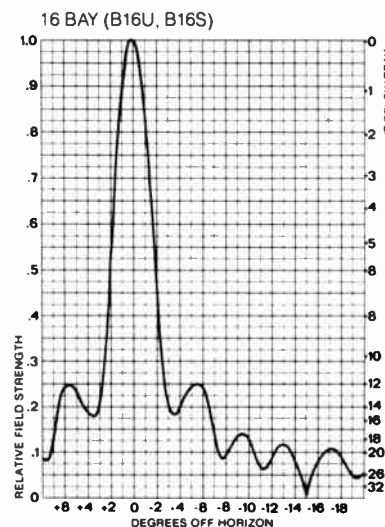
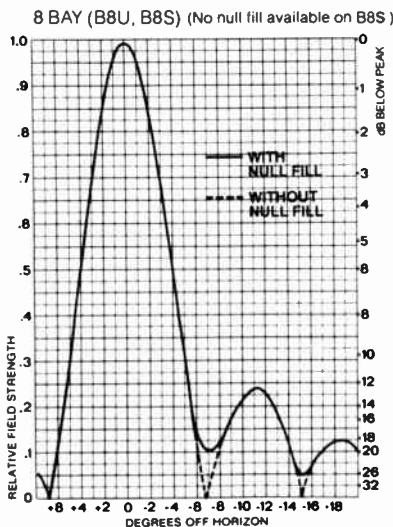
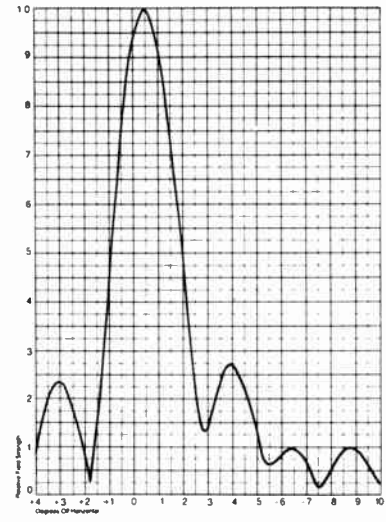
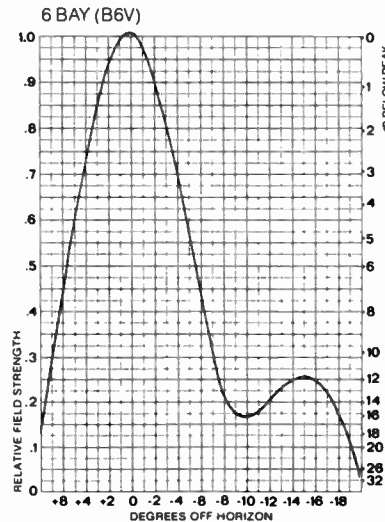
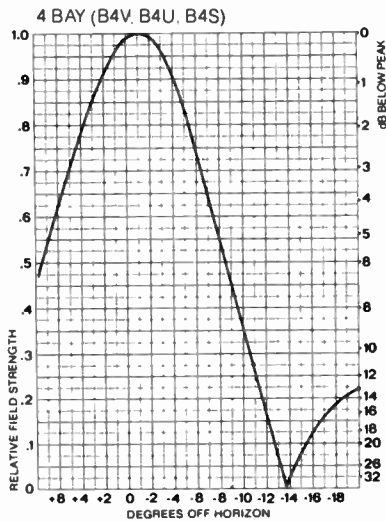


Model B24U and Model B24S

For low and medium power UHF-TV models B24U and for MDS/ITFS models.

Vertical Plane Pattern

Average gain for all 24 bay models is 26.5 (14.2 dB) for -1/2° electrical beam tilt and null fills, including smooth null fill are available.



Height, Weight and Wind Force

	H (ft)	F (lb)	W (lb)
Ch 14-24	50.2	2360	2270
Ch 25-40	44.0	1820	1720
Ch 41-52	38.7	1530	1370
Ch 53-69	33.5	1325	1230
MDS	12.3	217	75
ITFS	10.6	198	66

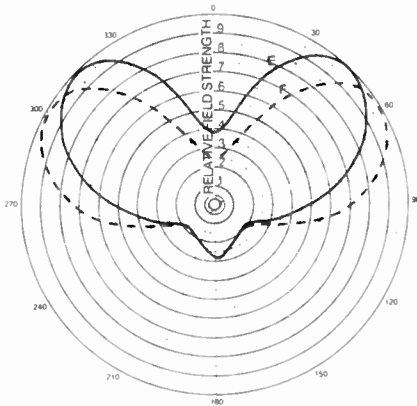
Base Flange Dimensions

CHANNEL	14-24	25-69	MDS/ITFS
O.D. (in)	15.00	12.50	11.00
B.C. (in)	13.00	10.62	9.50
Bolt Size (in)	.87	.75	.75
Dimension t	1.62	1.44	1.56
No. of Bolts	12	12	8

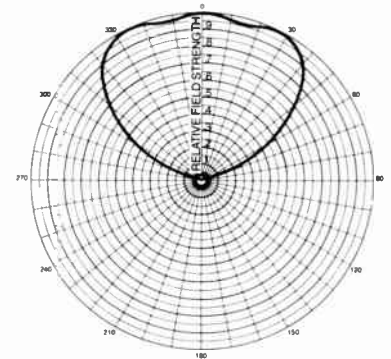
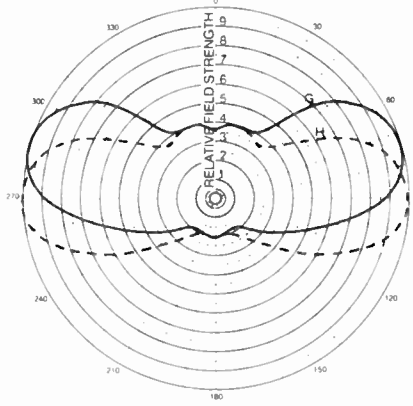
Peak TV Input Power Ratings

B24U(): 3.0kW B24U()M: 15kW B24U()H: 25kW

**PATTERN E & F—
TWO 45° SECTORS COVERAGE**



**PATTERNS G & H—
TWO 45° SECTORS COVERAGE**



PEAK GAIN VALUES

(Average values listed under specifications)

MODEL	POWER GAIN (above dipole)	dB GAIN (above isotrope)
B2VE or F	6.9 (= 8.4 dB)	10.7
B4VE or F	14.1 (= 11.5 dB)	13.7
B6VE or F	21.3 (= 13.3 dB)	15.4
B4UE or F	14.1 (= 11.5 dB)	13.7
B8UE or F	28.2 (= 14.5 dB)	16.7
B16UE or F	56.4 (= 17.5 dB)	19.7
B4SE or F	14.1 (= 11.5 dB)	13.7
B8SE or F	28.2 (= 14.5 dB)	16.7
B16SE or F	56.4 (= 17.5 dB)	19.7

PEAK GAIN VALUES

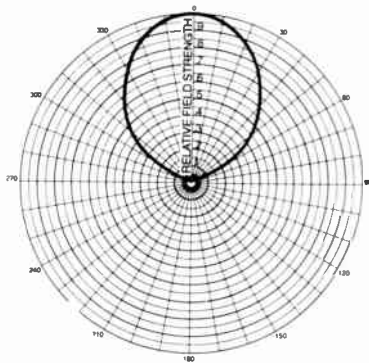
(Average values listed under specifications)

MODEL	POWER GAIN (above dipole)	dB GAIN (above isotrope)
B2VG or H	6.9 (= 8.4 dB)	10.7
B4VG or H	14.1 (= 11.5 dB)	13.7
B6VG or H	21.3 (= 13.3 dB)	15.4
B4UG or H	14.1 (= 11.5 dB)	13.7
B8UG or H	28.2 (= 14.5 dB)	16.7
B16UG or H	56.4 (= 17.5 dB)	19.7
B4SG or H	14.1 (= 11.5 dB)	13.7
B8SG or H	28.2 (= 14.5 dB)	16.7
B16SG or H	56.4 (= 17.5 dB)	19.7

PATTERN S

Horizontal gain 3.5 (5.4dB)

MODEL	PEAK GAIN > DIPOLE	PEAK GAIN > ISOTROPE
B4US B4SS	16.5 (12.2dB)	14.4dB
B8US B8SS	33.0 (15.2dB)	17.4dB
B16US B16SS	66.0 (18.2dB)	20.4dB
B24US B24SS	93.0 (19.7dB)	21.9dB



**PATTERN T
Horizontal gain 5.1 (7.1 dB)**

MODEL	PEAK GAIN > DIPOLE	PEAK GAIN > ISOTROPE
B4UT B4ST	24.0 (13.8dB)	16.0dB
B8UT B8ST	48.0 (16.8dB)	19.0dB
B16UT B16ST	96.0 (19.8dB)	22.0dB
B24UT B24ST	135.3 (21.3dB)	23.5dB

High gain 24 bay models

for low and medium power UHF-TV models
B 24U and for MDS/ITFS models B 24S

MODELS	HORIZONTAL PATTERN (COVERAGE)	PEAK GAIN > DIPOLE	PEAK GAIN > ISOTROPE
B24UO	B24SO	O (360°)	31.9 (15.0dB)
B24UA	B24SA	A (220°)	45.1 (16.5dB)
B24UB	B24SB	B (140°)	66.3 (18.2dB)
B24UC	B24SC	C (80°)	111.4 (20.4dB)
B24UD	B24SD	D (45°)	156.3 (21.9dB)
B24UE/F	B24SE/F	E/F (2-45°)	79.5 (19.0dB)
B24UG/H	B24SG/H	G/H (2-45°)	79.5 (19.0dB)

Refer to Green Section for Addresses and Telephone Numbers.

BRABURY LTD.

Terminal Equipment

T518 Series Video and Pulse Distribution Amplifier

• Extremely high performance • High density packaging • Central power supply or self powered • HDTV bandwidth achievable • Optional plug-in cable equalizer • Compatible with pulse, composite, RGB and subcarrier signals • Differential inputs • Desktop versions available

The T518 offers an extremely high performance means of distributing composite video, pulse, RGB and subcarrier signals.

The series offer plug-in equalizer functions to compensate for cable lengths of up to 150m with front panel HF and LF gain adjustment.

High density packaging enables the use of up to 14, 6 output T518 VDAs into a 19" 3 "U" rack frame powered by a central bulk unregulated power supply of ± 15V at 2.5A each and comprising independent regulation.

ADT557 Audio Distribution Amplifier

• 10 electronically balanced isolated outputs • Transformer coupled balanced input • Front panel access to gain adjustment • Harmonic distortion 0.03% at 0dB • Up to 14 modules in 19" rack width

Designed as a low cost high performance ADA the ADT557 provides 10 electronically balanced isolated outputs from a transformer coupled balanced input in only 25mm (5E) of rack width.

Each ADT557 contains on-board regulators with front panel indication of power as well as access to a gain adjustment control.

Constructed on the industry standard extended Eurocard format, this module is fully rack compatible with other units in the Brabury range and may be used in the CFT 170, CRT 175 Series or CFT 190 card frames.

Amplifiers

VDT518	Video and pulse distribution amplifier 6 output unsupported card	\$152.00
VDT518A	6 output VDA on 5E chassis	172.00
VDT518B	6 output VDA on 5E chassis with front panel access to equalizer adjustments	174.00
ADT557	10 output ADA unsupported Eurocard	164.00
ADT557A	10 output ADA on 5E chassis	202.00

Card Frames for T518 Series and ADT557

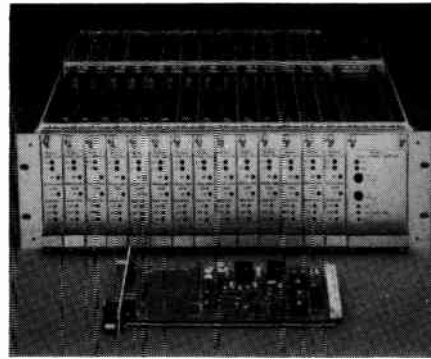
CFT170	3RU high 84E wide card frame for up to 14 x 5E modules + PST600 PSU	\$130.00
CFT175	20E wide portable card frame	193.00
CFT176	40E wide portable card frame	210.00
CFT177	60E wide portable card frame	228.00
CFT190	1RU spacesaver housing with integral PSU for up to 3xEurocard modules	441.00

Power Supplies for T518 Series and ADT557

PST600	14E wide ± 15V, 2.5A bulk PSU for CFT 170 card frame	\$251.00
PST625	10E wide bulk PSU for use with CFT 175 and CFT 176 portable frame	251.00
PST626	15E wide bulk PSU for use with CFT 177 portable frame	251.00

Termination Panels

TPT604	Termination panel for PST600.	\$104.00
TPT640	Termination panel for PST625.	104.00
TPT641	Termination panel for PST626.	104.00
TPT558	ADT557 rear connector assembly for use in CFT 170 card frame	104.00
TPT521	ADT557 rear connector assembly for use in CFT 175 series portable card frame.	104.00
TPT549	ADT557 rear connector assembly for use in CFT 190 "Spacesaver" card frame.	104.00
TPT519	Termination panel for VDT518A or B when used in CFT 170 frame	80.00
TPT520	Termination panel for VDT518A or B when used in portable card frames	104.00
TPT548	Termination panel for VDT518 when used in CFT 190 spacesaver frame	80.00
TPT516	Termination panel for DLT 594 when used in CFT 170 frame	76.00



T518

TPT591	Termination panel for DLT594 when used in CFT 175/6/7 portable frames	\$62.00
TPT559	Termination panel for DLT594 when used in CFT 190 "Spacesaver" frame	62.00

Equalizers for T518 Series

EQT593A	For 0-30m, of PSF 1/7m cable	\$70.00
EQT593B	For 30-65m of PSF 1/7m cable.	70.00
EQT593C	For 0-25m of PSF 1/3m cable.	70.00
EQT593D	For 25-60m of PSF 1/3m cable.	70.00
EQT593E	For 60-90m of PSF 1/3m cable.	70.00
EQT593F	For 0-75m of PSF 1/2m cable.	70.00
EQT593G	For 75-150m of PSF 1/2m cable	70.00

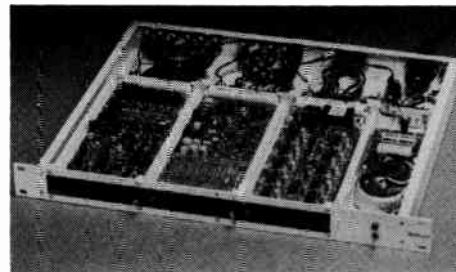
(If uncertain, specify cable length and type when ordering)

Delay Modules for T518 Series

DLT594	5E wide delay module without delay blocks appropriate for use with Matthey or balanced components	\$124.00
DLT594-195	Delay block of 195ns tappable	90.00
DLT594-200	Delay block of 200ns fixed.	94.00
DLT594-500	Delay block of 500ns fixed.	156.00

Blank Panels for T518 Series

BPT595A	5E wide blank panel.	\$14.40
BPT595B	7E wide blank panel.	17.80
BPT595C	10E wide blank panel.	18.40
BPT595D	14E wide blank panel.	21.00



CFT 190

CFT 190 Spacesaver Eurocard Housing

• Designed as an economic solution to the requirement for a compact and yet flexible packaging system for Eurocard modules and their associated back connector assemblies • Frequently no need for complete 3U rack frame systems where space is a limiting factor or distribution needs are minimal.

The CFT 190 comprises a 1RU chassis and PSU with a removable front panel offering access to 3 Eurocard slots into which any of the Brabury modules may be slotted. Similarly the rear termination assemblies are fitted as required in any of the 3 positions behind the appropriate Eurocard module.

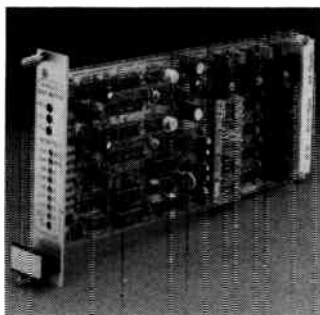
Cards currently available for use in the CFT 190 are as follows:

VDT518 6 output unsupported VDA modules; ADT557 10 output unsupported ADA module; *CMT599 Unsupported analog to component matrix module; TPT548 VDT518 VDA termination panel; TPT549 ADT557 ADA termination panel; TPT596 CMT599 matrix termination panel

*These modules may be configured to suit the application. Four options are available as standard options although other requirements may be accommodated on request.

BRABURY LTD.

Terminal Equipment



CMT599

CMT599 Analog — Component Matrix

- Conversion between R,G,B and Y, R-Y, B-Y (and vice-versa) • Variable configurations and signal amplitudes • External syncs or syncs from Y
- Composite or non-composite outputs

The CMT599 has been designed to satisfy a growing need to accurately convert between R,G,B and Y, R-Y, B-Y component video signals.

Tests have shown that, when working in the analog component domain, relative color channel gain errors as little as 0.1dB are noticeable. The CMT599 has a matrixing accuracy of >0.05dB.

The unit is constructed using the industry standard Eurocard format and is chassis compatible with other units in the Brabury range.

CMT599	2 output per channel unsupported Eurocard matrix.	\$631.00
CMT599A	5E wide 2 output per channel matrix card.	669.00
CMT599B	10E wide 2 output per channel matrix card for use with TPT523.	671.00

(Please specify required configuration for matrix when ordering)

Termination Panels

TPT522	5E wide termination panel for use with CMT599A when used in CRT175/6/7 portable rack frames	\$ 84.00
TPT523	10E wide termination panel for CMT599B when used in CFT175/6/7 portable rack frames	156.00
TPT597	5E wide termination panel for CMT599A when used in CFT170 3RU card frame . . . . .	.84.00
TPT598	10E wide termination panel for CMT599B when used in CFT170 3RU card frame	156.00
TPT596	Termination panel for CFT599 when used in CFT190 "Spacesaver" card frame. . . . .	.84.00

Card Frames

CFT170	3RU high 84E wide card frame for up to 14 X5E modules plus PST600 PSU	\$130.00
CFT175	20E wide portable card frame	193.00
CFT176	40E wide portable card frame	210.00
CFT177	60E wide portable card frame.	228.00
CFT190	1RU "Spacesaver" housing with Integral PSU for 3x Eurocard modules	441.00

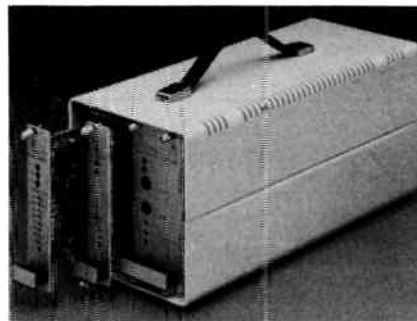
Power Supplies

PST600	14E wide ± 15V, 2.5A bulk PSU for CFT170 card frame	\$251.00
PST625	10E wide bulk PSU for use with CFT175/6 portable frames	251.00
PST626	15E wide bulk PSU for use with CFT177 portable frame	251.00

CFT175 Series Portable Eurocard Housing

- Portable, lightweight and rugged • Appropriate for any Brabury Eurocard module • Available in 3 sizes • Simple modular construction

The CFT175 series has been developed primarily to provide a flexible, portable means of distributing video and/or audio signals in the ENG/EFP/Desktop environments.



CFT175

The range comprises three rugged case sizes equipped with Eurocard frames appropriate to accept the Brabury ADT557 ADA and the VDT518 VDA, complete with accompanying termination panels and a common central power supply.

The modular nature of the system also facilitates the insertion of other Brabury Eurocard modules currently available (CMT599 analog-component matrix), or yet to be introduced.

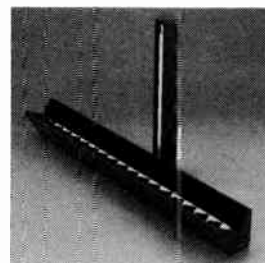
CFT175	20E wide portable card frame	\$193.00
CFT176	40E wide portable card frame	210.00
CFT177	60E wide portable card frame.	228.00

Power Supplies

PST625	10E wide bulk PSU for use with CFT175/6 portable frames	\$251.00
PST626	15E wide bulk PSU for use with CFT177 portable frame	251.00

Termination Panels

TPT640	Termination panel for PST625.	\$104.00
TPT641	Termination panel for PST626.	104.00
TPT520	Termination panel for use with VDT518 VDA when used in portable system	104.00
TPT521	Termination panel for use with ADT557 when used in portable system	104.00
TPT522	Termination panel 5E wide for use with CMT599A in portable system (1 output per channel only) . . . . .	.84.00
TPT523	Termination panel 10E wide for use with CMT599B in portable system (2 outputs per channel)	156.00



T115/123

T115/123 Script Lighting

- Controls light beam width and positioning • No special fixings required
- Three sizes available • Ease of tube replacement • Designed to provide lighting in studio and OB operational areas

The 115 generates an adjustable light beam which may be directed onto control desks and equipment racks and minimizes the effect of light scatter on surrounding monitor displays.

The 123 offers a similar facility but may be fitted flush with solid ceilings where no roof void exists and comprises a row of fins on each hinged cowling, thus enhancing the reduced light scatter effect.

115A	2'	\$361.00
115B	3'	375.00
115C	4'	391.00
123	4' webbed aperture	351.00



MANUFACTURERS ABBREVIATIONS USED IN THIS CATALOG

F—Frezolini Electronics, Inc. GE—General Electric Company L—Leviton LL—Lovel Light Manufacturing, Inc. LTM—LTM Corporation of America MT—Matthews R—Rosco Laboratories, Inc. SL—Strand Lighting ST—Strong International SY—Sylvania (GTE Product Corp.) TH—Thorn EMI Lighting, Inc. WB—Walter Brewer Corp. WK—Wiko Ltd.

KEY & BACK LIGHT

FRESNEL

The family of fresnels are the workhorses of the industry. They provide the art in lighting for the realization of depth, modeling, and to set the mood, which is so important for that interesting picture. All are focusing.



- 3101TV-SL 100/200W 3" MIZAR FOCUSING FRESNEL, with "C" clamp and plug \$268.00
- 3101MP-SL MOTION PICTURE MODEL as above except with Stand Mount, 25' cable and inline 20A crush proof on/off switch and plug 280.00
- 3102TV-SL 500W 3" MIZAR FOCUSING FRESNEL 308.00
- 3102MP-SL MOTION PICTURE MODEL as above except with Stand Mount, 25' cable and inline 20A crush proof on/off switch and plug 322.00
- 1310-SL 4-way Barndoor 41.00
- 1133-SL Gel/Diffusion Frame 15.00
- 1500-SL Safety Cable 9.00
- 1225-SL Scrim, full double 12.00
- 1228-SL Scrim, full single 12.00
- 1227-SL Scrim, half double 12.00
- 1228-SL Scrim, half single 12.00
- 1183-SL Variable Cone 62.00
- 1560-SL Table Stand 33.00

RECOMMENDED LAMPS
MEDIUM BIPOST BASE 2 7/16" / 3 7/16"
L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
ESR-GE	120	100	2900K	1000	CL	\$38.20
ESP-GE	120	150	2800K	1000	CL	35.50
FEV-GE	120	200	3200K	50	CL	32.20



- 3380TV-SL 500/1000W 6" FRESNELITE, with "C" clamp and plug \$205.00
- 3380MP-SL MOTION PICTURE MODEL as above except with Stand Mount, 25' cable with inline 20A crush proof on/off switch and plug \$230.00
- 1406-SL 8-way Barndoor 66.00
- 1108-SL Gel/Diffusion Frame 5.00
- 1500-SL Safety Cable 9.00
- 1350-SL Accessory clip assembly 8.50
- 1332-SL High Hat (snoot) 18.00

RECOMMENDED LAMP
MEDIUM PREFOCUS BASE 2 3/16"
L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
BTL-TH	120	500	2950K	750	CL	\$ 47.00
BTM-TH	120	500	3200K	100	CL	47.00
BTN-TH	120	750	3000K	750	CL	47.00
BTP-TH	120	750	3200K	200	CL	47.00
BTR-TH	120	1000	3200K	250	CL	52.50
FKM-TH	220	650	3200K	100	CL	99.00
FKB-TH	220	650	3000K	750	CL	102.00
FKN-TH	220	1000	3200K	200	CL	99.00
FKD-TH	220	1000	3050K	750	CL	57.00



- 3480TV-SL 1000/2000 8" FRESNELITE, with "C" clamp and plug \$325.00
- 3480MP-SL MOTION PICTURE MODEL as above except with Stand Mount, 25' cable and inline 20A crush proof on/off switch and plug 350.00
- 1408-SL 8-way Barndoor 100.00
- 1110-SL Gel/Diffusion Frame 7.00
- 1500-SL Safety Cable 9.00
- 1358-SL Accessory clip assembly 8.50
- 1333-SL High Hat (snoot) 18.00

RECOMMENDED LAMP
MEDIUM PREFOCUS BASE 2 3/16"
L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
8VT-TH	120	1000	3050K	500	CL	\$70.00
8VV-TH	120	1000	3200K	250	CL	70.00
8VW-TH	120	2000	3200K	300	CL	88.00
CWZ-TH	120	1500	3200K	300	CL	96.00



- 3301TV-SL 500/1000W 6" POLARIS FRESNEL, with "C" clamp and plug \$392.00
- 3301PO-SL 500/1000W 6" POLARIS FRESNEL, pole operated 611.00
- 3301MP-SL 500/1000W 6" POLARIS FRESNEL, stand mount 404.00
- 1300-SL 8-way Rotatable Barndoor 56.00
- 1144-SL Gel/Diffusion Frame 13.00
- 1500-SL Safety Cable 9.00
- 1201-SL Scrim, full double 12.00
- 1202-SL Scrim, full single 12.00
- 1203-SL Scrim, half double 12.00
- 1204-SL Scrim, half single 12.00
- 1123-SL Wireguard 15.00
- 1170-SL 2" Cone 45.00
- 1171-SL 3" Cone 45.00
- 1172-SL 4" Cone 45.00
- 1941-SL 6' Operating Pole 107.00
- 1942-SL 9.3' Operating Pole 112.00
- 1943-SL 12.6' Operating Pole 118.00
- 1944-SL 15.8' Operating Pole 124.00

RECOMMENDED LAMPS
MEDIUM BIPOST BASE 2 1/2"
L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
EGR-TH	120	500	3200K	100	CL	\$50.00
EGR-TH	120	750	3200K	200	CL	70.00
EGT-TH	120	1000	3200K	250	CL	75.00
FKH-TH	220	650	3200K	200	CL	80.00
FKJ-TH	220	1000	3200K	200	CL	92.00

- 06000-BM 1000W, 6" BABY KEG FOCUSING FRESNEL with GPP plug \$358.75
- 06001-BM MOTION PICTURE MODEL as above except with Stand Mount, 25' cable with inline 20A crush proof on/off switch and plug \$362.95
- 58005-BM 4-leaf Barndoor 51.00
- 58010-BM 4-leaf (8-way Barndoor) 91.50
- 49143-BM Gel/Diffusion Frame 22.50
- 49104-BM "C" Clamp 21.75
- 02710-WB Safety Cable 6.50
- 49144-BM Scrim, single 9.50
- 49145-BM Scrim, half single 9.50
- 49146-BM Scrim, double 10.00
- 49147-BM Scrim, half double 10.00
- 10004-BM Snoot 2" dia. opening 23.50
- 10005-BM Snoot 3" dia. opening 23.50
- 10006-BM Snoot 4" dia. opening 23.50
- 02048-BM Replacement socket, medium bi-post floating contact 62.40
- 02049-BM Replacement fresnel lens 18.50
- 02047-BM Replacement socket and lens kit 80.00



KEY & BACK LIGHT

CONTINUED

FRESNEL

RECOMMENDED LAMPS
MEDIUM BIPOST BASE 2 1/2"
L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
EGN-TH	120	500	3200K	100	CL	\$50.00
EGR-TH	120	750	3200K	200	CL	70.00
EGT-TH	120	1000	3200K	250	CL	75.00
FKH-TH	220	650	3200K	200	CL	80.00
FKJ-TH	220	1000	3200K	200	CL	92.00



3501TV-SL	1000/2000W	10"	CASTOR	2000W	FRESNEL, with "C" clamp and plug	\$675.00
3501PO-SL	1000/2000W	10"	CASTOR	2000W	FRESNEL, pole operated	861.00
3501MP-SL	1000/2000W	10"	CASTOR	2000W	FRESNEL, stand mount	807.00
1301-SL	8-way	Rotatable	Barndoor			79.00
1145-SL	Gel/Diffusion	Frame				25.00
1500-SL	Safety	Cable				9.00
1208-SL	Scrim,	full	double			16.00
1209-SL	Scrim,	full	single			16.00
1210-SL	Scrim,	half	double			16.00
1211-SL	Scrim,	half	single			16.00
1125-SL	Wireguard					19.00
1173-SL	4"	Cone				96.00
1174-SL	6"	Cone				96.00
1175-SL	10"	Cone				96.00
1941-SL	6'	Operating	Pole			107.00
1942-SL	9.3'	Operating	Pole			112.00
1943-SL	12.6'	Operating	Pole			118.00
1944-SL	15.8'	Operating	Pole			124.00

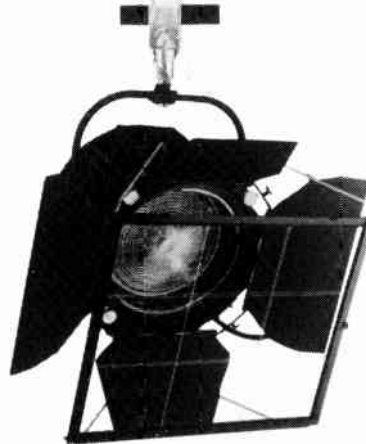
RECOMMENDED LAMPS
MOGUL BIPOST BASE 5"
L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
CYV-TH	120	1000	3200K	250	CL	\$ 90.00
CXZ-TH	120	1500	3200K	300	CL	115.00
CYX-TH	120	2000	3200K	400	CL	120.00
FKK-TH	220	2000	3200K	400	CL	135.00

14006-BM	2000W, 10"	JUNIOR FOCUSING	FRESNEL with GPP plug			\$503.25
14005-BM	MOTION PICTURE MODEL	as above except with Stand Mount, 25' cable with fixture mounted 20A switch and plug				\$509.00
58014-BM	4-leaf (8-way)	Barndoor				114.00
49369-BM	Gel/Diffusion	Frame				23.75
49100-BM	"C" Clamp					28.95
02710-WB	Safety	Cable				6.50
10012-BM	Snoot 6" dia.	front opening				68.50
10013-BM	Snoot 8" dia.	front opening				68.50
10014-BM	Snoot 10" dia.	front opening				68.50
49148-BM	Scrim,	single				11.50
49149-BM	Scrim,	half	single			11.50
49150-BM	Scrim,	double				13.50
49151-BM	Scrim,	half	double			13.50
09343-BM	Replacement	Socket Brass, terminal side				13.50
09344-BM	Replacement	Socket Brass, clamp side				10.50

RECOMMENDED LAMPS
MOGUL BIPOST BASE 5"
L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
CYV-TH	120	1000	3200K	250	CL	\$ 90.00
CXZ-TH	120	1500	3200K	300	CL	115.00
CYX-TH	120	2000	3200K	400	CL	120.00
FKK-TH	220	2000	3200K	400	CL	135.00



3601TV*-SL	5000W	12"	POLLUX FRESNEL, with "C" clamp and plug			\$1022.00
3601PO*-SL	5000W	12"	POLLUX FRESNEL, pole operated			1239.00
3601MP*-SL	5000W	12"	POLLUX FRESNEL, stand mount			1128.00
*Units include wireguard.						
1302-SL	8-way	Rotatable	Barndoor			118.00
1146-SL	Gel/Diffusion	Frame				31.00
1147-SL	Outrigger	Gel/Diffusion	Frame			236.00
1500-SL	Safety	Cable				9.00
1212-SL	Scrim,	full	double			34.00
1213-SL	Scrim,	full	single			34.00
1214-SL	Scrim,	half	double			34.00
1215-SL	Scrim,	half	single			34.00
1176-SL	6"	Cone				124.00
1177-SL	9"	Cone				124.00
1178-SL	11"	Cone				124.00
1941-SL	6'	Operating	Pole			107.00
1942-SL	9.3'	Operating	Pole			112.00
1943-SL	12.6'	Operating	Pole			118.00
1944-SL	15.8'	Operating	Pole			124.00

RECOMMENDED LAMPS
MOGUL BIPOST BASE 6 1/2"
L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
DPY-TH	120	5000	3200K	500	CL	\$535.00
CP29-TH	220	5000	3200K	500	CL	525.00

19005-BM	5000W, 13"	SENIOR FOCUSING	FRESNEL, with GPP plug			\$857.50
19004-BM	MOTION PICTURE MODEL	as above except with Stand Mount, 25' cable with fixture mounted 20A switch and plug				\$887.50
58022-BM	4-leaf (8-way)	Barndoor				172.60
49391-BM	Gel/Diffusion	Frame				27.50
49105-BM	"C" Clamp					28.95
02710-WB	Safety	Cable				6.50
10022-BM	Snoot 8" dia.	front opening				86.00
10023-BM	Snoot 10" dia.	front opening				86.00
10024-BM	Snoot 12" dia.	front opening				86.00
49152-BM	Scrim,	single				15.00
49153-BM	Scrim,	half	single			15.00
49154-BM	Scrim,	double				18.50
49155-BM	Scrim,	half	double			18.50

RECOMMENDED LAMP
MOGUL BIPOST BASE 6 1/2"
L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
DPY-TH	120	5000	3200K	500	CL	\$535.00
CP-29	220	5000	3200K	500	CL	525.00



3701TV*-SL	10,000W	14"	BAMBINO, with "C" clamp and plug			\$2099.00
3701PO*-SL	10,000W	14"	BAMBINO, pole operated			2372.00
3701MP*-SL	10,000W	14"	BAMBINO, stand mount			2194.00
*Add "LA" to specify lens door for drop-in accessories. Units include wireguard.						
1302-SL	8-way	Rotatable	Barndoor			118.00
1146-SL	Gel/Diffusion	Frame				31.00
1147-SL	Outrigger	Gel/Diffusion	Frame			236.00
1500-SL	Safety	Cable				9.00
1212-SL	Scrim,	full	double			34.00
1213-SL	Scrim,	full	single			34.00
1214-SL	Scrim,	half	double			34.00
1215-SL	Scrim,	half	single			34.00
1176-SL	6"	Cone				124.00
1177-SL	9"	Cone				124.00
1178-SL	11"	Cone				124.00
1941-SL	6'	Operating	Pole			107.00
1942-SL	9.3'	Operating	Pole			112.00
1943-SL	12.6'	Operating	Pole			118.00
1944-SL	15.8'	Operating	Pole			124.00

RECOMMENDED LAMP
MOGUL BIPOST BASE 6 1/2"
L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
DTY-TH	120	10,000	3200K	400	CL	\$995.00
CP83-TH	220	10,000	3200K	400	CL	995.00

BASE & FILL LIGHT



SCOOP

These fixtures give the proper soft light source and intensity to allow the camera lens aperture to operate at a desired f-stop setting to create that brilliant picture with creative depth and sharpness. All are focusing for absolute footcandle control.

BASE & FILL LIGHT

CONTINUED

SCOOP

- 02120-WB** 14" 1000W FOCUSING SCOOP, with "C" clamp and plug \$250.00
- 01120-WB** MOTION PICTURE MODEL as above except with Stand Mount, 25' cable and inline 20A crush proof on/off switch and plug 255.00
- 01129-WB** Gel/Diffusion Frame 35.00
- 02710-WB** Safety Cable 6.50
- 08806-L** Replacement Socket, medium prefocus base 15.00

RECOMMENDED LAMP
 MEDIUM PREFOCUS BASE
 3 1/2" L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
EGC-GE	120	500	3200K	150	CL	\$64.90
EGF-GE	120	750	3200K	500	CL	72.80
EGK-TH	120	500	3200K	400	FR	70.00
EWE-TH	220	1000	3200K	250	CL	71.50

- 02124-WB** 14", 2000W FOCUSING SCOOP with "C" clamp and plug \$255.00
- 01124-WB** MOTION PICTURE MODEL as above except with Stand Mount, 25' cable and inline 20A crush proof on/off switch and plug 265.00
- 01129-WB** Gel/Diffusion Frame 35.00
- 02710-WB** Safety Cable 6.50
- 08808-L** Replacement Socket, mogul screw base 13.00

RECOMMENDED LAMP
 MOGUL SCREWBASE 5 1/4"
 L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
1500Q/CL/48-SY	120	1500	3050K	2000	CL	\$176.50
BWL-TH	120	2000	3200K	500	FR	140.00

- 02135-WB** 18", 2000W FOCUSING SCOOP with "C" clamp and plug \$265.00
- 01135-WB** MOTION PICTURE MODEL as above except with Stand Mount, 25' cable and inline 20A crush proof on/off switch and plug 275.00
- 01139-WB** Gel/Diffusion Frame 40.00
- 02710-WB** Safety Cable 6.50
- 08808-L** Replacement Socket, mogul screw base 12.00

RECOMMENDED LAMP
 MOGUL SCREWBASE 9 1/2"
 L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
DSE-TH	120	1000	3200K	750	FR	\$ 54.00
DSF-TH	120	1500	3200K	500	FR	62.00
BWL-TH	120	2000	3200K	500	FR	140.00



- 4520TV-SL** 1000/1500 BROAD, with "C" clamp and plug \$231.00
- 4520MP-SL** Same, stand mount 231.00
- 4521-SL** Same, for 220 or 240V operation 262.00
- 1344-SL** 4-way Barndoor 68.00
- 1165-SL** Outrigger color/diffuser frame 79.00

RECOMMENDED LAMP
 DOUBLE ENDED 6 9/16"
 L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
FFT-TH	120	1000	3200K	500	CL	\$56.00
FGT-GE	120	1500	3200K	400	FR	75.00
EKM-TH	220	1000	3200K	200	CL	31.50
P2/12-TH	220	1250	3200K	200	CL	36.00

- 48007-BM** 1000W FOCUSING SINGLE BROAD with GPP plug \$259.95
- 48006-BM** MOTION PICTURE MODEL as above except with stand mount, 25' cable and fixture mounted 20A switch and plug \$259.95
- 48015-BM** 4-Way Barndoor 88.75
- 48013-BM** Gel/Diffusion Frame 15.75
- 02710-WB** Safety Cable 6.50
- 49104-BM** "C" Clamp 21.75
- 08815-L** Replacement Socket (2 required), recessed single contact 11.00/each

RECOMMENDED LAMP
 DOUBLE ENDED 4 11/16"
 M.O.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
FDN-TH	120	500	3200K	400	FR	\$32.00
EMD-TH	120	750	3200K	400	FR	40.00
FHM-TH	120	1000	3200K	400	FR	32.00
FWM-GE	120	1000	3200K	400	FR	42.00

- 48007/15-BM** 1500W FOCUSING SINGLE BROAD with GPP plug \$277.65
- 48006/15-8M** MOTION PICTURE MODEL as above except with stand mount, 25' cable and fixture mounted 20A switch and plug \$277.65
- 48015-BM** 4-Way Barndoor 88.75
- 48013-8M** Gel/Diffusion Frame 15.75
- 02710-WB** Safety Cable 6.50
- 49104-BM** "C" Clamp 21.75
- 08815-L** Replacement socket (2 required), recessed single contact \$13.50/each

RECOMMENDED LAMP
 DOUBLE ENDED 6 9/16"
 L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
FFT-TH	120	1000	3200K	500	CL	\$56.00
FGT-GE	120	1500	3200K	400	FR	75.00
EKM-TH	220	1000	3200K	200	CL	31.50
P2/12-TH	220	1250	3200K	200	CL	36.00

LIGHT HANGERS



Pole



Telescoping

WBC manufacturers the only light hanger made in the USA that is adjustable from the studio floor. Extends 5', 8', 10', & 15'. Supports 0-100 lbs.

TELESCOPING HANGER

- 02740-WB** *Floor adjustable telescoping hanger, 30" folded, extends 5', supports 0-200 lbs. \$585.00
- 02742-WB** *Floor adjustable telescoping hanger, 37 1/2" folded, extends 8', supports 0-200 lbs. 600.00
- 02744-WB** *Floor adjustable telescoping hanger, 42" folded, extends 10', supports 0-200 lbs. 610.00
- 02746-WB** *Floor adjustable telescoping hanger, 54" folded, extends 15', supports 0-200 lbs. 640.00

- 02750-WB** Battery operated motor assembly with activator pole and battery charger \$360.00
- 04130-WB** 5' 2000W extension cable **41.75
- 04131-WB** 8' 2000W extension cable **45.00
- 04132-WB** 10' 2000W extension cable **47.00
- 04133-WB** 15' 2000W extension cable **52.00

POLE HANGER

- 02771-WB** *5' Sur-Lok Pole Hanger \$245.00
- \$6.00 packing
- 02774-WB** *8' Sur-Lok Pole Hanger 265.00
- \$12.00 crating 1 to 3 pieces
- 02776-WB** *10' Sur-Lok Pole Hanger 280.00
- \$15.00 crating 1 to 3 pieces
- 02781-WB** *15' Sur-Lok Pole Hanger 320.00
- \$20.00 crating 1 to 3 pieces
- 04138-WB** 10' 6" 2000W extension cable **47.50
- 04139-WB** 15' 6" 2000W extension cable **52.50
- 04140-WB** 20' 6" 2000W extension cable **57.75
- 04141-WB** 30' 6" 2000W extension cable **67.75

Note: *Includes stirrup, safety cable, and other needed accessories.

**Add \$16.00 per cable for NEMA L520 Twist lock



SOFTLIGHT

Used for virtually shadowless fill light and base light. Fabricated from aluminum for easy movement.

- 01185-WB** 1000/4000W FEATHERLITE SUPER SOFTLIGHT with 4, 20A fixture mounted switches, 1 1/8" stud-stand mount, and two 20A pigtailed with Locking Pin Plugs \$785.00
- 04074-WB** 20A, 25' cables with female 120V pin plug (2 required) 65.00
- 01186-WB** Gel/Diffusion Frame 60.00
- 386021-MT** Studio stand low, folded 44", extended 8' 6" 295.00
- 02710-WB** Safety Cable 6.50
- 49100-8M** "C" Clamp 28.95
- 08815-L** Replacement Socket (8 required), recessed single contact 13.50/each
- 08902-L** Replacement Switch 9.00

RECOMMENDED LAMP
 DOUBLE ENDED 4 11/16"
 M.O.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
FCM-TH	120	1000	3200K	400	CL	\$ 30.00
EMF-TH	220	800	3200K	200	CL	37.50



- 4352TV-SL** 1000/1500W Arturo softlight for hanging \$428.00
- 4352PO-SL** 1000/1500W Arturo softlight pole-operated 667.00
- 4352MP-SL** 1000/1500W Arturo softlight stand mount 450.00
- 4353TV-SL** 1500/3000W Arturo softlight for hanging 667.00



BASE & FILL LIGHT

CONTINUED

4353PO-SL 1500/3000W Arturo softlight pole-operated	\$ 883.00
4353MP-SL 1500/3000W Arturo softlight stand mount	695.00
4356TV-SL 4000/6000W Arturo softlight for hanging	1272.00
4356PO-SL 4000/6000W Arturo softlight pole-operated	1489.00
4356MP-SL 4000/6000W Arturo softlight stand mount	1428.00

Note: 4356 is available with two inputs; add suffix "2"
Furnished with matte white bounce reflector

4322TV-SL 1000/1500W Arturo softlight for hanging	\$ 428.00
4322PO-SL 1000/1500W Arturo softlight pole-operated	667.00
4322MP-SL 1000/1500W Arturo softlight stand mount	450.00
4323TV-SL 1500/3000W Arturo softlight for hanging	667.00
4323PO-SL 1500/3000W Arturo softlight pole-operated	883.00
4323MP-SL 1500/3000W Arturo softlight stand mount	695.00
4326TV-SL 4000/6000W Arturo softlight for hanging	1272.00
4326PO-SL 4000/6000W Arturo softlight pole-operated	1489.00
4326MP-SL 4000/6000W Arturo softlight stand mount	1428.00

Note: 4326 is available with two inputs; add suffix "2"
Furnished with silver alzak reflector

1162-SL Diffusion frame for 4322, 4352	\$ 21.00
1233-SL Eggcrate for 4322, 4352	129.00
1163-SL Diffusion frame for 4323, 4353	50.00
1234-SL Eggcrate for 4323, 4353	119.00
1164-SL Diffusion frame for 4326, 4356	73.00
1235-SL Eggcrate for 4326, 4356	142.00
1500-SL Safety Cable	9.00

RECOMMENDED LAMP
DOUBLE ENDED 6^{9/16}"

M.O.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
FFT-TH	120	1000	3200K	500	CL	\$56.00
FDB-TH	120	1500	3200K	400	CL	58.00
EKM-TH	220	1000	3200K	200	CL	31.50
P2/12-TH	220	1250	3200K	200	CL	36.00

CYCLORAMA AND BACKGROUND LIGHTS

CYC LIGHTS

These units are available in a variety of configurations for up to 4 color cyclorama, background, set illumination and color blending. Grid or floor mounting are available with a full range of mounting hardware for any type of studio installation requirement.

(Fixtures for single and four light systems listed. Other configurations available upon request.)



5911-SL Iris 1, one light cyc light	\$ 311.00
5912-SL Iris 2, two-light cyc light	611.00
5913-SL Iris 3, three-light cyc light	862.00

5914-SL Iris 4, four-light cyc light	\$ 1087.00
5915-SL Mini Iris cyc light (color frame not included)	231.00
5901-SL Iris 1, one-light cyc light for 220 or 240V operation	415.00
5902-SL Iris 2, two-light cyc light for 220 or 240V operation	764.00
5903-SL Iris 3, three-light cyc light for 220 or 240V operation	1015.00
5904-SL Iris 4, four-light cyc light for 220 or 240V operation	1233.00
5905-SL Mini Iris cyc light for 220 or 240V operation (color frame not included)	295.00

Iris cyc lights are available in pole-operated versions.

1151-SL Additional color frame for Iris cyc lights	30.00
1155-SL Outrigger color frame for Mini Iris cyc light	79.00
1500-SL Safety cable	9.00

RECOMMENDED LAMP
DOUBLE ENDED 6^{9/16}"
M.O.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
FFT-TH	120	1000	3200K	500	CL	\$56.00
FDB-TH	120	1500	3200K	400	CL	58.00
FGT-GE	120	1500	3200K	200	FR	75.00
P2/7-TH	220	1000	3200K	400	CL	31.50
P2/12-TH	220	1250	3200K	400	CL	36.00



25013-8M ONE LIGHT CYC LIGHT 1000W with GPP Plug	\$ 142.00
25013/15-BM ONE LIGHT CYC LIGHT 1500W with GPP Plug	158.30
25050-BM Extended Holder, One Light	68.75
25063-BM "C" Clamp and Yoke Hanger Assembly for One Light CYC	40.75
02208-WB "C" Clamp and Yoke Hanger Assembly for Two One Light CYCs (Used in 4-circuit system)	45.00
25051-BM Gel Frame	18.75
02710-WB Safety Cable (1 required)	6.50
25018-BM FOUR LIGHT, FOUR CIRCUIT CYC LIGHT 1000/4000W with GPP Plug	384.00
25018/15-BM FOUR LIGHT, FOUR CIRCUIT CYC LIGHT 1500/6000W with GPP Plug	400.00
25050-BM Extended Holder, (one required)	68.75
25060-BM Extended Holder, Three Light (one required)	130.00
25053-BM "C" Clamp and Hanger Assembly (Pair)	67.00
08815-L Replacement Socket (2 required), recessed single contact	13.50

RECOMMENDED LAMPS DOUBLE ENDED
4^{11/16}" M.O.L. TUNGSTEN-HALOGEN QUARTZ
(Use with 1000W Version Only)

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
FDN-TH	120	500	3200K	400	FR	\$32.00
EMD-TH	120	750	3200K	400	FR	40.00
FHM-TH	120	1000	3200K	400	FR	32.00
FWM-GE	120	1000	3200K	400	FR	42.00

RECOMMENDED LAMPS DOUBLE ENDED
6^{9/16}" M.O.L. TUNGSTEN-HALOGEN QUARTZ
(Use with 1500W Version Only)

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
FFT-TH	120	1000	3200K	500	CL	\$56.00
FGT-GE	120	1500	3200K	200	FR	75.00
P2/7-TH	220	1000	3200K	400	CL	31.50
P2/12-TH	220	1250	3200K	400	CL	36.00

EFFECTS PROJECTORS

FOLLOW SPOTS



STRONG TROUPERETTE III® features easy-to-operate, high-efficiency, quartz-halogen, high intensity light source. Variable Focal Length Lens System. Six-filter color boomerang. Lightweight for ease in trouping.

45003-ST STRONG QUARTZ TROUPERETTE III	\$ 1100.00
FEL-TH 120V, 1000W, 3200K quartz lamp	52.00



STRONG XENON SUPER TROUPER® features easy-to-operate, one-touch ignition. High-efficiency xenon lamphouse Adjustable output power supply. Variable Focal Length Lens System. Six-filter color boomerang.

83070-ST XENON SUPER TROUPER with lamp	\$9350.00
L5470-ST Replacement 2000W xenon lamp	825.00



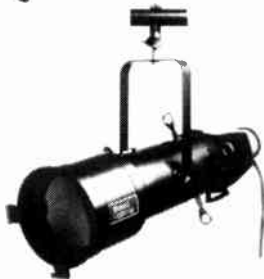
EFFECTS PROJECTORS

CONTINUED

2212



2123



ELLIPSOIDAL

Used for background special effects. Will project rectangles, triangles, and most any combination of straight edges. Also, will project patterns. The ellipsoidal can be purchased with an iris to control the diameter of the beam.

FIXEO FOCUS

2204-SL	4.5" x 6.5" P.C. lenses	\$345.00
2209-SL	6" x 9" P.C. lenses	345.00
2212-SL	6" x 12" P.C. lenses	345.00
2213-SL	As above (2212) plus iris	450.00
2216-SL	6" x 16" P.C. lenses	345.00
2217-SL	As above (2216) plus iris	450.00
2212-SL	6" x 12" P.C. lens	345.00
2111-SL	As above (2112) plus iris	450.00
2113-SL	8" x 13" P.C. lens	485.00
2114-SL	As above (2113) plus iris	560.00
2123-SL	10" x 23" P.C. lens	685.00
2124-SL	As above (2123) plus iris	720.00
1108-SL	Color frame for 4.5" and 6" units	5.00
1110-SL	Color frame for 8" units	7.00
1112-SL	Color frame for 10" units	9.00
1332-SL	High hat for 4.5" and 6" units	18.00
1333-SL	High hat for 8" units	18.00
1336-SL	High hat for 10" units	23.00
1342-SL	Pattern holder	11.00
1352-SL	Set of 6 patterns	21.00
1354-SL	Iris kit	105.00

SEE LAMP SELECTION FOLLOWING
VARIABLE FOCUS ELLIPOSIDAL
#2206 NEXT COLUMN



2205-SL	4.5" VARIABLE-FOCUS LEKOLITE	\$225.00
1105-SL	Color frame	5.50
1331-SL	High hat	18.00
1345-SL	Pattern holder	16.00
1352-SL	Set of 6 patterns	21.00
1355-SL	Iris kit	105.00

RECOMMENDED LAMPS
MINI-CAN SCREWBASE 1 3/8" to 2"
L.C.L. TUNGSTEN-HALOGEN QUARTZ

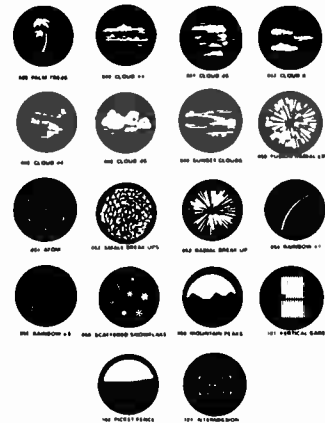
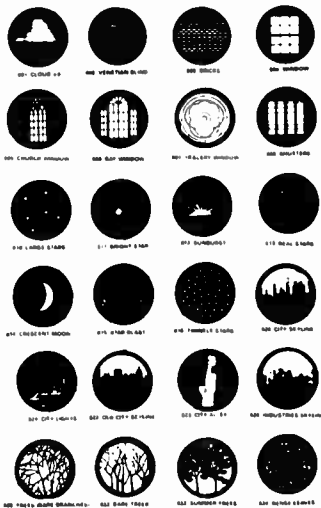
ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
150Q/CL-GE	120	150	2900K	2000	CL	\$25.00
EHT-GE	120	250	2950K	2000	CL	25.00
Q400CL/MC-GE	120	400	2950K	2000	CL	41.50
EVR-GE	120	500	2950K	2000	CL	35.65



2206-SL	6" VARIABLE FOCUS LEKOLITE	\$385.00
1108-SL	Color frame	5.00
1332-SL	High hat	18.00
1346-SL	Pattern holder	16.00
1352-SL	Set of 6 patterns	21.00
1356-SL	Iris kit	105.00

RECOMMENDED LAMP
MEDIUM TWO-PIN
BASE 2 3/8" L.C.L.
TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
EHC-TH	120	500	3200K	300	CL	\$50.00
EHF-TH	120	750	3200K	300	CL	58.00
EHG-TH	120	750	3200K	2000	CL	58.00
FEL-TH	120	1000	3200K	300	CL	52.00
FEP-TH	220	1000	3200K	300	CL	60.00



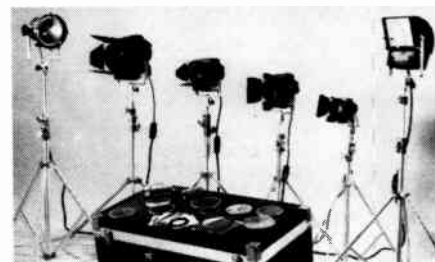
ELLIPSOIDAL DESIGNER PATTERNS

\$9.00

Select from over 100 precision patterns. The inexpensive way to accent your picture, theme, or mood. These patterns will fit any standard brand of ellipsoidal fixture. When necessary, the special heat resistant metal can be cut to size with scissors to fit most pattern holders.

CUSTOM PATTERNS from camera ready art
(first pattern) \$109.00
ASK FOR COMPLETE PATTERN BROCHURE

LIGHTING KITS



LTM KITS are generally used for smaller sets which require highly controlled light. Examples: food, glassware, close-up glamour shots, small parts, and videography of model creations.

FULL SPECTRUM KIT-LTM

- 1- Pepper 100
 - 1- Pepper 200
 - 1- Pepper 420
 - 1- Pepper 400 Soft Light
 - 1- Pepper 650
 - 1- Pepper 650 Flood
 - 4- Four-way Barndoors
 - 4- Hinged Gel Frames
 - 3- Fiber Gel Holders w/Filter Pak
 - 4- Four Piece Set of Diffusion
 - 1- 100 Pepper Snoot
 - 1- 200 Pepper Snoot
 - 1- 400 Soft Gel Frame
 - 1- #400 Egg Crate
 - 1- Pepper 100 Bulb (ESR)
 - 1- Pepper 200 Bulb (FEV)
 - 1- Pepper 400 Soft Bulb (FDA)
 - 1- Pepper 420 Bulb (EKB)
 - 2- Pepper 650 Bulbs (DYS)
 - 2- Light Pepper States (Stands)
 - 2- Medium Pepper States (Stands)
 - 1- Three Inch Baby Plate
 - 1- Three Inch "C" Clamp w/3/8" Pin
 - 1- Six Inch "C" Clamp w/two 3/8" Pin
 - 1- Gaffer Grip w/3/8" Pin
 - 1- Pepperella (Umbrella)
 - 1- Pepperella Adapter
 - 1- Net Set Complete
- Custom Dealer Kit Case w/Wheels & Sign \$3102.00



LIGHTING KITS

CONTINUED

LIGHT RED PEPPER PAK-LTM

- 3— Pepper 650
- 3— 4-way Barndoors
- 2— Full Single, Double, Double/Double Scrim
- 1— Half Single, Double, Double/Double Scrim
- 1— Fiber Gel Holder w/Filter Pak
- 3— Medium Pepper Stakes
- 3— DYS Bulbs
- 1— Custom Case (Red) **\$1665.00**

GREEN PEPPER PAK-LTM

- 4— Pepper 420
- 4— 4-way Barndoors
- 2— Full Single & Double Scrim
- 1— Full Double/Double Scrim
- 1— Half Single & Double Scrim
- 1— Fiber Gel Holder w/Filter Pak
- 4— Medium Pepper Stakes
- 4— EKB Bulbs
- 1— Custom Case (Green) **\$1797.00**

LIGHT GREEN PEPPER PAK-LTM

- 3— Pepper 420
- 3— 4-way Barndoors
- 2— Full Single & Double Scrim
- 1— Half Single & Double Scrim
- 1— Fiber Gel Holder w/Filter Pak
- 3— Medium Pepper Stakes
- 3— EKB Bulbs
- 1— Custom Case (Green) **\$1432.00**

CYAN PEPPER PAK-LTM

- 2— Pepper 420
- 2— Pepper 100
- 4— 4-way Barndoors
- 3— Full Single Scrim
- 3— Full Double Scrim
- 1— Full Double/Double Scrim
- 2— Half Double Scrim
- 1— Half Single Scrim
- 2— Fiber Gel Holders w/Filter Pak
- 2— Medium Pepper Stakes
- 2— Light Pepper Stakes
- 2— EKB Bulbs
- 2— FEV Bulbs
- 1— Custom Case (Cyan) **\$1828.00**

BLUE GREEN PEPPER PAK-LTM

- 4— Pepper 200
- 4— 4-way Barndoors
- 2— Full Single & Double Scrim
- 1— Half Single & Double Scrim
- 1— Fiber Gel Holder w/Filter Pak
- 4— Light Pepper Stakes
- 4— FEV Bulbs
- 1— Custom Case (Green) **\$1604.00**

LIGHT BLUE GREEN 3000 PAK-LTM

- 3— Pepper 200
- 3— 4-way Barndoors
- 1— Full Single & Double Scrim
- 1— Half Single & Double Scrim
- 3— ESS (250 Watt, 3000K, 2000 Hour Bulb)
- 3— Medium Pepper Stakes
- 1— Custom Case (Green) **\$1344.00**

BLUE PEPPER PAK-LTM

- 4— Pepper 100
- 4— 4-way Barndoors
- 2— Full Single & Double Scrim
- 1— Full Double/Double Scrim
- 1— Half Single & Double Scrim
- 1— Fiber Gel Holder w/Filter Pak
- 4— Light Pepper Stakes
- 2— ESR Bulbs
- 2— FEV Bulbs
- 1— Custom Case (Blue) **\$1454.00**

LIGHT BLUE PEPPER PAK-LTM

- 3— Pepper 100
- 3— 4-way Barndoors
- 3— Light Pepper Stakes
- 3— FEV Bulbs
- 1— Custom Case (Blue) **\$1135.00**

Century Kits are used for Industrial-Commercial work and documentation. Example: meetings, larger areas of people, manufactured goods, showrooms, a must for TV commercials.

CENTURY KIT I-SL

- 1051 Fitted Case with:
- 3— 4500MP Pulsars
- 3— 1310 4-leaf Barndoors
- 1— 1225 Full double scrim
- 1— 1226 Half double scrim
- 1— 1227 Full single scrim
- 1— 1228 Half single scrim
- 3— DYS 600W lamps
- 3— 1529 Pulsar stands **\$1120.00**

CENTURY KIT II-SL

- 1052 Fitted Case Complete with:
- 2— 4501MP lanebeam 650
- 2— 1230 Accessory Holder
- 2— 1324 4-leaf Barndoor
- 1— 1216 Double Scrim
- 1— 1217 Single Scrim
- 2— 1529 Stand
- 1— 1978 Case **\$811.00**

CENTURY KIT III-SL

- 1053 Fitted Case with:
- 3— 4501MP lanebeam 650
- 2— 1230 Accessory holders
- 2— 1324 4-leaf Barndoor
- 1— 1216 Double Scrim
- 1— 1217 Single Scrim
- 3— 1530 Stands **\$1028.00**

CENTURY KIT IV-SL

- 1054 Fitted Case with:
- 2— 4501MP lanebeam 650
- 2— 1230 Accessory holders
- 2— 1324 4-leaf Barndoors
- 1— 1216 Double Scrim
- 1— 1217 Single Scrim
- 2— 4801MP Mini Fill 1000
- 4— 1530 Stands **\$1339.00**

CENTURY KIT V-SL

- 1055 Fitted Case with:
- 2— lanebeam 1000
- 2— 1230 Accessory holders
- 2— 2-1324 4-leaf barndoors
- 1— 1216 Double scrim
- 1— 1217 Single scrim
- 3— 4801MP Mini Fill 1000
- 1— 1963 Gaffer grip with 5/8" stud
- 4— 1535 Stands **\$1589.00**

CENTURY KIT VI-SL

- 1056 Fitted Case with:
- 4— lanebeam 650
- 4— 1230 Accessory holders
- 4— 1324 Barndoors
- 2— 1216 Double scrim
- 2— 1217 Single scrim
- 4— 1535 Stands **\$1494.00**

CENTURY KIT VII-SL

- 1057 Fitted Case with:
- 4— 4503MP lanebeam 1000
- 4— 1230 Accessory holders
- 4— 1324 Barndoors
- 2— 1216 Double scrim
- 2— 1217 Single scrim
- 4— 1535 Stands **\$1494.00**

CENTURY KIT VIII-SL

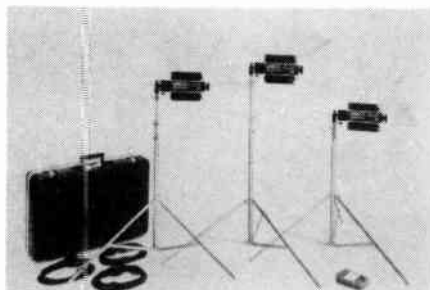
- 1058 Fitted Case Complete with:
- 3— 4503MP lanebeam 1000
- 2— 1230 Accessory holder
- 2— 1324 4-leaf Barndoor
- 1— 1216 Double scrim
- 1— 1217 Single scrim
- 3— 1529 Stand
- 1— 1978 Case **\$1028.00**

CENTURY KIT IX-SL

- 1059 Fitted Case Complete with:
- 2— 4503MP lanebeam 1000
- 2— 1230 Accessory holders
- 2— 1324 4-leaf Barndoor
- 1— 1216 Double scrim
- 1— 1217 Single scrim
- 2— 1530 Stands
- 1— 1979 Case **\$811.00**

CENTURY KIT XI-SL

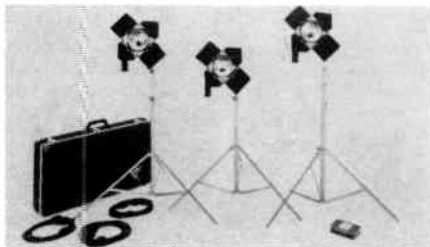
- 1060 Fitted Case with:
- 2— 4505MP lanebeam 2000
- 2— 1325 4-leaf Barndoor
- 1— 1221 Double scrim
- 1— 1222 Single scrim
- 1— 1223 Half double scrim
- 1— 1224 Half single scrim
- 2— 1535 Stands **\$1311.00**



LOWEL KIT'S are used when lighterweight equipment is required and a maximum of smaller portable grip accessories are desired. Example: Individuals, portraiture, and products.

TRANS KIT-LL

- T1-92M
- 3— Tota-lights, 16' cables (less lamps) T1-10
- 3— Tota-brellas T1-25
- 3— Omni-stands O1-33
- 1— Tota-lampak T1-61
- 1— Case TO-87 **\$770.00**



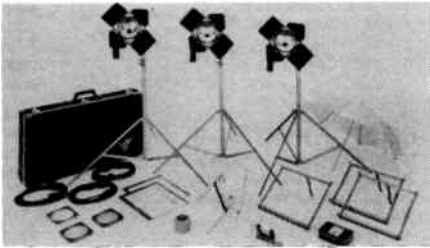
ACTION KIT-LL

- O1-92
- 3— Omni lights, 16' cable, #1 reflector (less lamps) O1-10
- 3— Omni barndoors O1-20
- 3— Omni stands O1-33
- 1— Omni lampak O1-61
- 1— Case TO-84 **\$950.00**



LIGHTING KITS

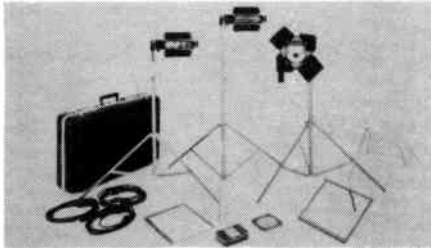
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OMNI 3 KIT-LL

- 01-93**
 3— Omni-lights, 16' cable, #1 reflector (less lamps) 01-10
 3— Omni-barndoors 01-20
 2— Full scrims 01-54
 1— Half scrim 01-55
 1— Tota-brella T1-25
 3— Tota-frames T1-20
 2— Assorted gels T1-78
 3— Omni-stands 01-33
 1— Tota-mount T1-32
 1— Tota-clamp T1-30
 1— Gaffer tape GT-12
 1— Omni-lampak 01-61
 1— Case TO-84

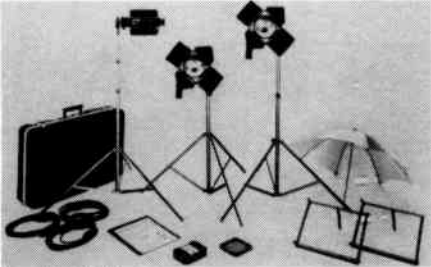
\$1150.00



BASICALLY 3 KIT-LL

- TO-97**
 2— Tota-lights, 16' Cables, (less lamps) T1-10
 1— Omni-light 16' Cable, #1 Reflector (less lamps) 01-10
 1— Omni-Barndoor 01-20
 1— Full Scrim 01-54
 1— Tota-brella T1-25
 1— Tota-frame T1-20
 1— Assorted Gels T1-78
 3— Omni-stands 01-33
 1— Tota/Omni Lampak TO-61
 1— Case TO-87

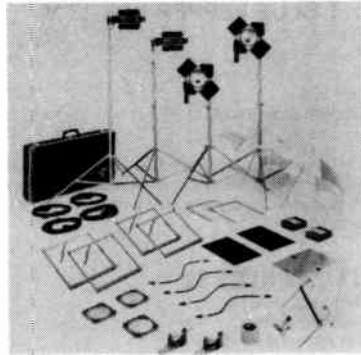
\$825.00



ELEMENTAL KIT-LL

- TO-98**
 1— Tota-light, 16' cable (less lamp) T1-10
 2— Omni-lights, 16' cables, #1 reflectors, (less lamps) 01-10
 2— Omni-barndoors 01-20
 1— Full scrim 01-54
 1— Tota-brella T1-25
 2— Tota-frames T1-20
 1— Assorted gels T1-78
 3— Omni-stands 01-33
 1— Tota/Omni lampak TO-61
 1— Case TO-87

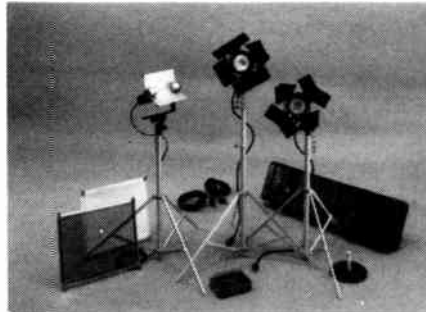
\$925.00



AMBI KIT-LL

- TO-95**
 2— Tota-lights, 16' cables (less lamps) T1-10
 2— Omni-lights, 16' cables, #1 reflectors (less lamps) 01-10
 2— Omni-barndoors 01-20
 2— Full scrims 01-54
 1— Half scrim 01-55
 2— Tota-brellas T1-25
 4— Tota-frames T1-20
 2— Assorted gels T1-78
 2— Tota-flags T1-52
 1— Tota-flector T1-54
 4— Flexi-shafts (2) T1-50
 1— Tota-tatch T1-34
 4— Omni-stands 01-33
 1— Tota-mount T1-32
 2— Tota-clamps T1-30
 1— Gaffer tape GT-12
 2— Tota/Omni lampaks TO-61
 1— Tota-packet 01-65
 1— Case TO-84

\$1445.00

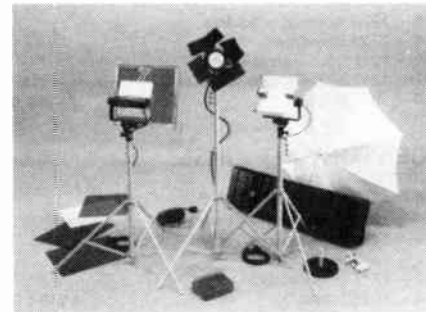


INTRO-KIT-LL

- VP-98**
 1— V-light (complete) less lamps, V1-10
 2— Pro-lights (complete) less lamps, P1-10
 2— Pro-light 4-way barndoors, iP-20
 3— ViP stands, ViP-33
 2— Tota-frames, T1-20
 1— Assorted Gels, T1-78
 1— Vipod with stud-link, ViP-35S
 1— ViP Lampak, ViP-61
 1— ViP shoulder case, ViP-86

\$675.00

With ViP-88 Case ViP-988 **\$740.00**



JET SET

- VP-97**
 2— V-lights (complete) less lamps, V1-10
 1— Pro-light (complete) less lamps, P1-10
 1— Pro-light 4-way barndoor, iP-20
 3— ViP stands, ViP-33
 1— Tota-brella, T1-25
 1— Tota frame, T1-20
 1— Assorted Tota gels, T1-78
 1— Vipod with stud-link, ViP-35S
 1— Tota-clamp, T1-30
 1— ViP lampak, ViP-61
 1— ViP shoulder case, ViP-86

\$665.00

With ViP-88 Case ViP-978 **\$730.00**

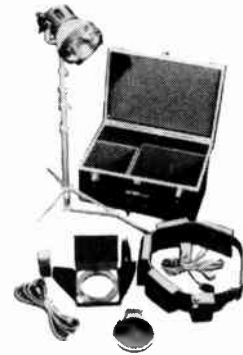


FREZZOLINI KITS are used for on-the-go pictures where a maximum of light output is required for the wattage and amperage. Example: Newsworld and other general documentation.

KIT-F

- SPK-1**
 3— FL-650 lighthoods
 3— C120-120V cables w/in-line switch
 3— EKD or DYS lamps
 2— FLBD-102 rotating barndoors
 1— FLS-102 scrim
 2— FLAH-101 accessory holders
 3— FLLS-101 light stands (8')
 1— C120EX 3-way extension cable (25')
 1— FLCC-101 carrying case

\$975.00



30V LIGHTING KIT-F

- SPK2**
 1— SP-650 head only
 1— C30-30V cable, 6'
 1— DYG 250W lamp
 1— FLH-101 handgrip
 1— F-30-EC belt
 1— Carrying case **\$860.00**
- SPK2A-F** Same as SPK2 except includes "Fast-Charge" belt model F-30EXFA in place of F-30EC
 Total **\$910.00**
- BC30D-F** One (1) hour Fast Charger for F-30EXFA
 Total **\$395.00**



PORTABLE/LOCATION LIGHTING

MINI-FILL-F

The FREZZOLINI® Mini-Fill lights are used as "on board" camera lights.



UNIQUE MINI-FILL FEATURES

- Extremely lightweight—only 12 oz.
- Compact size 2" x 4 1/4"
- Operates from any 12–14.4 or 30V battery
- Utilizes the latest high efficiency multi-mirror lamps—(20-100W)
- Completely serviceable
- Field tested
- Field proven
- Mounts on camera, pistol grip or lightstand
- Dual-lighthouse configuration from one power source
- Rugged construction—Built by Frezzolini—The world leader in portable lighting and power

YOUR CHOICE OF POWER CONNECTOR



- A** Frezzi Amp Connector
B 2-Pin Amphenol (30V)
C BP-90 In-Line
D Cigarette Lighter Type
E XLR (4 or 5 Pin)
- Shown with convenient flip-up dichroic filter model MFDF-F and diffused front surface.

SINGLE LIGHT CONFIGURATION (Including 100W or 75W Bulb)

- MF12P-F** Mini-Fill w/Cigarette Lighter plug (Fig. D) **\$149.95**
- MF12C-F** Mini-Fill w/BP-90-F Type Co-Ax Plug (Fig. C) **149.95**
- MF12V-F** Mini-Fill w/Frezzi Amp Connector (Fig. A) **149.95**
- MFSV-F** Mini-Fill w/Short (18") Cable & Amp Connector (Fig. A) **149.95**
- MF4X-F** Mini-Fill w/XLR-4-F Connector (Fig. E) **149.95**
- MF5X-F** Mini-Fill w/XLR-5-F Connector (Fig. E) **149.95**
- MF30-F** Mini-Fill w/2-pin Amphenol Connector for 30V Operation (Includes 80W Bulb) (Fig. B) **154.95**

DUAL LIGHT CONFIGURATION

- DMF12-F** Twin Mini-Fill Interconnected for Power from one (1) Source. Choice of Power Connectors: Sony BP-90-F In-Line, Frezzi-Amp, XLR-4-F or Cigarette Lighter Type **\$295.00**
- DMF30-F** Same as DMF12-F Except Wired for 30V Operation. Including 2-Pin Amphenol Connector **\$298.00**
- MFDF-F** Mini-Fill "Flip-Up" Dichroic Filter **88.00**
- MFCC-F** Mini-Fill Carrying Case **80.00**
- LP90-F** Leather Pouch w/Belt Loops for BP-90-F **38.00**
- LPS100-F** AC Adaptor/Power Supply, 100W w/Cigarette Lighter Type Mating Connector **195.00**
- LPS400-F** 4-Channel AC Adaptor/Power Supply, 400W w/XLR4-F Connector Output **295.00**
- FLLS-102-F** Mini-Fill Short Stand **36.00**
- CLPA-F** On-Camera Power Adaptor (XLP-4-F) **125.00**
- 1340-A-F** Replacement Socket and Base Plate **25.00**

MINI-FILL LAMP GUIDE

Lamp Code	Volts	Watts	Life (Hrs.)	Color Temp.	Typical Center Candle-power	Beam Spread
BAB	12	20	2000	2925°K	460	FLOOD
EKP	30	80	25	3350°K	1750	FLOOD
ESX	12	20	2000	2925°K	3300	NARROW SPOT
EXN	12	50	3000	3050°K	1500	FLOOD
EXT	12	50	3000	3050°K	9150	NARROW SPOT
EXV	12	100	50	3350°K	3300	FLOOD
EXZ	12	50	3000	3075°K	3000	NARROW FLOOD
EYC	12	75	3500	3050°K	2000	FLOOD
EYF	12	75	3500	3050°K	11500	NARROW SPOT

*Also recommended for 13.2 & 14.4VDC operation—See quartz lamp section for pricing.

MINI-FILL KITS

- MFK1-F:**
- 1— MF12P-F Mini-Fill
 - 1— VB12-F Battery
 - 1— VBC-F Charger
 - 1— EYC-F or EXV-F Lamp
- \$ 295.00**
- MFK2-F:**
- 1— MF12P-F Mini-Fill
 - 1— VB12-F Battery
 - 1— VBC-F Charger
 - 1— EYC-F or EXV-F Lamp
 - 1— MFDF-F Dichroic Filter
 - 1— FLCC-F Carrying Case
- 455.00**
- MFK3-F:**
- 1— MF12V-F Mini-Fill
 - 1— VB12-F Battery
 - 1— VBCV-F Charger
 - 1— EYC-F or EXV-F Lamp
- 355.00**
- MFK4-F:**
- 1— MF12V-F Mini-Fill
 - 1— VB12V-F Battery
 - 1— VBCV-F Charger
 - 1— EYC-F or EXV-F Lamp
 - 1— MFDF-F Dichroic Filter
 - 1— MFCC-F Carrying Case
- 515.00**
- MFK5-F:**
- 1— MF4X-F Mini-Fill
 - 1— VB4X-F Battery
 - 1— VBCV-F Charger
 - 1— EYC-F or EXV-F Lamp
- 365.00**
- MFK6-F:**
- 1— MF4X-F Mini-Fill
 - 1— VB4X-F Battery
 - 1— VBCV-F Charger
 - 1— EYC-F or EXV-F Lamp
 - 1— MFDF-F Dichroic Filter
 - 1— MFCC-F Carrying Case
- 525.00**
- MFK9-F:**
- 3— MF4X-F (LC) Mini-Fill
 - 3— MFDF-F Dichroic Filter
 - 3— FLLS-102-F Short Stand
 - 1— LPS-400-F Power supply
 - 3— SL1-F Stud
 - 3— EYC-F Lamp
 - 1— FLCC-104-F Case
- 1250.00**
- Other Custom-Designed Kits Available Per Your Specific Requirements.



KEY AND BACKLIGHTING

AC/DC Power—You need "FREZZI"™ high output lights, plus portable power for most all ENG production.

MODEL FL-650-F

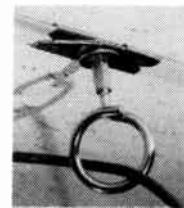
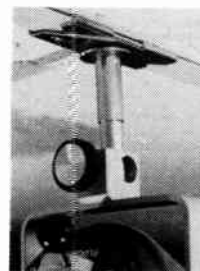
- Ultra-lightweight—1 lb.
 - Built-in spare lamp holder
 - AC/DC Operation from 12V-30V-115V-220V-240V
 - 650W capability
- FL-650-F Lighthouse Only \$165.00**
- Lamp/Cable/Handle/Mount are additional.

MODEL FL-250-F or MODEL FL-100-F

- Ultra-lightweight—1 lb.
 - DC operation from 12V-30V
 - Complete kits available
 - Choice of power configurations
- FL-250-F 195.00**
FL-100-F 195.00

Includes: Lamp, Attached Cable, Hand-Grip

- SWING-AWAY DICHOIC FILTER**
- Model FLDF-101-F 105.00**
- ACCESSORY HOLDER**
- Model FLAH-101-F 29.00**
- For scrim and Rotating Barn Doors
- Model FLS-102-F 28.00**
- FREZZI BARN DOORS—Rotate 360°**
- Model FLBD-102-F 40.00**
- HANDGRIP**
- Model FLH-101-F 12.00**



- 2339-BM** SCISSOR CLIP with 1/2" stud, used to suspend light from drop ceiling. Allows dressing of power cable along drop ceiling **\$ 8.00**
- 2339-H-BM** SCISSORHOOK, used to dress light cable across drop ceiling **10.00**
- 387483-MT** LIGHT/MEDIUM KIT STAND (aluminum), 2 lb./8 oz., 26"-8" **49.00**
- 387477-MT** MEDIUM KIT STAND (aluminum), 3 lb., 30"-9" **51.00**
- FLCC-101-F** SPK-1 Carrying Case **125.00**
- FLCC-103F** SPK8-F Carrying Case **175.00**

FL-650 LAMPS

- EYL-F** 100W 12V (50 Hrs.)
- DYG-F** 250W 30V (15 Hrs.)
- EKB-F** 420W 120V (75 Hrs.)
- DYS-F** 600W 120V (75 Hrs.)
- EKD-F** 650W 120V (25 Hrs.)
- DYR-F** 650W 220V (50 Hrs.)
- DYR-F** 650W 240V (50 Hrs.)
- See Quartz Lamp Section for Pricing
- 1306-F** Replacement Socket **15.00**
- 1306-F** Socket Housing Assembly **19.00**

FL-100/250-F LAMPS

- FAV-F** 100W 12V
- FBT-F** 150W 30V
- FBV-F** 250W 30V
- See Quartz Lamp Section for Pricing.
- 0924-F** Replacement Socket Assembly with Focus Shaft **\$28.00**

FL-650-F POWER CABLES

- Model C12-F** For 12VDC operation, 6' **32.00**
- Model C30-F** For 30VDC operation, 6' **32.00**
- Model C120-F** For 120VAC operation, 11' **17.00**

CAMERA MOUNTED LIGHTHEAD STUDS

- Frezzi Stud Specification List**
- LS1-F** Lite-Stud, 3" x 1/2", 1/4—20 **25.00**
- LS2-F** Lite-Stud, 3" x 1/2", 10-32 **25.00**
- LS3-F** Lite-Stud, 3" x 1/2", 5mm **25.00**
- LS4-F** Lite-Stud, 3" x 1/2", 6mm **25.00**
- LS5-F** Lite-Stud, 3" x 1/2", 4mm **25.00**



PORTABLE/LOCATION LIGHTING

CONTINUED

KEY AND BACKLIGHTING

LS21-F	Lite-Stud for FP-21/22-F	\$29.00
LS79-F	Lite-Stud for HL-79A/D-F	29.00
LS83-F	Lite-Stud for HL-83-F	38.00
LS95-F	Lite-Stud, 1 1/2" x 1/2", 5mm	25.00
LSM21-F	Lite/Mic Holder for FP-21/22 (Shoe Type)	65.00
LSM79-F	Lite/Mic Holder for HL-79A/D-F	65.00
LSM83-F	Lite/Mic Holder for HL-83-F	65.00
LSM95-F	Lite/Mic Holder for HL-95-F	65.00

CAMERA-STUD REFERENCE CHART

CAMERA	MODEL	DESCRIPTION	FREZZI P/N	PRICE
HITACHI	FP-15/21/22 & Z-31	Lite Only	LS-21-F	\$29.00
		Lite & Microphone	LSM-21-F	65.00
KEGAMI	HL-79	Lite Only	LS-79-F	29.00
	HL-79	Lite & Microphone	LSM-79-F	65.00
	HL-79E	Lite Only	LS-21-F	29.00
	HL-79E	Lite & Microphone	LSM-21-F	65.00
	HL-83	Lite Only	LS-83-F	38.00
	HL-83	Lite & Microphone	LSM-83-F	65.00
	HL-95	Lite Only	LS-95-F	25.00
	HL-95	Lite & Microphone	LSM-95-F	65.00
	ITC-730	Lite Only	LS-4-F	25.00
	ITC-730	Lite & Microphone	LSM-4-F	65.00
JVC	KY110/210/310 & KY320/850	Lite Only	LS-21-F	29.00
		Lite & Microphone	LSM-21-F	65.00
	KY1900/2000/2700	Lite Only	LS-2-F	25.00
SHARP	KY1900/2000/2700	Lite & Microphone	LSM-2-F	65.00
	XC700/800/900	Lite Only	LS-1-F	25.00
		Lite & Microphone	LSM-1-F	65.00
SONY	All Sony Cameras	Lite Only	LS-1-F	25.00
		Lite & Microphone	LSM-1-F	65.00

BATTERY PACKS/POWER BELTS



30VDC OPERATION WITH EC-30-F HIGH-CAPACITY BATTERY PACKS

- 30VDC at 4AH
- Operates 30V 250W DYG lamp 30 minutes.
- Fast charge capability (1 Hr.)
- Built-in overnight charger (12 Hrs.)
- Rugged steel case
- Weight: 10 lbs.
- Premium-grad selected NiCad cells used

Model EC-30-F \$695.00
 Optional: BC-30D-F One (1) hour fast charger 395.00

VB-F SERIES 12V AT 4AH "HIGH-TECH" BATTERY PACKS

- Premium-grade selected NiCad cells used
- Built-in belt clip
- Shoulder strap provided
- Includes VBCV-F 115V overnight charger

VB-12-F	4AH, 12V, 7.813" x 5.10" x 1.625", 4.0 lbs.	\$165.00
VB-12V-F	4AH, 12V, 8.125" x 5.10" x 1.625", 4.0 lbs.	225.00
VB4X-F	4AH, 12V, 7.813" x 5.10" x 1.625", 4.0 lbs.	235.00
VBSO-F*	4AH, 12V, 8.125" x 5.10" x 1.938", 4.0 lbs.	245.00
*with additional XLR4 connector		255.00

FREZZI™ HIGH CAPACITY 6AH MULTI-PURPOSE POWER BELTS

- Features:**
- High capacity—full 6AH (at 6A discharge rate)
 - Batteries housed in rugged aluminum cassettes mounted on a genuine leather belt
 - Built-in overnight (14 hrs.) charger
 - Fast charge (1 hr.) capability with Model BC-77U charger
 - Fuse & thermal protection
 - Low belt profile—only 4" wide
- Model F-12-EXFA-F Model F-12-77
- 12.0V at 6AH • ± 6.0V at 6AH
 - Standard five (5)-pin XLR • HL-77 connector connector • Weight 8 lbs.
 - Weight 8 lbs. \$475.00 \$475.00
- Model F-14-EXFA-F
- 14.4V at 6AH
 - Four (4)-pin XLR connector
 - Weight 8.5 lbs. \$495.00

FREZZI POWER BELTS FOR 30V SUN GUN 30VDC OPERATION WITH FREZZI F-30-EC-F AND F-30-EXFA-F HIGH-CAPACITY BATTERY BELTS

- Full 4AH capacity using selected NiCad cells
 - Operates 30V 250W DYG lamp for 30 minutes
 - Batteries housed in rugged aluminum cassettes which are mounted on a genuine leather belt
 - Built-in overnight charger (14 hrs.)
 - F-30-EXFA-F has fast-charge capability (1 hr.) w/ optional Frezzi BC-30D-F fast charger
 - Fuse and circuit-breaker protection
 - Weight: 10 lbs.
- Model F-30-EC-F \$595.00
 Model F-30-EXFA-F 645.00
 Model F-30/14EXFA-F Switchable 30V at 4AH, 14V at 8AH Power Belt 795.00

BATTERY PACKS

FREZZI ON-BOARD™ BATTERY PACKS

- "Superior To Camera-Manufacturer Supplied"
- Extended life with no memory
 - Battery mounts direct to camera-manufacturer-supplied Anton/Bauer bracket or optional Frezzolini® camera battery mounting bracket
 - No cables or modification required
 - Full 4AH capacity—only premium selected NiCad cells used
 - Custom-designed mounting brackets available
 - Rugged welded aluminum case
 - Lightweight 2AH models available
 - Internal fuse and thermal protection—internal spare fuse included for field replacement
 - Complete charge compatibility with camera-factory-supplied charge systems, or Frezzolini fast, overnight or multiple battery chargers available

Frezzi On-Board BP-12-F 4AH, 12V	\$455.00
Frezzi On-Board BP-13-F 4AH, 13.2V	475.00
Frezzi On-Board BP-14-F 4AH, 14.4V	495.00
Frezzi On-Board BP-122-F 2AH, 12V	275.00
Frezzi On-Board BP-132-F 2AH, 13.2V	285.00
Frezzi On-Board BP-142-F 2AH, 14.4V	295.00

All battery packs have fast charge (1 Hr.) capability.

FREZZI PREMIUM-GRADE DIRECT REPLACEMENT FOR SONY BP-90-F BATTERY PACKS FBP-90-F AND FAST CHARGER FBP-90FC-F

- Full 4AH capacity using premium-grade selected NiCad cells
- Rugged and serviceable plastic case
- Fuse and thermal protection
- Internal spare fuse for field replacement
- High discharge capability to power 100W lighthoods
- Weight 3.5 lbs.
- Complete charge compatibility with Sony BC-210 charger, Frezzi BC-124S-F overnight charger, Frezzi MBC-5-F 8-battery overnight charger, Frezzi BC-77UB-F 1 hr. fast charger with HV fast-charge adaptor cable, plus other Frezzi fast/slow multi-battery charging stations

FBP-90-F	\$275.00
FBP-90FC-F	330.00

Battery Pack Mounting Brackets

HM90-F	BP90-F adaptor for on-board mount	\$198.00
HM90B-F	Same as HM90-F except for Betacam® mount*	198.00
HM90BW-F	Same as HM90B except has mount for wireless receiver*	248.00

*Requires HMBVV 1-F bracket

BETACAM BATTERY MOUNTING BRACKET

Model: HMBVV 1-F
 Bracket mounts to the upper rear portion of the recorder, and accepts BP13/BP132-F batteries or BP90-F when used with HM90-F. Also accepts RPS-3-F and RPS-40-F on-board AC supply.
HMBVV 1-F \$105.00

FREZZI 2AH NICAD REPLACEMENTS FOR LEAD-ACID VTR BATTERY PACKS

Model FBP-20-F Replacement for Sony BP-20A	
Model FBP-44-F Replacement for JVC PBP-1	
Model FBP-44-F Replacement for Panasonic LCR-3012 VBP	
Model FBP-60-F Replacement for Sony BP60	
Model FNP-1-F Replacement for Sony NP-1 NiCad Batteries	
Model B-12-F (12V at 1AH)	\$125.00
Model FBP-20-F (12V at 2AH)	225.00
Model FBP-44-F (12V at 2AH)	225.00
Model FBP-60-F (12V at 2AH)	225.00
Model FNP-1HC-F (12V at 1.8AH)	85.00
Sealed Lead Acid Battery	
Model 12V 6.5AH-SGLA-F	37.50

CHARGERS

FREZZI SINGLE-BATTERY UNIVERSAL FAST CHARGERS MODEL BC-77U/MODEL BC-77UB SINGLE-BATTERY UNIVERSAL FAST CHARGERS

General:
 The line of Frezzolini Universal fast chargers were specifically designed to fast charge (1 hr.) all models of Frezzolini 12V and 14.4V 2—6AH battery packs. The Frezzi chargers also have the capability to safely fast charge Anton/Bauer 12V and 14.4V NiCad on-board battery packs. All chargers are transformer-type line-isolated and designed per European IEC-65 safety code specifications. The chargers are constructed of heavy-gauge aluminum in a compact size to withstand abuse in the field. The universal feature of this charger enables operation anywhere in the world.

Model BC-77U/BC-77UB-F \$395.00
 Model BC-30D-F (for use with 30V batteries with fast charge capability) 395.00

FREZZI MULTIPLE BATTERY CHARGING STATIONS "We custom-design per your specific charging requirements"

MBC-2-F (All Feature Model)
 Fast-charges five (5) Frezzolini or Anton/Bauer 12-14.4V NiCad battery packs in less than one (1) hour while simultaneously charging eight (8) additional Frezzolini, Sony, JVC or Panasonic VTR battery packs overnight. Universal AC inputs. Deluxe shipping case available. Weight: 45 lbs.

MBC-2-F \$2400.00
 MBC-4-F

Fast charges (1 hr.) five (5) Frezzolini or Anton/Bauer 12-14.4V NiCad battery packs while simultaneously charging eight additional Sony BP-90 type battery packs in 14 hours. Universal AC inputs. Deluxe shipping case available. Weight: 45 lbs.

MBC-4-F \$2090.00
 MBC-4A-F

Fast charges (5) Frezzolini or Anton/Bauer 12-14.4V battery packs. Weight: 43 lbs.

MBC-4A-F \$1595.00
 MBC-5-F, Charges Eight (8) BP-90

- Type Batteries Simultaneously
- Universal AC inputs
 - Compact size
 - Line-isolated
 - Current-sensing LED's
 - Other models available for all VTR or camera battery packs

Charge eight (8) BP-90 type battery packs simultaneously in 14 hours with MBC-5 Charging Station. Universal AC inputs. Weight: 8 lbs.

MBC-5-F \$495.00
 Overnight Trickle Chargers

- Fully charges battery packs in 14 hours
 - Switchable 115-230VAC 50/60Hz input
 - Miniature size
 - Transformer-type line-isolated
 - Current-sensing LED
- Model FTC-12/13/14-F (For BP-12/13/14-F) Fig. B \$80.00
 Model FTC-122/132/142-F (For BP-122/132/142-F) 90.00
 Model BC-122S-F (For FBP-20/44/60-F) Fig. C 90.00
 Model BC-124S-F (For BP-90/FBP-90-F) Fig. A 80.00



PORTABLE/LOCATION LIGHTING

CONTINUED

CHARGERS

Model CR-1-F (Current regulated for BP-90-F, BP-12/13/14-F) **\$125.00**
Trickle charges for VB-F series batteries 115V input only.
Model VBC-F (For VB-12-F) **38.00**
Model VBCV-F (For VB4X/VB-12V-F) **38.00**
Model FTC-NP1-F (For (1) NP1) **95.00**

CHARGERS/POWER SUPPLIES

FREZZI DUAL CHANNEL

AC ADAPTOR AND FAST CHARGER

The Frezzolini RPS-2-F Dual-Channel combination power supply/fast charger consists of two totally independent power sources. Each power source has the capability of either functioning as a precise regulated power supply for ENG Camera/VTR Power or switching over to a NiCad battery fast charger. Either one or two battery packs are simultaneously fast charged with automatic high-charge termination when the battery packs reach full charge.

Specifications

AC Input: 115/230VAC ± 10% 50/60Hz
Regulated DC Output: 13.25VDC (3.0A max. each channel)

Line Regulation: ± .05% for 10% line change
Load Regulation: ± .05% for 50% load change
Output Ripple: 5.0mV p-p maximum
Overload Protection: Automatic current limit/foldback

Fast Charge Time: 12.0V battery — 75 min.
14.4V battery — 180 min.

Size: 8 1/2" x 5" x 5 1/2"
Weight: 8.5 lbs.

RPS-2-F **\$895.00**

FREZZI ON-BOARD™ AC POWER SUPPLIES

MODELS RPS-3-F AND RPS-40-F

Ultra lightweight, compact size, mount directly to ENG/EPF professional TV cameras with on-board battery mounts. Replacing battery with either unit allows for "continuous" operation when 120 or 240VAC 50/60Hz is available. Easy voltage selection slide switch on unit. On-off lighted switch. Advanced switching design with full RFI/EMI suppression. Supplied as OEM and replacement equipment to major manufacturers.

Specifications

	RPS-3-F	RPS-40-F
Power:	50W	40W
Output Current:	4A max.	3A max.
Output Voltage:	13VDC nominal	
Output Ripple:	10mV typical	
Input Line Selection SW.:	120/240VAC 50/60Hz	
Line Regulation:	± 0.1% (10% line change)	
Load Regulation:	± 0.2% (50% load change)	
Current Limit:	Output protected and fully isolated	
Size:	5.0" x 4.0" x 3.4"	5.25" x 4.125" x 2.0"
Weight:	2.3 lbs.	1.8 lbs.
RPS-3-F	\$595.00	
RPS-40-F	545.00	

HMI DAYLIGHT LIGHTING

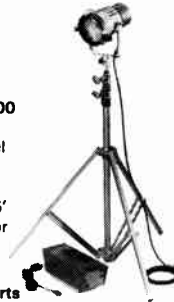
STRAND HMI lighting is a must for controlled daylight videography. HMI lamps incorporated in the fresnels give the same quality of light as found in the studio, only at 5400 kelvin instead of 3200 kelvin. If your production dictates a lot of quality daylight location work, HMI is the way to go.

LUXARC 200-LTM FRESNEL 200W LTM Luxarc System

203 001-LTM 1 ea. Luxarc MKIII Head with 4" Fresnel **\$2583.00**
506 001-LTM 1 ea. Ballast MKIII 120V/60Hz
510 261-LTM 1 ea. Mains Cable 15'
510 189-LTM 1 ea. 4-Leaf Barndoor
410 299-LTM 1 ea. Hinged Gel Frame

Individual Pricing of Component Parts for the 200W Luxarc System

800 000-LTM HMI Lamp 200W	\$ 285.00
435 200-LTM Full Single Scrim	8.00
435 201-LTM Half Single Scrim	9.00
435 202-LTM Full Double Scrim	8.00
435 203-LTM Half Double Scrim	9.00
510 259-LTM 50" Head to Ballast Extension Cable	205.00
510 261-LTM 4-Leaf Barndoor	85.00
510 299-LTM Hinged Gel Frame	35.00
203 001-LTM Luxarc 200 MKIII Head Only with 5" Fresnel	1280.00
506 001-LTM Alimarc 200 MKIII Ballast 120V/60Hz	1061.00
510 261-LTM Mains Cable 15'	122.00
553 203-LTM Head and Ballast Kit Case	205.00
386 029-LTM Beefy Baby Stand, Alum.	154.00



AMBIARC 200-LTM OPEN FACE

200W LTM Ambiarc System Includes: **\$2400.00**

211 001-LTM 1 ea. Ambiarc MKIII Head with 5" Clear Lens
506 001-LTM 1 ea. Ballast MKIII 120V/60Hz
510 261-LTM 1 ea. Mains Cable 15'
510 189-LTM 4-Leaf Barndoor
510 299-LTM 1 ea. Hinged Gel Frame
Individual Pricing of Component Parts for the 200W LTM Ambiarc System

800 000-LTM HMI Lamp 200W	\$ 285.00
435 200-LTM Full Single Scrim	8.00
435 201-LTM Half Single Scrim	9.00
435 202-LTM Full Double Scrim	8.00
435 203-LTM Half Double Scrim	9.00
510 259-LTM 50" Head to Ballast Extension Cable	205.00
510 261-LTM 4-Leaf Barndoor	85.00
510 299-LTM Hinged Gel Frame	35.00
211 001-LTM 200 MKIII Head Only with 5" Clear Lens	1097.00
506 001-LTM Alimarc 200 MKIII Ballast 120V/60Hz	1061.00
510 260-LTM Mains Cable 15'	122.00
553 203-LTM Head and Ballast Kit Case	205.00
386 029-LTM Beefy Baby Stand, Alum.	154.00



3360MP-SL **\$2790.00**

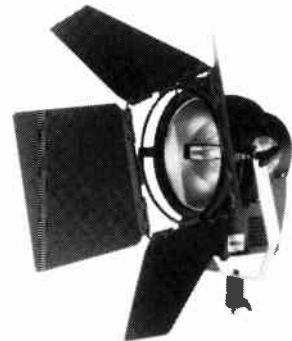
575W System
1—575W Sirio Mark 2 HMI Fresnel
1—1144-SL Color Frame
1—1300-SL Barndoor
1—1123-SL Wire Guard
1—3368-SL Ballast

Head and Ballast

3360-SL 6" 575W HMI Fresnel Head **\$1360.00**
3368-SL 575W Ballast **1570.00**

Accessories

1144-SL Color or Diffuser Frame (extra)	\$ 13.00
1123-SL Wire Guard (extra)	15.00
1300-SL 8-Way Rotatable Barndoor	56.00
1201-SL Full Double Scrim	12.00
1202-SL Full Single Scrim	12.00
1203-SL Half Double Scrim	12.00
1204-SL Half Single Scrim	12.00
1170-SL 2 1/4" Cone	45.00
1171-SL 3" Cone	45.00
1172-SL 4 1/4" Cone	45.00
3362-SL 26" Extension Cable ballast to fixture	267.00
3364-SL 49" Extension Cable ballast to fixture	330.00
3363-SL Fixture Case	504.00
3366-SL Ballast Case	790.00
1522-SL Castered Stand	353.00
575HMI-TH 575W HMI Lamp, 5600°K	405.00



4530MP-SL

575W System **\$3361.00**

1—575W Shaula "Open Face"
1—1136-SL Color Frame
1—1325-SL Barndoor
1—3368-SL Ballast

Accessories

1136-SL Color or Diffuser Frame	\$ 13.00
1325-SL 4-Way Barndoor	63.00
1221-SL Full Double Scrim	15.00
1222-SL Full Single Scrim	15.00
1223-SL Half Double Scrim	15.00
1224-SL Half Single Scrim	15.00
3362-SL 26" Extension Cable ballast to fixture	267.00
3364-SL 49" Extension Cable ballast to fixture	330.00
3366-SL Ballast Case	790.00
1519-SL Trojan Stand	129.00
575HMI-TH 575W HMI Lamp, 5600°K	405.00



3570-SL

1200W System **\$3785.00**

1—10" 200W Sirio Mark 2 HMI Fresnel
1—1145-SL Color Frame
1—1301-SL Barndoor
1—1125-SL Wire Guard
1—3578-SL Ballast



PORTABLE/LOCATION LIGHTING

CONTINUED

HMI DAYLIGHT LIGHTING

Head and Ballast

3570-SL	10" 1200W HMI Fresnel Head	\$1950.00
3578-SL	1200W Ballast	2030.00

Accessories

1145-SL	Color or Diffuser Frame (extra)	\$ 25.00
1126-SL	Wire Guard (extra)	19.00
1301-SL	8-Way Rotatable Barndoor (extra)	79.00
1208-SL-SL	Full Double Scrim	16.00
1209-SL	Full Single Scrim	16.00
1210-SL	Half Double Scrim	16.00
1211-SL	Half Single Scrim	16.00
1173-SL	4 3/8" Cone	96.00
1174-SL	6" Cone	96.00
1175-SL	7 3/4" Cone	96.00
3572-SL	26' Extension Cable ballast to fixture	267.00
3574-SL	49' Extension Cable ballast to fixture	331.00
3573-SL	Fixture Case	728.00
3576-SL	Ballast Case	896.00
1522-SL	Castered Stand	353.00
1200HMI-TH	1200W HMI Lamp, 5600°K	575.00



CINEPAR 1200-LTM

1200W LTM Cinepar System Includes: \$3900.00

221 001-LTM	1 ea. Luxarc MKIII Head with 4 Lens Rings	
503 001-LTM	1 ea. Ballast MKIII 120V/60Hz	
610 260-LTM	1 ea. Mains Cable 15'	
610 465-LTM	1 ea. Head to Ballast Cable 33'	

Individual Pricing of Component Parts for the 1200W LTM Luxarc System

800 013-LTM	HMI Cinepar Bulb with 4 Lens 120W Par 64	\$766.00
445 310-LTM	Full Single Scrim 9"	8.00
445 311-LTM	Half Single Scrim 9"	8.00
445 312-LTM	Full Double Scrim 9"	9.00
445 313-LTM	Half Double Scrim 9"	9.00
610 422-LTM	50' Head to Bellest Extension Cable	350.00
656 003-LTM	150' Head to Bellest Extension Cable	700.00
610 277-LTM	4-Leaf Barndoor	86.00
610 627-LTM	Hinged Gel Frame	36.00
221 001-LTM	Cinepar 1200 MKIII Head Only	1747.00
503 001-LTM	Alimerc 1200 MKIII Ballast 120V/60Hz	1731.00
610 260-LTM	Mains Cable 15' with Hubbell U Ground	122.00
610 465-LTM	Head to Ballast Cable 33'	300.00
653 221-LTM	Head Case	315.00
653 603-LTM	Bellest Case	231.00
386 029-LTM	Beefy Baby Stend, Alum.	154.00
386 070-LTM	Combo Stend, Alum. with Adeptor (429 029)	235.00
610 499-LTM	Lens Case	120.00
221 050-LTM	Additional Lens Rings	28.00
656 001-LTM	Super Wide Flood Lens	30.00
656 002-LTM	5 x 1200 Par Light Ballast	9834.00



3680MP-SL 2500W System \$5245.00

1-12" 2500W Sirio Mark 2 HMI Fresnel	
1-1146-SL Color Fresnel	
1-1302-SL Barndoor	
1-1126-SL Wire Guard	
1-3688-SL Ballast	

Head and Ballast

3680-SL	12" 2500W HMI Fresnel Head	\$2890.00
3688-SL	2500W Ballast	2620.00

Accessories

1146-SL	Color or Diffuser Frame (extra)	\$ 31.00
1126-SL	Wire Guard (extra)	28.00
1147-SL	Outrigger Color/Diffuser Frame	236.00
1302-SL	8-Way Rotatable Barndoor	118.00
1212-SL	Full Double Scrim	34.00
1213-SL	Full Single Scrim	34.00
1214-SL	Half Double Scrim	34.00
1215-SL	Half Single Scrim	34.00
1176-SL	6 1/4" Cone	124.00
1177-SL	9" Cone	124.00
1178-SL	11" Cone	124.00
3682-SL	26' Extension Cable ballast to fixture	341.00
3684-SL	49' Extension Cable ballast to fixture	426.00
3683-SL	Fixture Case	830.00
3686-SL	Ballast Case	952.00
1522-SL	Castered Stand	353.00
2500HMI-TH	2500W HMI Lamp, 5600°K	1000.00



3790MP-SL 4000W System \$7370.00

1-14" 4000W Sirio Mark 2 HMI Fresnel	
1-1146 Color Frame	
1-1302 Barndoor	
1-1126 Wire Guard	
1-3798 Ballast	

Head and Ballast

3790-SL	14" 4000W HMI Head	\$4155.00
3798-SL	4000W Ballast	3585.00

Accessories

1146-SL	Color or Diffuser Frame (extra)	\$31.00
1126-SL	Wire Guard (extra)	23.00
1147-SL	Outrigger Color/Diffuser Frame	236.00
1302-SL	8-Way Rotatable Barndoor (extra)	118.00
1212-SL	Full Double Scrim	34.00
1213-SL	Full Single Scrim	34.00
1214-SL	Half Double Scrim	34.00
1215-SL	Half Single Scrim	34.00
1176-SL	6 1/4" Cone	124.00
1177-SL	9" Cone	124.00
1178-SL	11" Cone	124.00
3792-SL	26' Extension Cable ballast to fixture	342.00
3794-SL	49' Extension Cable ballast to fixture	426.00
3793-SL	Fixture Case	964.00
3786-SL	Castered Ballast Case	986.00
1522-SL	Castered Stand	353.00
4000HMI	4000W HMI Lamp, 5600°K	1270.00



3796MP 6000W System \$11,900.00

(220V only) Complete with:

1-14" 6000W Sirio Mark 2 HMI Fresnel	
1-1146-SL Color Frame	
1-1302-SL Barndoor	
1-1126-SL Wire Guard	
1-3800-SL Ballast	

Head and Ballast

3796-SL	14" 6000W HMI Head	\$6830.00
3800-SL	6000W Ballast	5665.00

Accessories

1146-SL	Color or Diffuser Frame (extra)	\$ 31.00
1126-SL	Wire Guard (extra)	28.00
1147-SL	Outrigger Color/Diffuser Frame	236.00
1302-SL	8-Way Rotatable Barndoor (extra)	118.00
1212-SL	Full Double Scrim	34.00
1213-SL	Full Single Scrim	34.00
1214-SL	Half Double Scrim	34.00
1215-SL	Half Single Scrim	34.00
1176-SL	6 1/4" Cone	124.00
1177-SL	9" Cone	124.00
1178-SL	11" Cone	124.00
3797-SL	26' Extension Cable ballast to fixture	622.00
3799-SL	49' Extension Cable ballast to fixture	847.00
1531-SL	Wind-Up Stand	495.00
6000HMI	6000W HMI Lamp, 5600°K	2095.00



3880MP 12000W System \$22,222.00

Dual Output Ballast (220V) complete with:

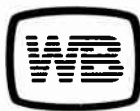
1-20" 12000W Sirio Merk 2 HMI Fresnel	
1-1158-SL Color Frame	
1-1348-SL Barndoor	
1-1128-SL Wire Guard	
1-3898-SL Ballast	

Head and Ballast

3890-SL	12KW HMI Head	\$12,347.00
3898-SL	12KW Ballast	12,140.00

Accessories

1158-SL	Color or Diffuser Frame (extra)	\$ 137.00
1128-SL	Wire Guard (extra)	195.00
1348-SL	8-Way Rotatable Barndoor (extra)	T80
1240-SL	Full Double Scrim	195.00
1241-SL	Full Single Scrim	195.00
1242-SL	Half Double Scrim	195.00
1243-SL	Half Single Scrim	195.00
3882-SL	26' Extension Cable ballast to fixture	695.00
3884-SL	49' Extension Cable ballast to fixture	1,005.00
1631-SL	Gladiator Stend	5,726.00
12000HMI	12000W HMI Lamp, 5600°K	4200.00



PORTABLE/LOCATION LIGHTING

CONTINUED

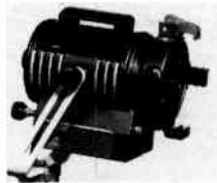
HMI DAYLIGHT LIGHTING



QUARTZ COLOR ARTURO HMI SOFTLIGHTS

4342MP-SL 575W System	\$4111.00
1—575W HMI Softlight	
1—1162-SL Color Frame	
1—3368-SL Ballast	
Accessories	
1162-SL Color or Diffuser Frame (extra)	\$ 21.00
1233-SL Egg Crate	129.00
3362-SL 26' Extension Cable ballast to fixture	267.00
3364-SL 49' Extension Cable ballast to fixture	330.00
3366-SL Ballast Case	790.00
1522-SL Castered Stand	353.00
575HMI-TH 575W HMI Lamp, 5600°K	405.00
4343MP-SL 1200W System	\$5413.00
1—1200W HMI Softlight	
1—1163 Color Frame	
1—3578 Ballast	
Accessories	
1163-SL Color or Diffuser Frame (extra)	\$ 50.00
1234-SL Egg Crate	119.00
3572-SL 26' Extension Cable ballast to fixture	267.00
3574-SL 49' Extension Cable ballast to fixture	331.00
3576-SL Ballast Case	896.00
1522-SL Castered Stand	353.00
1200HMI-TH 1200W HMI Lamp, 5600°K	575.00
4346MP-SL 2500W System	\$6969.00
1—2500W HMI Softlight	
1—1164 Color Frame	
1—3668 Ballast	
Accessories	
1164-SL Color or Diffuser Frame (extra)	\$ 73.00
1235-SL Egg Crate	142.00
3682-SL 26' Extension Cable ballast to fixture	341.00
3684-SL 49' Extension Cable ballast to fixture	426.00
3686-SL Ballast Case	952.00
1522-SL Castered Stand	353.00
2500HMI-TH 2500W HMI Lamp, 5600°K	\$1000.00

KEY AND BACK LIGHTS



LTM PEPPERS

LTM PEPPER Fresnels are miniature quartz-halogen specifically designed for still photography or miniature sets for television. Constructed of cast aluminum for ease of handling and heat dissipation.

100-LTM 1 1/8" FRESNEL 100/200W	\$175.00
4-leaf barndoors	53.00
Scrim (3") full or half (Single, double or double/double)	8.30
Gel/Diffusion frame	18.20
Snoot (4/1) apertures (1 3/4", 1 3/8", 1", 5/8")	62.50

200-LTM 3 1/8" FRESNEL 200W	\$210.00
4-leaf barndoors	63.00
Scrim (4 3/8") full or half (single, double or double/double)	8.30
Gel/Diffusion Frame	21.50
Snoot (5/1) apertures (2 1/2", 2 3/8", 1 3/4", 1 3/8", 1 5/16")	69.50
420-LTM 3 1/8" FRESNEL, 420W	\$237.00
4-leaf barndoor	63.00
Scrim (4 3/8") full or half (single, double or double/double)	8.30
Gel/Diffusion Frame	21.50
Snoot (5/1) apertures (2 1/2", 2 3/8", 1 3/4", 1 3/8", 1 5/16")	69.50
Handgrip	25.00
Battery Belt w/Cable	POR
Pepperoptics (Fiberoptic lighting system)	495.00
600-LTM 4 3/8" FRESNEL 650W	\$288.00
4-leaf barndoors	72.00
Scrim (5") full or half (single, double or double/double)	8.30
Hinged Gel Frame	26.50
Snoot (5/1) apertures (2 1/2", 2 3/8", 1 3/4", 1 3/8", 1 5/16")	88.50
Pepper Flood 650W	\$242.00
4 Leaf Barndoors	70.00
Scrim (6-5/8") Full Single or Half Single	6.80
Dichroic Filter	132.00
Handgrip	35.00
Gel Frame	23.10
Battery Belt w/Cable	POR
Soft Pepper 400W	240.00
Egg Crate	82.50
Diffusion Frame	13.50

RECOMMENDED LAMPS PEPPER/100/200

ANSI						
Code	Volts	Watts	Temp.	Hours	Type	Price
ESR-WK	120	100	2900	750	CL	\$33.20
FEV-GE	120	200	3200	50	CL	32.20
DZE-GE	24	150	3400	100	CL	17.02
DYG-TH	30	250	3400	20	CL	30.00
PEPPER 420/650						
EKB-GE	120	420	3200	75	CL	\$38.00
DYS-TH	120	600	3200	75	CL	28.00
DYR-TH	220	650	3200	75	CL	33.50
Universal Pepper Accessories						
Light Pepper Stake (Stand)						\$60.00
Medium Pepper Stake (Stand)						75.00
3" Baby Plate						25.00
Drop Ceiling Butterfly Clamp						14.20
Suction Cup Mount						59.50
3" C-Clamp w/5/8" Pin						29.00
6" C-Clamp w/two 5/8" Pins						39.80
Gaffer Grip w/5/8" Pin						27.00
Pepperella						53.60
Pepperella Adaptor						29.00
Net Set (Complete w/Flexarm, Net Holder, Net & Silk)						113.00
Flag (For Net Set)						22.00
Cases						
Custom Case Blue						\$332.00
Custom Case Red						346.00
Custom Case Green						352.00
Custom Case Cyan						381.00
Tube Stake						116.00
Full Spectrum Case						450.00

OPEN-FACE LIGHTS



DP LIGHT AND REFLECTORS make this 1000W very versatile. There are many accessories that complement this fixture. Ask for a complete brochure.

D2-10-LL dp light	\$150.00
D2-15-LL #1 reflector	13.50
D2-17-LL #3 reflector	13.50
D2-18-LL #4 reflector	13.50

DP LIGHT CONTROLS	
D2-20-LL Complete barndoor	\$ 62.50
D2-21-LL Barndoor frame	25.00
D2-22-LL Rectangular leaf	13.50
D2-23-LL Triangular leaf	13.50
D2-50-LL Diffused glass	34.00
D2-51-LL Dichroic filter	107.50
D2-52-LL Clear glass	30.00
D2-53-LL Snoot	38.50
D2-54-LL Full scrim	14.50
D2-55-LL Half scrim	14.50
D2-56-LL Graduated scrim	17.50
D2-57-LL Cookaloris	14.50
D2-24-LL dp frame	40.00

RECOMMENDED LAMP MEDIUM TWO-PIN BASE 2 3/8" L.C.L. TUNGSTEN-HALOGEN QUARTZ

ANSI						
Code	Volts	Watts	Temp.	Hours	Type	Price
EHC-TH	120	500	3200K	300	CL	\$50.00
EHF-TH	120	750	3200K	300	CL	58.00
FEL-TH	120	1000	3200K	300	CL	52.00
FCV-TH	120	1000	3200K	300	FR	64.00



4515MP-SL 600W PULSAR VARIABLE FOCUS SPOTLIGHT, fiberglass with integral accessory holder, switch and 12' cable	\$227.00
1133-SL Color or Diffuser Frame	15.00
1141-SL Outrigger Color/Diffuser Frame	96.00
1183-SL Variable Cone 1 1/4"-2"-2 7/8"	62.00
1225-SL Full Double Scrim	12.00
1226-SL Full Single Scrim	12.00
1227-SL Half Double Scrim	12.00
1228-SL Half Single Scrim	12.00
1278-SL Safety Glass (clear)	53.00
1281-SL Dichroic Filter	92.00
1310-SL 4-Way Barndoor	41.00
1529-SL Stand for Pulsar	68.00
1980-SL Handle	45.00
1963-SL Gaffer Grip with 5/8" stud	34.00

RECOMMENDED LAMP TWO-PIN PRE FOCUS BASE 1 7/16" L.C.L. TUNGSTEN HALOGEN QUARTZ

ANSI						
Code	Volts	Watts	Temp.	Hours	Type	Price
DYS-TH	120	600	3200K	75	CL	\$25.00
DYG-TH	120	250	3200K	20	CL	30.00
DYR-TH	220	650	3200K	75	CL	33.50
EYL-TH	120	100	3300K	50	CL	17.82



4501MP-SL 650W IANEBEAM VARIABLE FOCUS SPOTLIGHT, fiberglass, 12' cable	\$150.00
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PORTABLE/LOCATION LIGHTING

CONTINUED

4502MP-SL
800W IANEBEAM VARIABLE FOCUS SPOTLIGHT, fiberglass, 220/240V, 12' cable \$180.00

1230-SL	Accessory Holder (required for all accessories)	45.00
1324-SL	4-Way Barndoor	34.00
1135-SL	Outrigger Extended Color/Diffuser Frame	96.00
1282-SL	Dichroic Filter	129.00
1279-SL	Safety Glass (clear)	53.00
1216-SL	Full Double Scrim	13.00
1217-SL	Full Double Scrim	13.00
1218-SL	Half Double Scrim	13.00
1219-SL	Half Single Scrim	13.00
1530-SL	Small Kit Stand, aluminum, folds to 21", extends to 6' 5", 5/8" stud	75.00
1535-SL	Reg. Kit Stand, aluminum, folds to 30", extends to 8' 6", 5/8" stud	88.00

RECOMMENDED LAMPS
DOUBLE ENDED 3 1/8"

M.O.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
FDA-SY	120	400	3200K	100	CL	\$38.02
FAD-TH	120	650	3200K	100	CL	22.00
FBX-TH	120	650	3200K	100	FR	27.00
DXX-TH	220	800	3200K	75	CL	26.00



4503MP-SL
1000W IANEBEAM VARIABLE FOCUS SPOTLIGHT, fiberglass, 12' cable \$162.00

1230-SL	Accessory Holder (required for all accessories)	37.00
1324-SL	4-Way Barndoor	34.00
1135-SL	Outrigger Extended Color/Diffuser Frame	96.00
1282-SL	Dichroic Filter	129.00
1279-SL	Safety Glass (clear)	51.00
1216-SL	Full Double Scrim	13.00
1217-SL	Full Double Scrim	13.00
1218-SL	Half Double Scrim	13.00
1219-SL	Half Single Scrim	13.00
1530-SL	Small Kit Stand, aluminum, folds to 21", extends to 6' 5", 5/8" stud	75.00
1535-SL	Reg. Kit Stand, aluminum, folds to 30", extends to 8' 6", 5/8" stud	88.00

RECOMMENDED LAMPS
DOUBLE ENDED 3 3/4"

M.O.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
FCB-TH	120	600	3200K	75	CL	\$32.00
DXW-TH	120	1000	3200K	150	CL	38.00
FBY-TH	120	1000	3200K	150	FR	39.00
P2/SS-TH	220	1000	3200K	150	CL	38.50



4505MP-SL
2000W IANEBEAM VARIABLE FOCUS SPOTLIGHT with integral accessory holder, 16' cable \$356.00

4506MP-SL	2000W IANEBEAM VARIABLE FOCUS SPOTLIGHT with integral accessory holder, 220/240V, 16' cable	\$356.00
1325-SL	4-Way Barndoor	63.00
1283-SL	Dichroic Filter	264.00
1221-SL	Full Double Scrim	15.00
1222-SL	Full Double Scrim	15.00
1223-SL	Half Double Scrim	15.00
1223-SL	Half Single Scrim	15.00
1519-SL	Trojan Stand	134.00

RECOMMENDED LAMPS

DOUBLE ENDED 5 5/8"

M.O.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
FER-GE	120	1000	3200K	500	CL	\$ 70.80
FEY-TH	120	2000	3200K	300	CL	88.00
FEX-TH	200	2000	3200K	300	CL	113.00

PAR LAMP HOLDERS

Used for lighting of arenas, sports events, churches, etc. More light per 1000W than any other quartz fixture.

02031-WB	1000 PAR 64 WHITE, includes "C" Clamp, Color Frame and Plug	\$140.00
02032-WB	1000 PAR 64 BLACK, includes "C" Clamp, Color Frame and Plug	140.00
02033-WB	1000 PAR 64 WHITE, with Canopy, Gel Frame, and No Plug	125.00
02034-WB	1000 PAR 64 BLACK, with Canopy, Gel Frame, and No Plug	125.00
01034-WB	MOTION PICTURE ADDER For Stand Mounting, 25' Cable with Inline 20A Crush Proof On/Off Switch and Plug	\$25.00
01035-WB	4 Way Barndoor	52.00
01036-WB	Color frame	10.00
02710-WB	Safety cable	6.50
02705-WB	"C" clamp	20.00
08820-L	Replacement Socket, extended Mogul end prong	9.00

RECOMMENDED LAMPS SINGLE ENDED,
EXTENDED MOGUL END PRONG BASE
TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
FFN-TH (VNSP)	120	1000	3200K	800	CL	\$ 92.00
FFP-TH (NSP)	120	1000	3200K	800	CL	92.00
FFR-TH (MFL)	120	1000	3200K	800	CL	92.00
FFS-TH (WFL)	120	1000	3200K	800	CL	92.00
FGM-TH (NSP)	120	1000	5400K	800	CL	190.00
FGN-TH (MSL)	120	1000	5400K	800	CL	190.00
FGP-TH (WFL)	120	1000	5400K	800	CL	190.00
XH136-TH(XWF)	120	1000	5400K	800	CL	190.00
EXC-TH (UNSP)	220	1000	3200K	300	CL	152.00
EXD-TH (NSP)	220	1000	3200K	300	CL	152.00
EXE-TH (MFL)	220	1000	3200K	300	CL	152.00

BASE AND FILL LIGHT



4522-SL
1000W FILL LIGHT with integral 4-way barndoor and cable, for hanging \$275.00

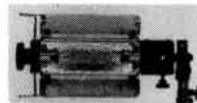
1500-SL	Safety Cable for hanging	\$ 9.00
1248-SL	Full Double Scrim	15.00
1249-SL	Full Single Scrim	15.00
1285-SL	Dichroic filter	66.00
1286-SL	Reflector panels	31.00
1287-SL	Opaline glass	42.00
1525-SL	Table stands	33.00

RECOMMENDED LAMPS

DOUBLE ENDED 4 1/8"

M.O.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
FDF-TH	120	500	3200K	400	CL	\$31.00
FDN-TH	120	500	3200K	400	FR	32.00
EJG-TH	120	750	3200K	400	CL	35.00
EMD-TH	120	750	3200K	400	FR	40.00
EMF-TH	220	800	3200K	200	FR	37.50
FCM-TH	120	1000	3200K	400	CL	30.00
FHM-TH	120	1000	3200K	400	FR	32.00



Lots of light and an even wide angle beam. Has a semi-hard light pattern that can be concentrated by the reflector doors for bounce light.

T1-10-LL	TOTA-LIGHT 1000 with Reflecting Doors and 16' Cable	\$112.00
T1-20-LL	Gel/Diffusion Frame	24.50
T1-80-LL	Replacement 16', 120V Power Cable with Inline On/Off Switch and Plug	22.50

(See Lamp Listing below LADI Set Lights)

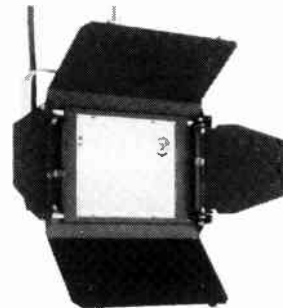


For Soft almost shadowless light. Folds to take on location.

S2-10-LL	SOFT LIGHT 2-2000 with 14' Cable with Inline On/Off Switch	\$285.00
S2-20-LL	Two Leaf Barndoor	75.00
S2-30-LL	Replacement Reflector Shell	70.00

(See Lamp Listing below Set Lights)

SET AND BACKGROUND LIGHT



Heavy-duty wash light for backgrounds, sets or curtains up to 9' in height. They work 4 1/2' from background service eliminating spill light on subject.

5925-SL	1000W LADI SET with integral 4-way barndoor and cable, for stand mount or hanging	\$275.00
1500-SL	Safety Cable for hanging	9.00
1248-SL	Full Double Scrim	15.00
1249-SL	Full Single Scrim	15.00
1285-SL	Dichroic filter	66.00
1286-SL	Reflector panels	31.00
1287-SL	Opaline Glass	42.00
1525-SL	Table Stands	33.00

RECOMMENDED LAMPS

DOUBLE ENDED 4 1/8"

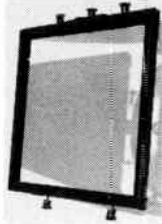
M.O.L. TUNGSTEN-HALOGEN QUARTZ

ANSI Code	Volts	Watts	Temp.	Hours	Type	Price
FDF-TH	120	500	3200K	400	CL	\$31.00
FDN-TH	120	500	3200K	400	FR	32.00
EJG-TH	120	750	3200K	400	CL	35.00
EMD-TH	120	750	3200K	400	FR	40.00
EMF-TH	220	800	3200K	400	FR	37.50
FCM-TH	120	1000	3200K	400	CL	30.00
FHM-TH	120	1000	3200K	400	FR	32.00



PORTABLE/LOCATION LIGHTING

CONTINUED



01017-W8
Gel Frame
Holder

- 01017-W8 Gel Frame Holder (For attachment to Barn-door for extension of Gel Frame) \$52.00
01018-W8 Gel Frame 13.00

GRIP EQUIPMENT



MATTHEWS GRIP EQUIPMENT

When your video or film production calls for grip equipment, Matthews has it! Call WBC for a complete Matthew's catalog.

Our LOW BOY KIT STAND (389780-MT) is our shortest stand measuring only 18" when extended. The LIGHTWEIGHT (387476-MT) KIT STAND is our most economically priced stand. It's light weight and small size make it ideal for the traveling location photographer. The LIGHT/MEDIUM (387483-MT) STAND is identical to the Light-weight except it has tubular legs making it more stable. The MEDIUM KIT STAND (387477-MT) has larger diameter tubing and heavier construction over all. The all new LIGHT/HEAVY STAND (387493-MT) has Beefy Baby risers with tubular legs. Casters are optional. While not as stable as the regular BEEFY BABY, it is lesser priced. BEEFY BABY STANDS Designed for use with baby lighting fixtures. These aluminum stands terminate in a 5/8" pin. The "Rocky Mountain" (R.M.) articulated leg adjusts to facilitate leveling on uneven terrain. PREMIE BABY STAND, the low boy version of the Beefy Baby Stand, the Premie Baby is designed for use with baby lighting fixtures. It terminates in a 5/8" pin. BABY/JUNIOR STANDS These stands are equipped with the new style caster wheels and terminate in a 5/8" pin. They are available in either double or triple riser configurations.

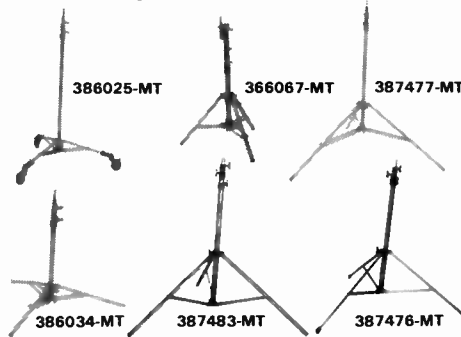
- 389780-MT LOW BOY KIT STAND (aluminum), 3lb., 18"-31" \$ 65.00
389782-MT WALL BRACKET for Low Boy, 3 oz. 27.00
387476-MT LIGHTWEIGHT KIT STAND (aluminum) 2 lb./4 oz., 26"-8' 51.00
387483-MT LIGHT/MEDIUM KIT STAND (aluminum), 2 lb./8 oz., 26"-8' 54.00
387477-MT MEDIUM KIT STAND (aluminum), 3 lb., 30"-9' 61.00
387490-MT LIGHT/HEAVY KIT STAND (aluminum), 7 lb., 45"-12' 105.00
387497-MT CASTERS FOR LIGHT/HEAVY STAND, 1 1/2 lb. 45.00
386034-MT PREMIE BABY (aluminum), 5 lb., 31"-5'10" 139.00
386021-MT LOW BOY JUNIOR STAND, with casters, 21 lbs., 44" to 8'6" 295.00
386029-MT BEEFY BABY ALUMINUM STAND (aluminum), 6 lb., 45"-12' 154.00
386030-MT BEEFY BABY (Double Riser-R.M.*Leg) (aluminum), 7 lb., 37"-8'3" 167.00

- 386031-MT BEEFY BABY (Triple Riser-R.M.*Leg) (aluminum), 8lb., 45"-12' 198.00
386025-MT BABY/JUNIOR STAND (Double Riser) 5/8" Male Pin (steel), 14 lb., 46"-9'6" 225.00
386020-MT BABY/JUNIOR STAND (Triple Riser) 5/8" Male Pin (steel), 18 lb., 55"-13'6" 265.00

REFLECTOR (COMBO) AND LIGHT STANDS

Combo Reflector Stands are considered to be the standard type of stand for use with reflectors. The stand was originally designed for mobile or location production back when studios were just beginning to get away from the back lot concept. The Combo Stand features a three-leg base with a folding brace in each leg. The stand is portable, yet has enough heft to withstand a moderate gust of wind blowing against the reflector surface. The name "combo", an abbreviation for "combination", refers to the fact that the stands are used to support a variety of exterior lighting fixtures.

The Combo/Light Stands are available with a "Rocky Mountain" (RM) articulated leg which is adjustable to facilitate leveling on uneven terrain.



- 386025-MT 366067-MT 387477-MT
386034-MT 387483-MT 387476-MT
366070-MT LIGHTWEIGHT COMBO REFLECTOR Double Riser (steel) RM leg, 18 lb., 48"-11' \$235.00
369573-MT COMBO-REFLECTOR LIGHT STAND (Double Riser) (steel) RM leg, 23 lb., 48"-11' 245.00
366066-MT LOW BOY-REFLECTOR LIGHT STAND (Double Riser) (steel) RM leg, 16 lb., 33"-6'9" 235.00
366065-MT SKY HIGH COMBO-REFLECTOR LIGHT STAND (Triple Riser) (steel) RM leg, 26 lb., 52"-10'6" 285.00
369574-MT ALUMINUM COMBO-REFLECTOR LIGHT STAND (Double Riser) (aluminum) RM leg, 13 lb., 48"-11' 305.00
366067-MT ALUMINUM LOW BOY COMBO-REFLECTOR LIGHT STAND (Double Riser) (aluminum) RM leg, 8 lb./8 oz., 37"-6'9" 275.00
366068-MT COMBO ADAPTOR WHEELS (3) (For 6065, 6066, 6067, 9573, 9574), 6 lb. set 157.00



DOORWAY DOLLY-MT

As the name suggests, the Doorway Dolly was designed to be an inexpensive camera dolly narrow enough to fit through most standard doorways. Over the years, Doorway Dollies have been used not only for this purpose but also as efficient equipment transporters for camera cases, lighting fixtures, cable, etc.

Pneumatic tires are standard, but Doorway can be fitted with track wheels for use on straight dolly track.

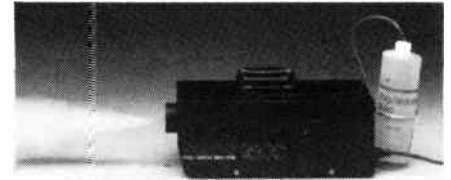
Steering is accomplished by use of a pull handle (like a wagon). A new steering feature has been added which allows the operator to steer from on board the dolly. This is accomplished by inserting the pull handle through the push bar on dolly front.

The basic construction is a wooden platform attached to a steel tubing frame. The platform is fitted with a recessed camera tiedown and is carpeted for a non-slip, low maintenance surface. For extra low angles shots, the dolly can be inverted, thereby positioning the platform closer to the ground.

Additionally, the latest version of the Doorway Dolly includes the ability to extend the rear wheels outward in order to provide greater operating stability.

- 395000-MT DOORWAY DOLLY, Complete w/Push Bar Handles and Side Boards, 94 lb. \$1570.00
395005-MT DOORWAY DOLLY, PUSH BAR ADAPTORS Tilt 34° Angle (Set of 2), 2 lb./4 oz. 37.00
395006-MT DOORWAY DOLLY FLOATION WHEEL ADAPTORS (Set of 2), 15 lb. 205.00
395001-MT TRACK WHEELS FOR DOORWAY DOLLY (Runs on Straight Track Only), 24 lb./8 oz./set 730.00
725089-MT TULIP DELUXE SEAT 450.00
725066-MT TULIP SINGLE SEAT connector with 4-way level head 1648.00
725096-MT TULIP TURRET 1075.00

FOG AND SMOKE SYSTEMS



Rosco's Fog and Smoke system is specially designed for applications in theater, film, television and live entertainment. It has been thoroughly tested for both safety and effectiveness. The products listed here have been proven over thousands of hours of use throughout the entertainment industry. The Academy of Motion Picture Arts and Sciences noted this achievement by voting Rosco an Academy Award "for the development of an improved, non-toxic fluid."

Model 1500

Rosco's newest addition to its range of Fog/Smoke Machines provides the opportunity for high reliability and continuous production of dry smoke at a remarkably low price.

The Model 1500 features an external tank, allowing fluid to be pumped from any container, ranging from the standard one-liter bottle or a huge drum. This, plus some uniquely reliable components permits non-stop operation without interruptions for re-cycling or re-filling.

Features of the 1500 include continuously variable smoke control, allowing you to design the smoke effect you need, from wispy cigarette smoke to billowing clouds.

The machine's heat exchanger (the component that atomizes liquid into smoke) as well as its electrically-operated internal pump and the associated electronics package, are all state-of-the-art devices. The model 1500 comes equipped with a standard remote control module, 6' power cord, and instruction manual.

- 150010-R Model 1500 \$695.00
150050-R Carrying Case 235.00
150060-R Super Remote Control 124.95
854197-R Hose Adaptor 19.95
821760-R Ducting Hose 4" x 25' 27.95
150085-R 50' Remote Extension 55.00
150086-R 100' Remote Extension 65.00

Standard Fog/Smoke Fluid

Rosco's Fog/Smoke Fluid is the standard of the industry. Unlike the products used for this purpose previously, Rosco Fluid contains no petroleum. When vaporized, this unique formulation produces a dense, realistic smoke which is non-toxic and non-irritating. It has no unpleasant odor and leaves no slippery residue and will not irritate eyes, nose or throat. Gallons are packed two gallons per case.

- 820613-R Fog Fluid gallon \$ 49.00
820711-R Fog Fluid liter 12.95
820712-R Fog Fluid 24 liter-case 310.80

GRIP EQUIPMENT

CONTINUED



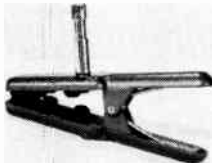
LIGHT METERS

- 09010-WB**
GE Incident Footcandle Meter \$ 75.00
- 09011-WB**
Sekonic Incident Light Meter (reads in footcandle) Complete Kit 198.50
- 09012-WB**
Gossen Sixicolor Color Meter (reads 2600 to 20,000K) indicating proper color \$406.00
- 02142-WB** Two Position 5/8" STAND TO FIXTURE MOUNT with 3/8 Yoke Bolt \$20.00



- 02705-WB**
"C" Clamp with Hand Position Knob—1/2" yoke bolt \$20.00
- 02704-WB**
As above. No plating, paint or hand knob—1/2" yoke bolt \$12.50

- 63070-BM GAFFERS**
GRIP with 1/2" Safety Stud, Non-Marring \$30.95



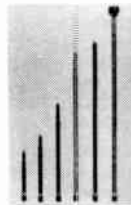
- 02731-WB PANTOGRAPH STIRRUP** \$24.00
- 02734-WB STIRRUP PIPE, two light position** \$10.00



SAND BAG

Used to weight stands for fixtures, boom, gobos and flags to assure stability and safety both on location and in the studio. These high quality lined sandbags can also be emptied and reloaded with ease.

- 07028-WB SINGLE BAG—25 lbs.** \$55.00
- 07029-WB SADDLE BAG—50 lbs.** 75.00



LTM MICROPHONE POLES

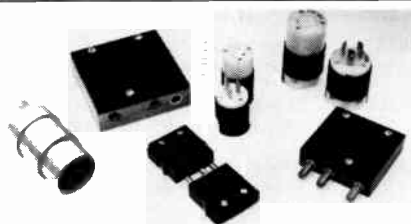
The LTM Microphone Poles are now being made of a new composite material, carbon and fiberglass, making the best microphone poles even better.

They are lighter, stronger, and extremely reliable. There is an access hole at the top if there is a need to run a wire inside the pole.

The new poles are manufactured in five sizes, ranging from 15" collapsed to 3'7" extended for the smallest pole, to 5'2" collapsed to 16'7" extended for the largest pole. The latter also has a 4'8" extension to make it a full 21'.

Code #	Designation	Weight	Price
M2 90A 412-LTM	15" to 44 1/2"	8.6 oz.	\$234.00
M2 90A 413-LTM	20" to 63"	9.5 oz.	235.00
M2 90A 414-LTM	31" to 9'	13.7 oz.	380.00
M2 90A 415-LTM	4'1" to 13'8"	17.6 oz.	400.00
M2 90A 416-LTM	5'2" to 16'7"	23 oz.	470.00
M2 90A 417-LTM	4'8"	9.5 oz.	298.00

PORTABLE DISTRIBUTION



CONNECTORS

All connectors are PHENELIC molded plastic, grounded and shipped with wire ends for the pin connectors. (All are grounded.)

04210-H	15A Parallel Blade (Fits standard recept) Female	\$11.50
04211-H	15A Parallel Blade (Fits standard recept) Male	8.50
04212-H	20A Parallel Blade, Female (Will accept 15A Male above)	19.00
04213-H	20A Parallel Blade, Male (Cannot be used with 15A Female above)	12.25
04214-UC	20A Pin Connector, Female	6.25
04215-UC	20A Pin Connector, Male	6.25
04216-H	20A Twistlock, Female	12.50
04217-H	20A Twistlock, Male	9.50
04218-H	50A Twistlock, Female	79.00
04219-H	50A Twistlock, Male	62.50
04220-UC	60A Pin Connector, Female	20.75
04221-UC	60A Pin Connector, Male	20.75
04222-UC	100A Pin Connector, Female	38.50
04223-UC	100A Pin Connector, Male	38.50
04230-UC	20A Locking Pin Connector, Male	9.25

EXTENSION CABLE

25' NUMBER 14/3 S.O. 1000W		
04030-WB	Parallel Blade "U" Ground, 15A/120V	\$71.00
04031-WB	Grounded Pin Plug, 20A/120V	61.00
04032-WB	Grounded Twist Lock, 20A/120V	77.00
25' NUMBER 12/3 S.O. 2000W		
04073-WB	Parallel Blade "U" Ground, 20A/120V	78.50
04074-WB	Grounded Pin Plug, 20A/120V	68.75



04075-WB	Grounded Twist Lock, 20A/120V	\$84.50
50' NUMBER 14/3 S.O. 1000W		
04033-WB	Parallel Blade "U" Ground, 25A/120V	96.00
04034-WB	Grounded Pin Plug, 20A/120V	86.00
04035-WB	Grounded Twist Lock, 20A/120V	102.00
50' NUMBER 12/3 S.O. 2000W		
04083-WB	Parallel Blade "U" Ground, 20A/120V	104.00
04084-WB	Grounded Pin Plug, 20A/120V	96.00
04085-WB	Grounded Twist Lock, 20A/120V	112.00

PIGTAILS



MALE TO FEMALE PIGTAIL 12/3 2000W

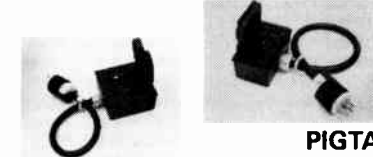
04112-WB	Male 15A/120V Parallel Blade "U" Ground to Female 20A/120V Grounded Pin Plug	\$39.00
04113-WB	Male 15A/120V Parallel Blade "U" Ground to Female 20A/120V Grounded Twist Lock	\$52.50



PIGTAIL TWO-FER

MALE TO FEMALE 12/3 2000W

04123-WB	Male to Two Female 20A/120V Grounded Pin Plug	\$67.50
04124-WB	Male to Two Female 20A/120V Grounded Twist Lock	80.50



PIGTAIL POWER BOXES

MALE TO FEMALE 1000W 15A/120V

WATER RESISTANT APPROVED BOX		
04411-WB	Parallel Blade "U" to Duplex	\$105.50
04412-WB	Parallel Blade "U" to Quad	129.50
04413-WB	Parallel Blade "U" to Duplex, Individually Switched-Quad Box	180.00

MALE TO FEMALE 2000W 20A/120V

WATER RESISTANT APPROVED BOX		
04418-WB	Parallel Blade "U" to Duplex	\$108.00
04419-WB	Parallel Blade "U" to Quad Box	132.50
04420-WB	Parallel Blade "U" to Duplex Individually Switched-Quad Box	137.00
04423-WB	Pin Plug to Duplex	114.50
04424-WB	Pin Plug to Quad	133.50
04425-WB	Pin Plug to Duplex, Individually Switched-Quad Box	126.00
04428-WB	Twist Lock to Duplex	114.50
04429-WB	Twist Lock to Quad	132.00
04430-WB	Twist Lock to Duplex Individually Switched-Quad Box	136.00

PORTABLE DISTRIBUTION

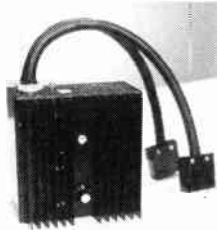
CONTINUED



LTM PEPPER POT DIMMER

LTM One and Three Channel Pepper Pot Dimmer Designed to accommodate three individual lights in one dimming box, with a separate control channel for each light. Plugs directly into 120V household or factory outlets. No additional power is needed. Each channel controls up to 1kW. Also features a 40A Triac with 10A circuit breaker and input surge protection per channel.

Three channel pepper pot,
 6³/₄"H x 6"W x 12¹/₄"L **\$550.00**
 One channel pepper pot,
 3¹/₄"H x 2³/₄"W x 5"L **194.00**



2.4kW PIGTAIL INLINE DIMMER

0600502-SL Parallel Blade "U" **\$325.00**
 0600506-SL Pin Plug **325.00**
 0600503-SL Twist Lock **325.00**
 06006-SL Remote Control Unit **81.00**



MAIN ENTRY POWER CONTROL BOX

Main power entry with CAM-LOK connectors to 50A 240V, 3 phase/4 wire main breaker distributed to eight 20A breaker/switches protecting two each 20A recessed plugs all housed in an approved enclosure. Box is constructed from aluminum. 150 usable amps at 125V.
04439-WB Main Entry Power Control Box \$2300.00

Note: All Portable Distribution exposed cabling is of S.O. Standards (resists oil, water, etc.). Other wire types and configurations may be Custom Fabricated upon request. (All grounded wiring).

GAFFER SUPPLIES

THORN LAMPS

Thorn, an English corporation, is one of the world's largest manufacturers of quartz lamps. The CYX, one of the most used lamps in the industry, has a stronger base than those of competitors...made from super strong glass/mica plus a high temperature metal retaining clip assures maximum strength from the base to the quartz envelope. Lamp tests show they are 50% quieter and last up to 60% longer life at 3200K^o, 125V.



QUARTZ LAMPS

ANSI Code	Case Qty.	Watts	Color Temp.	Cat. Price
BAB-GE	6	20	2925K	\$ 20.90
BAB-TH	12	20	2925K	21.00
BAB-WK	12	20	2925K	17.60
BAH-GE	24	300	3200K	5.20
BBA-GE	24	250	3400K	4.10
BCA-GE	24	250	4800K	4.50
BEJ-GE	24	200	3075K	19.30
BEP-GE	24	300	3400K	11.40
BFA-GE	24	375	3400K	18.40
BFK/BFL-GE	24	750	3050K	49.20
BHC/DYS/ DYV-GE	24	600	3200K	30.10
BHC/DYS/ DYV-TH	24	600	3200K	28.00
BHC/DYS/ DYV-WK	25	600	3200K	23.00
BRH-GE	12	1000	3350K	59.10
BTL-GE	12	500	2950K	50.40
BTL-TH	12	500	2950K	47.00
BTL-WK	20	500	2950K	45.50
BTM-TH	12	500	3200K	47.00
BTM-WK	20	500	3200K	47.30
BTN-GE	12	750	3000K	50.20
BTN-TH	12	750	3000K	47.00
BTN-WK	20	750	3000K	50.30
BTP-GE	12	750	3200K	50.80
BTP-TH	12	750	3200K	47.00
BTP-WK	20	750	3200K	50.60
BTR-GE	12	1000	3200K	57.10
BTR-TH	12	1000	3200K	52.50
BTR-WK	20	1000	3200K	56.60
BVR-GE	24	30	2860K	11.40
BVT-GE	6	1000	3050K	78.70
BVT-TH	6	1000	3050K	70.00
BVT-WK	25	1000	3050K	74.30
BVV-GE	6	1000	3200K	78.70
BVV-TH	6	1000	3200K	70.00
BVV-GE	6	2000	3200K	97.40
BVW-TH	6	2000	3200K	88.00
BWA-GE	6	2000	3200K	139.30
BWA-TH	12	2000	3200K	120.00
BWF-GE	6	2000	3200K	150.80
BWF-SY	6	2000	3200K	186.00
BWG-SY	6	2000	3200K	196.50
BWG-TH	6	2000	3200K	140.00
BWL-TH	6	2000	3200K	140.00
BWM-GE	6	750	3200K	88.20
BWN-GE	6	1000	3200K	96.10
CAW/CAX-GE	24	50	2050K	9.30
CAW/CAX-WK	25	50	2050K	8.80
CBA-GE	24	500	3200K	59.50
CBA-WK	25	500	3200K	41.80
CBJ/CBC-GE	24	75	2950K	18.20
CBJ/CBC-WK	25	75	2950K	12.30
CBX/CBS-GE	24	75	2950K	16.40
CBX/CBS-WK	25	75	2950K	11.80
CCM/CHD-GE	24	200	3150K	23.50
CDS/CDX-GE	24	100	2975K	18.20
CDS/CDX-WK	25	100	2975K	12.80
CEM-GE	24	120	3000K	12.60
CEM-WK	25	120	3000K	8.80
CEW/CFE-GE	24	150	3100K	17.60
CEW/CFE-WK	25	150	3100K	12.40
CLS/CLG-GE	24	300	3150K	18.20
CLS/CLG-WK	25	300	3150K	12.80
CLX/CMB-GE	24	300	3150K	20.70
CLX/CMG-WK	25	300	3150K	14.60
CMV/CMT-GE	24	300	3100K	29.70
CMV/CMT-WK	25	300	3100K	20.90
CWA-GE	24	750	3250K	38.70
CWA-WK	25	750	3200K	26.90
CWZ-TH	6	1500	3200K	96.00
CXZ-GE	6	1500	3200K	127.50
CXZ-TH	6	1500	3200K	115.00
CYV-GE	6	1000	3200K	100.00

ANSI Code	Case Qty.	Watts	Color Temp.	Cat. Price
CYV-TH	6	1000	3200K	\$ 90.00
CYX-GE	6	2000	3200K	137.40
CYX-TH	6	2000	3200K	120.00
DAH-GE	24	500	3000K	40.60
DAH-WK	25	500	3000K	28.50
DCT (XL)-SY	6	2000	3050K	192.70
DEB-GE	24	500	2850K	60.50
DGH-GE	24	750	3050K	59.90
DGH-WK	25	750	3050K	37.80
DMX-GE	24	500	3200K	28.20
DMX-WK	25	500	3200K	26.10
DNS-GE	24	500	3100K	54.30
DNS-WK	20	500	3100K	39.20
DNT-GE	24	750	3100K	57.20
DNT-WK	20	750	3100K	41.20
DNV-GE	24	1000	3100K	60.30
DNW-GE	24	500	3050K	58.70
DPY-AP	6	5000	3200K	400.00
DPY-GE	6	5000	3200K	600.00
DPY-TH	6	5000	3200K	535.00
DRC/DRB-GE	24	1000	3280K	41.70
DRC/DRB-WK	25	1000	3280K	27.80
DRS-GE	24	1000	3280K	35.70
DRS-WK	25	1000	3280K	26.00
DSE/DKE-TH	10	1000	3200K	54.00
DSE/DKZ-GE	12	1000	3200K	66.30
DSE/DKZ-SY	12	1000	3050K	72.00
DSF/DKX-TH	10	1500	3200K	62.00
DSF/DKX-GE	12	1500	3200K	70.50
DSF/DKX-SY	12	1500	3150K	83.70
DTA-TH	6	1500	3200K	90.00
DTY-GE	1	10000	3200K	1155.30
DTY-TH	6	10000	3200K	995.00
DVY-GE	12	650	3200K	37.10
DVY-WK	25	650	3200K	28.20
DWE-GE	12	650	3200K	44.50
DWT-GE	6	1000	3000K	92.10
DWY-GE	24	650	3400K	39.40
DWY-TH	50	650	3400K	26.00
DWY-WK	25	650	3400K	\$32.00
DWZ-GE	12	375	2950K	38.80
DWZ-WK	25	375	2950K	28.30
DXK-GE	12	650	3400K	47.60
DXN-GE	24	1000	3400K	55.90
DXN-TH	50	1000	3400K	37.00
DXN-WK	25	1000	3400K	42.80
DXR/DXS-GE	24	1000	3400K	22.20
DXW-GE	24	1000	3200K	45.90
DXW-TH	50	1000	3200K	38.00
DXW-WK	25	1000	3200K	41.30
DYA-GE	12	1000	3200K	53.90
DYA-WK	25	1000	3200K	46.60
DYG-GE	24	250	3400K	28.70
DYG-TH	50	250	3400K	30.00
DYG-WK	25	250	3400K	26.90
DYH-GE	24	600	3200K	36.20
DYH-TH	10	600	3200K	30.00
DYH-WK	25	600	3200K	28.30
DYR-GE	24	650	3200K	50.70
DYR-TH	50	650	3200K	33.50
DYR-WK	25	650	3200K	34.00
DYS/DYV/ BHC-GE	24	600	3200K	30.15
DYS/DYV/ BHC-TH	50	600	3200K	25.00
DYS/DYV/ BHC-WK	25	600	3200K	23.00
EAL-GE	24	500	3200K	17.60
EBR-GE	24	375	3400K	16.50
EBV-GE	24	500	3400K	4.20
EBW-GE	24	500	4800K	5.70
ECT-GE	24	500	3200K	4.70
EGC/EGD-GE	12	500	3200K	64.90
EGE-GE	50	500	3000K	64.90
EGE-TH	12	500	3000K	58.00
EGE-WK	20	500	3000K	61.00
EGF-GE	12	750	3200K	72.80
EGG-GE	12	750	3000K	72.80
EGG-TH	12	750	3000K	66.00



GAFFER SUPPLIES

Table with columns: ANSI Code, Case Qty., Watts, Color Temp., Cat. Price. Includes sub-section 'CONTINUED' and lists various gaffer supplies like EGG-WK, EGJ-GE, etc.

Table with columns: ANSI Code, Case Qty., Watts, Color Temp., Cat. Price. Lists various gaffer supplies like EXN-GE, EXT-TH, etc.

Table with columns: ANSI Code, Case Qty., Watts, Color Temp., Cat. Price. Lists various gaffer supplies like FFN-TH, FFP-GE, etc.

HMI LAMPS

Table with columns: ANSI Code, Case Qty., Watts, Color Temp., Price. Lists HMI lamp models like BA200-SY, BA575-SY, etc.

FLUORESCENT TUBES

Table with columns: Model, Case Qty., Watts, Color Temp., Price. Lists fluorescent tube models like T12-24-DT, T8-36-DT, etc.



ROSCOLUX



Rosco has been a leading producer and innovator of color filter products since early in the 20th century. Its premier range, Roscolux, is manufactured using a unique technology to insure the longest possible life under hot theatrical lights.

Table with 2 columns: Product Name and Price. Includes items like 880710-R Swatchbook and 881510-R Roscolux Designer Color Selector.

Large table listing Roscolux color selector items with columns for product name, color, and price. Includes items like 1001-R Lt. Bastard Amber and 1052-R Light Lavender.

DAYLIGHT CONVERSION FILTERS

RoscoSun Daylight Conversion Filters are used when shooting in an interior at a 3200°K balance. They are required at windows or other openings to convert incident daylight to an approximation of 3200°K.

Table listing Daylight Conversion Filters with columns for product name, description, and price. Includes items like 3401-R RoscoSun 85 Converts 5500°K daylight to a nominal 3200°K.

NEUTRAL DENSITY FILTERS

RoscoSun Neutral Density Filters reduce the level of incident daylight. Two of the materials also convert daylight to a nominal 3200°K.

Table listing Neutral Density Filters with columns for product name, description, and price. Includes items like 3402-R RoscoSun N3 Reduces light intensity one stop.

TUNGSTEN CONVERSION FILTERS

Rosco Tungsten Conversion Filters convert incandescent 3200° Kelvin sources to nominal daylight. These filters offer a deep-dyed base for optical clarity and high heat stability.

Table listing Tungsten Conversion Filters with columns for product name, description, and price. Includes items like 3202-R Full Blue (CTB) Boosts 3200°K to nominal 5500°K daylight.

For Cinegel rolls, add 13 to product number. Form Cinegel sheets add 11 to product number.



CINEGAL SELECTOR

Table listing Cinegal Selector items with columns for product name and price. Includes 880910-R Large Size Cinegel (3 1/4" x 6") Swatchbook.

DIFFUSION MATERIAL

Table listing Diffusion Material items with columns for product name, description, and price. Includes 3006-R Tough Spun, 4 1/2" x 22' Roll.

PAINT

Table listing Paint items with columns for product name, description, and price. Includes 5710-R Chroma Key Blue (gal.).

TAPE

(2" x 60 yds. — 24 Rolls Per Case)

DUCT TAPE

Table listing Duct Tape items with columns for product name, description, and price. Includes 3988L-WB Black and 3988R-WB Gray.

(2" x 60 yds — 24 Rolls Per Case)

Table listing Duct Tape items with columns for product name, description, and price. Includes 398-BL-WB Black, 398GR-WB Gray, and 398-CLR-WB Red, Green, Blue, Gold, Yellow, and White.

(2" x 60 yds. — Per Roll)

CAMERA TAPE

Table listing Camera Tape items with columns for product name, description, and price. Includes 1" x 60 yds. — Per Roll.

GAFFERS TAPE

Table listing Gaffers Tape items with columns for product name, description, and price. Includes PC-628-WB Gray, Black, White, Red, Yellow, Blue and Olive Drab.

(2" x 60 yds. — Per Roll)

DOUBLE SIDED TAPE

TC-19-100WB 2" x 36 yds. \$13.50

PAPER STRIPPING/CODING TAPE

546-WB 1" x 60 yds. Red, Green, Yellow, Black, and White \$3.00

GLOW TAPE

GLO-WB 1" x 10 yds. Yellow Glow (Variable widths available) (5 roll minimum) \$25.00

FILAMENT SHIPPING TAPE

410-WB 3/4" x 60 yds. \$2.00

REINFORCED PAPER

SHIPPING TAPE

Table listing Shipping Tape items with columns for product name, description, and price. Includes 653-WB 3" x 500' Brown and 630-WB 3" x 500' White.

CURTAINS, TRACK & ACCESSORIES

CURTAINS

—CYC

Cyclorama curtains are seamless up to 125' in length and 28' in height. The cloth is inspected before fabrication to assure against weaving flaws and sewn to our rigid specifications.



SEAMLESS LINO-WEAVE

This curtain has a 4" heavy-duty binding at the top with spring harness snaps on one foot centers. The 2 3/4" bottom hem has a #90 lead tape weight sewn 1" above the bottom of the hem in a separate muslin pocket.

Table listing Seamless Lino-Weave items with columns for product name, description, and price. Includes 07005-WB White, 07006-WB CBS Gray, and 07007-WB Powder Blue.

SEAMLESS SCRIM

Table listing Seamless Scrim items with columns for product name, description, and price. Includes 07038-WB White and 07039-WB Black.

TAUTING POLE

Tauting poles are used generally with the CYC curtain to assure proper vertical tension on the cyclorama. They stand vertical at both ends of the CYC with adjustable claws attached through the vertical eyelet on the curtain.

Table listing Tauting Pole items with columns for product name, description, and price. Includes 07013-WB Tauting Pole Base, 07014-WB (8') Tauting Pole, 07015-WB (9') Tauting Pole, 07016-WB (10') Tauting Pole, 07017-WB (11') Tauting Pole, 07018-WB (12') Tauting Pole, 07019-WB (13') Tauting Pole, and 07020-WB (14') Tauting Pole.

STUDIO DISTRIBUTION

CONTINUED

any possible situation, standard 18" or 24" pigtail with connector of your choice. A unique four circuit cyc box for powering your cyc lights. Unit available completely assembled including 1 1/2" ID pipe (not included in price below) ready to hang...saving time and cost at installation. Comes primed and painted with 3" permanent decal assuring circuit identification from the control console.

GRID CONNECTOR STRIPS

05015-WB	
10' Strip, 4 20A * Pigtails	\$439.50
05018-WB	
13' Strip, 5 20A * Pigtails	543.25
05021-WB	
16' Strip, 6 20A * Pigtails	672.00

Other Configurations Available
Price on Application

*Add \$16.00 per Circuit for 20A NEMA Twist Lock.

Add \$10.50 per circuit for Parallel Blade "U" Ground

Note: Price for Connector Strip Bracket Assemblies, Single Pipe are included in price of Connector Strip and are completely assembled ready to install. They are shipped in a wooden crate, price included.



WALL BOXES

Fabricated to the high standards of the above mentioned connector strip with desired number of circuits and ampacity. Ready for wall or pipe mounting.

05310-WB	
Two Pigtails, 2-20A	\$112.00
05315-WB	
Three Pigtails, 2-20A, 1-50A	161.50
05311-WB	
Three Pigtails, 3-20A	150.00

Other Configurations Available
Price on Application

Replacement 3", 3 color circuit numbers **.50**

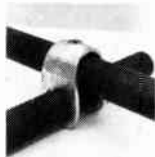
GRID HARDWARE

All hardware may be purchased to suspend the complete lighting grid system. Included would be load channel, for ceiling mounting positions, all thread, required nuts and bolts, beam clamps, concrete anchors, grid hardware and pipe cut to length.

05107-WB LIGHT PIPE **ft./\$2.80**

The heart of good lighting is the grid system. It is very important to use 1 1/2" ID light pipe.

05194-WB LIGHT PIPE Handling Charge **ft./\$.15**



05109-WB GRID LOCK **\$13.00**

Used to fasten perpendicular 1 1/2" ID light pipe together when constructing a grid. Also used for movable light pipe to place a light at any position in the grid. The grid lock will not let the pipe torque.

05113-WB	Beam clamp 3/8", attaches "Load Channel" to most types of angle iron, such as truss deck beams	\$6.25
05114-WB	Bolt Assembly 3/8", attaches "Load Channel" (as above) when slots are provided by truss deck beams (money savings)	.80
05115-WB	Sleeve Anchor 3/8" (for low PSI density concrete ceiling and floors)	.80
05116-WB	Wedge Anchor 3/8" (for high PSI density concrete ceiling and floors)	2.00
05117-WB	Toggle bolt 3/8" assembly for hollow wall	\$1.00
05118-WB	Load Channel, slotted sections, 20' x 1 5/8" x 1 5/8", 12 gauge	82.00
05112-WB	Load Channel Splicing Clamp	10.00
05119-WB	All Thread Suspension Rod, 3/8" x 12' plated	7.50
05120-WB	Locking Spring Nut	1.25
05121-WB	Square Locking Washer	1.10
05122-WB	Hex Head Nut, 3/8"	.10
05123-WB	Flat Washer, 3/8"	.10
05124-WB	Lock Washer, 3/8"	.05
05125-WB	Connector Strip Bracket Assembly, Single Pipe	25.00
05126-WB	Connector Strip Bracket Assembly, Double Pipe	31.50
05191-WB	Corner 90° Cyc Light Pipe, 4 1/2' radius, 1 1/2" ID Slip Couplings — both ends	90.00
05192-WB	Pipe Cuts, 1 1/2" ID	1.75
05193-WB	Pipe Threads, 1 1/2" ID	6.00
05195-WB	Light Pipe Coupling	4.00
05196-WB	Light Pipe Wall Flange, 1 1/2" ID	12.95
05197-WB	Movable Light Pipe, 6' x 1 1/2" ID	18.00
05198-WB	Light Pipe end plug 1 1/2" ID	1.75
05109-WB	Grid Locks, 1 1/2" x 1 1/2" for Movable Light Pipe	13.00

STUDIO LADDERS

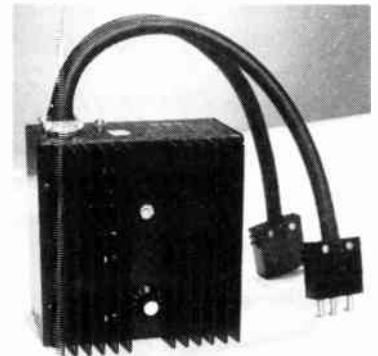


Designed to meet or exceed all safety standards. These ladders are manufactured to work to grid height providing a 6' reach from ladder platform to grid with a 30" safety rail. The ladder is fabricated from 1" square tubing with all joints welded. Gaffers storage chest and basket for extension cables and other frequently used studio equipment are recommended. The large casters are rubber with toe touch locking. A second ladder is recommended for larger studios. Finished with two coats of durable enamel.

09210-WB	Studio Ladder for 8' Grid	\$ 720.00
09211-WB	Studio Ladder for 9' Grid	785.00
09212-WB	Studio Ladder for 10' Grid	840.00
09213-WB	Studio Ladder for 11' Grid	910.00
09214-WB	Studio Ladder for 12' Grid	930.00
09215-WB	Studio Ladder for 13' Grid	995.00
09216-WB	Studio Ladder for 14' Grid	1050.00
09217-WB	Studio Ladder for 15' Grid	1120.00
09218-WB	Studio Ladder for 16' Grid	1145.00
09219-WB	Studio Ladder for 17' Grid	1200.00
09220-WB	Studio Ladder for 18' Grid	1270.00
09221-WB	Studio Ladder for 19' Grid	1335.00
09222-WB	Studio Ladder for 20' Grid	1400.00
09228-WB	Gaffers Basket	65.00
09229-WB	Gaffers Tool Box, Locking	275.00

LIGHTING CONTROL SYSTEM

DIMMER BANKS — PORTABLE



ALPHA DIM TO INCLUDE:

(For Portable/Location Use)

Alpha Dim 2.4kW portable dimmer with integral potentiometer is used to dim 2-1000W or 1-2000W fixtures. It is used in small studios or on location. A 10' low voltage cable with remote control can be purchased.

0600502-SL	Parallel Blade "U"	\$325.00
0600506-SL	Pin Plug	325.00
0600503-SL	Twist Lock	325.00
06006-SL	Remote Control Unit	B1.00



CD80 PACKS-SL

Designed for portable or wall-mounted use, these packs are available with analog or multiplex inputs in the following configurations: twenty-four 1.2KW dimmers, twelve 2.4KW dimmers, six 6.0KW dimmers and six 12.0KW dimmers. All have GR, GP, GTL or terminal strip outputs, Toroidal chokes, Terminal block phase change facility.



LIGHTING CONTROL SYSTEM

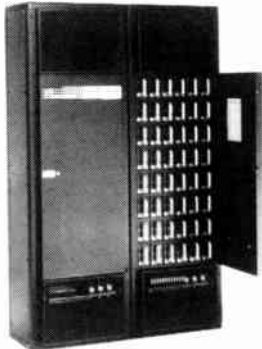
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- 8124-SL 120V with 12.24kW dimmers, two 20A GTL receptacles per dimmer, 65 lb. **\$4035.00**
- 8125-SL 120V with 12.24kW dimmers, two 20A GP receptacles per dimmer, 65 lb. **4035.00**
- 8126-SL 120V with 12.24kW dimmers, two 20A GR receptacles per dimmer, 65 lb. **4035.00**
- 8127-SL 120V with 12.24kW dimmers, terminal strips for hard wiring, 65 lb. **4035.00**
- 8066-SL 120V with six 6kW dimmers, one 50A GTL receptacle per dimmer, one 50A test outlet, 65 lb. **4625.00**
- 8067-SL 120V with six 6kW dimmers, one 60A GP receptacle per dimmer, one 60A test outlet, 65 lb. **4625.00**
- 8068-SL 120V with six 6kW dimmers, terminal strip for hard wiring, 65 lb. **4625.00**
- 8063-SL 120V with six 12kW dimmers, one 100A GP receptacle per dimmer, one 100A test outlet, camlock plugs, 85 lb. **5510.00**
- 8064-SL 120V with six 12kW dimmers, terminal strip for hard wiring, 85 lb. **5310.00**
- 8124SA-SL 220/240V with 12 2.2kW dimmers, two 10A GTL receptacles per dimmer, 65 lb. **4230.00**
- 8125SA-SL 220/240V with 12 2.2kW dimmers, two 10A GP receptacles per dimmer **4230.00**

OPTIONAL EQUIPMENT FOR CD80 PACKS

- 8033-SL 18" Daisy Chain control for jumper cable **\$ 63.00**
- 8034-SL 72" Daisy Chain control jumper cable **72.00**
- 11052-10-SL Daisy Chain control jumper cable for 1.2kW packs only **68.00**
- 8179-SL Trouping Case for CD80 packs **790.00**
- 8127A-SL 220/240V with 12 2.2kW dimmers, terminal strips for hard wiring, 65 lb. **4085.00**
- 8066SA-SL 220/240V with six 6.6kW dimmers, one 30A GTL receptacle per dimmer, one 30A test outlet, 65 lb. **4895.00**
- 8067SA-SL 220/240V with 30A GP receptacle per dimmer, one 30A test outlet, 65 lb. **4895.00**
- 8068SA-SL 220/240V with six 6.6kW dimmers, terminal strip for hard wiring, 65 lb. **4895.00**

DIMMER BANKS Studio



CD80 DIMMER BANK AND MODULES-SL

With over 1000 permanent installations, this is the most successful dimmer ever produced. CD80 offers compact, high-density dimmer banks with dual 2.4kW, single 6.0kW and 12.0kW dimmer modules.

Dimmer Rack Features

- Extremely shallow —only 17 1/4" deep
- Up to 96 plug-in 2.4kW dimmers in 24 1/2" width
- Full-length guides and self-aligning dimmer connectors for positive dimmer alignment
- Only four modules controlled per driver card
- Equipped with quiet fans to maintain proper operating temperature
- Easy to install
- Easy to troubleshoot and maintain
- Optional "status quo" feature to maintain lighting output
- Optional "split rack" control

Dimmer Module Features

- Heavy-gauge aluminum chassis
- Heavy-duty, self-aligning power and control plugs
- Toroidal chokes
- Available for 220/240V operation
- Easy to service

Custom Built Price on Application

NEW CD80/8 DIMMERS-SL

- High-performance toroidal chokes for increased filtering
 - Reduced electrical noise in audible harmonic range
 - Enclosure is the same size as standard CD80 modules
- Custom Built Price on Application

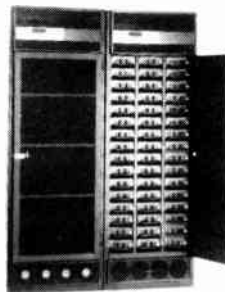


CD80 ROLLING RACKS-SL

The reliability of CD80 in a touring rack.

Features

- Heavy-duty construction
- Compact design, up to 96.2kW dimmers per rack
- Camloc power connectors as standard
- Electronic cage easily accessible
- Wide variety of back panel configurations
- Optional internal patch panel and main breaker
- Also available with CD80/8 modules



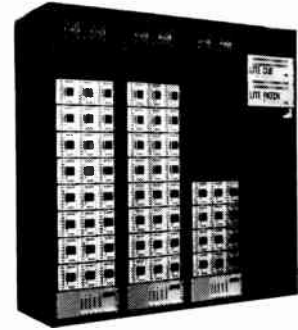
DC90 DIMMER SYSTEMS-SL

DC90 is a full-size dimmer system that uses AC line power, and produces DC output to the connected load.

Features

- Available in full and half rack, standing and rolling configurations
 - Dimmer status feedback
 - Plug-in dimmers with self-aligning dimmer connectors
 - Superior cooling with vertical air plenums and fan arrays
 - Built-in boost capability
 - Dual 2.4kW, 6.0kW and 12kW dimmer sizes
 - AC modules and non-dims also available
- Custom Built Prices on Application

QUAD DIMMER SYSTEM-EC/SL



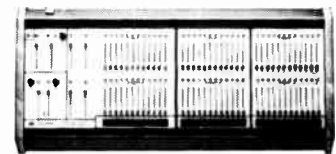
Available in four heights (43", 59", 76", 85") DCF Cabinets provide independent ventilation for each dimmer, thus preventing cross-temperature effect and increasing dimmer life. Standard 19" EIA. Dimmers are available in 10, 20, 50, 60 and 100A ratings. Contractor access is assured by removable panels on all faces.
Custom Built Prices on Application

Studio dimmer racks are modular to simplify installation. This system is complete with needed dimmer plug-in modules, wiring, breakers and all other components ready to be set in its permanent location.

NOTE: SUPPRESSION OF RADIO FREQUENCY INTERFERENCE IN DIMMERS

SCR dimmers utilize rapid switching of electrical current for effective dimming. This rapid switching creates radio frequency interference (RFI) that causes "noise" problems in audio systems. All well-designed dimmers contain choke coils to filter most of the RFI. There is confusion, however, about the best method to describe such filtering. A common approach is to quote a total rise time, which does not consider spikes. A more accurate approach is that proposed by Motorola Semiconductor Products in their article AN-295 on RFI suppression, wherein the rate of current rise is recommended to be less than 0.35A (350mA) per μ sec. All dimmers meet or exceed these recommendations.

CONTROL CONSOLES Manual



PRELUDE MANUAL PRESET CONTROL CONSOLE-EC/SL

Designed as a powerful basic console, perfect for portable use. Also ideal for auxiliary control in large systems and is compatible with most electronic dimmers.

Features

- 12 to 48 channels
- 2 scene configuration
- Selectable A/B/I per controller
- 4 submasters
- Split crossfader with separate times
- Timed independent master
- Time range: Manual to 6 minutes
- Grand master
- Blackout switch
- Variable bump level
- Real-time analog output
- Adjustable output-mates with many brands of dimmers

- 01-7810-12-SL Basic Module **\$1288.00**
- 01-7712-20-SL 12-Two scene expansion module **496.00**
- 01-7740-00-SL Patch module **1360.00**

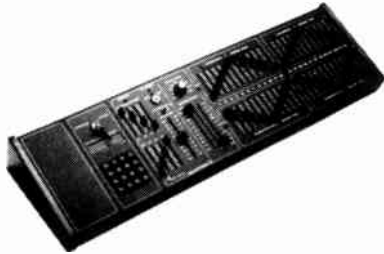


Options Include

- Digital communications—superior protocol
- 12 channel effects module
- Operation light
- Key switch
- Auxiliary panel/houselights, etc.
- Digital output model offers these additional options
 - Full matrix, proportional patch module
 - Handheld focus control
 - Library storage of patch data
 - Printout of patch assignments
 - Video monitor of channel outputs

POA

CONTROL CONSOLES Manual/Memory/Patch



Mantrix 2S-SL

A classic in manual control systems, Mantrix 2S continues to meet the needs of an ever demanding industry, with switch-selectable four-scene preset or two-scene preset with overlapping submaster capability. Matrix 2S controls 288 dimmers on a maximum of 84 channels.

Features

- Electronic proportional patch
- 1 grand master and blackout switch
- 2 split crossfaders with rate control
- 8 overlapping submasters
- Modular construction for easy expansion and service

All prices include 25' control cable.

2 Scene preset console has up to 56 overlapping submasters.

8108-SL	36-Channel without Patch, 45 1/2" one-tier console	\$3420.00
8109-SL	48-Channel without Patch, 45 1/2" one-tier console	4050.00
8110-SL	12-Channel without Patch, 20 1/4" one-tier console	2070.00
8111-SL	12-Channel with Patch, 20 1/4" one-tier console	3150.00
8112-SL	24-Channel without Patch, 33 1/2" one-tier console	2700.00
8113-SL	24-Channel with Patch, 33 1/2" one-tier console	3780.00
8114-SL	36-Channel with Patch, 45 1/2" one-tier console	4500.00
8115-SL	48-Channel with Patch, 45 1/2" one-tier console	5130.00
8116-SL	36-Channel with Patch, 33 1/2" two-tier console	4950.00
8117-SL	48-Channel with Patch, 33 1/2" two-tier console	5580.00
8118-SL	60-Channel with Patch, 45 1/2" two-tier console	6300.00
8119-SL	72-Channel with Patch, 45 1/2" two-tier console	6930.00
8120-SL	84-Channel with Patch, 45 1/2" two-tier console	7560.00

MANTRIX 2S WITH MEMORY-SL

All prices include 25' control cable.

8181-SL	12-Channel, 33 1/2" one-tier console	\$ 8,186.00
8182-SL	24-Channel, 45 1/2" one-tier console	8,822.00
8183-SL	24-Channel with Video Module, 45 1/2" one-tier console	9,550.00
8184-SL	36-Channel, 45 1/2" one-tier console	9,458.00
8186-SL	36-Channel with Video Module, 45 1/2" two-tier console	10,641.00

8187-SL	48-Channel with Video Module, 45 1/2" two-tier console	11,278.00
8188-SL	60-Channel with Video Module, 45 1/2" two-tier console	11,914.00
8189-SL	72-Channel with Video Module, 45 1/2" two-tier console	12,550.00

VIDEO MONITOR

Not included in system above.

Video module is required to support a video monitor.

8150-SL	Video Monitor (amber) for Mantrix 2S with video module, with 10' video cable	\$568.00
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Optional Equipment for Mantrix

3-229015-		
010-SL	Remote Console Receptacle Station	\$ 124.00
8021/01,		
03, 05-SL	Vinyl Cover for single-tier console	129.00
8021/07,		
09, 11-SL	Vinyl Cover for double-tier console	145.00
8017-SL	72" Stand	1098.00
8018-SL	72" Stand with Return	1270.00
8019-SL	Castered Stand 36" wide	1150.00
8020-SL	Castered Stand 48" wide	1241.00
8022-SL	Light Accessory for stand only	278.00
8030-SL	25' Dimmer Control Extension Cable	115.00
8031-SL	50' Dimmer Control Extension Cable	150.00
8032-SL	100' Dimmer Control Extension Cable	225.00
8174-SL	Trouping Case for 8110 and 8111	420.00
8175-SL	Trouping Case for 8112, 8113, 8181	567.00
8176-SL	Trouping Case for 8114, 8115, 8108, 8109, 8182, 8183, 8184	678.00
8177-SL	Trouping Case for 8116 and 8117	675.00
8178-SL	Trouping Case for 8186, 8187, 8188, 8189, 8118, 8119, 8120	792.00



MINI LIGHT PALETTE 2-SL

The next generation of mid-range console design, MLP/2 controls 384 dimmers on 200 channels, with 200 average cues, 100 groups and 100 effects.

Features

- Dual color high-resolution CRTs
- 10 submasters, pile-on or split, with bump buttons assignable individually or with recorded groups
- 3 playback faders
- Standard electronic or full tracking backup
- Support for optional hand held remote, desire remote and printer included as standard

Custom Built Price on Application



CELEBRITY-EC/SL

(For use with Custom Studio Dimmer Banks and the Playmate II Portable Dimmer Pack)

Modular celebrity comes in many different models; in single or two-tiered designs. (There's one perfect for you.) Either 24 or 48 celebrity Scene Masters can be configured with up to 96 control channels, and with patch, celebrity controls up to 512 dimmers. Controller comes with vinyl cover, 25' control cable, and 10' power cable.

7700-10-SL	Basic Celebrity Control Console, 24 Scene 12 Channel with operator's light	\$2600.00
7720-00-SL	24 Scene Master Expansion Module	756.00
7730-00-SL	12 Channel Expansion Module	793.00
7740-00-SL	Patch Module	1360.00
7700-01-SL	Single tier console stand with casters	1020.00
7200-02-SL	Dual tier console stand with casters	1133.00
7750-00-SL	Tape Module Plus (10) Tapes	1060.00
7760-00-SL	Special Effects Module	1015.00
7770-00-SL	Wireless Remote Controller	2790.00
7774-00-SL	Wired Remote Controller	604.00
7790-40-SL	Blank Plate	40.00
7791-10-SL	Wall Plug-in Box	60.00



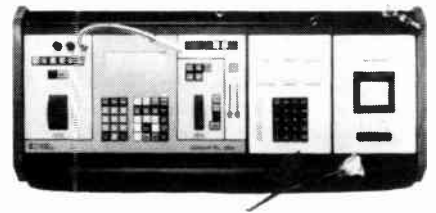
LIGHTBOARD M-SL

A full memory system with modular two-scene preset feature, LBM combines the ease of memory control and flexibility of manual control. LBM controls 768 dimmers on 96 control channels, with 200 cues and FX memories.

Features

- Single high-resolution color CRT
- Up to 48 overlapping submasters, with bump buttons, assignable individually or in groups
- 1 electronic crossfader
- 2 timed/manual split crossfaders
- 2 independent FX memory playback faders
- 8 function keys to record a series of console actions for instantaneous playback. Accessible on the main console or remotely
- Support for optional hand held remote and printed included as standard

Custom Built Price on Application



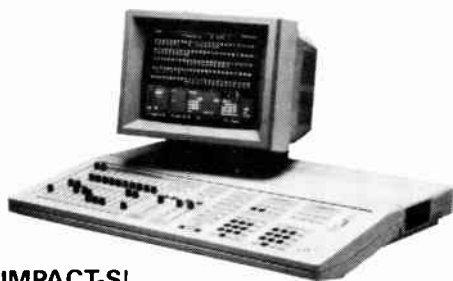
CELEBRITY PLUS-EC/SL

Celebrity plus provides greatly enhanced memory capacity in an easy to use format. It can also be used with the celebrity, or as a stand-alone memory control. Celebrity plus offers access to 250 memory cues and 125 channels through autosequencing, by means of a split wheeled A/B crossfader and a single wheeled C/D crossfader. It may be installed initially, or added to your celebrity console. Celebrity plus is CRT compatible, displaying data updates in both "on-stage" and "pre-view" modes.

6780-25-SL	Basic celebrity plus Control Console, 125 Channels and 200 Cues	\$6199.00
6780-64-SL	Basic celebrity plus Control Console, 64 Channels and 250 Cues	6199.00
7740-00-SL	Patch Module	1360.00
7700-01	Single tier console stand with casters	1020.00
7750-00-SL	Tape Module Plus (10) Tapes	1195.00
7790-40-SL	Blank Plate	40.00
7791-10-SL	Wall Plug-in Box	60.00



STUDIO PACKAGES



IMPACT-SL

The newest addition to the Strand Lighting control line, Impact controls 960 dimmers on 350 channels, with over 400 average cues. Impact outputs AMX 192 or DMX 512 dimmer communications protocol and provides a LAN for system expansion.

- Single high-resolution color CRT
- 24 group masters, with bump buttons
- 2 independent electronic crossfaders
- 1 manual split crossfader
- Simultaneous cue sequences, with plus and minus cue ability on a single crossfader
- 100 "Super Cues" for immediate reloading all playback buffers
- Support for optional hand held remote, printer and full tracking backup included as standard
- A unique feature, "multi-view," for cue comparisons

Custom Built Prices on Application



LIGHT PALETTE 3-SL

The most respected name in lighting control, LP/3 controls 1536 dimmers on 800 channels, with 300 average cues, 100 groups and 100 effects.

- Dual color high-resolution CRTs
- Operator-selectable Q-only or track operation
- Variable number of submasters, up to 13
- Variable number of playback faders, up to 6
- Default fade time and profile
- Circuit/dimmer alpha labeling
- Full tracking backup available
- Support optional for hand held remote, designer's remote and printer included as standard

Custom Built Price on Application

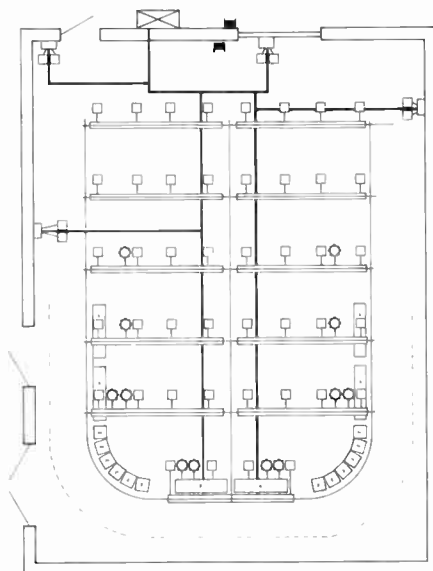


PREMIERE-EC/SL

For the most sophisticated control. Ideal for large production studios where large lighting jobs have to be made manageable—fast. Up to 4000 2K or 5K dimmers patch to 500 channels with 2 to 4 color CRTs for the ultimate control available.

Custom Built Price on Application

B-278



30' x 40' TELEVISION STUDIO LAYOUT 14' GRID HEIGHT

00-9130-40

Studio lighting packages are designed to supply an excellent system for a particular size studio. The "Complete Package" has all the lighting equipment and control equipment needed to light sets and the production area of the studio. The equipment is not over specified.

The "Start Package" is assembled with the idea of getting enough equipment from the "Complete Package" (master list) to begin production and then, add from the "Complete Package" as your production needs increase.

81015-WB	10' x 15' START	POA
81115-WB	10' x 15' COMPLETE	POA
81520-WB	15' x 20' START	POA
81620-WB	15' x 20' COMPLETE	POA
82030-WB	20' x 30' START	POA
82130-WB	20' x 30' COMPLETE	POA
83040-WB	30' x 40' START	POA
83140-WB	30' x 40' COMPLETE	POA
84050-WB	40' x 50' START	POA
84150-WB	40' x 50' COMPLETE	POA
85060-WB	50' x 70' START	POA
85160-WB	50' x 70' COMPLETE	POA
86070-WB	60' x 90' START	POA
86170-WB	60' x 90' COMPLETE	POA
87500-WB	70' x 100' START	POA
87600-WB	70' x 100' COMPLETE	POA

BILL OF MATERIALS

KEY AND BACK LIGHTS

- 30 1000 Watt 6" Sweep Focus Fresnel
- 18 2000 Watt 10" Focusing Fresnel

BASE AND FILL LIGHTS

- 10 1000/2000 Watt 14" Screw Focus Scoop
- 6 1500 Watt Focusing Broad
- 2 1000/4000 Watt Featherlite Super Softlight
- 16 Floor Adjustable Telescoping Hanger

CYCLORAMA, SET AND BACKGROUND LIGHTS

- 12 1000 Watt Two Light Two Circuit Cyc Light
- 6 1000 Watt Four Light Four Circuit Cyc Light

SPECIAL LIGHTS

- 2 1000 Watt 6" x 9" Ellipsoidal
 - 1 Porta Kit 4000
 - 3 Medium Duty High Riser Stand
 - 2 Heavy Duty Low Riser Stand
 - 6 Extension Cable (225')
 - 3 Male-Female Pigtail Adapter
 - 3 Power Box
 - 3 Inline 1000 Watt Dimmer
- Gaffers Tape, Diffusion Material, Gel Primaries

ELECTRICAL DISTRIBUTION

- 11 Connector Strips (109') with 44 - 20 Amp and 12 - Four Light Cyc Pigtail Receptacles
- 4 Wall Boxes with 8 - 20 Amp Pigtail Receptacles

LIGHTING GRID

- 203 feet 1 1/2" I.D. steel light pipe with beam clamps, load clamps, load channel, grid locks, bracket assemblies and other hardware as required for complete grid installation.

DIMMING EQUIPMENT

- 96 20 Amp QD Dimmers with SCR's, toroidal RFI filters and System Analysis Indicators

LIGHTING CONTROL

- 1 24 Channel Two Scene Preset PM Board with 96 x 24 low voltage patch.
- 2 Wall Mount Control Receptacles

CYCLORAMA AND CURTAINS

- 1 60' White Lino-weave 13' curtain
- 2 20' Chroma Key Blue Background 13' curtain
- 140 feet Curtain Track with 8 corners

Note: Cyclorama, Curtains and Double Track come complete with tauting poles and bases, sandbags, eyelet claws, velcro fasteners, carriers, brackets and clamps as required for complete track installation and operation.

GAFFER'S EQUIPMENT

- 1 Studio Ladder with Basket and Locking Tool Box
- 2 Footcandle Meter

Note: Lamps are included for all lighting instruments and fixtures. Spare lamps are not included. (Lamps are normally a supply item rather than a capital expenditure.)

For simplicity of illustration, cyclorama lights are not shown under grid pipes.

Refer to Green Section for Addresses and Telephone Numbers.

BROADCAST AUDIO CORP.**Audio Consoles****Series IV Broadcast Consoles**

All basic features, dimensions, and panel layouts of the System 16, 12 and 8 have been retained, so that virtually every new feature of the Series IV can be retrofitted to any Series II or UMC console manufactured by Broadcast Audio Corporation.

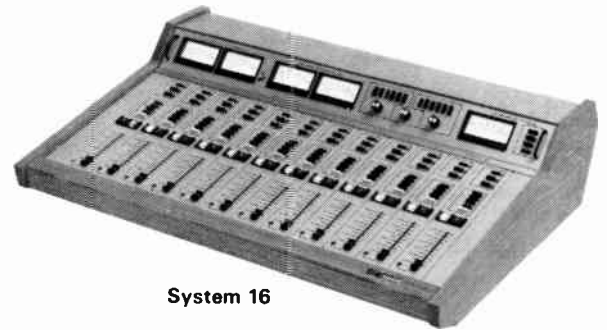
Operating Mode:	3 stereo outputs, plus mono/sum
Mixing Channels:	Up to 16 mixers, each with separate mono mike and stereo high level inputs. ± 10 dB gain trim switch for unusual input levels
Audio Inputs:	Up to 48 stereo inputs—3 inputs per mixer
Audio Outputs:	Total of 8—stereo Program, stereo Audition, stereo Utility, Mono/Sum, stereo Monitor, stereo Headphones, stereo Cue and stereo auxiliary (studio) Monitor. Program, Audition, and Utility outputs are +8dBm transformer balanced. Note: Utility output not available on System 8
Source Impedance:	Microphone—150 ohms transformer balanced and floating—input impedance 1500 ohms. Optional active balanced mike input. Line—20,000 ohms active balanced and floating. Output source impedance—150 ohms
Patch Points:	Prefader, with connectors on mixer motherboard. Connector also provided for phantom power supply
Remote Control:	Each mixer can be turned on/off with momentary contact to ground. Relays are assignable to any combination of mixers. Two 2-Form B (mute) Three Form C (start) on SYS 8; eight on SYS 12/16, momentary or maintained
Power:	105-125VAC, 50/60Hz, 250VA max. 210-250VAC, 50/60Hz optional
Size:	System 16—8.75" H x 44" W x 25" D System 8 and 12—8.75" H x 35" W x 25" D
Frequency Response:	Within ± 0.5 dB, 20-20,000Hz, all program and monitor circuits
Harmonic Distortion:	Less than 0.15% THD 20-20,000Hz at +8dBm output level. Less than 0.02% at 1,000Hz, +28dBm
Intermodulation Distortion:	Less than 0.03% SMPTE at +28dBm or below
Noise:	Mike inputs -125dBV equivalent input noise, 20-20,000Hz, unweighted, with -55dBV input level to one active mixer input. Line inputs -90dBm equivalent input noise, 20-20,000Hz, unweighted, with 0dBm level to one active mixer input
Crosstalk:	Better than 80dB between any adjacent program or cue bus, 20-15,000Hz
Gain:	Mike inputs 90dB nominal; Line inputs 38dB nominal for 0 VU output (+8dBm)
Monitor Outputs:	Stereo headphone—4V into 10 ohms; stereo cue—5W into 8 ohms; stereo control room and auxiliary monitor outputs—0.5V into 10K ohm load, unbalanced

System 16-IV Stereo Broadcast Console. Includes heavy-duty regulated power supply and 8 mixers, expandable to 16. Two muting and eight control relays. Walnut or oak trim \$11,350.00

System 12-IV Stereo Broadcast Console. Includes heavy-duty regulated power supply and 8 mixers, expandable to 12. Two muting and eight control relays. Walnut or oak trim \$10,250.00

System 8-IV Stereo Broadcast Console. Includes heavy-duty regulated power supply and 6 mixers, expandable to 8. Two muting and three control relays. Walnut or oak trim \$7,750.00

System 6-IV Stereo Broadcast Console. Includes rackmount power supply and 4 mixers, expandable to 6. Electronic monitor and cue muting. Walnut or oak trim \$4,550.00



System 16

Series IV Extender, with 4 mixers, expandable to 6 \$2850.00

System 6 RM Modular Rackmount console. Includes internal power supply and monitor amplifier \$4950.00

Console prices include pressure-sensitive matched color in/out labels, blank panels, plus Molex crimping tool and input connectors (Electrovert connectors on 6 RM).

Accessories

(Most will retrofit to Series II)

Additional Stereo Mixer Modules. Plug into existing connectors, replacing blank panels supplied in unused mixer positions \$550.00

Pan Pot Option on Standard Series IV mixer \$50.00

Equalized Stereo Mixer Modules, with 5-frequency EQ and Pan Pot, replacing 3 input selector switch. If substituted, add \$200.00 per EQ Mixer Module to base price \$750.00

Aux Send Mixer Module, with EQ and Pan Pot. Includes audition program, and mono outputs, plus 2 pre/post fader sends to L & R utility \$850.00

Peak Level Indicating System with high brightness focused LEDs behind meter to illuminate red area. Price includes meter buffer amplifiers. System 8/12—Series II or Series IV \$275.00

System 16—Series IV \$375.00

System 16—Series II includes 12V power supply module \$475.00

3-frequency Headphone EQ Panel for retrofit to all System 6, 8, 12, and 16 consoles. Mounts in place of trim panel at right side of console \$375.00

Studio Monitor Control, for remote selection of monitor output to studio speakers (requires additional monitor amplifier). Includes panel with 6-position switch and level control. 25' cable is provided (will not retrofit to Series II consoles) \$350.00

Remote input/output panel. Mounts in unused mixer position. Two 4-position selector switches, to add additional audio inputs or feed output of console to multiple locations \$350.00

Remote Input/Output Panel, with a single reel/reel control \$450.00

Remote Input/Output Panel, with dual reel/reel control \$550.00

Single Reel/Reel Control. Mounts in unused mixer position \$160.00

Dual Reel/Reel Control. Mounts in unused mixer position \$235.00

Redundant Power Supply. Two independent systems in 5 1/4" rack space. Order with console \$450.00

Spare Power Supply. Requires 5 1/4" rack space \$600.00

Fixed Copy Stand. Tinted plexiglass with walnut or oak base. Mounts on top of console meter panel. 17" W x 12" H \$55.00

Free Standing Sliding Copy Stand. Tinted plexiglass with walnut or oak base. Not for use with overbridge \$150.00

System 8/12 37" W x 20" H \$200.00

System 16 46" W x 20" H \$200.00

Overbridge. 5 1/4" panel space (includes blank panels) \$450.00

Stereo Cue Speakers, mounted in overbridge \$150.00

LED Digital Timer, with 16 reset inputs, mounted in overbridge \$350.00

Prices and Specifications Subject to Change Without Notice.

B-279

System 20 Stereo Broadcast Console

System 20 is a model of engineering simplicity, using motherboard construction, and a plug-in interconnecting harness. 3 independent industrial grade power supplies are rackmounted in a common housing, with front panel AC and DC status indicators. The power supply is short circuit proof.

System 20 has options that enable you to design your own audio console, for on-air use or production. 3 plug-in mixers are available: Type A (left) has in/out selectors, 7 frequency graphic equalizer, low cut filter, stereo/mono mode switch and pan pot; Type B (center) has in/out selectors, stereo/mono mode switch and pan pot; Type C (right) has in/out selectors only. Each mixer has a transformer balanced mike input and a differential balanced line level input. A universal output amplifier is used as line amplifier, stereo headphone and stereo cue amplifier.

Operating Mode:	3 stereo outputs, plus mono/sum.
Mixing Channels:	Up to 20 mixers, each with separate mono mike and stereo high level inputs. ± 10 dB gain trim switch for unusual input levels
Audio Inputs:	Up to 66 stereo inputs — 3 inputs per mixer plus two 4 position remote input switches, user assigned to mixer inputs. These can also be used for submaster assignments
Audio Outputs:	Total of 8 — stereo Program, stereo Audition, stereo Utility, Mono/Sum, stereo Monitor, stereo Headphones, stereo Cue and stereo auxiliary (studio) Monitor
Source Impedance:	Microphone — 150/250 ohms transformer balanced. Line — 600 ohms differential balanced (20K ohms balanced bridging optional)
Patch Points:	Mixers — prefader; Line amplifiers — between summing and output circuits
Remote Control:	Each mixer can be turned on/off with momentary contact to ground. Relays are assignable to any combination of mixers. Two 2-Form B (mute) eight 1-Form C, momentary or maintained (start) four 1-Form C, momentary (stop)
Power:	105-125VAC, 50/60Hz, 250VA maximum. 210-250VAC, 50/60Hz optional
Size:	10.5" H x 50.25" W x 33.5" D (85.1 x 127.6 x 26.7 cm)
Frequency Response:	Within ± 0.3 dB, 20-20,000Hz, all program and monitor circuits
Rise Time:	Less than 6 μ sec. line input to any program output, less than 12 μ sec. microphone input to any program output
Slew Rate:	9V/ μ sec
Harmonic Distortion:	Less than 0.09% THD 20-20,000Hz at +8dBm output level. Less than 0.02% at 1,000Hz, +28dBm
Intermodulation Distortion:	Less than 0.03% SMPTE at +28dBm or below
Noise:	Mike inputs -125dBV equivalent input noise, 20-20,000Hz, unweighted, with -55dBV input level to one active mixer input. Line inputs -90dBm equivalent input noise, 20-20,000Hz, unweighted, with 0dBm level to one active mixer input
Crosstalk:	Signal to crosstalk greater than 70dB, 20-15,000Hz, any program input to any program output
Gain:	Mike inputs 91dB nominal; Line inputs 38dB nominal for 0 VU output (+8dBm)
Input Headroom:	30dB with nominal gain setting



System 20

Monitor Outputs:	Stereo headphone — 4V into 10 ohms; stereo cue — 10W into 8 ohms; stereo control room and auxiliary monitor outputs — 0.5V into 10K ohm load
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System 20 Stereo Broadcast Console. Mainframe price includes power supply, all electronics except mixer modules and optional accessories. Plus a MOLEX crimping tool and input connectors. Specify walnut or oak trim **\$9,550.00**

Accessories

Type A Mixer Module with input/output selectors, 7 frequency graphic equalizer, low cut filter, stereo/mono mode switch and pan pot	\$875.00
Type B Mixer Module with input/output selectors, stereo/mono mode switch and pan pot . . . . .	.675.00
Type C Mixer Module with input/output selectors . . . . .	.575.00
Blank Panels , to mount in unused mixer positions . . . . .	.22.50
Studio Monitor Control , for remote selection of monitor output to studio speakers (requires additional monitor amplifier). Includes panel or tabletop enclosure with 6 position switch and level control. 25' cable included	\$.350.00
Dual Reel/Reel Control . . . . .	.260.00
Talkback Module (3 stations plus base) with Test Oscillator . . . . .	.675.00
Test Oscillator only . . . . .	.250.00
Peak Level Indicating System with high brightness focused LEDs behind meter to illuminate red area. Includes meter buffer amplifiers	\$.400.00
Fixed Copy Stand. Tinted plexiglass with walnut or oak base, mounts on top of console meter panel. 12" H x 17" W . . . . .	.55.00
Free Standing Sliding Copy Stand. Tinted plexiglass with walnut or oak base. 22.75" H x 52" W . . . . .	.225.00
Overbridge. 5 1/4" panel space. Includes blank panels . . . . .	.450.00
Stereo Cue Speakers , mounted in overbridge . . . . .	.200.00
LED Digital Clock , mounted in overbridge . . . . .	.350.00

BROADCAST AUDIO CORP.

Amplifiers

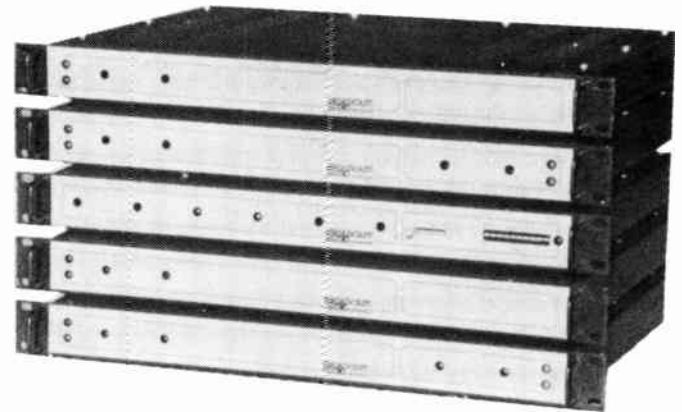
Amplifiers

All 4 amplifiers share the same 1³/₄" enclosure, which can be rack or table mounted. The amplifier circuits are on individual plug-in cards, which are inserted at the rear of the enclosure, and can be removed or installed with power on. Each amplifier has recessed front panel gain controls.

BA-235/435 Monitor Amplifiers

2 or 4 35W amplifiers, with internal bridging switch. Toroid power transformer eliminates buzz or vibration. Dual power supplies in BA-435. MOSFET transistors used as output power amplifiers.

Rated Power	
Per Channel:	35W (8 ohm load), 45W (4 ohm load)
Rated Power, 2 Channels Bridged:	90W (8 ohm load)
Harmonic Distortion at Rated Power:	20Hz-20kHz, 8 ohm load. Less than 0.05%
Intermodulation Distortion:	Less than 0.05% SMPTE
Frequency Response at Rated Power:	20Hz-20kHz \pm 0.1 dB
Slew Rate:	20V/ μ s
Voltage Gain:	30dB (adjustable)
BA-235	\$650.00



Input Impedance:	30K ohms balanced differential, 10K unbalanced
Signal-to-Noise:	100dB (600 ohm source)
Phase Shift:	\pm 10° 20Hz-20kHz
Damping Factor:	400 (8 ohms, 35W)
Overload Recovery:	10dB over clipping, 1 μ s
Output Protection:	Timed current limiting
Input overload:	+ 24dBm
Connections:	Input—phone jack. Output—barrier strip
Power Requirement:	120/240VAC, 50/60Hz
BA-435	\$1,050.00

BA-6x4 Distribution Amplifier

Accepts up to 6 amplifier cards, each with active balanced inputs and 4 transformer balanced outputs. LED bar level indicator with 7-position switch. Maximum output of +30dBm, with superb isolation and ultra low distortion.

Rated Output:	+ 8dBm
Max. Output:	+ 30dBm
Output Impedance:	600 ohms nominal (floating, transformer, balanced) 100 ohms internal impedance
Input Impedance:	20K ohms balanced active
Max. Input Level:	+ 24dBV
Frequency Response:	10Hz-30kHz \pm 0.5dB at +28dBm output level or lower
Harmonic Distortion:	Less than 0.07% 30Hz-20kHz at +18dBm output. Typically less than 0.006% at 1kHz with output level of +18dBm

Intermodulation Distortion:	Less than 0.06%, -18dBm to +18dBm output level
Signal-to-Noise:	Greater than 95dB at +28dBm output, with 20dB gain, 20Hz-20kHz unweighted
Gain:	Adjustable -80dB to +20dB
Temp. Range:	0°-40°C ambient
Connections:	Inputs—barrier strips. Outputs—individual plugs for each amplifier output
Power Requirement:	120/240VAC \pm 10% 50/60Hz
BA-6x4	\$1,250.00

BA-205/405 Phono Preamp

Two or four plug-in amplifier cards, with passive RIAA equalization to eliminate TIM caused by feedback EQ circuits. Internal switches adjust loading for specific cartridges. Subsonic rumble filter. Maximum output of +30dBm. Automatic redundant power supply.

Rated Output:	+ 8dBm
Max. Output:	+ 30dBm
Output Impedance:	600 ohms nominal (floating, transformer, balanced) 100 ohms internal impedance
Input Sensitivity:	7mV at 1kHz input level for +8dBm output level
Input Overload:	350mV
Frequency Response:	RIAA or IEC \pm 0.2dB 20Hz-20kHz
Harmonic Distortion at Rated Output:	0.01% at 1kHz
BA-205	\$750.00

Intermodulation Distortion:	0.006% SMPTE
Signal-to-Noise:	85dB 30Hz-15kHz unweighted
Gain Adjustment:	38-48dB
Crosstalk:	90dB at 15kHz
Input Characteristics:	Adjustable input loading. 50K ohms resistive, 100pF capacitive nominal. Non-reactive due to passive EQ network
Rumble Filter:	f _c 25Hz, rolloff 18dB/octave
Connections:	Input—RCA phono. Output—barrier strip
Power Requirement:	120/240VAC \pm 10% 50/60Hz
BA-405	\$1,050.00

BROADCAST ELECTRONICS, INC.**Tape Cartridge Equipment****Phase Trak 90 Series 9000
Tape Cartridge Playback Machines**

• Automatic stereo phase correction • Superb audio performance • Dynafex® noise reduction • Non-repeat lockout • Automatic audio muting • Phase Lok V precision adjustment head block • Innovative cartridge guidance system • True modular design with plug-in assemblies • All cue tones standard—including FSK detection • Reliable DC servo motor • Hall effect switches • Optional digital timer

Automatic Non-Encoding Phase Correction

The phase correction circuit continually monitors and corrects the phase relationship between the playback audio of the right and left channels. The output of any cartridge will undergo automatic phase correction when it is played through the Phase Trak 90—regardless of what machine was used to produce the cartridge originally

Excellent Audio Performance

The Phase Trak 90 boasts a signal to noise ratio of > 80dB (stereo, with Dynafex noise reduction operational). At ± 2 dB, 40Hz to 16kHz, the excellent frequency response delivers audiophile quality in any application. Wow and flutter specifications are also outstanding at < .12%

Automatic High/Low Level Sensing

Provides automatic level switching for cartridges recorded at higher levels (typically 250nW/m) through the application of optical sensing tabs on the front of the cartridge.

Automatic Audio Muting

No outboard audio switcher is required for multi-machine applications. When a particular machine is started, all others in the chain are automatically muted.

Four Standard Cue Circuits

The Phase Trak 90 comes equipped with four standard digital cue sensor circuits including an FSK (3.5kHz) decoder which provides an RS-232 compatible data output for automatic logging.

Phase Trak 90 Series 9000

(Long life head(s), three cue tones and fast forward standard) 117/220VAC 50/60Hz tabletop mounting, 7.5 ips (3.75 and 15 ips selectable)

Modular Construction

The Phase Trak 90 is completely modular for the ultimate in servicing convenience. All modules are easily removed from the back of the cabinet. Test points and adjustments are reached by removing the top cover. In addition, all modules feature gold-to-gold pin and socket contacts to enhance long term reliability.

A rear panel headphone jack is provided for independent monitoring.

Air Damped Solenoid

Firm pinch roller pressure is ensured through the use of a powerful, air damped solenoid. This solenoid features electronic current regulation for superior reliability. It applies sufficient pressure to pull virtually any type of tape while maintaining cool, silent operation.

Reliable DC Servo Motor

The Phase Trak 90 features a crystal-controlled, brushless DC servo motor. This provides dependable operation with low wow and flutter, high efficiency and low acoustic noise. Through the Vari Speed control it is possible to adjust the motor speed $\pm 10\%$ with an external oscillator.

Cartridge Guidance System

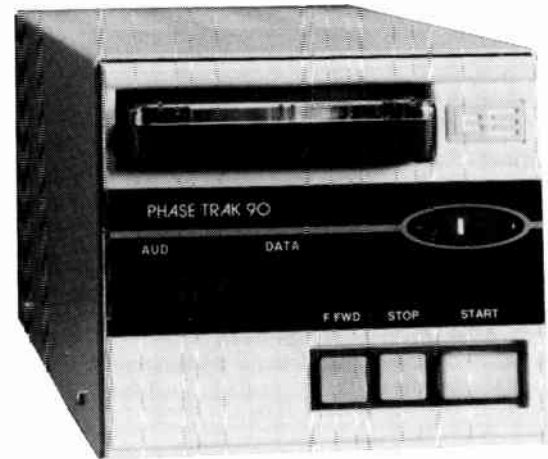
Right and left side guides grip the cartridge as it enters the deck and applies just enough force to ensure proper positioning. At the same time, two spring loaded top guides apply downward pressure. The result is silky-smooth cartridge insertion and excellent positioning regardless of variations in cartridge size.

Phase Lok V Head Block

The Phase Lok V head block utilized in the Phase Trak 90 is one of the only head assemblies in the industry to offer a locking azimuth adjustment that is independent of the height and zenith adjustments. This allows the user to achieve near-perfect head alignment quickly and easily.

Optional Timer

An optional timer is available for the Phase Trak 90. This counter timer is always synchronized to the motor speed for an accurate reading of "tape time" regardless of the actual elapsed "real time". The timer will re-set to zero whenever a cartridge is inserted and will stop counting when the cartridge stops playing. The display can also be set to freeze when an EOM (End of Message) tone is detected. This allows the operator to determine the actual length of the message.

**Phase Trak 90**

PT90P	900-9000-000 Mono, playback (A and AA size carts)	\$2195.00
PT90PS	900-9002-000 Stereo, playback (A and AA size carts)	2595.00

Phase Trak 90 Record/Playback

Includes all the features of the Phase Trak 90 PS, plus front panel metering with two 18 segment LED meters, automatic tape analysis, four record cue circuits, automatic splice finder and a built-in test oscillator.

Front Panel Metering

The LED meters will indicate left and right channel input or output audio. The meter scale extends from +5 to -4dB in 1dB intervals, with VU ballistics for the meter section and peak ballistics for the peak indicator.

Automatic Tape Analysis

A microprocessor tape analysis system eliminates the fear of introducing a new brand of audio tape. The Phase Trak 90 RPS will automatically evaluate a new tape and memorize the bias, level and EQ settings to obtain optimum performance.

Four Record Cue Circuits

The four standard cue circuits include 150Hz, 1kHz, 8kHz and an RS232-to-FSK encoder. The RPS also incorporates record defeat and cue erase functions.

Automatic Splice Finder

When the SPL switch on the front panel is pushed, the RPS will run at 22.5 ips until the splice detector locates the tape splice.

Test Oscillator

A built-in test oscillator facilitates maintenance on the Phase Trak 90RPS. Eight tones can be selected ranging from 50Hz up to 16kHz, along with a convenient "sweep mode" switch.

PT90RP	900-9001-000 Mono record Playback (A, AA, B and BB size carts)	\$3495.00
PT90RPS	900-9003-000 Stereo Record Play (A, AA, B and BB size carts)	3795.00

Options and Accessories

900-9013	Rack shelf for 19" EIA rack, 7" H.	\$ 150.00
900-9014	Rack shelf filler panel, 1/3 rack, for 9013	30.00
900-9015	Rack shelf filler panel, 1/2 rack, for 9013	40.00
910-9007	Test Extender PC Board.	100.00
900-9016	Tape timer, 4 digit, factory installed	100.00
970-0099	Tape sensor foil tab kit (package of 100)	10.00
900-5409-001	Record amplifier, mono with cues	1200.00
900-5410-001	Record amplifier, stereo, with cues	1300.00
970-0087	Adaptor cable kit for PT90P/PS to 5409/5410 record amp	115.00
970-0088	Record head connector kit for PT90P/PS when used with record amp	140.00

BROADCAST ELECTRONICS, INC.

Tape Cartridge Equipment

**SERIES 5300C AND SERIES 5400C
THREE-DECK TAPE CARTRIDGE MACHINES**

Non-repeat Lockout in Both Models

Non-repeat lockout prevents any tape cartridge from being played more than once unless the operator resets it from the "lockout" mode by pressing the appropriate STOP button, or by removing and re-inserting the cart. The illuminated STOP switches for each deck will flash on and off to indicate that a cart is in the lockout mode. The Non-repeat Lockout feature may be disabled through an internal jumper if desired.

Toroidal Transformer

Both series incorporate a toroidal transformer in the primary power supply for cool, efficient operation with a significant reduction in stray magnetic fields.

Phase Lok V Head Assembly

The removable Phase Lok V head assembly provides tight alignment control with a locking azimuth adjustment independent of height or zenith adjustments.

Powerful, Air Damped Solenoids

Both series utilize air damped solenoids that guarantee firm, reliable, cartridge engagement. The solenoid control circuit utilizes solid-state switching and a regulated current source for cool, quiet operation.

Series 5300C Three-Deck Tape Cartridge Machines

The 5300C cart machine incorporates many of the popular innovations of its companion model 5400C, but adds the capability to handle A, B, and AA cartridge sizes.

The 5300C is also one of the easiest machines to install and maintain. It is fully equipped with plug-in decks and PC cards. Tabletop mounting can be utilized, or a rackmount option is available.

Solid Mechanical Design

The 5300C features an internal structural bulkhead which insures stable, accurate deck and capstan positioning. The top capstan bearing is mechanically supported by the sturdy aluminum bulkhead for consistent alignment independent of front panel reference.

Series 5300C (A, AA, B and BB Size Carts) (Long Life Head(s) standard)

Model	Stock No.	Description	Price
117VAC 60Hz Tabletop Mounting (220VAC 60Hz available)			
5301C	900-5301-001	Mono, Playback	\$3500.00
5302C	900-5302-011	Mono, Playback with Cue Tones	3700.00
5303C	900-5303-001	Stereo, Playback	4000.00
5304C	900-5304-011	Stereo, Playback with Cue tones	4200.00

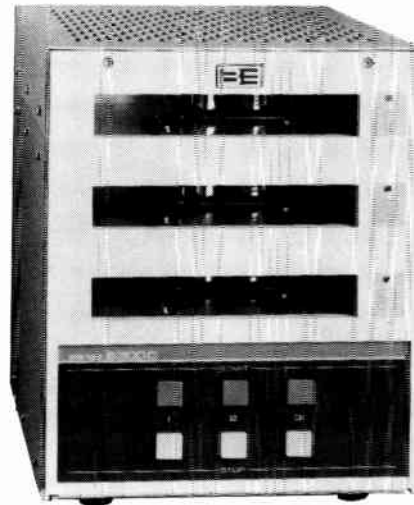
Series 5400C Three-Deck Tape Cartridge Machines

The 5400C is designed for the user who requires the utmost in long-term reliability and ease of operation. As a three deck cart machine, the 5400C will fit perfectly in any production or on-air studio environment.

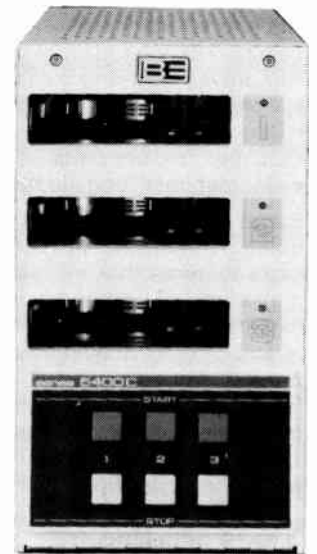
The 5400C is fully equipped with plug-in decks and PC cards for quick, easy servicing. The trim line design of the 5400Cs makes it easy to rackmount as many as three machines side by side.

Series 5400C (A and AA Size Carts) (Long Life Head(s) Standard)

Model	Stock No.	Description	Price
117VAC 60Hz Tabletop Mounting (220VAC 60Hz available)			
5401C	900-5401-001	Mono, Playback	\$3600.00
5402C	900-5402-011	Mono, Playback with Cue Tones	3800.00
5403C	900-5403-001	Stereo, Playback	4100.00
5404C	900-5404-011	Stereo, Playback with Cue Tones	4300.00



5300C



5400C

Recorders (Long Life Heads and Three Cue Tones Standard)

Model	Stock No.	Description	Price
5300 Series (For use with 5300C Series Playback Cartridge Machines)			
5309C	900-5309-011	Recorder, Mono with Q Trip, 117VAC, 60Hz.	\$1150.00
5310C	900-5310-011	Recorder, Stereo with Q Trip, 117VAC, 60Hz.	1350.00
5400 Series (For use with 5300C, and 5400C Series Playback Cartridge Machines)			
5409C	900-5409-011	Recorder, Mono with Q Trip, 117VAC, 60Hz.	\$1200.00
5410C	900-5410-011	Recorder, Stereo with Q Trip, 117VAC, 60Hz.	1350.00
SW5E	904-5000	Audio Switcher for Series 5300 and 5400	250.00

Rack Shelves

900-5406	Rack Shelf for 19" EIA rack, 12 1/4" H for mounting 1 or 2 units, 5300 Series	\$200.00
900-5415	1/4 Rack Filler Panel for 5406 shelf	40.00
900-5406	Rack Shelf for 19" EIA rack, 12 1/4" H for mounting 1 to 3 units, 5400 Series	200.00
900-5405	Four Position cart storage rack for 5406 rack shelf	150.00
900-5407	Ten Position cart storage rack for 5406 rack shelf	180.00
900-5408	1/3 Rack Filler Panel for 5406 shelf	37.00
919-1806	Test Extender P.C. board	74.00

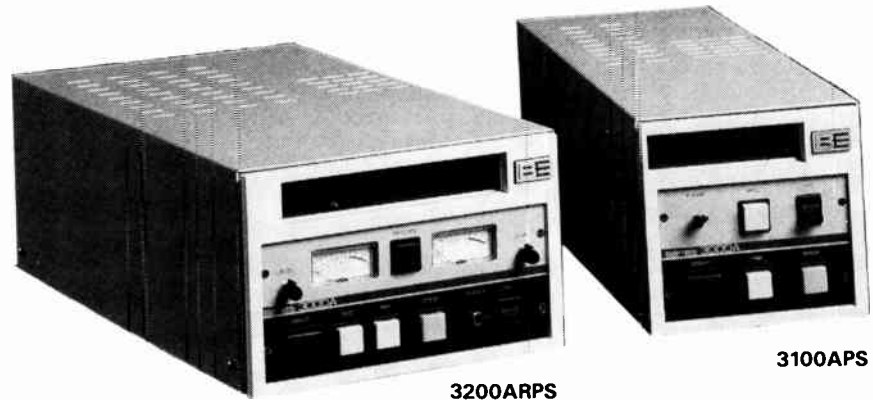
BROADCAST ELECTRONICS, INC.

Tape Cartridge Equipment

**Series 3000A
Tape Cartridge Machines**

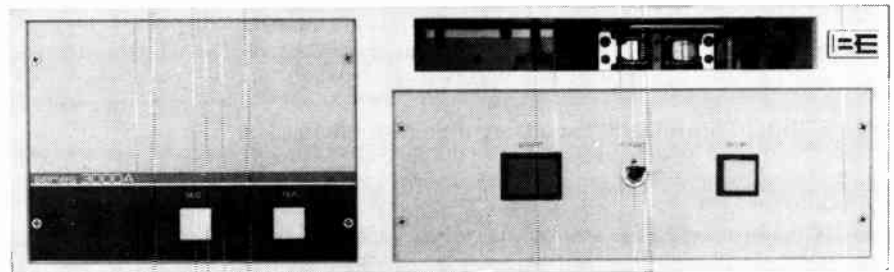
- Automatic/Manual fast forward and 3 cue tones standard
- Phase Lok V head block
- Improved cartridge guidance system
- More powerful, air damped solenoid
- Direct drive synchronous motor
- Gold to gold contacts
- Flat response long life heads

Series 3000A retains the features that made its predecessor famous and adds extra features that all users are sure to appreciate. These new improvements include the addition of the Phase Lok V head block, an innovative cartridge guidance system, a powerful air damped solenoid, and flat response long life heads. In addition, automatic/manual fast forward and three cue tones are now standard in the Series 3000A.



3200ARPS

3100APS



3400APS

3100A Slim Line

For use with NAB A and AA cartridges. Available in mono and stereo playback models. Three units can mount side-by-side in a 19" rack shelf.

3200A Compact

For use with NAB A, AA and B cartridges. Available in mono or stereo record/playback and playback only models. Two 3200A units can mount side-by-side in a 19" rack shelf.

3400A Rackmount

The 3400A's come standard as rack-mount units with no shelf or filter panels necessary. The 3400A's handle all cart sizes.

3200A RP/DL and 3400A RP/DL Delay Machines

In addition to providing normal playback and record functions, delay units allow the use of the machine whenever a delay might be required. These machines can handle from a six minute delay (for live talk show editing) to a 30 minute network programming delay. The time span of the delay is determined by the length of the tape in the cartridge.

Series 3000A

(Long Life Head(s), three cue tones and fast forward standard)

Standard Models — No options — 117VAC/60Hz (220VAC/60Hz available)

TABLETOP MOUNTING

Model	Stock No.	Description	Price
3100AP	900-3100-001	Mono, playback only, A, AA size cartridges	\$1800.00
3100APS	900-3102-001	Stereo, playback only, A, AA size cartridges	1950.00
3200AP	900-3200-001	Mono, playback only, A, AA, B and BB size cartridges	1825.00
3200ARP	900-3201-001	Mono, record/playback, A, AA, B and BB size cartridges	2825.00
3200APS	900-3202-001	Stereo, playback only, A, AA, B and BB size cartridges	1975.00
3200ARPS	900-3203-001	Stereo, record/playback, A, AA, B and BB size cartridges	3175.00

RACKMOUNTING

3400AP	900-3400-001	Mono, playback only, rackmount A, AA, B, BB, C, and CC size cartridges	\$1950.00
3400ARP	900-3401-001	Mono, record/playback, rackmount, A, AA, B, BB, C, and CC size cartridges	2875.00
3400APS	900-3402-001	Stereo, playback only, rackmount, A, AA, B, BB, C, and CC size cartridges	2100.00
3400ARPS	900-3403-001	Stereo, record/playback, rackmount, A, AA, B, BB, C, and CC size cartridges	3225.00

ACCESSORIES

900-3013	Rackmount shelf for EIA 19" rack, 5 1/4" high	\$75.00
900-3010	Top cover for 906-3013 shelf.	35.00
900-3014	Rack shelf filler panel, 1/3 rack for 3013 shelf	20.00
900-3015	Rack shelf filler panel, 1/2 rack for 3013 shelf	25.00
919-1504	Test extender, PC board	50.00

BROADCAST ELECTRONICS, INC.

Tape Cartridge Equipment/Accessories



2100CRPS

Series 2100C Tape Cartridge Machines

• Two cue tones standard (1kHz and 150Hz) • Exclusive mono/stereo switching • Precision adjust Phase Lok V head block • Flat response, long life heads • Precision machined deck with improved cartridge guidance system • Direct drive transport • Modular construction • Low voltage air-damped solenoid • Advanced electronics—meets or exceeds 1975 NAB standards

Phase Lok V Head Assembly

The Series 2100C features Phase Lok V head block. The Phase Lok V offers a locking azimuth adjustment that is independent of the height and zenith adjustments. With the Phase Lok V, precise head positioning

is possible through an azimuth adjustment that can be easily manipulated without affecting height and zenith. This permits quick, accurate positioning with a minimum of difficulty. (For correct stereo tracking, a dummy head is included in each playback model.)

Precision Transport and Deck Assembly

The improved cartridge guidance system permits precise cart positioning. The cartridge is directed to the head block area by right and left side guides. In addition, two spring loaded top guides apply firm pressure to hold the cart in place. The result is smooth, positive cart insertion regardless of variations in cartridge thickness.

Series 2100C (A, AA size cartridges) (Long Life Head(s) and two cue tones standard)

Model	Stock No.	Description	Price
2100CP	900-2110-001	Mono, Playback only	\$1425.00
2100CRP	900-2111-001	Mono, Record/Playback	2095.00
2100CPS	900-2112-001	Stereo, Playback only	1525.00
2100CRPS	900-2113-001	Stereo, Record/Playback	2395.00
2100CPA	900-2114-001	Mono, Playback with Audition/ Speaker	1550.00

Options and Accessories

900-2013	Rackmount Shelf for EIA 19" rack 5 1/4" H Holds up to three Series 2100C	\$75.00
900-2010	Top Cover for 2013 Shelf	45.00
900-2014	Rack Shelf Filler Panel, 1/3 rack for 2013 shelf	26.00
900-2016	Rack Shelf Filler Panel, 2/3 rack for 2013 shelf	38.00
919-2100	Test Extender P.C. Board	69.00

Tape Cartridge Accessories

Cartridge Storage Racks

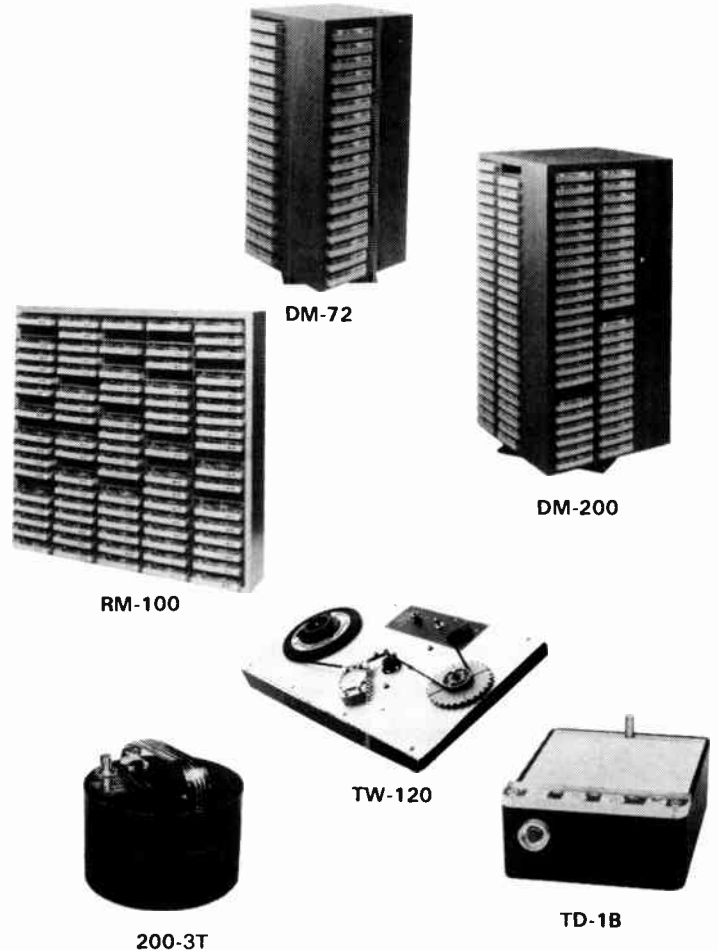
RM20V	818-0014	Cartridge Rack, 20 Carts, Fits 1/3 Rack Shelf for 5500 Series	\$175.00
RM20H-001	818-0020-001	Stores 20 A Size Cartridges, Rack-mounting (5 1/4" H)	95.00
RS25	816-0025	Wire Rack Section, holds 25 A Size Cartridges	45.00
RM100	810-0100	Wall Mounting, Formica Covered, holds 100 A Size Cartridges	125.00
DM20	812-0655	Wall or Table Mounting; Walnut Finish Cabinet, holds 20 A Size Cartridges	25.00
LZ20	800-2000	Lazy Susan, Tabletop, Wood/Formica, holds 20 A Size Cartridges	45.00
DM40	812-0650	Tabletop Lazy Susan, Walnut Finish Cabinet holds 40 A Size Cartridges	35.00
DM72	812-0072	Lazy Susan Module, Formica Covered for tabletop use, holds 72 A Size Cartridges	150.00
DM200	812-0200	As per above, holds 200 A Size Cartridges	200.00
LS200	814-0200	Lazy Susan Wire Unit, Floor Stand with Heavy-duty Casters, holds 200 A Size Cartridges	350.00

Cartridge Winders

TW-120	900-0100	Tape Cartridge Winder 117V, 50/60Hz	\$380.00
TW-240	900-0200	Tape Cartridge Winder 220V, 50Hz	430.00

Demagnetizers and Erasers

200-3T	820-0200	Bulk Tape Eraser, Handheld 115V, 50/60Hz	\$115.00
220-3T	820-0220	Bulk Tape Eraser, Handheld 220V, 50/60Hz	125.00
TD1B	820-0300	Bulk Tape Eraser, Heavy-Duty, Tabletop 115V, 50/60Hz	119.00
TD1BF	820-0301	Bulk Tape Eraser, Heavy-Duty, Tabletop 220V, 50/60Hz	128.00
K20/B5	800-3000	Annis Standard Han-D-Kit. Pocket Magnetometer, test strips and clip-on extension probe and Han-D-Mag demagnetizer, 115V, 50/60Hz	62.00
K25/B5	800-3001	Annis Deluxe Han-D-Kit, same as above, except with larger Model 25 jewelled demagnetizer, 115V, 50/60Hz	104.00
PF-380	800-3002	Nortronics Carbide Head Degausser, 117V, 60Hz only	41.00



BROADCAST ELECTRONICS, INC.

Audio Consoles

150A SERIES MONO/STEREO MIXERS

5M150A/5S150A 5-MIXER The 5M150A mono dual-channel and the 5S150A stereo five-mixer consoles employ high quality conductive-plastic attenuators. Identical plug-in preamplifier modules, presettable for microphone or line input service, feature gold-to-gold contact fingers. Interlocked pushbutton selection of two sources per mixer is provided. Separate headphone and monitor amplifiers permit full aural monitoring.

8M150A/8S150A 8-MIXER Eight-mixer consoles are also available in the 150A Series. Other than the number of mixing channels, these models are essentially identical to their five- and ten-mixer counterparts. All consoles in the 150A Series feature durable styling with clean, crisp front panel graphics protected by a laminated polycarbonate overlay.

10S150A/10M150A 10-MIXER The newest members of the Series 150A family are the 10S150A stereo and 10M150A dual-channel mono, 10-mixer models.

150A Series Mono and Stereo Consoles*

Model	Stock No.	Description	Price
5M150A	901-0531-000	5-Mixer Monophonic Console, Sealed Pots, Dual Channel	\$2450.00
8M150A	901-0831-000	8-Mixer Monophonic Console, Sealed Pots, Dual Channel	2950.00
10M150A	901-1030-000	10-Mixer Monophonic Console, Sealed Pots, Dual Channel	4350.00
5S150A	901-0530-000	5-Mixer Stereophonic Console, Sealed Pots	2995.00
8S150A	901-830-000	8-Mixer Stereophonic Console, Sealed Pots	3695.00
10S150A	901-1032-000	10-Mixer Stereophonic, Sealed Pots	5295.00

Options and Accessories

918-3604	Line amplifier for stereo audition channel 5S150A and 8S150A (2 required) for dual channel operation . . .	\$135.00
918-3602	Mono Matrix PC Board for 5S150, 8S150 and 10S150	125.00
971-0021	Second Muting relay for any Series 150 Console	30.00
838-0200	Additional Cost for 230VAC/50Hz Power Source	100.00

*Supplied with One Muting Relay

250A SERIES MONO/STEREO DELUXE DUAL CHANNEL MIXERS

Series 250A consoles are deluxe. 5, 8 and 10 mixing channel models available in mono or stereo with dual channel provisions. Precision step type ladder attenuators are used. Channel keys are telephone type roller cam design for long life and silent operation. Three muting relays are included.

In addition to preamplifier and line amplifiers, all Series 250A consoles are supplied with required monitor, cue and headphone amplifiers. A sum derived mono matrixed output is optional for stereo models. Styling adds durability and enhances the attractiveness of the 250A Series consoles.

The 10S250A stereo console accommodates twenty inputs into ten mixing channels. The console features identical line level stereo program and audition output channels with VU meter switching to either stereo pair. Mixing controls are maintainable, step type dual ladder attenuators. Quiet operating, telephone type channel select switches are used. A mono model, the 10M250A is also available.

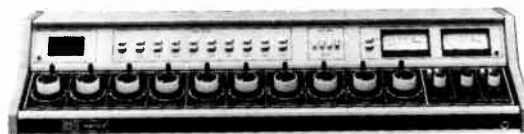
Model	Stock No.	Description	Price
5M250A	901-0541-000	5-Mixer, Deluxe Monophonic Console, Step type attenuators	\$2895.00
8M250A	901-0841-000	8-Mixer, Deluxe Monophonic Console, Step type attenuators	3795.00
10M250A	901-1041-000	10-Mixer, Deluxe Monophonic Console, Step type Attenuators	4895.00
5S250A	901-0540-000	5-Mixer, Deluxe Stereophonic Console, Step type Attenuators	3750.00
8S250A	901-0840-000	8-Mixer, Deluxe Stereophonic Console, Step type Attenuators	4850.00
10S250A	901-1040-000	10-Mixer, Deluxe Stereophonic Console, Step type Attenuators	5995.00

Options and Accessories

918-3602	Mono Matrix PC Board for 5S250, 8S250 and 10S250	\$125.00
938-0200	Additional cost for 230VAC/50Hz Power Source	100.00

NOTE: All Models are Dual Channel

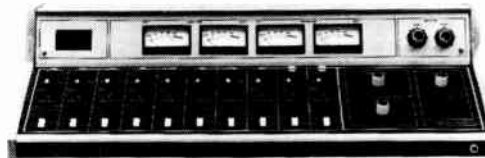
*Supplied with 3 Muting Relays



10S 150A



10S250A



10S350A Dual Channel, Stereo Outputs

SERIES 350A MIXERS

10-MIXER, VERTICAL FADER, DUAL-CHANNEL MONO/STEREO MODELS
The 350A Series consoles feature 22 inputs into 10 mixing channels. Available in either mono or stereo models, they are ideal for multiple-mix applications. Mixers #1 through #8 accept two inputs per mixer; Mixers #9 and #10, three each. Attractive front panel graphics are protected by a laminated polycarbonate overlay for maximum durability.

350A Series Slider Mixer Audio Consoles

Model	Stock No.	Description	Price
10M350A	901-1051-000	10-Mixer, Slider-Fader, Dual Channel, Monophonic Console	\$5195.00
10S350A	901-1050-000	10-Mixer, Slider-Fader, Dual Channel, Stereophonic Console	6195.00

Options and Accessories

918-3602	Mono Matrix PC Board for 10S350A	\$125.00
----------	--------------------------------------------	----------

SERIES 50A 4-MIXER, MONO/STEREO/RACKMOUNT

4M50A MONO The 4M50A is a complete console ideal for production or on-air use. The 4 mixers each accept two switch selectable inputs and each preamplifier can be wired for either microphone or line level sources. Speaker and headphone amplifiers are built-in for monitoring console output, an external source, or the cue circuit.

4S50A STEREO This four mixer, 12 input stereo console features quality performance at a practical price. Easily installed, it has cue-switches on all faders. In addition to level selectable preamplifiers, the 4S50A has individual monitor, cue and headphone amplifiers.

Series 50A Mono/Stereo/Rackmount Consoles

Model	Stock No.	Description	Price
4M50A	901-0450-000	Mono Four 4-Mixer Monophonic Console	\$1150.00
4M50AR	901-0451-000	Mono Four Rackmount 4-Mixer Monophonic Console	1195.00
4M50AP	901-0450-021	Mono 4-Mixer Monophonic Console with XLR Plug-in Connectors	1295.00
4S50A	901-0452-000	Stereo Four 4-Mixer Stereophonic Console	2150.00
4S50AR	901-0453-000	Stereo Four Rackmount 4-Mixer Stereophonic Console	2195.00
4S50AP	901-0451-021	Stereo Four 4-Mixer Stereophonic Console with XLR Plug-in Connectors	2250.00

BROADCAST ELECTRONICS, INC.

Studio Equipment

Turntables 12"/16"

- Rim drive assures minimum rumble, maximum starting torque
- Rugged construction, only three moving parts
- Stereo rumble < -3BdB (Exceeds NAB standards)
- Instant start and no speed overshoot

These turntables reach operating speeds in a fraction of a second. They perform with a minimum of rumble, wow and flutter. The use of an acoustic-absorbing, high-memory rubber idler, as well as motor isolation mounts and statically-balanced motor/counter-weight assemblies contributes to the highly desirable low rumble, wow and flutter characteristics.

Available in two- or three-speed 12" or three-speed 16" versions. Attractively styled, the turntables are finished in a hard wearing gray with a black felt platter pad. Control panels are protected by durable polycarbonate overlay for long term protection of labelling and legends.

Specifications

Speeds	Speed Regulation	Platter Weight	Depth below Frame
12C2, 33 ¹ / ₃ and 45 rpm	+ 1%, -0	12C, 12C2, 5 lbs.	12C, 12C2, 5"
12C, 16C, 33 ¹ / ₃ , 45 and 78 rpm	Line Voltage	16C, 9.5 lbs.	16C, 5 ⁵ / ₈ "
Start Time (at 33¹/₃ rpm)	115VAC, 60Hz standard	Capstan Concentricity	Weight
12C, 12C2 1/8th revolution	(230VAC, 50Hz optional)	± 0.00015"	12C, 12C2, 21 lbs.
16C, 1/4th revolution	Platter Size	Dimensions	net 25 lbs. packed
Stereo Rumble	12C, 12C2, 12"	12C, 12C2, 15" W x 15 ¹ / ₂ " D	16C, 22 ³ / ₄ lbs., net. 26 lbs. packed
-3BdB (NAB standard, -35dB)	Wow and Flutter	16C, 20 ¹ / ₈ " W x 20 ¹ / ₄ " D	Standard Color
	< 0.1%	Platter Concentricity	Gray with black felt pad
		+0.010" max. at driven rim	

Turntables 12" 2-Speed 33¹/₃ and 45

12C2/U	902-0063	12C Turntable 2-speed undrilled, AC motor, 117V/60Hz	\$415.00
12C2/320	902-0064	Same as 902-0063 except drilled for S-320	415.00
12C2/O	902-0065	Same as 902-0063 except drilled for other brand tone arm (specify brand arm)	430.00

Turntables 12" 3-Speed 33¹/₃, 45, 78

12C/U	902-0008	12C Turntable 3-speed undrilled, AC motor, 117V/60Hz	\$415.00
12C/320	902-0009	Same as 902-0008 except drilled for S-320	415.00
12C/O	902-0010	Same as 902-0008 except drilled for other brand tone arm (specify brand arm)	430.00

Turntables 16" 3-Speed 33¹/₃, 45, 78

16C/U	902-0069	16C Turntable 3-speed, 16" platter, undrilled. AC motor, 117V/60Hz	\$795.00
16C/260	902-0070	Same as 902-0069 except drilled for S-260	795.00
16C/O	902-0071	Same as 902-0069 except drilled for other brand tone arm (specify brand arm)	810.00



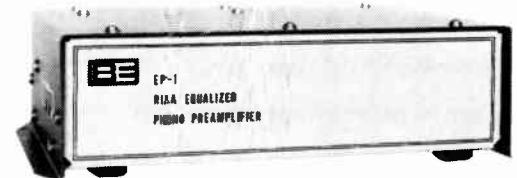
12C2 TWO-SPEED 12" TURNTABLE



12C THREE-SPEED 12" TURNTABLE



16C THREE-SPEED 16" TURNTABLE



EP-1/EP-2 Turntable Preamplifier

The EP-1/EP-2 Phono Preamps feature superb RFI immunity, exceptional S/N performance and excellent -70dB channel separation. EP-1 provides 600 ohms balanced transformer-less output. The EP-2 utilizes high quality output transformers for 150/600 ohms balanced floating outputs.

Preamplifiers

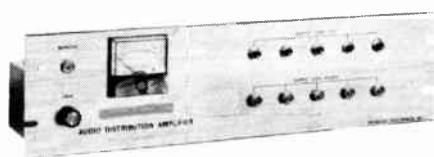
EP-1	903-0020	Equalized turntable preamplifier, RFI protected 117/220/240V, 50/60Hz	\$395.00
EP-2	903-0021	Equalized turntable preamplifier, RFI protected, w/transformer output, 117/220/240V 50/60Hz	415.00



BETMS-100/200 Turntable Preamplifier

The BETMS-100/200 series are economical professional quality dual channel turntable preamps for use with either mono or stereo cartridges. The BETMS-200 has transformer output.

BETMS-100	903-0100	Equalized turntable preamplifier	\$225.00
BETMS-200	903-0200	Equalized turntable preamplifier, with transformer output	295.00



AD1B Audio Distribution Amplifier

Provides five isolated audio output channels for audio distribution to multiple points or to telephone lines. All five isolated outputs have individual front panel monitoring and level controls. Bridging or matching balanced or unbalanced input with VU meter. Model AD1B/T has transformer output.

AD1B	903-0010	Audio D.A., 1 in, 5 out, rackmounting, Emitter Follower Output	\$625.00
AD1B/T	903-0011	Audio D.A., 1 in, 5 out, rackmounting, Transformer Outputs.	815.00



Rek-O-Kut Tone Arms

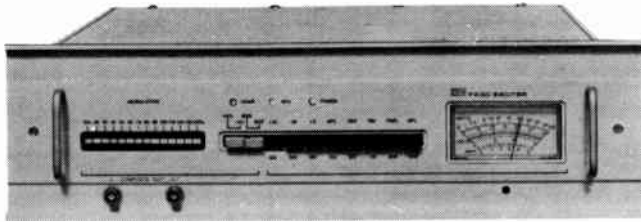
Optimum tracking capability ensures superior stereo reproduction. Available in 12" or 16" models, S-320 or S-260.

Tone Arms			
S-320	950-0061	S-320 Rek-O-Kut 12" Tone Arm, Chrome plated	\$175.00
S-260	950-0062	S-260 Rek-O-Kut 16" Tone Arm, Chrome plated	195.00

Prices and Specifications Subject to Change Without Notice.

BROADCAST ELECTRONICS, INC.

Transmitting Equipment



FX-30

FX-30 Synthesized FM Exciter

With more than 550 in use (1984) the synthesized FX-30, 30W FM exciter/transmitter has been universally accepted as the industry standard. The FX-30 provides excitation for each of the B/E FM transmitter models. It is however readily adaptable to interfacing with FM transmitters of any manufacture or vintage to dramatically update performance to today's most stringent standards. The FX-30 utilizes an ultra-linear modulated oscillator for unsurpassed performance; features typical THD and IMD at < 0.02%; is extremely quiet in operation with a typical SNR of 80dB; and is completely broadband, requiring no tuning adjustments. It is of semi-modular mechanical design. Slide-mounting ensures ready access to sub-assemblies. Pushbutton-selectable analog metering and a color-coded LED digital display afford highly-accurate parameter and modulation monitoring.

FX-30 909-0009 FX-30 Solid-state 3-30W FM exciter/transmitter, frequency range 87MHz to 109MHz with automatic power control, synthesized frequency control, and low pass filter, 19" rackmount, for operation on ___ MHz and for single phase 97 to 133VAC or 194 to 266VAC, 50/60Hz power source **\$5795.00**



FS-30

FS-30 FM Stereo Generator

Teamed up with the widely acclaimed FX-30 FM exciter, the new digital FS-30 stereo generator provides the very best stereo performance available. Includes linear, delay equalized audio low pass filters for minimum overshoot without the use of clippers or other non-linear devices. Front panel LED peak reading modulation status display; RFI protection; ready for remote control.

FS-30 909-0050 **\$2495.00**



FC-30 SCA Generator

FC-30 SCA Generator

The FC-30 SCA Generator assures very low FM noise high stability and, with its ultra linear 67kHz modulated oscillator, minimum distortion is obtained. Front panel LED peak modulation indicator; extensive RF filtering and front panel test jacks are other features. Controlled delay muting designed to be compatible with today's SCA receivers.

FC-30 909-0051 **\$1495.00**

AS-10 AM Stereo Modulation Monitor

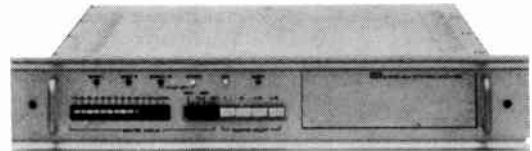
• RF AGC for optimum C-Quam® decoder performance • Front panel audio output for transmitter alignment and proof of performance

The AS-10 AM stereo modulation monitor represents a technological advancement in C-Quam monitoring technology. The state-of-the-art design of the AS-10 makes it a perfect companion for the AX-10 AM stereo exciter. The AS-10 features a single RF AGC system to avoid the tracking errors that appear in monitors with a matrix AGC design.

The filtering circuitry keeps overshoot errors at < 1%. A carrier shift reaction time of < 300ms permits easier and more accurate readings of the LED display.

AS-10 907-0100-000 C-Quam AM stereo modulation monitor, 120V, 50/60Hz **\$4500.00**

AS-10 907-0100-300 for 220V, 50/60Hz **4500.00**



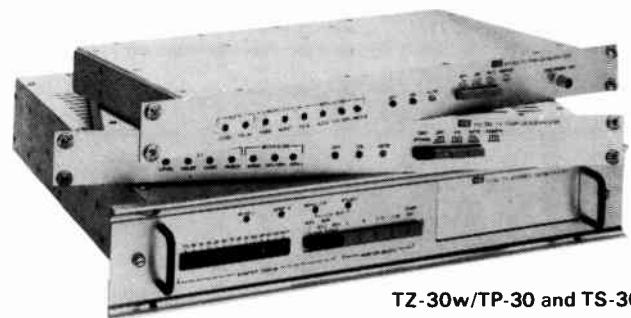
AX-10

AX-10 AM Stereo Exciter

• Second generation C-Quam digital design • Advanced-technology, independent right and left channel IF modulation technique • Interfaces with virtually any existing AM transmitter

The AX-10 stereo exciter is compatible with essentially any existing AM broadcast transmitter. Utilizing independent, non-interfacing left- and right-channel modulators in an IF modulation configuration, the AX-10 combines superior stereo performance with full monaural compatibility. Independent, switch-selectable, equalization networks for two-transmitter or dual antenna pattern operation are standard. The AX-10 is fully capable of remote control operation. It delivers up to 10W RF output and features a separate TTL-compatible output for use with transmitters with digital input capability. Balanced 600 ohm audio output is variable from -10 to +26dBm with independent day/night level adjustment. The AX-10 occupies only 3 1/2" of standard 19" rack height.

AX-10 907-0010 AM Stereo Exciter, 10W, solid-state, 117V, 60Hz, with independent day/night two (2) transmitter equalization **\$5500.00**



TZ-30w/TP-30 and TS-30

TZ-30 TV Stereo Generator

The TZ-30 is an advanced, second generation MTS generator incorporating a digital pilot generator, digital modulator, and a genuine dbx* encoder card. Audio filtering of both L and R as well as L + R/L-R channels minimizes crosstalk and guarantees excellent stereo separation. If your TV stereo requirements include audio processing, broadcast electronics has complete processing packages designed to complement the TZ-30.

The TZ-30 can be easily interfaced with the TS-30 SAP (Second Audio Program) generator and/or the TP-30 PRO (Professional Channel) generator. These generators will expand your MTS system to offer profitable audio/data subchannel capabilities.

TZ-30 906-0030-000 **\$5500.00**

TP 30 906-0032-000 Professional channel **1500.00**

TS-30 906-0031-000 Second Audio program. **2500.00**

Registered trademark, Motorola, INC.

*dbx is a registered trademark of the dbx corporation

BROADCAST ELECTRONICS, INC.

FM Transmitter/Accessories

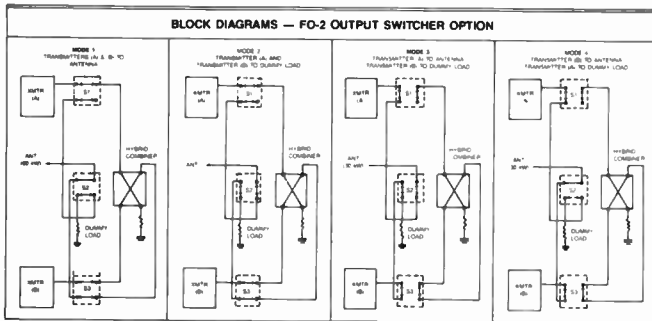
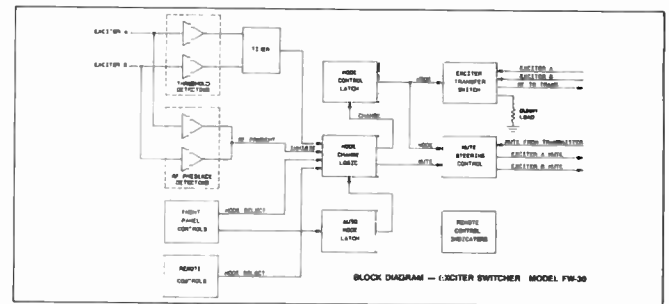
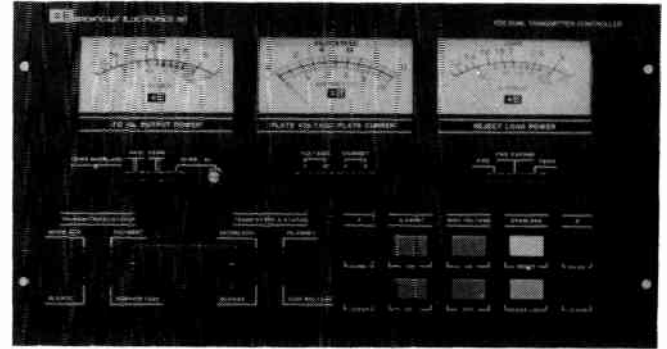
FD-2 Dual Transmitter Controller

- Control any two Broadcast Electronics FM transmitters in a combined configuration
- Monitor and control both transmitters from one panel
- Raise and lower output power of both transmitters together or separately
- Expanded scale reject load metering
- Output monitoring with combined output VSWR protection for both transmitters
- Field tested, reliable design
- Modular assembly for easy service
- Remote or extended local control capability
- Optional FO-2 Automatic Output switcher

The FD-2 dual transmitter controller forms the heart of a combined system utilizing two B/E FM transmitters. The FD-2 allows complete monitoring and control of the entire system from a single center cabinet. In addition, the FD-2 permits extended local and remote control through momentary contact closures.

FO-2 Transmitter Output Switcher

The optional FO-2 transmitter output switcher provides an extra measure of operational redundancy in dual transmitter systems. The FO-2 constantly monitors the output of both transmitters and will respond to a loss of power in either unit. If the output from one transmitter falls below a pre-set failure level for a designated period of time, the FO-2 will automatically switch the defective transmitter into a dummy load and place the remaining transmitter directly on-line to the antenna. The FO-2 can also activate the Preset power mode in the on-air transmitter. (The preset power mode can be set for virtually any emergency output level desired—even full output). The output failure switching level is user adjustable.



FA-2 Transmitter Output Switcher

- Maximum flexibility for Main/Alternate configurations
- Adjustable switching threshold
- Adjustable switching delay timer
- Automatic or manual switching modes
- Automatic alarm system
- Easy interfacing to motorized coaxial switches
- Remote control capability
- Direct connection with any B/E transmitter having an output of 1.5kW or greater

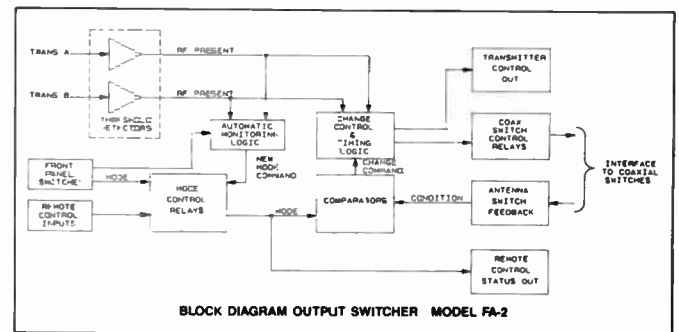
The FA-2 transmitter output switcher is designed to provide the greatest amount of redundancy through automatic transmitter switching in Alternate/Main configurations.

Operating Modes

Two primary operating modes may be automatically or manually selected:

1. Transmitter A to the antenna, transmitter B to Load (A air)
2. Transmitter B to the antenna, transmitter A to Load (B air)

* Coaxial switches not supplied



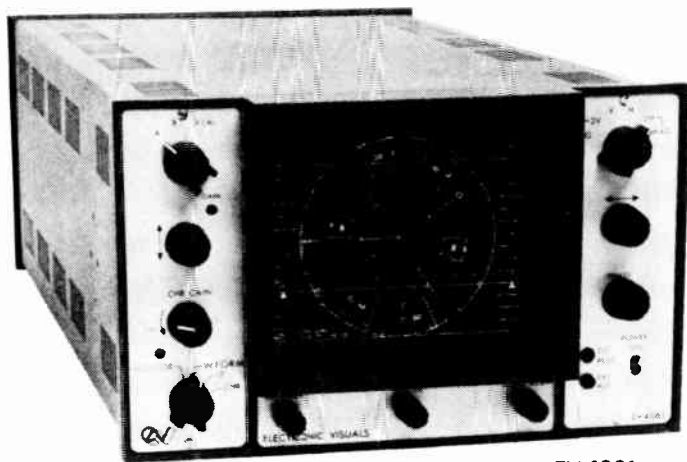
FW-30 Exciter Switcher

- Fast, automatic switching to back-up exciter
- State-of-the-art CMOS design
- Built-in high isolation coax transfer switch
- Built-in dummy load with modulation monitor sample port
- Attractive styling to match B/E equipment

The exciter occupies a crucial position in the transmission chain. A failure in its complex, delicate circuitry can cause a total transmitter shutdown. It makes perfect sense, therefore, to provide a system for automatic switching between primary and back-up exciters in the event of a failure. Such redundancy yields a substantial increase in overall transmitter reliability.

BROADCAST VIDEO SYSTEMS LTD.

Video Products



EV-4061

EV-4061 Combination Waveform/Vector Monitor

- Switchable between waveform and vector display modes
- Full broadcast specifications
- A/B encoded video inputs with buffered video output
- Half rack width, 5 1/4" high
- Mounts beside half rack picture monitor for complete monitor bridge
- 3 vertical and 3 horizontal sweep rates
- High brightness trace on all sweep rates
- Variable brightness illuminated graticule
- Int./Ext. reference in either mode
- Parade display

Controls and Features Common to Both Displays

Front Panel Controls

- Waveform/Vector mode switch
- Power on/off toggle switch
- V and H centering
- DC restorer on/off switch
- A-B-CAL switch
- Int./Ext. reference switch
- Intensity, focus, scale illumination

Rear Panel Controls (screwdriver adjust)

- Trace rotation

Display

- 10 x 8cm rectangular flat faced CRT with P31 phosphor
- Accelerating voltage 6kV regulated

Power Requirements

- 108-125V, 216-238V, 50/60Hz switchable on rear panel, 35VA

Operating Temperature

- 0° to 45°C

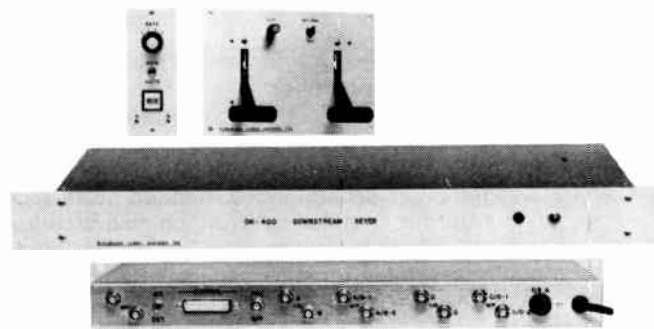
Mechanical

- Dimensions: 5 1/4" H x 8 1/2" W x 18" L
- Weight: 18 lbs.

The EV-4061 can be installed beside the following half rack width picture monitors:

- Conrac SNA9/RK
- Electrohome EVM910, EVM920
- Sony PVM-8200T
- Panasonic WV5311
- Videotek VM-8PRW
- JVC TM-41AU (with BVS rackmount)

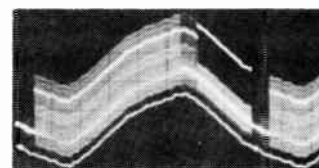
EV-4061	\$3650.00
Bench case for tabletop	75.00
Dual rackmount	285.00



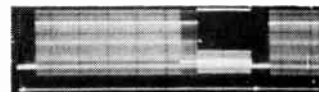
DK-400



HB-800



Input



Output

DK-400 Downstream Keyer

- Two independent, stand alone video mixing amplifiers in one rack unit
- Each mix amp may be operated separately or may be cascaded
- First mix amp is switchable between A/B mix and mix-to-key from remote panel
- Preview output to allow presetting of clip level
- Second mix amp allows convenient master fade to black or second A/B mix
- Switchable between self key or external key mode
- Back porch clamping on all video and key inputs
- Optional automix gives 4 selectable speeds of automatic A/B mix or mix-to-key

Specifications

Electrical:	110/230V, 50/60Hz, 8VA
Mechanical	
Electronics:	1 rack unit (1 3/4" x 19" x 10")
Remote Panel:	5" x 7" (mating connectors supplied)
Auto Mix	
Remote Panel:	5" x 2" (mating connectors supplied)
Connectors:	BNC for video Amphenol 25-pin for control
Video Inputs:	Four, IV p-p 75 ohm, terminating
Key Input:	IV p-p composite, looping
Video Outputs:	Five, IV p-p 75 ohm, 2 outputs from each amplifier plus key prev out

DK-400	\$2450.00
Auto Mix Option	525.00

HB-800 Hum Bucking Coil

Eliminate up to 6V p-p ground induced hum.

Specifications

Dimensions:	5" x 2 1/4" x 5 1/4"
Connectors:	BNC
Flat Loss:	<0.1dB
Freq. Response:	<0.1dB down at 5.5MHz
Diff. Phase:	<0.1°
Diff. Gain:	<0.1%
Path Length:	21ns

HB-800	\$ 175.00
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BROADCAST VIDEO SYSTEMS LTD.

Generator/Keyers

SA-101 Safe Area Generator

- Any pattern may be added to any of 5 independent, synchronous video sources
- Safe Action and Safe Title Areas (as per SMPTE RP 27.3) displayed simultaneously
- Display can be switched on/off, black/white independently on each source from remote panel
- Center cross to locate exact picture center
- Markers inserted to show legal H & V blanking limits
- All patterns and markers digitally generated and locked to subcarrier, assuring accurate, drift-free reference for precise picture positioning
- Movable Box Generator Option — An optional plug-in PC board allows the user to generate and store in memory ten different rectangles which can be keyed into any of the five video sources, with or without the Safe Area patterns. Each rectangle can be programmed for size and position at two rates of speed from the remote panel. Recall of any of these rectangles is via a remote thumbwheel. This option is very useful for positioning graphics, news shots, chroma keys, etc.

Specifications

Electrical: 115V ± 10%, 60Hz
Line Standard: 525
Video Inputs: Five, 1V p-p, 75 ohm, terminating
Ref. Input: 1V p-p looping (Color black or one of video inputs)
Video Outputs: Five, 1V p-p, 75 ohm
Frequency Response: < ± 0.15dB to 6MHz
Diff. Phase (10-90% APL): < 1°
Diff. Gain (10-90% APL): < 1%
Line Tilt: < 0.25%
Field Tilt: < 1%
Random RMS Noise: > 55dB to 5MHz
Hum: > 55dB
Input Return Loss: > 40dB
Crosstalk: > 60dB
Path Length (Each Channel): 13ns
Operating Temp.: 0-45°C

Pattern Details

Safe Action Graticule: 90% of scanned area
Safe Title Graticule: 80% of scanned area
Center Cross: Selectable on/off on all five channels simultaneously
Blanking Markers: Selectable on/off with center cross
Horiz. Blanking: 11.1, 10.8 and 10.5µs shown simultaneously
Vert. Blanking: 21 lines

All Graticules and Markers selectable on/off, black/white from remote panel.

SA-101 \$1650.00
MBG Option \$810.00

Masterkey Linear Keyer

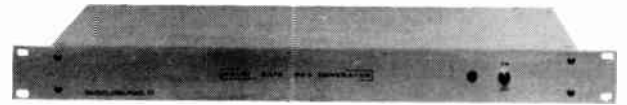
- Switchable between linear and fast key modes
- Smooth, seamless inlay of digital effects and paint boxes
- Faithfully preserves the anti-aliased edges of modern character generators
- Variable edge softness with key slope control
- Unique key window allows masterkey to differentiate down to a 5 IRE level difference, anywhere in the gray scale
- Full key control in internal, external, normal and invert modes
- Mix to key or cut to key
- All user controls on remote panel, supplied complete with 25' cable
- Optional auto mix provides 4 selectable speeds of automatic mix to key initiated via control panel pushbutton or external GPI

Masterkey \$2900.00

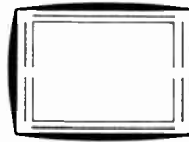
VK-900 Video Keyer Mix Amp

- Switchable between self key (internal) and external key
- Local or remote, key on/off and clip level
- Mix to key via optional fader panel or user supplied pot
- A/B mix between any two synchronous sources
- Optional auto mix gives 4 selectable speeds of automatic A/B mix or mix to key

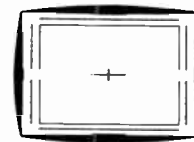
VK-900 Composite video keyer \$1185.00
Single fader remote panel option \$165.00
Auto mix option \$255.00



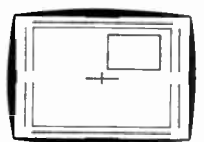
SA-101



Safe Action and Title Graticules



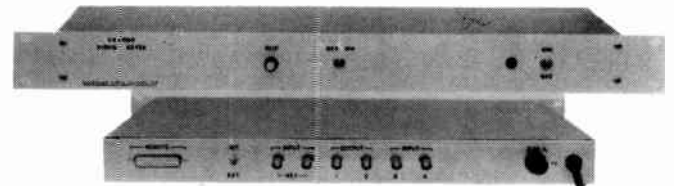
With Center Cross and Blanking Markers Enabled



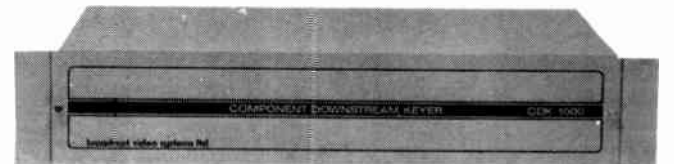
With Addition of Box Generator Option



Masterkey



VK-900

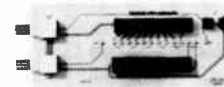


CDK-1000

CDK-1000 Downstream Keyer

- Switchable between mix or mix key mode
- B input may be switched from RGB to Y, B-Y, R-Y via remote panel
- Mix mode provides an A/B additive mix between two component signals or a component and RGB signal via the first fader handle
- Mix key mode (internal) allows the component or RGB signal on the B input to be keyed into the component signal on the A input. The dissolving in of the key is controlled by the first fader handle
- Mix key mode (external) allows a composite signal on the ext. key input to cut the hole into the component signal on the A input. The hole is filled with the RGB or component signal on the B input. The first fader controls the dissolving in of the key
- The second fader handle provides master fade to black in both mix and mix key modes
- All inputs clamped to ensure proper mixing and keying of bipolar signals
- Supplied complete with twin fader remote panel and 25' control cable
- Optional auto mix gives fully automatic operation of first fader control with 4 preset rates

CDK-1000 Component downstream keyer with fade to black . . . \$4950.00
Auto mix option \$255.00

BROADCAST VIDEO SYSTEMS LTD.**Video and Pulse Delay Lines****DL-500 Series****DL500 Series Rackmounted Video Delays**

- 75 ohms equalized to 5.5MHz
- Isolated grounds between channels
- 16 cards in 3 1/2" x 19" rackmount
- > 70dB crosstalk between channels

The DL501 and DL502 are infinitely adjustable within their specified range via soldered jumpers and variable fine trim. They will mount in an FR505 frame.

Part No.	Range	Price
DL501	10-165ns	\$215.00
DL502	10-325ns	345.00

DL505 Series Rackmounted Video Delays

- 75 ohms equalized to 5.5MHz
- Isolated grounds between channels
- 16 cards in 3 1/2" x 19" rackmount
- > 70dB crosstalk between channels

The DL505 Series, utilizing dual-in-line delays offers the widest range of video delay concurrent with small size, rigid specifications and economy. The gold contact "Bergstrip" jumpers provide quick and easy delay selection while maintaining the circuit integrity of a soldered connection. The total range of any card may be extended in the field by simply adding an additional line.

Cards are infinitely adjustable within specified range via jumpers and fine trim.

Card Type	Range	Price
DL505-1	10-165ns	\$ 239.00
DL505-2	10-245ns	289.00
DL505-3	10-455ns	430.00
DL505-4	310-745ns	618.00
DL505-5	410-845ns	651.00
DL505-6	510-945ns	657.00
DL505-7	610-1045ns	804.00
DL505-8	710-1145ns	837.00
DL505-9	810-1245ns	843.00
DL505-10	910-1345ns	878.00
DL505-11	1010-1445ns	885.00
DL505-12	1110-1545ns	1018.00
DL505-13	1210-1645ns	1065.00
DL505-14	1310-1745ns	1098.00
DL505-15	1410-1845ns	1104.00
DL505-16	1510-1945ns	1110.00

DL605 Series Rackmounted Active Video Delays

The DL-605 Series is similar to the DL-505 Series with the addition of an on-board video amplifier. The thick film amplifier provides up to 10dB gain to allow unity video output level at any delay setting.

Using the dual-in-line delays, the DL-605 Series can accommodate video delay of over 1900ns with 5.5MHz equalization. Gold jumpers, combined with a fine trim section make each card infinitely adjustable throughout its specified range.

Ten cards may be housed in a 2 rack unit frame (3 1/2") complete with power supply.

Card Type	Range	Price
DL605-1	10-165ns	\$ 356.00
DL605-2	10-245ns	407.00
DL605-3	10-455ns	548.00
DL605-4	310-745ns	735.00
DL605-5	410-845ns	769.00
DL605-6	510-945ns	775.00
DL605-7	610-1045ns	921.00
DL605-8	710-1145ns	955.00
DL605-9	810-1245ns	961.00
DL605-10	910-1345ns	996.00
DL605-11	1010-1445ns	1002.00
DL605-12	1110-1545ns	1136.00
DL605-13	1210-1645ns	1183.00
DL605-14	1310-1745ns	1216.00
DL605-15	1410-1845ns	1223.00
DL605-16	1510-1945ns	1230.00

Variable Boxed Video Delays—75 ohm Equalized to 5.5MHz

Part No.	Range	Price
010BV	7-15ns	\$ 90.00
165BV	15-165ns	226.00
215BV	65-215ns	330.00
265BV	115-265ns	363.00
365BV	215-365ns	403.00
465BV	315-465ns	482.00
565BV	415-565ns	540.00
665BV	515-665ns	569.00

Video Delay Lines mounted on PC board, installed in metal box, complete with BNC connectors. Infinitely variable delay within specified range by means of soldered jumpers and adjustable fine trimmer.

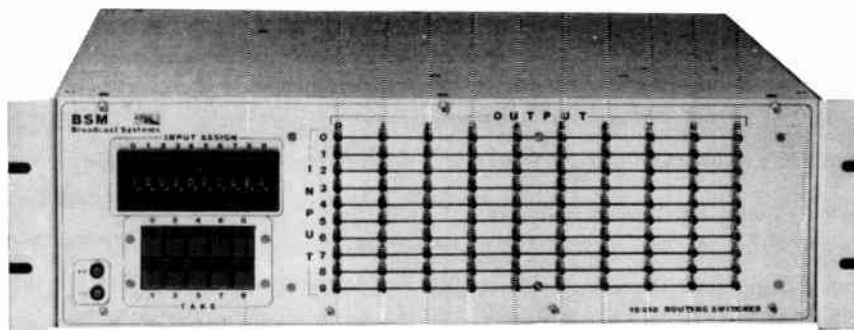
Variable Boxed Pulse Delays

Part No.	Range	Price
5ns Increments		
155BP	5-155ns	\$108.00
235BP	5-235ns	117.00
310BP	5-310ns	179.00
775BP	5-775ns	192.00
1655BP	5-1655ns	239.00
1810BP	5-1810ns	309.00
2275BP	5-2275ns	323.00
3155BP	5-3155ns	369.00
20ns Increments		
620BP	20-620ns	\$121.00
1240BP	20-1240ns	206.00
3620BP	20-3620ns	382.00
100ns Increments		
1500BP	100-1500ns	\$167.00
3000BP	100-3000ns	298.00
4500BP	100-4500ns	429.00

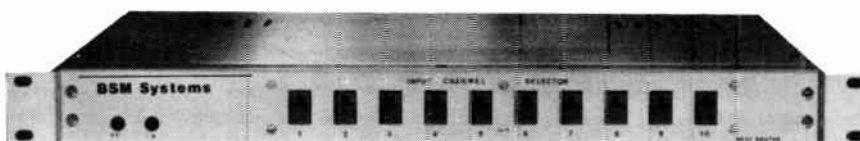
75 Ohms Pulse Delay Lines mounted in metal box complete with BNC connectors. Delay sections can be connected to obtain specific delays within ranges shown.

BSM BROADCAST SYSTEMS, INC.

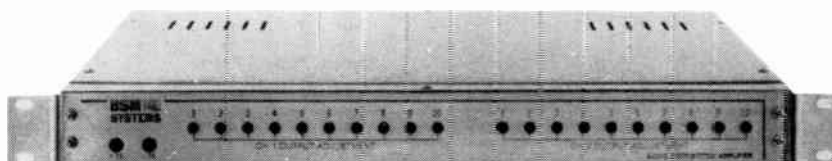
*Distribution Amplifiers/
Routing Switchers*



10 X 10 BCD BASED ROUTING SWITCHER



10 X 1 VIDEO ROUTING SWITCHER



AUDIO DISTRIBUTION AMPLIFIER

VIDEO DISTRIBUTION AMPLIFIER

Self-contained, 1-3/4" x 19" rack mount, level control, standard BNC connections, power supply included.

- 2 x 12 (Dual 1 x 6's) \$495.00
- 4 x 24 (Quad 1 x 6's) 795.00

10 X 1 ROUTING SWITCHER

Direct access momentary pushbutton controls, 1-3/4" x 19" rack mount, 10 inputs/1 output, power supply included, transformer input.

- Audio**
- 110-Mono \$695.00
- 120-Stereo 995.00
- Video**
- 210-Video Only \$1095.00
- 220-Audio Follow Video (1 level audio) 1295.00
- 230-Audio Follow Video (2 level audio) 1495.00

AUDIO DISTRIBUTION AMPLIFIER

Self-contained, regulated power supply, 1-3/4" x 19" rack mount, individual front panel output level controls, shielded power supplies and transformer inputs. Available with either active or transformer outputs.

- 1 x 10-MA-Mono, Active Out \$395.00
- 1 x 10-DMA-Stereo, Active Out 595.00
- 1 x 10-MT-Mono, Transformer Out 695.00
- 1 x 10-DMT-Stereo, Transformer Out 895.00

10 X 10 AUDIO ROUTING SWITCHER (BCD BASED)

Thumbwheel control with LED Matrix display of active crosspoints, 5-1/4" rack mount, power supply included, remote controls available. (Please specify on order).

- 510-Mono 10 x 10 \$3595.00
- 520-Stereo 10 x 10 4595.00

THE MODULAR SERIES

A complete line of Audio and/or Video Routing Switchers...Price On Request

BTS BROADCAST TELEVISION SYSTEMS, INC.**Frame Transfer-CCD
ENG Camera System****LDK 90****Frame Transfer-CCD ENG Camera System**

Three high-resolution Frame Transfer CCDs together with a shutter give superior picture quality with perfect geometry and negligible registration error, with corner-to-corner sharpness and without any lag, burn-in, comet-tailing, smear or microphonics. The Dynamic Contrast Control (DCD) handles in excess of 500% signal level over peak white without loss of detail.

FT-CCDs continue to produce perfect pictures with no deterioration in quality and no aging. They are stable and permanent. The robust solid-state LDK 90 is built to withstand the hectic pace of ENG and on-camera recorder operation. And with no tube changing, cost of ownership is extremely low.

Flexibility in Operation

The LDK 90 FT-CCD camera has been designed as the precise answer for ENG use. But bearing in mind the many and varied needs of broadcast and production companies throughout the world, BTS has provided quick fit adaptors and appropriate control systems for Betacam and other standards of on-camera recording, and for EFP use.

No Maintenance

Having CCD sensors the camera is completely solid-state and will require no maintenance. Equally, the built-in shutter is maintenance free. Therefore, even under rigorous working conditions the camera will be extremely reliable throughout its lifetime.

With Ease-of-Use

Microprocessor control of automatics. Electronic color temperature control, with two presets for studio and daylight operation. An operational menu system. A very wide range of viewfinder indicators. These are some of the built-in features that help make sure the cameraman can shoot quickly and easily.

The CCD-FT Principle

The Frame Transfer structure has a photosensitive imaging section with 350,000 pixels PAL, 300,000 pixels NTSC located next to a storage region and connected to it by parallel shift registers.

Each separate image is transferred to storage and a completely new image takes its place. The shutter is timed to operate during the transfer to ensure that the image remains unchanged and unaffected by incoming light. Each frame of the picture is thus clean and independent of previous frames and highlights (no smear).

System Control

A remote control unit, which can be used up to 300m from the camera, is available for EFP or studio use with RGB, CCVS and monitoring outputs, together with a cameraman intercom facility. A very compact local control panel can be connected to the remote control unit for control of iris, masterblack level, individual gain and black level for red and blue. The LCP may also be used for ENG and on-camera recorder use.

The BTS camera with Frame Transfer-CCD offers these additional advantages over other cameras (mainly equipped with Interline CCDs):

- Higher resolution obtained by 604 PAL, 610 (NTSC) pixels
- Total elimination of smear because of the CCD/shutter combination
- Shorter picture exposure time of $1/50^{\text{th}}$ second (50Hz) or $1/60^{\text{th}}$ second (60Hz) rather than $1/25^{\text{th}}$ and $1/30^{\text{th}}$ second respectively. These shorter exposure (integration) times result in higher dynamic resolution, which is especially important when shooting moving objects (slow motion replay)
- Vertical resolution clearly better than can be obtained with tube cameras
- Future proof—special sports version with exposure control available soon

Higher Sensitivity

Electronic color temperature compensation eliminates the use of color conversion filters. The result is approximately one f/stop more sensitivity in daylight operations.

**LDK 90****Four Position Gain Control**

A choice of 4 positions to suit different applications: -for applications where an extremely high (+6dB) signal-to-noise ratio is required; 0 for normal operation (signal-to-noise ratio 56dB PAL, 58dB NTSC); + for low light level operation; + + for extreme low light operation

Operation Memory Menu

For more demanding applications (such as extreme conditions) as well as for EFP use, a special menu control panel with a protective cover is available for the cameraman.

Its functions are: • **Master black:** 0, -10%, -20% • **Black stretch:** on/off • **Gamma 1:** 0.45 • **Gamma 2:** 0.55 or customer setting • **Contour:** -, nom, + • **Exposure control:** (provision for)

Local Control Panel

This special accessory is for use in the field with painting, iris and master black control.

Matte Box

A matte box accessory allows use of all standard bellows, filters, "french flags," etc. This is particularly suitable for the LDK 90 in film-style applications where additional artistic and creative possibilities are required.

Computerized Control

A built-in microprocessor fulfills several functions including: Switch-function communication with the camera viewfinder and, if present, the Remote Control Unit (RCU), as well as auto-iris control via intelligent picture sampling methods.

Viewfinders

The $1\frac{1}{2}$ " viewfinder is X-Y-Z adjustable and rotatable. There is a complete range of indicators. These include filter, color balance, gain, tape-end, rec, batt, menu, and range extender, together with tape bar, audio level, white balance window, and selectable zebra level. A 5" viewfinder is also available for EFP/studio use.

Light, Compact, Efficient

Extremely light and compact, the LDK 90 weighs only 5 lbs., basic camera. Visibility is extremely good. Hand grip and balance are perfect. Shoulder, flat bottom or tripod use are all designed for convenience. Power consumption is less than 11W.

LDK 90 Triax Camera

The LDK 90 camera system with frame transfer CCD's can now cover every aspect of television from ENG with or without on-board recorder in all popular formats, to EFP with up to 300 meters of multicore. And now EFP with up to 2000m of triax still with full remote facilities and production control.

BTS BROADCAST TELEVISION SYSTEMS, INC.**CCD Color Camera****LDK 900****Frame Transfer CCD Production Camera System**

• Smallest and lightest full facility production camera • Superb picture quality with proven CCD-FT sensors • Reliability with solid state electronics and no deterioration of picture quality through aging • Maintenance-free with rugged and rainproof case, solid state sensors, sealed-in shutter • Menu control with personalized settings for stand alone operation • Microprocessor control of important functions • Electronic shutter exposure control for blur-free slow motion and freeze-frame recording • Triax cable extends operations up to 2000m from the base station • Portable companion, the LDK 90 with the same CCD-FTs for matching colorimetry • Ergonomically designed by cameramen for cameramen • Both studio and field lenses up to 50 times zoom range • 7" high performance viewfinder • Two external video inputs • Extended intercom facilities • Utility power outlet (70VA) • Hi-Fi audio channel • SMPTE/EBU VTR connector for stand alone operation • Teleprompter channel • Minimum cost of ownership—with frame transfer CCD sensors, no maintenance cost and economic triax cable • Uniform resolution corner to corner. Microprocessor controlled automatic black level, with black reference built into the CCD itself

The LDK 900 production camera system consists of a small, light-weight camera head, base station, and operational control panel (OCP). The OCP has full operational facilities including iris and black level mono-knob control as well as black and white matching, and other production controls such as gamma, gain, color temperature, knee, etc. The base station has outputs of composite, full bandwidth RGB, and component signals, as well as picture and waveform monitoring signals. The LDK 900 camera head may be used in a fully self-contained mode, feeding directly into a suitable portable recorder, or over the triax camera cable to the base station and OCP.

Full production facilities provided by the LDK 900 include a comprehensive talk-back system, high quality microphone channel, selectable exposure control for high speed action, a full size high brightness, high performance, seven inch viewfinder with maximum pan and tilt, and a full range of operational facilities including knee circuits, color balance memories and automatic color balance, auto iris, and teleprompter channel.

The LDK 900 has one of the lowest centers of gravity and lowest optical axis available, and the effective optical center is directly over the pan and tilt head. This allows the camera to obtain spectacular low level action shots and at the same time minimize positional picture movement due to off axis optical center line. This gives the cameraman a much more natural "feel" for the camera in complex action shots.

Specifications**Camera Head**

Transmission System:	PAL or NTSC
Power Supply:	220-240V: 48-410Hz 110-120V: 48-410Hz
Power Consumption:	170W including lens, viewfinder and 70VA utility output
Picture Elements:	610H x 492V NTSC, 604H x 576V PAL
Optical System:	4 position filter wheel, f/1.4 prism with quartz filter
Inputs Signals:	Playback video signal at VTR connector, composite or black burst, external 1, external 2, teleprompter
Output Signals:	Composite output at camera head and VTR connector, sync S at VTR connector, components (Y, P _r , P _b) at VTR connector, viewfinder signal, color bars (full field, EBU white level)
Sensitivity:	1750 lux (160' cord) at f/4.0 with 90% reflectance
Signal to noise Ratio:	At normal gain 58dB NTSC, 56dB PAL typical

**LDK 900**

Modulation Depth:	Horizontal modulation depth at 5MHz typically 45% in red, green and blue (equates to a limiting response > 650 TV lines in a 2/3" tube camera)
Registration:	< 25nS (0.05%) in all three zones
Contour Correction:	Edge of band, contours from red and green
Gain Control:	-6dB, 0dB, +6dB and +12dB
Color Temperature:	Electronic presets for Studio (3200°K) and for daylight (5600°K) 7500°K available on OCP
White Balance:	Two selectable memories
Exposure Control:	Down to 1/500 sec
Gamma Correction:	0.45 or 0.55 pre-select via switch pane or remoted to OCP
Contour Correction:	3 selectable levels pre-select via switch panel or remoted to OCP
Black Level:	0%, -10%, -20% pre-select via switch panel
Black Stretch:	On/off via switch panel or remoted to OCP
Intercom:	From base station to camera head, 1 channel; from camera head to base station, 1 channel
Dimensions:	Camera head including bottom plate: 11.8" H x 9.5" W x 10.2" L
Weight:	< 40 lbs.
Viewfinder	
Power Supply:	~ 10.5-14V
Power Consumption:	30W
Picture Sharpness:	> 700 Lines
Dimensions:	5.3" H x 7.5" W x 11.2" D
Weight:	15 lbs.
Base Station	
Transmission System:	PAL or NTSC
Power Consumption	Approx. 280W including camera, lens, viewfinder and utility
Input Signals:	External 1, external 2, teleprompter, video reference
Output Signals:	Composite; R, G, B; Components (Y, P _r , P _b)
Intercom Inputs/Outputs:	Production, engineering, program, 2 or 4 wire system
Dimensions:	5.2" H x 19" W x 19" D
Weight:	< 56 lbs.

BTS BROADCAST TELEVISION SYSTEMS, INC.**Automatic Studio/
Field Camera****LDK 6A****Television Camera System with Total Computer Control and Distributed Intelligence****Superb Picture Quality**

Through 25mm or 30mm Plumbicon tubes and optimized digital scan, shading and dynamic focus correction.

Operational Flexibility

For a wide range of broadcast applications under varied weather and light conditions. The interactive computer system with operational and set-up memories allows quick set-up and smooth operation for single or multi-camera systems. The RGB triax system allows great cabling flexibility.

Reliable—Ready for Operation

Assured by digital control components, self-diagnostics and easy interchangeability of main units without the need for further adjustments. Tube change takes about 10 minutes. The "full auto set-up" program aligns the green channel automatically, using the diascope integral to the camera head. Red and blue are then aligned to green.

Future-Proof

State-of-the-art in concept and design, having a transparent computer system with distributed intelligence that can also accommodate future developments. And COACH, the Philips remote control and monitoring system, gives double assurance of perfect performance.

Memories—A Major Advantage

The LDK 6A camera has 6 operational, 2 set-up and 4 lens memories. All 6 operational memories can be recalled so that there is immediate access to pre-arranged special production effects or lighting conditions.

Each of these operational memories can store: • Gains RGB • Blacks RGB • Filter wheel 1 • Filter wheel 2 • Color temperature • Master black • Gain • Black stretch • Gamma • Contours • Auto-iris presets

For special creative and technical applications over 700 parameters can be stored in 2 separate selectable set-up memories.

Each LDK 6A camera can also store the complete characteristics of up to 4 lens types and recall their parameters when required. These parameters are: • Color temperature • Registration • Flare • Shading • Back focus

These lens files can also be used to store range extender characteristics and are called up automatically with servo extender selection.

Diagnostics

There are two comprehensive diagnostics systems in the LDK 6A. The first is an advance warning system for fault detection to avoid costly downtime. The second is able to pinpoint the location of a fault to a specific board.

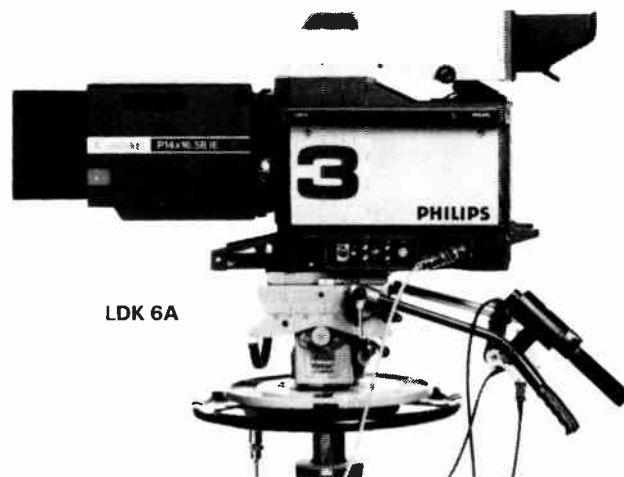
Diagnostics-1 operates on-line, and is active whenever a camera is "on." It makes no decisions which will interfere with normal "on-air" operation. However, where important characteristics deviate from normal, it warns the operator a decision is needed, and provides a character display readout on the engineering monitor.

Diagnostics-2 operates off-line, and on demand, by using signal injection techniques throughout the camera system. Messages are displayed on the picture monitor indicating probable fault location.

Selectable Automatic Programs

Selectable automatic programs in the LDK 6A include: • Full auto set-up • Auto daily check • Auto white • Auto black • Auto shading white • Auto shading black • Auto video levels • Auto lens registration calibration • Auto tube adjustment • Auto centering • Auto registration—full range

These automatic programs provide for ease-of-use and produce the best possible results in the shortest possible time.



LDK 6A

Because of the computer-controllable back focus and the full range computer control of the tube parameters, it is even possible to set up the camera fully automatic after tube replacement without any manual pre-setting. The green channel is automatically aligned to a digital electronic test pattern, with red and blue, subsequently aligned to green.

COACH—Double Assurance

COACH is a tool for centralized maintenance and monitoring of the LDK 6 family of cameras. It consists of 2 components—an interface and an IBM-compatible personal computer. Simple to use, COACH provides: • Remote control and monitoring of LDK 6 family camera systems • Flexible retrieval, storage and control of camera data • In depth diagnostic monitoring • Remote access via standard modems over telephone lines • Remote video measurement. It therefore helps make more cost-effective use of engineering staff and allows contact and control at the local Philips Service Center.

Status Feedback

The unique status feedback system is another important advantage of the LDK 6A.

The data transparency of the design enables access to, and retrieval from, any unit on the bus. While all operation settings are displayed on the common control panel, virtually all setting-up and operational control parameters are available for display on the master control panel. All settings generated by digi-pots are fed back to the alphanumeric displays and are shown by an exact percentage readout. This permits settings to be checked at a glance, without physically measuring them.

The Camera Head

• Dynamic lens error correction • Remote control scan reversal • Rain-proof housing and RFI shielded • Quick lens change • 4 different lens memories • Built-in diascope • Optical axis of the lens and viewfinder in one vertical plane • Two 5-position filter wheels—one controllable by cameraman • Extensive viewfinder signal selection • Auto-iris • Momentary auto-iris by spot measurement • Auto-white balance control by spot measurement • Extensive intercom facilities • Rotatable, tiltable and removable 7" high resolution viewfinder with extreme tilt range ($\pm 60^\circ$) • Extensive indicators and markers in the viewfinder • Provision for remote facility for intercom and external viewfinder switches (e.g. on pan bars) • Two audio channels • Utility power • Integrated lens support • Large, switchable tally light visible from every direction • Contours from red (option)

And it is in the camera head, not in the lens, that the diascope is located, making a wider selection of lenses available for different production situations. Full range extender facilities are maintained.

BTS BROADCAST TELEVISION SYSTEMS, INC.**Automatic Studio/
Field Camera****LDK 26A Television Camera System**

• Excellent picture quality through 18mm Plumbicon tubes and optimized digital scan, shading and dynamic focus correction • Operational flexibility. Maximum flexibility for a wide range of broadcast applications under varied weather and light conditions. The interactive computer system with operational and set-up memories allows quick set-up and smooth operation for single or multi-camera systems • Reliable and ready for operation. Assured by digital control components, self-diagnostics and easy interchangeability of main units without the need for further adjustments. And COACH, the Philips remote control and monitoring system, gives double assurance of perfect performance • Safety for the future. A camera that is built to last, having a transparent computer controlled system with distributed intelligence that can also accommodate future developments

Computer Control—For Perfect Performance

The LDK 26A System has 3 microcomputers—in the camera head, the camera processing unit and the master control panel. Each unit can converse with the others in the chain enabling constant check on status of camera performance. Each camera has its own set-up computer. Because of this "distributed intelligence" system it is possible to set up independently, simultaneously and automatically any number of camera chains. And, system units can be interchanged, without the need for resetting, checking or adjusting.

The control system is fully digital, and digital/analog converters with "pulse-pot" technology permit manual and automatic adjustment over the whole control range. Because of this system no manual preset is required for automatic set-up.

The extensive automatic control of parameters makes the LDK 26A a total automatic 18mm camera with perfect, consistent performance.

Memories—An Aid For Production

Every LDK 26A camera has 2 set-up and 2 lens memories as standard. Optionally, there are 6 operational memories available.

The set-up memories may be used for special creative and technical applications. Each memory can store over 700 parameters.

The lens file can store color temperature, flare, shading and registration.

Each of the operational memories stores gains, RGB, blacks, filter wheel position, color temperature, black stretch, gamma and contours.

COACH—Double Assurance

COACH is a tool for centralized maintenance and monitoring of the LDK 6 family of cameras. It consists of 2 components—an interface and an IBM-compatible personal computer. Simple to use, COACH provides: • Remote control and monitoring of LDK 6 family camera systems • Flexible retrieval, storage and control of camera data • In depth diagnostic monitoring • Remote access via standard modems over telephone lines

Status Feedback

The unique status feedback system is another important advantage of the LDK 26A.

The data transparency of the design enables access to, and retrieval from, any unit on the bus. All setting-up and operational control parameters are available for displays on the master control panel. All settings in the camera processing unit and camera head are generated by the digi-pots on the master control panel and are fed back to the alphanumeric displays and are shown by an exact percentage readout. This permits settings to be checked, at a glance, without physically measuring them.

Diagnostics

There is one standard diagnostic system (Diagnostics-1) and one optional system (Diagnostics-2) available for the LDK 26A.

Diagnostics-1 operates on-line, and is active whenever a camera is "on." It makes no decisions which will interfere with normal "on-air" operation. However, where important characteristics deviate from nor-



mal, it warns the operator a decision is needed, and provides a readout on request.

Diagnostics-2 is a very valuable optional extra. It operates off-line, and on demand, by using signal injection techniques throughout the camera system. Messages are displayed on the picture monitor indicating probable fault location.

Automatic Programs

The following selectable automatic programs are available in the LDK 26A: • Full auto set-up • Auto daily check • Auto white balance • Auto black balance • Auto lens registration calibration • Auto lens shading, flare and color temperature calibration

These auto programs provide full automatic control not only to give ease of use, but also to produce the best results in the shortest time.

The auto lens programs can be used when the zoom lens is equipped with a built-in diascope.

After setting the back focus, it is possible to set up the camera fully automatically after tube replacement without any manual presetting. This is made possible because of the full range of computer controlled tube parameters.

Ahead Of Its Time

The LDK 26A camera head is smaller in size with high brightness, high resolution 5" viewfinder which makes it one of the most versatile 18mm cameras in the studio or on location. It has a number of outstanding features: • Dynamic lens error correction • Remote controlled scan reversal • Integrated lens support • Quick lens change • Optical axis of the lens and viewfinder in one vertical plane • A 5-position filter wheel • A separate (controllable) auto cap • Rotatable, tiltable and easily removable viewfinder (tilt range $\pm 60^\circ$) • Extensive indicators and markers in the viewfinder • Provision for remote facility for intercom and external viewfinder switches (e.g. on pan bars) • Utility power e.g. for teleprompter • Rainproof housing • Extensive intercom facilities • R, G and B and external video on VF display • Unparalleled service accessibility

The LDK 26A has an integrated camera lens support which ensures correct balance of the combined camera head and lens—whatever the size of the lens being used—light or heavyweight. Then there is the flexible viewfinder for extremes of pan and tilt movement. Finally, there is a wide range of indicators and signal selectors together with full communication facilities.

For the engineer and video operator, the master control panel acts as the surveillance center for the whole system—a sort of electronic screwdriver for maintenance and diagnostics. It monitors and controls hundreds of functions. Used with the individual operational control panels, the video operator has control over the whole system.

Immediate reading of lens f/stop numbers, preprogrammed contours, etc. is possible after selection of the relevant camera by means of the MATCH knob on the operational control panel.

KCH 1000 Multi-Standard HDTV-Camera**Special Features**

- Scanning parameters adaptable to all proposed standards
- $f/1.5$ prism splitter
- Nominal sensitivity 1000 lux, maximum sensitivity 100 lux
- High resolution mixed field tubes
- Dynamic lens error correction, including dynamic pincushion correction
- Automatic high-order correction of registration, geometry and shading with diascope in the lens
- Dynamic knee processor and automatic beam control (ABC)
- Optional two-dimensional image enhancer with unique noise suppression
- Automatic cable length equalization up to 300m
- Cheapernet control bus, extensible for multi-camera operation
- Sophisticated master setup unit with electroluminescent (EL) display and incremental controls
- Four-wire intercom multi-communication system
- Two high-quality microphone channels
- Teleprompter facility
- Error diagnosis system (in preparation)

Video Signal Processing

- Bandwidth $> 30\text{MHz}$
- Gain selection -6dB, -3dB, 0dB, +3dB, +6dB, +9dB
- Knee processor, static or dynamic up to 400%
- Knee-detail signal (horizontal)
- Automatic beam control (ABC) up to 1000%
- Independent control of black and white balance
- Test signals: sawtooth, grid, color bar, external
- Analog aperture processor (horizontal)

Automatic Functions

- Basic adjustments
- Geometry, fine
- Image registration, fine
- White/black shading
- Pre-operating adjustments
- White/black balance
- Filter selection
- Cable length compensation
- Continuous automatic functions
- Automatic iris
- Dynamic lens error correction

Viewfinder

- 7" monochrome viewfinder, aspect ratio 16:9
- Electronic peaking and variable box cursor

Control Unit

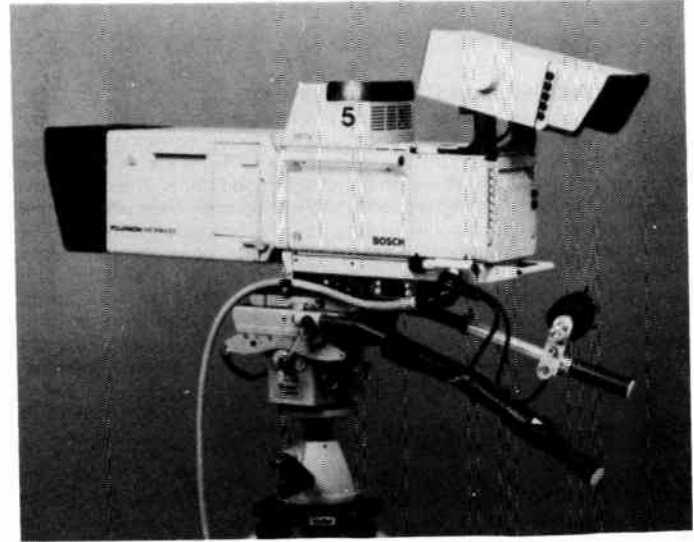
- Menu controlled operation
- EL display
- Incremental controls
- Scene file facility
- Cheapernet bus connection to CCU
- Multi-camera operation including automatic setup

Audio

- 3 intercom channels: production intercom, engineering intercom and program sound
- Headsets for cameraman, reporter and dolly driver can be connected to camera head
- Service intercom
- Two high-quality microphone channels with connections for dynamic and condenser microphones

Specifications:

Scanning: 1125 lines, 60 fields/s, 2:1 interlaced or 1250 lines, 50 fields/s, 2:1 interlaced or 1050 lines, 59.94 fields/s, 2:1 interlaced or 625 lines, 50 frames/s, 1:1 progressive or 525 lines, 59.94 frames/s, 1:1 progressive, aspect ratio 16:9, other standards on request

**KCH-1000**

Sensitivity**:	1000 lux, $f/2.8$, 0dB, 100 lux, $f/1.5$, +9dB (16:9, 89.9%, 3200°K, green channel, 350nA _{pp} at 0dB)
Signal-to-Noise Ratio*:	47dB (gamma off, aperture and contour off, 3200°K, 350nA _{pp} luminance channel)
Resolution**:	50% at 600 TVL (16:9), 1200 TVL limiting resolution (CTF in picture center, aperture and contour off, RCA P200 test pattern, green channel)
Registration:	0.04% (within a circle of 90% of the picture height)
Output Signals:	2X RGB video, 0.7V _{pp} /75 ohm 1X RGB video + sync, 1V _{pp} /75 ohm 1X Y video + sync, 1V _{pp} /75 ohm
Input Signals (loop-through):	1X sync reference (black burst or tri-level possible) 1X return video, 1X teleprompter

Engineering and Production Intercom

Headset:	All inputs -10dBm, All outputs +6dBm Inputs and outputs from and to production control = +6dBm Input and output at remote control unit -10dBm
Frequency Response:	(without headset) = 300Hz up to 3kHz -3dB Harmonic distortion factor total $\leq 3\%$ Signal-to-noise ratio $\geq 40\text{dB}$

Microphone Channels

2 Inputs for Dynamic Microphone or Condenser Microphone:	(12V or 48V feed)
Sensitivity Selectable:	From -75dBm to -5dBm
Switchable Dynamic Compressor	
Frequency Response:	20Hz up to 15kHz -3dB
Total Harmonic Distortion:	$\leq 1\%$
Unweighted S/N Ratio:	$\geq 50\text{dB}$
Outputs to Production Control:	+6dBm

* Depending on tube

** Depending on tube and lens

Vidifont Vidityx II™

Vidityx II is the latest in the Vidifont line of distinctive operator-oriented design systems. Providing corporate, educational and commercial users new heights in character graphics generation.

The Vidityx II boasts many of the basic features of the higher-end Vidifont Graphics V™, with the capability to incorporate optional features including Animation, Time Sequential Overlays, Vidityclock™ and the Playback Sequence Controller. And Vidityx II has access and compatibility with Vidifont's extensive font library, including creative services for custom graphics and logos.

System Configuration

Vidityx II's compact design invites installation in virtually any graphic environment, particularly where space is at a premium.

Keyboard: Combines the standard typewriter keyboard with conveniently grouped function, editing and operational keys. Special attention to detail provides an environment that is both ergonomically efficient and user-comfortable.

Disk storage: Each double density 5 1/4" flexible disk holds up to 20 fonts, or provides random access of up to 600 display pages. Fonts and messages can be stored on the same disk. In a two-channel system, disk formatting or duplicating can be performed simultaneously with editing and composition.

MultiChannel: Directory controlled, high-capacity RAM and disk memory treat each message, regardless of length, as a single page, under a single identification. Over 10 instantly available on-line from RAM. Font IDs, colors, table locations, predesignated update windows, and all other user-environment parameters are recorded as part of each message. Allows multiple off-line channels rapid access for updates and changes, while on-line use can occur simultaneously utilizing different fonts, colors, formats and messages.

Display Characteristics

Fonts: Eight full-set fonts per channel, each containing up to 106 characters, may be accessed and intermixed for instant composition. Resident font memory has a capacity up to 24, with additional fonts available from flexible or hard disk.

Vidityx II has complete access and compatibility with Vidifont's complete graphic and font library of over 100 typefaces and 250 sizes.

Colors: The color collection contains 4,096 choices. On-line you can manually select, or automatically load, any combination of 16 Color Quads. Multicolored fonts and logo graphics may be displayed in up to 48 colors per character with or without multi-colored edge.

Backgrounds: Can be created independently of the character plane or linked to the foreground plane, dimensioned by one of the display items, and enlarged or reduced. Background sizes range from one TV line high and two pixels wide to a full display. 32 colors may be selected from the 4,096 palette independently of those on the foreground character plane.

Composition/Editing

Multiplanar: Up to 16 rows may be stacked by composing the first plane, pushing it back, composing the second, pushing it back, etc. Access to any plane is available by temporarily peeling away forward planes.

Justification: Vidityx II provides horizontal centering, left or right and left and right justification. Vidityx II suggests an initial justification point and moves the cursor to that location. You may begin to compose at that point, manually move to a new point or specify a preselected location by X and Y coordinates.

Tab: Each page may contain unlimited tab locations set at any horizontal and/or vertical point and recorded as part of the message. Upon playback, information at these tab points can be accessed instantly with forward or back tabbing, then updated and rerecorded.



Lower Thirds: The cursor is automatically centered on the bottom row. As a message is composed, it is centered unless otherwise designated. When the operator moves the cursor to the next row, the message scrolls up and the cursor is centered for the next entry.

Acquire/Deposit: Font style, color and edge may be "acquired" from any character and "deposited" on any other entity (character, word, row, group or entire page). This eliminates reentry steps, saves time and encourages artistic creativity.

Display Dynamics

Rolls/Crawls: Vidityx II has 7 bidirectional speeds, with 224 speed/direction combinations. Roll or crawl movements may be stopped at any point, then resumed at the same or different rate.

Ripple-On/Ripple-Off: Provides character-by-character appearance or removal, at any of 127 different preselected rates, as fast as 1/1000 second.

Flash: An infinite number of flash speeds are available on a character-by-character basis. Underlines and backgrounds can be independently flashed.

Expansion

Beyond the basic Vidityx II are expansion capabilities with which to grow.

- **Animation.** Of characters, rows, pages and backgrounds
- **Time Sequential Overlays.** For frame-accurate editing of events
- **Playback Sequence Controller.** For creation of an ordered or randomly sequenced playback list
- **Vidityclock.** Provides time of day, elapsed and split time plus stop, pause and resume up or down
- **Vidivote.** Election reporting package
- **Vidicast/Vidisports.** Weather and sports package
- **GraphicStore.** Paint and library system
- **Twenty-megabyte hard disk drive.** Increases font and message storage

BTS BROADCAST TELEVISION SYSTEMS, INC.**Graphic System****Vidifont GraphicStore™ Paint and Library System**

The Vidifont GraphicStore combines the multiuser flexibility of Vidifont Graphics V and Viditext II with full-color, full-frame graphics creation, cataloging, storage and playback. These expanded capabilities can be added to one or both high resolution channels, assisting you in the creation of your own art/graphics library.

Video Capture

The Vidifont GraphicStore is fully integrated to capture full-color artwork of freeze-frame live video from external sources or directly from the Vidifont. At the touch of a button, pictures containing motion can be stored as a field. An external key input accepts video sources with key outputs for overlaying images without generation loss. A keyhole is punched directly into the composite picture and the associated video inserted.

Image Creation/Modification

You can recall a stored image or start from scratch. Create and touch up. Enlarge the image 2 or 4 times with real-time scroll for easy detailing. The single screen system also displays menus called up whenever needed. Resize, crop, change perspective, position and border. Stencil, cut and paste, rubber stamp, color fill, blend and airbrush. Select from a variety of brush strokes and sizes or design your own. Montage two or more pictures. Add background mattes in solid or graduated colors. A complete menu of drawing and painting functions is available by selection on both the digitizing tablet and the keyboard.

Paint/Draw

• Color-fill a bounded area • Mosaic creation • Flip and move • Edges, drop-shadows, borders, italics • Create geometric shapes as outlines or solids • Reference grids: defined by size, horizontal/vertical density; moveable centerpoint • Temporary disk memory makes earlier versions available for recall • Global color change • Color cycling: marqueeing • Copy, rubber stamp, mirror image

Penpalette Menu

A wave of the stylus brings up the unique PenPalette menu, a centralized workplace providing easy access to a wide variety of artist tools and options. Start with a full-range spectrum of 32 paintpots chosen from 16 million available colors, including over 2,000 on screen. Or specify your own start/end color range, and the magnified spectrum between the two will automatically fill into your paintpots. Colors can also be picked up from a picture custom-mixed by varying hue, saturation and luminance, RGB values, or by personal blending in the large mixing area available. PenPalette indicators always show both current color and the new color as it's being blended.

Choose your stylus pen point from six different round pens. Or select from five calligrapher pens or an airbrush, each available in seven different sizes. There's also a single pixel pen for detail work. If you need more than these 49 possibilities, you can custom-design your own pen point, perhaps using one of the picture elements. Then store your customized pen for on-line use.

In fact, your entire PenPalette can be stored with its associated artwork to make changes, updates and segmented working sessions easier.

Stencil/Montage

The stencil and montage functions make it easy to create new graphics quickly by combining elements of pictures already in your library. They work together like an "electronic clipbook," helping you to stencil or "cut" elements from two or more pieces of artwork and "paste" them together to form a montage. All the tools and features are there to make the process flexible, quick and easy.

Define stencil by:

• Freehand drawing • Rectangles/squares • Circles/ellipses • Color or area • Point-to-point

After stencil definition:

• Matte with a single or blend of colors • Crop outside stenciled area • Stencil can be reversed

Your stencil outline may be stored on its own or with its associated cut-out picture. Two or more pictures can be combined as a montage.

• Resize, rotate or reposition cut-out while maintaining standard 4 x 3 aspect ratio • Reshape or stretch, vertically, horizontally or at any angle • Change image perspective • Foreground and background planes can be position-swapped, layers reordered • Image merges with full opacity or any degree of transparency • Editing function allows experimenting before final image merge

**The Library**

Captured or created pictures are cataloged and stored on disk, in one or more Vidifont GraphicStore electronic slide trays. Each of these storage trays can hold up to 100 slides in any chosen order. Search/select by keyword and/or date can quickly retrieve any slide or group of slides from your library. Further selection can pinpoint just those you need at the moment. Both slides and trays may be arranged in any sequence. Slides can be re-sorted, moved from one tray to another, or duplicated to appear in several trays.

A handy indexing system speeds sorting and sequencing by listing the name and numbers of the previous two and following two slides. An optional printer provides hard copy. Or use the "light table" to simultaneously display either 4 or 16 slides. Highlight any one, and enlarge it to full screen. The Vidifont GraphicStore accommodates up to 100 storage trays of 100 slides each.

Playback

Pictures may be played back manually in slide tray sequence using forward, backup and skip functions. Or playback timing and sequence may be linked to and automatically triggered by Vidifont Graphics V or Viditext II messages and animations. Either way, you can use a variety of transitions including cuts, wipes, venetian blinds and posterizations. And because of a double-buffered frame store, these transitions require only a single GraphicStore channel, leaving the second available for other uses.

Vidifex 3-D

The Vidifex 3-D package provides a variety of full-screen perspective and animation options. Text and other graphic images may be recalled and depth added by extruding. Perspective may be altered by varying the viewpoint distance from the screen. Scaling, moving and rotation can occur independently or together around the X, Y and/or Z axis.

Pictures may be recalled from the library and used as backgrounds. Cell animation begins by simply defining the start and end images and their positions, along with the desired duration time. Vidifex automatically computes in-between key frames and merges the images with the background using high-definition anti-aliasing. These key frames may be transferred directly to tape or previewed from the library before transfer.

Storage

The Vidifont GraphicStore is available with a 40 or 140M byte hard disk drive with a capacity of 70 or 250 full-frame, randomly accessible pictures. Capacity is doubled by adding a second drive to the basic storage unit. Up to three additional storage units may be added, each with one or two drives for a total system capacity of 2,000 full-frame pictures.

An optional high-density Kodak® flexible drive provides hard disk backup, library portability for interfacility use and off-line archiving. The system employs a high speed SASI controller allowing for upward compatibility as higher capacity drives become available.

FGS 4500 Elite Computer Graphic System

- Latest techniques in shading include solid texture mapping, reflectance mapping and texture wrapping
- Ability to interactively design sophisticated motion
- Dynamic human interface providing with continuous response for quick results
- Ability to complex grouping of objects for animation
- Accurate control over every motion parameter by trajectory editor
- Special effects with glows, streaks, texture mapping, smooth shaded textured objects and multiple light sources
- Ethernet interface for satellite workstations
- Automated single frame recording control for VTR and digital disc recorder

The FGS 4500 is capable of modeling 2 and 3 dimensional objects, choreographing animation sequences up to the greatest complexity and rendering the images in realtime or as single frames and recording it under host control onto videotape or into digital single frames disk recorders.

For high resolution imagerendering images will be rendered as digital datas on to streamer tape for reading by high resolution printing scanners. Imageresolution may go up to 4000 by 4000 pixels for this application.

FGS 4500 Illustrator Paint System

- 2- and 3-dimensional object modeling
- Selectable brushes
- Selectable transparency
- Color selection of 16 millions colorshades, all displayable
- Cut and paste, stenciling, masking functions
- Illustration of images with 3 dimensional objects applying smooth shading, texture mapping and setting of colored light sources
- Realtime framegrab for illustration in full color resolution
- Rotoscoping facility

The FGS 4500 is a high quality 3D illustrator paint system. It's the basic FGS 4500 hardware with 2 and 3 dimensional object modeling and painting software. The FGS 4500 three dimensional capabilities make it the most sophisticated paint system. By adding on the animation and the special effects software it will become a full facility FGS 4500 Elite.

FGS 4500 Satellite Modeling Workstation

- SUN computer based off line package
- Data transfer over high speed Ethernet data link to FGS 4500 for animation/rendering
- Enhanced modeling capability with 2- and 3D editor
- Model building like extrusion, merging and surface of resolution
- Lofting capability for interconnecting two dimensional boundaries in a definable path

The modeling satellite is a stand alone system for object modeling with the latest sophisticated modeling software available.

It communicates with the FGS 4500 Elite over high speed Ethernet Bus. With use of this satellite workstation more jobs may be processed through the FGS Graphic Network for increased production.

Pixelerator — High Speed Rendering

The Pixelerator has a unique architecture which allows multiple CPUs to be linked together for high speed performance. With just one CPU the Pixelerator is expected to perform 10-30 times faster than the FGS. As CPUs are added, a near linear



FGS 4500 Elite

increase in performance is realized. There is no practical limit to the number of CPUs in one system, and a system with more than one CPU can be configured to run multiple jobs simultaneously.

While the display for the Pixelerator is video, the system is actually resolution independent. Higher resolution images may be rendered to disk, then transferred via the Satellite to magnetic tape for recording. To preview the image, a filtered version is displayed in video.

The Pixelerator communicates with the FGS over Ethernet. Animations are sent from the FGS to the Pixelerator, which takes over from there. The Pixelerator has its own built-in machine control for single frame recording. Inputs and outputs are provided via analog (R, G, B, Key) and digital CCIIR 601. System supervision for the Pixelerator is handled by the Satellite; this includes file management, system start-up, complete diagnostic control, and access to Unix. A terminal-based user interface provides for set-up and control of the rendering and recording process.

The Pixelerator offers a number of features to the network. The Pixelerator Z Shader allows for automatic depth sorting and object interpenetration with no limitations. Objects may be arbitrarily scaled in any direction for squashing and stretching. The Pixelerator RGBK out includes a soft key that can be recorded at the same time as the animation. These features combine with the rendering speed to create the ideal system for the synthetic image market.

The implications of fast rendering may alter your approach in working with clients. Consider the fact that a job which took 30 hours to render may take one hour on the Pixelerator. When a job takes thirty hours to render, the client is usually locked into the finished piece. When the time is reduced to one hour, the client may play a much more interactive role in the animation process. A job could now be rendered on the Pixelerator a number of times, producing the perfect result, while the FGS is available for interactive work.

BTS BROADCAST TELEVISION SYSTEMS, INC.*Distribution Switching
Systems***TVS/TAS-2000****Distribution Switching Systems**

- Redundant control card capability • Multilevel breakaway capability
- SMPTE-422 computer control optional • Internal refresh memory with 30-day memory save • Power supply failure indicators on all boards • Power supply alarm indicators with contact closure for remote alarm • Fused power supply outputs • Redundant power supply capability • No PROM changing on crosspoint boards • Vertical interval switching of video • Clamped video inputs • Output delay trim • Field expansion of inputs and outputs without rewire • Compact—10 x 10 matrix arrangement. 60 x 10 audio and video or 130 x 10 audio or video in 8³/₄" card cage • Internal cooling fans. Fans removable during normal operation • Matrix board "in use" indicator • Computer automated system testing of audio and video through all possible signal paths • BNC video and party line connectors • Dual video outputs • Capable of interface to TCS-1 machine control system

The TVS/TAS-2000 is a modular switching system consisting of a matrix, output and control cards. The cards—the basic building blocks of the system—are installed in rackmounted card cages which utilize pin and socket connectors to increase reliability and provide low circuit card insertion force. Systems may be configured and interconnected to create switching systems with capabilities ranging from 10 x 10 to 450 x 150. Redundant power supplies can be housed in each card cage.

Control Configurations

Desktop and rackmount control panels are available for use with the TVS/TAS-2000 switcher to meet virtually any control requirement.

Power Supplies

The PS-2000 Power Supplies provide unregulated DC voltages for on-card regulation. Because the supplies are interconnected in a redundant manner, either supply can power the card cage. Cost savings can be achieved by eliminating the redundancy and replacing the second power supply with a blank panel.

Monitor test points, a green LED indicator for each voltage and a red alarm LED, are located on the front panel of the power supplies.

Polling Card

The CE-2000 Polling Card is the system's master controller. It polls panels for switching commands and periodically refreshes all switcher outputs.

Using a nonterminated coaxial cable, the serial bidirectional party line offers a highly efficient communications medium for system control. The CE-2000 provides four separate and identical party line outputs. A short in one party line will automatically trigger the logical removal of the shortened line, allowing the other three lines to continue normal operation.

Card Cages

The RF-2000 Card Cages are 8³/₄" (five rack units) high and 18" deep. They mount in standard 19" racks, and feature easily removable front doors for quick access to circuit boards.

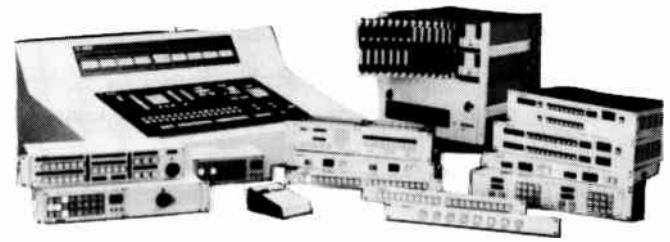
Each card cage has its own ventilation system. Air is drawn in through the front panel and exhausted through the right rear side. Fans are mounted to a removable panel on the rear of the chassis to allow replacement without turning the switcher off.

Input connections for the switcher system are located on the first card cage, and each cage in the system contains its own output connectors.

Internal cabling carries video and audio between card cages within a single rack. Plug-on cables and terminators are used to facilitate future expansion of inputs and outputs.

Alarm Circuits

Alarm circuits are contained within all circuit boards. The loss of any power supply voltage used on any individual circuit card creates an alarm condition which is indicated by the activation of a red LED. This alarm condition is bused to the power supplies where it generates a card cage alarm.

**TVS/TAS-2000****Matrix and Output Circuit Cards****Video Card**

The VS-2100 has 10 input amplifiers, each with a plug-selectable sync tip clamp option. The video matrix card contains 100 solid-state crosspoints for video switching. An LED is used on each card to indicate when the card has one or more crosspoints selected.

Audio Card

The AS-2100 Audio Matrix Card switches audio signals. This card has 10 solid-state bridging input amplifiers with high common-mode rejection. Balanced input signals are converted to a single-ended signal for switching by crosspoints. When the card is in use, output bus amplifiers and output crosspoints feed the matrix output bus. When the card is not in use, these are disconnected from the bus. Cards can be added to a system to supply the required number of inputs. For interchangeability, DIP switches are used to select the card addressing. An "In Use" LED indicates when one or more card crosspoints are selected.

TVS/TAS-2000 Matrix Configurations

Type CAV: Combined Audio and Video This configuration combines both audio and video switchers in a single 8³/₄" card frame. While the unit is limited to 60 inputs, it may be ordered with (or expanded to) 100 outputs.

Type CAA: Combined Audio Audio The CAA design can be configured as a dual audio switcher (channel 1 and 2) with 60 inputs to 10 outputs or as a single audio with 60 inputs to 20 outputs in each 8³/₄" card frame.

Type CVV: Combined Video Video Type CVV provides as many as 60 inputs to 20 outputs per 8³/₄" card frame.

Type MSO: Multiple Chassis with Single Output Card per Chassis These switchers are supplied with one card frame for each video output decade and a separate card frame for each audio output decade. Expansion to facilitate matrices of any size may be ordered initially or at a later date.

TVS/TAS-2001 Wide Band Distribution Switcher

The TVS/TAS-2001 provides a video bandwidth of more than 30MHz—measured with a full-amplitude (1V p-p) sine wave or video signal.

It takes advantage of surface mount technology to reduce signal path length and stray capacitance effects, providing the flattest possible response through every stage.

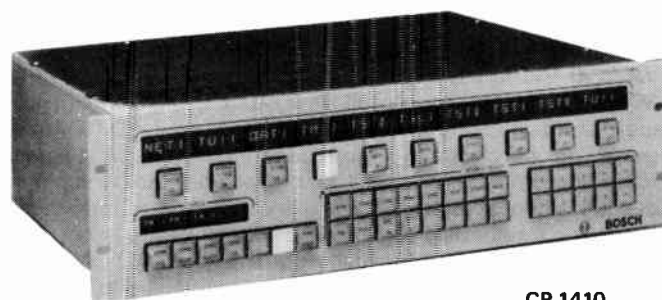
Featuring a companion line of 30MHz distribution amplifiers, the TVS/TAS-2001 is designed to deliver wide band performance with matrix sizes of 250 inputs x 250 outputs or more.

The bus technique maintains bandwidth performance across a wider motherboard than was possible in previous designs, allowing more inputs to be brought directly to the main matrix. This technique also increases the number of output buses that can be added before it becomes necessary to use the input distribution amplifiers.

The switcher can interface to older Bosch control panels delivered with TVS/TAS-1000 and 2000 series.

BTS BROADCAST TELEVISION SYSTEMS, INC.**Control Panels****SWITCHER PARTY LINE CONTROL PANELS****CP-1410 Multibus Control Panel**

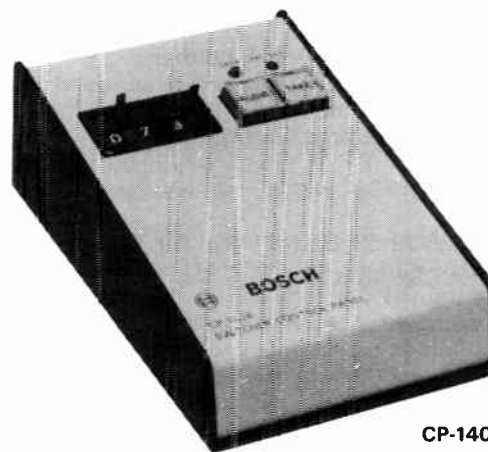
- Twenty bus control • Keypad entry—16 key • Alpha-numeric LED display • Individual level control • Up to four separate matrix levels • Input status tracking • Category number control • Displays can consist of any combination of up to four letters or numbers, and are complemented by descriptive labels



CP-1410

CP-1420 Pushbutton Control Panel

- Expandable to 200 buttons • Illuminated pushbuttons • Single bus • Dual bus • Full matrix XY • Programmable • Lock • Provides for 20 pushbuttons to select inputs for one switcher output



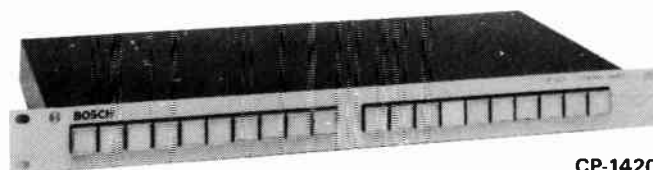
CP-1420

CP-1406 Battery-Powered Lever Wheel Control Panel

- Single bus • Designed to sit on a desk or tabletop • Provides control in offices and conference rooms when switcher status indication is not necessary • Operates on a single 9V radio battery • The battery will operate for up to one year under normal operation • A power connector is also provided to be operated with an AC adaptor • LEDs are provided to indicate the transmission of data to the party line and the condition of the battery

CP-1440 3-Lever Wheel Control Panel with Status

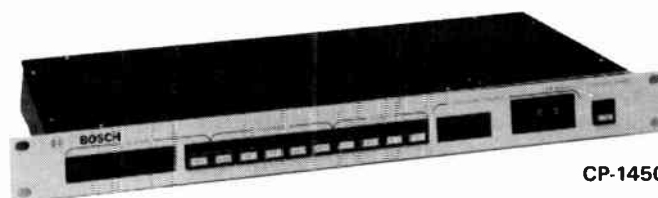
- Lever wheel entry • Single bus • Dual bus • Full matrix • LED displays • Downloadable mnemonics • Chop • Lock • Internal switches allow selection of operational modes, output number, switcher levels, normal or extended party line and numeric or alphanumeric operation



CP-1420

CP-1450 Series Microprocessor-based Control Panels

- Lever wheel entry • Category number selection • Alphanumeric LED displays • Level select buttons • Programmable override buttons • Downloadable mnemonics • Chop • Lock • Single bus alphanumeric lever wheel control panels • CP-1450/4 provides control of 2 output buses • CP-1450/3 is a full matrix control panel



CP-1450

CP-1501A Full Matrix Alphanumeric Control Panel

- Full matrix XY, seven levels • Keypad entry, 10-key • Alphanumeric LED display • Individual level control • Input status tracking • Category number selection • Downloadable mnemonics • Chop • Lock

TI-2000 Telephone Interface

- Switcher control from Touch-Tone® phone • Synthesized voice prompting • 100 programmable access codes • Multi-language capability • Contains a certified telephone voice coupler to conform to FCC regulations • Includes a power supply alarm indicator, on-board indicator and test lights, full or restricted matrix control capability

SM-2000 Status Monitor

- Video only takes • Audio only takes • Dual take status • Separate audio and video takes • Repeated dual takes • Inactive crosspoint • Up to four SM-2000 cards can be utilized in the system at one time • Each SM-2000 provides up to eight pages of information, each of which can be programmed to display the status of the matrix in either normal or reverse video or a combination of both

CI-2000 Computer Interface

- Provides interface between external computers and TVS/TAS-2000 switcher systems • Permits mnemonics download for CP-1420, CP-1440, CP-1450, and CP-1501 series control panels and the SM-2000 status monitor

Prices and Specifications Subject to Change Without Notice.

B-303

BVA-350 Video Distribution Amplifier

- 30MHz bandwidth (with full slew rate capability)
- Six rear panel outputs and one 75 ohm front panel output
- Differential input
- Back porch clamp
- Front panel video and voltage presence indicators
- Front panel controls include gain, which provides ± 1.5 dB of adjustment, and cable equalization in 10 steps as well as continuously variable fine control
- Plug-in options: Continuously variable 300m cable equalizer (30MHz). Adjustable video delay (to 235ns) in 5n sec steps with plug-in optional fixed delay units available

BPA-350 Pulse Distribution Amplifier

- Wide band amplifier
- Six rear panel outputs and one 75 ohm front panel output
- Front panel pulse and voltage presence indicators
- Plug in options: Pulse delay/regen. Cable equalizer for up to 300m

BAA-350/525 Audio Distribution Amplifiers

- One input/six outputs
- Handles balanced or unbalanced inputs and outputs
- Six balanced or 12 unbalanced outputs
- Mix and match balanced and unbalanced outputs
- Very low noise, > 100 dB at typical reference levels
- Very low distortion, typically $< .002\%$ at any level up to $+24$ dB
- Totally transformerless circuitry for superior audio performance
- Front panel 10-segment LED VU meter

BAA-350 Gain in four selectable ranges, maximum of $+6$, $+12$, $+18$ or $+24$ dB; ± 20.5 VDC; $> +27$ dBV balanced, $> +21$ dBV unbalanced, input/output max.

BAA-525 Gain in two selectable ranges. Maximum of $+6$ dB in LO position, maximum of $+24$ dB in HI position, > 24 dBV balanced, > 19 dBV unbalanced, input/output max; optional phono jacks for unbalanced use

TVA-528 Video Distribution Amplifier

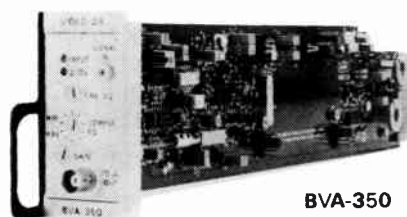
- Differential input
- One input/six outputs
- Precision-grade components assure long-term stability
- 1% bounce (overshoot)
- 0.25% distortion and tilt, 50Hz square wave (servo on)
- Accepts delay and equalizer plug-in operations
- DL 525 delay plug-in option—up to 300ns delay with frequency response/ripple of < 0.25 dB to 5MHz
- EQ525 equalizer plug-in option—corrects for up to 1000' of 8281 cable
- Delay/equalizer combinations possible

TPA-527 Precision Pulse Distribution Amplifier

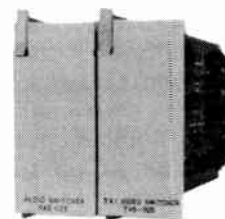
- One input/four outputs
- Precision design assures long-term stability
- Separate output stages
- Individual output 350-4000ns delay adjustments

TBB-525 Black Burst Generator/Sync Blanking and Burst Adder

- Burst adder
- Permits smooth fades to black without loss of colorlock
- Two separate outputs permit simultaneous sync/blanking/burst addition to monochrome source with separate blackburst output to switcher
- Remote on/off control of burst on either output
- Either output can be used for sync/blanking adder and/or burst adder
- 360° burst phase adjustment



BVA-350



TAS-525

TVS/TAS-525 Video/Audio Distribution Switchers

- 5 x 1 modules can be stacked for additional inputs with common latching or for multiple bus operation
- Video-loop/audio-bridge inputs
- Video switching is vertical interval, with a sixth crosspoint for improved isolation specifications in multimodule systems, (0.2° differential phase, 0.2% differential gain), (-60 dB crosstalk)
- Switchers self-latch, require only momentary closures
- TAS-525 audio distortion: 0.1dB overall; Crosstalk: -75 dB
- 5 x 1 illuminated pushbutton control panel available
- The RC5 pushbutton remote control panel can be mounted in RP-203 rack frame. The RC5 will operate either a TVS-525 or a TAS-525, or both simultaneously (audio follow video). Looping control connections allow two control panels to operate in parallel. Each RC5 requires a CC5 interconnecting cable.

THE-100 Hum Eliminator

- For use in color and monochrome systems
- Greatly reduces common mode power line hum in video circuits
- Passive, failure-free
- Compact
- Flat frequency response
- No differential phase or gain distortion



LDK-4210

LDK-4210 Genlock Sync Pulse Generator

- Single or double systems with automatic changeover unit
- Black burst with 8 field ident, and color bar generator
- PLUGE and grid pattern generator
- LSI technology ensures very stable and reliable operation
- Pulse outputs 4 or 2V p-p
- SC/H phase relation according to EBU recommendation for PAL
- 8V flag pulse optional output
- PAL, PAL-M, NTSC, PAL-N and SECAM versions available
- 19" rackmounting

TCE-2000N NTSC Digital Color Encoder

- Digital color bar generator
- Pulse delay module
- Drift-free digital modulators (U.S. Patent No. 3721755)
- All-digital color bar generator—full/split bars—optional
- Level-dependent proportional aperture correction
- 100% circuit access during operation—no extenders required—no phase shift or gain change during adjustment
- Umbilical connection for instant service replacement
- Subcarrier rejection typically 55dB
- No DC shift with APL change
- Drift-free current summing matrices (U.S. Patent No. 3715470)
- Meets all specifications over 100-130VAC, 0° - 60° C range without readjustment

DCR-100 Digital VTR in SMPTE/EBU D-1 Standard

- Recording and playback in SMPTE/EBU standard
- Any of the three D-1-cassette sizes can be used
- Can be switched between 525/60 and 625/50
- Modular construction
- Flexible overall design
- Reliable precision mechanics
- Serial control interface
- Digital video inputs and outputs according to CCIR 601
- Digital audio inputs and outputs according to EBU/AES
- Analog video/audio inputs and outputs (option)
- Internal machine-to-machine editor (option)
- Automatic tracking
- Automatic optimization of recording current and playback equalizer

As the system is of modular construction, the machine can easily be equipped to meet specific user requirements or applications.

Top quality coders and decoders enable the DCR-100 to be incorporated into existing systems.

The control panel, a useful feature of the DCR-100's modular construction, is laid out in a clear and practical way and is available in two versions: a basic version for applications where the unit is mostly remote controlled, and a deluxe version—as shown in the picture—with every refinement.

The front cassette compartment is directly above the control panel. It is unique in that it accepts all three sizes of D-1 cassette.

XD-CD 7184 Digital Encoder

- Conversion of analog component signals R, G, B, or Y, Pr and Pb to digital component signals as specified by CCIR Rec. 601
- Analog filters designed to CCIR Rec. 601 specification
- Two separate outputs (25 pins) for digital component signals (SMPTE RP 125/EBU Tech 3246)
- Insertion of H, V, and F in the blanking of the digital signal
- Built-in test signal generator for color bars, sawtooth and modulated signal. Switchable to one of the two outputs as separate test signal and/or to be inserted as line-test signal in line 20 and 333 in the vertical interval
- Pushbutton control from the front panel with LCD display
- Self diagnostic in case of failure
- Remote control (serial data line)
- Serial port for diagnostic data terminal

XD-DC 7184 Digital Decoder

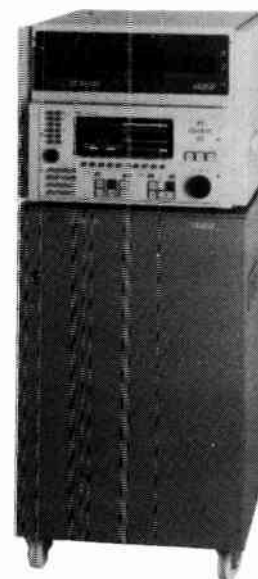
- Two separate digital 4:2:2 inputs (25 pins)
- Pushbutton control from the front panel with LCD display
- Remote control (optional)
- Built-in diagnostics
- Serial port for diagnostic data terminal
- Full screen display of test signals in the vertical interval
- Cable equalizer for 250m cable length (optional)
- Analog filtering according to CCIR Rec. 601, annex III
- Menu-driven control
- Individual switch-off of the components y, CR, CB
- Generation of standard blanking and sync signals
- Line delay board (optional—maximum of two can be installed inside decoder)

Options**XD-0160 Cable Equalizer**

Suitable for cable lengths up to 250m.

XD-0164 Line Delay Board

For test line storage over 1 V/interval. Maximum of two boards, can be installed within decoder.

**DCR-100****XD-ST NR 631 4:2:2 Noise Reducer**

- Selectable noise reduction: -3, -5, -7dB
- 525/60 and 625/50 signals
- Automatic switchover between 525/60 and 625/50
- 4:2:2 digital signal input, loopthrough
- Separate luminance and chrominance noise reduction
- Still store operation
- Local internal or optional remote control
- Input: parallel digital 4:2:2 component signals
- Output: parallel digital 4:2:2 component signals
- Output signals locked to external (studio) reference
- 19" rackmount
- Noise reduction of 4:2:2 digital signal (according to CCIR 601/656) with studio bandwidth
- Accepts analog component video signal through analog—digital converter
- Digital output signal can be reconverted into desired analog signal

DNR-7 Digital Noise Reducers

- 4:2:2 signal processing unit for the noise reduction of 4:2:2 digital signals with full studio bandwidth
- Also accepts composite or analog component video signals via analog-digital converters
- Digital output signals can be reconverted into the desired analog signals
- Range of noise reduction is selectable with separate processing of luminance and chrominance
- Facilities for still store operation
- Switching between 625/50 and 525/60 signals is possible
- Remote control is available

PD-TB 7184 Digital Test Pattern Generator

- Test signal generator for digital component signals according to CCIR Rec. 601
- Two separate outputs for digital component signals
- Eight-line repetitive test signals selectable with or without programmable color area
- Selectable output for test signals
- Additional H- or V- sweep for luminance and chrominance (with or without motion, programmable motion frequency)
- Line repetitive test signals can be used as test signals in vertical blanking interval (line 20 and 333)
- Adjustable horizontal position
- Pushbutton control from front panel with LCD display
- Self diagnostic in case of failure
- Remote control (optional)
- Provision for serial output to connect a terminal for diagnostic menu-driven control
- Separate switch-off facility for digital components

BTS BROADCAST TELEVISION SYSTEMS, INC.**Master Control/
Automation Systems****MCS-2000 Master Control Switcher
With Built-In Stereo Capabilities**

- Full TVS/TAS routing switcher access to up to 250 video/audio sources
- Programmed source name display for 16 input buttons
- Manual and automatic-fades, dissolves and wipes
- Two independent key stages
- Key colorizing and bordering
- Communication with TCS machine control system
- Over/under audio mixer
- 4-channel stereo meter bridge with real time display
- On-air bypass

The MCS-2000 can offer the most sophisticated and yet still the simplest preroll system you can get. It offers the capacity to multi-roll A/V splits and backup machines, to automatically handle film chain multiplexers, and to provide automatic full-function machine control at the operator's fingertips.

The MCS-2000 can provide complete on-air automation, with every function of the switcher available to an automation system. The automation system can even adjust the clip levels of a keyer.

The MCS-2000 can provide automatic logging of all switcher events, even without an automation system.

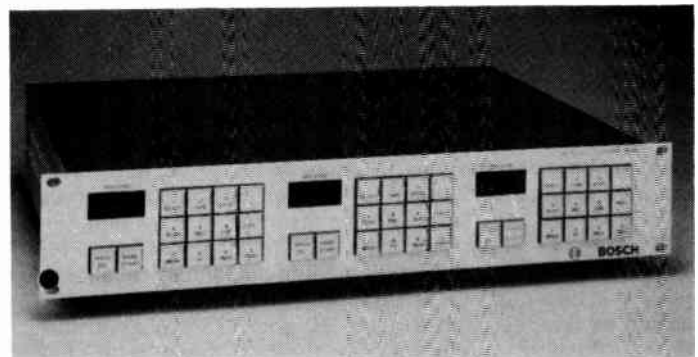
**MCS-2000**

The switcher can be interfaced to a complex machine control system such as the TCS-1 and will provide complete full-function control of any machine selected on the preset or program bus.

TCS-1 Machine Control System

- Controls up to 100 VTRs/film chains
- Dual twisted pair wiring simplifies installation
- Control of each VTR/film chain can be delegated to any one of eight studio control panels or machine control multiplexers
- Central microprocessor can be programmed to provide special functions such as permanent assignment of specific machines to specific control panels
- System can be integrated with the TVS/TAS-2000
- Distribution switcher to provide dynamic machine selection
- System can be integrated with the MCS-2000 master control switcher
- Integrates with the BTA-2300 automation system

- MI-8** 8-function machine interface, 1³/₄" rackmount
- MI-24** 24-function machine interface, 3¹/₂" rackmount
- MD-8** Machine delegate panel, 1³/₄" rackmount
- MC-24A** Single-machine control panel, requires MCM-1000
- MC-12/3** Twelve function three machine control panel
- MCM-1000** Machine control multiplexer, connects up to 30 MC-24A's

**TCS-1****BTA-2300 Television Automation System**

Designed to provide television station operators with a powerful yet easy to use, computer-assisted television station automation system of high reliability. The system is intended to be used as a tool by the operators—it does not presume to do the operators' job.

The automation system features include a traffic computer interface, switcher and auxiliary equipment control, alternate schedule selection, log creation, media pull list generation, machine assignment, and cart machine play list generation. The software is configurable to meet the needs of individual stations. The system makes extensive use of color displays, touch screens, and mouse pointing devices to streamline the operator interface. Fill-in-the-blank forms and labeled softkeys make the system easy-to-use.

The system controls an MCS-2000 Master Control Switcher and its associated TVS/TAS-2000 Distribution Switcher and TCS-1 Machine

Control System. Nearly all of the master control switcher functions and adjustments which can be performed manually can be controlled automatically from the switching schedule.

A typical system would consist of:

- The processor
- 4M bytes of RAM
- An 80M byte hard disk drive used to store the software, switching schedules and logs
- A 7770K byte, 3.5" floppy disk drive used for schedule backup, log archiving and cart machine play list output
- A color terminal used as the main console
- A color video output used for monitors around the station
- Several additional color terminals used to provide access from around the station (optional)
- Two printers, one used to print the log on-line and the other used as a utility printer to print various reports
- A serial interface to a separate traffic computer system

BTS BROADCAST TELEVISION SYSTEMS, INC.**Editing System****BBE 900 Automatic Editing Control Unit****4 VTR Control $\frac{1}{2}$ " , $\frac{3}{4}$ " or 1"**

Up to four VTRs can be controlled in an A/B Roll edit. Any unused VTR can also be selected and controlled while an automatic event involving the other VTRs is taking place.

Switcher Control for Full Effects

Serial and parallel switcher controls of crosspoints, main fader, keyer, wipes, and dissolves.

Audio Mixer Control

Fader selection and VCA control. This allows individual automated control over audio switching and cross fades.

2 Auxiliary Sources

Both of these sources can be assigned to access; for instance, a live camera, black, or color bars.

Multiple Source Selection

Select all four sources for simultaneous control. Used for live cuts and dissolves.

Longitudinal, Vertical Interval Time Code, Control Track

Time Code can be read in any combination, and selected independently for each machine.

Battery Backup

Protects EDL (Edit Decision List) events in case of power failure.

Non Volatile Memory

For storing user selectable system setup parameters.

Color Framing

NTSC or PAL color framed edits by either the VTR's detector or an optional plug-in color framing detector.

Cue Tone Record/Playback Option

Places tones on the audio channel.

Advanced Graphic Effect Mode Display

Tells at a glance what the displayed event is without having to analyze the time code values.

Full Synchronization Accuracy Selection

Synchronization using various time code grades, or no time code at all, can be accomplished by using the six accuracy grades provided. These grades are: absolute time code synchronization, ± 1 frame tolerance, rough sync, preroll and play, play only, or manual start. These help overcome a large number of time code quality reading problems.

DMC (Dynamic Motion Control)

-1 to +3 times normal speed synchronization, manual override possible. Automatically assigns the outpoint to an inpoint for matched edit.

Crosspoint Selection

Switcher crosspoints are assignable.

Matched Frame Edits

Allows back to back effects in a multi-machine special effects sequence.

Automatic Time Tracking

Allows automatic calculation of the player matched frame. An enormous amount of time is saved with this feature. Also, time tracking can be initiated manually, when the automatic mode has been disabled.

Specifications

Power Requirements:	100VAC to 240V $\pm 10\%$, 48Hz-64Hz
Power Consumption:	50W max. including all BKE boards
Operating Temperature:	0°C-45°C (32°F-113°F)
Storage Temperature:	-40°C + 60°C (-40°F + 140°F)
Weight:	Card file unit—Approx. 19.7 lbs. (9 kg) Keyboard—Approx. 5.5 lbs. (2.5 kg)
Dimensions:	Card file unit—Approx. 6.9" H x 16.7" W x 10.3" D (175 x 424 x 262mm) Keyboard—Approx. 2.1" H x 16.7" W x 10.8" D (53 x 424 x 275mm)
Video/Reference Signal:	External sync input—0.2-5.0V p-p sync signal or 1.0V ± 0.2 V p-p video signal, 75 ohms

**BBE 900**

Cue Tone Signal:	Reference video input—1.0V ± 0.2 V p-p, 75 ohms (with BKE-901/BKE-902) Field reference input (PAL only)—Nominal 4.0V p-p, 1.5k ohms, negative going edge in line 1 through line 15 of fielt 1 (with BKE-902) VDU output—1.0V ± 0.3 V p-p, 75 ohms Frequency—1kHz (begin cue), 400Hz (end cue) Cue audio input— +4dB, 600 ohms, balanced, XLR 3-pin Cue audio output— +4dB, 600 ohms, balanced, XLR 3-pin
Operation:	Data and source controlled by keyboard with VDU of edit data and source status
Edit Reference:	Control track signal, SMPTE/EBU LTC (Longitudinal Time Code), VITC (Vertical Interval Time Code)
Editing Accuracy:	± 0 frame with time code operation (normal play mode)
Edit List:	128 edits
GPI:	3 ports, programmable pulse output
External Edit Control:	RS-232C, programmable BAUD rate and bit
VDU:	6 x 7 dot matrix, 80 characters x 24 lines
Supplied Accessories:	Extension board for Card File Unit (x1), 8-pin keyboard cable (5m x 1), 15-pin D subconnector (male, x 1), 25-pin D subconnector (male, x 1), AC power cord, operation and maintenance manual

Optional Accessories**BKE Series Interface Boards**

BKE-901: NTSC color framing detector; BKE-902: PAL color framing detector; BKE-903: Cue tone record/playback adaptor; BKE-904: 9-pin interface with two 9-pin connectors; BBE 900 $\overset{RCC-G}{\leftrightarrow}$ BVU-800 series, BCB Betacam; BKE-911: Parallel switcher interface; BBE-900 $\overset{RCC-G}{\leftrightarrow}$ BVS-500, GVG 50CV; BKE-912: Serial switcher interface; BBE-900 \leftrightarrow GVG 100/1680; BKE-915¹: Serial switcher interface; BBE-900 $\overset{25-pinD}{\leftrightarrow}$ SEG-2550; BKE-916²: Parallel mixer interface

¹25-pin (5m) switcher control cable supplied

²15-pin (5m) mixer control cable supplied

Prices and Specifications Subject to Change Without Notice.

BTS BROADCAST TELEVISION SYSTEMS, INC.**Camcorder/Betacam
Recorder/Player****KCB 590 Recorder Camera System
for Betacam SP Videocassettes**

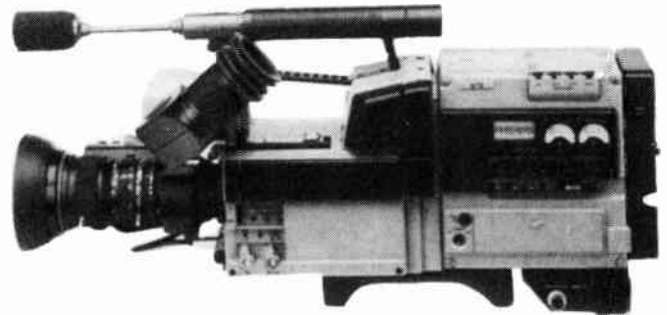
The KCB 590 is a combination of the LDK 90 frame transfer-CCD camera with the Betacam SP recorder BCB 5.

Camera System (LDK 90)

- Three chip CCD camera
- 610 (NTSC)/604 (PAL) pixels in horizontal direction
- Low profile camera body
- No smear due to frame transfer principle
- Viewfinder playback
- Full bandwidth high-grade recording plus a parallel broadcastable video signal
- 8V genlockable sync generator
- 1 1/2" viewfinder with tape length indication, audio level control, signal-inserted border, white balance, momentary iris window in the picture area; around the picture area: record/on-air indication, gain readout, two white balance memories and presets, no filter, range extender, tape-end signal, low battery warning, standby save and video level indication

Recorder System (BCB 5)

The quality-enhanced BCB 5 Betacam SP recorder for metal particle tapes gives wider bandwidth coverage, superior signal component recording, improved signal-to-noise ratio and better-than-ever picture quality for playback/editing.

**KCB 590**

- Betacam SP recordings are compatible with Betacam format
- Video and audio off-tape monitoring
- Immediate playback of recorded events in the viewfinder
- Lightweight and compact
- Four audio channels. Two FM audio channels are added to the normal two longitudinal ones
- 48V phantom supply for audio CH1

**BCB 35 Portable Field Recorder/Player
Betacam SP Format**

- RS-422 interface for field editing
- Frame accurate back space editing
- 4 audio channels with individual meters
- 48V phantom supply for audio CH1
- Built-in RF modulator
- 19.2 lbs.
- Built-in time code generator/reader with 8-digit LCD readout
- Composite and component input/output
- Battery compartment accepts either two NP-1A or one BP-90 battery. AC operation is also possible using an AC-500 power adaptor
- Supplied with extension board, soft carrying case, shoulder belt, antenna selector switch, coaxial cable with F connector
- Search mode is \pm normal playback
- 45 minutes continuous operating time with NP-1A

**BCB 35**

BTS BROADCAST TELEVISION SYSTEMS, INC.**Betacam Recorder/
Players****BCB 75/70/65/60 STUDIO RECORDERS/
PLAYERS FOR BETACAM SP VIDEOCASSETTES****BCB 75 Betacam SP Recorder/Player**

The BCB 75 employs the Betacam SP standard which, together with metal particle tape, raises the picture quality to a remarkably high level. Other techniques also introduced contribute to the VTR's video reproduction standard. In particular, the FM carrier frequency has been raised, making possible significant improvements in luminance bandwidth, signal-to-noise ratio and the pulse-bar response in both luminance and chrominance channels.

Dynamic-Tracking Playback

With the DT head and circuit technology, the BCB 75 can playback broadcast quality video from -1 to +2 times normal speed continuously. It also has a variable memory for storage and recall of tape speeds within that range.

Extended Recording-Playback Time

The BCB 75 accepts, beside the S-Cassette (5, 10, 20 or 30 minutes), the L-Cassette (60 or 90 minutes). In the PAL-Standard the time increases for S-Cassette to 36 min. and L-Cassette to 108 min.

Built-In Editing

- Split audio-editing with independent In and Out memories
- Frame by frame forward and reverse trim
- (Dynamic Motion Control) DMC is provided during editing. Using a DT equipped player VTR with RS-422 interface (BCB 15, 65, 75) the BCB 75 can memorize the tape speed of the player VTR achieving broadcastable playback at -1 to +2 times normal speed. After memorizing, the DMC function can be used either in edit or play mode.

Video/Audio Confidence Heads

The unit is equipped with video and audio 1 and 2 confidence heads for simultaneous playback during recording.

Built-In TBC

A built-in time base corrector provides broadcast quality video signals. A high quality digital dropout-compensation also ensures consistent picture performance.

Maintenance Alleviation

The BCB 75 has built-in indicators for power on, drum running time and threading/unthreading cycles. Quick serviceability is supported with comprehensive self diagnostics.

Multichannel Audio

Four channels—two longitudinal ones with Dolby C and two FM channels (simultaneously recorded with the video signal by the rotary video heads)—are provided.

The adjustment of record and playback level can be done with the individual potentiometers. By pressing those buttons the channels are set to unity gain. The bar graph display can be selected either for VU- or peak-display.

Built-In Time Code Generator, Reader and Character Display

- Built-in time code generator for LTC, VITC and User-Bits
- Presettable User Bits can be stored in the non-volatile memory
- External/Internal time code (Regen/preset—Rec run/free run)

SMPTE/EBU Component Connectors

In addition to the 12-pin dub connectors, the Betacam SP studio models are equipped with separate BNC connectors for Y, R-Y, B-Y, which are adjusted for the proper SMPTE/EBU component levels.

**BCB 70****BCB 65 Studio Player with Dynamic Tracking**
Player version only of BCB 75**BCB 70 Studio Recorder/Player**

The BCB 70 is the workhorse for editing suites, which provides full edit capabilities for mastering purposes.

Capstan override

Normal playback-speed can be varied by $\pm 16\%$ using the search dial or by $\pm 8\%$ using the TRIM buttons.

High Speed Picture Search

Picture search can be done at various speeds up to 24 times normal speed in forward and reverse mode. Up to 5 times normal speed, a color picture can be obtained.

Color Framing

A 4 field/8 field capstan servo provides for color framing to be introduced in cases where it is necessary for maintaining a good playback-encoded NTSC/PAL composite video signal, without degradation or horizontal shift. The color-framing is based on ID-Pulse and VISC (Vertical interval subcarrier).

SC-H Indicator

The BCB 75 has two independent SC-H phase indicators for composite input and output. Using these, the operator can easily check the status of input and output signals.

Initial Set-Up Menu/Character Display

An initial set-up menu has been introduced. It can be scrolled and modified by the search dial while monitoring video out 3 or the timer display on the front panel. The individual set-up is stored in a non-volatile memory. The character display, which is super-imposed via video output 3, displays VITC/LTC/U-BIT or CTL data, furthermore, function status and shuttle speeds.

BCB 60 Studio Player

The BCB 60 is the ideal machine, where only playback of recorded Betacam SP cassettes is necessary. Due to the built-in TBC, the player can be used in the transmission area or as a slave machine in an editing suite. The usage of the small and large size cassettes allows for continuous playback of up to 90 min. (NTSC) and over 100 min. (PAL).

FDL-60 Film to Tape Transfer System

- CCD line sensors — extreme long life, no burn in, no afterglow
- Capstan drive — smooth quiet film motion, gentle handling of original negative film, fast shuttle up 625 frame/s
- Digital signal processing — progressive scanning avoids flicker and shrinkage problems, slow motion and fast motion, forward and reverse and freeze frame in high picture quality
- Quick format change — change from 35mm to 16mm optical block in seconds
- Select-A-Speed — variable speed between 16.00 and 30.00 frames/s
- Freeze start and instant stop — broadcastable
- Pan scan cinema scope (only B1, B2)
- Negative and positive film operation
- Automatic shading and fixed pattern correction
- Automatic color correction with manual access
- Black stretch for high contrast cinema prints
- 16mm and 35mm COMOPT, 16mm COMMAG
- Low operational costs — high stability and reliability by digital processing and CCD sensors, long life mechanical parts, inexpensive 24V halogen lamp
- Film timer for cue, autocue, freeze and changeover
- All color TV standards, component video output
- Change from spools to cores in seconds
- Two independent audio channels — stereo or two different languages

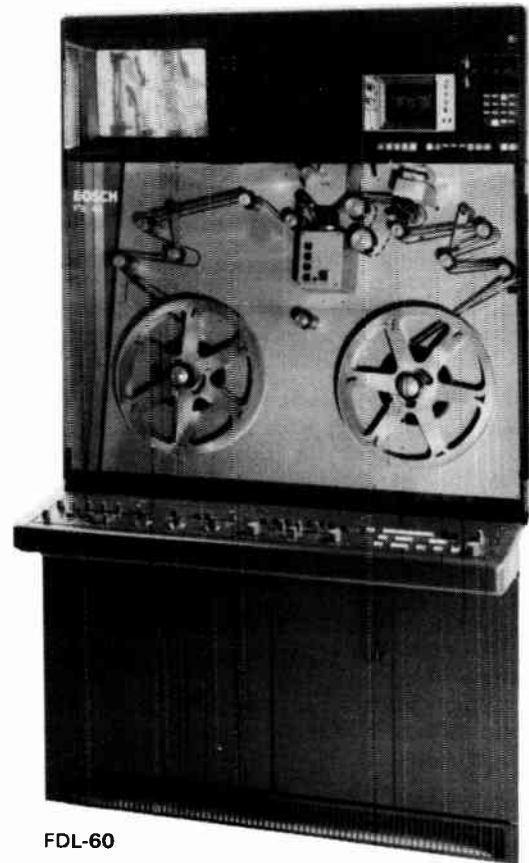
Options

- Digital film grain reducer FDGR — unique improvement in picture quality
- Secondary color processor FDSC — including six sector correction of hue, saturation and luminance, independent colorimetric improvement of red, yellow, green, cyan, blue and magenta
- Negative matching
- Super 8 optical block and COMMAG unit
- 35mm Dolby optical stereo sound
- 35mm COMMAG one-track and four-tracks
- SEPMAG interface for different sound followers
- WETGATE system from Schmitzer — eliminates film scratches
- 1-2 changeover — continuous reproduction of cinema films
- A/B interface for synchronous start of two FDLS
- X-Y zoom with ATX-100 and camera aperture optical block 35mm
- CCD 134 sensor
- Anti blooming sensor — improved shadow reproduction of high contrast prints without the danger of blooming effects
- Improved low light level parameters

The FDL 60 is a Telecine without Tubes

It uses generation long life CCD line sensors eliminating burn-in and lag problems. Each frame is scanned only once, line sequentially and without deflection voltages, so field flicker cannot occur and the vertical resolution is absolutely constant.

The result is first class picture quality with high resolution, excellent signal to noise ratio and brilliant color rendition allowing even those red hues to be faithfully reproduced.



FDL-60

Capstan Drive and Digital Signal Processing Provide

Slow motion and fast motion, forward and reverse, and freeze frame are all in excellent quality. Finding scenes or single frames is made easy by the variable programmable search facility and step mode — with full format color pictures. Start and stop are instant and frame accurate and the deck can handle film lengths up to 1200m.

The FDL-60 Dramatically Reduces Costs

The digital signal processing needs no maintenance and the CCD sensors are free from wear with typical semiconductor reliability and operating life. Forget about drifting circuitry, expensive tube changes and line up problems.

FDGR Film Grain Reducer

The film grain reducer reduces the visibility of film grain and noise. It is a fully digitized unit with an ECL-interface for the in- and outsignal. In principle the FDGR is a recursive filter with a frame store. A part of the output signal is fed back to the input. The ratio of the direct signal to the delayed signal defines the grain/noise reduction. An automatic circuit, measuring the input noise as well as the movement in the picture signal, optimizes the signal to noise ratio and prevents smearing and lag effects at moving pictures.

FRP 60 Film Reproduction Programmer

- 12 bit resolution for all 48 analog channels
- 800 events in battery buffered solid state memory (> 256 K RAM)
- Standard event list for 32 basic correction set-ups of different film stocks
- 8 scratch pad memories for direct comparison of different color corrections (simulate camera matching)
- Unlimited reediting: Reuse of any stored event (instantaneous random access) for actual scene
- V-synchronized switching of corrections
- Human Interface: Messages, warnings in plain text, Plain text identification of scenes and standard events
- Automatic test- and diagnostic system TADS: access via commercial data terminal

Performance Characteristics

- **Override—Mode:** no need to center the pots and joysticks when recalling events
- **Coupled—Mode:** transparent orientation in even less by electronic interlock of data display and film position
- **Fade—Corrections:** dynamic linear interpolated transition between different corrections, also used for Pans (S-curve customer selectable)
- **Adjust—Mode:** global edits for the whole event list
- **Update—Function:** global corrections scene beginnings in the event list, after cutting or splicing a piece of film

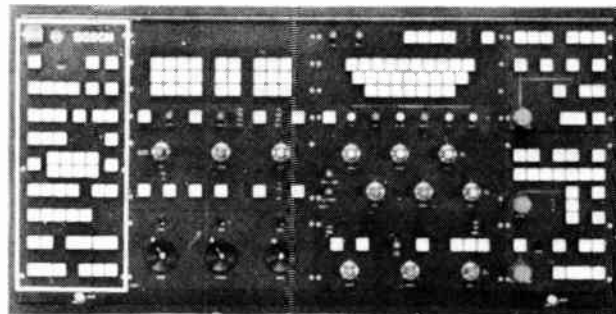
Options

- **Secondary color correction:** corrections of color hue, saturation and luminance in six sectors; continuous chroma control; dark desaturation; white, black and gamma level of the luminance signal, separate activated function: six sector—chroma—luminance
- **Automatic scene change detector:** automatic marking of the scene changes without the presence of the operator
- **Digital film grain reducer FDGR programmable:** for matching scenes with different graininess
- **User definable functions—**for programming switchers, sub-titlers, etc.
- Floppy disk, printer
- **Automatic field—**accurate film-to-tape transfer by means of an integrated editing system
- **C-format interface—**for BVH 2000, PAL, NTSC; for VPR 6, PAL, NTSC under development

Film-To-Tape-Editor

- Reproducible film-to-tape edits
- Field-accurate edits
- FDL slow motion edits
- Automatic edit simulation (preview)
- Edit out point decision by telecine or by VTR
- Auto preset mode
- Auto assemble mode
- Synchronous playback of telecine and VTR—assists A/B-roll transfer

The FRP 60 provides for film post production a programmable correction system. It has independent programmers for primary and secondary color correction, PanScan, audio level and sources, playback speeds and a general purpose interface for switching and analog functions, which can be defined by the user as required. The FRP 60 is very easy to operate. In contrast to menu techniques, the operator controls the system



interactively, which enables much faster operation. The outstanding feature is an integrated field accurate editor—even for slow motion speeds—and interfaces for B- and C-format VTR's.

The master processor consists of standard Intel P.C.'s:

- Microcomputer—SBC 86/14 • CMOS RAM/EPROM • Serial I/O extension • Two analog input interfaces • Data display control unit • 256K RAM

Two BOSCH interfaces for:

- Analog output • Digital output, sync sep., film timer

Distribution of analog channels:

Color corrector: 8; secondary color correction: 18; Joysticks: 6; Negative matching: 6; Contour correction: 1; Audio 1: 1; Audio 2: 1; Pan position: 1; User functions: 6; Total: 48

Specifications

Microprocessor:	Intel 8086
Microcomputer:	S.B.C 86/14
Data Monitor:	B/W monitor: M 24 BA/BB or M 38 BA/BB or M 51 /BB
Floppy Disc:	8" single sided, single density 800 events incl. comments, 32 standard events
Capacity:	Number of analog channels: 48 Number of digital channels: 52 Resolution: 12 bit Max. number of event in battery protectable store: 800 Storage capacity of the RAMs for the events: > 256K Program length (basic version): 120K
Cable Lengths:	Operating console—master processor: max. 150m Master processor—FDL 60: max. 7m Master processor—floppy disc: max. 300m
Input Reference:	FDL 60 film timer (data line) + studio pulses
Power Consumption:	Operating console: 150W Master processor: 700W
FDL 60 Configuration:	1. Operating console 2. Main frame (Intel ICS 80) 3. Connection cable

LDH 6200/LDH 6220/LDK 7020 Color Monitors**Common features:**

- Two video inputs and RGB input
- Vertical split screen between inputs A and B
- Special effects display between selected video inputs and RGB inputs
- Selectable internal/external sync
- Switchable normal and underscan mode
- Color/mono selection for A and B video inputs
- Remotely controlled tally indicators
- Modular design, compact, and lightweight plus easy servicing
- Comb filter (NTSC version)
- Automatic degaussing
- Keyed back porch clamping ensures stable black level
- Excellent monitor to monitor matching
- High reliability
- At home in broadcasting studios or mobile production vehicles
- Ideal for cable television, education studios and production houses
- In line gun CRT and integral yoke design replaces user's need for adjustable convergence controls
- Close proximity, multiple monitor use is possible as these monitors can operate without influencing each other, even when working from asynchronous signals

Accessories Supplied

- Power cable with sealed connectors, length 1.75m
- Exchangeable transparent text-plates for tally indicators
- Operating manual, including circuit diagram

LDH 6200 14" Color Monitor**Shares common features plus:**

- In-line 'Hi-Bri' self-converging CRT
- Pulse cross mode
- Optional 19" rackmounting kit (LDH 6250)*

- LDH 6200/51:** 14" color monitor NTSC, 60Hz—525 lines
- LDH 6200/01:** 14" color monitor PAL, 50Hz—625 lines

Optional

- LDH 6250/00:** 19" rackmounting kit*
- LDH 6260/00:** Automatic PAL/SECAM decoder module, to convert a PAL monitor into a PAL/SECAM version

LDH 6220 20" Color Monitor**Shares common features plus:**

- In Line 'Hi-Bri' self-converging CRT
- Setup switch for low level white balance adjustment
- 19" rackmounting kit*

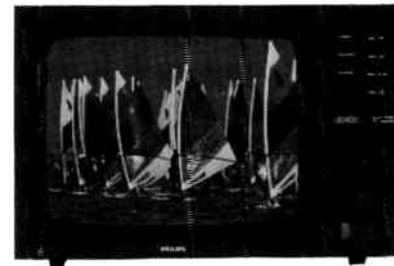
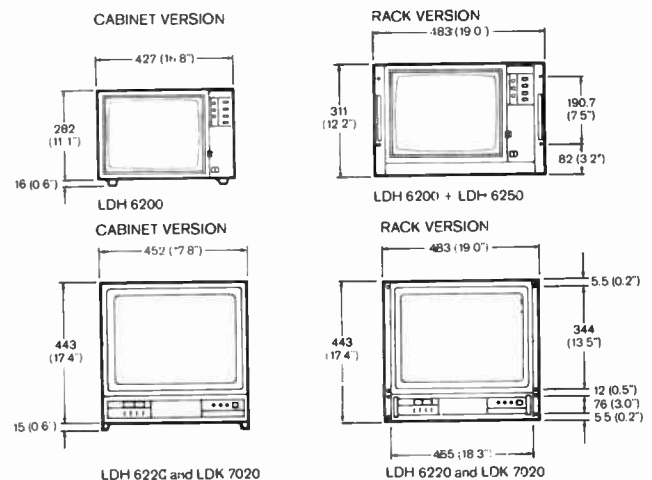
- LDH 6220/51:** 20" NTSC, 60Hz—525 lines
- LDH 6220/01:** 20" PAL, 50Hz—625 lines

Optional

- LDH 6260/00:** Automatic PAL/SECAM decoder module, to convert a PAL monitor into a PAL/SECAM version

LDK 7020 20" Color Monitor**Shares common features plus:**

- Fine pitch (0.40mm) dot type shadow mask self-converging CRT

**LDH 6200**

- Setup switch for low level white balance adjustment
- 19" rackmounting kit*

- LDK 7020/52:** 20" color monitor NTSC, 60Hz—525 lines
- LDK 7020/01:** 20" color monitor PAL, 50Hz—625 lines

Optional

- LDH 6260/00:** Automatic PAL/SECAM decoder module, to convert a PAL monitor into a PAL/SECAM version

*Note: Most proprietary sliding rails are suitable, but are not part of 19" rackmounting kit.

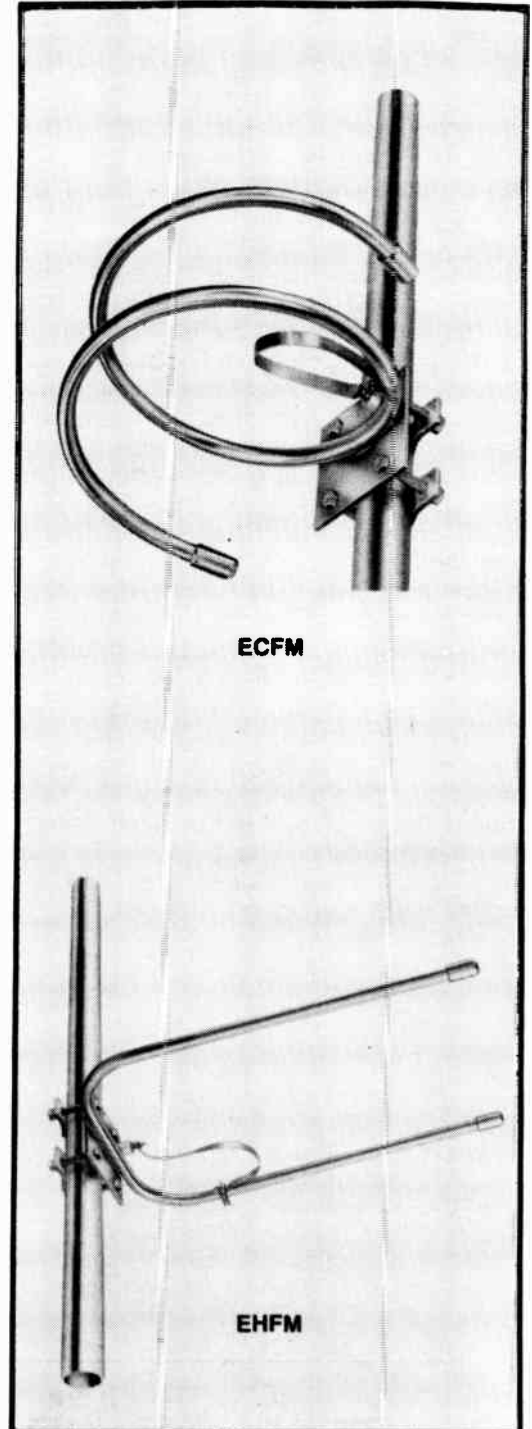
CABLEWAVE SYSTEMS, INC.

FM Educational Antennas

Educational FM antennas using the same general design concepts as the commercial High Power and Low Power antennas are available.

However, these antennas, because of the normally lower power required in the educational service, are fabricated of 7/8" stainless steel tube. The circularly polarized antenna is a 1½ turn helix and the horizontal polarized element has a U configuration. The educational antennas are complete with a matching harness of RG type cables and are designed to mount on tower legs or support pipes 1¼" to 2¾" diameters. The multi-element arrays have an element spacing of 10 feet.

All educational FM antennas are completely grounded structures. Each radiating element is fabricated of a single piece of stainless steel tubing. The coupling loop is a stainless steel strip attached to the radiating element with a worm-type all stainless steel clamp. The coupling loop is fed through a type N feed-through connector and an insulator. The type N connectors used in the binary feed harness are sealed to the cables with heat shrink tubing. Where icing may be a problem radomes are available for circularly polarized but not horizontally polarized antennas.



ECFM

EHFM

CIRCULARLY POLARIZED FM EDUCATIONAL ANTENNA SPECIFICATIONS							
Type No. And Bays	Power Gain	Gain In db	Field Gain	FS @ 1 Mile 1 KW, MV/M	Net Weight Lbs. (Kg.)	Power Rating KW	Wind Load* 50/33 PSF
ECFM-1	.43	-3.66	.65	90	9 (4.1)	.2	19
ECFM-2	.90	- .46	.95	131	21 (9.6)	.4	40
ECFM-3	1.42	1.52	1.19	165	32 (14.5)	.5	62
ECFM-4	1.95	2.9	1.39	192	43 (19.5)	.5	84
ECFM-6	2.99	4.76	1.73	239	65 (29.5)	.5	130
*244/166 Kg-m ² When ordering specify Radome PD-1203							
HORIZONTALLY POLARIZED FM EDUCATIONAL ANTENNA SPECIFICATIONS							
Type No. And Bays	Power Gain	Gain In db	Field Gain	FS @ 1 Mile 1 KW, MV/M	Net Weight Lbs. (Kgs)	Power Rating KW	Wind Load* 50/33 PSF
EHFM-1	1.0	0	1.0	138	9 (4.1)	.2	19
EHFM-2	1.8	2.55	1.34	184	21 (9.6)	.4	40
EHFM-3	2.8	4.47	1.67	230	32 (14.5)	.5	62
EHFM-4	3.7	5.7	1.92	264	43 (19.5)	.5	84
EHFM-6	5.5	7.4	2.3	317	65 (29.5)	.5	130
*244/166 Kg-m ²							
Educational FM Antennas are designed to mount on tower legs or support pipes having diameters up to 2¾". The spacing between bays is 10 ft. Education FM Antennas are fed with RG-8 and RG-11 cables and all have a type N Male Input Connector.							

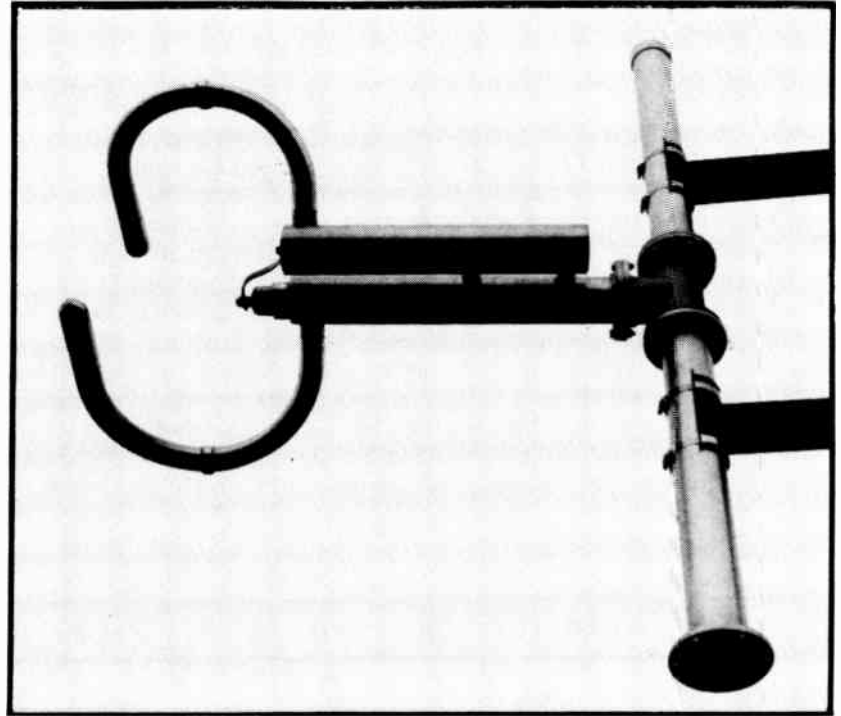
CABLEWAVE SYSTEMS, INC.

**Super Power Circularly Polarized
FM Broadcast Antennas**

The new series of Super Power Circularly Polarized FM Broadcast Antennas are very high power antennas which use a minimum number of bays. A massive 3 1/8 inch (79.4mm) two tube balun provides wider match bandwidth than loop coupled designs. The new element has a much lower Q than previous designs. These new antennas have a VSWR of 1.1:1 for approximately 500 KHz, 2 1/2 times the bandwidth of standard circularly polarized low power and high power antennas. Two bay and four bay arrays are also available. All elements are fed inphase to produce maximum gain on the horizon with the two element array end fed and the four element array center fed.

All antennas are precisely cut and matched at the factory. A fine tuner is supplied for final matching of the antenna after installation. The input impedance of each element is carefully adjusted for optimum results in the final array configuration.

If required, stainless steel internal deicer heaters are available. Due to the much wider bandwidth produced by the new Super Power Circularly Polarized Antennas the impedance change due to icing is minimized, therefore deicers are not required under light icing conditions.



Length of antenna in feet is 984 divided by frequency in MHz times (number of bays less 1) plus 9.

Power gains are for 50/50 horizontally and vertically polarized ratios.

Antenna polarization is circular in all directions of azimuth.

Prices include complete mounting hardware for leg or face mounting on uniform towers 24" (609.6 mm) face or less. Brackets for other than uniform towers are extra and will be quoted upon request.

Antenna weights include standard mounting hardware. Add 15 lbs. (6.8 kg) per bay for deicers. Deicers require 230 volts single phase balanced to ground with 1000 watts consumption per bay.

When ordering, specify:

- Antenna Type No.
- Frequency (88.1 to 107.9 MHz)
- Description of tower, make and model
- Beam tilt and null fill, if required

- SPC-1** Super Power Circularly Polarized Baluned Element with 3 1/8" (79.4 mm) Fine Matcher
- SPC-2** Super Power Circularly Polarized End Fed 2 Element Array with 6 1/8" (155.6 mm) Fine Matcher
- SPC-4** Super Power Circularly Polarized Center Fed 4 Element Array with 6 1/8" (155.6 mm) Fine Matcher

Type No. And Bays	Power Gain	Gain In dB	Field Gain	FS @ 1 mile (1.6 km) 1 kw. mv/m	Net Wt. Lbs. (Kg)	Power Rating kw	Wind' Load Lbs. (Kg)
SPC-1	.475	-3.21	.69	95	150 (68)	20	100 (45.5)
SPC-2	1.00	0.0	1.00	138	400 (181)	40	570 (259)
SPC-4	2.15	3.3	1.47	203	700 (317)	40	900 (409)

*at 50/33 PSF (244/166 kg-m²)

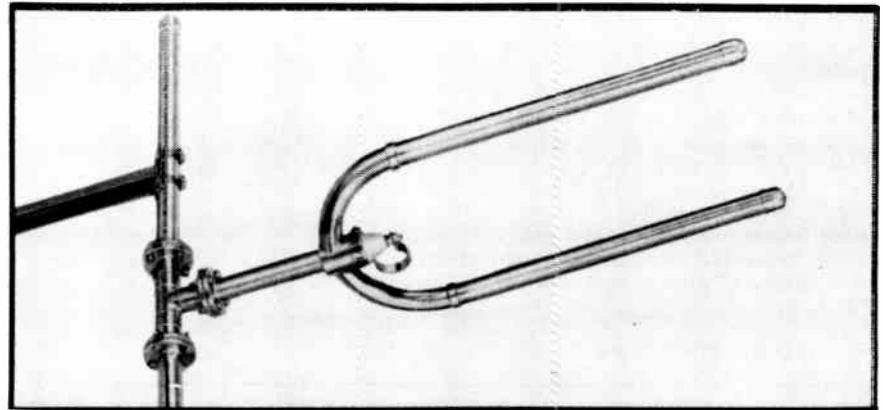
CABLEWAVE SYSTEMS, INC.

Horizontally Polarized FM Broadcast Antennas

Standard horizontally polarized FM antennas are fabricated of 1 5/8" O.D. copper tube formed into a U shape. This element produces a horizontally polarized signal that is equal in all azimuth directions and has a vertical pattern similar to a vertically polarized dipole.

As with the circularly polarized High Power and Low Power antennas, single element antennas are available. Multi-element arrays are available with all elements fed inphase to produce maximum gain on the horizon with 2 through 8 elements end fed and 10 through 16 elements center fed. If beam tilt and/or null fill is required, the multi-element array will be center fed with appropriate power divider and phaser supplied.

Deicers are also available with the horizontal High Power and Low Power antennas.



FM ANTENNA SPECIFICATIONS

Type No. And Bays	Power Gain	Gain In db	Field Gain	FS @ 1 Mile 1 KW, MV/M	Net Weight Lbs. (Kgs.)	Power Rating KW	Wind Load* 50/33 PSF
HFM LP-1	1.0	0	1.0	138	118 (53.6)	5	97
HFM HP-1	1.0	0	1.0	138	178 (80.7)	5	160
HFM LP-2	1.85	2.7	1.36	187	145 (65.8)	10	170
HFM HP-2	1.9	2.8	1.38	190	223 (101.2)	10	280
HFM LP-3	2.9	4.6	1.70	234	172 (78.2)	10	250
HFM HP-3	3.0	4.8	1.73	238	268 (121.8)	15	400
HFM LP-4	4.0	6.0	2.00	276	198 (89.8)	10	325
HFM HP-4	4.1	6.1	2.02	279	313 (142.0)	20	525
HFM LP-5	5.0	7.0	2.23	307	225 (102.1)	10	400
HFM HP-5	5.2	7.1	2.28	314	358 (162.4)	25	650
HFM LP-6	6.0	7.8	2.44	336	251 (114.0)	10	480
HFM HP-6	6.3	8.0	2.51	346	404 (183.6)	30	780
HFM LP-7	7.0	8.5	2.64	364	278 (126.0)	10	560
HFM HP-7	7.3	8.6	2.70	372	449 (203.7)	35	910
HFM LP-8	8.1	9.1	2.84	391	305 (138.4)	10	640
HFM HP-8	8.4	9.2	2.90	400	494 (224.1)	40	1030
HFM LP-10	10.2	10.1	3.19	440	365 (165.6)	10	820
HFM HP-10	10.5	10.2	3.24	447	600 (272.2)	40	1320
HFM LP-12	12.2	10.9	3.49	481	418 (189.6)	10	975
HFM HP-12	12.5	11.0	3.53	487	690 (313.0)	40	1560
HFM LP-14	14.3	11.5	3.78	521	471 (214.0)	10	1130
HFM HP-14	14.6	11.6	3.82	527	781 (354.3)	40	1800
HFM LP-16	16.3	12.1	4.03	556	532 (241.3)	10	1290
HFM HP-16	16.7	12.2	4.09	564	872 (395.5)	40	2060

HFM LP = Horizontally Polarized Low Power Shunt Fed with 1 5/8" Feed Line—Complete with 1 5/8" Fine Matcher

HFM HP = Horizontally Polarized High Power Shunt Fed with 3 1/8" Feed Line—Complete with 3 1/8" Fine Matcher

*244/166 Kg-m²

Length of Antenna in feet is 984 divided by frequency in MHz X (No. of bays - 1) plus 6 1/2.

Prices include complete mounting hardware for leg or face mounting on uniform towers 24" face dimension or less. Brackets for other than uniform towers are extra and will be quoted upon request.

High power antennas—input flange is 3 1/8" EIA Female. Low power antennas—input flange is 1 5/8" EIA Female.

Antenna weights include standard mounting hardware. Add 10 lbs. per bay for deicers. Deicers require 230 volts single phase balanced to ground with 500 watts consumption per bay.

When ordering specify:

Antenna Type No.

Deicers, **PD-1201**

Frequency, 88.1 to 107.9 MHz

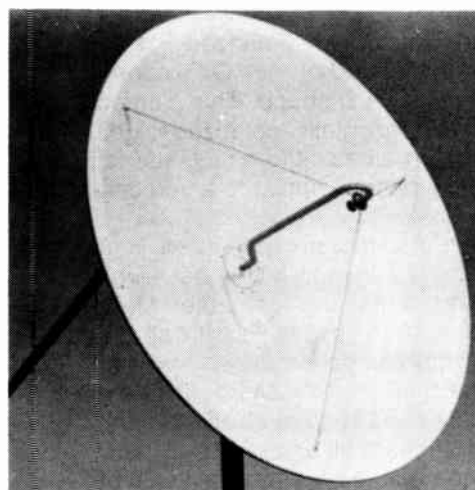
Description of tower—Make & Model

Beam Tilt and Null Fill, if required

Thermostat & Control Box **PD-1202**

CABLEWAVE SYSTEMS, INC.**Microwave Antennas/Radomes****Standard Series Microwave Parabolic Antennas**

- Antennas utilize heavy gauge spun aluminum reflectors and center fed dipole feeds mounted from the rear. 12' antennas are sectionalized; 8' and 10' antennas are supplied in one piece, and available sectionalized as an option
- Feeds can be pressurized up to 10 psi and feature 360° polarization orientation
- Antennas will withstand 125mph wind with 1" radial ice without damage
- Feed guy wires are included with antennas of 6' diameter and larger
- All antennas include vertical mounts for attachment to a 4 1/2" outer diameter pipe (pipe not included) with azimuth and elevation adjustment of $\pm 5^\circ$. All hardware is stainless steel. One azimuth stabilizing strut (sway bar) is included on 8' and 10', two on 12' units. Other type mounts are also available
- Radomes are available for all sizes
- Cross Polarization discrimination is better than 30dB
- All Cablewave Systems' antennas meet EIA Standards RS-195B and RS-222C



Standard

Electrical Specifications

Dia. Ft.	Type No.	Part No.	Gain dBi			Beam Width Degrees	F/B Ratio dB	Max VSWR	Feed Input Flange	Price
			Low	Mid	High					
1.7-2.11GHz Single Polarized, Standard										
4	PA4-17	301001	24.0	24.9	25.8	9.0	34	1.15	7/8" EIA 50 ohm	\$1056.00
6	PA6-17	301002	27.9	28.8	29.7	6.0	37	1.15	7/8" EIA 50 ohm	1312.00
8	PA8-17	301003	30.4	31.3	32.2	4.5	40	1.15	7/8" EIA 50 ohm	2261.00
10	PA10-17	300004	32.3	33.3	34.2	3.6	43	1.15	7/8" EIA 50 ohm	2914.00
12	PA12-17	301005	33.9	34.8	35.7	3.0	45	1.15	7/8" EIA 50 ohm	5978.00
6.425-7.125GHz Single Polarized, Standard										
4	PA4-65	301081	35.9	36.4	36.8	2.5	43	1.10	CPR137G*	1035.00
6	PA6-65	301082	39.4	39.9	40.3	1.7	47	1.10	CPR137G*	1334.00
8	PA8-65	301083	42.0	42.4	42.9	1.3	49	1.10	CPR137G*	2331.00
10	PA10-65	300084	43.7	44.2	44.6	1.0	52	1.10	CPR137G*	3200.00
12	PA12-65	301085	45.3	45.8	46.2	0.8	53	1.10	CPR137G*	6417.00
12.7-13.25GHz Single Polarized, Standard										
6	PA6-127	301182	45.2	45.3	45.5	0.9	52	1.10	WR75 Choke	1457.00
8	PA8-127	301183	47.7	47.8	48.0	0.7	54	1.10	WR75 Choke	2491.00
10	PA10-127	300184	48.9	49.0	49.2	0.6	57	1.10	WR75 Choke	3050.00
12	PA12-127	301185	51.1	51.2	51.4	0.5	58	1.10	WR75 Choke	6696.00

Note: Customer must specify assigned operating frequency band.

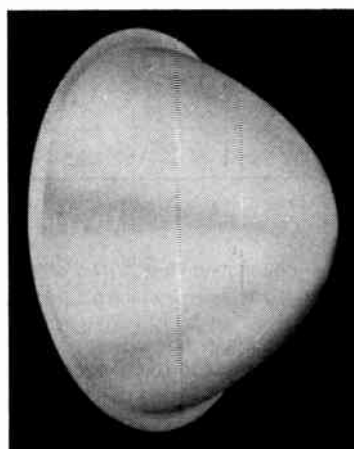
*Optional flange type UG-343B/U available on request.

Fiberglass Radomes

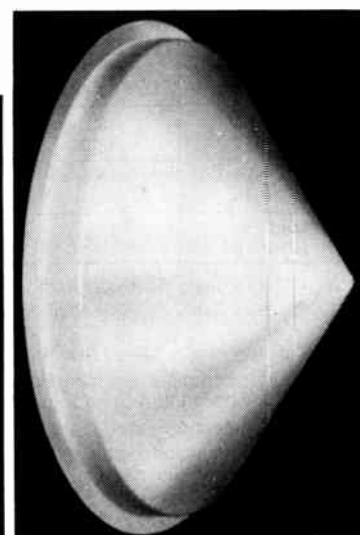
These are optional for all standard antennas — Series PA/PAL/PAX/PAF, and are shown on this page. The fiberglass surface is protected against deterioration by ultraviolet rays with a gel coat finish. Radomes may be parabolic or conical in shape. Some may include feed rf absorber material for improved electrical performance.

All Cablewave Systems' fiberglass radomes provide minimal contribution to increased return loss of the antenna system. The fiberglass radome design will give a VSWR contribution of 1.03:1 between 2 and 12GHz to the antenna VSWR when the two are combined. Typical attenuation is given in the table below.

Heated radome details are available upon request. All radomes are light blue; other colors are available on request.



Parabolic Fiberglass Radome



Conical Fiberglass Radome

CABLEWAVE SYSTEMS, INC.

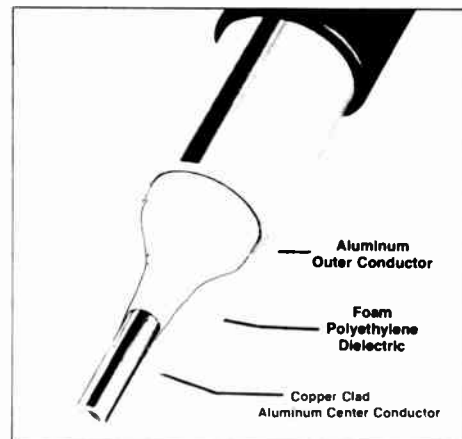
Coaxial Cable/Connectors

3/8" Foamflex FXA

Cablewave Systems Foamflex coaxial cables combine excellent performance and reliability with a simple, economic cable construction. The design includes a copper clad aluminum center conductor, low loss cellular polyethylene foam dielectric, smooth wall aluminum outer conductor and a protective black polyethylene jacket. No pressurization is required. Providing greater efficiency than flexible braided outer conductor types, Foamflex cable is a logical choice for lower loss, more reliable cables in communications and electronic equipment from HF through the microwave frequency range.

Standard 3/8" Foamflex cable is supplied with a protective black polyethylene jacket. For indoor applications such as pre-formed cable assemblies, delay lines, and inter-equipment cabling, the cable may be special ordered without a jacket by dropping the "J" suffix.

Copper clad aluminum meets ASTM-B-566-72.






ELECTRICAL CHARACTERISTICS



Cable Type (part no.)	Cable Size	Impedance ohms	Velocity of Propagation percent	Max. Freq. 90% fco GHz	Attenuation dB/100 ft. (db/100m)			Average Power kW @ 40 C Ambient		
					30 MHz	400 MHz	1000 MHz	30 MHz	400 MHz	1000 MHz
FXA 38-50J (810952-001)	3/8"	50	81	12.5	0.65 (2.13)	2.63 (8.63)	4.67 (15.32)	2.41	0.61	0.35

MECHANICAL CHARACTERISTICS

Cable Type (part no.)	Center Conductor O.D., inches (mm)	Outer Conductor		Jacket O.D., in. (mm)	Minimum Bending Radius, in. (mm)	Cable Weight lbs./ft. (kg/m)
		I.D., in. (mm)	O.D., in. (mm)			
FXA 38-50J (810952-001)	0.117 (2.97)	0.325 (8.26)	0.375 (9.52)	0.435 (11.05)	3.75 (95.2)	.081 (.120)

3/8" Foamflex Connectors

	N Male	Cable	Ohms	Part No.
		3/8"	50	735 200
	N Female	Cable	Ohms	Part No.
		3/8"	50	735 201
	TNC Male	Cable	Ohms	Part No.
		3/8"	50	735 208

	UHF Male	Cable	Ohms	Part No.
		3/8"	50	735 202
	UHF Female	Cable	Ohms	Part No.
		3/8"	50	735 203

CABLEWAVE SYSTEMS, INC.

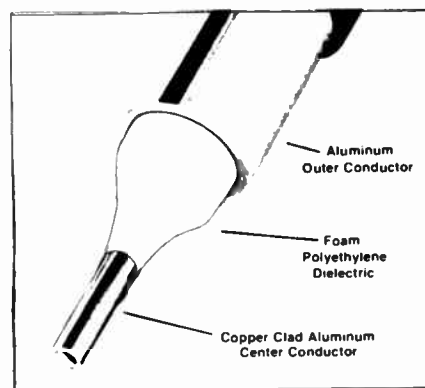
Coaxial Cable/Connectors

1/2" and 7/8" Foamflex FXA

Cablewave Systems Foamflex coaxial cable combines a reliable, economic cable construction with excellent electrical performance. The design includes a copper clad aluminum center conductor, low-loss cellular polyethylene foam dielectric, smooth wall aluminum outer conductor, and a protective black polyethylene jacket. No pressurization is required. Foamflex cable is a logical choice for moderate power applications in the HF, VHF, UHF and microwave frequency bands.

Standard 1/2" and 7/8" Foamflex cables include a jacket. For indoor applications such as preformed cable assemblies, delay lines or inter-rack cabling, the cable may be special ordered without a jacket by dropping the "J" suffix.

Copper clad aluminum meets ASTM-B-566-72.



ELECTRICAL CHARACTERISTICS

Cable Type (part no.)	Cable Size	Impedance ohms	Velocity of Propagation percent	Max. Freq. 90% fco GHz	Attenuation dB/100 ft. (dB/100m)			Average Power kW @ 40°C Ambient		
					30 MHz	400 MHz	1000 MHz	30 MHz	400 MHz	1000 MHz
FXA 12-50J (810953-003)	1/2"	50	81	9.0	.476 (1.56)	2.00 (6.56)	3.68 (12.07)	3.78	0.92	0.51
FXA 78-50J (810954-003)	7/8"	50	81	5.0	.280 (.918)	1.28 (4.19)	2.54 (8.33)	9.03	2.04	1.06

75 ohm versions of these cables available upon request.

MECHANICAL CHARACTERISTICS

Cable Type (part no.)	Center Conductor O.D., in.(mm)	Outer Conductor		Jacket O.D., in.(mm)	Minimum Bending Radius, in.(mm)	Cable Weight lbs/ft. (kg/m)
		I.D., in.(mm)	O.D., in.(mm)			
FXA 12-50J (810953-003)	0.161 (4.09)	0.450 (11.43)	0.500 (12.70)	.600 (15.24)	5 (127.0)	.138 (.205)
FXA 78-50J (810954-003)	0.288 (7.31)	0.801 (20.34)	0.875 (22.22)	1.001 (25.43)	10 (254.0)	.380 (.565)

1/2" and 7/8" Foamflex Connectors

	7/8" EIA (Alum. Flange)	Cable	Ohms	Part No.
		1/2"	50	734 053**
		7/8"	50	734 053**
	(Inner Connector P/N 612951)			
	7/8" EIA (Brass Flange)	Cable	Ohms	Part No.
		1/2"	50	734 380**
		7/8"	50	734 380**
	(Inner Connector P/N 612951)			
	LC Male	Cable	Ohms	Part No.
		1/2"	50	735 020
		7/8"	50	734 051
	N Male	Cable	Ohms	Part No.
		1/2"	50	735 000
		7/8"	50	735 100
	N Female	Cable	Ohms	Part No.
		1/2"	50	735 001
		7/8"	50	735 101

	Splice	Cable	Ohms	Part No.
		1/2"	50	734 037
		7/8"	50	734 027
	UHF Male	Cable	Ohms	Part No.
		1/2"	50	735 002
		7/8"	50	735 102
	UHF Female	Cable	Ohms	Part No.
		1/2"	50	735 003
		7/8"	50	735 103
	HN Male	Cable	Ohms	Part No.
		1/2"	50	735 005
		7/8"	50	735 106
	End Terminal	Cable	Ohms	Part No.
		1/2"	50	734 261
		7/8"	50	734 262

**Inner connector supplied loose

CABLEWAVE SYSTEMS, INC.

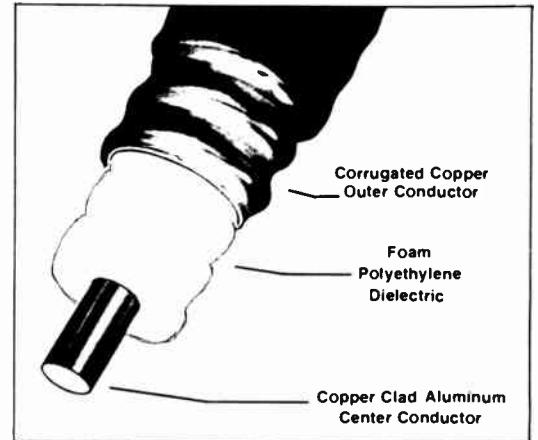
Coaxial Cable/Connectors

3/8" Cellflex Foam FCC

Cablewave Systems Foam Cellflex coaxial cables offer a combination of remarkable flexibility, high strength and superior electrical performance. The designs include a copper clad aluminum center conductor, low-loss cellular polyethylene foam dielectric, corrugated copper outer conductor and a protective black polyethylene jacket. Foam Cellflex is used extensively in communications and electronic systems in the HF, VHF, UHF and microwave frequency bands.

Standard Cellflex cable is supplied with a protective black polyethylene jacket. For indoor applications (delay lines or inter-rack cabling) an unjacketed version may be special ordered by dropping the "J" suffix.

Copper clad aluminum meets ASTM-B-566-72.







ELECTRICAL CHARACTERISTICS




Cable Type (part no.)	Cable Size	Impedance Ohms	Velocity of Propagation percent	Max. Freq. 90% fco GHz	Attenuation dB/100 ft. (db/100m)			Average power, kW @ 40° C Ambient		
					30 MHz	400 MHz	1000 MHz	30 MHz	400 MHz	1000 MHz
FCC 38-50J (810909-001)	3/8"	50	81	12.7	.59 (1.93)	2.50 (8.20)	4.25 (13.94)	3.4	.87	.54

MECHANICAL CHARACTERISTICS

Cable Type (part no.)	Center Conductor O.D., in. (mm)	Outer Conductor		Jacket O.D., in. (mm)	Minimum Bending Radius, in. (mm)	Cable Weight lbs/ft (kg/m)
		I.D., in. (mm)	O.D., in. (mm)			
FCC 38-50J (810909-001)	.119 (3.02)	.298 (12.65)	.375 (9.53)	.445 (11.30)	4 (100)	.113 (.168)

3/8" Cellflex Foam Connectors

	N Male	Cable	Ohms	Part No.
		3/8"	50	738 626
	N Female	Cable	Ohms	Part No.
		3/8"	50	738 627
	UHF Male	Cable	Ohms	Part No.
		3/8"	50	738 628
	UHF Female	Cable	Ohms	Part No.
		3/8"	50	738 629

	TNC Male	Cable	Ohms	Part No.
		3/8"	50	738 630
	End Terminal	Cable	Ohms	Part No.
		3/8"	50	738 632
	Splice	Cable	Ohms	Part No.
		3/8"	50	738 631

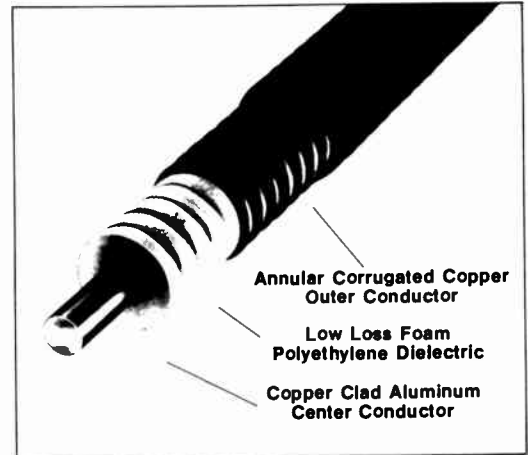
CABLEWAVE SYSTEMS, INC.

Coaxial Cable/Connectors

1/2" and 7/8" Cellflex Low Loss Foam FLC

Cablewave Systems Low Loss Foam Cellflex coaxial cables are designed to exhibit lower attenuation than prior foam cables. The proprietary design features a closed cell foam dielectric with low density and high velocity specifications. These cables provide low loss performance characteristics that are almost as low as air dielectric cables but with none of the pressurization requirements associated with air cable. The outer conductor is annularly corrugated for flexibility, crush resistance, and prevention of moisture migration. The cable center conductor is copper clad aluminum. Cables are supplied with a black polyethylene jacket for improved handling and for use in direct burial applications.

Low Loss Foam Cellflex offers optimum performance for many applications throughout the Land Mobile, Microwave, Broadcast and Radar bands.



ELECTRICAL CHARACTERISTICS





Cable Type (part no.)	Cable Size	Impedance Ohms	Velocity of Propagation percent	Max. Freq. 90% fco GHz	Attenuation dB/100 ft. (dB/100m)			Average Power, kW @ 40° Ambient		
					30 MHz	400 MHz	1000 MHz	30 MHz	400 MHz	1000 MHz
FLC 12-50J (810918-001)	1/2"	50	88	8.0	0.37 (1.21)	1.40 (4.59)	2.30 (7.54)	5.0	1.3	.80
FLC 78-50J (810919-001)	7/8"	50	88	5.0	0.20 (0.65)	0.68 (2.23)	1.37 (4.49)	10.5	2.8	1.7




75 ohm versions of these cables available upon request.

MECHANICAL CHARACTERISTICS

Cable Type (part no.)	Center Conductor O.D., in. (mm)	Outer Conductor		Jacket O.D., in. (mm)	Minimum Bending Radius, in. (mm)	Cable Weight lbs./ft. (kg/m)
		I.D., in. (mm)	O.D., in. (mm)			
FLC 12-50J (810918-001)	.190 (4.83)	.450 (11.43)	.540 (13.72)	.640 (16.30)	5.0 (127.00)	.178 (.264)
FLC 78-50J (810919-001)	.357 (9.07)	.850 (21.59)	.990 (25.14)	1.124 (28.55)	10.0 (254.0)	.427 (.635)

1/2" and 7/8" Cellflex Low Loss Foam Connectors

	N Male	Cable	Ohms	Part No.
		1/2"	50	738802
		7/8"	50	738828
	N Female	Cable	Ohms	Part No.
		1/2"	50	738801
		7/8"	50	738829
	UHF Male	Cable	Ohms	Part No.
		1/2"	50	738804
		7/8"	50	738833
	UHF Female	Cable	Ohms	Part No.
		1/2"	50	738803
		7/8"	50	738832

	7/8" EIA	Cable	Ohms	Part No.
		1/2"	50	738807
		7/8"	50	738831
	End Terminal	Cable	Ohms	Part No.
		1/2"	50	738805
		7/8"	50	738834
	Splice	Cable	Ohms	Part No.
		1/2"	50	738806
		7/8"	50	738830

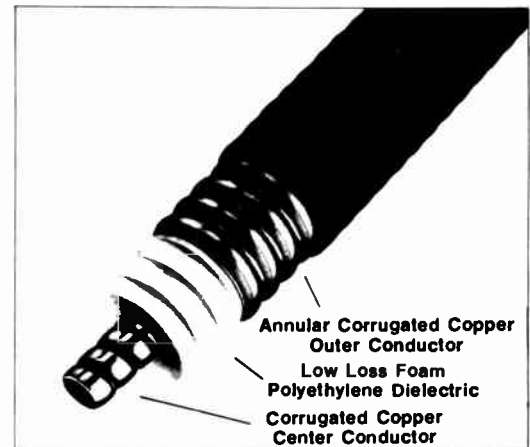
CABLEWAVE SYSTEMS, INC.

Coaxial Cable/Connectors

1 5/8" Cellflex Low Loss Foam FLC

Cablewave Systems Low Loss Foam Cellflex coaxial cables are designed to exhibit lower attenuation than prior foam cables. The proprietary design features a closed cell foam dielectric with low density and high velocity specifications. These cables provide low loss performance characteristics that are almost as low as air dielectric cables but with none of the pressurization requirements associated with air cable. The outer conductor is annularly corrugated for flexibility, crush resistance, and prevention of moisture migration. The center conductor is corrugated copper tube. Cables are supplied with a black polyethylene jacket for improved handling and for use in direct burial applications.

Low Loss Foam 1 5/8" Cellflex offers higher power for many applications throughout the Land Mobile, Microwave, Broadcast and Radar bands.



ELECTRICAL CHARACTERISTICS

Cable Type (part no.)	Cable Size	Impedance ohms	Velocity of Propagation percent	Max. Freq. 90% fco GHz	Attenuation dB/100 ft. (dB/100m)			Average Power kW @ 40° C Ambient		
					30 MHz	400 MHz	1000 MHz	30 MHz	400 MHz	1000 MHz
FLC 158-50J (810920-001)	1 5/8"	50	88	2.7	0.12 (0.39)	0.48 (1.57)	0.87 (2.85)	22	5.2	3.0

MECHANICAL CHARACTERISTICS

Cable Type (part no.)	Center Conductor O.D., inches (mm)	Outer Conductor		Jacket O.D., in. (mm)	Minimum Bending Radius, in. (mm)	Cable Weight lbs./ft. (kg/m)
		I.D., in. (mm)	O.D., in. (mm)			
FLC 158-50J (810920-001)	.680 (17.27)	1.590 (40.39)	1.830 (46.48)	2.015 (51.18)	20 (508)	.92 (1.369)

75 ohm version of this cable available upon request.

1 5/8" Cellflex Low Loss Foam Connectors

	3/8" EIA	Cable Ohms Part No.
		1 5/8" 50 738854
	1" EIA	Cable Ohms Part No.
		1 5/8" 50 738853
	N Male	Cable Ohms Part No.
		1 5/8" 50 738850

	N Female	Cable Ohms Part No.
		1 5/8" 50 738851
	End Terminal	Cable Ohms Part No.
		1 5/8" 50 738856
	Splice	Cable Ohms Part No.
		1 5/8" 50 738855

CABLEWAVE SYSTEMS, INC.

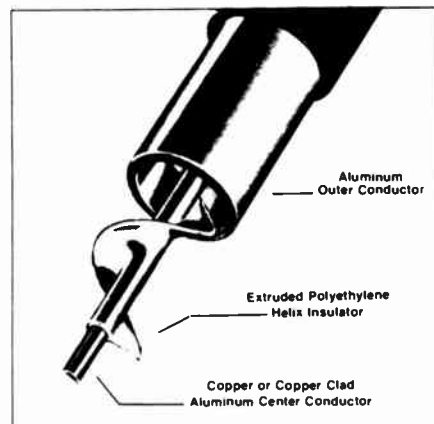
Coaxial Cable/Connectors

3/8", 1/2" and 7/8" Spirafil SLA

Cablewave Systems air dielectric Spirafil coaxial cable uses a unique extruded helical insulator to attain outstanding mechanical and electrical performance. The design includes a copper or copper clad aluminum center conductor, extruded spiral polyethylene dielectric insulator, smooth wall aluminum outer conductor and a protective black polyethylene jacket. For indoor applications such as delay lines or inter-rack cabling, an unjacketed version may be special ordered by dropping the "J" suffix.

The helix is extruded directly onto (and covers) the center conductor, to achieve higher voltage breakdown, lower attenuation, lower VSWR, and better stability than competitive coaxial cables. The "locked" insulator construction results in superior phase stability through temperature changes and bending. Spirafil is used extensively in multiple array radars and communications and electronic systems from HF through microwave.

Copper clad aluminum meets ASTM-B-566-72.



ELECTRICAL CHARACTERISTICS

Cable Type (part no.)	Cable Size	Impedance ohms	Velocity of Propagation percent	Max. Freq. 90% fco GHz	Attenuation dB / 100 ft. (dB / 100m)			Average Power kW @ 40°C Ambient		
					30 MHz	400 MHz	1000 MHz	30 MHz	400 MHz	1000 MHz
SLA 38-50J (810955-001)	3/8"	50	90	13.8	.5970 (1.96)	2.12 (6.95)	3.39 (11.12)	2.75	.740	.46
SLA 12-50J (810960-001)	1/2"	50	90	10.0	.483 (1.58)	1.81 (5.93)	2.92 (9.58)	4.05	1.08	.67
SLA 78-50J* (810961-001)	7/8"	50	90	5.9	.250 (0.82)	.952 (3.12)	1.55 (5.08)	10.0	2.64	1.6

*75 ohm version available upon request.

MECHANICAL CHARACTERISTICS

Cable Type (part no.)	Center Conductor O.D., inches (mm)	Outer Conductor		Jacket O.D., in. (mm)	Minimum Bending Radius, in. (mm)	Cable Weight lbs./ft. (kg/m)
		I.D., in. (mm)	O.D., in. (mm)			
SLA 38-50J (810955-001)	.134 (3.40)	0.325 (8.26)	0.375 (9.53)	.435 (11.05)	4 (102)	.071 (.105)
SLA 12-50J (810960-001)	0.184 (4.67)	0.450 (11.43)	0.525 (13.34)	0.60 (15.24)	5 (127)	.144 (.214)
SLA 78-50J (810961-001)	0.310 (7.87)	0.758 (19.25)	0.875 (22.23)	.975 (19.68)	9 (239)	.363 (.540)

3/8", 1/2" and 7/8" Spirafil Connectors

	N Male		
	Cable	Ohms	Part No.
	3/8"	50	735 700
	N Female		
	Cable	Ohms	Part No.
	3/8"	50	735 701
	Splice		
	Cable	Ohms	Part No.
	3/8"	50	735 702
	1/4" EIA (GP/Alum. Flange)		
	Cable	Ohms	Part No.
	1/2"	50	734 514*
	1/4" EIA (GP/Brass Flange)		
	Cable	Ohms	Part No.
	1/2"	50	735 700
	1/4" EIA (GB/Alum. Flange)		
	Cable	Ohms	Part No.
	1/2"	50	735 813
	1/4" EIA (GB/Brass Flange)		
	Cable	Ohms	Part No.
	1/2"	50	734 379
	End Terminal		
	Cable	Ohms	Part No.
	1/2"	50	734 358

CABLEWAVE SYSTEMS, INC.

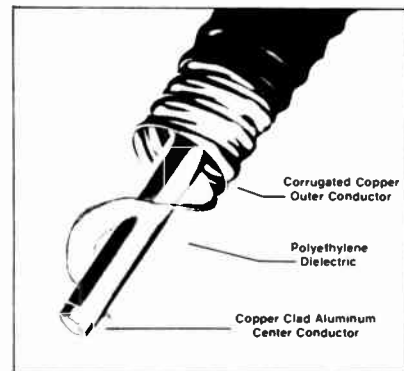
Coaxial Cable/Connectors

1/2" and 7/8" Air Dielectric Flexwell HCC

Cablewave Systems air dielectric Flexwell coaxial cables offer a combination of remarkable flexibility, rugged strength, and superior electrical performance. The designs include a copper clad aluminum center conductor, extruded spiral polyethylene dielectric insulator, corrugated copper outer conductor, and protective polyethylene jacket. Air dielectric Flexwell is used extensively in communications and electronic systems in the HF through microwave frequency range.

The helix is extruded precisely onto (and covers) the center conductor, to achieve better uniformity, lower attenuation, and better mechanical stability than similar size competitive air dielectric coaxial cables. The Flexwell "locked" insulator construction results in superior phase stability through temperature changes and bending.

Copper clad aluminum meets ASTM-B-566-72.



ELECTRICAL CHARACTERISTICS

Cable Type (part no.)	Cable Size	Impedance ohms	Velocity of Propagation percent	Max. Freq. 90% fco GHz	Attenuation dB/100ft. (dB/100m)			Average Power kW, @ 40° Ambient		
					30 MHz	400 MHz	1000 MHz	30 MHz	400 MHz	1000 MHz
HCC 12-50J (810901-001)	1/2"	50	91.5	11.3	.455 (1.49)	1.72 (5.64)	2.79 (9.15)	3.7	.98	.61
HCC 78-50J* (810902-001)	7/8"	50	91.5	5.13	.202 (.66)	.783 (2.56)	1.29 (4.23)	13.0	3.3	2.1

* 75 ohm version available upon request.

MECHANICAL CHARACTERISTICS

Cable Type (part no.)	Center Conductor O.D., Inches (mm)	Outer Conductor		Jacket O.D., in. (mm)	Minimum Bending Radius, in. (mm)	Cable Weight lbs/ft. (kg/m)
		I.D., in. (mm)	O.D., in (mm)			
HCC 12-50J (810901-001)	.160 (4.06)	.353 (8.97)	.484 (12.29)	.584 (14.83)	5 (127)	.182 (.271)
HCC 78-50J (810902-001)	.354 (8.99)	.793 (20.14)	1.00 (25.4)	1.10 (27.94)	10 (254)	.530 (.788)

1/2" and 7/8" Air Dielectric Flexwell Connectors

	<p>3/8" EIA (GP)</p> <table border="1"> <tr><th>Cable</th><th>Ohms</th><th>Part No.</th></tr> <tr><td>1/2"</td><td>50</td><td>738259*</td></tr> </table> <p>(Inner Connector P/N 612951)</p>	Cable	Ohms	Part No.	1/2"	50	738259*			
Cable	Ohms	Part No.								
1/2"	50	738259*								
	<p>3/8" EIA (GB)</p> <table border="1"> <tr><th>Cable</th><th>Ohms</th><th>Part No.</th></tr> <tr><td>1/2"</td><td>50</td><td>738256*</td></tr> </table> <p>(Inner Connector P/N 612951)</p>	Cable	Ohms	Part No.	1/2"	50	738256*			
Cable	Ohms	Part No.								
1/2"	50	738256*								
	<p>N Male</p> <table border="1"> <tr><th>Cable</th><th>Ohms</th><th>Part No.</th></tr> <tr><td>1/2"</td><td>50</td><td>738200</td></tr> <tr><td>7/8"</td><td>50</td><td>738250</td></tr> </table>	Cable	Ohms	Part No.	1/2"	50	738200	7/8"	50	738250
Cable	Ohms	Part No.								
1/2"	50	738200								
7/8"	50	738250								
	<p>N Female</p> <table border="1"> <tr><th>Cable</th><th>Ohms</th><th>Part No.</th></tr> <tr><td>1/2"</td><td>50</td><td>738201</td></tr> <tr><td>7/8"</td><td>50</td><td>738251</td></tr> </table>	Cable	Ohms	Part No.	1/2"	50	738201	7/8"	50	738251
Cable	Ohms	Part No.								
1/2"	50	738201								
7/8"	50	738251								

	<p>LC Male</p> <table border="1"> <tr><th>Cable</th><th>Ohms</th><th>Part No.</th></tr> <tr><td>1/2"</td><td>50</td><td>738254</td></tr> </table>	Cable	Ohms	Part No.	1/2"	50	738254			
Cable	Ohms	Part No.								
1/2"	50	738254								
	<p>UHF Female</p> <table border="1"> <tr><th>Cable</th><th>Ohms</th><th>Part No.</th></tr> <tr><td>1/2"</td><td>50</td><td>738253</td></tr> </table>	Cable	Ohms	Part No.	1/2"	50	738253			
Cable	Ohms	Part No.								
1/2"	50	738253								
	<p>Splice</p> <table border="1"> <tr><th>Cable</th><th>Ohms</th><th>Part No.</th></tr> <tr><td>1/2"</td><td>50</td><td>738204</td></tr> <tr><td>7/8"</td><td>50</td><td>738257</td></tr> </table>	Cable	Ohms	Part No.	1/2"	50	738204	7/8"	50	738257
Cable	Ohms	Part No.								
1/2"	50	738204								
7/8"	50	738257								
	<p>End Terminal</p> <table border="1"> <tr><th>Cable</th><th>Ohms</th><th>Part No.</th></tr> <tr><td>1/2"</td><td>50</td><td>738258</td></tr> </table>	Cable	Ohms	Part No.	1/2"	50	738258			
Cable	Ohms	Part No.								
1/2"	50	738258								

* Inner connector supplied loose

Prices and Specifications Subject to Change Without Notice.

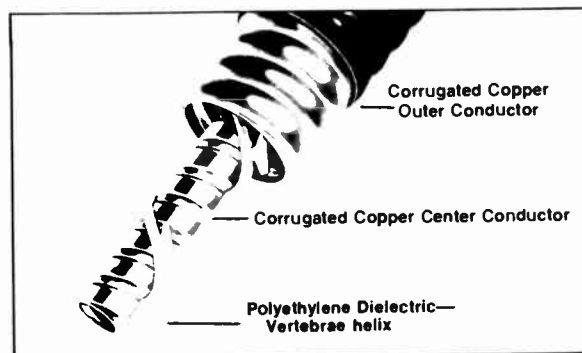
CABLEWAVE SYSTEMS, INC.

Coaxial Cable/Connectors

1 5/8", 3" and 3 1/2" Air Dielectric Flexwell HCC

Cablewave Systems air dielectric Flexwell coaxial cables achieve a combination of remarkable flexibility, rugged strength, and superior electrical performance. The 1 5/8", 3" and 3 1/2" cable design includes a corrugated tubular copper center conductor, spiral polyethylene dielectric, corrugated outer conductor, and a black polyethylene jacket. The special helix insulator construction contributes to low dielectric loss and excellent mechanical stability.

Air dielectric Flexwell cables are used extensively in high power applications in the HF through lower frequency microwave bands.



ELECTRICAL CHARACTERISTICS

Cable Type (part no.)	Cable Size	Impedance Ohms	Velocity of Propagation percent	Max. Freq. 90% fco GHz	Attenuation dB/100 ft. (db/100m)			Average Power kW 40° Ambient		
					30 MHz	400 MHz	1000 MHz	30 MHz	400 MHz	1000 MHz
HCC 158-50J (810903-001)	1 5/8"	50	95	2.74	.110 (.36)	.417 (1.36)	.699 (2.29)	29.0	7.8	4.9
HCC 300-50J (810905-001)	3"	50	96	1.63	.075 (.24)	.290 (.95)	.470 (1.54)	70.0	17.0	9.15
HCC 312-50J (810915-001)	3 1/2"	50	96	1.43	.058 (.19)	.229 (.751)	.384 (1.26)	93	25	15

MECHANICAL CHARACTERISTICS

Cable Type (part no.)	Center Conductor O.D., in. (mm)	Outer Conductor		Jacket O.D., in. (mm)	Minimum Bending Radius, in. (mm)	Cable Weight lbs./ft. (kg/m)
		I.D., in. (mm)	O.D., in. (mm)			
HCC 158-50J (810903-001)	.732 (18.6)	1.562 (39.67)	1.830 (46.4)	1.996 (51)	20 (508)	.864 (2.834)
HCC 300-50J (810905-001)	1.150 (29.2)	2.500 (63.5)	2.850 (723)	2.990 (75.94)	30 (762)	1.423 (4.667)
HCC 312-50J (810915-001)	1.370 (34.8)	2.961 (75.21)	3.36 (85.34)	3.502 (88.95)	30 (762)	1.985 (6.512)

1 5/8", 3" and 3 1/2" Air Dielectric Flexwell Connectors

	1 5/8" EIA (Gas Pass) Cable Ohms Part No. 1 5/8" 50 738314* (Inner Connector P/N 612874)
	1 5/8" EIA (Gas Barrier) Cable Ohms Part No. 1 5/8" 50 738303* (Inner Connector P/N 612874)
	3" EIA (GP) Cable Ohms Part No. 3" 50 738355* 3 1/2" 50 734579*
	3" EIA (GB) Cable Ohms Part No. 3" 50 738350* 3 1/2" 50 734578*
	3 1/2" EIA Anchor Inner Connector Ohms Part No. 50 622720

	End Terminal Cable Ohms Part No. 1 5/8" 50 738306
	Splice Cable Ohms Part No. 1 5/8" 50 738305 3" 50 738352 3 1/2" 50 734574
	N Female Cable Ohms Part No. 1 5/8" 50 738301
	1/8" EIA (GP/Low VSWR Tunable) Cable Ohms Part No. 1 5/8" 50 738308
	1/8" EIA (GB/Low VSWR Tunable) Cable Ohms Part No. 1 5/8" 50 738310
	1/8" EIA Reducer Connectors Connector Cable Ohms Part No. 1/8" EIA(GB) 1 5/8" 50 738304 1/8" EIA(GP) 1 5/8" 50 738311

* Inner connector supplied loose

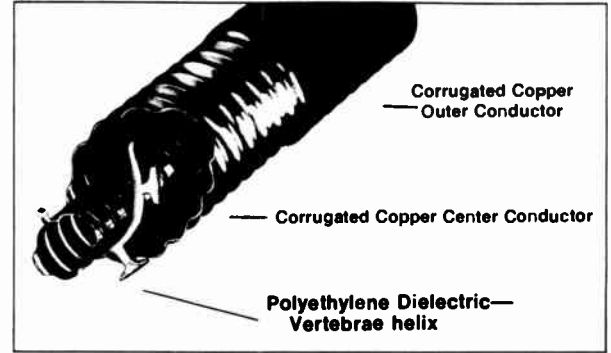
CABLEWAVE SYSTEMS, INC.

Coaxial Cable/Connectors

4 1/8" Air Dielectric Flexwell

Cablewave Systems air dielectric Flexwell coaxial cables achieve a combination of remarkable flexibility, rugged strength, and superior electrical performance. The 4 1/8" (4 1/2" O.D.) cable design includes a corrugated tubular copper center conductor, spiral polyethylene dielectric, corrugated outer conductor, and black polyethylene jacket. The special helix insulator construction contributes to low dielectric loss and excellent mechanical stability.

Air dielectric 4 1/8" Flexwell cable is used extensively in high power applications in the broadcast frequency bands and for lowest practical insertion loss at frequencies through 1 GHz.



ELECTRICAL CHARACTERISTICS

Cable Type (part no.)	Cable Size	Impedance Ohms	Velocity of Propagation percent	Max. Freq. 90% fco GHz	Attenuation dB 100 ft. (db/100m)			Average Power kW 40 Ambient		
					1 MHz	100 MHz	800 MHz	1 MHz	100 MHz	800 MHz
HF4 1/8" Cu2Y (8101944-008)	4 1/2"	50	97	1.0	.008 (.028)	.085 (.280)	.259 (.850)	720	72	26

MECHANICAL CHARACTERISTICS

Cable Type (part no.)	Center Conductor O.D., in. (mm)	Outer Conductor		Jacket O.D., in. (mm)	Minimum Bending Radius, in. (mm)	Cable Weight lbs. ft. (kg/m)
		I.D., in. (mm)	O.D., in. (mm)			
HF4 1/8" Cu2Y (8101944-008)	1.76 (44.8)	3.86 (96.7)	4.30 (98)	4.57 (116)	40 (1000)	3.8 (5.6)

4 1/8" Air Dielectric Flexwell Connectors

	<p>6 1/2" EIA (GB, Male)</p> <table border="1"> <tr> <th>Cable</th> <th>Ohms</th> <th>Part No.</th> </tr> <tr> <td>4 1/8"</td> <td>50</td> <td>734645</td> </tr> </table>	Cable	Ohms	Part No.	4 1/8"	50	734645
Cable	Ohms	Part No.					
4 1/8"	50	734645					
	<p>6 1/2" EIA (GP, Male)</p> <table border="1"> <tr> <th>Cable</th> <th>Ohms</th> <th>Part No.</th> </tr> <tr> <td>4 1/8"</td> <td>50</td> <td>734646</td> </tr> </table>	Cable	Ohms	Part No.	4 1/8"	50	734646
Cable	Ohms	Part No.					
4 1/8"	50	734646					
	<p>6 1/2" EIA-3 1/2" EIA Taper Reducer</p> <table border="1"> <tr> <th>Ohms</th> <th>Part No.</th> </tr> <tr> <td>50</td> <td>920251</td> </tr> </table>	Ohms	Part No.	50	920251		
Ohms	Part No.						
50	920251						

	<p>End Terminal</p> <table border="1"> <tr> <th>Ohms</th> <th>Part No.</th> </tr> <tr> <td>50</td> <td>920255</td> </tr> </table>	Ohms	Part No.	50	920255
Ohms	Part No.				
50	920255				
	<p>6 1/2" EIA Male-to-Male Adapter</p> <table border="1"> <tr> <th>Ohms</th> <th>Part No.</th> </tr> <tr> <td>50</td> <td>920259</td> </tr> </table>	Ohms	Part No.	50	920259
Ohms	Part No.				
50	920259				

CABLEWAVE SYSTEMS, INC.

Rigid Coaxial Transmission Line

Description and Model Numbers — 20' Sections

Size	Impedance Ohms	20 Foot section, flanges both ends		20 Foot section, flange one end		20 Foot section, no flanges	
		Model No.	Part No.	Model No.	Part No.	Model No.	Part No.
7/8"	50	1-78-50	920213	2-78-50	920217	3-78-50	920221
1 1/8"	50	1-158-50	920214	2-158-50	920218	3-158-50	920222
3 1/8"	50	1-318-50	920215	2-318-50	920219	3-318-50	920223
4 1/8"	50	1-416-50	926201	2-416-50	926202	3-416-50	926203
6 1/8"	50	1-618-50	920216	2-618-50	920220	3-618-50	920224
6 1/2"	75	1-618-75	914647	2-618-75	914784	3-618-75	926011
9 1/8"	50	1-936-50	926241	2-936-50	926242	3-936-50	926243
9 1/2"	75	1-936-75	926271	2-936-75	926272	3-936-75	926273

Description and Model Numbers — Special Lengths

Size	Impedance Ohms	Special length, flanges both ends*		Special length, flange one end*		Special length, no flanges*	
		Model No.	Part No.	Model No.	Part No.	Model No.	Part No.
7/8"	50	1S-78-50	914677	2S-78-50	926008	3S-78-50	914685
1 1/8"	50	1S-158-50	914678	2S-158-50	914682	3S-158-50	914686
3 1/8"	50	1S-318-50	914679	2S-318-50	914683	3S-318-50	914687
4 1/8"	50	1S-416-50	926204	2S-416-50	926205	3S-416-50	926206
6 1/8"	50	1S-618-50	914680	2S-618-50	926009	3S-618-50	926010
6 1/2"	75	1S-618-75	926012	2S-618-75	926013	3S-618-75	926014
9 1/8"	50	1S-936-50	926244	2S-936-50	926245	3S-936-50	926246
9 1/2"	75	1S-936-75	926274	2S-936-75	926275	3S-936-75	926276

* Prefix designations "1S", "2S" and "3S" refer to special lengths of rigid line in which the exact length in inches is added as a suffix after the impedance, ie: 1S-318-50 (24) for a 24 inch length of 3 1/8" 50 ohm line with EIA flanges on each end.
When ordering, part numbers should also be used.

Electrical Characteristics

Size	Impedance Ohms	Maximum Frequency MHz	Velocity Percent	Peak Power kW
7/8"	50	6,000	99.8	78
1 1/8"	50	3,000	99.8	294
3 1/8"	50	1,550	99.8	1,149
4 1/8"	50	1,200	99.8	1,937
6 1/8"	50	800	99.8	4,464
6 1/2"	75	900	99.8	2,916
9 1/8"	50	530	99.7	10,090
9 1/2"	75	600	99.7	6,592

Mechanical Characteristics and Shipping Information

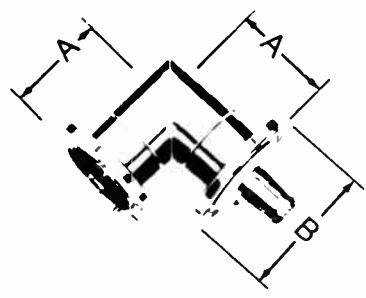
Size	Impedance Ohms	Outer Conductor O.D. x I.D. inches (mm)	Inner Conductor O.D. x I.D. Inches (mm)	Shipping Carton Inches (mm)	Net Weight Per Length Lbs. (Kg)	Number of Line Sections Per Carton	Shipping Weight Per Carton Lbs. (Kg)
7/8"	50	.875 x .785 (22.2 x 20.0)	.341 x .291 (8.7 x 7.4)	13 x 13 x 245 (330 x 330 x 6,223)	12 (5.5)	16	250 (114)
1 1/8"	50	1.625 x 1.527 (41.3 x 38.8)	.664 x .588 (16.9 x 14.9)	13 x 13 x 245 (330 x 330 x 6,223)	27 (12.3)	9	303 (138)
3 1/8"	50	3.125 x 3.027 (79.4 x 76.9)	1.315 x 1.231 (33.4 x 31.3)	13 x 13 x 245 (330 x 330 x 6,223)	44 (19.9)	4	268 (122)
4 1/8"	50	4.062 x 3.935 (103.2 x 99.9)	1.711 x 1.661 (43.4 x 42.2)	—	110 (49.9)	—	—
6 1/8"	50	6.125 x 5.981 (155.6 x 151.9)	2.600 x 2.520 (66.0 x 64.0)	12 x 24 x 245 (305 x 610 x 6,223)	135 (61.4)	2	370 (168)
6 1/2"	75	6.125 x 5.981 (155.6 x 151.9)	1.711 x 1.666 (43.4 x 42.2)	—	130 (59.1)	1	—
9 1/8"	50	9.188 x 9.000 (232.8 x 228.6)	3.910 x 3.812 (99.3 x 96.8)	—	229 (103.9)	1	—
9 1/2"	75	9.188 x 9.000 (232.8 x 228.6)	2.580 x 2.516 (65.5 x 63.9)	—	229 (103.9)	1	—

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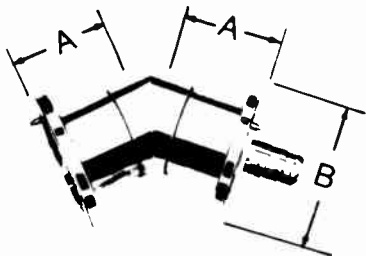
Rigid Line Hardware

Elbows

90° Miter Elbow 4—		90° Miter Elbow, Male/Female. 50 ohm copper and brass construction. Miter joints—all sizes except 7/8", are reinforced. EIA swivel flanges. Unsupported silver plated inner conductor. One anchor inner connector, "O" ring, and hardware set.						
Size	Imp. Ohms	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		
				A	B	Net	Shipping	
7/8"	50	4-78-50	920225	2 3/4 (69.9)	2 1/4 (57.2)	1.3 (.6)	1.7 (.8)	
1 1/8"	50	4-158-50	920226	2 1/2 (63.5)	3 1/2 (88.9)	3.4 (1.5)	3.8 (1.7)	
3 1/8"	50	4-318-50	920227	3 13/16 (96.8)	5 3/8 (131.8)	8.2 (3.7)	8.9 (4.0)	
4 1/16"	50	4-416-50	926207	5 (127)	6 (152.4)	—	—	
6 1/8"	50	4-618-50	920228	5 1/2 (139.7)	8 1/8 (206.4)	22.0 (10)	26.0 (11.8)	
6 1/8"	75	4-618-75	926083	5 1/2 (139.7)	8 1/8 (206.4)	22.0 (10)	26.0 (11.8)	
9 3/16"	50	4-936-50	926247	9 (228.6)	12 (304.8)	—	—	
9 3/16"	75	4-936-75	926277	9 (228.6)	12 (304.8)	—	—	



45° Miter Elbow 5—		45° Miter Elbow, Male/Female. Copper and Brass construction. Miter joints—all sizes except 7/8", are reinforced. EIA swivel flanges, unsupported inner conductor.						
Size	Imp. Ohms	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		
				A	B	Net	Shipping	
7/8"	50	5-78-50	920229	2 3/4 (69.9)	2 1/4 (57.2)	1.2 (.5)	1.6 (.7)	
1 1/8"	50	5-158-50	920230	2 1/2 (63.5)	3 1/2 (88.9)	3.3 (1.5)	3.6 (1.6)	
3 1/8"	50	5-318-50	920231	3 1/2 (88.9)	5 3/8 (131.8)	7.9 (3.6)	8.6 (3.9)	
4 1/16"	50	5-416-50	926208	—	—	—	—	
6 1/8"	50	5-618-50	920232	5 1/2 (139.7)	8 1/8 (206.4)	21.0 (9.5)	25.0 (11.3)	
6 1/8"	75	5-618-75	926084	5 1/2 (139.7)	8 1/8 (206.4)	21.0 (9.5)	25 (11.3)	
9 3/16"	50	5-936-50	926248	—	—	—	—	
9 3/16"	75	5-936-75	926278	—	—	—	—	



90° Miter Elbow, Male/Male. Miter joints—all sizes except 7/8", are reinforced. EIA swivel flanges both ends. Silver plated, supported inner conductor. Two "O" rings and two sets of hardware included.								
Size	Imp. Ohms	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		
				A	B	Net	Shipping	
7/8"	50	6-78-50	920233	2 3/4 (69.9)	2 1/4 (57.2)	1.2 (.5)	1.6 (.7)	
1 1/8"	50	6-158-50	920234	2 1/2 (63.5)	3 1/2 (88.9)	3.3 (1.5)	3.7 (1.7)	
3 1/8"	50	6-318-50	920235	3 13/16 (96.8)	5 3/8 (131.8)	8.2 (3.7)	8.9 (4.0)	
4 1/16"	50	6-416-50	926209	5 (127)	6 (152.4)	—	—	
6 1/8"	50	6-618-50	920236	5 1/2 (139.7)	8 1/8 (206.4)	22.0 (10.0)	26.0 (11.8)	
6 1/8"	75	6-618-75	926085	5 1/2 (139.7)	8 1/8 (206.4)	22.0 (10.0)	26.0 (11.8)	
9 3/16"	50	6-936-50	926249	9 (228.6)	12 (304.8)	—	—	
9 3/16"	75	6-936-75	926279	9 (228.6)	12 (304.8)	—	—	

90° Miter Elbow, EIA Male Flanges 6—								

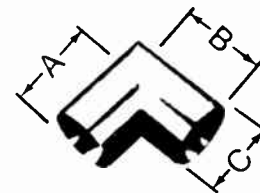
Prices and Specifications Subject to Change Without Notice.

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Rigid Line Hardware

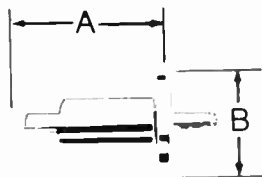
Elbows (cont'd)

Unflanged 90° Elbow with unsupported inner conductor. No straight coupling or inner connector included.									Unflanged 90° miter elbow 25—	
Size	Imp. Ohms	Model No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)			
				A	B	C	Net	Shipping		
7/8"	50	25-78-50	920291	2 11/16 (68)	2 11/16 (68)	.875 (22.2)	1.2 (.5)	1.6 (.7)		
1 1/8"	50	25-158-50	920292	2 3/8 (60)	2 3/8 (60)	1.625 (41.3)	3.2 (1.5)	3.6 (1.6)		
3 1/8"	50	25-318-50	920293	3 5/8 (92)	3 5/8 (92)	3.125 (79.4)	7.9 (3.6)	8.9 (4.0)		
4 1/16"	50	25-416-50	926219	4 3/4 (120.6)	4 3/4 (120.6)	4 1/16 (103.2)	—	—		
6 1/8"	50	25-618-50	920294	5 3/32 (134)	5 3/32 (134)	6.125 (155.6)	21.0 (9.5)	25.0 (11.3)		
9 3/16"	50	25-936-50	926259	—	—	—	—	—		
9 3/16"	75	25-936-75	926283	—	—	—	—	—		

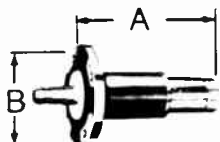


Adapters

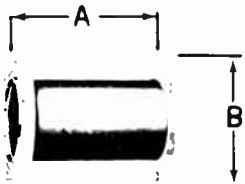
Adapter — EIA to N Female 9—		Adapter — EIA to type N Female with anchor inner connector. Mates with UG21/U. Gas tight with 1/8" FPT pressure inlet and plug.								
Size	Imp. Ohms	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)				
				A	B	Net	Shipping			
7/8"	50	9-78-50	920241	3 5/8 (92.0)	2 1/4 (57.2)	.6 (.3)	.9 (.4)			
1 1/8"	50	9-158-50	920242	5 (127.)	3 1/2 (88.9)	2.0 (.9)	2.7 (1.2)			
3 1/8"	50	9-318-50	920243	6 (152.4)	5 1/16 (131.8)	6.0 (2.7)	6.8 (3.1)			



Adapter — EIA to LC Female 24—		Adapter — EIA to LC Female with anchor inner connector. Mates with UG154/U.								
Size	Imp. Ohms	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)				
				A	B	Net	Shipping			
7/8"	50	24-78-50	920244	3 3/4 (95.3)	2 1/4 (57.2)	1.2 (.5)	1.4 (.6)			
1 1/8"	50	24-158-50	920245	5 1/4 (133.4)	3 1/2 (88.9)	3.5 (1.6)	4.2 (1.9)			
3 1/8"	50	24-318-50	920246	5 7/8 (138.1)	5 1/16 (131.8)	6.3 (2.9)	7.1 (3.2)			



Adapter — EIA to EIA 21—		Adapter — Male to Male. Unsupported inner conductor. Fixed EIA flanges. One "O" ring and hardware set included. No anchor inner connector included.								
Size	Imp. Ohms	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)				
				A	B	Net	Shipping			
7/8"	50	21-78-50	920256	4 (101.6)	2 1/4 (57.2)	1.0 (0.5)	1.5 (0.7)			
1 1/8"	50	21-158-50	920257	4 (101.6)	3 1/2 (88.9)	2.4 (1.1)	3.2 (1.5)			
3 1/8"	50	21-318-50	920258	6 (152.4)	5 3/16 (131.8)	6.0 (2.7)	7.0 (3.2)			
4 1/16"	50	21-416-50	926218	—	5 (127)	—	—			
6 1/8"	50	21-618-50	920259	6 (152.4)	8 1/8 (206.4)	18.0 (8.2)	23.0 (10.4)			
6 1/8"	75	21-618-75	926091	6 (152.4)	8 1/8 (206.4)	18.0 (8.2)	23.0 (10.4)			
9 3/16"	50	21-936-50	926301	—	—	—	—			
9 3/16"	75	21-936-75	926258	—	—	—	—			

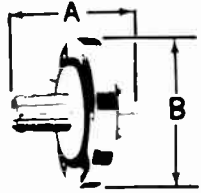


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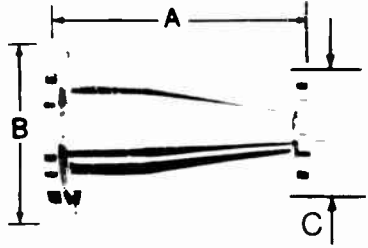
Rigid Line Hardware

Adapters (cont'd)

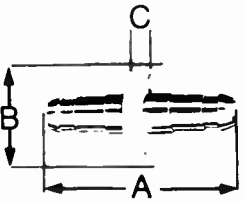
Plate Reducer. Quick step type. Male inner connectors on both ends. "O" rings and hardware included for both ends.								Plate Reducer 23—	
Size	Imp. Ohms	Model No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kg)		
				A	B		Net	Shipping	
1½" — 7/8"	50	23-158-50	920247	¾ (19.0)	3½ (88.9)		3.0 (1.36)	3.6 (1.63)	
3½" — 1½"	50	23-318-50	920248	7/8 (22.2)	5⅝ (131.8)		5.0 (2.27)	5.8 (2.63)	

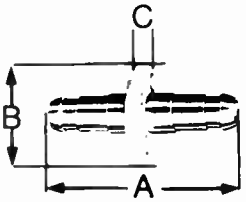


Taper Reducer. Low VSWR (1.05 @ 1.0 GHz). Fixed flange large end, swivel flange small end. Unsupported inner conductor. Removable anchor inner connector, "O" ring and hardware included for smaller size flange only.								Taper Reducer 17—	
Size	Imp. Ohms	Model No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kg)		
				A	B	C	Net	Shipping	
1½" — 7/8"	50	17-158-50	920249	4 ²⁷ / ₆₄ (112.3)	3½ (88.9)	2¼ (57.2)	1.75 (0.8)	2.4 (1.1)	
3½" — 1½"	50	17-318-50	920250	7 ³² / ₃₂ (180.0)	5⅝ (131.8)	3½ (88.9)	4.1 (1.9)	5.0 (2.3)	
4¼" — 3½"	50	17-416-50	926217	—	6 (152.4)	5⅝ (131.7)	—	—	
6½" — 3½"	50	17-618-50	920251	8¼ (209.5)	8⅞ (206.4)	5⅝ (131.8)	11.5 (5.2)	12.5 (5.7)	
9 ³ / ₁₆ " — 6½"	50	17-936-50	926257	—	—	—	—	—	
9 ³ / ₁₆ " — 6½"	75	17-936-75	926282	—	—	—	—	—	



Anchor Inner Connectors

Anchor Inner Connector 12—		Anchor Inner Connector. With Teflon insulator. Standard type 12—is silver plated. Inner connectors type 12A—include a dry baked molybdenum di-sulfide lubricant coating to prevent galling and electrical deterioration with repeated thermal expansion and contraction of the inner conductor.							
	Size	Imp. Ohms	Model No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)	
					A	B	C	Net	Shipping
	7/8"	50	12-78-50	612951	2 ¹ / ₁₆ (68.3)	0.810 (20.6)	3/8 (4.8)	0.1 (.05)	0.1 (.05)
	1½"	50	12-158-50	612874	3¼ (82.6)	1 ¹ / ₁₆ (41.9)	¼ (6.4)	0.2 (.09)	0.2 (.09)
	3½"	50	12-318-50	622720	4¼ (108.)	3 ³ / ₁₆ (81.2)	3/8 (9.5)	0.8 (.4)	1.0 (.45)
	4¼"	50	12-416-50	926213	5 ⁷ / ₁₆ (188.9)	4 (101.6)	3/8 (9.5)	—	—
	6½"	50	12-618-50	920270	5½ (139.7)	6 ¹ / ₁₆ (153.8)	7/16 (11.1)	2.9 (1.3)	3.5 (1.6)
	6½"	75	12-618-75	926087	5½ (139.7)	6.055 (153.8)	7/16 (11.1)	2.9 (1.3)	3.5 (1.6)
	9 ³ / ₁₆ "	50	12-936-50	926253	—	—	—	—	—
	9 ³ / ₁₆ "	75	12-936-75	926281	6 ³ / ₁₆ (157.2)	9 ⁷ / ₁₆ (239.7)	5/8 (15.9)	—	—

Anchor Inner Connector 12S—		Anchor Inner Connector for unflanged 50 ohm line. Teflon insulator, silver plated. Use with coupling 16-158-50 (P/N 920296) and 16-318-50 (P/N 920297)							
	Size	Imp. Ohms	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)		
				A	B	C	Net	Shipping	
	1½"	50	613946	3¼ (82.6)	1.630 (41.40)	.250 (6.4)	0.2 (.09)	0.2 (.09)	
3½"	50	624054	4.238 (107.7)	3.130 (79.50)	.373 (9.5)	0.8 (.4)	1.0 (.45)		

Inner Connectors

Inner Connector for unflanged unpressurized line. Silver plated, no undercut.								Inner connector 27—	
Imp. Size	Ohms	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		A	B
				A	B	Net	Shipping		
7/8"	50	27-78-50	920299	2 1/16" (68.3)	0.341 (8.7)	0.1 (.05)	0.1 (.05)		
1 1/8"	50	27-158-50	920300	3 1/4" (82.6)	0.664 (16.9)	0.2 (.09)	0.2 (.09)		
3 1/8"	50	27-318-50	920301	4 1/4" (108.)	1.315 (33.4)	0.7 (.3)	0.9 (.4)		
4 1/8"	50	27-416-50	926220	—	—	—	—		
6 1/8"	50	27-618-50	920302	5 1/2" (139.7)	2.6 (66)	2.7 (1.2)	3.3 (1.5)		
9 1/8"	50	27-936-50	926260	—	—	—	—		
9 3/8"	75	27-936-75	926284	—	—	—	—		

Inner Connector Adaptor to connect 50 ohm EIA flanged line to 51.5 ohm flanged line. No anchor beads.								Inner Connector Adaptor 32—	
Imp. Size	Ohms	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		A	B
				A	B	Net	Shipping		
7/8"	50	32-78-50	920280	2 3/8" (58.7)	.341 (8.7)	0.1 (.05)	0.1 (.05)		
1 1/8"	50	32-158-50	920281	2 3/4" (69.9)	.664 (16.9)	0.2 (.09)	0.2 (.09)		
3 1/8"	50	32-318-50	920282	3 3/8" (85.7)	1.315 (33.4)	0.8 (.4)	1.0 (.45)		
6 1/8"	50	32-618-50	920597	3 5/8" (92.1)	2.600 (66.5)	2.9 (1.3)	3.5 (1.6)		

Gas Barrier and End Terminal

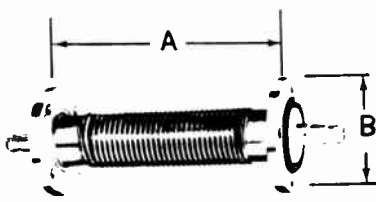
Gas Barrier 7—		EIA Gas Barrier. 1/8" FPT pressure inlet with plug. One set of longer bronze hardware, and two "O" rings.							
Imp. Size	Ohms	Model No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)		
				A	B	C	Net	Shipping	
7/8"	50	7-78-50	920237	3 5/16" (84.1)	2 1/4" (57.2)	3 5/16" (13.9)	1.1 (.5)	1.3 (.6)	
1 1/8"	50	7-158-50	920238	3 7/8" (98.4)	3 1/2" (88.9)	3 5/8" (13.9)	3.4 (1.5)	4.1 (1.9)	
3 1/8"	50	7-318-50	920239	4 7/8" (123.8)	5 1/8" (131.8)	3 5/8" (13.9)	6.2 (2.8)	7.0 (3.2)	
4 1/8"	50	7-416-50	926210	—	—	—	—	—	
6 1/8"	50	7-618-50	920240	6 1/8" (155.6)	8 1/8" (206.4)	1 1/16" (27.0)	15.2 (6.9)	17.0 (7.7)	
6 1/8"	75	7-618-75	926086	6 1/8" (155.6)	8 1/8" (206.4)	1 1/16" (27.0)	15.2 (6.9)	17.0 (7.7)	
9 1/8"	50	7-936-50	926250	—	—	—	—	—	
9 3/8"	75	7-936-75	936042	6 1/16" (176.9)	12 (304.8)	3/4" (19.0)	—	—	

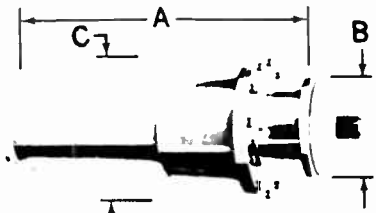
End Terminal 20—		End Terminal. For strap connection to antenna. Pressure tight with 1/8" FPT gas inlet and plug. Fixed EIA flange with male inner connector. "O" ring and hardware included.							
Imp. Size	Ohms	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)			
				A	B	Net	Shipping		
7/8"	50	20-78-50H	920252	6 1/8" (155.0)	2 1/4" (57.2)	1.0 (0.5)	1.4 (0.6)		
1 1/8"	50	20-158-50H	920253	4 7/8" (124.0)	3 1/2" (88.9)	2.6 (1.2)	3.4 (1.5)		
3 1/8"	50	20-318-50H	920254	6 1/2" (165.1)	5 3/8" (131.8)	4.4 (2.0)	5.4 (2.5)		
4 1/8"	50	20-416-50	926232	—	—	—	—		
6 1/8"	50	20-618-50H	920255	8 (203.2)	8 1/8" (206.4)	11.7 (5.3)	12.8 (5.8)		
9 1/8"	50	20-936-50	926262	—	—	—	—		

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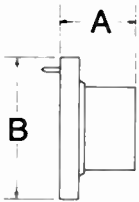
Rigid Line Hardware

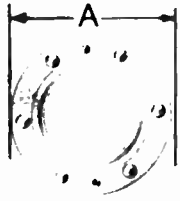
Flexible Section/Breakaway Section

Flexible Section accommodates vibration and angles up to 30° for 1½" and 20° for 3½" and 6½". Maximum offset or compression is .25" (0.64 cm) for 1½" and .5" (1.27 cm) for the 3½" and 6½" units. EIA fixed male flanges both ends. Two sets of "O" rings and hardware supplied.								Flexible Section 30— 	
Imp. Size	Ohms	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)			
				A	B	Net	Shipping		
1½"	50	30-158-50	920260	10 (254.0)	3½ (88.9)	4.2 (1.9)	4.7 (2.1)		
3½"	50	30-318-50	920261	18 (457.2)	5¾ (131.8)	15.0 (6.8)	16.9 (7.7)		
6½"	50	30-618-50	920262	24 (609.6)	8½ (206.4)	31.0 (14.1)	36.0 (16.3)		

Breakaway Section. Permits easy opening and disassembly of transmission line. Pressure tight when closed. EIA fixed flange on one end. EIA male anchor inner connector on other end.								Breakaway Section 31— 	
Imp. Size	Ohms	Model No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)		
				A	B	C	Net	Shipping	
1½"	50	31-158-50	920263	12 (304.8)	3½ (88.9)	4¼ (108.0)	14.0 (6.35)	18.0 (8.16)	
3½"	50	31-318-50	920264	14¾ (376.2)	5¾ (131.8)	7 (177.8)	21.0 (9.53)	34.0 (15.42)	
6½"	50	31-618-50	920265	24 (609.6)	8½ (206.4)	10¼ (260.4)	47.0 (21.32)	59.0 (26.8)	
6½"	75	31-618-75	926093	24 (609.6)	8½ (206.4)	10¼ (260.4)	47.0 (21.32)	59.0 (26.8)	

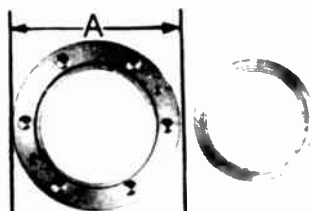
Fittings

Field Flange 10 — 		EIA fixed flange, soft solder type, pressurized. No anchor connector, "O"-ring or hardware.					
Line Size	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pound (kilograms)		
			A	B	Net	Shipping	
¾"	10-78-50	920325	1½ (29.3)	2¼ (57.2)	—	—	
1½"	10-158-50	920326	1¾ (49.2)	3½ (88.9)	¾ (.4)	—	
3½"	10-318-50	920327	1¾ (45.7)	5¾ (129.8)	2 (.9)	—	
6½"	10-618-	926016	3½ (88.9)	8½ (205.8)	5½ (2.5)	—	

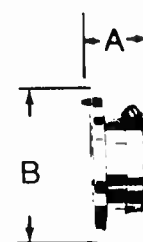
Fixed Flange 13— 		Fixed Flange kit for silver brazing of EIA fixed flange to outer conductor tubing. Includes silver solder preform ring.					
Size	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		
			A		Net	Shipping	
¾"	13-78-50	920287	2¼ (57.1)		.5 (.2)	1 (.4)	
1⅓"	13-158-50	920288	3½ (88.9)		.8 (.4)	1.3 (.6)	
3½"	13-318-50	920289	5¾ (131.7)		1.6 (.7)	2.0 (.9)	
4¾"	13-416-50	926214	6 (152.4)		—	—	
6½"	13-618-50	920290	8½ (206.4)		5.3 (2.4)	6 (2.7)	
9¾"	13-936-	926254	12 (304.8)		—	—	

Fittings (cont'd)

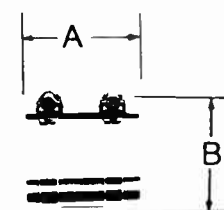
Swivel Flange 18—		Swivel Flange kit for silver brazing of an EIA swivel flange to outer conductor tubing. Includes silver solder preform ring.				
Size	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)	
			A		Net	Shipping
7/8"	18-78-50	920283	2 1/4 (57.1)		.5 (.2)	1 (.4)
1 1/8"	18-158-50	920284	3 1/2 (88.9)		.8 (.3)	1.3 (.6)
3 1/8"	18-318-50	920285	5 3/8 (131.7)		1.6 (.7)	2.0 (.9)
4 1/8"	18-416-	926231	6 (152.4)		--	--
6 1/8"	18-618-50	920286	8 3/8 (206.4)		5.3 (2.4)	6 (2.7)
9 3/8"	18-936-	926263	12 (304.8)		--	--



Unpressurized EIA field flange with stainless steel hose clamp, does not include anchor inner connector, hardware or O-ring. Not gas tight.							Unpressurized EIA field flange 11—	
Size	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		A	B
			A	B	Net	Shipping		
7/8"	11-78	920303	1 3/8 (30.1)	2 1/4 (57.2)	.7 (.3)	1.2 (.5)		
1 1/8"	11-158	920304	1 13/16 (46.0)	3 1/2 (88.9)	1.2 (.5)	1.7 (.8)		
3 1/8"	11-318	920305	1 13/16 (46.0)	5 3/8 (131.8)	2.5 (1.1)	3.0 (1.4)		
4 1/8"	11-416	926212	—	—	—	—		
6 1/8"	11-618	920306	3 1/4 (82.5)	8 1/8 (206.4)	6.5 (3.0)	7.0 (3.2)		
9 3/8"	11-936	926252	—	—	—	—		



Unflanged Line Straight Coupling. Connects unflanged lines and fittings. Includes one inner connector and hose clamps.							Unflanged line straight coupling 16—		
Size	Imp. Ohms	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)		A	B
				A	B	Net	Shipping		
7/8"	50	16-78-50	920295	1 5/8 (41.3)	1 (25.4)	0.3 (.1)	0.4 (.2)		
1 1/8"	50	16-158-50	920296	2 5/8 (58.7)	1 3/4 (44.4)	0.5 (.2)	0.6 (.3)		
3 1/8"	50	16-318-50	920297	3 3/8 (90.5)	3 3/8 (83.5)	1.5 (.7)	3.3 (1.5)		
4 1/8"	50	16-416-50	926216	—	—	—	—		
6 1/8"	50	16-618-50	920298	6 3/8 (161.9)	6 3/8 (163.5)	5.4 (2.5)	6.5 (3.0)		



CABLEWAVE SYSTEMS, INC.

Rigid Line Hardware

Fittings (cont'd)

Bulkhead Fitting for anchoring single horizontal transmission line run at building entrance. Galvanized steel. Mounts to entry wall with 1/2" bolts through 3/16" holes. Use 712 870 Weatherproofing kit to seal fitting at wall entry.								Bulkhead Fitting 111—	
Line Size	Model No.	Part No.	Dimensions, inches (millimeters)			Weight, pounds (kilograms)			
			A	B	C	Net	Shipping		
7/8"	111-78	920321	3/16 (14.3)	4 3/4 (120.7)	6 (152.4)	2 5/8 (.9)	3 (1.4)		
1 1/8"	111-158	920322	3/16 (14.3)	4 3/4 (120.7)	6 (152.4)	2 5/8 (.9)	3 (1.4)		
3 1/8"	111-318	920323	3/16 (14.3)	6 3/4 (171.5)	8 (703.2)	2 3/4 (1.3)	4 (1.8)		
4 1/8"	111-416	926236	—	—	—	—	—		
6 1/8"	111-618	920324	3/16 (14.3)	10 1/4 (260.3)	12 (304.8)	1 1/4 (6.5)	16 (7.0)		
9 3/8"	111-936	926264	—	—	—	—	—		

Cover Plate 15 —		Cover plate with 1/8" MPT gas inlet port and plug. No hardware.							
Line Size	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pound (kilograms)				
			A	B	Net	Shipping			
7/8"	15-78-50	926134	2 1/4 (57.1)	3/8 (9.5)	—	—			
1 1/8"	15-158-50	926135	3 1/2 (88.9)	7/16 (11.1)	1/16 (.03)	—			
3 1/8"	15-318-50	926015	5 3/8 (131.7)	1/2 (12.7)	3/16 (.08)	—			
6 1/8"	15-618-50	926136	8 1/8 (206.4)	5/8 (15.9)	—	—			


"O" Ring Gasket 14—		"O" Ring Gasket for EIA flange. Silicone rubber.					
Size	Model No.	Part No.	Size	Model No.	Part No.		
7/8"	14-78	520681-010	4 1/8"	14-416	926221		
1 1/8"	14-158	520681-011	6 1/8"	14-618	920279		
3 1/8"	14-318	520681-012	9 3/8"	14-936	926261		


Patch Panels


Manual transfer patch panel, 3 pole, one 180° patch link, three anchor inner connectors, three line clamps, screwdriver.					Patch Panel 34 —	
Line Size	Model No.	Part No.	Weight, pound (kilograms)			
			Net	Shipping		
1 1/8"	34-158-3	936008	—	—		
3 1/8"	34-318-3	936013	—	—		
6 1/8"	34-618-3	936031	—	—		

Manual transfer patch panel, four pole, two 180° patch links, four anchor inner connectors, four clamps, screwdriver.					Patch Panel 34 —	
Line Size	Model No.	Part No.	Weight, pound (kilograms)			
			Net	Shipping		
1 1/8"	34-158-4	936009	—	—		
3 1/8"	34-318-4	936014	—	—		
6 1/8"	34-618-4	936034	—	—		

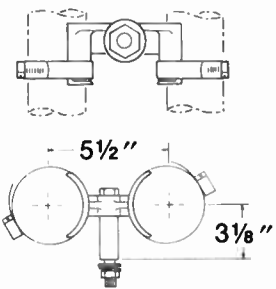
Mounting Hardware

<p>Fixed Hanger 51—</p> 	<p>Fixed Hanger for fastening a transmission line run to the top of the tower. Use one fixed hanger for each 300 feet of line. Mounts to 5/16" diameter hole with 1/2"-13 x 1 3/4" bolt supplied.</p>					
	Line Size	Model No.	Part No.	Dimensions, inches (millimeters) A	Weight, pounds (kilograms) Net	Shipping
7/8"	51-78	920307	1 1/8 (28.6)	.75 (.3)	1 (.5)	
1 1/8"	51-158	920308	3 3/16 (96.8)	1.25 (.6)	1 1/2 (.7)	
3 1/8"	51-318	920309	4 1/4 (115.9)	2.25 (1.0)	2 1/2 (1.1)	
4 1/16"	51-416	926223	4 3/4 (112.7)	—	—	
6 1/8"	51-618	920310	5 5/8 (142.9)	4.375 (2.0)	4 1/2 (2.0)	
9 3/16"	51-936	926287	7 (177.8)	—	—	

<p>Spring Hanger 91—</p> 	<p>Spring Hanger for supporting rigid line every 10 feet. Accommodates line expansion-contraction. Mounts to 5/16" diameter hole with 1/2" threaded rod.</p>					
	Line Size	Model No.	Part No.	Dimensions, inches (millimeters) A	Weight, pounds (kilograms) Net	Shipping
1 1/8"	91-158	920311	4 3/8 (111.1)	2.5 (1.1)	3 (1.4)	
3 1/8"	91-318	920312	5 7/8 (149.2)	2.8 (1.3)	3 1/2 (1.6)	
4 1/16"	91-416	926225	—	—	—	
6 1/8"	91-618	920313	9 3/8 (238.1)	7.8 (3.5)	8 (3.6)	
9 3/16"	91-936	936043	7 (177.8)	—	—	

<p>Slide Hanger 151—</p> 	<p>Slide Hanger. Line guide ring to secure transmission line to supporting towers every 10 feet for short runs if spring type hangers are not required. Mounts to 5/16" diameter hole with 1/2"-13 x 1 3/4" bolt supplied.</p>					
	Line Size	Model No.	Part No.	Dimensions, inches (millimeters) A	Weight, pounds (kilograms) Net	Shipping
1 1/8"	151-158	920314	8 1/4 (209.6)	1.2 (.6)	1.5 (.7)	
3 1/8"	151-318	920315	9 (228.6)	1.75 (.80)	2.5 (1.1)	
4 1/16"	151-416	926228	4 1/4 (112.7)	—	—	
9 3/16"	151-936	926268	—	—	—	

<p>Dual Fixed Hanger for fastening two parallel runs of transmission line to the top of the tower. Use one fixed hanger for each 300 feet of line. Mounts to 5/16" diameter hole with 1/2"-13 x 3/4" bolt supplied.</p>					
Line Size	Model No.	Part No.	Weight, pound (kilograms) Net Shipping		
3 1/8"	81-318-50	926018	2 1/4 (1.0)	—	

<p>Dual Fixed Hanger 81—</p> 

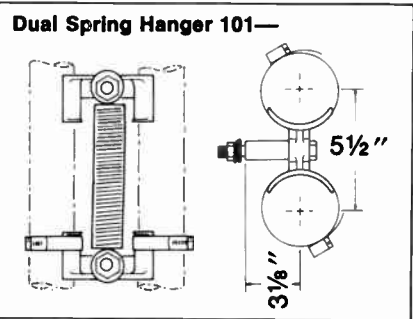
CABLEWAVE SYSTEMS, INC.

Rigid Line Hardware

Mounting Hardware (cont'd)

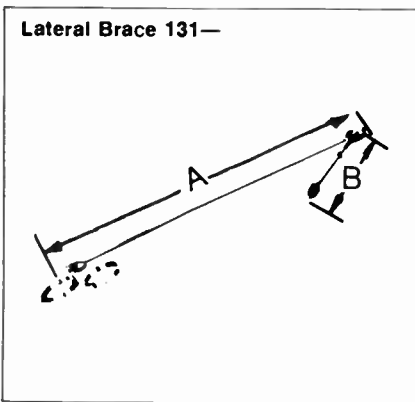
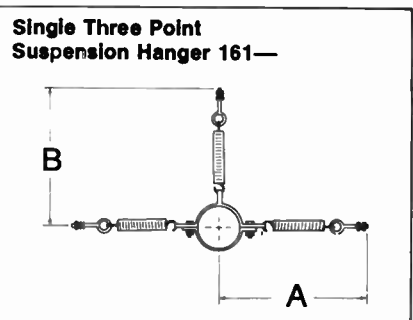
Dual Spring Hanger for supporting two parallel runs of transmission line every 10 feet. Accommodates line expansion-contraction. Mounts to $\frac{1}{8}$ " diameter hole with $\frac{1}{2}$ "-13 x $\frac{3}{4}$ " bolt, supplied.

Line Size	Model No.	Part No.	Weight, pound (kilograms)	
			Net	Shipping
3 1/8"	101-318-50	926017	5 3/4 (2.6)	—



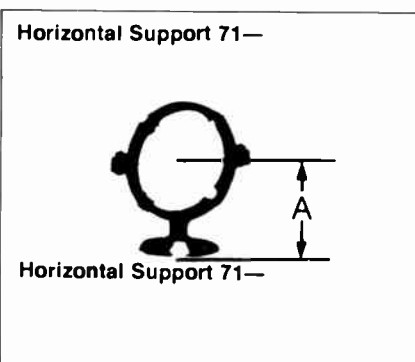
Single Three Point Suspension Hanger for use at base of tower. Mounts with three $\frac{3}{8}$ "-16 x 6" eye bolts, supplied.

Line Size	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pound (kilograms)	
			A	B	Net	Shipping
3 1/8"	161-318	926081	24 3/8 (617.5)	24 7/8 (631.9)	5 1/4 (2.3)	—
6 1/8"	161-618	926082	29 3/8 (744.4)	31 1/8 (808.0)	11 1/2 (5.2)	—
9 3/8"	161-936	936046	19 (482.6)	28 1/8 (735.0)	20 (9.1)	—



Lateral Brace for securing transmission line at bottom of vertical run. Prevents lateral motion. Use two per transmission line run. Mounts to $\frac{1}{8}$ " diameter hole with $\frac{3}{8}$ "-16 threaded rod.

Line Size	Model No.	Part No.	Dimensions, inches (millimeters)		Weight, pounds (kilograms)	
			A	B	Net	Shipping
1 5/8"	131-158	920316	39 (991.0)	7 1/2 (190.5)	2.3 (1.0)	3 (1.4)
3 1/8"	131-318	920317	39 (991)	7 1/2 (190.5)	2.3 (1.0)	3 (1.4)
4 1/16"	131-416	926227	—	—	—	—
6 1/8"	131-618	920318	39 (991)	7 1/2 (190.5)	2.4 (1.1)	3 (1.4)
9 3/8"	131-936	926267	41 1/8 (1055.6)	—	—	—



Horizontal Support for supporting horizontal runs of transmission line. Mounts to post or plate with $\frac{1}{4}$ " bolts three equally spaced on 3" diameter mounting circle. Hardware not supplied.

Line Size	Model No.	Part No.	Dimensions, inches (millimeters)	Weight, pounds (kilograms)	
			A	Net	Shipping
1 5/8"	71-158	920319	2 7/8 (61.9)	.91 (.4)	1.5 (.7)
3 1/8"	71-318	920320	3 3/8 (81)	1.5 (.7)	2 (.9)
4 1/16"	71-416	926224	—	—	—
6 1/8"	71-618	915031	—	—	—
9 3/8"	71-936	926286	—	—	—

Custom Rigid Line Assemblies

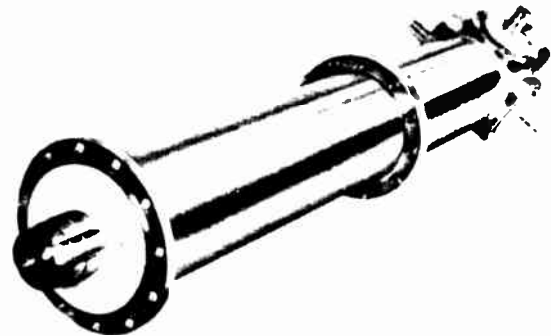
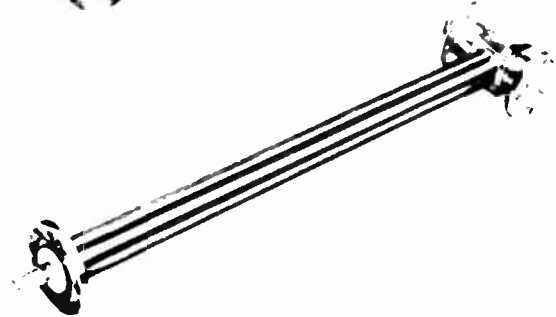
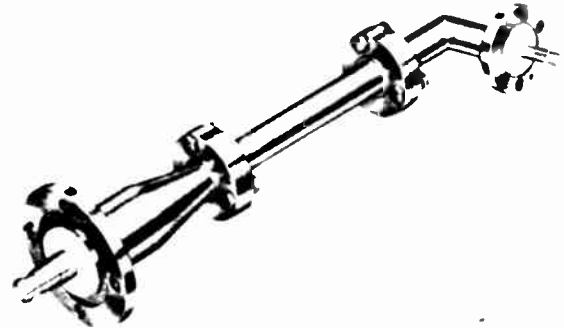
Rigid Line Assembly consists of three sections of Seal-O-Flange, EIA, 50 ohm Rigid Line—a taper reducer of 1½" to 7⁄8", 7⁄8" line, and 7⁄8" miter elbow—joined by flanges.

Used in the corporate feed harness of a multi-element corner array, this power divider is fitted with tees to provide a 2:1 power split. VSWR is 1.02:1 at center of frequency. All connectors are 50 ohm EIA flange type and all assemblies are of the pressure type. This custom assembly has two output ports matched to the input by an internal ¼ wavelength linear transformer.

Four 3½", 50 ohm lines are matched into one 6½", 50 ohm line by means of this power divider. The 6½" port is matched to the four 3½" ports by means of a 2-section linear transformer in the large diameter section.

This fitting provides a gas tight termination for 3½", 50 ohm EIA rigid transmission line. It may be used to terminate the transmitter end of the line where link or π output circuits are used. Another usage is at the antenna feed point for feeding open wire antennas or for feeding open wire transmission lines through the use of a Balun.

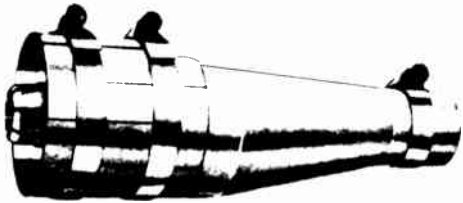
Phase and power matching for multi-element arrays. This 12-way power divider provides for 12 elements to be fed from a single 3½", 50 ohm transmission line. A matching transformer is included in the 3½" leg of the divider. The output fittings of this unit are designed to accept 7⁄8" air dielectric, semi-flexible coaxial cable.




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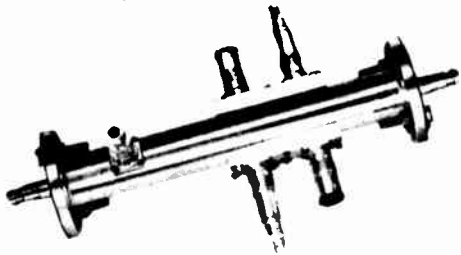
Rigid Line Hardware


Custom Rigid Line Assemblies (cont'd)

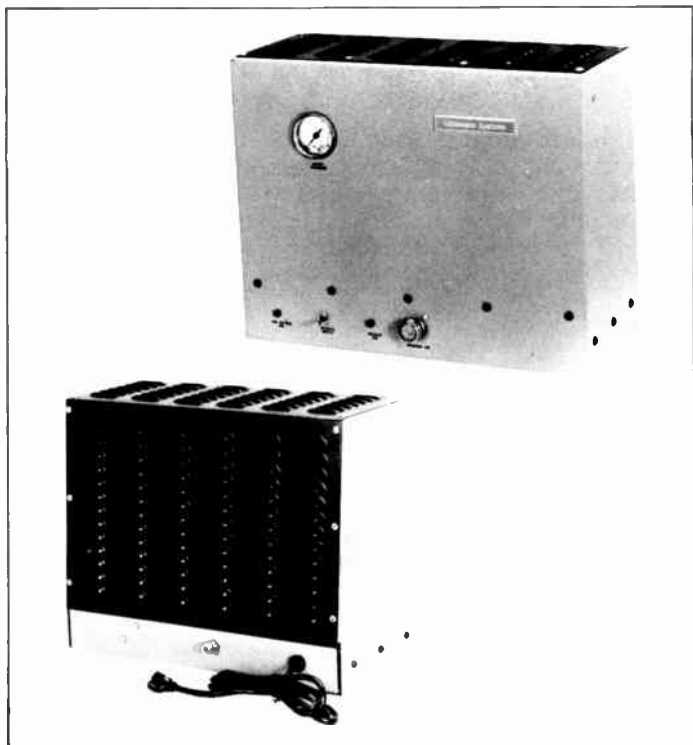
	<p>This ungasged reducer, used with the transmission line requiring a size change, is not pressurized but is protected from the weather. It is ideally suited for use in the factory for temporary test set-ups as well as in AM, FM and TV permanent indoor interconnections.</p>
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	<p>Line size changes can be made in a minimum overall axial length by means of step-type reducers. In this case the requirement was for a female inner conductor with removable connectors at each end creating a length of approximately 8 inches. If a male-to-male connector had been required the entire length, excluding the inner conductor connectors, could have been made as short as 1½”.</p>
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FM Broadcast Directional Couplers/Low Pass Filters

<p>Shims are provided with each directional coupler to position the coupler loops so as to produce 1 volt D.C. into a 5000 ohm load at the specified power level, i.e., 3, 5 or 10 kW for Part No. 936005 and 20 or 25 kW for Part No. 936006. In addition to the D.C. outputs of the directional loops, an RF monitor non-directional port is provided which can couple as much as 2 watts into a 50 ohm load.</p>	<p>Directional Coupler</p> 																		
<table border="1"> <thead> <tr> <th>Model No.</th> <th>Part No.</th> <th>Power (kW)</th> <th>Connectors</th> <th>VSWR</th> <th>Directivity</th> </tr> </thead> <tbody> <tr> <td>44-158-50</td> <td>936005</td> <td>3, 5 and 10</td> <td>1½-50 EIA</td> <td>1.04 Max</td> <td>30 db</td> </tr> <tr> <td>44-318-50</td> <td>936006</td> <td>20 and 25</td> <td>3½-50 EIA</td> <td>1.04 Max</td> <td>30 db</td> </tr> </tbody> </table>	Model No.	Part No.	Power (kW)	Connectors	VSWR	Directivity	44-158-50	936005	3, 5 and 10	1½-50 EIA	1.04 Max	30 db	44-318-50	936006	20 and 25	3½-50 EIA	1.04 Max	30 db	
Model No.	Part No.	Power (kW)	Connectors	VSWR	Directivity														
44-158-50	936005	3, 5 and 10	1½-50 EIA	1.04 Max	30 db														
44-318-50	936006	20 and 25	3½-50 EIA	1.04 Max	30 db														

<table border="1"> <thead> <tr> <th>Model No.</th> <th>Part No.</th> <th>Power (kW)</th> <th>Connectors</th> <th>Pass Band Loss (db)</th> <th>Harmonic Rejection (db)</th> <th>Length Inches</th> </tr> </thead> <tbody> <tr> <td>42-78-50</td> <td>936001</td> <td>1</td> <td>7/8-50 EIA</td> <td>.2</td> <td>40</td> <td>65</td> </tr> <tr> <td>42-158-50</td> <td>936002</td> <td>5</td> <td>1½-50 EIA</td> <td>.2</td> <td>40</td> <td>70¼</td> </tr> <tr> <td>43-158-50</td> <td>936004</td> <td>10</td> <td>1½-50 EIA</td> <td>.2</td> <td>40</td> <td>79½</td> </tr> <tr> <td>42-318-50</td> <td>936003</td> <td>20</td> <td>3½-50 EIA</td> <td>.2</td> <td>40</td> <td>86½</td> </tr> </tbody> </table>	Model No.	Part No.	Power (kW)	Connectors	Pass Band Loss (db)	Harmonic Rejection (db)	Length Inches	42-78-50	936001	1	7/8-50 EIA	.2	40	65	42-158-50	936002	5	1½-50 EIA	.2	40	70¼	43-158-50	936004	10	1½-50 EIA	.2	40	79½	42-318-50	936003	20	3½-50 EIA	.2	40	86½	<p>Low Pass Filter</p> 
Model No.	Part No.	Power (kW)	Connectors	Pass Band Loss (db)	Harmonic Rejection (db)	Length Inches																														
42-78-50	936001	1	7/8-50 EIA	.2	40	65																														
42-158-50	936002	5	1½-50 EIA	.2	40	70¼																														
43-158-50	936004	10	1½-50 EIA	.2	40	79½																														
42-318-50	936003	20	3½-50 EIA	.2	40	86½																														
<p>Other frequency ranges and rejection levels available on special order.</p>																																				



CHARACTERISTICS

Power Source	115 V 60 Hz
APD-130 P/N 920638	115 V 50 Hz
APD-131 P/N 920639	240 V 50 Hz
APD-132 P/N 920640	
Output Ratings	
60 Hz models	1.3 SCFM (0.6 liters/sec.) -40°F (-40°C) dew point @ 95°F (35°C), 95% RH input
50 Hz models	1.0 SCFM (0.45 liters/sec.) -40°F (-40°C) dew point @ 95°F (35°C), 95% RH input
Ambient Temperature	-20-120°F (-28.9 to 49°C)
Output Pressure On/Off	
Factory set	3-7 psig (.21 - .49 Kg/sq.cm)
Field adjustable	1-15 psig (.07 - 1.05 Kg/sq.cm) @ 3 psig (.21 Kg/sq.cm) differential
Standard Low Pressure Alarm	
P/N 913467	factory set at 1 psig (.07 Kg/sq.cm) .1 psig (.007 Kg/sq.cm) differential
Output	3/8" plastic tube fitting (removes to provide 1/8" FPT desired)
Dimensions, HxWxD inches	
(mm)	APD-130 14 x 17 11/16 x 8 (355 x 450 x 203)
	APD-131, 132 14 1/8 x 22 3/4 x 13 1/2 (359 x 578 x 343)
Power Consumption, watts	
pumping	600
idle	10
Net Weight, lbs. (kg)	62 (28)
Shipping Weight, lbs. (Kg)	72 (33)
Standard Items Supplied	20 Ft. of 3/8" plastic tubing 1/8" MPT fitting 6 ft. 3 cond. grounded power cord
Optional Accessories	
P/N 920642	Maintenance Parts Kit for APD-130 and APD-131
P/N 920643	Maintenance Parts Kit for APD-132
P/N 920184	High Pressure Alarm
P/N 920185	Humidity Alarm
P/N 913843	Floor Stand
P/N 913907	Relay Rack Mtg. Brkt. Kit
P/N 940008	Wall Shelf for APD-130
P/N 940009	Wall Shelf for APD-131, 132

The APD-130 Automatic Pressurization Dehydrator, 1.3 SCFM 115 volts 60 Hz, is designed for operation in larger systems with up to 1,200 ft. of 6 1/8" diameter line. The dehydrator utilizes the heatless, dual canister molecular sieve drying system with completely automatic operation and no need for replacement or manual reactivation of desiccant. The APD-130 generally is similar in design and features to the APD-20 series, except that the APD-130 includes an expanded metal rear cover as standard equipment and has the larger 1.3 SCFM capacity.

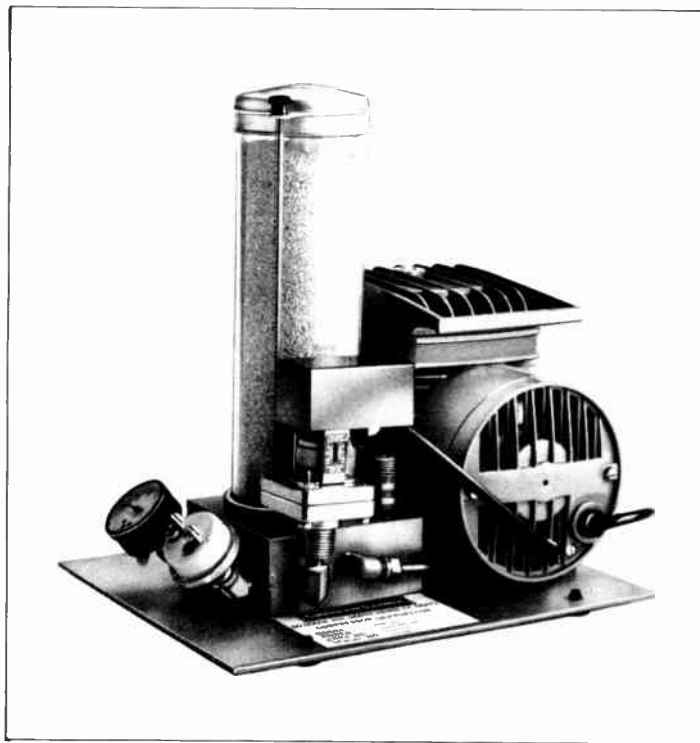
From normal room environments, the APD-130 delivers typical dry air dew points of -60°F. The pressure output control is factory set at 3 psig (0.21 Kg/sq.cm) "on" and 7 psig (0.49 Kg/sq.cm) "off". A check valve prevents loss of pressure back through the dehydrator. A standard low pressure alarm switch, factory set for 1 psig (0.07 Kg/sq. cm) is included for remote monitoring.

APD-130 DEHYDRATOR CAPACITY RATINGS

Trans. Line	Approx. Length	
	feet	(meters)
7/8"	90,000	(27,500)
1 1/8"	24,000	(7,500)
3 1/8"	6,000	(1,800)
6 1/8"	1,200	(300)
6 to 12 GHz waveguide	20,000	(6,000)
4 to 5 GHz waveguide	6,000	(1,800)

NOTE

The pipe fittings referred to in this section are to U.S. National Pipe Thread standards and are abbreviated as 1/8" MPT for 1/8" NPT male and 1/8" FPT for 1/8" NPT female. These fittings may be mated with the International 1/8" pipe thread fittings although the U.S. standards include 27 threads per inch while the European International Standards Organization fittings have 28 threads per inch.



The SPD-10 Series Semi-Automatic Dehydrator is designed for applications where cost is a factor and where periodic desiccant replacement is practical.

The SPD-10 dehydrator consists of a 1/10th h.p. shaded pole motor compressor with permanently lubricated and sealed ball bearings, a 10,000 hour 2-ply Buna N with nylon cord diaphragm, a 0 to 15 psig pressure gauge, a pressure switch, a low pressure alarm, a high pressure safety relief valve, and a clear plastic canister with two (2) pounds of desiccant — anhydrous calcium sulphate impregnated with cobalt chloride.

Output capacity rating is 1.0 scfm (0.47 liters/sec.). Output pressure is factory set to 3-8 psig. (0.21-0.56 kg/sq. cm) but may be readjusted in the field to operate anywhere between 2 and 15 psig. (0.14-1.05 kg/sq. cm). Differential is fixed at 5 psig (0.35 kg/sq. cm). A check valve prevents loss of pressure back through the compressor, and a standard low pressure alarm switch, factory set for 1 psig (.07 kg/sq. cm) offers SPST contacts for remote monitoring.

The High Pressure Safety Relief Valve protects transmission line components in case of excessive pressure buildup. The valve is set at 10 psig (0.7 kg/sq. cm); leak rate will keep up with the capacity of the compressor (1.0 SCFM). With the safety relief valve in operation maximum pressure is limited to 10 psig (0.9 kg/sq. cm).

A Bleedoff Orifice is located in the input connector fitting to the manifold block and should not be interpreted as an air leak. The purpose of the bleedoff is to (1) bleed pressure from the canister so it is not under pressure when shut off, thereby allowing safe removal when it is necessary to restore desiccant, and to (2) remove pressure from the head of the pump so it is not under load when the motor-compressor is turned on.

Dry desiccant is blue color, when the desiccant becomes moisture saturated it turns pink and requires replacement or regeneration. Regeneration can be accomplished by heating the desiccant in an oven at 350°F (180°C) for four (4) hours, or until it is dry as indicated by change to a blue color.

SPD-10 DEHYDRATOR CAPACITY RATINGS

Transmission Line	Approx. Length	
	feet	(meters)
7/8"	30,000	(9,000)
1 1/8"	8,000	(2,400)
3 1/8"	2,400	(700)
6 1/8"	400	(120)
6 to 12 GHz waveguide	6,000	(1,800)
4 to 5 GHz waveguide	2,000	(600)

Typical service time of desiccant is approximately six months. This is based on dry air makeup of 1 cu. ft. (0.028 cu. m) per day under 50% R.H. at 65°F (18.3°C).

CHARACTERISTICS

Power Source SPD-10 P/N 933629	115 V 60 Hz
Power Consumption	250 watts
Output Rating	1.0 scfm (0.47 liters/sec) Below -35°F (-37°C) Dew Point @ 90°F (32.2°C) 90% R.H. input
Ambient Temperature	-20° to 120° F (-28.9° to 48.9°C)
Output Pressure	
—Factory Set	3-8 psig (0.21-0.56 kg/sq. cm)
—Field Adjustable	2-15 psig (0.14-1.05 kg/sq. cm)
High Pressure Safety Relief Valve	Factory Set 10 psig (0.7 kg/sq. cm)
Standard Low Pressure Alarm	Factory Set 1 psig (.07 kg/sq. cm)
Low Pressure Alarm Contacts	SPST 24 volts 4 amps dc
Output Connection	3/8 inch (9mm) plastic tube fitting
Dimensions, H x W x D	
Inches	13 x 9 x 11
(mm)	(330 x 229 x 280)
Net Weight, Lbs. (kg)	21 (9.5)
Shipping Weight, Lbs. (kg)	28 (12.7)
Standard Items Supplied	15 ft. (4.6 m) 3/8" plastic tubing 1/8 inch mpt fitting.

OPTIONAL ACCESSORIES

Part No. 920184	High Pressure Alarm Set at 10 psig (0.7 kg/sq. cm)
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NOTE: Due to the limited service time of desiccant, the SPD-10 is not recommended for purging. If used for purging it may be necessary to run the desiccant through several regeneration cycles, depending on moisture content of air, before putting unit into service.

SCED Series Computer Assisted Video Editing Systems

• SCED MK-II offers direct control of a mix of up to 6 Ampex and Sony protocol machines as standard • SCED is compatible with Calaway Engineering Translators and Sony BVH-2000, BVU-800/820, and BVW-10/40 machines • CED series offers standard RS-422 direct switcher control of popular audio and video switchers

Features Common to All Models

• NTSC (PAL available) • Compatible with CMX and GVG • Optional 8" disc • Numeric keypad with double zero • Motion controller: Variable speed, Frame advance, Mark in/out keys • Extended motion controller keyboard • Preview Switcher: Audio/Video Previews, Sync Generator NTSC w/Genlock, Black Burst Generator NTSC, GPI Pulse • Video and Audio Switcher Control: Cross Point Selection w/Aux and Black, Transition Setup, Transition Execution • Exit to MS-DOS w/out reboot • OutEdit preview • Open end key (shift Set-Dur) • Save/recall marks flip-flop (current marks are saved when last saved marks are recalled) • Klean and Keen • Frame Accurate • Color framed • Preview Field Select • Full Range Synchronizer • Save Editor Setup to disc • Save A/V switcher assignments • Save macro set • Save GPI labels/mode • Error/Help Messages • Automatic Assembly—Sequential and Checkerboard • Sync Roll • Previews: VVV, VBVB, VBVB • Replay • Edit Types: Video, Audio 1, Audio 2 • Transitions: Cuts, Wipes, Dissolves • Split Edits • Trim Times • Set Times • Move Times • Constants: 8 • Master Slave • Saved to list • Looping and Branching • English Display of Macros • Transport Controls: FFW, FREV, Play, Stop, Slow Cue, Cue to In-point, 2X Play Very Slow, and More • Mark Keys • List Functions: Compatible with CMX, GVG/ISC, Conversion between Formats, Notes, Insert Edits/Notes, Delete Edits/Notes, Replace Edits/Notes, Shift Times, Renumber, Move, Ripple, Load EDL from Disc, Save EDL to Disc, Save EDL to Printer, Multiple Lists on Each 5 1/4" Disc, Seek for Event by Event Number, Seek Event by Record in Time, Scroll List Up/Down by Page, Jump to Head/End of List • List Sort: Event Number, Modified Record In, As Stored, Change Mode at Any Time

All Models Include:

• Motion controller • Power cord • Installation manual • Operation manual • Software: edit program and diagnostics • Edit support card • upPV preview switcher

CED upPV Preview Switcher: Provides preview switching and synchronizing signals for the basic editing system (Composite sync and black burst). It also provides an output pulse at the start of a transition which can be used to trigger an external device.

SCED + MK-II Six VTR Editor

• 6 VTRs standard • Fast 80286 computer • GPI w/V-EFX and Slo-Mo • All software options • Mixed Sony/Ampex Control • Powerful macros • Multiple record • Display recalled • Master/slave link marks displayed • Display recalled event number • Preview switcher pre-select software for record machine assignment • 24 macro keys (12 single key and same 12 shifted for 13-24) including all macro features: macro counter, macro delay, macro pause, and macro edit • Eight VTR ports connected with any six assigned and synchronized simultaneously • Multiple record • Super user mode • Keyboard active in preview for going directly to record or for marks during preview

Includes

• Rackmount electronics chassis with: 80286 processor with serial and parallel printer ports • GPI card • Two 4-channel serial cards • Floppy disc interface • Monochrome display adaptor • Single 5 1/4" drive • Desktop green screen monitor • Extended color-coded keyboard • MS-DOS

SCED + MK-II Editor for Serial VTR Control \$22,495.00



SCED Series

SCED + Six VTR Editor

• 6 VTRs standard • A/B mix standard • User supplied computer • Variety of switchers/mixers • Optional control of Ampex VTRs • Display recalled event number • Master/slave link marks displayed

Includes

• Two 4-channel serial cards • Extended color coded keyboard

SCED + Six VTR Editor \$12,995.00

SCED + Six VTR Editor with MK-I Computer 13,995.00

SCED+ requires either the Calaway Engineering MK-I computer or the Compaq Deskpro I, II or 20. The computer must have one 360K floppy disc drive, 640K of memory MS-DOS or compatible operating system version 3.0 or later. SCED+ requires 3 free slots in the computer.

SCED Four VTR Editor

• 4 VTRs standard • User supplied computer • A/B mix standard • Powerful off-line system • Variety of switchers/mixers

Includes:

• 4-channel serial card • Color coded keyboard

SCED Four VTR Editor \$9,995.00

SCED Four VTR Editor with MK-I computer 9,995.00

SCED requires either the Calaway Engineering MK-I computer, the IBM PC/XT, or the Compaq Deskpro I, II or 20. The computer must have one 360K floppy disc drive, 512K of memory MS-DOS or compatible operating system version 3.0 or later. SCED requires 2 free slots in the computer.

CALAWAY ENGINEERING

Editing Accessories

SCED + MK-II SIX VTR EDITOR ACCESSORIES**B" Disc Option**

MK-II Disc Includes: rackmounted 8" drive, 50 pin interconnect cable, power cable, format program **\$2,495.00**

Floppy and Hard Disc Options

CE-525 5 1/4" floppy disc* **\$295.00**
CE-350 3 1/2" floppy disc drive* **295.00**
CE-20M 20M byte hard disc drive. **995.00**

*Room for only one extra floppy drive in the MK-II. This may be either the 5 1/4" or the 3 1/2" drive.

AX-KBD Extended motion controller (replaces standard motion controller) when ordered with new system . . \$ **995.00**
 When ordered for field retrofit **2495.00**

Software option preview pre-selector control **\$500.00**
 Requires 646-10X or similar switcher

RGB-Preview Switcher

RGB-PVW Includes: upPV-RGB preview switcher (video only, three 3 x 1 channels), power cord, 6' interconnect cable **\$2,795.00**

Interconnect Cables

RS-422 SCED to VTR, 25' **\$120.00**
SWCH SCED to Switcher/Mixer, 25' ** **300.00**
MK-II-CG MK-II to Character Generator, 25' **120.00**
MCXTR Motion Control extension, 50' **150.00**
KDXTR Keyboard/display extension, 50' **350.00**

**The SWCH switcher control cable includes 3 cables: 1 for the preview switcher and 1 each for the audio and video switchers.

Special Length Cables:

RS-422X \$100.00 plus \$1.00 per foot, max. 150'
SWCHX \$250.00 plus \$3.00 per foot, max. 150'
MK-II-CGX \$130.00 plus \$1.00 per foot, max. 150'

Allow extra time when ordering for fabrication of non-standard length cables.

Audio Connector Kit

ACONN 8 connectors for preview switcher **\$50.00**

SCED + SIX VTR ACCESSORIES**Hardware Option**

GPI+ General Purpose Interface. Includes: software upgrade, connector, diagnostic software **\$1,995.00**

Note: GPI+ requires one free slot in computer.

Software Options

Mixed Mixed control of Sony/Ampex allows control of Ampex VPR-3, VPR-6, VPR-80 and Abekas A-62 **\$1,995.00**
Film Film entry mode **495.00**
SCED-CG Character generator control, specify Quanta Q8 or QCG-500 **2,495.00**

SCED FOUR VTR AND SCED + SIX VTR EDITOR ACCESSORIES**Hardware Options**

GPI General Purpose Interface. Includes: Software upgrade, connector, GPI card **\$1,495.00**

Note: GPI requires one free slot in computer.

SCED-Disk 8" Disc Option. Includes: 8" rackmounted disc drive, formatting software, power cord, 50 pin interconnect cable, replacement disc controller. **\$3,175.00**

Note: When used with the Compaq Deskpro, you will loose the parallel printer port supplied with the Deskpro.

AX-KBD Extended motion controller (replaces standard motion controller) when ordered with new system . . \$ **995.00**
 when ordered for field retrofit **2,495.00**

CE-MXP29 Interface for controlling the Sony MXP-29 mixer (for use only with the Calaway Engineering Editors) . . **2,250.00**

Includes: Interconnect cable, manual, power cord

upST Series Translators

000 Cabinet. Includes: Cabinet, power cord, power supply, sync separator **\$2,300.00**
210 Sony VO-5850. Includes: Framing kit. **1,550.00**

Note: The upST series translators are used to translate the commands required by the particular machine (serial or parallel) into an RS-422 format compatible with the SCED direct control format. Machines equipped with the upST translators may be intermixed with a Sony machine on a system. There is room in each cabinet for up to four translator cards.

Each upST includes the control cable and an internal play speed time code reader.

SCED-MK-I Computer Includes: Fast 8088 processor card with 640K memory, RS-232 interface card, parallel printer port, floppy disc controller card, case, desktop amber screen monitor, power cord, monochrome display adaptor, software: MS-DOS **\$2,595.00**

SCED-MK-1 rackmounting kit. **495.00**

Floppy and Hard Disc Options for MK-I Computer

CE-525 5 1/4" floppy disc* **\$295.00**
CE-350 3 1/2" floppy disc drive* **295.00**
CE-20M 20M byte hard disc drive. **995.00**

*Room for only one extra floppy drive in the MK-I. This may be either the 5 1/4" or the 3 1/2" drive.

RGB-Preview Switcher

RGB-PVW Includes: upPV-RGB preview switcher (video only, three 3 x 1 channels), Power cord, 6' interconnect cable **\$2,750.00**

Interconnect Cables

RS-422 SCED to VTR, 25' **\$120.00**
SWCH SCED to Switcher/Mixer, 25' ** **300.00**
MK-II-CG MK-II to Character Generator, 25' **120.00**
MCXTR Motion Control extension, 50' **150.00**
KDXTR Keyboard/Display extension, 50' **350.00**

**The SWCH switcher control cable includes 3 cables, 1 for the preview switcher and 1 each for the audio and video switchers.

Special Length Cables:

RS-422X \$100.00 plus \$1.00 per foot, max. 150'
SWCHX \$250.00 plus \$3.00 per foot, max. 150'
MK-II-CGX \$130.00 plus \$1.00 per foot, max. 150'

Allow extra time when ordering for fabrication of non-standard length cables.

Audio Connector Kit

ACONN 8 connectors for preview switcher **\$50.00**

CALAWAY EDITOR ACCESSORIES**Edit List Processing Software**

KLEAN Edit list cleaning package **\$750.00**
KEEN Edit list tracing software* **750.00**

Note: KLEAN and KEEN will operate on any IBM compatible computer.

Time Code Equipment

TCPC Time Code Phase Indicator. Includes: TCPC phase indicator, power supply with cord, instruction manual. **\$695.00**

SCED UPDATES AND UPGRADES**SCED Software Update Option**

SCED **\$375.00**
SCED + **500.00**
SCED + MK-II **675.00**

Note: The first update released after purchase of a Calaway Editor will be provided to the user at no charge.

To receive subsequent software updates, the user must purchase the software update option. With this option, they will receive all software updates for one year. (There will be at least one update released each year.) If the user skips one or more years, the cost of the update will be the total of the years missed plus the current year.

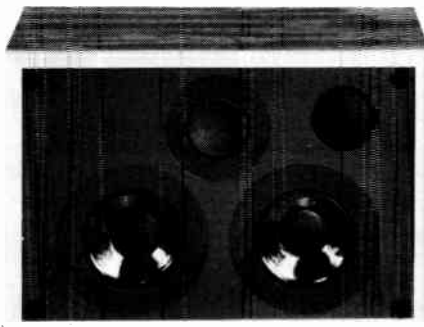
SCED Upgrades

SCED to SCED + **\$ 4,600.00**
SCED to SCED + MK-II **15,500.00**
SCED + to SCED + MK-II **11,000.00**
GPI to GPI + **575.00**

Note: The upgrade includes any necessary hardware and software to upgrade the user's current system to the desired system.

CALIBRATION STANDARD INSTRUMENTS

Monitors



MDM-4 Mix Down Monitor for Nearfield Monitoring

The MDM-4 is a loudspeaker designed specifically as a Nearfield Monitor. The acoustic output of the MDM-4 is blended to produce a uniform plane wave radiation within .5m from the center of its baffle and has a time offset of less than 100 μ s from 200Hz to 16kHz.

The MDM-4 can be used in close, allowing outstanding loudspeaker and headphone monitoring. "Acoustical Noise" caused by the room boundary reflections is eliminated, as with headphones, but the ability to move across the listening field between the loudspeakers to check for phasing, comb filter effects, and panning accuracy is retained.

MDM-4pr./\$990.00

SPECIFICATIONS

FREQUENCY RESPONSE	\pm 3dB 60Hz to 17kHz (4 π Steradians)
MATCHED PAIR RESPONSE	\pm 5dB
TIME OFFSET	Less than 100 microseconds 200Hz to 16kHz
SENSITIVITY	81dB SPL/Volt/Meter
POWER REQUIRED	1 Watt for 89dB at 1 Meter
POWER RECOMMENDED	100 Watts per channel minimum
POWER HANDLING	40 Watts continuous (below 1kHz) 160 Watts instantaneous (above 1kHz) 15 Watts continuous (below 1kHz) 60 Watts instantaneous (above 1kHz)
DISTORTION	Less than 5% THD or IM, 60 Hz to 20kHz. Less than 1% THD or IM, 100 Hz to 20kHz (94dB SPL at 1 Meter)
IMPEDANCE	8 Ohms nominal, 5 Ohms Minimum
SYSTEM TYPE	Dual Woofer, Ported with Velocity Control High Pass Filter
CROSSOVER	Equalizer/Filter Type at 1500kHz
DRIVERS	Two CSI BD-8/102 Bass, 160mm One CSI TD7/38 Mid-High, 70mm
ENCLOSURE VOLUME	27 Liters (.95 cubic feet)
ENCLOSURE DIMENSIONS	483mm x 310mm x 248mm 19" x 13" x 9 3/4"
FINISH	Rosewood Laminate, Aluminum Trim, Brown Grill
SYSTEM WEIGHT	11.4 kgm Net, 12.7 kgm Shipping 25 lbs Net, 28 lbs Shipping



MDM-TA3 Time-Align[®] Monitor

The MDM-TA3 will allow you to hear the effects of limiters, compressors, noise reduction systems, digital recorders, splices, dropouts, and many other things to a degree that you have never before experienced. You will also hear more detail, at a distance, in poor acoustic environments. This means that you will be able to exercise more control over your recordings than you have been able to in the past.

Special switches are provided which allow different settings to be used for monitoring original recording and broadcast material from those used for monitoring final product. The MDM-TA3 is designed to be used against or flushed into a wall and so the 3 fuses for the bass, midrange and treble drivers are also mounted on the front plate.

MDM-TA3pr./\$ 1390.00

SPECIFICATIONS

FREQUENCY RESPONSE	\pm 3dB 45Hz to 20kHz (2 π Steradians)
MATCHED PAIR RESPONSE	\pm 5dB
TIME-OFFSET	\pm 15 microseconds 200Hz to 16kHz
SENSITIVITY	82dB SPL/Volt/Meter
POWER REQUIRED	1 Watt for 91dB at 1 Meter
POWER RECOMMENDED	100 Watts per channel minimum
POWER HANDLING	40 Watts continuous (below 1kHz) 160 Watts instantaneous (above 1kHz) 15 Watts continuous (below 1kHz) 60 Watts instantaneous (above 1kHz)
DISTORTION	Less than 3% THD or IM, 60Hz to 20kHz. Less than 1% THD or IM, 100Hz to 20kHz (94dB SPL at 1 Meter)
IMPEDANCE	8 Ohms nominal, 5 Ohms minimum
SYSTEM TYPE	TIME-ALIGN [®] Three-way, Dual Woofer, Ported (32Hz tuning)
CROSSOVER	TIME-ALIGN [®] Equalizer/Filter 1.8kHz, and 7kHz. Bass to port at 68Hz
DRIVERS	Two CSI BD16/102A Bass, 160mm One CSI MD7/38 Midrange, 70mm One CSI TD2/3 Treble, 19mm
ENCLOSURE VOLUME	37 Liters (1.3 Cubic Feet)
ENCLOSURE DIMENSIONS	483mm x 406mm x 298mm 19" x 16" x 11 3/4"
FINISH	Rosewood laminate on all surfaces
SYSTEM WEIGHT	16 kgm Net, 19 kgm Shipping 35 lbs Net, 42 lbs Shipping



MDM-TA2 Time-Align Monitor

The MDM-TA2 is a Time-Align monitor designed to be used as a Nearfield Monitor as well as a distant monitor. Because it is a Time-Align design, the MDM-TA2 allows you to hear and correct the bad effects of limiters, compressors, noise reduction systems, digital recorders, splices, dropouts, etc. to a degree never before possible. The MDM-TA2 may be used at 1m or less thus overcoming "acoustical noise" caused by room boundaries. Because Time-Align causes the direct sound to be presented as a tight, coherent package of acoustical energy, you will also hear more detail, at a distance, in poor acoustic environments.

MDM-TA2pr./\$ 1090.00

SPECIFICATIONS

FREQUENCY RESPONSE	\pm 3dB 60Hz to 20kHz (4 π Steradians)
MATCHED PAIR RESPONSE	\pm 5dB
TIME-OFFSET	\pm 25 microseconds 200 Hz to 16kHz
SENSITIVITY	78dB SPL/Volt/Meter
POWER REQUIRED	1 Watt for 87dB at 1 Meter
POWER RECOMMENDED	100 Watts per channel minimum
POWER HANDLING	40 Watts continuous (below 1kHz) 160 Watts instantaneous (below 1kHz) 15 Watts continuous (above 1kHz) 60 Watts instantaneous (above 1kHz)
DISTORTION	Less than 3% THD or IM, 60Hz to 20kHz. Less than 1% THD or IM, 100Hz to 20kHz (94dB SPL at 1 Meter)
IMPEDANCE	8 Ohms nominal, 4 Ohms minimum
SYSTEM TYPE	TIME-ALIGN [®] Two-way, Ported (50Hz tuning)
CROSSOVER	TIME-ALIGN [®] Equalizer/Filter 2.5kHz. Bass to port at 78Hz
DRIVERS	One CSI BD16/102 Bass, 160mm One CSI TD2/3A Treble, 19mm
ENCLOSURE VOLUME	16 Liters (.56 Cubic Feet)
ENCLOSURE DIMENSIONS	406mm x 299mm x 235mm 16" x 11 3/4" x 9 1/4"
FINISH	Rosewood & Black laminate and aluminum trim
SYSTEM WEIGHT	9.1 kgm/unit, 21.8 kgm/pair Shipping 20 lbs/unit, 48 lbs/pair Shipping

[®]Time-Align and ^{*}Nearfield Monitor are Trademarks of E.M. LONG ASSOCIATES



The Calrec UA8000 – Music Studio Console

- 48 or 64 channel consoles, partially equipped if required
- 32 output groups for 24 or 32 track recording
- 2 stereo outputs with full dynamics and auxiliaries on each
- 48 buttons for separate or mixed sources to control room and studio monitor plus alternative and "mini" LS checks, allowing instant A–B comparisons
- VU and bargraph main metering from 18-way selectors with touch changed PPM or VU characteristics for the bargraphs and sensitivities with adequate headroom indication. Similar bargraph multi-track metering responds to all selections
- UA8000 zoned status control for instant desk modes; the Left tracking section (1-24 or 32) can be controlled entirely independently of the Right section (25 or 33 upwards). Local overrides can themselves be overridden for fast replays
- 9 VCA master faders control selected groups of large faders
- Full automation of output, group and monitor faders—large or small—and silent monitor mutes; separate automation grouping facility
- 4 echo plus 4 stereo cues from Left and Right sections make a total of 24 auxiliary bus; easily mixed if required
- Two 7-way stereo foldback mixers from all cues, stereo output, control room monitor and RTB, maintained at constant level irrespective of mix
- High performance microphone amplifiers with phantom power and line performance at high levels plus wide band second line inputs. Exceptional headroom level of 28dB in channels and in groups
- 4-band parametric EQ wide-range high and low filters
- Very comprehensive dual acting dynamics, sampling peak and average signals, provides an unequalled range of effects in every channel. Wide range expander/gate produces superb drum sounds
- Talkback, reverse talkback, alignment tones and confidence checks
- Unique 1.38" (35mm) modular construction for easy maintenance, spares and development changes
- Beautifully styled and elegant console ergonomics and furniture
- State-of-the-art technology based on 15 years of front line custom broadcast design is used throughout the UA8000 producing the customary clean sound
- Outstanding performance figures: well inside stringent broadcast specifications and easily matched to digital performance
- The design of the UA8000 involved respected recording engineers at all stages

UA8000 Console Performance Specification

MICROPHONE AMPLIFIER

Special Balanced Transformer in

Sensitivity Range:

-70/-30dBu

Input Impedance:

1200 ohms

Electronically Balanced in Sensitivity Range:

-25/+10dBu

Input Impedance:

10,000 ohms

Continuous Overall Sensitivity:

-70/+10dBu in 5dB steps

Trim:

±10dB

Headroom:

28dB at all settings to maximum input

Maximum Input:

24dBu

Equivalent Input Noise (EIN):

<-12B, 5dBu RMS, 20Hz-20kHz, 150 ohm source

Frequency Response:

+0/-0.3dB, 20Hz-20kHz -3dB at 13Hz and 30kHz and falling rapidly outside these limits due to fixed sub and supersonic filters

Total Harmonic Distortion:

	Setting	Output Level	50Hz	1kHz	10kHz
Transformer —	-30dBu	0dBu	0.06%	0.006%	0.009%
	-50dBu	+20dBu	0.022%	0.007%	0.008%
Electronic —	-20dBu	0dBu	0.008%	0.007%	0.008%
	0dBu	+20dBu	0.01%	0.007%	0.008%

Input Balance:

>-80dB at 1kHz and -65dB at 10kHz

LINE INPUT AMPLIFIER

Electronically Balanced

Input Impedance:

20,000 ohms

Sensitivity/Trim:

0dBu, ±10dB

Headroom:

28dB to maximum input

Maximum Input:

28dBu

Equivalent Input Noise:

<-90dBu RMS, 20Hz-20kHz 300 ohm source

Frequency Response:

+0/-0.1dB, 20Hz-20kHz

Total Harmonic Distortion:

	Setting	Output Level	50Hz	1kHz	10kHz
Transformer —	0dBu	0dBu	0.007%	0.007%	0.008%
	0dBu	20dBu	0.01%	0.007%	0.008%

Input Balance:

>-90dB at 1kHz, -75dB at 10kHz

EQUALIZER

Gain:

0dB at line-up

Headroom:

28dB

Noise (controls flat):

<-80dBu RMS, 20Hz-20kHz

Frequency Response at Line-up:

0/-0.5dB, 30Hz-16kHz
(falling at extremes due to filters nominally -3dB at 13Hz and 30kHz)

Total Harmonic Distortion:

	Setting	Output Level	50Hz	1kHz	10kHz
Transformer —	at all settings and	0dBu	0.008%	0.008%	0.009%
	+15dB levels	20dBu	0.008%	0.008%	0.009%

DYNAMICS

Headroom:

28dB

Noise:

<-81dB, RMS 20Hz-20kHz

Total Harmonic Distortion (Compressor/Limiter):

	Input	Output	50Hz	1kHz	10kHz
No gain reduction —	0dBu	0dBu	0.012%	0.013%	0.013%
No gain reduction —	+20dBu	+20dBu	0.05%	0.014%	0.01%
20dB gain reduction —	+20dBu	0dBu	0.05%	0.017%	0.06%

— Attack and recovery times do not affect measurements

LINE OUTPUT AMPLIFIERS

(Main Stereo, Multi Record, Auxiliary)

Transformer balanced using special transformer in unique low-distortion, low impedance, high level circuit, independent of load impedance.

Output Impedance:

22 ohms

Line-up Level:

+4dBu (0VU)

Maximum Level:

26dBm in 600 ohm (minimum)

Typical Noise Level:

<100dBu RMS, 20Hz-20kHz

Frequency Response:

+0/-0.25dB, 20Hz-20kHz

Total Harmonic Distortion:

	Setting	Output Level	50Hz	1kHz	10kHz
Transformer —	at +20dBm in 600 ohms	0dBu	0.02%	0.007%	0.007%

OTHER INPUTS/OUTPUTS

Monitor Inputs and Insert Returns:

Similar performances to line input amplifiers

Insert Send Outputs:

Electronically balanced

Output Impedance:

75 ohms

Normal Level:

0dBu

Maximum Level:

28dBu

Frequency Response:

+0/-0.25dB, 20Hz-20kHz

Total Harmonic Distortion:

<0.005% at 20dBm in 600 ohms, 30Hz-16kHz

COMPLETE SIGNAL PATHS

Record. Measured from microphone input at 30dB gain, via one channel VCA at line-up to one group output.

Frequency Response:

+0/-0.5dB, 20Hz-20kHz

Noise:

Typically -80dB below +4dBu output

Total Harmonic Distortion at +12dBu Output:

>0.04%, 20Hz-20kHz

Headroom (Typical Record Conditions):

+28dB

Group Bus Crosstalk:

-80dB

Interchannel Crosstalk:

<-90dB

All taken 100Hz-10kHz

Mixdown. Monitor input to Stereo output via Monitor and Output VCAs.

Frequency Response:

+0/-0.5dB, 20Hz-20kHz

Noise:

Typically -78dB below +4dBu output

Total Harmonic Distortion at +12dBu Output:

>0.025%, 20Hz-20kHz

Headroom (Typical Mixdown Conditions):

+28dB

Stereo Separation:

Worst path: -75dB taken 100Hz-10kHz

NOTE: 0dBu = 775mV

The policy of Calrec Audio LTD is one of continuous development. In accordance with this policy, Calrec Audio Ltd reserves the right to change these specifications without prior notice.

CALREC BY AMS

Mixer

Mini Mixer

For Professional Recording and Broadcasting

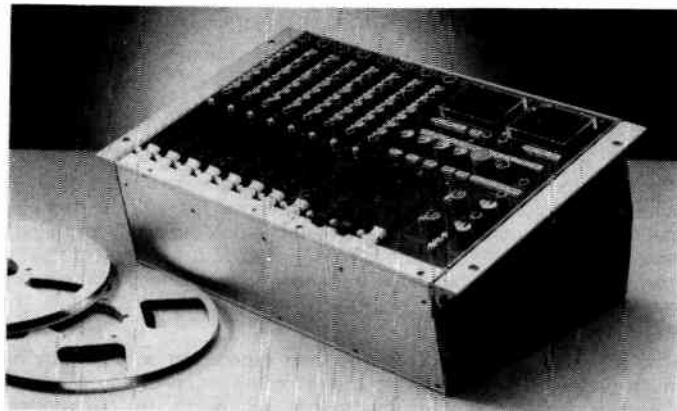
- Tabletop, drop-in, flight case or 19" rackmounted styles
- Up to 16 channels
- Optional 1 or 2 compressor/limiters with provision for stereo linking
- Optional channel, group and output insert system, pre or post faders
- Low power consumption from mains or batteries
- 2 Group or Stereo A and B faders with pre fade listen
- 4 auxiliary controls pre or post fader from each channel and 4 auxiliary output controls
- Mono master fader output with separate mix controls pre or post A and B fader
- Full throw conductive plastic faders with pre fade and after fade listen
- Wide range low noise input switching on each channel with optional phantom power
- Sophisticated 3-band equalizer, HF and LF filters on each channel
- Comprehensive stereo output monitor selection and control system
- Channel pan controls
- Stereo/mono high level playback or outside source inputs with pan and after fade listen
- Switched talkback from internal microphone to each auxiliary, main and external outputs
- Wide range alignment oscillator also used for tone to line
- Monitor headphones output
- Choice of peak program or VU metering
- 2 or more units may be connected in series with no loss of channels
- Full professional specification on all outputs

Frame Sizes:

The mini mixer design allows for up to 18 channel strips 30mm wide and 1 or 2 compressor/limiter strips also 30mm wide in 8, 12 or 18 "strip" frame sizes in the tabletop, drop-in and flight case styles and 8 "strip" only in the 19" rackmounted style. Compressor/limiters are usually fitted between channels and the output section. Blank panels are fitted to cover unused strip locations, working from the left.

Specifications

Inputs:	Microphone:	Balanced transformer	1.2K ohm
		Sensitivity:	-10/-70dB in 10dB steps
		Input Headroom:	30dB at all settings
Line:		Max. Input:	+8dBu
		Balanced Transformer:	10K ohm
		Sensitivity:	+20/-20dB in 10dB steps
Playback/Direct:		Max. Input:	+28dBu
	Insert:	Electronic Balanced:	20K ohm, 0dBu
		Electronic Balanced:	20K ohm, -6dBu
Outputs:	Main/Aux. (7):	Bal. Transformer:	0dBu for 600 ohms min.
	Secondary (2A, 2B, 2 Mono, 4 Aux.)	Balanced Transformer:	0dBu for 10K ohms min.
	Talk-back/Insert:	-bridged on above	
Monitor/Phones:		Balanced, C.T. Earthed:	0dBu/-6dBu for 600 ohms min.
		Unbalanced:	0dBu for 300 ohms min.
		Max. Outputs:	24dBm in 600 ohms
Dynamics:	Compressor:	ON Button:	
		Threshold, Variable:	-20/+6dBu
		Ratio, Variable:	1.5/1 to 100/1
		Recovery, Variable:	0.1/3 seconds
		Auto-Recovery Button:	Fast at first, slow later
		Attack Button:	Normal: 5m secs. Fast: 0.1m secs.
			Gain reduction indicator
			Bar Graph:
			On Button:
			Threshold, Variable:	0/+15dBu
Compressor/Limiter:		Peak Limit Lamp	
		Stereo Link Button	



Performance: Noise:	Microphone:	Better than -127dBu, 20Hz, 300 ohms
	Line:	Typically better than -80dBu, 20Hz-20kHz
Distortion:	at +12dBu:	Better than 0.05% 40Hz-16kHz
Frequency Response:	Any Circuit:	±0.5dB, 30Hz-15kHz, -3dB and falling 18Hz and 30kHz due to steep cut filters

Connections:

Channel and Playback Inputs:	XLR 3F (pin 2 hot)
Main/Aux./Monitor/Osc. Outputs:	XLR 3M (pin 2 hot)
Secondary Signal Outputs:	Varicon 38: for connection in fixed locations and recorder feeds Varicon 38: for connection to separate patch field
Inserts:	
Direct Inputs	
(Units in series):	Varicon 38: also includes optional remote connections
Mains Input:	IEC (3-pin) 240/120V*, 50/60Hz (switched change over)
Battery Input:	XLR 4M: ±12V (±10V min.); Pins: +3, -2, CT1
(or DC output when on mains):	+48V phantom power: Pin 4 (not required if low voltage mikes are used)
	*Specification holds down to 200VAC or ±10VDC below which performance is slightly compromised

General:

8-Strip Frame:	Dimensions:	485 (19")W x 220D x 311H (7U) (Add 30mm width for each additional strip)
(Equipped)	Weight (8-strip):	Approx. 12kg

Mixers:

8 Channel	.....	\$10,450.00
10 Channel Plus 2 Dynamics Modules	.....	13,120.00
12 Channel	.....	13,340.00
16 Channel	.....	16,020.00
16 Channel with 2 Dynamics	.....	16,980.00

Modules:

Channel Modules	.....	590.00
Dynamic Modules (Compressor/Limiters)	.....	480.00

There are 3 frame sizes: 8, 12, and 18 channel.

There are 4 styles: 19" rackmount (8 ch. only)

- Tabletop
- Drop-In
- Flight Case (Additional \$190.00)

The total number of channels possible (minus Dynamics) is 16.

Intermediate packages to those above are available and can be priced by subtracting the cost of the appropriate modules from the next package/frame size up the scale.

CM4050 SOUNDFIELD MICROPHONE

The need for perfectly natural reproduction of all types of sound in all environments makes the condenser microphone the obvious choice for broadcast, film and recording studios, where the highest fidelity is essential. Our range of condenser microphones has been evolved and perfected over the last 20 years to meet this requirement.

Construction throughout is of brass and stainless steel and all screwed parts use a large profile cross-resistant thread. The capsules have a light, aluminum coated, polyester diaphragm producing a very smooth, virtually flat frequency response and an excellent transient response. This combination produces high quality microphones which are immune to heat, damp, mechanical shocks and are extremely reliable.

The CM4050 Soundfield Microphone represents a departure in microphone technology giving the recording engineer and producer freedom and flexibility of microphone technique. Its outstanding characteristic is that it enables the effective polar pattern of the microphone, as well as its direction of pointing both in pan and tilt, to be adjusted not only remotely at a live recording session but also by post session processing of master tape.

General Accessories

- CW 870** Polyurethane foam microphone windshield
- CA 110** 3-pin Cannon XLR microphone plug
- MC 2** Quick release half lap Microphone Clip
- MC 4** Standard Microphone Clip
- MC 6** Spring loaded quick release Microphone Clip
- CS 1** 15" Swan neck 3-pin XLR/3-pin XLR, 2 meters cable

Microphone Connecting Leads

- CL 1060** 3-pin XLR/OPEN END 2 meter Balanced microphone lead
- CL 1061** 3-pin XLR/3-pin XLR 2 meter Balanced microphone lead
- CL 1064** 3-pin XLR/3-pin XLR 10 meter Balanced microphone lead
- CL 1081** 3-pin XLR/OPEN END 2 meter Balanced microphone lead with built-in 15dB attenuator for matching down to 30 ohms

Power Supplies

CP 1022
Free standing mains powered unit 200/250V or 100/120VAC only providing 48V phantom power for 2 microphones on XLR connectors suitable for 1000, 2000 and 2100 series.

Bulk Phantom Power Supplies and Power Injection Boards available to special order. Please enquire for details.

CP 2111
Small in line 9V PP3 battery operated supply unit suitable for 2100 series only. Approximately 400 hours use.

Microphone Stand Thread Adaptors

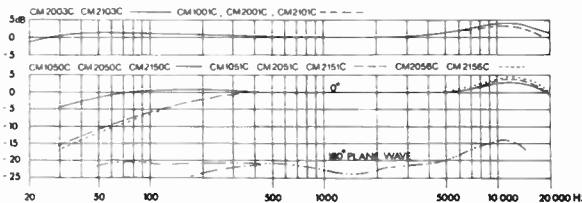
- STA 3** Stand Adaptor 5/16" Whit. Internal 5/8" 26 TPI External with Flange
- STA 4** Stand Adaptor 3/8" Whit. or 26 TPI Internal 5/8" 26 TPI External
- STA 5** Stand Adaptor 5/8" 26 TPI Internal 3/8" Whit. External
- STA 6** Stand Adaptor 3/8" Whit. Internal 1/2" 26 TPI External
- STA 7** Stand Adaptor 1/2" 26 TPI Internal 3/8" Whit. External
- STA 8** Stand Adaptor 5/16" Whit. Internal 1/2" 26 TPI External with Flange
- STA 9** Stand Adaptor 3/8" Whit. Internal 1/2" Whit. External
- STA 10** Stand Adaptor 5/16" Whit. Internal 1/2" 26 TPI External

- STA 11** Stand Adaptor 1/2" 26 TPI Internal 5/16" 22 TPI BSF External
- STA 12** Stand Adaptor 5/8" 27 TPI Internal 5/16" 22 TPI BSF External
- STA 13** Stand Adaptor 5/16" BSF Internal 1/2" 26 TPI External
- STA 14** Stand Adaptor 5/16" BSF Internal 5/8" 27 TPI External
- STA 15** Stand Adaptor 5/16" BSF or 1/2" 26 TPI Internal 5/8" 27 TPI External
- STA 16** Stand Adaptor 1/2" 26 TPI or 3/8" Whit. Internal 5/8" 27 TPI External

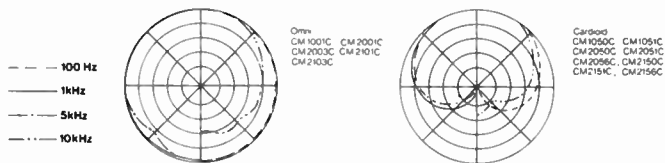


STA-16

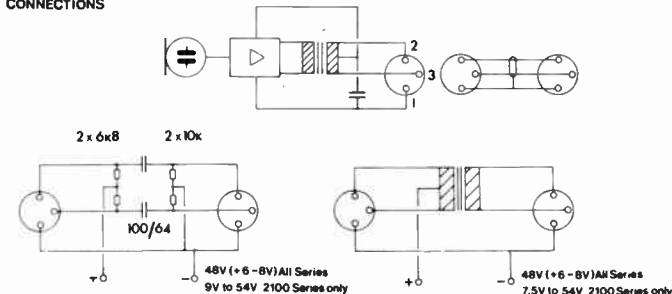
TYPICAL FREQUENCY RESPONSE CURVES (All stated curves ±2dB)



TYPICAL POLAR PATTERNS



CONNECTIONS



CALREC BY AMS

Microphones/Accessories

SERIES 1000/2000/2100 MICROPHONES

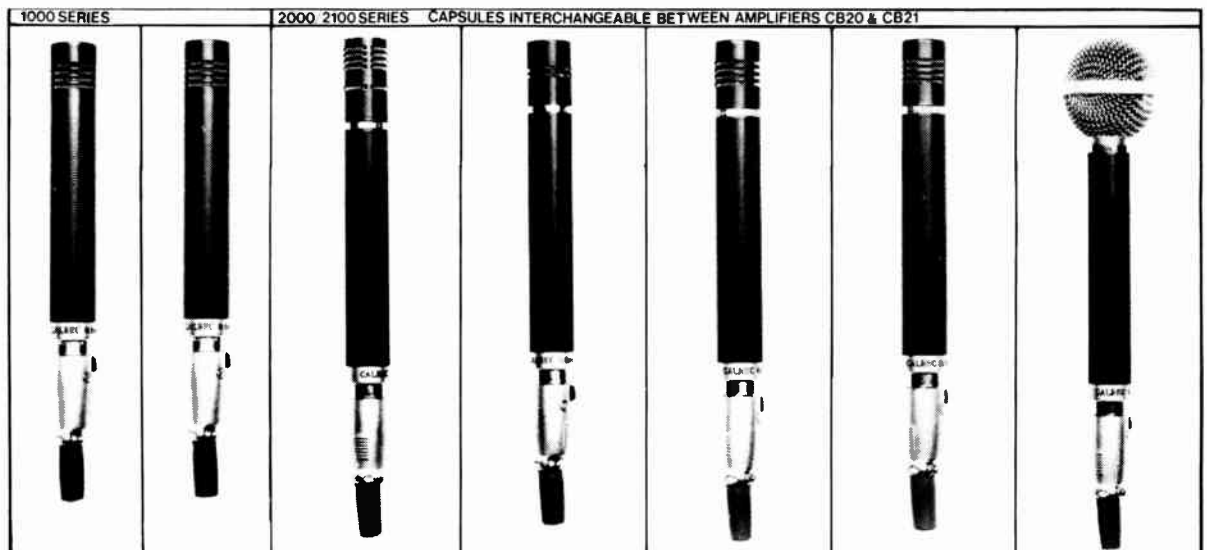
- 1000 Series microphones are phantom powered at 48V 0.5mA and have fixed capsules.
- 2000 Series microphones are phantom powered at 48V 0.5mA and have detachable capsules.
- 2100 Series microphones are phantom powered from 7.5V to 50V 0.5mA and have detachable capsules.

To identify a microphone, the first two digits indicate the series, the second two the directional characteristic.

Examples

- Fixed capsule type
CM 1050C—1000 Series Cardioid
- Detachable capsule types
CM 2051C—2000 Series Cardioid
Comprising Amplifier CB20C; Capsule CC51
- CM 2150C—2100 Series Cardioid
Comprising Amplifier CB21C; Capsule CC50

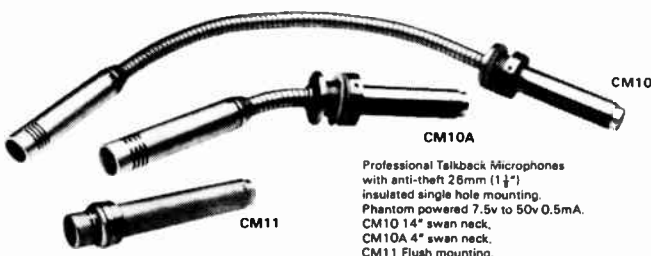
All microphones operate on conventional balance line cables and produce a positive going output for an increase in sound pressure on pin 2 of a standard 3 pin XLR plug.



SPECIFICATIONS

COMPLETE UNIT REF NO.	CM 1050C	CM1051C	CM 2001C	CM 2101C	CM 2003C	CM 2103C	CM 2050C	CM 2150C	CM 2051C	CM 2151C	CM 2056C	CM2156C
Directional Characteristics	CARDIOID ○	BASS ROLL OFF CARDIOID ○	HAND HELD DIVERSE ○	○	OMNI ○	○	CARDIOID ○	○	BASS ROLL OFF CARDIOID ○	○	WINDSCREEN/FOAM BASKET DIVERSE ○	○
Frequency Range	30-20 000 Hz	40-20 000 Hz	20-20 000 Hz	20-20 000 Hz	20-20 000 Hz	20-20 000 Hz	30-20 000 Hz	30-20 000 Hz	40-20 000 Hz	40-20 000 Hz	40-20 000 Hz	40-20 000 Hz
Front to Back Resp. Diff	approx 20 dB	approx 20 dB	-	-	-	-	approx 20dB	approx 20dB	approx 20dB	-	approx 20dB	approx 20dB
Sensitivity at 1kHz in 1000 ohms	0.8 mV/Microbar	0.8 mV/Microbar	0.8mV/Microbar	0.8mV/Microbar	0.8mV/Microbar	0.8mV/Microbar	0.8mV/Microbar	0.8mV/Microbar	0.8mV/Microbar	0.8mV/Microbar	0.8mV/Microbar	0.8mV/Microbar
EIA rating Gm	-133 dBm	-133 dBm	-133dBm	-135dBm	-133dBm	-135dBm	-133dBm	-135dBm	-133dBm	-135dBm	-133dBm	-135dBm
Recommended Load impedance	500 ohms	500 ohms	500 ohms	1000 ohms	500 ohms	1000 ohms	500 ohms	1000 ohms	500 ohms	1000 ohms	500 ohms	1000 ohms
Source Impedance	200 ohms	200 ohms	200 ohms	200 ohms	200 ohms	200 ohms	200 ohms	200 ohms	200 ohms	200 ohms	200 ohms	200 ohms
Equivalent self noise IEC 179	approx 17 dB-A	approx 17 dB-A	approx 17 dB-A	approx 17 dB-A	approx 17 dB-A	approx 17 dB-A	approx 17 dB-A	approx 17 dB-A	approx 17 dB-A	approx 17 dB-A	approx 17 dB-A	approx 17 dB-A
Equivalent self noise DIN 45 405	approx 24 dB	approx 24dB	approx 24dB	approx 24dB	approx 24dB	approx 24dB	approx 24dB	approx 24dB	approx 24dB	approx 24dB	approx 24dB	approx 24dB
S/N Ratio (A Weighted) re 1 Pa	76dB	76dB	76dB	76dB	76dB	76dB	76dB	76dB	76dB	76dB	76dB	76dB
Max SPL for less than 0.5%THD	130 dB	130dB	130dB	128dB	130dB	128dB	130dB	128dB	130dB	128dB	130dB	128dB
Max Level : approx.	134dB	134dB	134dB	130dB	134dB	130dB	134dB	130dB	134dB	130dB	134dB	130dB
Power: Voltage	48 (+6-8)V DC	48 (+6-8)V DC	48 (+6-8)V DC	48 (+6-8)V DC	48(+6-8)V DC	7.5-54V DC	48(+6-8)V DC	7.5-54V DC	48(+6-8)V DC	7.5-54V DC	48(+6-8)V DC	7.5-54V DC
Current	0.5mA	0.5mA	0.5mA	0.5mA	0.5mA	0.5mA	0.5mA	0.5mA	0.5mA	0.5mA	0.5mA	0.5mA
Dimensions Length	140 mm (5½")	140mm (5½")	188mm (6¾")	188mm (6¾")	158 mm (8¼")	158 mm (8¼")	158 mm (8¼")	158 mm (8¼")	158 mm (8¼")	158 mm (8¼")	184 mm (7¼")	184 mm (7¼")
Diameter	22mm (7/8")	22mm (7/8")	22mm (7/8")	22mm (7/8")	22mm (7/8")	22mm (7/8")	22mm (7/8")	22mm (7/8")	22 mm (7/8")	22 mm (7/8")	48/22mm (1½"/7/8")	48/22mm (1½"/7/8")
Weight approx.	113 gms (4 oz)	113 gms (4 oz)	120 gms (4.2oz)	120 gms (4.2oz)	120 gms (4.2oz)	120 gms (4.2oz)	120 gms (4.2oz)	120 gms (4.2oz)	120 gms (4.2oz)	120 gms (4.2oz)	130 gms (4.5oz)	130 gms (4.5oz)
Power Systems	Studio phantom power or CPT022 Power unit				Studio phantom power CP1022 Power Unit or CP2111 Battery Power Unit for 2100 Series only							

ACCESSORIES:

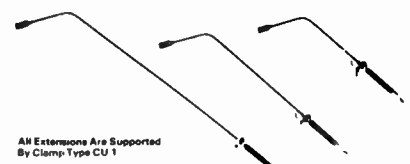


For detachable capsule microphones only



Capsule Extensions

- CE 500 500 mm. CC capsule extension
- CE 700 700 mm. CC capsule extension
- CE 1000 1000 mm. CC capsule extension
- CU 1 Extension Tube clamp



CAMBRIDGE PRODUCTS CORP.

Coaxial Connectors

BNC, N, and TNC Fastfit® Coaxial Connectors



CP 88



CPFI UG88



CP 89



CPFI UG89



CPFI TNC



CP TNC



CPM TNC



CPMC TNC

BNC Plugs

Fastfit/Crimp-On-CP 88

Two piece connector construction, with crimpless, solderless captive center contact and crimped outer braid.

Fastfit/Twist-On-CPFI UG88

One piece connector construction, with both crimpless and solderless center conductor/ braid connections. Requires no tools.



N-Type

N-Type Crimp Style Plugs

N-Type Crimp Style

Quick crimp, low-cost 50 ohm impedance all brass construction.

BNC Jacks

CP 89 Fastfit Crimp-On

Jack cord connector. Two piece connector construction with crimpless, solderless captive center contact and crimped outer braid.

CPFI UG89 Fastfit Twist-On

Jack cord connector. One piece connector construction with both crimpless and solderless center conductor/braid connections. Requires no tools.

TNC Plugs

Fastfit/Twist-On-CPFI TNC

One piece connector construction, with both crimpless and solderless center conductor/ braid connections. Requires no tools.

Fastfit/Crimp-On-CP TNC

Two piece connector construction, with crimpless, solderless captive center contact and crimped outer braid.

Mini-Coax/Crimp-On-CPM TNC

Crimped center contact and outer braid. Designed for miniature coaxial cables.

COMM-MIL Crimp-On-CPMC TNC

Cost effective version of the crimp type (category "C") MIL-C-39012/16 series of plugs.

Electrical Characteristics

Working Voltage: 500VRMS at sea level
Contact Resistance Outer Contact: 2m ohms

Center Contact: 1.5m ohms
Insulation Resistance: 5000M ohms minimum
Dielectric Withstanding Voltage: 1500VRMS at sea level

RG/U CABLE SIZE	FASTFIT® TWIST-ON CPFI UG88	FASTFIT TWIST-ON CPFI TNC	FASTFIT TWIST-ON CPFI UG89	FASTFIT CRIMP CP 88	FASTFIT CRIMP CP 89	FASTFIT CRIMP CP TNC	MINI CRIMP CPM 88	MINI CRIMP CPM TNC	COMM/MIL CRIMP CPMC 88	COMM/MIL CRIMP CPMC TNC	N-TYPE CRIMP
MATV 6/U	CPFI UG88-5	CPFI TNC-5	CPFI UG89-5								
55									CPMC 88-55	CPMC TNC-55	
58	CPFI UG88-1	CPFI TNC-1	CPFI UG89-1	CP 88-1	CP 89-1	CP TNC-1			CPMC 88-58	CPMC TNC-58	CPN-58
59	CPFI UG88-2	CPFI TNC-2	CPFI UG89-2	CP 88-2	CP 89-2	CP TNC-2			CPMC 88-59	CPMC TNC-59	CPN-59
MATV 59/U	CPFI UG88-4	CPFI TNC-4	CPFI UG89-4	CP 88-4	CP 89-4	CP TNC-4			CPMC 88-59M	CPMC TNC-59M	
62	CPFI UG88-2	CPFI TNC-2	CPFI UG89-2	CP 88-2	CP 89-2	CP TNC-2			CPMC 88-62	CPMC TNC-62	CPN-62
TFE 62/U	CPFI UG88-10	CPFI TNC-10	CPFI UG89-10								
8/U											CPN-8
122									CPMC 88-122	CPMC TNC-122	
140									CPMC 88-140	CPMC TNC-140	
141									CPMC 88-141	CPMC TNC-141	
142									CPMC 88-142	CPMC TNC-142	
174							CPM 88-174	CPM TNC-174			
179							CPM 88-179	CPM TNC-179			
180									CPMC 88-180	CPMC TNC-180	
187							CPM 88-187	CPM TNC-187			
188							CPM 88-188	CPM TNC-188			
195									CPMC 88-195	CPMC TNC-195	
210									CPMC 88-210	CPMC TNC-210	
223				CP 88-7	CP 89-7	CP TNC-7			CPMC 88-223	CPMC TNC-223	
303									CPMC 88-303	CPMC TNC-303	
316							CPM 88-316	CPM TNC-316			
400									CPMC 88-400	CPMC TNC-400	
TIMES MI 2040				CP 88-6	CP 89-6	CP TNC-6					
BELDEN 8281	CPFI UG88-3	CPFI TNC-3	CPFI UG89-3								

FOR MATV 6/U CABLE WITH A NOMINAL JACKET DIA. OF .270 DIA.
 FOR USE WITH MATV 59/U CABLE WITH #20 AWG CENTER CONDUCTOR, FOR MATV 59/U CABLE WITH #22 AWG CENTER CONDUCTOR, USE THE - 2 MODELS
 CONSULT FACTORY FOR STRANDED WIRE VERSIONS FOR THE FASTFIT SERIES.

CAM-LOK, INC.

Power Connectors

**E1016 SERIES
LEKTRALINK™ CONNECTORS**

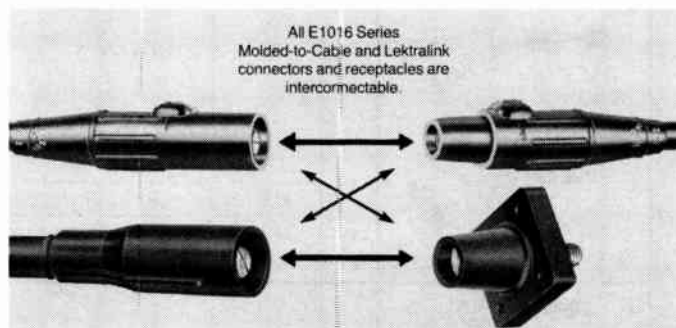
CAM-LOK's E1016 Power Series field attachable style connectors feature the patented Lektralink principle. The Lektralink design permits assembly to cables in seconds without vulcanization and without the danger of exposed set screws or pins.

The locking ring is permanently molded into the insulator. (See illustration below). The ring, made of high strength material, cannot cause inductive heating. As the contact is pulled into the insulator a drive pin is captured by the ring, locking the contact into an immovable position. That's all there is to it.

CAM-LOK's patented strain relief system distributes flexing over a wide area. A retaining wire prevents cable jacket from pulling away from contacts exposing dangerous bare wires.

Insulator compound has superior heat, weather, ozone, and abrasion resistance.

The patented Lektralink™ design eliminates unnecessary shock hazard and provides an easily attachable moisture resistant connector.



DOUBLE ² SET SCREW CONNECTORS	MALE CONNECTOR				FEMALE CONNECTOR			Color
	Cable Size	Complete Part No.	Contact Only	Insulator Only	Complete Part No.	Contact Only	Insulator Only	
	#2-2/0	E1016-8350 E1016-8352 E1016-8354 E1016-8355 E1016-8356	A200630-1 ↓	A200074-19 A200074-21 A200074-23 A200074-24 A200074-38	E1016-8375 E1016-8377 E1016-8379 E1016-8380 E1016-8381	A200640-3 ↓	A200075-19 A200075-21 A200075-23 A200075-24 A200075-44		Black Red Green White Blue
2/0-4/0	E1016-8362 E1016-8364 E1016-8366 E1016-8367 E1016-8368	A200639-1 ↓	A200074-13 A200074-15 A200074-17 A200074-18 A200074-37	E1016-8387 E1016-8389 E1016-8391 E1016-8392 E1016-8393	A200641-1 ↓	A200075-13 A200075-15 A200075-17 A200075-18 A200075-37	Black Red Green White Blue	

Price \$ 10.43 ea.

Accessories for Cable Size #6-4/0, 600 Volts,
rated up to 315 amperes continuous, 550 amperes intermittent.

RECEPTACLES

THREADED STUD STYLE

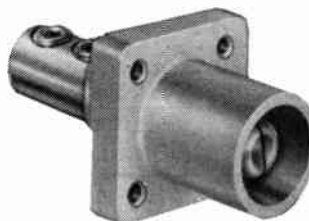
DOUBLE SET SCREW STYLE



MALE



FEMALE



MALE



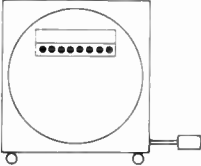


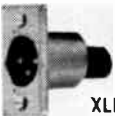

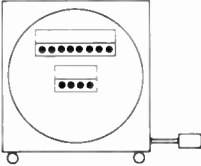




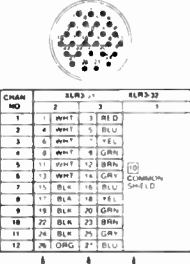
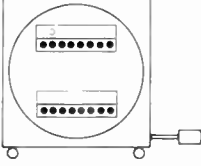





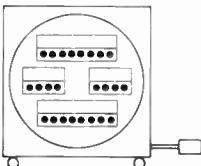






FEMALE

Cable Size	THREADED STUD STYLE		DOUBLE SET SCREW STYLE		Color
	Male Complete Part No.	Female Complete Part No.	Male Complete Part No.	Female Complete Part No.	
#6-4/0	E1016-1600 E1016-1602 E1016-1604 E1016-1605 E1016-1612	E1016-1631 E1016-1633 E1016-1635 E1016-1636 E1016-1643	E1016-1700 E1016-1702 E1016-1704 E1016-1705 E1016-1706	E1016-1725 E1016-1727 E1016-1729 E1016-1730 E1016-1731	Black Red Green White Blue

Price \$ 12.41 ea.

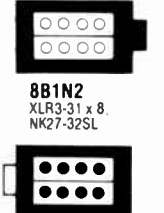
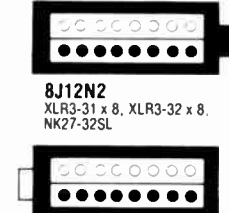
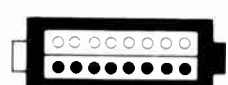

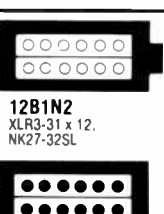
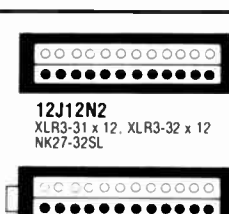
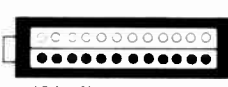

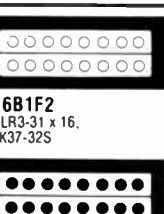
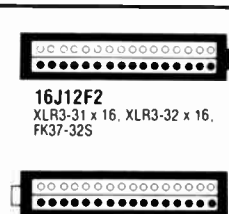


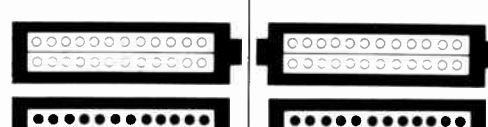
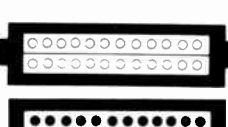
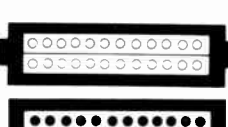

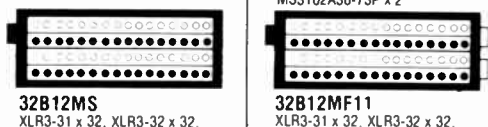
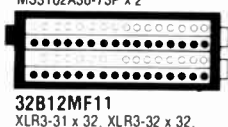
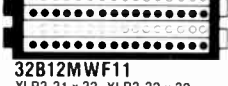

Price \$ 17.23 ea.

Refer to Green Section for Addresses and Telephone Numbers.

MULTI-CHANNEL PIGTAILS	CABLE REEL SYSTEMS *		CANNON (MULTI-PIN) CONNECTORS	CHANNEL	
	Length	L-PE TYPE CABLE			L-4E3 TYPE CABLE
8S1N2 XLR3-11C x 8, NK27-22C 8S2N1 XLR3-12C x 8, NK27-21C	30 m 50 m	 XLR3-32 x 8, XLR3-31 x 8, NK27-21C		XLR CONNECTORS TYPICAL FOR ALL CHANNELS  XLR3-11C  XLR3-12C  XLR3-32  XLR3-31	8
		8R30D 8R50D	8R30D-E3N1 8R50D-E3N1		
12S1N2 XLR3-11C x 12, NK27-22C 12S2N1 XLR3-12C x 12, NK27-21C	30 m 50 m	 XLR3-32 x 12, XLR3-31 x 12, NK27-21C		FOR 8 & 12 CHANNELS  NK27-21C  NK27-32SL  NK27-22C  NK27-31SL 	12
		12R30D 12R50C	12R30D-E3N1 12R50C-E3N1		
16S1F2 XLR3-11C x 16, FK37-22C 16S2F1 XLR3-12C x 16, FK37-21C	30 m 50 m	 XLR3-32 x 16, XLR3-31 x 16, FK37-21C		 FK37-21C  FK37-32S  FK37-22C  FK37-31S 	16
		16R30D 16R50C	16R30D-E3F1 16R50C-E3F1		
24S1M2 XLR3-11C x 24, MS3101B-32A-10P 24S2MS2 XLR3-12C x 24, MS3101B-32A-10P	30 m 40 m	 XLR3-32 x 24, XLR3-31 x 24, MS3106B-32A-10S		 MS3106B-32A-10S  MS3102A-32A-10P 	24
		24R30C 24R40C	24R30C-E3MS 24R40C-E3MS		
		*D indicates R380 cable reel/ C indicates R460 cable reel		 MS3106B36-73S  MS3102A-36-73P 	32

◻ FEMALE ◼ MALE

1 meter = 3.28 feet Consult factory for custom configurations not shown.

CHANNEL	JUNCTION BOXES			MULTI-CHANNEL SNAKES				
	SINGLE XLR PER CHANNEL	PARALLEL XLR PER CHANNEL	PARALLEL TO PARALLEL XLR PER CHANNEL	Length	L-PE TYPE CABLE	M202-AT TYPE CABLE	L-4E3 TYPE CABLE	
8	 <p>8B1N2 XLR3-31 x 8, NK27-32SL</p> <p>8B2N1 XLR3-32 x 8, NK27-31SL</p>	 <p>8J12N2 XLR3-31 x 8, XLR3-32 x 8, NK27-32SL</p> <p>8J12N1 XLR3-31 x 8, XLR3-32 x 8, NK27-31SL</p>	 <p>8J12N12 XLR3-31 x 8, XLR3-32 x 8, NK27-31SL, NK27-32SL</p>	 <p>NK27-21C, NK27-22C</p>	10 m	8C10	8C10M2	8C10E3N12
					30 m	8C30	8C30M2	8C30E3N12
	50 m	8C50	8C50M2		8C50E3N12			
12	 <p>12B1N2 XLR3-31 x 12, NK27-32SL</p> <p>12B2N1 XLR3-32 x 12, NK27-31SL</p>	 <p>12J12N2 XLR3-31 x 12, XLR3-32 x 12, NK27-32SL</p> <p>12J12N1 XLR3-31 x 12, XLR3-32 x 12, NK27-31SL</p>	 <p>12J12N12 XLR3-31 x 12, XLR3-32 x 12, NK27-31SL, NK27-32SL</p>	 <p>NK27-21C, NK27-22C</p>	10 m	12C10	12C10M2	12C10E3N12
					30 m	12C30	12C30M2	12C30E3N12
	50 m	12C50	12C50M2		12C50E3N12			
16	 <p>16B1F2 XLR3-31 x 16, FK37-32S</p> <p>16B2F1 XLR3-32 x 16, FK37-31S</p>	 <p>16J12F2 XLR3-31 x 16, XLR3-32 x 16, FK37-32S</p> <p>16J12F1 XLR3-31 x 16, XLR3-32 x 16, FK37-31S</p>	 <p>16J12F12 XLR3-31 x 16, XLR3-32 x 16, FK37-31S, FK37-32S</p>	 <p>FK37-21C, FK37-22C</p>	10 m	16C10	16C10M2	16C10E3F12
					30 m	16C30	16C30M2	16C30E3F12
	50 m	16C50	16C50M2		16C50E3F12			
24	 <p>24B12MS XLR3-31 x 24, XLR3-32 x 24, MS3102A-32A10P</p> <p>24B12MSW XLR3-31 x 24, XLR3-32 x 24, MS3102A-32A10P x 2</p>	 <p>24B12MSW XLR3-31 x 24, XLR3-32 x 24, MS3102A-32A10P x 2</p>	 <p>24B12MSW XLR3-31 x 24, XLR3-32 x 24, MS3102A-32A10P x 2</p>	 <p>MS3106B-32A-10S, MS3106B-32A-10S</p>	10 m	24C10	24C10M2	24C10E3MS
					30 m	24C30	24C30M2	24C30E3MS
	50 m	24C50	24C50M2		24C50E3MS			
32	 <p>32B12MS XLR3-31 x 32, XLR3-32 x 32, MS3102A36-73P</p> <p>32B12MSW XLR3-31 x 32, XLR3-32 x 32, MS3102A36-73P x 2</p>	 <p>32B12MSW XLR3-31 x 32, XLR3-32 x 32, MS3102A36-73P x 2</p> <p>32B12MF11 XLR3-31 x 32, XLR3-32 x 32, MS3102A36-73P x 1, FK37-31S x 2</p>	 <p>32B12MWF11 XLR3-31 x 32, XLR3-32 x 32, MS3102A36-73P x 2, FK37-31S x 2</p>	 <p>MS3106B36-73S, MS3106B36-73S</p>	10 m		32C10M2	
					30 m		32C30M2	
	50 m		32C50M2					

□ ○ FEMALE ■ ● MALE

1 meter = 3.28 feet

Prices and Specifications Subject to Change Without Notice.

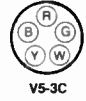
V3-3C/V4-3C/V5-3C V-Series Multi-Channel Video Cable

- 75 ohm high definition video coax (3C-2V NHK Standard)
- Super flexible (stranded conductor) for handling ease, and smooth cable layout
- Choice of 3, 4, or 5 channels in a common jacket
- Easy channel color code identification (Red, Green, Blue, Sync/White or Yellow available)
- Multi-channel cable design maintains circuit phase
- Keeps cable runs neat, safe and uncluttered
- High density shield blocks stray RF and electrostatic noise
- Use with Canare BCP-C3, 75 ohm, BNC connectors



STANDARD ATTENUATION VALUE (PER 100 FEET)

4.5 MHz	10 MHz	50 MHz
0.95 dB	1.49 dB	3.17 dB

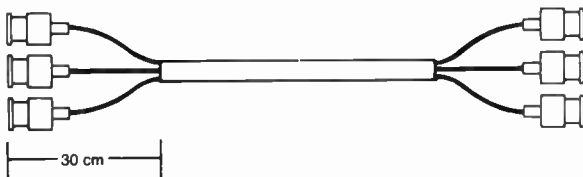


Red
Green
Blue
White
Yellow

Model	No. of Chan.	Std. Length	Wt. (lbs./1000')	Nom. O.D.	Channel Construction						Electrical Characteristics					
					Jacket O.D.	Inner Conductor		Insulation		Shield		Nom. O.C.R. (Ω/1000')	Shield O.C.R. (Ω/1000')	Nom. CAP. (PF/1000')	Nom. Imp. (Ω)	Nom. Atten. (dB/1000')
						Cond. Strand (Qty./mil.) Cross Sec. Area (mil. ²) A.W.G. size	Nom. O.D. (mil.)	Nom. Thick (mil.)	Nom. O.D. (mil.)	Shield Strand (Mils./Qty./Pitch) Shield Coverage (%)	Pitch (In.)					
V3-3C	3	100 m	101	0.46" (11.5 mm)	.169" (4.3 mm)	7/7.09 279 #25	21.3	51.2	123.7	5.52/5/24 97	1.1	32.1	3.7	21	75	15.0
V4-3C	4		135	0.52" (13.0 mm)												
V5-3C	5		162	0.56" (14.2 mm)												

V-Series Video Fan Tail

For added convenience, Canare also offers a preassembled fan to fan version in various lengths, terminated with Canare's exclusive BCP-C3 75 ohm BNC connectors, for cable matching impedance.



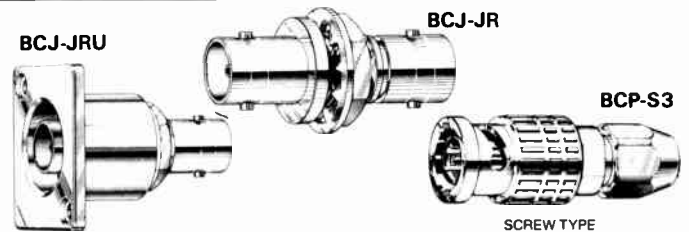
Note: 1 cm = .39"
1 m = 3.28'

MODEL	LENGTH	CONNECTORS
3VSO3-3C	3m	CANARE 75 OHM BNC BCP-C3
3VSO5-3C	5m	
4VSO3-3C	3m	
4VSO5-3C	5m	
5VSO3-3C	3m	
5VSO5-3C	5m	

75 Ohm BNC Connectors

- BCP-C3** For use with: Canare remote video camera cable and "New" V-series/Multicoax videocable (3C-2V)
- BCP-C4** For use with: Canare LV-61S 75 ohm coax cable and any standard RG-59B/u, RG62A/u
- BCP-S3** For use with: Canare remote video camera cable and "New" V-series/Multicoax videocable (3C-2V)
- BCP-S4** For use with: Canare LV-61S 75 ohm coax cable and any standard RG-59B/u, RG62A/u
- BCJ-R** Female panelmount to solder pin
- BCJ-JR** Double female panelmount
- BCJ-RU** Female recessed panelmount to solder pin
- BCJ-JRU** Double female recessed panelmount

- Discontinuity compensated circuit design maintains low VSWR characteristics (< 1.1) up to 2GHz
- Correct impedance match when using 75 ohm coax cable
- Damage preventing bulkhead connector
- Audible snap on pin insertion to confirm assembly



TYPICAL CONNECTOR SPECIFICATIONS & PERFORMANCE

Characteristic impedance:	75 ohms
Frequency range:	DC to 2 GHz
PERFORMANCE:	
VSWR:	1.1 or less up to 2 GHz
Insulation resistance:	1000 Mohms or more at 500 VDC
Rated voltage:	1500 VAC (rms) for 1 minute
CONTACT RESISTANCE:	
External contact:	3 Mohms or less
Center contact:	6 Mohms or less

CANON U.S.A., INC.

Support Equipment

MC-200 and MC-300 Pedestals

• The innovative Modular Cassette Counterbalance (MCC) System highlights the Easy To Balance Pedestal Column • The MCC System reduces the total weight of the unit, resulting in light maneuverable camera operation • Needle bearings incorporated in the casters help to reduce rotational friction and resistance • Specially designed rubber wheels and axles guarantee smooth starting and running operation • Sturdy adjustable cable guards are made of special 3-layer structure material to absorb shock and noise

MC-200 Specifications

Min. Height: 24.0" (61cm)
Max. Height: 49.2" (125cm)
Min. Width: 31.1" (79cm)
Max. Width: 34.3" (87cm)
Dead Weight: 363 lbs. (approx. 165kg)
Mounting Weight: 66 ~ 286 lbs.
 (30 ~ 130kg)

MC-200 \$15,500.00

MC-300 Specifications

Min. Height: 22.8" (58cm)
Max. Height: 60.6" (154cm)
Min. Width: 31.1" (79cm)
Max. Width: 34.3" (87cm)
Dead Weight: 374 lbs. (approx. 170kg)
Mounting Weight: 66 ~ 242 lbs.
 (30 ~ 110kg)

MC-300 \$18,900.00

Tripods and Dolly

TR-60 Tripod Specifications

Max. Height: 45.3" (115cm)
Min. Height: 20" (51cm)
Loading Capacity: 132 lbs. (60kg)
 (When used together with CD-10.....198 lbs. (90kg))
Dead Weight: 16.5 lbs. (7.5kg)

TR-60 \$1,450.00

TR-90 Tripod Specifications

Max. Height: 47.6" (121cm)
Min. Height: 25.6" (65cm)
Loading Capacity: 264 lbs. (120kg)
Dead Weight: 24.2 lbs. (11kg)

TR-90 \$1,950.00

CD-10 Dolly Specifications

Loading Capacity: 286 lbs. (130kg)
Dead Weight: 17.6 lbs. (8kg)
Dimensions: 25 x 114 x 114.8cm

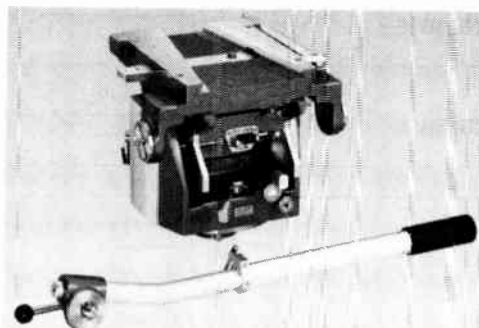
CD-10 \$1,680.00



TR-90



MC-300



SC-15

SC-15 and SC-05 Cam Heads

- Weight of the camera is balanced by a cam system $\pm 50^\circ$ of tilt angle
- Total sliding adjustment of 16.5cm for front to rear camera balance
- V-Shaped wedge plate for easy camera mounting

Specification Chart

	SC-05	SC-15
Cam Head:		
Pan Rotation:	360°	360°
Tilt Angle:	± 50	± 50
Dead Weight:	25 lbs. (11.5kg)	31 lbs. (14kg)
Load Capacity:	130 lbs. (60kg)	330 lbs. (150kg)
Cam Material:	Stainless	Steel
Price:	\$5,160.00	\$4,780.00

Accessories for Cam Heads

Male Wedge Plate for SC-15	\$180.00
Female Wedge Adaptor for SC-15	600.00
V Wedge Plate (TA74) for SC-05	180.00
Pan Bar Clamp/SC-15	90.00
Pan Bar Clamp/SC-05	90.00
Full Size Pan Bar	250.00
Short Pan Bar (1 1/8" dia.)	90.00
Sleeve Handle	160.00
Long Pan Bar (1 1/8" dia.)	90.00
Utility Pan Bar (7/8" dia.)	90.00
Cam Plate/SC-15	340.00
Cam Plate/SC-05	340.00
Tripod/Dolly/Cam Head Case (wooden)	880.00
Tripod Case (plastic case, lightweight)	280.00

CANON U.S.A., INC.

Broadcast Lenses

For 2/3" Tube and CCD Color TV Cameras

Specifications Lens	Application	Zoom Ratio	Range of Focal Length	With Extender	Maximum Relative Aperture	Angular Field of View
J50X9.5B IE	Field	50X	9.5—475mm	2X	1:1.4 at 9.5—202mm 1:3.0 at 475mm	49.7°X38.3° at 9.5mm 1.1°X0.8° at 475mm
			19—950mm	2X	1:2.8 at 19—404mm 1:6.0 at 950mm	26.1°X19.7° at 19mm 0.53°X0.40° at 950mm
J45X9.5B IE	Field	45X	9.5—430mm	—	1:1.7 at 9.5—202mm 1:3.0 at 430mm	49.7°X38.1° at 9.5mm 1.2°X0.9° at 430mm
			19—860mm	2X	1:3.4 at 19—402mm 1:6.0 at 860mm	26.1°X19.7° at 19mm 0.59°X0.45° at 860mm
J40X9.5B IE	Field	40X	9.5—380mm	—	1:1.4 at 9.5—240mm 1:2.0 at 380mm	49.7°X38.3° at 9.5mm 1.3°X1.0° at 380mm
			19—760mm	2X	1:2.8 at 19—480mm 1:4.0 at 760mm	26.1°X19.7° at 19mm 0.66°X0.5° at 760mm
J25X11.5B IE	Field	25X	11.5—288mm	—	1:1.6 at 11.5—219mm 1:2.1 at 288mm	41.9°X32° at 11.5mm 1.8°X1.3° at 288mm
			17.3—433mm	1.5X	1:2.4 at 17.3—329mm 1:3.15 at 433mm	28.5°X21.6° at 17.3mm 1.2°X0.9° at 433mm
			23—576mm	2X	1:3.2 at 23—439mm 1:4.2 at 576mm	21.6°X16.3° at 23mm 0.9°X0.7° at 576mm
			28.8—720mm	2.5X	1:4.0 at 28.8—549mm 1:5.25 at 720mm	17.4°X13.1° at 28.8mm 0.7°X0.5° at 720mm
J20X8.5B IE	Studio	20X	8.5—170mm	—	1:1.6 at 8.5—129.5mm 1:2.1 at 170mm	54.7°X42.4° at 8.5mm 3°X2.2° at 170mm
			17—340mm	2X	1:3.2 at 17—259mm 1:4.2 at 340mm	29°X22° at 17mm 1.5°X1.1° at 340mm
J15X8.5B IE	Studio	15X	8.5—128mm	—	1:1.6 at 8.5—128mm	54.7°X42.4° at 8.5mm 3.9°X3° at 128mm
			17—256mm	2X	1:3.2 at 17—256mm	29°X22° at 17mm 2°X1.5° at 256mm



J45 x 9.5B IE



J40 x 9.5B IE



J25 x 11.5B IE



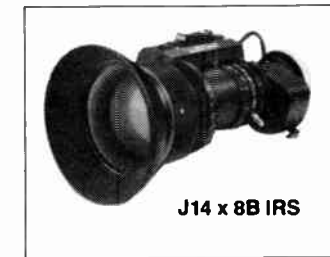
J18 x 8.5B IRS

J40X9.5B IE	Field	40X	9.5—380mm	—	1:1.2 at 9.5—190mm 1:2.0 at 380mm	49.7°X38.3° at 9.5mm 1.3°X1.0° at 380mm
			19—760mm	2X	1:2.4 at 19—380mm 1:4.0 at 760mm	26.1°X19.7° at 19mm 0.66°X0.5° at 760mm
J18X8B IE	Field/ Studio	18X	8—144mm	—	1:1.2 at 8—123mm 1:1.4 at 144mm	57.6°X44.8° at 8mm 3.5°X2.6° at 144mm
			12—216mm	1.5X	1:1.8 at 12—184.5mm 1:2.1 at 216mm	40.3°X30.8° at 12mm 2.3°X1.8° at 216mm
			16—288mm	2X	1:2.4 at 16—246mm 1:2.8 at 288mm	30.8°X23.3° at 16mm 1.8°X1.3° at 288mm
J14X9B IE	Studio	14X	9—126mm	—	1:1.2 at 9—126mm	52.1°X40.3° at 9mm 4.0°X3.0° at 126mm
			13.5—189mm	1.5X	1:1.8 at 13.5—189mm	36.1°X27.5° at 13.5mm 2.7°X2.0° at 189mm

J18X8.5B IRS	ENG/EFP	18X	8.5—153mm	2X	1:1.7 at 8.5—113mm 1:2.3 at 153mm	54.7°X42.4° at 8.5mm 3.3°X2.5° at 153mm
			17—306mm	2X	1:3.4 at 17—226mm 1:4.6 at 306mm	29.6°X22.0° at 17mm 1.6°X1.2° at 306mm
J14X8B IRS	ENG/EFP	14X	8—112mm	2X	1:1.7 at 8—91mm 1:2.1 at 112mm	57.6°X44.8° at 8mm 4.5°X3.4° at 112mm
			16—224mm	2X	1:3.4 at 16—182mm 1:4.2 at 224mm	30.8°X23.3° at 16mm 2.3°X1.7° at 224mm
J13X9B IRS IIA	ENG/EFP	13X	9—117mm	2X	1:1.6 at 9—99mm 1:1.9 at 117mm	52.1°X40.3° at 9mm 4.3°X3.2° at 117mm
			18—234mm	2X	1:3.2 at 18—198mm 1:3.8 at 234mm	27.5°X20.8° at 18mm 2.2°X1.6° at 234mm
J8X6B IRS	ENG/EFP	8X	6—48mm	2X	1:1.7 at 6—33mm 1:1.9 at 48mm	72.5°X57.6° at 6mm 10.5°X7.9° at 48mm
			12—96mm	2X	1:3.4 at 12—66mm 1:3.8 at 96mm	40.3°X30.8° at 12mm 5.2°X3.9° at 96mm
J8X6B KRSA	ENG/EFP	8X	6—48mm	—	1:1.7 at 6—33mm 1:1.9 at 48mm	72.5°X57.6° at 6mm 10.5°X7.9° at 48mm
J15X9.5B KRS	Semi-Professional	15X	9.5—143mm	—	1:1.8 at 9.5—112mm 1:2.3 at 143mm	49.7°X38.3° at 9.5mm 3.5°X2.6° at 143mm
J12X10B KRS	Semi-Professional	12X	10-120mm	—	1:1.7 at 10—101mm 1:2.0 at 120mm	47.5°X36.5° at 10mm 4.2°X3.2° at 120mm



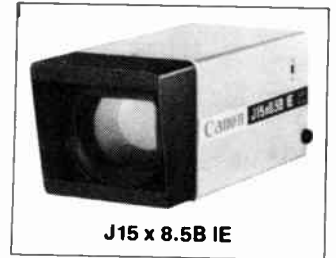
J15 x 9.5 KRS



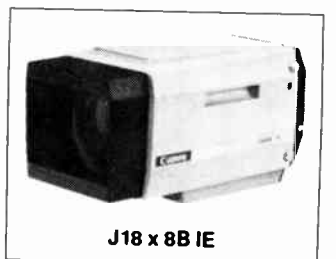
J14 x 8B IRS

For 2/3" Tube and CCD Color TV Cameras (cont'd)

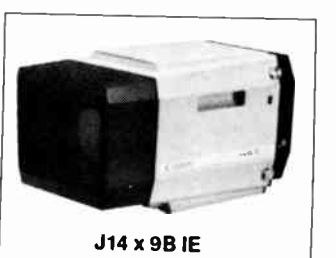
Specifications Lens	Minimum Object Distance (M.O.O.)	Object Dimensions at M.O.O.	Optical Back Focal Distance	Operation System	Remarks
J50X9.5B IE	2.2m	180X135cm at 9.5mm 3.6X2.7cm at 475mm	55.23mm in air	Zoom/Focus: Servo/Manual Iris: Servo	Built-in extender 2X
		90X68cm at 19mm 1.8X1.4cm at 950mm			
J45X9.5B IE	1.8m	148X111cm at 9.5mm 3.3X2.5cm at 430mm	42.0mm in air	Zoom/Focus: Servo/Manual Iris: Servo	Built-in extender 2X
		75.9X56.9cm at 19mm 1.7X1.3cm at 860mm			
J40X9.5B IE	2.5m	205X154cm at 9.5mm 5X3.8cm at 380mm	48.9mm in air	Zoom/Focus: Servo/Manual Iris: Servo	Built-in extender 2X
		103X77cm at 19mm 2.6X2cm at 760mm			
J25X11.5B IE	1.5m	101.9X76.5cm at 11.5mm 4.1X3.1cm at 288mm	48.2mm in air	Zoom/Focus: Servo/Manual Iris: Servo	Built-in extender 1.5X, 2X, 2.5X
		68.5X51.3cm at 17.3mm 2.8X2.1cm at 433mm			
		51.3X38.4cm at 23mm 2.1X1.6cm at 576mm			
		41.0X30.7cm at 28.8mm 1.7X1.2cm at 720mm			
J20X8.5B IE	0.6m	82.1X60.4cm at 8.5mm 3.9X3cm at 170mm	47.9mm in air	Zoom/Focus: Servo/Manual Iris: Servo	Built-in extender 2X
		40X29.8cm at 17mm 2X1.5cm at 340mm			
J15X8.5B IE	0.6m	81.9X60.3cm at 8.5mm 5.2X4cm at 128mm	47.9mm in air	Zoom/Focus: Servo/Manual Iris: Servo	Built-in Extender 2X
		41X30.2cm at 17mm 2.6X2cm at 256mm			
J40X9.5B IE	2.5m	205X154cm at 9.5mm 5X3.8cm at 380mm	41.7mm in air	Zoom/Focus: Servo/Manual Iris: Servo	Built-in extender 2X
		103X77cm at 19mm 2.6X2cm at 760mm			
J18X8B IE	0.6m	87.7X65.8cm at 8mm 4.7X3.5cm at 144mm	41.9mm in air	Zoom/Focus: Servo/Manual Iris: Servo	Built-in Extender 1.5X, 2X
		58.5X43.9cm at 12mm 3.1X2.3cm at 216mm			
		43.9X32.9cm at 16mm 2.4X1.8cm at 288mm			
J14X9B IE	0.7m	89.1X66.8cm at 9mm 6.2X4.7cm at 126mm	41.9mm in air	Zoom/Focus: Servo/Manual Iris: Servo	Built-in Extender 1.5X
		59.4X44.6cm at 13.5mm 4.1X3.1cm at 189mm			
J18X8.5B IRS	0.9m	86.2X64.6cm at 8.5mm 4.9X3.6cm at 153mm	42.2mm in air	Zoom: Servo/Manual Focus: Manual Iris: Auto/Remote/ Manual	Built-in extender 2X
		43.1X32.3cm at 17mm 2.4X1.8cm at 306mm			
J14X8B IRS	0.7m	87.8X65.9cm at 8mm 6.1X4.6cm at 112mm	48.1mm in air	Zoom: Servo/Manual Focus: Manual Iris: Auto/Remote/ Manual	Built-in extender 2X
		43.1X32.3cm at 16mm 3.1X2.3cm at 224mm			
J13X9B IRS IIA	0.8m	72.2X54.2cm at 9mm 5.6X4.2cm at 117mm	48.3mm in air	Zoom: Servo/Manual Focus: Manual Iris: Auto/Remote/ Manual	Built-in extender 2X
		36.1X27.1cm at 18mm 2.8X2.1cm at 234mm			
J8X6B IRS	0.3m	51.3X38.5cm at 6mm 6.4X4.8cm at 48mm	40.2mm in air	Zoom: Servo/Manual Focus: Manual Iris: Auto/Remote/ Manual	Built-in extender 2X
		25.7X19.2cm at 12mm 3.2X2.4cm at 96mm			
J8X6B KRSA	0.3m	51.3X38.5cm at 6mm 6.4X4.8cm at 48mm	42.9mm in air	Zoom: Servo/Manual Focus: Manual Iris: Auto/Remote/ Manual	-
J15X9.5B KRS	1m	86.2X64.7cm at 9.5mm 5.7X4.3cm at 143mm	41.9mm in air	Zoom: Servo/Manual Focus: Manual Iris: Auto/Remote/ Manual	-
J12X10B KRS	1.1m	89.8X67.3cm at 10mm 7.6X5.7cm at 120mm	41.0mm in air	Zoom: Servo/Manual Focus: Manual Iris: Auto/Remote/ Manual	-



J15 x 8.5B IE



J18 x 8B IE



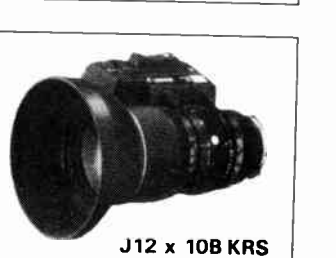
J14 x 9B IE



J45X9.5B IE



J8 x 6B KRSA

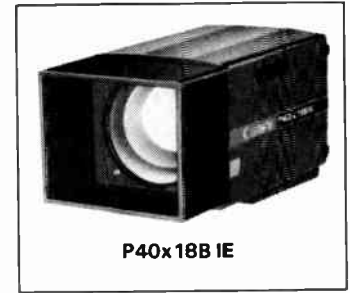


J12 x 10B KRS

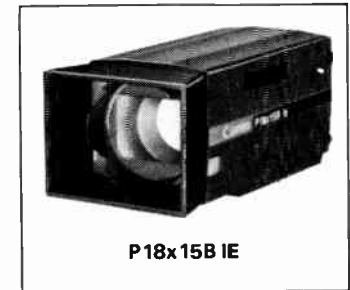
Prices and Specifications Subject to Change Without Notice.

For 1 1/4" Tube Color TV Cameras

Lens	Application	Zoom Ratio	Range of Focal Length	With Extender	Maximum Relative Aperture	Angular Field of View
P40X18B IE	Field	40X	18-720mm	-	1:2.3 at 18-360mm 1:3.7 at 720mm	50.7°X39.1° at 18mm 1.4°X1° at 720mm
			36-1440mm	2X	1:4.6 at 36-720mm 1:7.4 at 1440mm	26.7°X20.2° at 36mm 0.7°X0.5° at 1440mm
P18X15B IE	Field/Studio	18X	15-270mm	-	1:2.1 at 15-210mm 1:2.7 at 270mm	60.4°X47.1° at 15mm 3.7°X2.7° at 270mm
			22.5-405mm	1.5X	1:3.1 at 22.5-315mm 1:4.0 at 405mm	42.4°X32.4° at 22.5mm 2.4°X1.8° at 405mm
			30-540mm	2X	1:4.2 at 30-420mm 1:5.4 at 540mm	32.4°X24.6° at 30mm 1.8°X1.4° at 540mm
P14X16.5B IE	Studio	14X	16.5-231mm	-	1:2.1 at 16.5-231mm	54.8°X42.4° at 16.5mm 4.2°X3.2° at 231mm
			24.75-346.5mm	1.5X	1:3.15 at 24.75-346.5mm	38.2°X29.1° at 24.75mm 2.8°X2.1° at 346.5mm
			33-462mm	2X	1:4.2 at 33-462mm	29.1°X22° at 33mm 2.1°X1.6° at 462mm
P12X18B IE	Studio	12X	18-216mm	-	1:2.1 at 18-216mm	50.8°X39.1° at 18mm 4.5°X3.4° at 216mm
			27-324mm	1.5X	1:3.1 at 27-324mm	35.1°X26.7° at 27mm 3°X2.3° at 324mm
			36-432mm	2X	1:4.2 at 36-432mm	26.7°X20.2° at 36mm 2.3°X1.7° at 432mm



P40x18B IE



P18x15B IE

For 1" Tube Color TV Cameras

Lens	Application	Zoom Ratio	Range of Focal Length	With Extender	Maximum Relative Aperture	Angular Field of View
PV40X13.5B IE	Field	40X	13.5-540mm	-	1:1.7 at 13.5-270mm 1:2.8 at 540mm	50.7°X39.1° at 13.5mm 1.4°X1° at 540mm
			27-1080mm	2X	1:3.4 at 27-540mm 1:5.6 at 1080mm	26.7°X20.2° at 27mm 0.7°X0.5° at 1080mm
PV18X11B IE	Field/Studio	18X	11-200mm	-	1:1.6 at 11-159mm 1:2.0 at 200mm	60.4°X47.1° at 11mm 3.7°X2.7° at 200mm
			16.5-300mm	1.5X	1:2.4 at 16.5-238mm 1:3.0 at 300mm	42.4°X32.4° at 16.5mm 2.4°X1.8° at 300mm
			22-400mm	2X	1:3.2 at 22-317mm 1:4.0 at 400mm	32.4°X24.6° at 22mm 1.8°X1.4° at 400mm
PV14X12.5B IE	Studio	14X	12.5-175mm	-	1:1.6 at 12.5-175mm	54.2°X42° at 12.5mm 4.2°X3.1° at 175mm
			18.75-262.5mm	1.5X	1:2.4 at 18.75-262.5mm	37.6°X28.6° at 18.75mm 2.8°X2.1° at 262.5mm
			25-350mm	2X	1:3.2 at 25-350mm	28.7°X21.7° at 25mm 2.1°X1.6° at 350mm
PV12X14B IE	Studio	12X	13.5-162mm	-	1:1.6 at 13.5-162mm	50.8°X39.1° at 13.5mm 4.5°X3.4° at 162mm
			20.3-243mm	1.5X	1:2.4 at 20.3-243mm	35.1°X26.7° at 20.3mm 3°X2.3° at 243mm
			27-324mm	2X	1:3.2 at 27-324mm	26.7°X20.2° at 27mm 2.3°X1.7° at 324mm
PH18X6.2B IRS	ENG/EFP	18X	6.2-112mm	-	1:1.4 at 6.2-82mm 1:1.7 at 112mm	54.6°X42.3° at 6.2mm 3.3°X2.5° at 112mm
			12.4-224mm	2X	1:2.8 at 12.4-164mm 1:3.4 at 224mm	28.9°X21.9° at 12.4mm 1.6°X1.2° at 224mm



PV40x13.5B IE



PV18x11B IE

For 1/2" Tube and CCD Color TV Cameras

Lens	Application	Zoom Ratio	Range of Focal Length	With Extender	Maximum Relative Aperture	Angular Field of View
PH13X6.6B IRS IIA	ENG/EFP	13X	6.6-86mm	-	1:1.4 at 6.6-86mm	51.7°X40° at 6.6mm 4.3°X3.2° at 86mm
			13.2-172mm	2X	1:2.8 at 13.2-172mm	27.3°X20.6° at 172mm 2.1°X1.6° at 172mm
PH15X7B KRS	ENG/EFP	15X	7-105mm	-	1:1.4 at 7-87mm 1:1.7 at 105mm	49.1°X37.8° at 7mm 3.5°X2.6° at 105mm



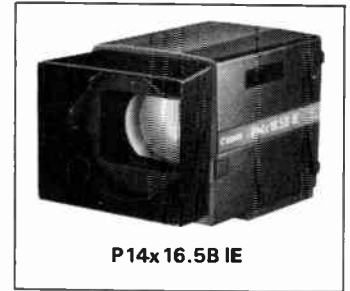
PH15x7B KRS

CANON U.S.A., INC.

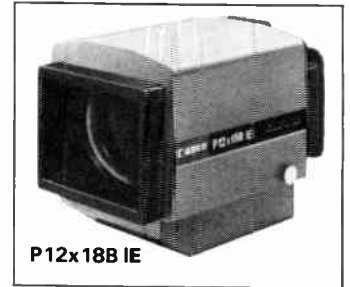
Broadcast Lenses

For 1 1/4" Tube Color TV Cameras (Cont'd)

Lens	Minimum Object Distance (M.O.D.)	Object Dimensions at M.O.D.	Optical Back Focal Distance	Size WxHxL	Weight (Approx.)	Operation System	Remarks
P40X18B IE	2.5m	211X158cm at 18mm 5.3X4cm at 720mm 106X80cm at 36mm 2.7X2cm at 1440mm	73.9mm in air	280X309X648mm	66 lbs	Zoom, Focus: Servo/manual control Iris: Servo control	Built-in extender 2X
P18X15B IE	0.6m	92.2X69.2cm at 15mm 4.9X3.7cm at 270mm 60.9X45.7cm at 22.5mm 3.3X2.5cm at 405mm 45.8X34.4cm at 30mm 2.5X1.9cm at 540mm	75.3mm in air	260X285X636mm	59.4 lbs	Zoom, Focus: Servo/manual control Iris: Servo control	Built-in extender 1.5X, 2X
P14X16.5B IE	0.7m	96.5X72.4cm at 16.5mm 6.7X5cm at 231mm 64.3X48.3cm at 24.75mm 4.5X3.3cm at 346.5mm 48.25X36.2cm at 33mm 3.35X2.5cm at 462mm	79.4mm in air	250X245X500mm	46.2 lbs	Zoom, Focus: Servo/manual control Iris: Servo control	Built-in extender 1.5X, 2X
P12X18B IE	0.9m	75.5X56.7cm at 18mm 6.5X4.9cm at 216mm 50.3X37.8cm at 27mm 4.3X3.3cm at 324mm 37.8X28.4cm at 36mm 3.3X2.4cm at 432mm	78.27mm in air	284X321.5X433mm	44 lbs	Zoom, Focus: Servo/manual control Iris: Servo control	Built-in extender 1.5X, 2X



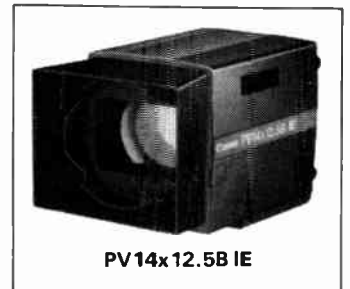
P14x16.5B IE



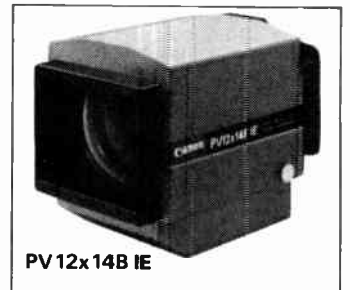
P12x18B IE

For 1" Tube Color TV Cameras (Cont'd)

Lens	Minimum Object Distance (M.O.D.)	Object Dimensions at M.O.D.	Optical Back Focal Distance	Size WxHxL	Weight (Approx.)	Operation System	Remarks
PV40X13.5B IE	2.5m	211X158cm at 13.5mm 5.3X4cm at 540mm 106X80cm at 27mm 2.7X2cm at 1080mm	62.8mm in air	280X309X648mm	66 lbs	Zoom, Focus: Servo/manual control Iris: Servo control	Built-in extender 2X
PV18X11B IE	0.6m	92.2X69.2cm at 11mm 4.9X3.7cm at 200mm 60.9X45.7cm at 16.5mm 3.3X2.5cm at 300mm 45.8X34.4cm at 22mm 2.5X1.9cm at 400mm	62.79mm in air	260X277.5X710mm	56.7 lbs	Zoom, Focus: Servo/manual control Iris: Servo control	Built-in extender 1.5X, 2X
PV14X12.5B IE	0.7m	96X72cm at 12.5mm 6.7X5cm at 175mm 64X48cm at 18.75mm 4.5X3.3cm at 262.5mm 48X36cm at 25mm 3.4X2.5cm at 350mm	62.9mm in air	250X245X500mm	46.2 lbs	Zoom, Focus: Servo/manual control Iris: Servo control	Built-in extender 1.5X, 2X
PV12X14B IE	0.9m	75.5X56.7cm at 13.5mm 6.5X4.9cm at 162mm 50.3X37.8cm at 20.3mm 4.3X3.3cm at 243mm 37.8X28.4cm at 27mm 3.3X2.4cm at 324mm	63.22mm in air	284X321.5X433mm	44 lbs	Zoom, Focus: Servo/manual control Iris: Servo control	Built-in extender 1.5X, 2X



PV14x12.5B IE



PV12x14B IE

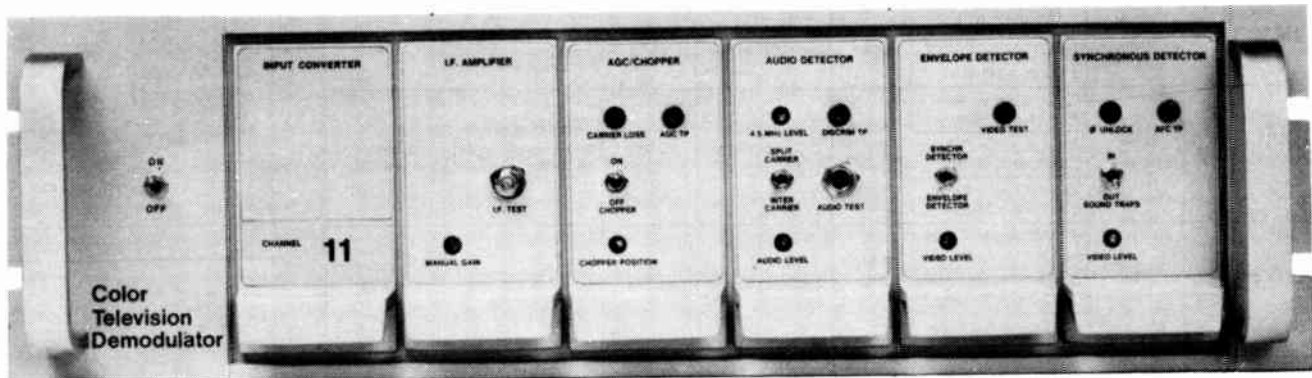
For 1/2" Tube and CCD Color TV Cameras (Cont'd)

Lens	Minimum Object Distance (M.O.D.)	Object Dimensions at M.O.D.	Optical Back Focal Distance	Size WxHxL	Weight (Approx.)	Operation System	Remarks
PH13X6.6B IRS IIA	0.8m	72.3X54.2cm at 6.6mm 5.6X4.2cm at 86mm 36.5X27.3cm at 13.2mm 2.9X2.2cm at 172mm	33.1mm in air	137X96X171.5mm	2.84 lbs	Zoom: Servo/manual Focus: Manual Iris: Auto/remote/manual	Built-in extender 2X
PH15X7B KRS	1m	85.5X64.1cm at 7mm 5.6X4.2cm at 105mm	35.7mm in air	125X95X176.2mm	3.3 lbs	Zoom: Servo/manual Focus: Manual Iris: Auto/remote/manual	-
PH18X6.2B IRS	0.9m	86X64.5cm at 6.2mm 4.8X3.6cm at 112mm 43X32.3cm at 12.4mm 2.4X1.8cm at 224mm	35.8mm in air	137X101X177mm	3.52 lbs	Zoom: Servo/manual Focus: Manual Iris: Auto/remote/manual	Built-in extender 2X



PH13X6.6B IRS IIA

Refer to Green Section for Addresses and Telephone Numbers.



CTD10

CTD10 Color Television Demodulator

- Synchronous/envelope detection • Zero carrier chopper • Video squelch • Switchable sound traps • Split carrier/intercarrier sound
- Audio squelch • Balanced audio output • DC and AC input powering

The CTD10 Series Demodulators are solid state and have been designed for use in cable system applications. The demodulated signal is available for monitoring, video processing, or remodulation for transmission over cable system or microwave systems.

Synchronous/Envelope Detection

Both synchronous and envelope video demodulation are available in the CTD10. Selection of the desired detection mode may be chosen by front panel control, or remotely from rear panel contacts. Logic circuitry automatically enables the envelope detection mode with removal of the optional synchronous detector module. Rear panel terminal jumpering also permits automatic transfer to envelope detection with synchronous detection phase unlock.

Specifications

Input Level Range:	-20dBmV to +30dBmV VHF channels -10dBmV to +30dBmV UHF channels
Operating Channels:	Any standard VHF 2 thru 13 Any standard UHF 14 μ thru 83 μ Sub-low cable channels T7-T11 Cable channels 14 thru 36 (A-W)
Noise Figure:	6dB channels T7 thru T11 and 2 thru 6 7dB channels 7 thru 13 12dB channels 14 μ thru 83 μ 75 ohms nominal
Input Impedance:	75 ohms nominal
Input VSWR:	16dB (1.37:1) 6MHz channel width, over specified input level range
AGC Type:	Keyed AGC, sync tip referenced
AGC Control:	± 0.5 dB maximum video variation over specified input level range
Image Rejection:	60dB VHF, 50dB UHF
IF Rejection:	60dB
Adjacent Channel Rejection:	60dB
IF Frequency:	45.75MHz visual carrier 41.25MHz aural carrier
Video Output Impedance:	75 ohms, 30dB min return loss
Video Output Level:	Adjustable to 1.5V p-p, sync tip to peak white

Video Frequency Response:

- Envelope detector ± 0.5 dB, 30Hz-3.58MHz
- Synchronous detector, sound traps in: ± 0.5 dB, 30Hz-4.18MHz
- Synchronous detector sound traps out: ± 0.5 dB, 30Hz, -4.5MHz

Envelope Delay:

- Sound traps in circuit, Chroma/Luminance delay within ± 25 nsec of complement of FCC transmitter nominal delay
- Sound traps out of circuit, Chroma/Luminance delay within ± 25 nsec (synchronous detector only)

Linearity:

Differential Gain:

Differential Phase:

Chopper:

- 2% synchronous, 5% envelope detection
 $\pm 1\%$ Synchronous; $\pm 2.5\%$ Envelope detection
 $\pm 0.5^\circ$ Synchronous; $\pm 1.0^\circ$ Envelope detection
Position adjustable within vertical blanking interval, width adjustable between 30 μ sec and 60 μ sec

Chopper Carrier Cutoff:

Video Squelch:

- 55dB
Activation selectable from one or more of 3 modes
a) Carrier loss
b) Adjustable threshold carrier level
c) Synchronous Detection Phase Unlock

Audio Output Level:

Adjustable to 2.0 VRMS across 600 ohms (before de-emphasis starts). The main output is balanced or unbalanced to ground depending on the selected option. The monitor output is always unbalanced to ground

Audio Frequency Response:

Audio Deemphasis:

Audio Harmonic Distortion:

± 0.5 dB from 30Hz to 15kHz
75 μ sec

4.5MHz Output:

0.5%, 30Hz to 15kHz, 25kHz deviation at specified maximum audio output level

AC Powering Input:

DC Powering Input:

Option Code C

DC Powering Input:

Ambient Temperature:

Dimensions:

Weight:

Model

CTD10(*)

CTD10U(*)

CTD10(6ss)

Adjustable to 0.2V p-p, 75 ohms source impedance, 1:25:1 VSWR

100 to 130VAC, 50-60Hz, 30W

21.5 to 30.0VDC, 800mA negative ground

21.5 to 28.0VDC, 1.5A, floating ground

0 to +55°C operating

Standard 19" rackmount, 5 $\frac{1}{4}$ "H, 16" chassis depth

24 lbs.

Input Channel

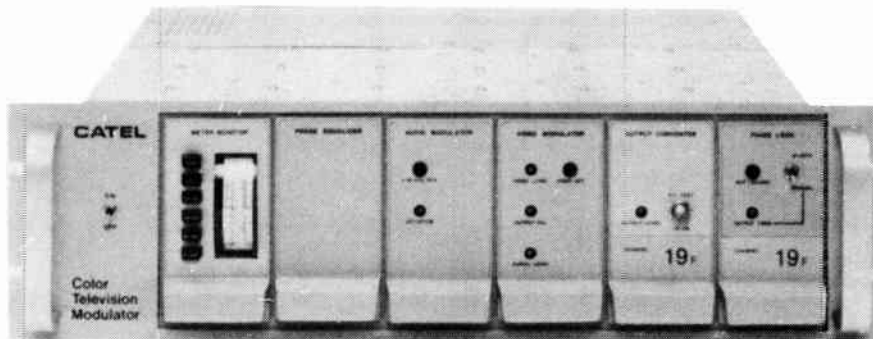
VHF, 2-13; cable, T7-T11;

cable, 14-36 \$2165.00

UHF, 14U-83U; cable, 37-53 2480.00

..... 1B45.00

* Designate input channel and offset. Add \$100.00 to list price for non-standard frequencies.



CTM11

CTM11 Television Modulator

- Quality performance to 550MHz
- Advanced SAW filter circuitry
- Automatic mode switching
- Complete scrambler interface
- BTSC stereo compatible

The CTM11 Television Modulator is a high performance AM modulator designed to provide quality television signals for use in CATV headends or to meet any broadband requirement where standard television signal generation is required.

Auxiliary video and IF filters are unnecessary, enhancing system performance and increasing reliability. Phase equalization circuitry provides ideal shaped group delay predistortion specified for color television transmission. The CTM11 can generate television signals on any channel from channel 2 to channel 78 (550MHz), on sub-low channels T7 to T11, and on special channels in the A minus band. Frequencies up to 800MHz are available by special order. Complete system design, including optional advanced phase lock circuitry, allows the CTM11 to function on standard harmonic or incrementally related carriers, all within the limits of FCC, Docket 21006. In the event of a loss of input signal to the phase lock module, transfer to a non-phase lock operation or return to phase lock is accomplished without disruptive transients in the picture by using a crystal voltage controlled oscillator (VCO) as the adjustable frequency control element.

Standard features include high level IF switching, which allows it to operate from an external IF signal, and separate video and audio IF loops for easy integration with IF scrambling. The IF switcher may be manually controlled externally or functions automatically in conjunction with a built-in video loss sensor to assure continuity of output signals. Optional IF AGC is available to provide constant IF levels with signal input variations of ± 8 dB.

The modulator can be equipped with an aural separator circuit to accept a 4.5 MHz modulated audio signal, either monaural or BTSC. When only 4.5MHz subcarrier is utilized no audio modulator module is required. If both baseband and 4.5MHz audio are desired, the CTM11 includes internal switching capability to select either system or it can automatically switch to baseband audio if the 4.5MHz signal is lost.

The modular design allows the user to configure the unit to meet exact applications. Use of plug-in modules also allows upgrading and simplifies frequency changes in the field. All modules mount in a 5.25" (133mm) EIA rackmount chassis with built-in power supply. The chassis is pre-wired for the addition of optional modules such as the phase lock and meter monitor, simplifying future expansion.

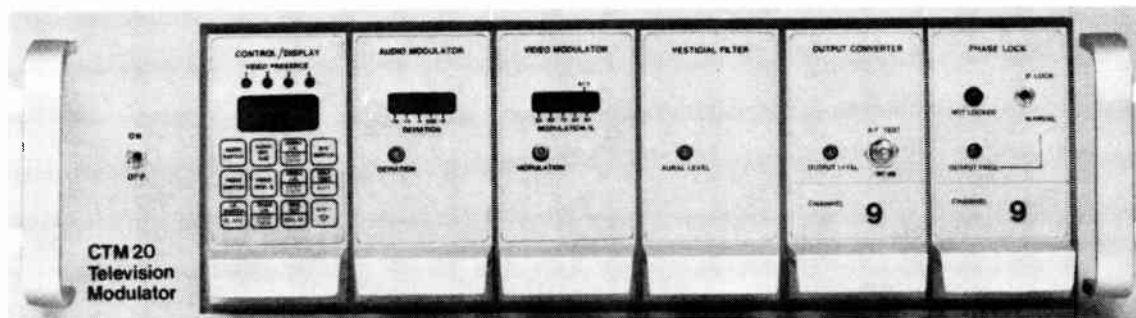
Specifications

Input Level:	0.5V p-p min. for 87.5% modulation depth
Input Impedance:	High impedance, loopthrough
Input Return Loss:	30dB min., 25Hz to 6MHz, with supplied 75 ohms termination
Frequency Response:	± 0.5 dB, 25Hz to 4.18MHz
Differential Gain:	0.3dB max. at 87.5% modulation, 10 to 90% APL
Differential Phase:	0.5 deg. max. at 87.5% modulation, 10 to 90% APL

AM Hum and Noise:	60dB min. below 87.5% modulation depth 1% max. on 60Hz, 50% squarewave	
Tilt or Sag:		
Input Type:	Monaural High impedance balanced loopthrough or 600 ohms balanced	BTSC Stereo Zero source impedance unbalanced, Hi-Z or 600 ohms balanced
Input Level:	250mV RMS min. for 25kHz deviation	1.0V RMS min. for 50kHz deviation
Modulation Response:	Within ± 0.75 dB of 75 microsecond pre-emphasis, 50Hz to 15kHz	Within ± 0.75 dB 50Hz to 15kHz
Harmonic Distortion:	0.5% max., 50Hz to 15kHz at 25kHz deviation	0.5% max., 50Hz to 15kHz at 50kHz deviation
Modulation Range:	40kHz max.	100kHz max.
FM Hum and Noise:	60dB min., below 25kHz deviation	60dB min., below 50kHz deviation
Intercarrier Frequency:	4.5MHz \pm 500Hz above video carrier	4.5MHz \pm 500Hz above video carrier
Output Channels:	T7 to T11, 2 to 13, 14(A) to 78	
Output Impedance:	75 ohms	
Output Level:	+60dBmV max. video carrier, 5 to 450MHz, continuously adjustable, +50dBmV to +60dBmV +55dBmV max. video carrier, 450 to 550MHz, continuously adjustable, +45dBmV to +55dBmV	
Spurious Outputs:	60dB below video carrier at any output level between +50 and +60dBmV, 5-450MHz and between +45 and +55dBmV, 450-550MHz	
Frequency Accuracy:	± 10 kHz, Channels T7-T11, 2-13, 17(D)-24(K), 54-78 ± 5 kHz, Channels 14(A)-16(C), 25(L)- 53(QQ), 1(A-1)-95(A-5)	
Group Delay Response:	Meets FCC predistortion requirements for color transmission	
Sound Carrier Level: Vestigial Sideband Response:	Adjustable 10 to 20dB below video carrier -20dB channel edge -40dB adjacent picture and sound carriers and any frequency farther removed from channel	
IF Output Level: Power:	+40dBmV 100 to 130VAC, 60-50Hz, 35W 21.5 to 30.0VDC, 1.05A max.	
Size:	5.25" H x 19" W x 16" D	
Weight:	24 lbs.	
CTM11(*)	VHF T-13, cable T7-T11, cable 14-36 .....\$1875.00	
CTM11X(*)	Cable 37-53 .....2355.00	
CTM11(IF)	IF output, +60dBmV .....1875.00	
CTM11(Less)	.....1505.00	
CTM11(*)	SPP IF output, +40dBmV .....2230.00	
CTM11Z(*)	Same as CTM11, except equipped to work with Zenith scrambling, uses 152304-10 video mod- ule .....1975.00	
CTM11ZX(*)	Same as CTM11Z and CTMX .....2455.00	

Prices and Specifications Subject to Change Without Notice.

8-359



CTM20

CTM20 Color Television Modulator

- Microcomputer Control
- Extensive Control and Monitoring Capability
- Central Control Serial Data Interface
- Totally Modular Expansion
- Multiple Audio/Visual Switching
- Internal Message Generator
- Complete Scrambler Interface
- Surface Acoustic Wave (SAW) IF Filtering
- Bar Graph Modulation Indicators
- Calibrated Detent Modulation Controls
- Self Test Mode
- Audio/Video/IF AGC Signal Level Normalizing

The CTM20 is a high performance digitally controlled modulator designed for all applications in CATV system headends, local origination, terrestrial microwave service, and satellite TVRO signal remodulation for cable distribution. The modulator incorporates an on-board microcomputer control system, complete audio, video, and IF signal switching, and provisions for controlling operating levels, signal switching, and the monitoring of system performance from a central terminal or under local control.

System Design Flexibility

The modulator is designed to give total configuration control to the system operator. All options for the modulator can be readily field installed by the equipment user. System revisions, updates, or reconfiguration can be made from the central control computer and through the option hardware within the modulator.

SAW Vestigial Sideband Filter

A surface acoustic wave IF filter is utilized in the CTM20. Inherently linear phase and a flat amplitude response across the channel passband are achieved with the SAW filter, insuring excellent video signal transparency and waveform fidelity. The exceptional shape factor obtained with the SAW filter affords excellent adjacent channel protection. Auxiliary video and IF filters with attendant all-pass delay correction circuits are not required with the SAW filter.

Phase Equalization

The SAW IF filter exhibits an inherently flat group delay characteristic across the channel passband. The shaped group delay characteristic specified for color television transmission is provided by an all-pass phase equalizer in the video module.

Control and Monitoring System

A microcomputer based control system contained within the CTM20 provides extensive controlling and monitoring capability. All switching functions as well as modulation levels and the channel output level are controllable from a headend terminal. Up to four audio and three video signal sources may be accepted by each modulator. A video message generator option located within the modulator offers preprogrammed, custom messages as the fourth video signal source.

Local control of the modulator's audio, video, and IF switching is accomplished by means of parallel, hardwired switch input lines to the modulator's control module.

Audio and video modulation levels are internally precalibrated to normalized values. Adjustment of detent type front panel controls permits local override of the preset levels or central controller command if desired.

Control Features

AGC — Automatic level control of selected audio, video, and IF signal inputs is optionally available within the CTM20. These options serve to normalize the modulator's modulation characteristics and carrier level under all conditions of signal switching, and provide the means for remote programming and monitoring of these functions.

Signal Switching

The internal signal switching provisions within the CTM20 will accommodate multiple signal sources (both baseband and IF) and various modes of switch program control. All commands for signal switching are processed by the microcomputer located within the modulator and permit the control of switching functions by local commands generated at the headend site, by automatic prioritized signal selection, or by override of both these through central controller commands.

Baseband Switching

The audio/video switches respond to the microcomputer generated commands, with switching decisions based on 4 data input types:

- hardwired, parallel data switch commands into the modulator
- presence of video at each of 4 audio/video switch locations in the modulator
- the priority level of each switch relative to all other switches

- central controller serial data input commands to the modulator
- Audio switching normally will follow the associated video switch unless otherwise specified by central controller command. The hardwired, parallel data inputs permit audio override to energize the emergency audio alert switch or to switch off all audio sources.

IF Switching

The substitute IF signal switching control may be enabled by either local, hardwired input line commands, or by the central controller data input. Automatic switching to an external IF signal source may be initiated by the loss of a selected video input signal source if so desired.

Signal Scrambling

A scrambler interface for both IF and baseband encoders is included in the CTM20 chassis. Separate picture and sound carrier loop through connectors provide the interface to IF scramblers. Video loop through connectors at the video output bus allow baseband scrambling of the CTM20 switch selected video source. An aural subcarrier input provides for sound security in baseband encoding systems.

Monitoring Features Self Test Mode

The self contained local monitoring system provides a self test mode that is automatically initiated with power up of the modulator, or at the request of the local keyboard. Ten parameters are sequentially checked against internal preset limits contained in ROM. The measured parameters are:

- Audio, video, VSB filter, and converter module currents
- Audio and video modules local 5 and 15 volt regulator outputs
- Audio module and output converter AFC levels

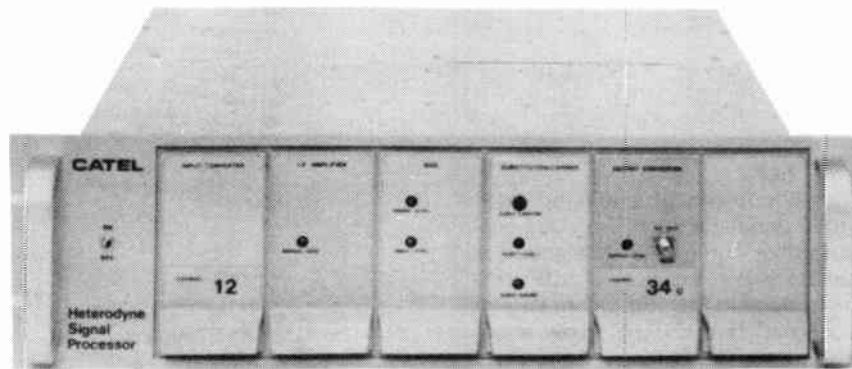
Model No.	Output Channel	Price
CTM20*	VHF 2-13 Cable	
	T7-T11, 14-36	\$2400.00
CTM20*	Cable 37-53	2880.00
CTM20(IF)	IF Output	2400.00

*Add \$100.00 to list price for non-standard frequencies. For inverted frequencies, please refer to the Converters Section of the Headend Spare Modules.

Prices and Specifications Subject to Change Without Notice.

CATEL TELECOMMUNICATIONS, INC.

Signal Processor



HSP1

HSP1 Heterodyne Signal Processor

- On or off channel signal conversion
- Widest choice of input and output frequencies
- Automatic carrier substitution
- Separate IF input switching
- Optional video and audio modulation
- BTSC stereo compatible

The HSP1 Heterodyne Signal Processor offers system designers and operators a cost-effective, quality method of processing and frequency conversion for standard AM television signals. Designed for operation in CATV headends or any broadband application where signal processing or channel conversion is desired, the HSP1 will accept any standard VHF or UHF off-air television signal, CATV sub-low channel, AML microwave output channel or broadband cable network channel. The signal is converted to IF, amplified and processed. After processing, the signal is converted to an RF output, either on the same channel as the input or on any other available channel from sub-low channels T7 to T11, to VHF channels 2 to 13, or any cable channel from 14(A) to 78 (550MHz).

The HSP1 contains a keyed AGC system to increase noise immunity and assure consistent output levels, and group delay correction circuits minimize chroma luminance displacement and waveform distortion. Audio circuits in the HSP1 are fully compatible with BTSC stereo sound and will pass the signal unchanged.

The HSP1 is part of a complete family of Catel AM headend products. The modular design of these products allows the HSP1 to share common input and output converters and phase lock modules with other members of this family, which includes the CTM11 and CTM20 Modulators and the CTD10 Demodulator. The HSP1, like others in this product line, will meet all requirements of FCC 21006 when operated on channel or in a system of harmonically related (HRC) or incrementally related (IRC) carriers. The HSP1 has a high output level (up to $\pm 60\text{dBmV}$). Double balanced diode mixers in both input and output converters, and the hybrid module amplifier in the output converter insure 60dBmV spurious control at these high output levels.

The HSP1 offers a wide range of features and applications in addition to signal processing. Various IF and baseband modulation options can provide automatic program substitution, automatic or manual video/audio substitution. The HSP1 will support all of these options together. There are no forbidden combinations. The HSP1 includes a substitution carrier generator to allow either unmodulated or modulated IF substitution of the incoming signal. Control can be manual or tied to a carrier loss sensor and provide automatic switching in the event the incoming signal is lost. High level IF substitution/switching prior to output conversions is standard and there are provisions for optional low level IF substitution/switching. Any of the various switching functions can be made automatic by interconnecting terminals on the back of the unit.

Specifications:

Input Channels:	VHF channels 2 thru 13, UHF channels 14 thru 83 Sub-low cable channels T7 thru T11, Cable channels 14(A) thru 78 (550MHz)
Input Impedance:	75 ohms
Input Level Range:	-20dBmV to +30dBmV, VHF channels -10dBmV to +30dBmV, UHF channels
Noise Figure:	6dB max., channels T7-T11 and 2-13 7dB max., channels 14U-83U and 37(AA)-78 60dB min., VHF; 50dB min., UHF
Image Rejection:	60dB min.
Adjacent channel rejection:	60dB min.
AGC Control:	$\pm 0.5\text{dB}$ max. level change for -20dBmV to +30dBmV input range
Passband Response:	$\pm 0.5\text{dB}$, video carrier -0.75MHz to video carrier +4.18MHz
Group Delay:	± 25 nsec. video carrier to chroma subcarrier
Conversion Accuracy:	$\pm 10\text{kHz}$ off channel conversion. Meets $\pm 5\text{kHz}$ FCC 21006 with on-channel conversion or when operated in an HRC or IRC system
Sound Control:	$\pm 0.5\text{dB}$ max. level change for -20dBmV to +30dBmV input range
Sound Output Level:	Adjustable from 10 to 20dB below visual carrier
Output channels:	VHF channels 2 thru 13, sub-low cable channels T7 thru T11, Cable channels 14(A) thru 78 (550MHz)
Output Impedance:	75 ohms
Output Level:	+60dBmV max. video carrier, 5 to 450MHz, continuously adjustable, +50dBmV to +60dBmV +55dBmV max. video carrier, 450 to 550MHz, continuously adjustable, +45dBmV to +55dBmV
Spurious Outputs:	60dB below video carrier at any output level between +50 and +60dBmV, 5-450MHz and between +45 and +55dBmV, 450-550MHz
Power:	100 to 130VAC, 60-50Hz, 30W, 21.5 to 30.0VDC, 800mA, max.
Ambient Temperature:	0 to 55°C, operating
Size:	5.25"H x 19"W x 16"D 133.4H x 482.6W x 406.4Dmm
Weight:	24 lbs., 10.9kg
HSP1(*/*)	VHF2-13, cable T7-T11, cable 14-36 input/output channels .....\$1845.00
HSP1X(*/*)	VHF2-13, cable T7-T11, cable 14-36 input channel; cable 37-53 output channel .....\$2325.00
HSP1U(*/*)	UHF 14U-83U, Cable 37-53 input channel; VHF2-13, cable T7-T11, cable 14-36 output channel. ....\$2160.00
HSP1UX(*/*)	UHF 14U-83U, cable 37-53 input channel; cable 37-53 output channel. ....\$2640.00
HSP1(6SS/6SS)	.....\$1155.00

VP708 Six x 1 Routing Switcher

• 6 loopthrough video inputs • 6 loopthrough audio inputs, 3 balanced and 3 unbalanced (or 6 unbalanced) • Two video outputs and two stereo audio outputs • Audio output balanced or unbalanced • Audio signal-to-noise ratio >112dB (ref. +24dBu) • +24dB audio headroom (ref. 0dBu balanced signals) • Audio crosstalk >80dB, 20Hz to 20kHz • Low audio distortion <0.05% • Vertical interval switching • Solid-state switching of both video and audio • Momentary press buttons with LED indications • Compact one rack unit (1.75"), 19" mounting or free standing

VP708\$975.00

VP702-01/02

Video/Audio Distribution Amplifiers 1 x Ten

• 1 x 10 distribution of video and two audio channels in one module • Loopthrough on video and audio inputs • Switchable selection of balanced or unbalanced audio input • Internal audio gain adjustment, accessible from rear • Switchable equalization to compensate for video cable losses • Isolated outputs for short-circuit protection • Small size, 1 U high and 19" rackmounting • 10 isolated outputs of stereo sound and video • VP702-02 has loopthrough facility which enables daisy-chaining of audio inputs; video inputs also loopthrough • Low power consumption • Bandwidth of 6.5MHz • Equalization switchable in 1.5dB steps • VP702-01 has XLR connectors for its balanced input • VP702-02 has 5-pin DIN connectors with the added feature of loopthrough on its balanced input • Unbalanced phono inputs with loopthrough

VP702-01\$465.00

VP702-02465.00

VP705 Audio Distribution Amplifier

• Low noise, flat frequency response, low distortion and high overload margin • Especially suited to professional Hi-Fi audio distribution in Video Tape Duplication systems • Isolated outputs offer short circuit protection • Loopthrough on audio inputs enabling daisy-chaining for economic audio distribution • Switchable selection of balanced or unbalanced audio input • Internal gain adjustment, accessible from rear • Small size, 1 U high and 19" rackmounting • Low power consumption

VP705-03

or 04 Stereo audio distribution amp (1 x 10)—Hi-Fi\$360.00

VP705-06 Stereo audio distribution amp (1 x 10)—Hi-Fi (balanced out)395.00

VP705-06C Stereo audio distribution amp (1 x 10)—Hi-Fi (balanced out w/clamp)490.00

VP712 Video Distribution Amplifier

1 x 20 distribution of video in one unit • Input loopthrough for efficient signal distribution • Switchable 75 ohm termination on input • Differential input • Internal gain adjustment • Designed bandwidth of 8MHz • Switchable equalization to compensate for cable losses • Isolated outputs for short-circuit protection • Small size, 1U high and 19" rackmounting • Optional DC clamp version available

VP712\$465.00



VP-710



VP-716

VP715 Audio Distribution Amplifier

• Low noise (S/N 120dB), flat frequency response, low distortion and high overload margin • Suited to professional hi-fi audio distribution in video tape duplication systems • Highly reliable—isolated outputs offer short-circuit protection • Loopthrough on audio inputs enabling daisy chaining for economic audio distribution • Switchable selection of balanced or unbalanced audio input • Internal gain adjustment, accessible from rear • Small size, 1U high and 19" rackmounting • Low power consumption

VP715\$450.00

VP716 Audio Level Adjust—2 Group

• Flexible signal switching—input stereo channels can be reversed, mixed or re-routed to both or individual channels • 2 audio stereo inputs—balanced or unbalanced • Dual bargraph PPM display • Auxiliary stereo inputs and line-outs • Additional group 1 and 2 line-outs for extra monitoring • XLR balanced input connectors, locking 5-pin DIN balanced output connectors • Dynamic range 108dB • Crosstalk between audio groups 90dB, 20Hz to 20kHz • 24dB headroom • Signal-to-noise ratio >108dB (ref +24dBu), 20Hz to 20kHz • Flat frequency response ±0.2dB, 20Hz to 20kHz • Compact module, 1 U high and standard 19" rackmount • Accommodates two stereo audio input groups, either balanced or unbalanced • Level of each individual channel can be adjusted and displayed on the PPM bargraph LED display • Two channels (one stereo) of PPM monitoring are provided, switchable to select group 1, group 2 or auxiliary outputs.

VP716\$650.00

VP710 Audio Level Adjust—5 Group

• Flexible signal switching—input stereo channels can be reversed, mixed or re-routed to both or individual channels • 5 audio stereo inputs—balanced or unbalanced • 2 x 5 audio stereo outputs with individual channel level adjustment • 5-group dual bargraph Peak Program Meter display • 10 channels of continuous PPM monitoring • PPM incorporates a precision full-wave peak detector • 8 meter sensitivity ranges (-12dBu to +8dBu), measurement range +20dBu to -27dBu • 1kHz calibrated tone signal • Dynamic range 120dB • Crosstalk between audio groups 100dB, 20Hz to 20kHz • > +27dB headroom • Flat frequency response ±0.1dB, 20Hz to 20kHz • Signal-to-noise ratio >120dB (ref +24dBu), 20Hz to 20kHz • Compact module 3.5" (2U) and standard 19" rackmount • XLR input connectors, locking 5-pin DIN output connectors

VP710\$1600.00

DWIGHT CAVENDISH CO.

System Monitoring/Machine Controls

VP709 Stereo Audio Monitor

- Simultaneous VU monitoring of four audio channels • Simple pushbutton selection for A/B stereo audio signal comparisons
- Two headphone jacks, one mono and one stereo • Built-in loudspeaker with volume control • Line-out of selected stereo signal for external monitoring • Built-in power supply

The VP709, designed primarily for video cassette duplication applications, provides comprehensive monitoring of stereo audio (or 2-channel audio) signals from two sources.

The panel has a good quality loudspeaker, stereo and mono headphone jacks and VU metering.

The monitor panel fulfills a variety of applications, typically the A/B comparison of stereo audio signals from two VCR sources, such as the master and slave in a video cassette duplication system. Another application is the monitoring of the two linear audio and two Hi-Fi audio signals from a Hi-Fi VCR.

VP709 \$700.00

VP704 Automatic Signal Switcher-10 Way

- Small size, 1 U high, 19" rackmounting • Switching of 10 video inputs • Manual selection of any input • Automatic sequencing of all 10 inputs • Skip facility in auto mode • Dwell time adjustment • Vertical interval switching • Very low crosstalk • Switching capability for time code or other data signals
- Can be configured as 10 in—1 out or 1 in—10 out

For recording applications, surveillance monitoring or situations where clean switching is important, the VP704 provides vertical interval switching between inputs which are synchronized.

VP704 \$650.00

VS-611-01 Remote Control Panel with Interface

- Allows full 7-function remote control of a group of up to 10 video cassette recorders • Within the Copymaster 10 concept, the module can be interfaced with other Dwight Cavendish modules to simultaneously control up to 100 VCRs • Front panel houses seven function control buttons and one control lock button to prevent inadvertent function selection • Each button has an associated LED indicator • Mains on lamp also indicates the presence of the mains supply • Uses only one VS-611-01 with a mains supply to simultaneously remote control a group of up to 10 VCRs • Functions remotely controlled, where compatible, are eject, rewind, fast forward, stop, play, record, and pause • Different module variants are available

VS-611-01 \$650.00

VS-616 Machine Control System—Single Group

- Single slave group system for simultaneous control of up to 2000 slave VCRs • Control of serial, parallel or infrared remotely-controllable VCRs • Full 7-function control of eject, rewind, fast-forward, stop, play, record and pause • Direct remote control of up to 10 serial or infrared VCRs • Master expansion output to drive interfaces or signal distributors • Momentary press buttons with LED status indication • Lock button to override function buttons and so prevent accidental operation • Master eject facility • Looping input/output connectors for daisy-chaining additional control modules • Compact, one rack, 19" mounting

VS-616-01 For Group 1 with basic serial-IR, parr and status opt. \$725.00

VS-616-02 For Group 1 with basic IR—Serial, parr and status opt. \$750.00



VP704



VS-615

VS-615 Machine Control System—5 Group

- Selection of slave group(s) G1 to G5 for simultaneous remote control of up to 1000 slave VCRs • Full 7-function remote control of eject, rewind, fast forward, stop, play, record and pause
- Individual group status memory display of play, record and pause • Lock button to override function buttons and so prevent accidental operation • Master eject facility • Momentary press buttons with LED indication • Operation of any type of remotely-controllable VCR • Compact one rack unit, 19" mounting

The VS-615 Machine Control System provides full 7-function remote control of up to five groups of slave VCRs in a video cassette duplication system. The modules have been designed to provide an inexpensive solution to the user who wishes to tailor his own customized systems.

VS-615 \$800.00

VS-608-03 Interface for VS615 (1 required for 10 VCRs) \$340.00

VP700 Automatic VCR Changeover Module

- Built-in cue-tone generator enables cue-tones to be placed onto the existing audio track • Switching of video, RF (off-tape), balanced or unbalanced audio CH1 and CH2 • Auxiliary signal input which can be addressed manually • Electronic control interlock to prevent inadvertent switching in the auto sequence • Vertical interval switching • Integral power supply • Professional XLR connectors • VCR playing sequences switchable 1-2-1, 1-2-3 or continuous 1-2-1 option • Dub switcher option available

The VP700 VCR changeover module is designed to automatically control the playing sequence of two or three hi-band or low-band U-Matic video cassette recorders. Both audio tracks are switched.

The module operates in any of three modes—manual, prewind or fully auto.

In manual operation, independent control of three VCRs is possible for the front panel. The prewind start enables the exact position of each prerecorded sequence on each tape to be found automatically prior to starting the program sequence. In fully auto, after the prewind sequence, the unit automatically generates the required control outputs which, for example, may be used to put slave recorders into the record sequence, as applied to mass duplication applications. At the end of the sequence all three VCRs are rewound. Leads are provided to suit the VCR type.

VP700 \$1600.00

DWIGHT CAVENDISH CO.

Automatic Videocassette System



CS811

CS811 Automatic Video Cassette System

- Very simple to use • No software or cueing tones on tapes
- Versatile expandable modular system • Single or multi-channel configuration • Stand-alone modules with 19" rackmounting cabinet option • Automatic VCR mains switch-off when not in play, also monitor mains if required • Change-over from one VCR to another or continuous repeat play mode
- Optional text generator during VCR down-time • Adjustable pre-roll timing for each VCR • Internal or external UHF modulator • 24-hour real time clock with weekday indicator • Programmable memory allowing clock to play VCRs up to 20 times per day • Four independent clock outputs • Short mains interrupt protection • Mains failure battery back up for clock • Will operate domestic VCRs which have wired remote control of play/stop/rewind • Loss of video detector

The CS811 budget system is ideal for playing video programs or text for a wide variety of commercial applications. The system is very simple to operate and does not need any special software or cueing tones on the tapes. It uses only two module types and can be simply configured to customer requirements in any combination from the minimum system (one automatic video controller and one VCR) to an expanded system with optional cabinet.

Minimum System

This system requires only one module to control the VCR in either of two modes:

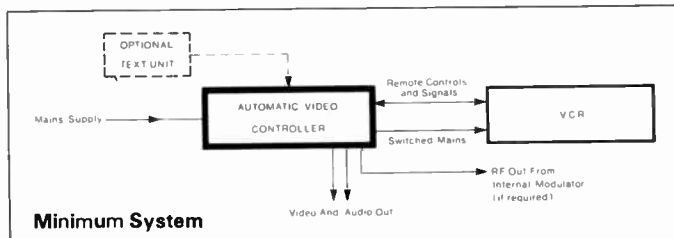
Each play is started by the clock, stopped and rewind automatically or each play is continually repeated after rewind.

An optional text unit can be incorporated to display text between video programs

Expanded System

This system shows two channels with two VCRs per channel. Within each channel, automatic changeover occurs from one VCR to the other.

The two channels can be played completely independently. When each VCR has finished playing, its mains supply is switched off automatically. The maximum expanded system can control 6 VCRs.

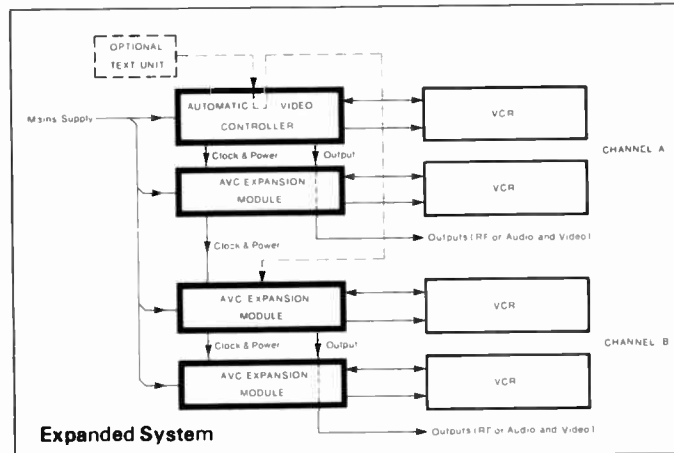


Specifications

- Inputs**
VCR Video: 1V p-p, 75 ohm BNC
Text Video: 1V p-p, 75 ohm BNC, switched loopthrough
VCR and Text Audio: -5dBm / > 10K ohm, unbalanced, phono

Note: In some configurations text input is output from previous module.

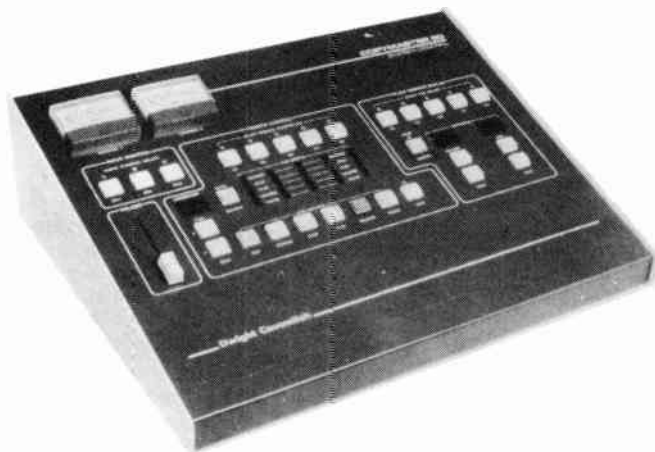
- Outputs**
Video: 1V p-p, 75 ohm, BNC
Audio: -5dBm, unbalanced, phono
RF (only if mod. used): Nominally channel 30 to 39 (adjustable, 3mV, 75 ohm)
Remote: Lead supplied to suit customer VCR model used
Power Voltage: 220VAC to 240VAC, 50/60Hz (110V/120V on request)
Consumption: 12W (24W with three VAC Expansion Modules)
Control Clock: 24 hour format with day of week, 20 memories, 4 independent outputs, battery back-up for 12 hours



- Dim. (HxWxD) & Weight**
Auto Video Cont.: 87 x 440 x 330mm, 6.5kg approx.
AVC Expansion Module: 45 x 440 x 330mm, 4.5kg approx.
CS811-01 Control Module:\$1475.00
CS811-02 Expansion Module:800.00

DWIGHT CAVENDISH CO.

Video Tape Duplication System



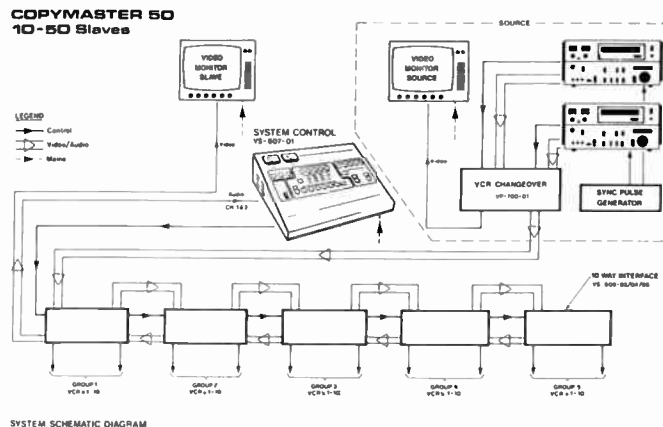
Copymaster 50 Video Tape Duplication System

- Desk top system control keyboard
- Full 6-function remote control of five groups
- Status monitoring for 50 slave VCRs
- Two audio channels throughout
- Manual or auto slave signal monitoring
- Up to 10-high slave VCR stacking
- Level metering of both slave audio channels
- Selection of either auto channel or mix of both
- Built-in loudspeaker with volume control
- Master eject facility
- Simple modular expansion from 10 to 50 slave VCRs

The Copymaster 50 video cassette duplicator is designed for use in systems employing from 10 to 50 slave VCRs, all of which may be monitored and controlled from a desktop "keyboard." The keyboard provides full function remote control for all slaves with five group selection. Each group may contain from 1 to 10 slaves. An LED readout provides status monitoring of all VCRs, giving indication of the failure of any VCR to take a remote command. (Status monitoring operates only with VCRs having status reporting electronics included.) The keyboard also provides video and audio monitoring from each VCR for complete quality control checking. This built-in QC system is employed both while recording (through the E to E of the VCR) and when the program duplication is complete and the VCRs are placed in the playback mode for spot checking of the finished tapes. An auto-cycle function allows constant monitoring of all VCRs in the system. Two channels of audio follow video are provided throughout. An audio monitor with speaker and VU metering is included in the keyboard controller. Video monitoring is accomplished by use of a desktop color video monitor.

The slave racks are standard Cavendish Copymaster racks allowing stacking of VCRs up to ten high. Each slave rack can hold two stacks of VCRs allowing a maximum of 20 slave VCRs per rack. Rack shelving is adjustable to allow the use of any size VCR. Racks come with AC power distribution, electronics and all cabling including remote control cables and signal cables for the slave VCRs. Since the system is totally modular, slave racks can be added at any time without cost penalty.

The Copymaster 50 is shipped complete. Installation consists of plugging several control cables into the keyboards controller and connecting the VCRs. Remote control cables and electronics are available for any remotely controllable VCR, including consumer as well as industrial VCRs.



Specifications

General

- Video Signal System:** PAL/SECAM/NTSC
- Slave Formats:** U-matic/VHS/Betamax/V2000
- Mains Power Requirement:** 200/250V, 50Hz
100/125V, 60Hz on request
- Power Consumption:** (electronics only)
90W for 50 VCR system

Video

- Gain:** Unity \pm 0.5dB
- Inputs:** 1V p-p composite, BNC 75 ohm
- Frequency Response:** -1dB, 15Hz to 6MHz
- Hum and Noise:** 60dB below 1V
- Input Return Loss:** -35dB at 5 MHz

Audio

- Gain (balanced input):** -6dB \pm 1dB
- Gain (unbalanced input):** Unity \pm 1dB
- Inputs to VP-700-01:** XLR Cannon balanced or unbalanced
- Inputs to VS-609-03/04/05:** 5-pin locking DIN balanced or unbalanced with loopthrough
- Input Nominal Level:** Balanced + 1dBm
Unbalanced -5dBm
- Input Impedance:** > 30K ohm
(balanced and unbalanced)

- Frequency Response:** \pm 0.5dB, 20Hz to 20kHz
- Total Harmonic Distortion:** < 0.05%, 100Hz, 1kHz, 10kHz
- Hum and Noise:** > 65dB below -5dBm
- Number of Channels:** Two (CH1 and CH2/or stereo)

Copymaster 50 Video Tape Duplication System

Model	Qty.	Description
VS 607-01	1	System control keyboard for 50 VCRs
PVM 8020	2	Sony 7" color monitor w/pulse cross and audio
SC 50-00	1	Cable set
Control Unit		\$3,210.00

Tape Duplication Slave Rack

RS 01	1	Slave rack w/AC distribution
VS 609-03	1 or 2	Remote control/VCR interface
SC 50-10	1 or 2	Slave rack cable set system assembly and test
Slave rack for 10 VCRs		\$3,435.00
Slave rack for 20 VCRs		5,895.00

Options

RS 05	2	Rack finish trim panel	\$ 180.00
RS 03A	1	Source rack for five VCRs	.625.00
VP 700-01	1	Automatic changeover switcher	.1,600.00
AE 61B	1	Hotronic time base corrector	.3,275.00

Systems Pricing

10 Slave System	\$ 6,645.00
20 Slave System	.9,105.00
30 Slave System	.12,540.00
40 Slave System	.15,000.00
50 Slave System	.18,435.00
60 Slave System +	.Quote

DWIGHT CAVENDISH CO.**Videocassette Duplicator****Copymaster 250 Videocassette Duplicator**

• 4 in/2 out routing switcher • 2 audio channels throughout • 5 group signal distribution • 5 group audio level adjust • 4 source signal monitoring • 6 function remote control • 2 simultaneous programs • Status monitoring for 50 VCRs • Manual and autocycle QC system • Modular expansion to 250 slaves • Master and QC eject capability • Up to 10 high slave stacking

Control Rack

The Copymaster 250 is a professionally designed system, engineered specifically for videocassette duplication. Control modules provide signal routing, remote VCR control with status monitoring, source video/audio/waveform/VU monitoring and complete slave signal QC monitoring. Control and monitoring equipment is housed in a control rack with lower shelves to accommodate source machines. An optional two tier low silhouette console is also available.

The signal routing switcher provides inputs from four video and eight audio signals. Any two video signals (followed by their respective two audio channels) may be selected for duplication at one time and routed to any one or all of five VCR groups in any permutation. Each basic group will accommodate 10 VCRs and each group is expandable to a maximum of 50 VCRs. Signal routing to groups is accomplished with color coded pushbuttons for ease of operation. After signal selection is made, the electronic lock buttons may be used to prevent accidental disruption of signals during duplication. Audio signals are distributed balanced from the control panel to the slave racks.

The remote VCR control selection allows separate control for each slave group, thus providing the ability to duplicate two programs and accomplish a quality control function on a third group of VCRs all at the same time. Slave groups may be selected for control in any combination. Remote functions provided are: Rewind, Stop, Play, Record, Pause and Eject. An electronic lock avoids accidental mis-control during a duplication run. Front panel LED display of machine control status of each VCR (first 50 VCRs) is supplied. This status function operates only on VCRs with internal status reporting electronics.

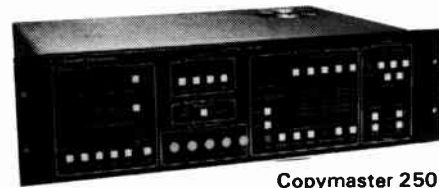
A slave monitoring section is provided to allow video and audio viewing from each VCR. Quality control check can thus be made on each VCR both during recording (through the E to E of the VCR) or during playback after the recording is complete. An auto cycle mode allows a quality control check of each machine without an operator having to make manual selections. An optional module will provide Sequence Hold and Eject buttons. This function will permit the operator to hold the signal being viewed for further study and then to eject only the cassette being viewed in the event of a defect.

A 2-channel audio monitor panel with 4 VU meters provides the ability to monitor both source and program audio simultaneously. A built-in speaker and ear phone jack with channel one, channel two and mix capability completes the audio monitoring function. Additional switching is included for signal selection for waveform monitoring for an optional vector scope. Picture monitoring is accomplished with two 8" color monitors, each with underscan and pulse cross capability.

A master AC power distribution panel with an on/off key switch is provided. A single AC power cable plugs into a 110V-15A circuit and provides all power to the system, less the VCRs. All cabling is supplied cut to length with connectors affixed and pre-tested. A substantial reduction in cabling is achieved through multiplexing and daisy chain techniques. Additional space is available in the control rack or console for accessory equipment or system expansion modules. The system is modular in design and by addition of modules and racking may be extended to almost any size.

Slave Rack

Slave racks are designed with variable spacing shelving to accommodate any size VCR and will allow stacking of front load VCRs up to ten high. Slave racks are 82" H, x 47" W x 22" D. Each rack is wide enough to permit two vertical stacks of VCRs, thus permitting a maximum of 20 VCRs per rack. A 10 VCR interface module mounts on top of and in the rear of the slave rack above each stack of VCRs. All cables route along the top of the racks and are concealed by a 3" decorative plinth. AC power is distributed vertically down the center of the back of each

**Copymaster 250**

rack. Two vertically mounted cable troughs are provided to allow an organized distribution of VCR interconnect cables. The racks come complete with all system interconnect signal and control cables including all signal and control cables to the slave VCRs.

Copymaster 250 Videocassette Duplicator Control Rack

Model	Qty.	Description	
RS 04	1	Control rack	
VS 609-01	1	System control panel	
VS 609-02	1	Source/slave audio monitor	
VS 600-12	1	AC key switch control panel	
SC 250-00	1	Control rack cable set	
PVM 8220	1	Sony dual 8" color monitor with pulse cross	
1710B	1	Tektronix waveform monitor with rackmount	
RS-003S	1	Finish trim panel for dual monitors	
VS 609-00	1	Service documentation set System assembly and test	
Control Rack			\$9,700.00

Videocassette Duplicator Slave Rack

Model	Qty.	Description	
RS 01	1	Slave rack with AC	
VS 609-03	1 or 2	Remote control/VCR interface	
SC 250-10	1 or 2	Slave rack cable set System assembly and test	
Slave rack with 10 slaves			\$3,435.00
Slave rack with 20 slaves			5,895.00

Options

VS 609-07	1	DC power supply line driving (1 required per 50 VCRs)	\$ 675.00
VS 609-06	1	Group combiner module (1 required over 50 VCRs).	750.00
RS 05	2	Rack finish trim panel.	200.00
VP 700-01	1	VCR changeover switch for U-Matic VCRs	1,600.00
1720	1	Tektronix vector scope	2,250.00
1730	1	Tektronix WF monitor (instead of 1710B).	Add 500.00
RS-03	1	Source rack . . . . .	.635.00
VS 609-32	1	QC eject/hold control panel . . . . .	.250.00
VS-609-30	1	QC eject/hold PC board (1 required per interface) . . . . .	.75.00
Turbo 2	1	Cavendish-Fortel duplication TBC processor	8,995.00
VP716-01	1	2 group audio "switchmix" control panel. . . . .	.650.00

System Pricing

10 Slave System	\$13,135.00
20 Slave System	15,595.00
30 Slave System	19,030.00
40 Slave System	21,490.00
50 Slave System	24,925.00
60 Slave System	28,600.00
100 Slave System	40,390.00
150 Slave System	56,130.00
200 Slave System	70,895.00
250 Slave System	86,635.00

DWIGHT CAVENDISH CO.

Video Cassette Duplicator

Copymaster 250-5 Videocassette Duplicator

• Five simultaneous duplication programs • Full 6-function remote control of 5 groups of slave VCRs • 6 in—6 out source routing matrix • Two audio (stereo) channels throughout • 5-group signal distribution • 5-group audio switching with output level adjustment • 6-source signal monitoring • VCR status monitoring display • Auto-sequence or manual step slave signal monitoring • Master eject facility • Monitoring sequence hold with QC eject/reject • Ten-high slave VCR stacking • Professional performance specification • System will duplicate in any standard, any format and from any source machine • Simple modular expansion to 250 slave VCRs

Copymaster 250-5 Videocassette Duplicator

The Copymaster 250-5 video cassette duplicator is designed for use in systems employing from 10 to 250 or more slave VCRs when there is a requirement to be able to dub as many as five different programs at the same time.

Control Rack

The Copymaster 250-5 is a professionally designed and factory manufactured system, engineered specifically for video cassette duplication. Control modules provide signal routing, remote VCR control with status monitoring, source and slave video, audio and waveform monitoring. Control and monitoring equipment is housed in a control rack with lower shelves to accommodate source VCRs if required. An optional two tier low silhouette console is also available.

Source signal routing is accomplished by use of modular 6 x 1 routing switchers with looping inputs to allow "stacking." From one to five switchers may be "stacked," one required for each program to be dubbed concurrently. A sixth routing switch is used to select source signals for test and monitoring. With a full complement of routing switchers (6), it is then possible to dub five different programs at once and have the ability to monitor any one of six possible input program signals. All signal paths in the system are video with two channels of audio follow. Audio signals are distributed balanced from the routing switcher to the VCR interfaces located at the slave rack.

The remote VCR control section allows separate control for each of the five slave groups. Slave groups may be selected for control in any combination. Remote functions provided are: rewind, stop, record, play, pause and eject. Front panel LED's display machine status of each VCR group (and each VCR up to the first 50 VCRs). The status function operates only on VCRs with internal status reporting circuitry.

A slave monitoring section is provided to allow video and stereo audio signal monitoring from each VCR. Quality control checks can thus be made on each VCR both during recording (through the E to E of the VCR) or during playback after the recording is complete. An auto cycle mode allows quality control checking of each VCR without an operator having to make manual selections. A sequence hold and defective cassette eject buttons are provided to allow the operator to stop the auto cycle function temporarily (in order to study a cassette in question) and then if defective to eject only the defective cassette.

A stereo audio monitor panel with VU metering provides the ability to monitor both slave and source audio in stereo through an operator stereo headset or in mono with a built-in speaker. Line level audio output connections are provided for use in driving external stereo audio amplifiers.

A control rack master AC power distribution panel with an on/off key switch is provided. All cabling in the system is supplied cut to length with connectors affixed and pre-tested. A substantial reduction in cabling is achieved through multiplexing and "daisy chain" techniques. Additional space is available in the control rack or console for accessory equipment or system expansion modules. The system is totally modular and, by addition of modules and racking, may be expanded to almost any size.

Slave Rack

Slave rack are designed to accommodate any size VCR and will allow stacking of VCRs up to ten high. Each rack is 82" H x 47" W x 22" D. Each rack contains two vertical stacks of VCRs, thus allowing a maximum of twenty VCRs per rack. A ten VCR interface module mounts on top and in the rear of the slave rack above each stack of the VCRs. All trunk cables route along the top of the racks and are concealed by a 3" decorative plinth. AC power is distributed vertically down the center of the back of the rack. Two vertically mounted cable troughs are provided to allow an organized distribution of VCR interconnect cables. The racks come complete with all system interconnect signal and control cables including all signal and control cables to the slave VCRs.



Copymaster 250-5 Videocassette Duplicator Control Rack

Model	Qty	Description
RS 04	1	Control rack w/2 shelves
VS 614 01	1	System control panel
VS 600 12	1	Key switch control panel
SC 250 5	1	Control rack cable set (includes VS 708-00 cable set)
PVM 8220	1	Sony dual 8" color monitor w/pulse cross/U-scan
17108	1	Tektronix waveform monitor w/rackmount
VS 708-00	6	6 x 1 video/audio routing switcher
RS-003S	1	Finish trim panel for monitors
VS 612-00	1	Documentation set: system assembly and test
Control rack price		\$ 14,320.00

Video Cassette Duplicator Slave Rack

Model	Qty	Description
RS 01	1	Stand alone slave rack w/AC
VP 609 03E	1 or 2	Remote control/VCR interface
SC 250 10	1 or 2	Slave rack cable set system assembly and test
Slave rack w/10 slaves		\$3,510.00
Slave rack w/20 slaves		6,045.00
Options		
VS 609-07	1	DC line driver (1 req'd per 50 VCRs after 1st 50 VCRs) \$ 675.00
VS 609-06	1	Group combiner (1 req'd over 50 VCRs) 750.00
RS 09-01	1	Control console one tier (instead of RS 04) add: 425.00
RS 05	2	Rack finish trim panel 200.00
VP 700-01	1	VCR changeover switch 1,600.00
1720	1	Tektronix vector scope 2,250.00
1730	1	Tektronix WF mon (instead of 1710B), add: 500.00
RS 03	1	Source VCR rack 635.00
		Stereo headset 50.00
VP 708-13	1	6 x 6 matrix remote control panel Add: 450.00
Turbo 2	1	Fortel duplication TBC processor 8,995.00
VP 710-01	1	5 group "switch-mix" control panel 1,600.00

Systems Pricing	
10 Slave system \$17,830.00	60 Slave System \$33,670.00
20 Slave System 20,365.00	100 Slave System 45,760.00
30 Slave System 23,875.00	150 Slave System 61,875.00
40 Slave System 26,410.00	200 Slave System 77,015.00
50 Slave System 29,920.00	250 Slave System 93,130.00

DWIGHT CAVENDISH CO.**Video Cassette Duplication System****Copymaster 500 Videocassette Duplication System**

• Five simultaneous duplication programs • Full 7-function remote control of 5 groups of slave VCRs • 6 in—6 out signal routing matrix • Two audio (stereo) channels throughout • 5-group signal distribution • 5-group audio switch-mix with stereo audio level adjustment • 6-source signal monitoring • Video, audio, waveform and VU monitoring • Master eject facility • Serial, parallel and infrared VCR remote control • Ten-high slave VCR stacking • Professional performance specification • System will duplicate in any standard, any format and from any source machine • Simple modular expansion in increments of 10 slave VCRs

Control Rack

The Copymaster 500 is a professionally designed and factory manufactured duplicator, engineered specifically for high volume video cassette duplication. System modules provide signal switching and distribution, remote control, video waveform monitoring and audio monitoring. Control and monitoring equipment is housed in a control rack with optional lower shelves to accommodate source VCRs if required. An optional two tier low silhouette console is also available.

The signal routing provides for the input of six video and six stereo audio signals. The routing switch program output bus is modular and may be configured to allow from one to five different programs to be duplicated at the same time. (Duplicators ordered with less than five program capability may expand up to a maximum of five program buses at any time.) Slave VCR groups can be wired in increments of from 1 to 100 VCRs, allowing a total basic system capability of 500 VCRs. The addition of more signal distribution electronics permits expansion to almost any size.

A five group stereo audio Switch-Mix and audio level adjust panel is provided to accommodate the wide variety of audio levels and audio track configurations found on video tape masters. This panel allows moving of audio track 1 to audio track 2 and reverse. It allows either track to be selected and installed on audio track 1 or on audio track 2. It permits the combining of audio track 1 and audio track 2 to be added to either or both audio tracks in monoral form. Audio gain of up to 9dB is front panel adjustable. Individual channel level adjust is provided along with a bargraph level display for each channel. A 1kHz audio calibration signal is included. The audio signals are distributed balanced from the control rack to the slave racks and unbalanced from the slave rack distribution amplifiers to the VCRs.

The remote control panel provides control selection to five VCR groups. Full function remote controls with group status indicators will allow the control of up to five different programs at one time. In addition to the normal controls, a master eject button is included. From the control panel, master control cables feed to the five slave group locations. The basic five group remote control panel is capable of controlling five hundred and more VCRs. This remote control system will operate with any remotely controllable VCR including parallel wired, serial wired, infrared and DC matrix types of control. Control interfaces of all types may be intermixed in the system.

A 13" color monitor (or optional dual 8" color monitor) with pulse cross and underscan along with a waveform monitor is provided to allow viewing of the various source signals. A dual stereo audio monitor with built-in speaker, headphone jacks and VU metering is included. Individual audio channel monitoring is accomplished with the built-in monitor speaker. Stereo audio is monitored by use of headphones. Switching is included to connect video, waveform and audio monitors to the various incoming signals. Audio "line output" connections are available from the audio monitor for driving external amplifiers if required.

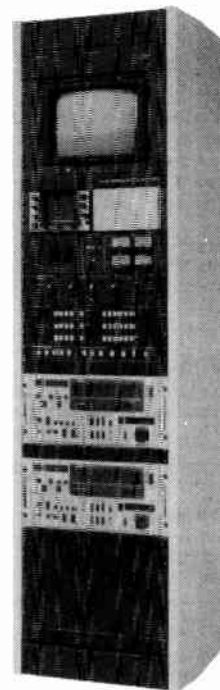
A master AC power distribution panel with key switch is provided. All power, signal and control cables are included. One AC cable plugs into a 15A, 110V outlet for powering of the complete system, except for VCR AC power, which is supplied separately.

By use of NTSC, PAL or SECAM monitoring equipment and the appropriate VCRs, the Copymaster 500 Duplicator will dub any of the formats.

By the use of optional modules the Copymaster 500 easily accommodates distribution of four channels of audio for those cases where separate stereo audio distribution is desired.

Slave Rack

Slave rack are designed with variable spacing shelving to accommodate any size VCR. Racks are 82"H x 47"W x 22"D. Front load VCRs can be mounted up to ten high, side by side, permitting twenty VCRs per rack. An AC power outlet strip is mounted vertically in the center of the rear of the rack supplying power to all VCRs and DAs. The video/audio distribution amplifiers and VCR remote control interfaces mount on top and in the rear of



the racks. All trunk cables route across the top of the racks. A 3" front dress plinth conceals all cables. Trunk cables may also be routed under the racks through cable ports provided. Vertical cable troughs in the rear of the racks are provided to allow an organized distribution of VCR interconnect cables. The racks come complete with all system interconnect signal and control cables including all signal and control cables to slave VCRs.

Copymaster 500 Videocassette Duplication System

Model	Qty	Description
RS04	1	Control rack w/2 shelves
VP 708-00	6	Signal routing switcher module
VP 710-01	1	5 group stereo audio switch-mix control panel
VP 709-01	1	Stereo audio monitor panel
VS 615-01	1	Remote control panel for 5 groups w/status
VS 600-12	1	AC key switch control panel
SC 500-00	1	Control rack cable set
PVM 8220	2	Sony 8" color monitor w/rackmount kit
17108	1	Tektronix waveform monitor
VS 615-00	1	Copymaster 500 documentation set system assembly and test

Control Rack Price..... \$14,960.00

Video Cassette Duplicator Slave Rack

Model	Qty	Description
RS-04A/D w/AC	1	Slave rack
VP 702-02	1 or 2	Video stereo audio DA
VS 608-03/24	1 or 2	Remote control interface
SC 500-10	1 or 2	Slave rack cable set system assembly and test

Parallel control slave rack w/10 slaves	\$2,175.00
Parallel control slave rack w/20 slaves	3,970.00
1st in group serial control slave rack w/10 slaves	1,965.00
1st in group serial control slave rack w/20 slaves	3,550.00
Intra group serial control slave rack w/10 slaves	1,585.00
Intra group serial control slave rack w/20 slaves	2,790.00

Options	
RS-05	2 Rack finish trim panels \$ 200.00
RS-09	1 Control console mainframe 1 tier, add 425.00
VP700-01/02	1 VCR changeover switch for U-matic VCR 1,600.00
1720	1 Tektronix vector scope 2,250.00
RS-03	1 Source VCR rack 635.00
VP-708-13	1 Remote control panel for VP 708 w/cables, add: 450.00

Systems Pricing

	Parallel	Serial	Parallel	Serial
60 Slave:	\$26,870.00	\$25,230.00	240 Slave: \$ 62,600.00	\$50,340.00
100 Slave:	34,810.00	30,810.00	300 Slave: 74,510.00	58,710.00
160 Slave:	46,720.00	39,180.00	400 Slave: 94,360.00	72,660.00
200 Slave:	54,660.00	44,760.00	500 Slave: 114,210.00	86,610.00

DWIGHT CAVENDISH CO.

Videocassette Quality Control Station

Copymaster QC-10/50 Videocassette Quality Control Station

• Monitors picture video • Monitors pulse cross and underscan • Monitors video waveform • Monitors linear and Hi-Fi stereo audio • Monitors video and audio RF envelope • Monitors up to 50 slave VCRs • VU metering of audio • Full-function remote control • View hold control • Manual and automatic sequencing • Auto rewind timer • Master eject facility • Sequenced reject-eject • Easily expandable from 10 to 50 slave VCRs

The Copymaster QC-10/50 quality control station consists of a control rack (or optional console), slave racking, all cabling, remote VCR control and signal sequence switching for video, audio, video RF envelope, HI FI audio RF envelope, and defective cassette eject. Waveform monitoring, video monitoring, audio monitoring and special operator controls are included. QC stations are available for use with from ten to as many as fifty slaves.

When the QC VCRs are loaded, the operator places all slaves in the play mode. The video and audio signals are played back from each cassette player, either in manual or automatic sequence. In the automatic mode, the operator has the option to set the dwell time to a comfortable period. A 13" color video monitor with pulse cross and underscan is provided for picture viewing.

A waveform monitor is included for video waveform inspection. The B input of the waveform monitor is used to view the RF envelope signal. An optional second waveform monitor can be employed to monitor the video RF envelope and/or the RF Hi Fi audio signal.

A four channel audio monitor with VU metering is included for audio monitoring of linear of Hi Fi audio tracks. Audio monitoring with earphones will monitor stereo sound while a built-in speaker can be selected to monitor individual track audio channels. Line level audio output signals are supplied for use in driving external stereo audio amplifiers if required.

The remote control panel provides five function remote control including master eject. A sequenced eject button is provided to allow the operator to eject only the defective cassette.

A rewind timer is provided to allow the operator to preset and automatically rewind to any point on the tape for QC inspection.

In the signal viewing process, a "signal hold" button is provided to allow the operator to "hold" a cassette playback signal for closer scrutiny.

The system comes complete with all slave racking, all VCR cables and VCR AC power distribution. Any remotely controllable video cassette player can be used in the system. Some VCRs may require modification for RF envelope inspection and eject functions. VCRs must be specified at time of order so the system may be supplied with proper mating connectors.

Depending upon inspection procedures, tape length and operator variables, cassette inspection outputs of 300 to 400 or more per hour can be expected when using the Copymaster QC-10/50 with a full complement of slave VCRs.

Specifications

Audio Monitor

Inputs: Linear and Hi-Fi (CH1/CH2)
Level: -5dBm, 47k ohm, unbalanced, phono

Line Outputs (CH1 and CH2): Level: -5dBm, 1K ohm, unbalanced, phono (volume control at maximum)

Frequency Response: ± 0.2dB, 20Hz to 20kHz

Total Harmonic Distortion

(20Hz to 20kHz): Speaker: < 0.3%
Stereo jack: < 0.1%
Line outputs: < 0.05%

Signal-to-Noise:

Speaker: > 72dB
Stereo jack: > 82dB
Line outputs: > 82dB

Speaker Output Power:

1.2WRMS

Crosstalk:

< 80dB, 20Hz to 20kHz

Stereo Crosstalk:

< 80dB, 1kHz



Copymaster QC-10/50 Videocassette Quality Control Station

Model	Qty	Description
RS-04	1	Control rack
RS-01	1 to 3	QC VCR slave rack w/AC
VS612-01	1	System control panel
VS612-03	1	Rewind timer panel
VS612-04	1 to 5	VCR interface remote control/video/audio/eject
SCQC-10A	1 to 5	Cable set for 10 slaves
SCQC-00	1	Control console cable set
VS600-12	1	AC key switch control panel
BT-S1300N	1	13" Panasonic video monitor
1710B	1	Tektronix waveform monitor w/rackmount stereo headset
VS612-00	1	Service documentation set system assembly and test

Basic 10 slave QC station price \$ 10,800.00

Options

VS612-06	1	VCR interface-video and audio RF and Hi Fi audio (w/cable set) \$1,300.00
SCQC-108	1	Slave rack cable set for VS612-06 400.00
RS09-01	1	Single tier control console, add: 425.00
1710B	1	Tektronix waveform monitor 1,745.00
1730	1	Tektronix dual trace waveform monitor 2,250.00
RS-05	2	Rack finish trim panel 180.00
BBV-1	1	RF envelope buffer board. 75.00

Systems Pricing

		Basic Unit	w/Opt 1	w/Opt 1 and 2
QC-10	Quality control station	\$ 10,800.00	\$ 12,500.00	\$ 12,925.00
QC-20	Quality control station	13,610.00	17,110.00	17,535.00
QC-30	Quality control station	17,260.00	22,360.00	22,785.00
QC-40	Quality control station	20,035.00	26,835.00	27,260.00
QC-50	Quality control station	23,685.00	32,185.00	32,610.00

Note: Prices quoted do not include VCRs.

DWIGHT CAVENDISH CO.

Cables/Cabinetry/Accessories

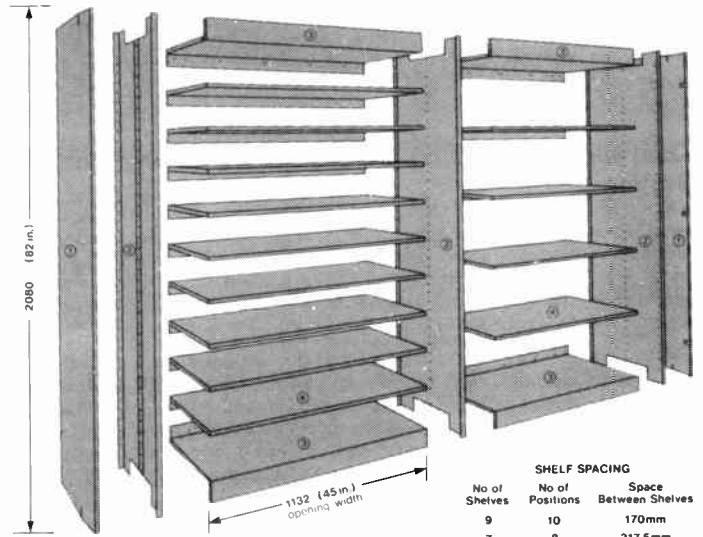
System Cable Sets

SC50-00	Control panel cable set	\$ 20.00
SC250-00	Control rack cable set for Copymaster 250	150.00
SC250-5-00	Control rack cable set for Copymaster 250-5	500.00
SC500-00	Control rack cable set for Copymaster 500	600.00
SCQC-00	Control rack cable set for Copymaster QC-10/50	150.00
SC50-10	Slave rack cable set for Copymaster 50 per each 10 VCRs	775.00
SC50-10IR	Slave rack cable set for Copymaster 50 per each 10 VCRs IR	525.00
SC250-10	Slave rack cable set for Copymaster 250 per each 10 VCRs	775.00
SC250-10IR	Slave rack cable set for Copymaster 250 per each 10 VCRs IR	525.00
SC500-10	Slave rack cable set for Copymaster 500 per each 10 VCRs	550.00
SC500-10IR	Slave rack cable set for Copymaster 500 per each 10 VCRs IR	400.00
SC500-10S	Slave rack cable set for Copymaster 500 per each 10 VCRs serial	300.00
SC1000-10	Slave rack cable set for Copymaster 1000 per each 10 VCRs	550.00
SC1000-10IR	Slave rack cable set for Copymaster 1000 per each 10 VCRs IR	400.00
SC1000-10S	Slave rack cable set for Copymaster 1000 per each 10 VCRs serial	300.00
SCQC-10A	Slave rack cable set for QC-10 for remote/video/audio for 10 VCRs	695.00
SCQC-10B	Slave rack cable set for QC-10 for Hi-Fi audio/RF options for 10 VCRs	400.00
SC250-01/1 to 5	Slave rack feed cable set-group 1 thru 5 for CM50 and CM250	250.00
SC250-02	Slave rack loop cable set-interfaces intra group for CM50 and 250	200.00
SC250-06	Slave rack system control feed cable (3m to 5m) for CM50 and 250	95.00
SC250-07	Slave rack system control loop cable (.5m) for CM50 and 250	80.00
SC500-01	Slave rack system feed video cable (15m) for CM500 (BNC to BNC)	45.00
SC500-02	Slave rack loop video cable (.5m to 1.5m) for CM500 (BNC to BNC)	15.00
SC500-04	Slave rack system feed audio cable (15m) for CM500 (DIN to DIN)	30.00
SC500-05	Slave rack loop audio cable (.5m to 1.5m) for CM500 (DIN to DIN)	20.00
SC500-06	Slave rack system feed RC cable (15m) for CM500 (9-pin D to 9-pin D)	55.00
SC500-07	Slave rack loop RC cable (1.5m) for CM500 (9-pin D to 9-pin D)	40.00
SC500-08	Slave rack system feed serial control cable (15m) (RCA to RCA)	15.00
SC500-10	VCR serial remote control loop cable (.5m to 1m) (RCA to RCA)	3.00
SC500-27	Remote control distributor cable for IR systems (RCA to 9-pin D type)	15.00
MC608-01	VCR video cable for VCR (#1 thru #10) (BNC to BNC)	10.00
MC608-02	VCR stereo audio cable for VCR (#1 thru #10) (RCA to RCA)	5.50
MC608-03	VCR remote control cable for CM500 w/parallel control	30.00
MC608-04	VCR remote control cable for CM500 w/IR control (4-pin DIN to LED)	15.00
MC608-24	VCR remote control cable for CM500 w/serial (RCA to RCA)	4.00
MC608-26	VCR remote control cable for CM500 w/IR control (RCA to LED)	15.00
MC609-01	VCR video cable for VCR (#1 thru #10) (BNC to BNC)	10.00
MC609-02	VCR stereo audio cable for VCR (#1 thru #10) (RCA to RCA)	5.50
MC609-03	VCR remote control cable for CM50, 250, 250-5 w/parallel control	40.00
MC609-04	VCR remote control cable for CM50, 250, 250-5 w/IR	15.00
MC-QC-03	VCR remote control cable for CM10/50 QC station w/parallel control	40.00
MC700-03	VCR remote control cable for VP700 changeover switcher	40.00
SC700-01	Remote control cable for VP700-01 to Copymaster duplicator	25.00
SC708-00	1 x 6 video/audio Matrix cable set for VP708 switcher	75.00
SC708-20	Remote control cable for VP708 switcher (2m)	30.00
C-5	5-pin locking DIN connector	3.25

Cabinetry

RS01	Slave rack, stand alone for 20 VCRs, less AC strip, KD	\$925.00
RS02	Slave rack adder for 20 VCRs, less AC strip, KD	790.00
RS03	Source rack, stand alone for 5 VCRs, less AC strip, KD	635.00
RS04	Control rack, stand alone w/mounting rails, w/2 shelves, KD	695.00
RS04A	Slave rack, stand alone for 10 VCRs, less AC strip, w/VCR brackets, KD	435.00
RS04AD	Dual slave rack for 20 VCRs, less AC strip, w/VCR brackets, KD	725.00
RS05	Rack-side finish trim panel	100.00
RS09-01	Control console mainframe 1 tier	1075.00
RS09-02	Control console mainframe 2 tier	1975.00
RS000	Side support panel for rack	135.00

TYPICAL SLAVE SECTIONS



Slave Cabinet

RS001	Panel mounting angle for control rack (full length-front/rear), set	\$ 130.00
RS002	Interface module mounting bracket, pair	10.00
RS003 S or P	Finish trim panel for dual video monitors	35.00
RS004/5/6S	Shelf-slave rack/source rack/control rack for side panel mount	50.00
RS-006RM	Shelf-control rack for rackmount	50.00
RS007	Slave rack 22 outlet AC distribution module	135.00
RS008	Cable trough	17.50
RS009 S or P	Monitor shelf	32.00
RS010/011	Pinth-slave/source	70.00
RS012	Pinth-control rack	40.00
RS013S or 014DC	Module mounting supports, pair	\$ 14.00
RS015	Rack feet, pair	8.50
RS016	Blank panel 1 unit	12.00
RS017	Blank panel 2 unit	15.00
RS018	Blank panel 3 unit	18.00
RS019	Blank panel 4 unit	21.00
RS020	Rack front trim strip	35.00
RS021	Interface mounting bracket, pair	12.00
RS022	VCR support bracket front panel mount, pair	17.50
RS022A	VCR support bracket side panel mount, pair	4.50
HW01	Hardware set for RS01 control rack	13.00
HW03	Hardware set for RS03 source rack	8.00
HW04	Hardware set for RS04 and RS04A slave rack	10.00
HW04AD	Hardware set for RS04AD slave rack	18.00

Accessory Equipment

Turbo 2	Fortel duplication TBC processor	\$ 8,995.00
Y-688	Fortel 32 line digital TBC w/enhancement and processing	12,500.00
AE618	Hotronic time base corrector	2,950.00
LCG400M	Leader sync/color bar/test signal generator	2,100.00
BTS702N	Panasonic dual 7" color monitor w/rackmt/pulse cross/U-scan	1,150.00
BTS1300N	Panasonic 13" color monitor w/rackmt/pulse cross/U-scan	695.00
BTS1900N	Panasonic 19" color monitor w/rackmt/pulse cross/U-scan	850.00
TSG-375	Sigma sync/color bar/test signal generator	2,995.00
PVM5300	Sony triple 5" color monitor	2,430.00
PVM8220	Sony dual 8" color monitor w/rackmount/pulse cross/U-scan	1,335.00
VDC-5	Sony dub cable for Sony U-matic VCRs	85.00
17108	Tektronix waveform monitor	1,745.00
1720	Tektronix vectorscope	2,250.00
1730	Tektronix waveform monitor	2,250.00
1700F05	Tektronix side by side rackmount kit	180.00
96425-000/1/2	Telex cassette auto loader for Panasonic or JVC VHS VCR	350.00
AVM-13S	Videotek 13" color monitor w/rackmount/pulse cross/U-scan U-matic/Beta/VHS/8mm VCRs	705.00

Video Tape Erasers

EM1524	Erasemaster I-High volume video cassette degausser (1000+/hr)	\$9,200.00
EM29	Erasemaster II-Medium volume video cassette degausser (100/hr)	3,000.00
EM1905	Erasemaster III-High density video cassette Degausser	2,800.00
EM908	Erasemaster IV-Cassette and 1" video tape Degausser (16" reel)	8,400.00

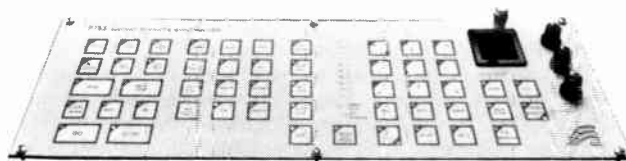
Refer to Green Section for Addresses and Telephone Numbers.

CEL ELECTRONICS LTD.

Digital Effects Systems/Editing Systems

MS101 (Maurice Minor) Zoom Effects Controller

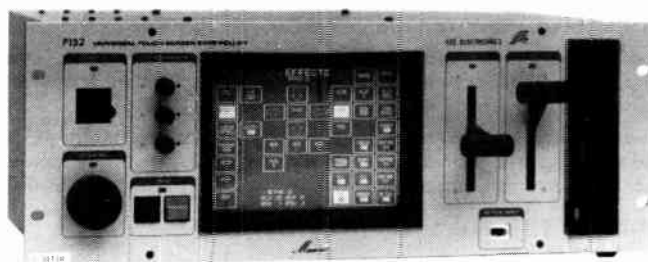
Consists of:
P147-30 TBC/frame store synchronizer with NDS filter
P148/1 Serial interface with key combiner (DKC)
P153 Touch pad controller
 • Joystick • Zooms • Folds • Slides • Reveals • Moves • Quarters
 • Montages • Pixelation • False coloring • Posterization • Adjustable
 move speed • Remote control of framestore setup
MS101 \$10,995.00



P153

MS102 (Maurice EFX-II) Single Channel Zoom System

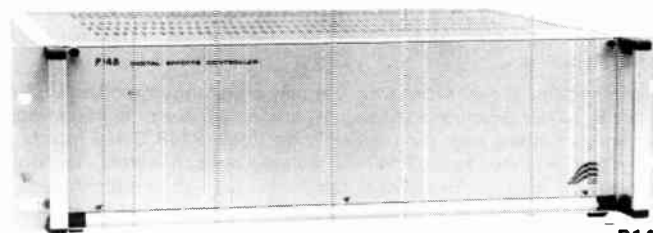
Consists of:
P147-30 TBC/frame store synchronizer with NDS filter
P148/1 Serial interface with key combiner (DKC)
P152 "Maurice" touch screen controller
 Software disk program
 • Zoom • Flip • Tumble • Border • Variable aspect ratio • Slide • Joy-
 stick positioning • Montage • Pixelation • False color • Quantization
 • Programmable moves • Updatable disk based software
MS102 \$17,750.00



P152

MS203 (Maurice EFX-III) Dual Channel Zoom System

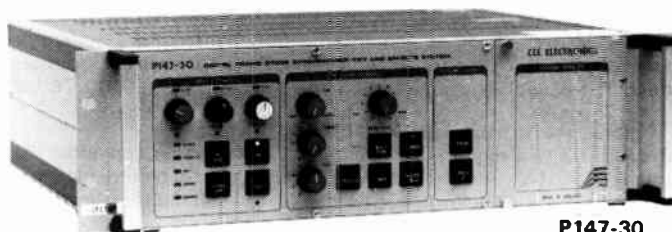
Consists of:
(2) P147-30 TBC/frame store synchronizers with NDS filters
P148/2 Serial interface with key combiner (DKC)
P152 "Maurice" touch screen controller
 Dual channel software disk system
 • Push on/off • Reveal/conceal • Digital effects on both channels si-
 multaneously • Up to 8 video inputs with optional P169V routing
 switcher • Built-in dual key combiner with software controlled priority
MS203 \$27,750.00



P148

MS304 (Maurice EFX-IV)

Dual Channel Zoom System with Mix Effects
 Consists of:
(2) P147-30 TBC/frame store synchronizers with NDS filters
P148/3 Serial interface with mixer (SEG)/combiner (DKC)
P152 "Maurice" touch screen controller
 Dual channel software disk program
 • Mix • Fade • Wipe • Internal color matte generators • Multi-level
 keying all under software control • Vignette of color matte • High
 grade internal SPG • Programmable mix, fade and wipe
MS304 \$29,990.00



P147-30

Eric Editing System

• Expandable from basic 2 machine to 12 and beyond • Usable with
 most VTRs/VCRs and other machines in any mix • Comprehensive jog/
 search/cruise control of all machines • Frame accurate and full color
 framing • Split audio facilities with auto fade • Integrated with CEL
 Maurice system effects • Three external GPIs as standard • Edit list
 management options • Easy trim functions • Auto preview, replay, re-
 turn, tag, match tag, go to, timecode burn-in, readers and generators,
 dub facilities, laser disk controllers, etc.
P158 Basic 3 machine control \$3,500.00
 Used with existing EFX systems
 Controlled by Maurice (P152)
Eric System — Consists of P158 and P152 controller . . . \$7,995.00

MS101 to MS203
 Includes 2 NDS filters and key combiner (DKC) \$18,525.00
MS101 to MS304
 Includes 2 NDS filters, mixer and key combiner (DKC) . . .20,945.00
MS102 to MS203
 Includes additional NDS filter and key combiner 12,775.00
MS102 to MS304
 Includes additional NDS filter mixer and key combiner
 (DKC) 15,140.00
MS203 to MS304
 Includes mixer 5,240.00

Upgrades

EFX I to MS101 (Maurice Minor) \$ 4,990.00
EFX I to MS102 (EFX-II)
 Includes NDS filter 9,995.00
EFX I to MS203 (EFX-III)
 Includes 2 NDS filters and key combiner (DKC) 20,495.00
EFX I to MS304 (EFX-IV)
 Includes 2 NDS filters, mixer and key combiner (DKC) . . .21,995.00
MS101 to MS102
 Includes NDS filter 7,495.00

Up-Grades Editing Systems with Effects Systems
Eric System to MS102
 Eric Editing System Plus
 P147-30, P148/1 and software
 disk program \$15,375.00
Eric System to MS203
 Eric Editing System Plus
 (2) P147-30, P148/2 and software disk program 26,375.00
Eric System to MS304
 Eric Editing System Plus
 (2) P147-30, P148/3 and software disk program 28,840.00

Prices and Specifications Subject to Change Without Notice.

CEL ELECTRONICS LTD.

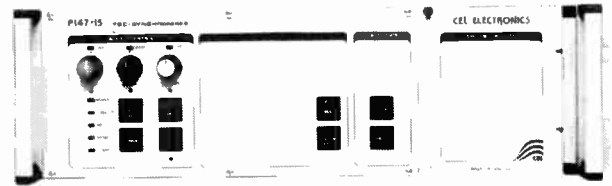
Digital Effects Standards Converter/Switcher

P147-15 Frame/Store Synchronizer TBC

- Full digital frame store • Freeze frame • Field 1 or 2 buttons • Operates as a TBC/synchronizer • DOC on/off • Drop out and hot cut concealment • Fast freezes of last picture in the event of sync disturbances • Operates w/dynamic tracking for improved slow-mo pictures • Offers Bypass facility • Can operate as a transcoder • Extended euro card type construction • Low power construction • Optional input decoder • Dual standard input decoder PAL/SECAM or NTSC 3.58/4.43 • YUV component inputs are available

The P147-15 is a stand alone all digital television frame store synchronizer/TBC intended for industrial commercial, educational and corporate video applications.

This unit features a full frame store making it an 'infinite' window TBC and requiring only a single composite signal as an input. The unit will accept inputs from virtually any source \$6,500.00



P147-15

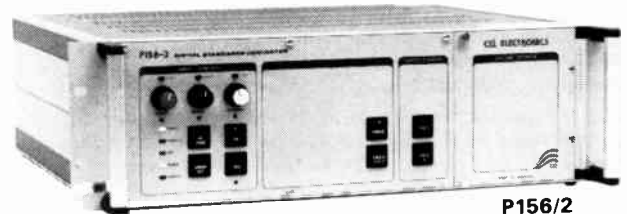
P147-30 TBC-Frame Store Synchronizer —

Digital Effects

- Time base corrector • Frame store synchronizer • Color corrector/proc. amp. • Comb filter (optional) • Dynamic tracking • Drop out compensation • Border and background color generator • Remotable front panel controls • Smooth horizontal movement • Digital effects • LED switches

This unit is able to take video from virtually any source including VHS or Betamax. After time base correction, a wide variety of digital effects can be performed with pictures utilizing CEL's P148 Serial Interface Unit which attaches to the P147-30 via auxiliary connectors. The front panel allows manual control of signal level setups, drop out compensator, error control and effects such as posterization, pixelation and false color imaging.

Component video input is available as an option with the P147-30(C). This enables the unit to be used in conjunction with Recam and Betacam, with other studio equipment or external broadcast standard decoders using YUV outputs. This gives the P147-30 a virtual broadcast standard frequency response \$ 10,750.00



P156/2

P156-2 Standards Converter

The P156-2 is a digital TBC, frame store, standards converter that features Interpolation Circuitry which corrects the geometry of picture sizes while converting from 625 line to 525 line standards or vice versa. (Dependant on standards format ordered).

The unit is intended for industrial, commercial, educational and corporate video applications and may also be used as a back-up unit in broadcast applications.

P156-2 is available in two configurations:

- PAL/SECAM input with an NTSC output
- NTSC input with a PAL output

The PAL/SECAM input converter can automatically or manually switch between standards. As an option, either unit can be fitted with a PAL-M decoder.

Seven (7) bit digital processing is used for Y, U and V signals and is also able to cope as a TBC/synchronizer for both the PAL/SECAM and the NTSC source.

P156/2 N-P NTSC input to PAL output \$9,995.00
 P156/2 P-N PAL/SECAM input to NTSC output 9,995.00

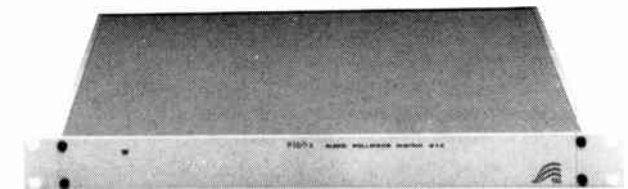


P169V

P169V Video Routing Switcher

P169A-3 Audio Follower

The units in the P169 Series are designed as general purpose routing switchers for both audio and video. They are intended for broadcast, industrial, commercial and educational television production environments. They allow the system components to be routed conveniently and used manually, or digitally controlled by means of serial or parallel link from computer or edit controller.



P169A

Due to the built-in intelligence of these units, they may be interfaced either to CEL's digital effects equipment or, alternatively, to any terminal, microcomputer or edit suite with an RS232/423 interface. The 8 x 4 routing switchers may be stacked, as many as 7 units may be used together to produce larger matrix combinations.

The P169V unit contains the master control processor and video matrix. An optional Audio Follower unit, the P169A (also 8 x 4) is available with up to three separate channels allowing for stereo plus timecode. Unlike most other routing switchers, the PV169V is able to accept synchronous and non-synchronous feeds through any of its inputs and switching always occurs during the field blanking interval of the currently selected input. There are two fully buffered outputs for each of the four output channels which all add up to make the unit uniquely versatile.

P169V Digitally Controlled Routing Switcher. 8 x 4 general purpose routing switcher for studio environment. Used manually or digitally controlled by means of serial or parallel link from computer or edit controller \$2,500.00

P169A-1 Audio Matrix Follower 8 x 4 x 1 channels for use with the P169V 710.00

P169A-3 Audio Matrix Follower 8 x 4 x 3 channels for use with the P169V 1,150.00

SECAM option available **POR**

CENTURY PRECISION OPTICS

Video Camera Accessories

Achromatic Diopters

- 86mm thread to fit most lenses
- Original lens maintains all zoom capabilities
- Edge-to-edge sharpness
- Lack of chromatic aberration
- Excellent contrast
- No light loss
- Highly corrected 2-element design
- Glass elements fabricated to strict mil spec standards
- Hard anti-reflection coated elements
- 86mm thread with adaptors to most lenses
- May be stacked for additional magnification

AD-8616	+ 1.6 Achromatic Diopter	.....	\$325.00
AD-8620	+ 2.0 Achromatic Diopter	.....	325.00
AD-8626	+ 2.6 Achromatic Diopter	.....	325.00
Step-Up Rings For Century Achromatic Diopters			
FA-6786	67mm to 86mm screw-in type	.....	\$37.50
FA-7286	72mm to 86mm screw-in type	.....	37.50
FA-7786	77mm to 86mm screw-in type	.....	37.50
FA-8086	80mm slip-on to 86mm	.....	37.50

Video Duplikins For Economical 35mm Slide To Video Transfer

- Superior multi-element lens
- Slide holder providing vertical, horizontal and rotational adjustments
- Slide-in holder for 2 x 2 filters
- Hinged swing-away diffusion plate for even illumination
- Black anodized aluminum housing
- 2 focusing mounts for variable magnification, (2:1), and adjustable back focus
- Designed to work with many of the Sony, Sharp, Panasonic, NEC, JVC, Hitachi, etc. cameras. (Please specify camera model when ordering).

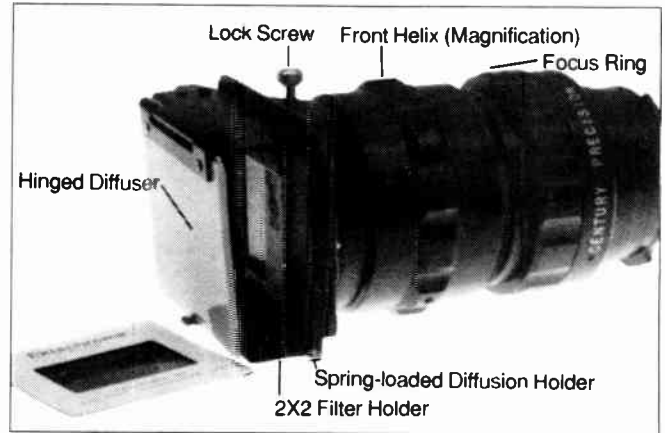
Video Duplikins let you incorporate 35mm slides into video productions in your studio without using costly transfer equipment. This stand-alone system easily attaches to the lens port of your 2/3", 3-tube or CCD professional camera. The Video Duplikin lets you control cropping or add effects filters to increase creativity.

CD-323C	Duplikin III in "C" Mount for 2/3" Cameras	.....	\$750.00
CD-323S	Duplikin III in Sony Mount Designed to work with many of the Sony, Sharp, Panasonic, NEC, JVC, Hitachi, etc. cameras. (Please specify camera model when ordering.)	.....	750.00
CD-323I	Duplikin III in Ikegami Mount for HL-79	.....	750.00

Wide Angle Adaptors For 2/3" Video And 16mm Macro Zoom Lenses

- Precision construction
- Aluminum alloy housing
- Glass elements yield high definition low distortion images and resist scratches
- Lightweight
- No light loss to the taking lens
- Easy to use: Mount to the front of the lens, set the lens focus at infinity, and adjust the macro setting until the picture is sharp. Lenses without a macro feature require back focus adjustment
- Adaptors available to fit most popular 2/3" video zooms
- Custom accessories available

WA-7X52X	.5X and .7X Wide Angle Adaptor Set	.....	\$695.00
WA-7X93	.7X Wide Angle Adaptor	.....	345.00
WA-5X45	.5X Super Wide Angle Adaptor. Must be used with .7X to yield a total of 50% additional coverage to the original zoom lens	.....	445.00



Duplikin

Step-Up Rings For Wide Angle Adaptors

FA-7X67	67mm screw-in type	.....	\$37.50
FA-7X72	72mm screw-in type	.....	37.50
FA-7X75	75mm slip-on type	.....	37.50
FA-7X77	77mm screw-in type	.....	37.50
FA-7X80	80mm slip-on type	.....	37.50
FA-7X86	86mm screw-in type	.....	37.50
FA-7X90	90mm slip-on type	.....	37.50

Video Lens Adaptors

Optical Relay Systems

LA-CSYO	C to Sony (optical relay system) Allows use of C mount lenses on many of the Sony, Sharp, Panasonic, NEC, JVC, Hitachi, etc. cameras. (Please specify camera model when ordering. Note: image inverted and reverted.)	.....	\$500.00
LA-CSYP	C to Sony (optical relay system) with prism for proper image orientation	.....	\$1700.00

Mechanical Adaptors

LA-CSYM	C to Sony (mechanical) (For close-up work only. Does not allow infinity focus.)	.....	125.00
LA-A8EC	Arri Bayonet to Ikegami EC35 (requires slight camera modification)	.....	495.00

Periscope V16

- Highest professional optical and mechanical quality
- 1:1 Relay system. (Field of view same as for objective lens alone.)
- Accepts standard C mount lenses with adaptors to fit most professional 2/3" format lenses. Other lenses may be used with Century C-mount Adaptors
- Fast T3.2, f/2.5
- Accepts Century Interchangeable Mount System for use with most 2/3" three-tube and CCD video cameras
- Adjustable back-focus
- Custom systems available
- Weighs 2.5 lbs.

V16 Periscope establishes a standard in optical relay systems. Ideal for 2/3" three-tube and CCD cameras, the lightweight and economical V16 promises to get into tight corners, up to new highs and down to new lows, increasing the effectiveness of your shots.

Century Periscopes require Interchangeable Camera Adaptors (TM Series).

PR-1125	Periscope V16, with case. Accepts C mount lenses directly and Century C Mount Adaptors	\$3450.00
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CETEC VEGA

Wireless Microphone Receivers Microphone Systems

R-41, R-42 and R-42W PRO PLUS Wireless Microphone Receivers

• GaAsFET front end for ultra low noise and widest RF dynamic range • ULNR (ultralow noise receiver) with highest signal-to-noise ratio and widest dynamic range. "Quiet as a wire" • Switch selectable DYNEX® II, a new standard in audio processing • Highest adjacent channel rejection, with 16 poles of IF filtering • "Infinite gain" receiver technology for highest performance • Low distortion. Wide, flat frequency response • True dual receiver diversity (R-42) or single-channel (R-41) modules • Independent headphone amplifier with front panel level control (high quality, usable as an auxiliary output) • Adjustable, four range, balanced audio output with audio phasing switch • Mu-Metal shielding for power transformer and other critical circuitry to eliminate hum and power line noise • High performance, silver plated, four pole, true helical resonator front end filter • Dual 115/230VAC, 50-60Hz operation (user selectable) with internationally approved power line hardware • Attractive, modern, professional styling • Large, internally illuminated audio and RF signal level meter with VU ballistics as well as VU scale • Special high speed squelch • Front panel overload and audio processing mode LED indicators

R-41	Nondiversity version of R-42 PRO PLUS receiver. Includes one 120U whip antenna	\$2199.00
R-42	PRO PLUS diversity receiver with DYNEX II. Includes two 123U high performance dipole antennas	2835.00
R-42W	Same as R-42 except with two 120U whip antennas instead of the 123U dipole antennas	2865.00
R-42X	Same as R-42 except with two 123 heavy-duty dipole antennas and metal balun cases instead of the 123U dipole antennas	3075.00
R-42Y	R-42 diversity receiver with 123U high-performance dipole antennas (telescoping elements)	2997.00

R-33 Miniature Portable Wireless Microphone Receiver

• 0.8"H x 3.3"W x 5.5"D • Single-piece welded case, as well as the one-piece front panel and chassis, are made of high-strength aircraft-alloy aluminum • Weight of the R-33 is just under 12 oz. with the battery installed • Receiver is available in "Camera Black" (Model R-33-B) and in "PRO Brown/Cream" (Model R-33-T) • DYNEX® II audio processing • High signal-to-noise ratio • Wide dynamic range • GaAsFET preamplifier transistor, which provides both improved sensitivity and excellent intermodulation performance • Miniaturized true helical resonator filter, along with 10 poles of IF filtering, provides razor-sharp selectivity • 9V alkaline battery will run the receiver about 10 hours, if the display is turned "off" • Power-saving battery condition display is included

R-33-B	Miniature DYNEX II portable, battery-powered receiver, with "Camera Black" case. Includes 9V battery, one Model 121BNC whip antenna, one Model 124 "rubber-duckie" antenna with Model 225 right-angle adaptor, one limp-wire antenna, one Model 219 audio output plug, one power adaptor for external DC, one metal belt clip, one leather holster, one soft carrying case, and Velcro strips (for camera mounting)	\$1199.00
R-33-T	Same as Model R-33-B receiver, but with "PRO Brown/Cream" case	1199.00

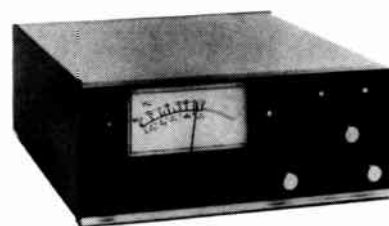
PRO 1 and PRO 2 Wireless Microphone Systems

PRO 2 and PRO 1 Series wireless microphone systems have eight standard configurations to match virtually any application.

The PRO 2 systems are configured around the Model R-32 true-diversity receiver, and the PRO 1 systems around the Model R-31B nondiversity receiver. The PRO 2-B and PRO 1-B systems include the Model T-37 bodypack transmitter. The "BM" systems add the Shure 838 miniature omnidirectional electret mike. Other mikes are available for the "B" systems. The PRO 2-H and PRO 1-H are handheld systems. The "HE" systems include the Model T-36 transmitter with an Electro-Voice BK-1 "Black Knight" condenser element, and the "HS" systems include the Model T-39 transmitter with a Shure SM-96 condenser element.

The PRO 2 and PRO 1 systems can operate on any crystal-controlled frequency from 150 to 216MHz, at a range of up to 1200'. The systems feature Cetec Vega's advanced DYNEX II audio processor for the highest signal-to-noise ratio, widest dynamic range, and most natural sound.

PRO 1-BM	Bodypack system; T-37 transmitter and R-31B receiver with accessories, with Shure 838 miniature omnidirectional electret mike	\$1539.00
PRO 1-B	Bodypack system with accessories, without mike	1439.00
PRO 1-HE	Handheld system; T-36 transmitter and R-31B receiver with accessories	1710.00
PRO 1-HS	Handheld system; T-39 transmitter and R-31B receiver with accessories	1800.00



R-41/R-42

PRO 2-BM	Bodypack system; T-37 transmitter and R-32 diversity receiver with accessories, with Shure 838 miniature omnidirectional electret mike	\$1825.00
PRO 2-B	Bodypack system with accessories, without mike	1725.00
PRO 2-HE	Handheld system; T-36 transmitter and R-32 diversity receiver with accessories	1998.00
PRO 2-HS	Handheld system; T-39 transmitter and R-32 diversity receiver with accessories	2088.00
T-37	DYNEX II pocket transmitter. Includes 153A belt-clip; short flexible antenna, 9V battery, miniature XLR audio input plug, and C-157 soft zippered protective case for transmitter	600.00
T-36	Handheld transmitter with advanced technology, including DYNEX II, and Electro-Voice BK-1 (Black Knight) element. Includes 9V battery, 126 mike stand holder, and C-158 soft zippered protective case	875.00
T-39	Same as T-36 transmitter but with Shure SM96 condenser microphone element. Includes same accessories as T-36	965.00
R-31B	PRO receiver with DYNEX II. Includes one 120U whip antenna	855.00

Accessories

Multicouplers and RF Line Amplifiers

M-1178	Wideband (169-216MHz) multicoupler to split the RF signal from a 50 ohm antenna (such as a 123) to feed four receivers. Includes four 155 coaxial cables, and AC adaptor	\$360.00
A-118	Wideband (169-216MHz) line amplifier (RF preamplifier), for increasing antenna signal level to overcome coaxial line loss. Requires +12VDC, which is available at the R31A receiver terminal block	329.00

Antennas

120U	Quarter-wave whip antenna with universal (straight or right angle) PL-259 connector	\$ 15.00
121 BNC	Same as the 120U except BNC connector	15.00
123	Dipole receiving antenna, with balun in heavy-duty metal case. Includes 25' cable	120.00
123U	High performance telescoping-whip dipole antenna with permanently attached 25' cable	81.00
124	"Rubber-duckie" antenna with BNC connector, approximately 6" long. Supplied with the C-446A Quad Case	24.00

Cases, Holsters, Belt Clips

150	Fitted heavy-duty road case for smaller Cetec Vega wireless microphone systems (transmitter, receiver and accessories). Case has room for three portable systems	\$150.00
152	Leather holster for T-37 transmitter	24.00
153A	Heavy-duty metal belt clip with strong adhesive pad for mounting to side of T-37 transmitter	6.00
C-156	Fitted heavy-duty road case for Cetec Vega PRO PLUS wireless microphone system. Holds one R-41 or R-42, one pocket transmitter, one handheld transmitter and all accessories	240.00
C-157	Soft-zippered protective case for T-37 transmitter	9.00
C-158	Soft-zippered protective case for T-36 handheld transmitter	12.00
C-159	Small low cost minicase for single PRO 1 system	105.00

Miscellaneous

BN-102	Rechargeable 9V NiCad battery for all transmitters	\$18.00
CH-102	Charger for BN-102	9.00
114X	5' audio cable. Connects any microphone with XLR-type 3-pin male connector to T-37 transmitter	38.00
119X	Spare miniature XLR audio input plug for T-37 transmitter	9.00
126	Plastic mike stand holder for T-36 handheld transmitter	9.00
RK-131	19" rackmounting tray; holds two R-31A receivers	84.00
RK-140	19" rackmounting tray; holds two R-41 or R-42 receivers	90.00
RK-132	19" rackmounting tray; holds two R-32 diversity receivers	75.00

CETEC VEGA

Wireless Microphone Systems

PRO PLUS 77 DYNEX® II

Professional Wireless Microphone Transmitter

The 77 DYNEX II is small enough to fit in a shirt pocket, and weighs only 5 oz. Transmitter circuitry is sealed in a separate compartment from the battery, all within an impact-resistant cycloac case. The standard 9V battery (Duracell MN1604 alkaline) can be replaced without exposure of other circuitry.

The mike connector is a Lemo "Quick-Loc" with positive-mating gold contacts, push-lock security, and rugged strain-relief cable fitting. Bias for an electret-condenser microphone can be obtained from spare pins in the Lemo connector.

The 77 DYNEX II is designed for compatibility with Cetec Vega's latest professional receivers such as the R-31 PRO and R-41 and R-42 PRO PLUS featuring DYNEX II, a new standard in audio processing for wireless microphone systems. With DYNEX II, the system provides lower noise and wider dynamic range, improved dynamic response for natural sounding audio, and flatter frequency response.

The preamplifier in the 77 DYNEX II incorporates an ultra low noise input stage, using the latest IC technology for lowest noise and distortion. It features improved gain control circuitry and improved "soft" gain compression circuitry for modulation control. Other features include compression-point metering and battery-status metering. Positive and negative microphone bias is available.

Specifications

Frequency Ranges: 150-174MHz, 174-216MHz

Frequency

Stability: $\pm 0.005\%$, worst case, 20°C to +56°C

Power Output: 50mW

Spurious

Radiation: 40dB below carrier, minimum, typically 55 to 60dB below carrier

Audio Input: -43dBm (10mV) to -4dBm (0.5V) for full deviation; -58dBm (1mV) to -19dB (50mV) for normal overhead allowance

Input Impedance: 10K ohms, minimum

Microphone Bias: ± 5 VDC, nominal

Controls: Power on/off, microphone gain

Metering: Dual function meter; battery condition indication, audio compression metering

Modulation Limiting

(Compressor): Per FCC requirements; "soft" compressor action, 24dB range (minimum), typically system distortion is less than 0.4% at 25dB compression

Connector: Microphone; 4-pin Lemo (Type 304)

Antenna: 1/4 wavelength flexible wire whip, permanently attached

Battery: 9V alkaline, Duracell MN1604 recommended

Dimensions: 3.8" L x 2.8" W x 1.0" D

Weight: 5 oz., including battery

Transmitter

77/DII DYNEX II pocket transmitter. Includes 153A belt-clip, short flexible antenna, battery, 119 audio input plug, and C157 soft zippered protective case for transmitter \$983.00



PRO PLUS T-80 Series

Handheld Wireless Microphone Transmitters

- Lower noise and wider dynamic range
- Improved dynamic response for natural sounding audio
- Flatter frequency response

High Performance Audio Circuits

- Ultralow noise input stage
- Latest IC technology for lowest noise and lowest distortion
- Improved "soft" gain compression circuitry for modulation limiting
- Effective handling noise filter

Other Features

- Patented internal dipole antenna, no performance compromises
- Attractive contoured styling
- All switches and controls on the bottom—out of the performer's way

Transmitters

- T-81*** Handheld transmitter with advanced technology, including DYNEX II, and Shure SM58 dynamic microphone element. Includes battery, 126 mike stand holder and C-158 soft zippered protective case \$1098.00
- T-82*** Same as T-81 transmitter, with Shure SM85 condenser microphone element. Includes same accessories as T-81. 1098.00
- T-83*** Same as T-81 transmitter, but with AKG C-535 condenser microphone element. Includes same accessories as T-81. 1098.00
- T-86*** Same as T-81 transmitter, but with Shure omnidirectional microphone element. Includes same accessories as T-81. 1098.00
- T-87*** Same as T-81 transmitter, but with Shure SM87 condenser microphone element. Includes same accessories as T-81 1098.00

*Non-DYNEX versions of all transmitters are available.

CETEC VEGA

Wireless Microphone System

Traveler and Reporter Portable Wireless Microphone Systems

- Ideal for ENG, on location production
- TV/film/commercial production
- General field use
- Professional audio quality

Cetec Vega Traveler and Reporter portable wireless microphone systems are ideal for ENG, on-location production, TV/film/commercial production, and general field use. The systems provide professional audio quality at a reasonable price. Specify frequencies when ordering transmitters or receivers. (Frequency range is 150 to 216MHz). Remember to check the list of accessories for completing your system. Microphones are not included with the bodypack transmitters, but are listed in the accessories section.

Traveler*

1-B	Bodypack system (T-37 transmitter and 66B receiver), without mike	\$ 1599.00
1-BM	Bodypack system, with Shure 838 mike	1699.00
1-HE	Handheld system (T-36 transmitter and 66B receiver)	1879.00
1-HS	Handheld system (T-39 transmitter and 66B receiver)	1969.00
T-37	DYNEX® II bodypack transmitter. Includes C-157 protective case, 9V alkaline battery, 119X miniature XLR audio input plug, wired-in flexible wire antenna, 153A heavy-duty belt clip, power on/off switch, mike on/off switch, mike level control, and instruction manual.	600.00
T-36	DYNEX II handheld transmitter, with Electro-Voice BK-1 (Black Knight) element, 9V battery, 126 mike holder, C-158 protective case, built-in antenna, and instruction manual	875.00
T-39	Same as T-36 transmitter, but with Shure SM96 condenser microphone element. Includes same accessories as T-36	965.00
66B	DYNEX II portable, battery-powered receiver. Includes four 9V batteries, 121BNC antenna, connector for external DC power, and instruction manual	1010.00

Reporter*

1-B	Bodypack system (T-23 transmitter and R-26 receiver), without mike	\$ 1199.00
1-BM	Bodypack system, with Shure 838 mike	1299.00
1-H	Handheld system (T-24 transmitter and R-26 receiver)	1299.00
T-23	CVX™ bodypack transmitter. Includes C-157 protective case, 9V alkaline battery, 119X miniature XLR audio input plug, wired-in flexible wire antenna, 153A heavy-duty belt clip, power on/off switch, mike on/off switch, and mike level control	435.00
T-24	CVX handheld transmitter. Includes C-158 protective case, 9V alkaline battery, built-in antenna, and instruction manual	535.00
R-26	CVX portable battery-powered receiver. Includes four 9V batteries, 121BNC antenna, connector for external DC power, and instruction manual	775.00
113X	Shure 838 miniature omnidirectional electret condenser microphone. Includes 3' cable and miniature XLR connector.	100.00



Reporter

LM-201X	ECM-44B miniature omnidirectional electret condenser microphone. Includes 3' cable and miniature XLR connector.	\$ 132.00
LM-202X	Crown GLM-100/E miniature omnidirectional electret condenser microphone, with wind-screen, tie bar, and belt clip. Includes 3' cable and miniature XLR connector.	171.00
LM-203X	Audio-Technica AT831C miniature unidirectional electret condenser microphone. Includes 3' cable and miniature XLR connector.	129.00
114X	5' audio cable. Connects any microphone with XLR-type 3-pin male connector to T-24 or T-37 transmitter. (Low-output dynamic microphones may require an inline matching transformer)	38.00
119X	Spare miniature XLR audio input for T-24 or T-37 transmitter	9.00
121BNC	Quarter-wave whip antenna with BNC connector for R-26 or 66B receiver	15.00
124	"Rubber-duckie" antenna with BNC connector, approximately 6" long. (Note: This type of antenna is much less efficient than a whip antenna and range will be decreased by 25 to 40% when it is used in lieu of the 121BNC antenna)	24.00
126	Plastic mike stand holder for all handheld transmitters	9.00
150	Fitted heavy-duty road case. Holds up to two systems	150.00
152	Leather holster for T-24 or T-37 bodypack transmitter.	24.00
153A	Heavy-duty metal belt clip with strong adhesive pad for mounting to side of all bodypack transmitters.	6.00
C-157	Soft zippered protective case for T-24 or T-37 bodypack transmitter	9.00
C-158	Soft zippered protective case for all handheld transmitters.	12.00
C-159	Small low-cost minicase for single Traveler or Reporter system.	105.00
C-266	Kangaroo soft canvas shoulder carrying case for R-26 or 66B receiver	30.00
225	BNC right-angle adaptor for 124 "rubber-duckie" antenna.	9.00
BN-102	Rechargeable 9V NiCad battery for all transmitters and R-26 and 66B receivers.	18.00
CH-102	Charger for BN-102.	9.00
PS-67A	AC adaptor for 66B receiver.	30.00
PS-26A	AC adaptor for R-26 receiver	30.00

*Traveler Dynex II transmitters and receivers are not compatible with Reporter CVX receivers and transmitters. System prices are slightly less than the sum of the individual transmitter and receiver prices.

CETEC VEGA

Wireless Microphone Systems

Ranger 1 and 2 True-Diversity Wireless Microphone Systems

- True dual-receiver diversity for maximum range and reliability
- CVX audio processing for high signal-to-noise ratio, wide dynamic range, and clean, natural sound
- VHF high-band frequencies for clear, reliable audio
- Eight system configurations (for virtually any application)

The Ranger Systems permit total freedom of movement without the restrictions of microphone cables. Operation is clean and clear up to 1000', line of sight, between transmitter and receiver. The systems incorporate CVX™ audio processing for high signal-to-noise ratio, wide dynamic range, and clear, natural sound.

Audio is sent by the bodypack or handheld transmitter to the Ranger receiver on a clear radio frequency. The receiver, in turn, feeds the audio to your public-address system, microphone mixer, or recorder (just like any standard wired microphone).

Specifications (Overall for 1 and 2)

Frequency Range:	169-186MHz
Stock Frequencies:	169.505, 170.245, 171.045, 171.905, 179.200, 184.425, 185.125MHz; special frequencies in the 169-186MHz range are also available (contact factory for price and delivery)
Frequency Stability:	± 0.005%
Working Range:	Up to 1000' under ideal conditions; usually somewhat less in typical applications
Emission/Modulation:	Direct FM, crystal-controlled 60F3
Frequency Response:	60Hz to 14kHz, ± 15dB
Harmonic Distortion:	0.5% maximum, below transmitter limiting; 0.25% typical at 1kHz
Ultimate S/N:	100dB (flat) minimum (105dB typical A-weighted), excluding microphone electronics and/or element noise
Operating Temp.:	-4°F to +122°F (-20°C to +50°C)
RANGER 2-BM	Bodypack system with Model LM-206X mike, including Model T-93M transmitter and Model R-98 diversity receiver, with accessories \$1249.00
RANGER 2-B	Bodypack system without mike, including Model T-93 transmitter and Model R-98 diversity receiver, with accessories \$1175.00



RANGER 2-HA	Handheld system, including Model T-96 transmitter and Model R-98 diversity receiver, with accessories \$1315.00
RANGER 2-HV	Handheld system, including Model T-94 transmitter and Model R-98 diversity receiver, with accessories \$1285.00

Ranger 1 Non-diversity Wireless Microphone Systems

RANGER 1-BM	Bodypack system with Model LM-206X mike, including Model T-93M transmitter and Model R-97 receiver, with accessories \$ 999.00
RANGER 1-B	Bodypack system without mike, including Model T-93 transmitter and Model R-97 receiver, with accessories \$ 925.00
RANGER 1-HA	Handheld system, including Model T-96 transmitter and Model R-97 receiver, with accessories \$1065.00
RANGER 2-HV	Handheld system, including Model T-94 transmitter and Model R-97 receiver, with accessories \$1035.00

VS-1 VECTA Wireless Microphone System

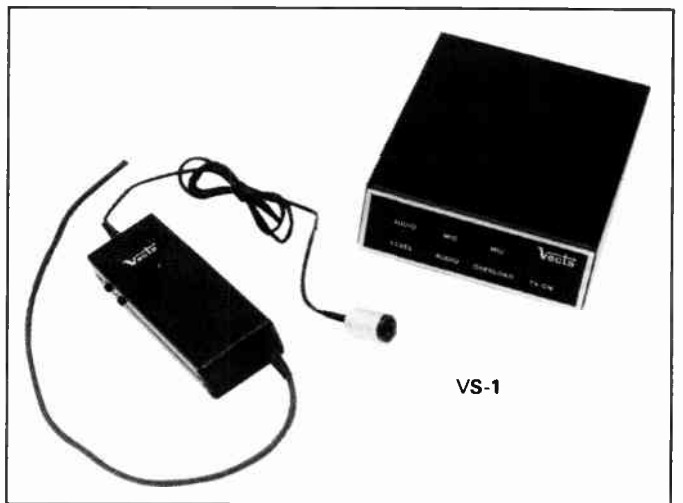
The VECTA VS-1 is an affordable, high quality wireless microphone system designed and priced for school, church, business, entertainment, and similar applications.

The VECTA VS-1 system includes a clean sounding electret lavalier microphone (with wind screen and clip) wired into a miniature radio transmitter. At the other end of the system is the VECTA receiver, on the same radio frequency as the VECTA transmitter, plugged into your audio amplifier (or audio recording equipment).

The transmitter power output is 30mW, nominal.

Standard Frequencies:	169.505, 170.245, 171.045, or 171.905MHz
Range (Transmitter to Receiver):	400' typical, 1000' or more under good conditions
Audio Output:	0dBm (nominal)
Audio Response:	70 to 12,000Hz, ± 3dB
Signal-to-Noise Ratio:	> 78dB

VS-1	VECTA system (models VT-1 and VR-1, with accessories) \$640.00
VS-1A	Same as VS-1, but with VT-1A (see below) \$716.00
VT-1	Bodypack transmitter for use with VR-1 receiver. Includes Vega RSX-11 miniature omnidirectional electret lavalier mike attached with 36" cable, short flexible antenna, 9V alkaline battery, heavy-duty belt-clip, power on/off switch, mike on/off switch, and gain control \$320.00



VT-1A	Same as VT-1 but with Audio-Technica AT831C miniature unidirectional electret lavalier mike attached with 36" cable \$396.00
VR-1	Wireless receiver for use only with VT-1 transmitter. With LEDs to indicate power on and transmitter modulation. Has audio gain control. Includes power supply and whip antenna. \$332.00

Refer to Green Section for Addresses and Telephone Numbers.

CETEC VEGA

*Wireless Microphone Receivers/
Lavalier Microphones*

67B/66B Portable Wireless Microphone Receivers

- Battery-operated receiver with low power consumption; can be powered by external sources for true portability
- High signal-to-noise ratio and wide dynamic range
- Low distortion and wide, flat frequency response
- Multiple-pole crystal IF filter for superb IF selectivity
- Independent headphone amplifier with front-panel level control
- Dual-range, balanced audio output matches line or microphone inputs
- True helical-resonator front-end filter
- AC power adaptor available for in-studio use
- Internal battery pack (uses four 9V alkaline batteries) for true portability
- External power capability for field and portable use, from a 12V camera belt pack or other +10.5 to 18VDC source
- Large multipurpose audio and signal level with VU scale

Designed for "on-location" and portable use, these models are fully compatible with all previous "Pro" transmitters, and now offer higher performance and expanded compatibility. The receivers are extremely sensitive, highly selective, and very stable. The preselector is a true two-pole helical-resonator filter, silver-plated for low loss and long term durability. Low-noise, overload-resistant, dual-gate MOSFETs are used for the RF amplifier and mixer stages. The local oscillator is an overtone, crystal-controlled design, ensuring years of stable, drift-free operation. These models use a combination of LC and multiple-pole crystal IF filtering to provide outstanding IF selectivity and adjacent-channel rejection. The wideband, low-distortion FM demodulator has low distortion (system THD is typically 0.3 or less) and excellent dynamic range.

Either line-level or microphone-level audio output is available via the front-panel mounted XLR connector. (Mike level audio is now externally adjustable). A monitor output is provided for use with headphones; this output is completely independent of the main audio circuitry. A high-quality VU scale meter is included to allow monitoring of the audio output level. This meter may also be used to indicate the relative RF signal level and to meter the DC supply voltage.

67B Wireless Microphone Receiver

The 67B is fully compatible with all "Pro" transmitters equipped with the DYNEX® audio processor, including Cetec Vega's "T" Series transmitters. Because it is equipped with Cetec Vega's DYNEX II audio processor, its usable dynamic range is in excess of 100dB.

67B DYNEX II portable, diversity, battery powered receiver. Includes four 9V alkaline batteries and two 121BNC antennas **\$1398.00**

66B Wireless Microphone Receiver

The 66B professional portable wireless microphone receiver is designed around a GaAsFET (gallium-arsenide field-effect transistor) front end, for high sensitivity, and therefore, greater range (up to 1000'). It incorporates DYNEX II audio processor for the highest signal-to-noise ratio and widest dynamic range, and clean, clear, natural sound.

The compact, lightweight, battery-powered wireless receiver is intended for on-location film and TV production and other portable wireless applications.

The 66B has improved audio performance (including lower distortion) and better squelch characteristics as compared to previous versions.



66B



67B

66B DYNEX II Portable, battery-powered receiver. Includes four 9V batteries and one 121BNC antenna **\$1010.00**

PS-67A Wall-type power supply for 66B and 67A portable receivers. Note: Cannot be used with 66 receiver **30.00**

Accessories

114 5' audio cable. Connects any microphone with XLR-type 3-pin male connector to 77/DII transmitter **\$ 50.00**

123U High-performance dipole antenna with telescoping elements and permanently attached 25' cable **81.00**

C-159 Small low-cost minicase for single 66B or 67A systems. **105.00**

C-266 Kangaroo soft canvas shoulder carrying case for 66B receiver **30.00**

C-267 Kangaroo soft canvas shoulder carrying case for 67A receiver **33.00**

C-466C 66B Quad Case. Compact package includes antenna multicoupler and battery pack for 12 alkaline "D" cells (not included). Holds four 77/DII-66B portable systems **2199.00**

Lavalier Microphones

(113, LM201 and LM202 include 3' cable and Lemo connector to plug into 77/DII transmitter)

113 Shure 838 miniature omnidirectional electret condenser microphone **\$112.00**

LM-201 ECM-44B miniature omnidirectional electret condenser microphone **169.00**

LM-202 Crown GLM-100E miniature omnidirectional electret condenser microphone, with windscreen, tie bar, **183.00**

LM-203 Audio-Technica AT831C miniature unidirectional electret condenser microphone **149.00**

CETEC VEGA

Wireless Intercom Systems

"Q" Plus VHF FM Full-Duplex Beltpack Wireless Intercom Systems

"Hands-free" Continuous Communications

- Freedom from trailing cables
- Easy-to-use full-duplex operation
- Simplified operator controls
- Up to six portables per system
- Ties into existing wired intercom
- Reliable, low-noise, high-band VHF frequencies
- Easy to install in minutes
- Rugged, reliable, professional
- Crystal-clear radio communications for your application

"Q" Plus wireless intercom system provides continuous "hands-free" full-duplex communications between up to six remote beltpack units (portables) through a central master station. The portables are similar in size and configuration to conventional wired-intercom beltpacks.

The system is very easy to operate. For example, untrained personnel can easily use the QTR-1 portable, which has only two operating controls—a combined on/off and headset volume control, and a pushbutton audio control switch (internally programmable for push-to-mute with continuous transmit, or push-to-talk with transmitter and audio "off" until pushed).

A 168X headset (using a Beyer DT-108) plugs into the heavy-duty connector on the QTR-1. The QTR-1 also accepts Clear-Com headsets without any changes, or other headsets equipped with a four-pin female XLR connector. Any one of these headsets also plugs directly into the front panel of the master station.

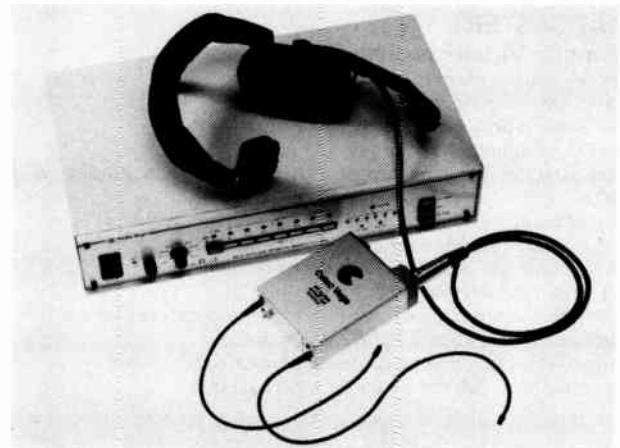
The QX-6 master station provides a full set of convenient controls for monitoring and troubleshooting. The master station has a "universal" intercom interface, enabling the portables to communicate with all stations on most types of wired intercom systems. Also, two master stations can be linked together, allowing full-duplex communications between up to 12 portables, plus operators plugged into the master stations, plus stations on connected wired intercom systems.

The "Q" Plus wireless intercom system features a single-package wireless beltpack remote, simplified operation, near-program-quality audio, improved operating range, "universal" intercom interface, and 115 or 230VAC or DC operation. This price list shows complete configurations from two-up to six-up systems, plus prices for spare modules and accessories. The system packages include all required equipment (i.e., base-station receiver and transmitter modules, portable beltpack units, two 9V alkaline batteries for each beltpack unit, etc.), except for headsets. A "universal" intercom interface is included as a standard feature, and no wired-intercom interface option need be specified.

Frequency Range: 150-216MHz

Systems

Model	Description	User Price
Q + /M	Two-up "Q" Plus system, consisting of 2 QTR-1 beltpack remotes	\$ 1698.00
Q + /1	One-up "Q" Plus system, consisting of a QX-6 master station with one TQX-6 transmitter module, one RQX-6 receiver module, and two 121 BNC antennas, plus one QTR-1 beltpack remote	3676.00



Q + /2	Two-up "Q" Plus system, consisting of a QX-6 base station with one TQX-6 transmitter module and two RQX-6 receiver modules, plus two QTR-1 remote belt-pack units	\$4854.00
Q + /3	Three-up "Q" Plus system, consisting of a QX-6 base station with one TQX-6 transmitter module and three RQX-6 receiver modules, plus three QTR-1 remote belt-pack units	6032.00
Q + /4	Four-up "Q" Plus system, consisting of a QX-6 base station with one TQX-6 transmitter module and four RQX-6 receiver modules, plus four QTR-1 remote belt-pack units	7210.00
Q + /5	Five-up "Q" Plus system, consisting of a QX-6 base station with one TQX-6 transmitter module and five RQX-6 receiver modules, plus five QTR-1 remote belt-pack units	8388.00
Q + /6	Six-up "Q" Plus system, consisting of a QX-6 base station with one TQX-6 transmitter module and six RQX-6 receiver modules, plus six QTR-1 remote belt-pack units	9566.00

Accessories, Remotes, and Spare Models

168X	Beyer DT-108 with 166X connector installed for QTR-1 beltpack remote.	\$ 269.00
166X	Audio connector for QTR-1 remote belt-pack unit	11.00
QTR-1	Spare (or nonsystem) remote beltpack unit (includes two 9V batteries)	849.00
RS-1	Rocker-switch option (momentary in one position and locked in the other) for QTR-1. Duplicates push-to-talk or push-to-mute function (as selected internally) of momentary push-button switch normally supplied with QTR-1	15.00
RQX-6	Spare receiver module for QX-6 base station (six maximum)	329.00
TQX-6	Spare transmitter module for QX-6 base station.	299.00
QX-6	Spare base station (without transmitter or receiver modules, but with full audio interfacing circuitry)	2199.00

CHANNELMATIC, INC.**Automatic Videocassette Changer****BROADCASTER II™****Automatic Videocassette Changer**

- Random access of up to 15 videocassettes
- Total microcomputer control
- Easy 7-day programming with 100 events per day
- No VCR modification required
- Computerized stepper motor drive—indexing accuracy within 0.005"
- Minimal moving parts for high reliability and long service life
- Units may be cascaded for additional capacity
- Will play multiple sequential segments on each tape
- Built-in vertical interval switching
- Automatic switch to auxiliary source during cassette change
- Automatic record/delayed playback optional
- Optional electronic modules can add numerous features
- More cost-effective than multiple VCR systems

The Broadcaster II is a stand-alone, highly reliable videocassette changer mechanism. Totally microprocessor-controlled, the unit can randomly access from its internal storage trays any of fifteen standard 3/4" videocassettes.

The unit is designed to be used in broadcast television stations, CATV systems, LPTV studios, hospitals, schools, hotels, and other facilities where high quality video programming must be originated automatically on a pre-determined weekly time schedule. Available options allow the Broadcaster II to serve as a self-contained record/delayed playback system, a versatile editing suite library, or as part of an automated commercial insert system.

System Operation

The Broadcaster II can randomly access from a library of up to fifteen standard 3/4" videocassettes, insert them into an unmodified Sony Type 5 videocassette machine (VCR), and cue the pre-encoded tapes automatically.

At an operator-programmed time, or upon receipt of a "start" command, the Broadcaster II prerolls the tape to speed and switches it on-air during the vertical blanking interval of network (or other "auxiliary" source) video. With a sync-locked VCR (Sony Type 5 equipped with a Channelmatic Handimod I sync-lock accessory module), clean, glitch-free, broadcast quality video transitions occur.

At the end of the tape program, audio and video output are returned to the network or auxiliary source. The tape is rewound and removed (if so programmed) or simply removed in a "played" condition and replaced in its storage slot.

Operator Programming

All system commands are microcomputer controlled and are entered by the operator on an integral display/keyboard module, the CCU-1A. A full seven day schedule consisting of up to 100 events per day may be entered by the operator at one time.

The 20-pushbutton keypad and large 12-digit LED display allow not only simple schedule entry, but quick and easy error checking, schedule editing (including event insertion or deletion), and the ability to copy entire schedules from day-to-day.

Events may be scheduled to occur at pre-determined times or as sequential occurrences. The operator may choose whether to automatically rewind individual videocassettes either before or after they air, or to rewind all previously aired videocassettes at the end of the programming day.

Additional scheduling functions allow audio/video switching, message generator page turning, and limited external equipment control.

Summary

Field proven in many installations around the world, the Broadcaster II offers up to 15 hours of automatic programming without the need for operator intervention of any kind. The unit is an economical alternative to multiple videocassette machine sequencing systems of the same capacity. Full seven day scheduling ability makes the Broadcaster II a valuable addition to any television system.

Broadcaster II \$ 15,000.00

**Broadcaster II****Optional Equipment**

Options allow the Broadcaster II to perform such varied functions as DTMF tone decoding, built-in color message generation, automatic recording, and external VCR control. Two or more Broadcaster II units may be cascaded together for continuous programming. Other Channelmatic control, function and interface modules are available to adapt the Broadcaster II to perform many other desired functions.

Automatic Sync Lock: The Handimod I can be added to automatically sync lock the VCR, assuring broadcast vertical-interval switching.

Video Monitoring: A panel is provided for the addition of a 5" monochrome video monitor to allow monitoring of the system video output. Pulse-cross is also available optionally.

Character Generator: The CMG-3008A Color Message Generator module and related CSG-3001A Sync Generator module can be added to provide a built-in 8-page/8-line per page alternate video source to fill time during cassette change or to provide a backup in event of VCR malfunction.

Tone Decoding: Various tone decoder modules may be added to allow control of Broadcaster II to be initiated by tones fed through a telephone or other voice-grade audio path or by satellite service cue tones.

Distribution: Channelmatic 1x6 video, audio, and pulse distribution amplifier modules may be added to enable Broadcaster II to provide multiple isolated outputs.

Cascading: Two or more Broadcaster II units may be interfaced together electronically to increase the capabilities of the system.

Backup Source: The VPD-3001A Universal Signal Presence Detector module may be added to enable Broadcaster II to automatically switch to a secondary video source if output video is lost for any reason.

Installed VCR: An installed and tested Sony VP-5000 is optionally available.

Record and Play: Electronics may be added to enable automatic recording and delayed playback of programming.

Balanced Audio: The UAA-3031A audio amplifier module may be added to provide balanced audio inputs and outputs for broadcast interface.

External VCR Control: A VCR-3001 videocassette controller module enables an external VCR to provide fill programming during cassette changing.

CHANNELMATIC, INC.

Ad Insertion System/Accessories

Adcart 2 + 2 Random Access Ad Insertion System

- Full random access of up to 100 30-second spots per 60-minute tape
- Direct spot-to-spot cueing
- Plays spots from eight seconds to full tape capacity or sequence four VCRs for hours of programming
- Provides all playback options—run of schedule, random pod, and full random access
- Operator selected bypass mode if VCR fails—switch to network, switch to next VCR, switch to auxiliary source
- Broadcast quality vertical interval switching
- Fully integrated circuit audio and video switching (has relay bypass)
- Broadcast quality audio and video performance specifications
- Interface for low-cost CRT terminal or personal computer
- Network sync output for locking up VCRs
- Remote tape encoder with CRT terminal control
- Remote control option enables system operation via dial up line
- Interfaces with, and auto-downloads from, traffic and billing software packages
- Operator selectable switch back to network priority—either tape, time, tone, or percent-of-play priority
- Multiple spot cueing options—DTMF tones, contact closure, programmable real time, or operator initiated manual cue
- Automatic VCR preroll calculation—calculates VCR tape loading time for accurate parking
- Video quality detection circuitry monitors output of VCRs
- Optional Ad Manager traffic and billing package optimized for use with Adcart 2 + 2
- Prints out schedules and tape directories
- Programs multiple DTMF cue tone codes per channel

The Adcart 2 + 2 is a random access and insertion system. It can be operated in random pod or full random access modes. The basic Channel Control Unit is housed in a 3 1/2" high rack enclosure and inserts ads into two CATV networks. Channel Control Units can be chained together to form a system of any desired size. The VCR-to-channel assignments can be easily made from the terminal keyboard without moving any jumpers or cables. The system can be configured to have one, two, three, or four VCRs on one channel, 1 or 2 VCRs on each of two channels, or 4 VCRs shared between two channels.

Adcart System Components

- CCU-2A** Channel Control Unit
The Channel Control Unit (CCU) is the heart of the Adcart 2 + 2 system. It handles all ad insertion functions for one or two satellite networks, controlling up to four videocassette players. The CCU contains all necessary audio and video switching and VCR control for normal ad insertion requirements. The CCU can be utilized "stand-alone" or multiple CCUs can be connected together requiring a System Control Unit (SCU), which allows one CRT terminal to control all CCUs. (Requires 1 CAV-015A VCR cable for each VCR used and requires 1 CAL-005A Link Cable between each CCU-2A) **\$6,500.00**
- SCU-1A** System Control Unit
The System Control Unit (SCU) is a communications controller, linking multiple CCU's to a common CRT terminal and printer, or personal computer. It is required when two or more Adcart 2 + 2 CCUs are linked together. (Requires 1 CAL-005A cable) **\$1,500.00**
- TEU-1A** Tape Encoder Unit
The Tape Encoder Unit (TEU) is used for generating and placing advertiser I.D. and spot location digital data on videocassettes. A CRT terminal and editing recorder are minimally required in conjunction with the TEU for tape encoding. The TEU can be connected between a Sony RMM-440 editing controller and recorder. This allows the RMM-440 to be used to accurately position the tape during encoding. A Sony cable with 33-pin connector is required with the TEU. (Requires cable number RCC-005A) **\$2,500.00**

Video Display Terminal

- WSE-060A** Wyse 60A CRT Terminal
The terminal is required for programming, controlling, and monitoring system operation. A terminal is not required in systems that have a PC controller. The terminal is recommended for backup in case of PC failure or for troubleshooting. The Wyse 60 has a pop-up CRT displayed calendar, calculator, and alarm clock built-in. The terminal also includes an auxiliary serial printer port. (Requires CAT-015A cable) **\$650.00**

Remote Systems

- MOD-2400A** Hayes 2400 Baud Smart Modem
For remote systems the Hayes 2400 baud auto-dial auto-answer modem is recommended **\$600.00**



Adcart 2 + 2

Printers

- PLX-800** Epson LX-800 Printer, narrow carriage, with tractor drive **\$ 300.00**
- PLX-286** Epson FX-286E Printer, wide carriage, with tractor drive **800.00**
- PWH-351** Toshiba 351 Printer, 240 CPS, wide carriage, with tractor drive **1,800.00**
- OKI-2410** Okidata 2410 Printer, 350 CPS, wide carriage, with tractor drive **2,300.00**
- NOTE: Printers connected to the Wyse 60 Terminal must have serial control

Adcart Software

- APC-100** Adcart PC Software
Runs on IBM PC-AT or PC-AT compatibles. Enables the Adcart System to be controlled either locally or remotely from a PC **\$1,500.00**
- CTS-2018** Channelmatic "Ad Manager" Traffic Software
20 networks, 18 weeks. Runs on IBM PC-AT or PC-AT compatibles. Requires 30M hard disk, 256K of RAM, 1.2M 5 1/4" floppy, color video and clock boards, tape backup system recommended **11,500.00**
- CTS-1000** Channelmatic "Ad Analyzer" Traffic Software
Runs on IBM PC-XT or PC-XT compatibles. Requires: 10M hard disk, 256K of RAM, 5 1/4" floppy **3,995.00**
- SWZ-150** Spotmatic PC Control Software
Runs on IBM PC-XT, PC-AT, and IBM PC compatibles. Required for use with all Traffic Software packages with computer interfaced directly to a Spotmatic system **3,500.00**
- SWM-200** Spotmatic MCU Software and Hardware Upgrade
(Installed at factory, loaner unit sent to field.) Includes upgrade to interface with specified personal computer for Traffic System or remote control **550.00**
- LSW-100** Logmatic PC Software
Required when interfacing an IBM PC or compatible to an ALS-5A Logmatic for local or remote control. Logmatic PC software can interface with the Channelmatic "Ad Analyzer" software **1,250.00**

Cables and Accessories

- CAV-015A** VCR remote control cable, CCU to VCR **\$ 50.00**
- CAP-025A** Printer cable, CCU or SCU to printer (parallel) **50.00**
- CAP-020A** Printer cable, terminal to printer (serial) **50.00**
- CAT-015A** Terminal cable, CCU or SCU to terminal **50.00**
- CAM-015A** Modem cable, CCU or SCU to modem **50.00**
- CAC-025A** PC to Adcart cable, CCU or SCU to PC **50.00**
- ATA-002A** AT adaptor, 9-pin to 25-pin AT converter cable **50.00**
- CAM-010A** Terminal to modem cable **50.00**
- MOD-150A** PC to modem cable **50.00**
- RCC-005A** Sony, RCC5F, 33-pin TEU to VCR/RMM-440 cable **150.00**
- CAV-001A** Audio/video jumper cables, included with CCUs **30.00**
- CAL-005A** Link communications cables, CCU to CCU or SCU **50.00**
- CAV-002A** VCR A/V cable kit, audio and video cables from CCU to VCRs **200.00**
- MCK-001A** Mating connector kit, all mating connectors for CCU **150.00**
- MST-030B** Masterspot 30, pre-encoded tape, 90-30 sec., 5-60 sec. spots **150.00**
- MPT-060B** Masterpod 60, pre-encoded tape, 50-60 sec. spots **150.00**
- MPT-120B** Masterpod 120, pre-encoded tape, 22-120 sec., 6-60 sec. spots **150.00**
- MPT-690B** Masterpod 120, pre-encoded tape, 35-60 sec., 10-90 sec. spots **150.00**

CHANNELMATIC, INC.

Logging/Insert Systems/Controllers/ Switchers

SERIES 1000

ALS-4A Logmatic Jr.™ Automatic Logging System

- Automatic, unattended operation • 20 character alphanumeric printout
- Prints advertiser and spot ID, event times • Built-in real time clock • Complete 4-channel logging printout • Uses standard 2 1/4" thermal calculator tape • Complete unit fits in 1.75" x 19" rackspace • Connects easily to almost any commercial insert system • Ideal mate to VCR-3004A insert system • Very low cost full-featured logging • Attractive self-contained package

ALS-4A \$2000.00

ALS-5A Logmatic Automatic 4-Channel Logging and Verification System

- 4-channels—automatic operation • Logs advertiser and spot ID event times
- Full size 80-line printer available • Expandable to 400 channels • Use with Li'I MoneyMaker™, Spotmatic Jr.™, or other insert systems • Stack multiple units for large systems • Local or remote download of data to personal computer • Remote controllable via telephone modem • 4000 event memory storage • Allows full sales traffic system when combined with the Channelmatic "Ad Analyzer" software

ALS-5A \$2750.00

BBX-1A Billibox™ Bypass and Test Switcher

- Automatic bypass • Manual bypass • Preview bus • Test signal bus • High speed DTMF tone encoder • Digit-by-digit steppable tone generator • Sync loss annunciator • Vertical interval switching • Front panel LED status indicators
- Adjustable missing pulse detector • Automatic recovery after two minutes
- High performance specifications • Compact one rack unit package • Preview monitor output • Sync loss output • Annunciator output • Stereo processor interface • Wide bandwidth integrated amplifiers

BBX-1A \$1000.00

CIS-1A Spotmatic Jr.™ Single VCR Commercial Insert System

- Lowest price full-featured system available today • Microcomputerized satellite tone decoder • Automatic operation • Built-in logging and verification printout
- Vertical interval switching • Attractive self-contained package • Complete system fits in 1.75" x 19" rackspace • Simplicity-versatility • Lithium battery memory provides months of memory retention • Selectable VCR/satellite priority
- Operational modifications to meet almost any need • Spot sequential mode
- Multiple spot mode • Power and VCR failure protection • Logging and verification • Preview feature • Automatic fill

CIS-1A \$2750.00

- SPP-005 Seiko printer paper, 5 rolls per box, for CIS-1A and ALS-4A \$12.50
- PAC-001 Panasonic VCR adaptor cable, for CIS-1A 70.00
- JAC-001 JVC VCR adaptor cable, for CIS-1A 70.00

CIS-2A Li'I MoneyMaker Single VCR Commercial Insert System

- Fully automatic operation • Microprocessor controlled • Complete system fits in 1.75" x 19" rackspace • Simple to operate, yet highly versatile • Easy portable tonepad programming • Complete preview capability • Vertical interval switching • Digital DTMF tone decoding • Programmable preroll times • Selectable VCR or satellite priority • Selectable VCR start delay—perfect for interconnects
- Built-in aux source fill switcher for blackouts • Compatible with most 1/2" and 3/4" VCRs • Totally compatible with Logmatic and Logmatic Jr. logging and verification systems

CIS-2A \$1995.00

LCC-1A Li'I Ben™ Clock Controller

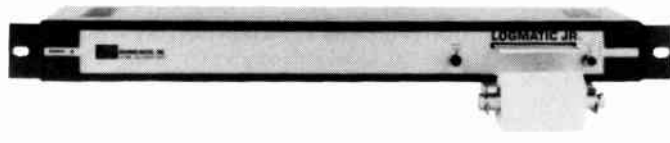
- Simple, easy to use, four-key keypad • Four-digit LED display • One second resolution • 7 day programmability • 100 event capacity • Power backup • 8 open collector outputs • Optional relay outputs • Optional 2 x 1 stereo audio/video switcher • Optional 4 x 1 stereo audio/video switcher

- LCC-1A Controller with 8 open collector outputs \$ 850.00
- LCC-2A Controller with 8 Form C relay outputs 1000.00
- LCC-3A Controller with 2 x 1 stereo A/V switching 1250.00
- LCC-4A Controller with 4 x 1 stereo A/V switching 1450.00

NSS-4A Network Share Switcher

- Inserts ads into four networks from one ad source • Inserts ads one network at a time on a first come first served basis • Four digital DTMF cue tone decoders
- Four preroll delay timers—one for each network • Composite sync output to facilitate vertical interval switching • Cue tone decoder disable switches • Power fail relay bypass • Inputs and outputs for controlling and insertion devices

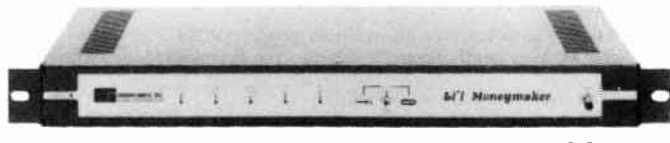
NSS-4A \$2750.00



ALS-4A



Spotmatic Jr.



CIS-2A



NSS-4A

SERIES 1000 ADDITIONAL PRODUCTS

- ADA-1A Audio distribution amplifier, 1-in x 6-out balanced bridging input, 600 ohm balanced output, level adj., broadcast specs. \$ 375.00
- ADA-2A Same as above except with 2 independent amplifiers 600.00
- ADA-3A Same as above except with 3 independent amplifiers 800.00
- ATS-1A Programmable automatic DTMF tone, 4 x 1 audio/video vertical interval switcher, with control signalling 1000.00
- AVS-8A "8 Ball", 8 x 1 stereo audio follow video monitor switcher 750.00
- AVS-10A "Patchmaster" 10 x 1 expandable audio/video bridging switcher, remote control input, broadcast specs. 1200.00
- AVS-10AS Same as above with 2-channel (stereo) audio 1450.00
- RCP-10A Remote control panel for AVS-10A and AVS-10AS 475.00
- ACP-10A Expanded audio connection panel with cable 200.00
- ACP-10AS Stereo audio connection panel with cable 250.00
- DTG-101A Automatic high-speed DTMF tone generator with memory 450.00
- DTG-102A 16-digit DTMF tone generator for Spotmatic Jr., Li'I MoneyMaker, Logmatic, ATS-1A, and Broadcaster I 225.00
- SAV-1A Stereo audio/video distribution amplifier, 1-in x 6-out 800.00
- SDA-1A Sync stripping pulse distribution amplifier, 1-in x 6-out, looping input, 75 ohm source terminated outputs 550.00
- UAA-6A Universal audio amplifier, six amplifiers each with Hi-Z bridging input and level-adjustable 600 ohm outputs UAA-6X-XLR (with XLR type audio connectors) 750.00
- UAA-6A-TB (with barrier strip audio connections) 700.00
- VDA-1A Video distribution amplifier, 1-in x 6-out, looping input, source terminated outputs, level adj. broadcast specs. 375.00
- VDA-2A Same as above except with 2 independent amplifiers 600.00
- VDA-3A Same as above except with 3 independent amplifiers 800.00

CHANNELMATIC, INC.**Controllers/Sequencers/Generators****Series 3000 Custom Systems**

The Series 3000 "Building Blocks" provide the system designer with a diversified group of standard prepackaged and pretested, plug-in modules which can be easily combined to satisfy a large variety of requirements. Over 50 modules, each with different functions, are available.

Through many years of providing custom designed switching and control systems for Cable and Industrial Television users, these modules represent the most reliable and economical solution to many specialized system requirements.

PCM-3000A Superclock™**Programmable Controller Module**

The PCM-3000A Programmable Controller is a microprocessor-based 7-day clock module for the Series 3000 frame. It has a 1-minute resolution and a large memory for storage of program events. The system is bus-oriented and provisions are included for input-output capability and addition of a multitude of special control interfaces. The basic system has eight programmable closure-type outputs which can be preprogrammed to open or close on any desired weekly time schedule.

The PCM-3000A is designed to be used in any application where local or remote control of equipment is required on a 7-day schedule. By adding appropriate modules, it can be used to control almost any electrical or electronic device, including satellite receivers, video cassette machines, audio-video switchers, relays, IF switching, message generators, solenoids, motors, etc.

A UAD-3000A Unattended Telephone Answering Device module and related CTD-3001A DTMF Decoder module can be added to a clock-controller subsystem, enabling it to be operated over standard telephone lines.

PCM-3000A \$2000.00

PCM-3000A-1. Programmable 7-day, 1683-event clock with eight outputs. Assembled in Series 3000 frame with blank filler panel. Outputs are open collector transistor type, which will sink 40mA at 30VDC. \$2430.00

PCM-3000A-2. Same as -1, except outputs are eight form A (SPST) relay closures. \$2530.00

PCM-3000A-3. Same as -1, except also has UAD-3000A Automatic Telephone Answering Device module and CTD-3001A Tone Decoder for telephone override capability. \$3030.00

PCM-3000A-4. Same as -3, except outputs are eight form A (SPST) relay closures. \$3130.00

PCM-3000A-13. Remotely programmable 7-day, 1683-event clock having both transmit and receive subsystems. Transmit subsystem is provided with an answering device and telephone override. Receive subsystem has decoding for twenty independently programmable decimal outputs, each of which are provided with a form-A (SPST) relay. Receive system can be expanded to control hundreds of devices, including satellite receivers, audio/video switches, etc. Transmit and receive subsystems can be connected by any voice-grade audio path. Multiple hubs can be controlled by a single transmit subsystem (PCM) by adding receive subsystems for each. Includes modems, card extenders, and blank panels. \$7660.00

Receive Subsystems (add. ea.) \$3555.00

VCR-3005A-5 Vertical-Interval**Videocassette Sequencers**

Automatic vertical-interval videocassette sequencer system for playback of locally generated programming. Frame is wired to handle up to five VCRs, and provisions are included for cascading two or more mainframes as the sequential control of any number of machines. Front panel Sequence Selector Switches allow each VCR to: 1) continue sequence normally, 2) bypass to the next VCR in sequence, or 3) terminate the sequence. In broadcast-quality performances, all switching occurs in the vertical blanking interval of program video. This allows glitch-free transitions if the VCRs in the sequence are sync-locked with an accessory such as the Handimod I. Systems include ATG-202A Tone Generator/Verifier for videotape encoding. Sequence may be initialized manually using pushbutton relay closure, or automatically on a real-time basis by the PCM-3000A Clock Controller.

VCR-3005A-5 \$5005.00

VCR-3005A-2. Same as above except with modules to control two VCRs. \$3155.00

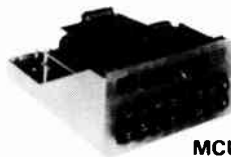
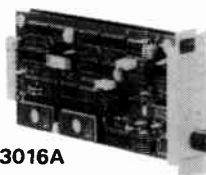
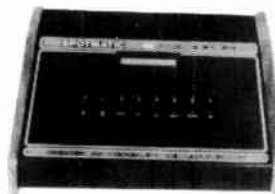
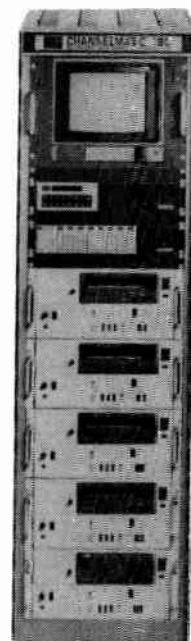
VCR-3005A-3. Same as above except with modules to control three VCRs. \$4005.00

VCR-3005A-4. Same as above except with modules to control four VCRs. \$4505.00

PCM-3000A-VCR. Same as VCR-3005A-5 except frame includes built-in PCM-3000A 7-day programmable clock controller. \$7435.00

MCU-3000A Master Control Unit

Special-purpose, microprocessor-based, programmable control unit provides a means of automating local commercial insertion into ad-supported satellite programming. Sixteen front panel pushbuttons facilitate operator programming of spot playback sequence on a 24 or 48 hour basis and program entry is monitored on a 12-digit, 7-segment LED display panel. Single or multiple VCR configurations

**PCM-3000A****MCU-3000A****TDG-3016A****DCG-300A****VCR-3005A-5**

as well as multi-channel systems can be developed with the MCU-3000A. Designed to operate with the SDD-3001A Serial Data Decoder and the UCC-3000A Universal Computer Controller to provide logging and program data for printout on a commercial-quality 80-column alphanumeric printer.

The MCU-3000A is a multispace module and occupies the space normally used for the power supply plus four additional module spaces.

MCU-3000A Printer included, PLX-800 \$4850.00

DCG-300A Digital Code Generator Console

Provides the means for encoding videotapes for use with random access within tape VCR control systems. Unit prompts operator for proper data entry, automatically senses tape position, accepts entries on 16-pushbutton front panel keyboard for both segment position and identification data, encodes videotape using high speed AFSK data stream on Channel 1 audio track. All operator entries are verified on a 12-digit LCD display panel. Designed specifically for use with VCR-3201A Random Access VCR Control modules and Sony Type 5 editing VCRs.

DCG-300A \$1500.00

TDG-3016A Time/Date Generator**(Includes KMG-3016A)**

Unit is designed to inject time and date information onto a video signal. Crystal-controlled clock is set with a BCD set switch and a start pushbutton. Module includes a KMG-3016A 8-line, 16-page Keying Message Generator. Time and date is one of 16 selectable messages and is superimposed in white or black letters over video. One TDG-3016A can supply time and date information for up to 30 KMG-3016A Keying Message Generators.

TDG-3016A \$950.00

VCR-3201A Random Access VCR Controller

Unit accepts start signal and controls VCR automation. Incorporates necessary timing circuits to allow delays for intermission, preroll, and rewind functions. Includes tone decoding and logic circuitry to automate fast forward, rewind, and "next VCR" operations. Sets up audio/video switch for vertical interval switching and contains provisions for power-fail restart and VCR bypass. Front panel pushbutton permits manual cue-up and LEDs indicate "Park" or "Play" status. Microprocessor-based module can be used to implement most VCR control systems, including random access within a tape.

VCR-3201A \$1000.00

UCC-3000A Universal Computer Controller

Provides an interface between the MCU-3000A Master Control Unit and peripheral serial data devices. Collects, stores, and formats data to permit the maximization of the MCU-3000A.

UCC-3000A \$1000.00

Prices and Specifications Subject to Change Without Notice.

CHRISTIE ELECTRIC CORP.

Batteries/Charger/Analyzer

Ultra Series Batteries

- Ultra fast 30-minute recharge time when using CASP/1000®
- Higher capacity – 4.5AH
- 1-hour recharge on TCO chargers
- Premium quality cells
- Thermal and fuse protection

Temperature cut-off thermal design keeps battery cells cooler. Other battery packs have only 4 TCO sensors. We use 6 sensors in close contact with every cell to ensure that TCO is fast and sure and to prevent internal overheating of any cell.

Ultra Series

Ultra 14	12 Cell, 14.4V, 4.5AH	.....\$525.00
Ultra 13	11 Cell, 13.2V, 4.5AH	.....505.00
Ultra 90	10 Cell, 12.0V, 4.5AH	.....TBA



Ultra Series

CASP/1000

Charger/Analyzer/Reconditioner

The CASP/1000 is a microprocessor-based precision instrument for maintaining any rechargeable batteries at the peak of performance. As such, it is vital to the operation of video equipment, communications gear, portable computers, and medical electronic systems. Through the systematic use of CASP/1000, battery operated equipment becomes more reliable, safer, and far more cost effective.

The CASP/1000 has six channels which automatically process up to six batteries of any type sequentially. The system performs the following functions:

Battery Reconditioning

By virtue of the ReFLEX charging technique, the system can be used to recondition, or "rejuvenate," NiCad batteries, even when these batteries have deteriorated to the point that they will no longer hold a charge. This dramatic capability by itself literally justifies the use of CASP/1000.

Battery Recognition

When a battery is connected to any one of the channels, the system senses the type of battery which is involved, and automatically provides the kind of processing that battery requires.

Battery Analysis

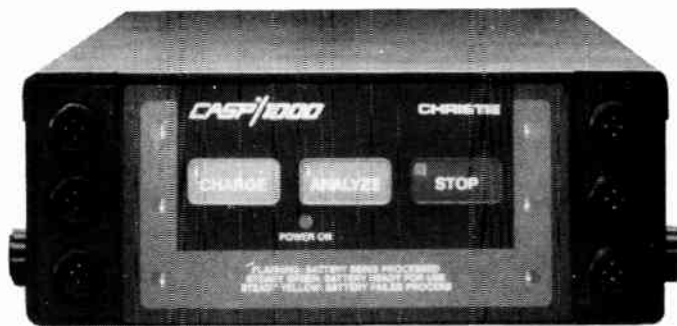
The system can analyze the condition of a battery, and report that condition on an optional serial printer. It can be determined from the hard-copy printout what action should be taken. In this mode, the system can analyze battery discharge capacity and battery charge capacity.

Battery Charging

The system has the capability for different types of charging, as appropriate to the kinds and conditions of the batteries being processed. This capability includes fast charge, slow charge, dual-rate charge, and simultaneous trickle charge of up to six batteries. Charging can be very rapid, and Christie NiCads can be charged in as little as 30 minutes.

Cost Effectiveness

An outstanding benefit of CASP/1000 is that it saves its own cost by rejuvenating worn-out NiCads, allowing them to be returned to useful service, and by charging batteries more completely, improving their reliability, and extending their life.



CASP/1000

Advanced Processing Methods

The ReFLEX charging process has numerous advantages over other battery charging methods. Foremost among these is the ability to erase "memory" and restore badly faded battery capacity.

With the ReFLEX method, batteries also get charged faster, and more fully charged, stay cooler, have less cell imbalance, and last appreciably longer.

Universal Application

CASP/1000 handles every rechargeable battery type, and all voltage and current ratings. The system is preprogrammed for the most popular battery makes, with the flexibility to handle new batteries as they are developed.

Unattended Operation

In using CASP/1000, the operator first selects the processing function. The system sequences through each channel indefinitely, processing all connected batteries. If a fully charged battery is removed and a discharged battery installed, the system will recognize the new battery and charge it appropriately. The only attendance CASP/1000 requires is the loading and off-loading of batteries.

Worldwide Operation

The lightweight, portable CASP/1000 operates on mains power anywhere in the world. The system accepts inputs from 90 to 265VAC, at frequencies from 47 to 440Hz.

CASP/1000 1H Version, 4.4V Software\$2495.00

CHYRON CORP.**Character and Graphics Generator/
Video Printer/Paint System****VP-2 Plus Character and Graphics Generator**

- **Character Resolution:** 35ns resolution, equivalent to 1510 pixel elements
- **Colors:** 512 color choices available, 16 per page for characters, edges, and backgrounds
- **Fonts:** Six full fonts (upper and lower case) on line selectable from a library of 41 Chyron face styles with international fonts available. Custom font and logo compose service is also available (3 fonts standard)
- **Multiple Character Planes:** Full horizontal and vertical overlap of characters, symbols, and logos to any depth
- **Background Editing Capabilities:** Color every two raster lines, if desired for background effects and graduated color
- **Auto Display (Read from Disk):** Display selected graphics pages from disk memory in any sequence at variable rates (cued or automatic)
- **Palette Animation:** Cycles color in characters or backgrounds at frame rate increments
- **Edge Types:** The three edge types for any font—full drop shadow, character offset, and bordered edge—can be varied in extent, direction, and color
- **Menus:** Complete menus and prompting displays to guide you through graphics composition
- **Composition and Control Features:** Cursor commands: up, down, right, left, backspace, return, home. Insert, delete, or move characters, words, lines. Select fonts, character colors, palette edge types, edge colors, key color. Set tab, clear tab, right justify, center page, line or column. Italicize a font (left or right), and display menu. Change character, word, line, color, font, edge, or edge color

Multifont Option

Allows VP-2 to use up to six font styles in six sizes, providing up to 36 fonts on-line. Each multifont chip contains one typestyle in scanline sizes: 18, 24, 30, 36, 42 and 48. Available as a field-installable kit, or as an option on VP-2 Plus systems.

VP-2 Plus Includes software enhancement and three standard fonts\$6,115.00

VP-2 Plus With multifont 6,895.00

VP-2 Plus With multifont (International) 7,495.00

Multifont Upgrade Kit

Field Installable in an existing VP-2 Plus \$920.00

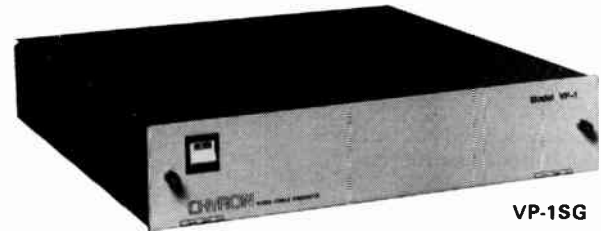
Multisize Fonts ea./150.00

Available in PAL, PAL-M and NTSC.

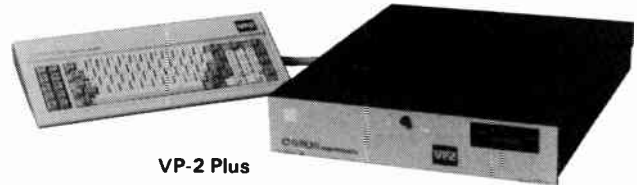
VP-1SG Video Printer

- **Fonts:** ROM based minimum of two fonts, each with full upper and lower case. Optional expansion to six fonts. (Face style library of 41).
- **Hardware:** Microprocessor controlled—dual 32K byte frame store memory—ROM Program—4000 bytes of message memory—internal sync generator with genlock and NTSC video generation
- **Color Select:** Any 1 of 8 colors may be assigned to backgrounds, characters or edge
- **Color Table:** Any 8 of 512 colors
- **Sync:** Genlock to external sync or composite video from a stable source. (VCR may not be a stable source)
- **Keying:** Full downstream keying included
- **Output:** NTSC composite video (Optional RGB video board)
- **Commands:** Select background color, character color, edge type, edge color, font type. Skip scan lines (push down), center line, center page, roll display, page delay, repeat message, end of page, horizontal and vertical margin control. Adjust character spacing, italicize, set color table
- **System:** Microprocessor based with ROM program
- **Interface:** Multibaud rate serial RS-232 interface. Max 9600 Baud
- **Frame Store:** 32K bytes of run length encoding. 2 frame stores to provide sequential picture generation. (35ns resolution)
- **Video Memory:** Is organized as a dual frame buffer which allows one page to be displayed while the next page is being created
- **Design:** Single PC board design for computer and video with switching power supply. Enclosed in a metal chassis with power switch and video connectors on rear of unit (rackmountable)

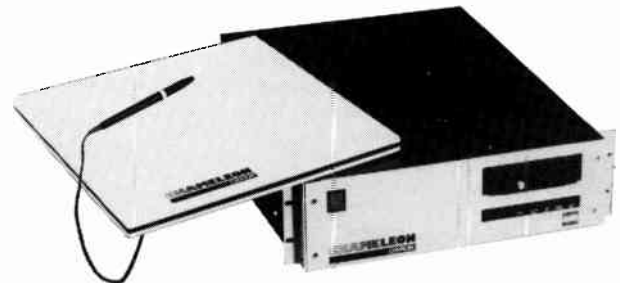
VP-1SG Includes 3 standard fonts\$2,995.00



VP-1SG



VP-2 Plus



Chameleon

Chameleon Paint System

- **Input Device:** Tablet, stylus, camera/video capture, text grab
- **Operator Interface:** Dynamic icon-oriented menu
- **Resolution:** NTSC: 768 x 525; PAL: 768 x 625
- **Colors:** 256 on-line, 4096 total
- **Color Program:** Tint, shading, color pickup, area fill, color smear, palette memory, color cycling, color definition by hue, luminance, saturation or by red, green, blue
- **Memory:** 10M byte removable Winchester cartridge for storing images, palettes, brushes, grids and cut and paste
- **Software:** 2D paint
- **Drawing Tools:** Free hand lines, point-to-point lines, curve drawing. Out-lined or filled circles, rectangles, polygons. Definable grids
- **Brushes:** Unlimited user definable brushes, single or multi-color brushes. 14 standard brushes
- **Cut and Paste:** Rotate, mirror, scale, skew, perspective, flip, duplicate, stencil, overlay
- **Magnification:** 16 level zoom, pan and scroll
- **Video Input:** Genlockable to composite video source (RS-170), internal variable rate downstream keyer. Complete timing adjustments
- **Video Outputs:** Broadcast NTSC or PAL plus RGB and SYNC. Two composite outputs plus 1 which includes downstream keying, key out, RGB and SYNC out

The Chameleon is a high resolution paint system which consists of a 16" x 16" digitizing tablet with pen, and uses an icon-oriented menu for selection of the large array of functions. It has a 10M byte Winchester removable hard-disk which can store unlimited graphic images by simply inserting another cartridge.

Although it will accept input from a camera or any video source, it can also be interfaced directly to Chyron's VP-2 character generator (via RS232) or VP-1 character generator (via video input) to produce graphics which combine superior text with dynamic images created on Chameleon.

Chameleon\$11,900.00

CHYRON CORP.**Graphics and Titling System/Digital
Video Effects Generator****RGU-2 Graphics and Titling System**

- 27nsec resolution
- Versatile multi-font library compatible with Chyron IV Standard Font Library
- Proportionally-spaced characters
- Background stripes and solids
- Choice of character edging
- See-through characters
- Four full font-loading positions
- Multiple roll and crawl speeds
- Slow reveal
- Automatic centering
- Flexible VidiDisc magnetic storage system
- Disc duplication
- Flash
- Automatic lower third display
- Visibly-bordered safe title area
- Insert and delete controls
- 256 tab positions
- Modular design
- Horizontal/vertical character shift
- Logo compose
- 64 color choices
- Character size—maximum character height of 420 lines (logos may be full-screen), minimum character height of 4 lines
- Auto pause of rolls and crawls
- Automatic instruction displays
- Auto color/font change
- Clock/event timer
- RS232 interface
- Programmed animation (PSC)
- Color encoder/downstream keyer

The RGU-2 is a high-quality graphics and titling system for studio and mobile production which provides many of the most-wanted features of the industry-standard Chyron IV.

Operation of the RGU-2 is flexible and uncomplicated. Just load a software program and automatic instruction displays appear on the monitor to provide an interactive communications channel between the operator and the RGU-2.

Optional Features

Motion functions as an optional module of the Chyron RGU-2 to produce high-resolution video graphic effects. Titles, logos and background graphics can be manipulated and positioned anywhere on screen. Versatile digital effects can be selected and displayed in seconds while each image maintains the superb resolution that is the standard of every Chyron system.

Motion/Channel Control Module (CCM) combines or mixes the dual channels of the Chyron RGU-2 with selective priority control, along with all effects of Motion. There are ten wipe patterns with ten selectable speeds providing the user with a wide range of graphic effects when wiping between Chyron channels or program video.

Full-Resolution Second Channel converts the Chyron RGU-2 into a dual-channel system. Both channels provide full function capabilities for graphics composition and display.

Additional "Vididisc" Drives provide additional storage and flexibility during multiple studio operations.

Additional Full-function Control Keyboards can be connected in series to any system. A keyboard delegate switch and channel delegate key control the keyboard-to-channel assignments in multi-keyboard or dual-channel systems.

**RGU-2**

Recall-only Keyboard is a compact unit which contains all keyboard functions necessary for recall and playback of messages from a remote location.

Additional Font Libraries supply pre-designed fonts on an individual basis or a supplemental Chyron font library package containing 100 additional fonts (20 typefaces in 5 sizes each).

International Font Libraries provide additional characters not found in the English alphabet.

Subtitling Interface converts the Chyron RGU-2 into a versatile subtitling system capable of creating, recording and displaying an unlimited number of subtitles in synchronization with SMPTE or EBU time code.

Camera Font Compose enables RGU-2 users to create high-quality custom fonts, logos and other graphics according to their own requirements.

Custom Factory Font/Logo Compose provides end users with professional creation of custom fonts and logos from customer-supplied artwork.

Sports Scoreboard Unit allows quick updating and display of numerical data such as sports scores, through the use of four 3-digit thumbwheels.

General Purpose Interface (G.P.I.) permits remote execution of any Chyron keyboard function through the use of contact closures.

Specifications

Power Requirements: 117V \pm 10% at 60Hz, 8A (available on order 230V \pm 10% at 50Hz, 6A)

Dimensions

Main Chassis: 15²³/₃₂" H x 19" W x 20¹/₂" D, 65 lbs.
Control Keyboard: 4⁵/₈" H x 21" W x 11¹/₂" D, 30 lbs.
Recall Keyboard: 4⁵/₈" H x 8" W x 11¹/₂" D, 15 lbs.
Colorizer/Keyer: 1³/₄" H x 19" W x 14" D, 10 lbs.

Single Channel RGU-2

(Includes color encoder and downstream keyer) \$15,990.00

Dual Channel RGU-2

(Includes 2 color encoders and downstream keyers) 20,190.00

CHYRON CORP.*Text Generator***Scribe Text Generator**

- Unsurpassed print quality resolution with 16 levels of anti-aliasing
- 1500 master typeface library
- Automatic font resizing from 10 to 400 scan lines
- 512K font memory expandable to 4M bytes
- Eight font loading positions
- Fonts loadable during message playback
- Automatic playback with recorded fonts
- Automatic character kerning
- Row exchange
- Unlimited character, word, or row underlap or overlap
- Automatic centering horizontal and/or vertical
- Squeeze/expand for characters, words, or row
- Cut and paste
- Adjustable safe title area
- Color encoder and linear keyer/fader
- 16.7 million color choices for characters, edges, and backgrounds
- Multiple character edges in variable size and color
- Multicolored logo/character display
- Background colors selectable on scan line basis
- Automatic color ramping for shaded backgrounds
- Automatic color and font change
- Dual frame buffer
- 1.2M byte floppy disk plus 20M byte Winchester Disk for storage of messages, fonts, and programs
- Insert/delete controls
- Right/left/center justification
- 256 tab positions
- Multiple speeds of roll/crawl
- Programmable timed roll
- Multiple speeds of slow reveal
- Programmable function keys
- Clock/event timer
- Built-in sync generator with genlock
- Programmable directory for operators includes auto font loads, with color palettes, tab, edges
- Software intensive
- Remote event triggering
- **Mechanical:** All electronics in the main chassis are VME compatible PC boards; backplane is all PC and uses DIN pin connectors
- **Power Requirements:** Main Chassis—900W max.; Keyboard—125W max.
- **Dimensions:** Main Chassis: 19.25" H x 19" W x 22" D; Keyboard—4.75" H x 21.25" W x 11.75" D

Options

- **Advanced Font Utility I:** Variable 3D viewpoint control; Variable light source shading; Texture mapping; Metallic shadings; Word compose
- **Advanced Font Utility II:** 3D texture mapping; Neon tube effect; Custom character shading; Inner/outer glows; Bevel effects; Multiborder effects; Chisel effect
- **Dynamic Read Effects:** Permits rows or pages to be displayed with a variety of video effects such as flips, tumbles, wipes and slides—with variable speed control
- **Color Video Capture:** Allows capture of color image via RGB camera or other video input to the system. Once captured, images can be resized, positioned, mixed with text, overlapped, allocated to a particular font, or assigned to any key on the keyboard

**Scribe**

- **Logo Compose:** For customized creation of anti-aliased logos from artwork. Automatically resized with no loss of resolution
- **Supercharger/High-Speed Processor:** Increases the processing power of the CPU, improving rendering time of machine fonts and execution time of the Advanced Font Utilities
- **I/O Expander:** Provides 5 external communication channels—four serial and one parallel
- **Auxiliary Entry/Election Reporting:** Provides an additional CPU expander board and software supporting off-line entry via computer terminal in addition to third-party supplied election reporting services
- **Preview/Offline Edit Channel:** Allows simultaneous composition and update of messages while main channel remains on air
- **Networking:** Permits multiple systems to be linked together for shared access to all pages, fonts and files—or for sophisticated multi-channel displays
- **Expanded G.P.I.:** Provides 8 additional inputs to be used by external devices for controlling the execution of preprogrammed sequences on the SCRIBE
- International keyboard
- Font memory expansion to 4M byte in 512K increments
- Expandable storage available in 42 and 280M byte fixed disc or 20M byte removable discs
- Additional keyboard
- RGB or component outputs

The Scribe is a revolutionary, high performance text and graphics generator featuring fully anti-aliased print quality display and choice of type styles. It offers the most perfect resolution possible on today's video systems.

In addition, the Scribe provides unlimited sizing of fonts, unlimited coloring (including multicolored logo/character display), and color ramping for shaded backgrounds. Add to this the ability for unlimited overlap and underlap of characters and graphics, automatic character kerning, and an impressive array of composition and editing functions which combine to make the Scribe the most sophisticated text generator available.

Scribe \$29,800.00

CHYRON CORP.**Character/Graphics Generators****THE CHYRON IV SERIES CHARACTER AND GRAPHICS GENERATORS****4200 and 4100 EXB Character/Graphic Generators**

- 27 Nanosecond Chyron character resolution
- Full-function control keyboard
- Versatile, high quality font library
- True proportionally-spaced characters
- Automatic character kerning
- 12 full font-loading positions
- True character overlay
- See-through characters
- 512 color palette selection
- Solid or multicolored backgrounds
- Multicolored character and logo display
- Multiple character edges
- Roll and crawl in multiple speeds
- Adjustable roll window size
- Slow reveal in multiple speeds
- Automatic lower third displays
- Animation program sequence controller (PSC)
- *Motion II - High resolution digital graphic effects
- *Motion II/Channel Control Module (CCM) - mixes, wipes, fades
- Automatic centering
- Insert/delete controls
- Automatic left or right justification
- Row exchange
- Squeeze and expand for characters, words or rows
- Automatic color and font change
- Re-position for character or row
- Block message move or delete
- 256 tab positions
- Automatic right or left italics in 14° increments
- Diagonal typing
- Flash
- Clock/event timer
- Visible safe title area
- Off-line edit channel
- Flexible "Vididisc" floppy disc storage system
- RS232 standard computer interface
- Software intensive/modular design

The Chyron IV Series expandability has been the predecessor to Chyron's philosophy that systems need not be obsolete from one year to the next. That is as true of the Chyron 4100 EXB as it has been with other generations. The 4100 EXB contains all of the standard features of the 4200 with the exception of Motion II and can be easily field converted to a 4200 with the addition of Motion II and the Motion II/Channel Control Module (CCM).

Multimode Graphics Module (MGM)**Option For Chyron IV**

- Standard RS170 input
- 512 color palette
- Full screen display capability
- Accepts drawing tablet input
- Resizing of graphics
- Cut and paste
- Standard geometric library
- Infinite montaging of multiple graphics
- Montaging of text channels
- Area fill
- Custom brush compose
- Palette animation
- Satellite weather service interface

The Multimode Graphic Module (MGM) provides a multitude of graphic abilities never before associated with a character generator. In addition to standard camera font compose, the MGM offers an advanced camera font compose that is unparalleled in the industry today.

An important extra dimension is added by the MGM's background graphics abilities. High resolution background graphics (1024 x 512 pixels) can be created either from standard black-and-white camera input or hand drawn with an optional digitizing tablet. Up to 16 colors may be selected from a 512 color palette, as well as a wide variety of brush sizes and styles, color fill, color pick-up, etc. Circles, rectangles

B-388**Prices and Specifications Subject to Change Without Notice.****4200****Optional Features**

- Full-resolution second channel
 - Multimode graphics module (MGM)
 - *Motion II - High resolution digital graphic effects
 - *Motion II/Channel Control Module (CCM) - mixes, wipes, fades
 - Digitizing tablet
 - Winchester hard disc
 - Multiple "Vividisc" drives
 - Additional full-function control keyboards
 - Recall-only keyboard
 - Additional font libraries
 - Camera font compose
 - Custom font/logo compose service
 - International font libraries
 - Right-to-left text entry
 - Subtitling interface
 - includes: SMPTE/EBU time code reader/generator
 - Election reporting interface
 - Weather service interface - included with MGM
 - Sports scoreboard unit
 - General purpose interface (G.P.I.)
 - Color encoder
 - Downstream keyer
- 4100 EXB and 4200 with Motion II priced from \$41,000 to \$90,000, depending upon configuration.
*Motion II and Motion II/Channel control module (CCM) are options which will convert the 4100 EXB to a 4200.

and other graphic primitives are automatically drawn at the touch of a key. Completed portions of the background graphic can be cut and pasted and varied in size. Backgrounds can also be montaged over other backgrounds for an unlimited layered effect. Palette animation is an important function of the MGM. The colors of the background graphics can be animated for exciting effects such as glow glitter, neon and color trails.

Weather service interface of the MGM can accept and display high resolution weather graphics from Weather Service International (WSI) or Environmental Satellite Data, Inc. (ESDI). The weather graphics are transmitted over telephone line* to the Chyron IV and stored on Chyron's Winchester disk for subsequent display on command.

In foreground mode, the MGM provides an extremely advanced form of camera font compose that will quickly and easily create standard and multicolor graphics. Fonts can be automatically modified and added to your font library.

When background graphics are created with the MGM, they can be displayed as a single graphic or combined with text and other graphics on Chyron IV's channel one or two and stored as a single message on Winchester disk.

MGM \$8000.00
Digitizing Tablet 1900.00

*Data terminal and modem are required.

CINE 60, INC.

Video Battery Belts

Cat. No.	Volts/ Amps	Connectors	Charge Rate	Fast Charge Rate With Fast Charger	Weight	Price
12V Battery Belts						
6307	12V- 4AH	5-Pin XLR	Overnite		5 1/2 lbs.	\$ 454.00
8307FC	12V- 4AH	5-Pin XLR	Fast Charge*	1 Hr.	5 1/2 lbs.	502.00
7007	12V- 7AH	5-Pin XLR	Overnite		7 1/2 lbs.	610.00
7007FC	12V- 7AH	5-Pin XLR	Fast Charge*	2 Hrs.	7 1/2 lbs.	655.00
6327	12V- 8AH	5-Pin XLR	Overnite		10 lbs.	690.00
8327FC	12V- 8AH	5-Pin XLR	Fast Charge*	1 Hr.	10 lbs.	739.00
7027	12V-14AH	5-Pin XLR	Overnite		13 lbs.	1077.00
7027F	12V-14AH	5-Pin XLR	Fast Charge*	2 Hrs.	13 lbs.	1111.00

13.2V Battery Belts. For 10% more run time vs. 12V Battery Belts

6308	13.2V- 4AH	5-Pin XLR	Overnite		6 lbs.	\$ 481.00
8308FC	13.2V- 4AH	5-Pin XLR	Fast Charge*	1 Hr.	6 lbs.	528.00
7008	13.2V- 7AH	5-Pin XLR	Overnite		8 lbs.	621.00
7008FC	13.2V- 7AH	5-Pin XLR	Fast Charge*	2 Hrs.	8 lbs.	667.00
6328	13.2V- 8AH	5-Pin XLR	Overnite		11 lbs.	728.00
8328FC	13.2V- 8AH	5-Pin XLR	Fast Charge*	1 Hr.	11 lbs.	770.00
7028	13.2V-14AH	5-Pin XLR	Overnite		14 lbs.	1108.00
70287F	13.2V-14AH	5-Pin XLR	Fast Charge*	2 Hrs.	14 lbs.	1148.00

14.4V Battery Belts. For 20% more run time vs. 12V Battery Belts

6306	14.4V- 4AH	5-Pin XLR	Overnite		6 lbs.	\$ 508.00
8306FC	14.4V- 4AH	5-Pin XLR	Fast Charge*	1 Hr.	6 lbs.	557.00
6306B	14.4V- 4AH	4-Pin XLR	Overnite		6 lbs.	508.00
8306BFC	14.4V- 4AH	4-Pin XLR	Fast Charge*	1 Hr.	6 lbs.	563.00
7006	14.4V- 7AH	5-Pin XLR	Overnite		8 lbs.	629.00
7006FC	14.4V- 7AH	5-Pin XLR	Fast Charge*	2 Hrs.	8 lbs.	678.00
7006B	14.4V- 7AH	4-Pin XLR	Overnite		8 lbs.	629.00
7006BFC	14.4V- 7AH	4-Pin XLR	Fast Charge*	2 Hrs.	8 lbs.	678.00
6326	14.4V- 8AH	5-Pin XLR	Overnite		11 lbs.	764.00
8326FC	14.4V- 8AH	5-Pin XLR	Fast Charge*	1 Hr.	11 lbs.	799.00
6326B	14.4V- 8AH	4-Pin XLR	Overnite		11 lbs.	764.00
8326BFC	14.4V- 8AH	4 & 5-Pin XLR	Fast Charge*	1 Hr.	11 lbs.	799.00
7026	14.4V-14AH	5-Pin XLR	Overnite		15 lbs.	1137.00
7026FC	14.4V-14AH	5-Pin XLR	Fast Charge*	2 Hrs.	15 lbs.	1186.00
7026B	14.4V-14AH	4-Pin XLR	Overnite		15 lbs.	1137.00
7026BFC	14.4V-14AH	4 & 5-Pin XLR	Fast Charge*	2 Hrs.	15 lbs.	1186.00

± Voltage Battery Belts

8314FC	± 7.2V- 4AH	5-Pin XLR	Fast Charge*	1 Hr.	6 lbs.	\$ 557.00
7014FC	± 7.2V- 7AH	5-Pin XLR	Fast Charge*	2 Hrs.	8 lbs.	702.00
7014BFC	± 7.2V- 7AH	4-Pin XLR	Fast Charge*	2 Hrs.	8 lbs.	702.00
8324FC	± 7.2V- 8AH	5-Pin XLR	Fast Charge*	1 Hr.	11 lbs.	829.00
8324BFC	± 7.2V- 8AH 4 &	5-Pin XLR	Fast Charge*	1 Hr.	11 lbs.	842.00
7024FC	± 7.2V-14AH	5-Pin XLR	Fast Charge*	2 Hrs.	15 lbs.	1194.00
7024BFC	± 7.2V-14AH 4 &	5-Pin XLR	Fast Charge*	2 Hrs.	15 lbs.	1194.00
8313FC	± 9.6V- 4AH	5-Pin XLR	Fast Charge*	1 Hr.	8 1/2 lbs.	698.00
7013FC	± 9.6V- 7AH	5-Pin XLR	Fast Charge*	2 Hrs.	11 lbs.	1018.00
8311FC	± 12V - 4AH	5-Pin XLR	Fast Charge*	1 Hr.	10 lbs.	720.00
7011FC	± 12V - 7AH	5-Pin XLR	Fast Charge*	2 Hrs.	14 lbs.	1096.00
8315FC	± 14.4V-4AH	5-Pin XLR	Fast Charge*	1 Hr.	11 1/2 lbs.	798.00
7015FC	± 14.4V-7AH	5-Pin XLR	Fast Charge*	2 Hrs.	15 lbs.	1186.00

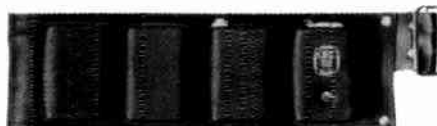
*Require Fast Charger. 115V Overnite Charger built-in.

All Battery Belts have a 115V Overnite Charger built-in. For 220 or 115/220V built-in Overnite Chargers, the following Options are available:

8994 220V Charger built into any Battery Belt in lieu of the 115V Charger \$25.00
 6994 115/220V Charger. Only built into Overnite Charge Type Battery Belts. 49.00
 Not available for Fast Charge Type Battery Belts.



4 Amp.-Hr.
3 1/2" width



7 Amp.-Hr.
4 3/4" width



8 Amp.-Hr.
5 3/4" width



14 Amp.-Hr.
6 1/4" width

These unique Battery Belts replace On-Camera Batteries, BP-90, NP-1, and any other built-in or attached Battery Packs. Used world-wide by entrepreneurial professional ENG/EFP Camera Persons and Broadcast News Persons, Cine 60 Battery Belts offer more reliability, more power, more mobility, better balance with more comfort and greater economy with obsolete-proof versatility.

- **Most economical.** Longer life gives more hours of power per dollar than any other type NiCad battery
- **Lifetime investment.** Never discarded. All components of the battery purchasable to replace those that wear out
- **Most convenient.** Charger and Charge Cable built-in means less equipment to keep track of
- **More comfort.** Worn, not carried like 5 lb. On-Camera Batteries
- **Cameras and Betacam** become easier to handle, lighter to carry without On-Camera Battery
- **Undisturbed balance,** unimpeded movement from uniformly distributed weight around waist
- **Universal use.** Runs any equipment, lights, cameras, monitors, microwave devices. Run two or more devices simultaneously

CINE 60, INC.

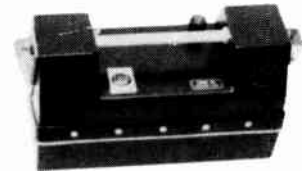
Video Battery Packs



12V, 4AH Style; 2" x 5 1/2" x 7". With built-in belt loops, shoulder strap.



12V, 7AH; 13.2/14.4V, 4AH Style; 2" x 6 1/2" x 8". With built-in belt loops, shoulder strap.

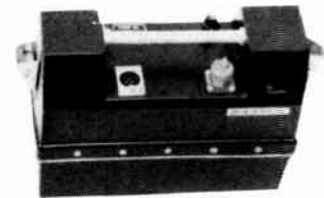


13.2V/14.4V, 7AH, 8AH Style; 4 1/2" x 6" x 10". With built-in handgrip, shoulder strap.

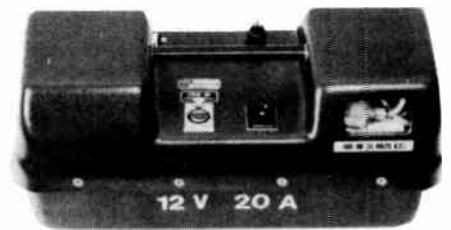
Rugged, compact housings designed to withstand ENG/EFP field abuse and provide optimum portability possible. Utilizes the same components, cells and chargers used in Cine 60 Battery Belts.

Cat. No.	Volts/Amps.	Connectors	Charge Rate	Fast Charge Rate With Fast Charger	Weight	Price
12V Battery Packs						
9107	12V, 4AH	5-pin XLR	Overnite		4 lbs.	\$ 495.00
9107FC	12V, 4AH	5-pin XLR	Fast Charge *	1 hr.	4 lbs.	545.00
9707	12V, 7AH	5-pin XLR	Overnite		6 lbs.	655.00
9707FC	12V, 7AH	5-pin XLR	Fast Charge *	2 hrs.	6 lbs.	690.00
9127	12V, 8AH	5-pin XLR	Overnite		9 lbs.	731.00
9127FC	12V, 8AH	5-pin XLR	Fast Charge *	1 hr.	9 lbs.	781.00
9727	12V, 14AH	5-pin XLR	Overnite		13 lbs.	1076.00
9727FC	12V, 14AH	5-pin XLR	Fast Charge *	2 hrs.	13 lbs.	1127.00
20-120/2	12V, 20AH	(2)5-pin XLR	Overnite		22 lbs.	1615.00
13.2V Battery Packs						
9108	13.2V, 4AH	5-pin XLR	Overnite		6 lbs.	\$ 512.00
9108FC	13.2V, 4AH	5-pin XLR	Fast Charge *	1 hr.	6 lbs.	566.00
9708	13.2V, 7AH	5-pin XLR	Overnite		8 lbs.	673.00
9708FC	13.2V, 7AH	5-pin XLR	Fast Charge *	2 hrs.	8 lbs.	703.00
9128	13.2V, 8AH	5-pin XLR	Overnite		10 lbs.	765.00
9128FC	13.2V, 8AH	5-pin XLR	Fast Charge *	1 hr.	10 lbs.	808.00
9728	13.2V, 14AH	5-pin XLR	Overnite		14 lbs.	1118.00
9728FC	13.2V, 14AH	5-pin XLR	Fast Charge *	2 hrs.	14 lbs.	1154.00
20-130/2	13.2V, 20AH	(2)5-pin XLR	Overnite		24 lbs.	1675.00
14.4V Battery Packs						
9106	14.4V, 4AH	5-pin XLR	Overnite		5 1/2 lbs.	\$ 517.00
9106FC	14.4V, 4AH	5-pin XLR	Fast Charge *	1 hr.	5 1/2 lbs.	574.00
9106B	14.4V, 4AH	4-pin XLR	Overnite		5 1/2 lbs.	523.00
9106BFC	14.4V, 4AH	4-pin XLR	Fast Charge *	1 hr.	5 1/2 lbs.	574.00
9706	14.4V, 7AH	5-pin XLR	Overnite		8 lbs.	687.00
9706FC	14.4V, 7AH	5-pin XLR	Fast Charge *	2 hrs.	8 lbs.	714.00
9706B	14.4V, 7AH	4-pin XLR	Overnite		8 lbs.	702.00
9706BFC	14.4V, 7AH	4-pin XLR	Fast Charge *	2 hrs.	8 lbs.	714.00
9126	14.4V, 8AH	5-pin XLR	Overnite		10 lbs.	803.00
9126FC	14.4V, 8AH	5-pin XLR	Fast Charge *	1 hr.	10 lbs.	830.00
9126B	14.4V, 8AH	4-pin XLR	Overnite		10 lbs.	803.00
9126BFC	14.4V, 8AH	4- and 5-pin XLR	Fast Charge *	1 hr.	10 lbs.	830.00
9726	14.4V, 14AH	5-pin XLR	Overnite		14 lbs.	1138.00
9726FC	14.4V, 14AH	5-pin XLR	Fast Charge *	2 hrs.	14 lbs.	1186.00
9726B	14.4V, 14AH	4-pin XLR	Overnite		14 lbs.	1138.00
9726BFC	14.4V, 14AH	4- and 5-pin XLR	Fast Charge *	2 hrs.	14 lbs.	1186.00
20-140/2	14.4V, 20AH	(2)5-pin XLR	Overnite		26 lbs.	1735.00
20-140B/2	14.4V, 20AH	(2)4-pin XLR	Overnite		26 lbs.	1735.00
± Voltage Battery Packs						
9114FC	± 7.2V, 4AH	5-pin XLR	Fast Charge *	1 hr.	5 1/2 lbs.	\$ 574.00
9714FC	± 7.2V, 7AH	5-pin XLR	Fast Charge *	2 hrs.	8 lbs.	750.00
9714BFC	± 7.2V, 7AH	4-pin XLR	Fast Charge *	2 hrs.	8 lbs.	750.00
9124FC	± 7.2V, 8AH	5-pin XLR	Fast Charge *	1 hr.	10 lbs.	872.00
9124BFC	± 7.2V, 8AH	4- and 5-pin XLR	Fast Charge *	1 hr.	10 lbs.	872.00
9724FC	± 7.2V, 14AH	5-pin XLR	Fast Charge *	2 hrs.	14 lbs.	1204.00
9724BFC	± 7.2V, 14AH	4- and 5-pin XLR	Fast Charge *	2 hrs.	14 lbs.	1204.00
9113FC	± 9.6V, 4AH	5-pin XLR	Fast Charge *	1 hr.	8 1/2 lbs.	754.00
9713FC	± 9.6V, 7AH	5-pin XLR	Fast Charge *	2 hrs.	11 lbs.	1065.00
9111FC	± 12V, 4AH	5-pin XLR	Fast Charge *	1 hr.	9 lbs.	798.00
9711FC	± 12V, 7AH	5-pin XLR	Fast Charge *	2 hrs.	13 lbs.	1138.00
9115FC	± 14.4V, 4AH	5-pin XLR	Fast Charge *	1 hr.	10 lbs.	847.00
9715FC	± 14.4V, 7AH	5-pin XLR	Fast Charge *	2 hrs.	14 lbs.	1199.00

* Require Fast Charger. 115V Overnite Charger supplied. All Battery Packs have a 115V Overnite Charger.



14AH Style; 4 1/2" x 8" x 10". With built-in handgrip, shoulder strap.



20AH Style; 6 1/2" x 6 1/2" x 14 3/4". With built-in handgrip.

Properly cared for, Cine 60 Battery Belts and Packs provide many years of reliable service. Due to many variations in possible use, the number of re-cycles or life expectancy cannot be stated exactly. There are so many factors to consider which will influence battery life, such as high discharge, low discharge, temperature, environment, charging modes, etc. For instance, a battery constantly used at high discharge will not have as many re-cycles as a battery used for low discharge applications. Life expectancy can vary from 500 to 20000 re-cycles. But from our 26 year experience in making and selling batteries, we have seen batteries out of service after 4 years and we have seen batteries in use after 10 years. Again, the above mentioned factors will apply to the disparity in re-cycle life for any battery.

CINE 60, INC.

Battery Belts/Packs/Battery System

30V Battery Belts/Packs

For Cine 60 Sun-Guns, Lowel, Colortran, Frezzi, Anton-Bauer, Mole-Richardson, Cinema Products, De Sisti, Kobold, lanero, and other battery lights. 4AH capacity operates 30V 250W lamp 26 minutes. 7AH capacity operates 250W lamp 42 minutes. 2-pin Amphenol connector and 5-pin XLR on fast charge models, 2-pin Amphenol on Overnite models.

Cat. No.	Volts/Amps	Charge Rate	Fast Charge Rate With Fast Charger	Weight	Price
6304	30V, 4AH	Overnite		11 lbs.	\$ 696.00
8304FC	30V, 4AH	Fast Charge*	1 hr.	11 lbs.	740.00
7004	30V, 7AH	Overnite		15 lbs.	1113.00
7004FC	30V, 7AH	Fast Charge*	2 hrs.	15 lbs.	1168.00



7004FC
6304 Shown on cover page.

Same as 30V Battery Belts but in a battery pack style.

9104	30V, 4AH	Overnite		10 lbs.	\$ 731.00
9104FC	30V, 4AH	Fast Charge*	1 hr.	10 lbs.	781.00
9704	30V, 7AH	Overnite		14 lbs.	1150.00
9704FC	30V, 7AH	Fast Charge*	2 hrs.	14 lbs.	1179.00



9704FC

30V/14.4V/13.2V All-Purpose Battery System

Cine 60's versatile power for most portable equipment and Sun-Guns. The Battery provides 14.4V and 30V. With an in-line plug-in voltage converter, it becomes a 13.2V battery. And with a power adaptor, it will power both a Sun-Gun and camera simultaneously. 13.2V mode limited to applications drawing under 48W. Equipped with 2-pin Amphenol and 5-pin XLR connectors. A complete system requires the battery, voltage converter, and power adaptor, plus 1 or more video cables.

Applications for the All-Purpose Battery System are virtually unlimited. It will power all 13.2V cameras, VTRs, Betacams, and other similar systems, all 14.4V cameras, most 12V cameras, VTRs, plus all 14.4V and 30V battery lights and Sun-Guns.

All-Purpose Battery Belts. Require the Voltage Converter for 13.2V operation.

3014	30V, 4AH/14.4V, 8AH	Overnite		11 lbs.	\$ 783.00
3014FC	30V, 4AH/14.4V, 8AH	Fast Charge*	1 hr.	11 lbs.	836.00
3017	30V, 7AH/14.4V, 14AH	Overnite		15 lbs.	1199.00
3017FC	30V, 7AH/14.4V, 14AH	Fast Charge*	2 hrs.	15 lbs.	1254.00



3014FC

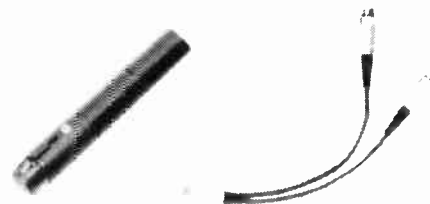
All-Purpose Battery Packs. Require the Voltage Converter for 13.2V operation.

9014	30V, 4AH/14.4V, 8AH	Overnite		10 lbs.	\$ 783.00
9014FC	30V, 4AH/14.4V, 8AH	Fast Charge*	1 hr.	10 lbs.	836.00
9017	30V, 7AH/14.4V, 14AH	Overnite		14 lbs.	1199.00
9017FC	30V, 7AH/14.4V/14AH	Fast Charge*	2 hrs.	14 lbs.	1254.00
1430	30V, 10AH/14.4V, 20AH	Overnite		26 lbs.	1996.00

VRX Voltage Converter. Plugs in between battery and video cable. Converts 14.4V to 13.2V. Allows battery to power all 13.2V cameras, VTRs, Betacams. Maximum 48W. 5-pin male XLR input, 5-pin female XLR output. \$49.00

6400-Y Power Adaptor. Allows battery to run a battery light and camera simultaneously. Plugs in between battery, video cable, and light cable. 5-pin male XLR input, two 5-pin female XLR outputs. With the VRX plugged into one output to power a 13.2V Betacam or camera, and the second output providing 14.4V to operate a 14.4V, 70W battery light, excellent battery utilization is assured. \$54.00

*Requires Fast Charger. Overnite charger built-in.



VRX

6400-Y

Kwik-Charge Battery Belts/Packs

Same as Fast Charge Belts and Packs but with built-in dual-rate Kwik-Charger that allows fully charging 4 and 8AH batteries in 4 hrs., and 7 and 14AH batteries in 7 hrs. Then trickle charge circuit safely maintains fully charged battery indefinitely. Can also be fast charged with Cine 60 Universal Fast Chargers Models 9400, 9400-U and Model 94DC30 Mobile Fast Charger.

8327KFC	12V, 8AH, 4 hr. Kwik-Charge Battery Belt, 1 hr. Fast Charge*	\$ 871.00
7027KFC	12V, 14AH, 7 hr. Kwik-Charge Battery Belt, 2 hr. Fast Charge*	1243.00
9127KFC	12V, 8AH, 4 hr. Kwik-Charge Battery Pack, 1 hr. Fast Charge*	913.00
9727KFC	12V, 8AH, 4 hr. Kwik-Charge Battery Pack, 1 hr. Fast Charge*	1254.00

8328KFC	13.2V, 8AH, 4 hr. Kwik-Charge Battery Belt, 1 hr. Fast Charge*	\$ 902.00
7028KFC	13.2V, 14AH, 7 hr. Kwik-Charge Battery Belt, 2 hr. Fast Charge*	1280.00
9128KFC	13.2V, 8AH, 4 hr. Kwik-Charge Battery Pack, 1 hr. Fast Charge*	940.00
9728KFC	13.2V, 14AH, 7 hr. Kwik-Charge Battery Pack, 2 hr. Fast Charge*	1286.00



9128KFC

8326KFC	14.4V, 8AH, 4 hr. Kwik-Charge Battery Belt, 1 hr. Fast Charge*	\$ 932.00
7026KFC	14.4V, 14AH, 7 hr. Kwik-Charge Battery Belt, 2 hr. Fast Charge*	1318.00

8304KFC	30V, 4AH, 4 hr. Kwik-Charge Battery Belt, 1 hr. Fast Charge*	\$ 872.00
7004KFC	30V, 7AH, 7 hr. Kwik-Charge Battery Belt, 2 hr. Fast Charge*	1300.00
9104KFC	30V, 4AH, 4 hr. Kwik-Charge Battery Pack, 1 hr. Fast Charge*	913.00
9704KFC	30V, 7AH, 7 hr. Kwik-Charge Battery Pack, 2 hr. Fast Charge*	1311.00



8328KFC

*Requires Fast Charger. Kwik-Charger built-in.

CINE 60, INC.

Motion Picture Camera Battery Belts and Packs

These batteries are the standard power source for the motion picture industry and are equipped with connectors to interface with the motion picture camera manufacturer's power cables.

Universal. Overnite Charge types for Arri, Aaton, and Eclair Cameras.

Cat. No.	Volts/Amps	Weight	Price
6305 Battery Belt	8.4V, 8AH/12V/16.8V, 4AH, with Banana Jacks, 3- and 4-pin XLR, switch	7 lbs.	\$599.00
9105 Battery Pack	8.4V, 8AH/12V/16.8V, 4AH, with 5-pin XLR switch	6 lbs.	643.00
7005 Battery Belt	8.4V, 14AH/12V/16.8V, 7AH, with Banana Jacks, 3- and 4-pin XLR, switch	10 lbs.	781.00
9705 Battery Pack	8.4V, 14AH/12V/16.8V, 7AH, with 5-pin XLR, switch	9 lbs.	842.00

Note 1. Above battery belts can be supplied with 4- and 5-pin in place of 3- and 4-pin XLR, on request.

For Arri 16BL, 16SR, 35BL, 35BL-3, 35-III, 35-2C, Eclair, and Aaton Cameras.

9805 Battery Pack	12V, 8AH/16.8V, 8AH, with Banana Jacks, 4-pin XLR, Overnite Charge	9 lbs.	\$874.00
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For Arri 16S, 16M Cameras

6301 Battery Belt	8.4V, 4AH, with Banana Jacks, Overnite Charge	4 1/2 lbs.	\$358.00
9301FC Battery Belt	8.4V, 4AH, with 5-pin XLR, Fast Charge*	4 1/2 lbs.	370.00
9101 Battery Pack	8.4V, 4AH, with 5-pin XLR, Overnite Charge	3 lbs.	415.00
9101FC Battery Pack	8.4V, 4AH, with 5-pin XLR, Fast Charge*	3 lbs.	451.00

For Arri 16S, 16M, 35-2C Cameras.

6302 Battery Belt	8.4V, 8AH/16.8V, 4AH, with Banana Jacks, Switch, Overnite Charge	7 lbs.	\$539.00
8302FC Battery Belt	8.4V, 8AH/16.8V, 4AH, with 5-pin XLR, Switch, Fast Charge*	7 lbs.	599.00
9102FC Battery Pack	8.4V, 8AH/16.8V, 4AH, with 5-pin XLR, Switch, Fast Charge*	6 lbs.	636.00

For Arri 16S, 16M, 16SR, 16BL, 35-III, 35BL-3 Cameras.

6307WBJ Battery Belt	8.4V/12V, 4AH, with Banana Jacks, 5-pin XLR, Overnite Charge	5 1/2 lbs.	\$457.00
9107-S Battery Pack	8.4V/12V, 4AH, with 5-pin XLR, Overnite Charge	4 lbs.	495.00
7007WBJ Battery Belt	8.4V/12V, 7AH, with Banana Jacks, 5-pin XLR, Overnite Charge	7 1/2 lbs.	618.00
9707-S Battery Pack	8.4V/12V, 7AH, with 5-pin XLR, Overnite Charge	6 lbs.	655.00

For Eclair NPR, ACL, Arri 16S, 16M, 16SR, 16BL, 35BL and Aaton Cameras.

6303 Battery Belt	8.4V/12V, 4AH, with Banana Jacks, 3- and 4-pin XLR, Overnite Charge	5 1/2 lbs.	\$478.00
7003 Battery Belt	8.4V/12V, 7AH, with Banana Jacks, 3- and 4-pin XLR Overnite Charge	7 1/2 lbs.	649.00

For Eclair NPR, ACL, Arri 16SR, 16BL, 35BL-3, 35-III Cameras.

8303FC Battery Belt	12V, 4AH, with 4-pin XLR, Fast Charge*	5 1/2 lbs.	\$385.00
7003FC Battery Belt	12V, 7AH, with 4-pin XLR, Fast Charge*	7 1/2 lbs.	655.00
9103 Battery Pack	12V, 4AH, with 3- and 4-pin XLR, Overnite Charge	4 lbs.	520.00
9103FC Battery Pack	12V, 4AH, with 4-pin XLR, Fast Charge*	4 lbs.	545.00
9703 Battery Pack	12V, 7AH, with 3- and 4-pin XLR, Overnite Charge	6 lbs.	665.00
9703FC Battery Pack	12V, 7AH, with 4-pin XLR, Fast Charge*	6 lbs.	690.00

For 24V Cameras. These batteries are equipped with the 5-pin XLR connector.

6310 Battery Belt	24V, 4AH, Overnite Charge	10 lbs.	\$ 685.00
8310FC Battery Belt	24V, 4AH, Fast Charge*	10 lbs.	720.00
7010 Battery Belt	24V, 7AH, Overnite Charge	14 lbs.	1065.00
7010FC Battery Belt	24V, 7AH, Fast Charge*	14 lbs.	1113.00
9110 Battery Pack	24V, 4AH, Overnite Charge	9 lbs.	750.00
9110FC Battery Pack	24V, 4AH, Fast Charge*	9 lbs.	786.00
9710 Battery Pack	24V, 7AH, Overnite Charge	13 lbs.	1109.00
9710FC Battery Pack	24V, 7AH, Fast Charge*	13 lbs.	1145.00
10-224 Battery Pack	24V, 10AH, Overnite Charge	22 lbs.	1595.00

For 28V cameras. These batteries equipped with AN-3102-12S-3S 2-pin connector.

6312 Battery Belt	28V, 4AH, Overnite Charge	11 lbs.	\$ 696.00
8312FC Battery Belt	28V, 4AH, 5-pin XLR, Fast Charge*	11 lbs.	742.00
7012 Battery Belt	28V, 7AH, Overnite Charge	14 1/2 lbs.	1116.00
7012FC Battery Belt	28V, 7AH, 5-pin XLR, Fast Charge*	14 1/2 lbs.	1168.00
9112 Battery Pack	28V, 4AH, Overnite Charge	10 1/2 lbs.	732.00
9112FC Battery Pack	28V, 4AH, 5-pin XLR, Fast Charge*	10 1/2 lbs.	781.00
9712 Battery Pack	28V, 7AH, Overnite Charge	13 1/2 lbs.	1150.00
9712FC Battery Pack	28V, 7AH, 5-pin XLR, Fast Charge*	13 1/2 lbs.	1179.00
10-228 Battery Pack	28V, 10AH, Overnite Charge	25 lbs.	1750.00

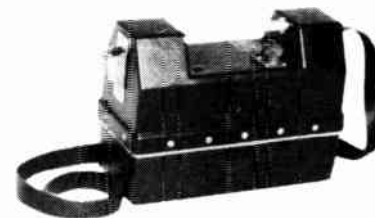
*Requires Fast Charger. Overnite Charger built-in.



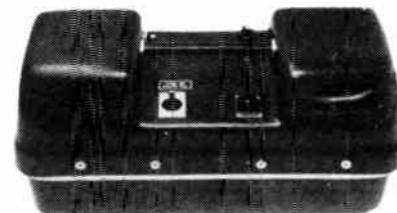
6305 Universal Belt with 6401-BL Cable connected



8.4, 12, and 16.8V battery packs. Supplied with Overnite Charger. Shoulder strap. Has belt loops. 8.4V, 4AH, 2" x 5 1/2" x 6". 12V, 4AH, 2" x 5 1/2" x 7". 12, 7AH, 16.8V, 4AH, 2" x 6 1/2" x 8"



16.8V, 7AH and 8AH, 24V and 28V, 4AH and 7AH battery packs. With shoulder strap, handgrip, and built-in Overnite Charger. 4AH size 4 1/2" x 6" x 10". 7AH and 8AH size 4 1/2" x 8" x 10"



24V and 28V, 10AH Battery Packs. With handgrip, and built-in Overnite Charger. Size 6 1/2" x 6" x 14 1/4"

Approx. Footage per Charge for 4 and 7AH Batteries

Arri 16S:	4AH	7AH
8.4V w/o mag., w/var. and const. spd. mtr.	3500'	5600'
W/torque mtr. and mag.	2400'	3900'
Arri 16BL:		
W/uni or gov'r contr. mtr.	4000'	6400'
As above w/1200' mag.	2600'	4200'
W/xtal sync mtr., 1200' mag.	3600'	5800'
As above w/400' mag.	6400'	10600'
Arri 16M:		
W/torque mtr. and mag.	2400'	3900'
W/1200' mag.	1800'	3000'
Arri 16 SR	6400'	10600'
W/Video viewfinder	4500'	7500'
Arri 35BL:		
Type II, 12V w/400' mag.	5200'	8400'
As above w/1000' mag.	4500'	7400'
Arri 35-2C, 16.8V	6800'	11000'
Eclair:		
ACL w/200' mag.	6000'	9800'
As above w/400' mag.	5600'	9100'
NPR w/Beala/Cirpi mtr.		
400' mag.	2800'	5200'

CINE 60, INC.

Batteries/Chargers

Cine 60's 12V 4AH

Replacement Batteries for Sony's BP-90

Built to Cine 60 standards with fish paper-insulated, deep welded NiCad cell modules protected by precision "Lifeguard" cell sensors for cooler, more efficient fast charging. Housed in a rugged molded case, it utilizes Sony's original non-shorting split connector and has an autoreset circuit breaker protecting the battery against external shorts while eliminating fuses.

BP-912S. Charges overnight with all BP-90 chargers.
May be fast charged with Sony's BC-210 or other 2-wire fast chargers. \$230.00

BP-912FC. As above but also may be fast charged with all
Cine 60 Fast/Lifeguard/Quik Chargers. Requires BPA charge adaptor 255.00

BP-2C Dual BP-90 Battery Charger. Charges 2 BP-90 batteries (any brand) overnight. In molded housing 1 1/2" x 2 7/8" x 4 3/8". Wt. 8 oz. 115V 116.00

BP-2C-220. As above but 220V 116.00

BP-612S. 13.2V 2AH NiCad replacement battery for Sony's BP-60 lead-acid battery. Higher voltage and NiCad reliability assure long life and run time. With autoreset circuit breaker. 205.00

BP-25C Dual Battery Charger. Charges 2 BP-612s overnight. Size and weight same as BP-2C. 115V 116.00

BP-25C-220. As above but 220V 116.00

BP-512S. 12V 2.5AH NiCad replacement battery for Sony's BP-20, -20A lead-acid batteries. Equipped with an autoreset circuit breaker. Charge with BP-25C dual overnight charger. . . 215.00

NP-1. 12V 1.5AH replacement battery for Sony's NP-1. Charge with Sony's NP-1 chargers . . 66.00

CBP-2J5S. 12V 2.5AH NiCad replacement battery for JVC/Panasonic PBP-1 lead-acid battery. Equipped with an autoreset circuit breaker. Charge with CBP-2J charger. 215.00

CBP-2J Dual Battery Charger. Charges 2 CBP-2J5S batteries overnight. Size and weight same as BP-2C. 115V 116.00

CBP-2J-220. As above but for 220V 116.00



BP-912S



BP-912FC



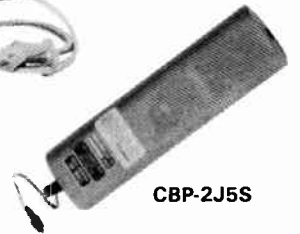
NP-1



BP-612S



BP-2C



CBP-2J5S

For "Hitch-Hiker"™ and OEM types Anton-Bauer Snap-on® batteries (with BP3XF charge adaptor), Cine 60 BP-912FC battery (with BPA charge adaptor), Cine 60 "OB" batteries directly. All Lifeguard chargers feature a manual start 1A charge rate and an automatic start of a 150mA. Lifeguard rate permitting batteries to be fully charged in 4 hours and then safely maintained in a "ready" condition indefinitely. Sensing circuits and visual indicators provide continual monitoring of battery condition. Equipped with 5-pin XLR connector. Can also be used for other types of 2, 4 and 7AH 12 to 14.4V NiCad batteries which have a 3rd wire cell sensing circuit.

LC2-914 Lifeguard Two Position 4 Hour Charger. Two independent positions charge 2 batteries in 4 hours. Equipped with "Hitch-Hiker"™ and OEM Camera Battery connector. Line-isolated and line and load regulated. Lightweight, small size. 2 1/2" x 6 1/4" x 8". Wt. 1 3/4 lbs. 115/220V, 50/60Hz \$485.00

LC4-914 Lifeguard Four Position Fast Charger. Four independent positions charge 4 batteries in 4 hours. A unique parallel patching circuit permits increasing the charge rate of the "Master's" position to 4A to charge 1 battery in 1 hour. Requires BP3XF charge adaptor for BP-912FC Cine 60 BP-90 battery. Line isolated, line and load regulated. Lightweight, small size. 4 1/2" x 6 5/8" x 7 1/2". Wt. 4 lbs. 115/220V, 50/60Hz \$765.00

LC2-914



LC4-914

Universal Sofbelts feature highest quality, high drain, long-life, fishpaper-insulated NiCad cells, matched and deep-welded into battery modules encased in thick walled, precisely sized module boxes designed to protect cells and intercell connections against harsh field abuse. Module boxes are mounted on a flexible, soft, body-molded, foam-cushioned belt that assures lifetime comfort. Universal Sofbelts are available in two types: standard (cannot be fast charged) and Fast Charge. Both are equipped with a built-in high efficiency Overnite Charger, and Auto-reset Circuit Breaker. Fast Charge types feature precision cell sensors of ceramic, hand-calibrated to an accuracy of $\pm 5\%$, assuring a full, safe, fast charge. Sofbelt weight is evenly distributed around the waist for excellent balance and comfort.

Universal Sofbelts

Cat. No.	Volts/Amp. Rating	Charge Rate	Weight	Price
1314304	13.2V/14.4V-8AH/30V-4AH	Overnite	11 lbs.	\$ 849.00
1314304FC	13.2V/14.4V-8AH/30V-4AH	Fast Charge* 1 Hour	11 lbs.	902.00
1314307	13.2V/14.4V-14AH/30V-7AH	Overnite	15 lbs.	1265.00
1314307FC	13.2V/14.4V-14AH/30V-7AH	Fast Charge* 2 Hours	15 lbs.	1315.00

Universal Battery Packs utilize the same components and incorporate the same features as the Universal Sofbelts. The housings are rugged, thick-walled enclosures designed to accept the heavy duty encountered in the field. The 8AH and 14AH versions are styled for carrying with a padded shoulder strap (supplied) or a tubular metal handle in the housing. The 20AH Model is equipped with a metal handle for portability.

Universal Battery Packs

Cat. No.	Volts/Amp. Rating	Charge Rate	Price
901314	13.2V/14.4V-8AH/30V-4AH	Overnite	10 lbs. \$ 849.00
901314FC	13.2V/14.4V-8AH/30V-4AH	Fast Charge* 1 Hour	10 lbs. 902.00
901317	13.2V/14.4V-14AH/30V-7AH	Overnite	14 lbs. 1265.00
901317FC	13.2V/14.4V-14AH/30V-7AH	Fast Charge* 2 Hours	14 lbs. 1315.00
90131430	13.2V/14.4V-20AH/30V-10AH	Overnite	26 lbs. 1996.00

*Require Fast Charger. 115V Overnite Charger built in.

All Universal Sofbelts and Battery Packs have a 115V Overnite Charger built in. For 220V or 115/220V built-in Overnite Chargers, the following options are available:

8994	220V Charger. Built into Universal Sofbelt or Battery Pack. Overnight Charging in lieu of the 115V Charger	\$25.00
6994	115/220V Charger. Built into Overnite Charge type Universal Sofbelts or Battery Packs. Not available for Fast Charge types	49.00
8994/22	220V, Overnite and Fast Charging in lieu of 115V	25.00
'U'	115V/220V. Fast Charging in lieu of 115V	88.00
'U-21'	115V/220V. Overnite and Fast Charging in lieu of 115V	112.00

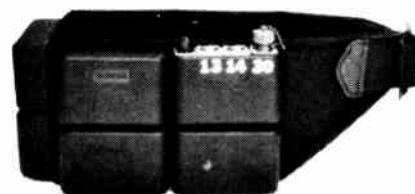
Video Equipment Battery Cables

Coiled cable, 1' retracted, 6' extended. Supplied with 5-pin XLR connector and OEM's mating connector.

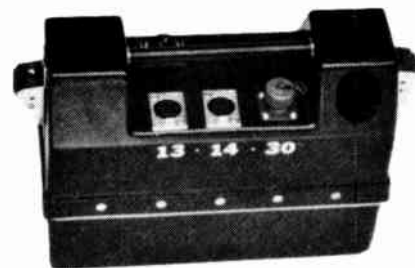
Cat. No.	Application	Price
6400IKE	Ikegami TM-10R-9H Monitor	\$ 65.00
64020E	Open end cable for customer's installation of equipment's connector	32.00
6406	All Hitachi "FP" and "SK" Cameras, Z-31 Camera	65.00
6408	Ampex Betacam, ARC-10, FPC-10, FRC-10; Cinema Products Camera Prompter; JVC CR-4700U, CR-4900U, CY-8800U, all "KY" Cameras; Panasonic AG-6400, AU/AK 100, AU-220, AU-400, AU-500, AK-30; BTS-700N, NV-9450, WV-V3, WV-555, WV-777, WV-888, WV-890, WV-6000, N-3; Sharp XCA1, XC-800, XC-900; Thomson MC-301, 501, 601, 701, Betacams, TTV-1623, TTV-1624	65.00
6421	Hitachi HR-100 Recorder	65.00
6431	Ampex VPR-20 Recorder	65.00
6471	Ikegami HL-78, HL-79A, D, L, E, HL-95, ITC-350, ITC-730	65.00
6473	Ampex BCC-14, BCC-20/Philips LDK-14, LDK-54	80.00
6475	Sony Betacams, BVH, BVM, BVP, BVU, BVW Equipment, DXCM3A, DXC3000, VO-6800, DXC-M2	65.00
6476	RCA TK76	170.00
6477	Ampex VPR-5 Recorder	85.00
6478	Panasonic AK-710, 750, 760, WV3600, 3700, 3800, 3900, 3890, 3990	65.00
6483	Ikegami HL-83	80.00
6486	RCA TK-86	80.00

13/14/30V Universal Batteries

- Triple Voltage:
13.2V for cameras
14.4V for lights
30V for lights
- Simultaneously runs 13.2V camera and 14.4V light
- 2 and 3 times more power than any camera battery
- Comfortable Sofbelt or compact battery pack styles

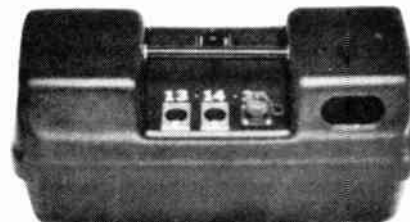


1314304FC 8AH Universal Sofbelt



901317 14AH Universal Battery Pack
Size 4 1/2" x 8" x 10"

901314 8AH Universal
Same style as 14AH Pack
Size 4 1/2" x 6" x 10"



90131430 20AH Universal Pack
Size 6 1/2" x 6 1/2" x 14 3/4"

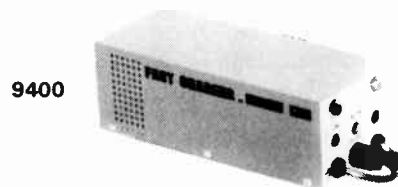
CINE 60, INC.

Chargers/Battery Dememorizer/Adaptors

Universal Fast Chargers

One Hour Fast Chargers for 4 and 8AH batteries. Two Hour for 7 and 14AH batteries.
 Used for charging all Cine 60 Fast Charge Battery Belts and Packs. Can also be used for Hitch-Hiker™, and OEM Camera Batteries (Require BP3XF Charge Adaptor), and Cine 60 BP-912FC Battery (Requires BPA Adaptor). Two charge rates, Fast, Trickle. Size 2 3/4" x 3 3/4" x 8". Wgt. 3 lbs. 9400-U, 9400-UB Size 2 3/4" x 4 1/2" x 8 3/4"

9400	115V Fast Charger with 5-pin XLR connector	\$346.00
9400B	As above but with 4-pin XLR connector	346.00
9422	220V Fast Charger with 5-pin XLR connector	346.00
9422B	As above but with 4-pin XLR connector	346.00
9400-U	115/220V Fast Charger with 5-pin XLR connector	436.00
9400-UB	As above but with 4-pin XLR connector	436.00



Mobile Fast Chargers

One Hour Mobile Fast Chargers. Designed for safely and fully charging Fast Charge Batteries in the vehicle with the engine running. Equipped with LED indicators for DC input and Charge Mode, Charge Current Ammeter, Start Button, On-Off Switch, Back Up Automatic Cut Off of Fast Charge if battery's sensing circuit fails to operate. Can be used to charge other similarly rated batteries equipped with 3rd wire cell sensing circuits. Operates on 10.5-14VDC.

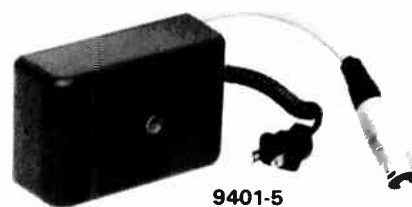
94DC30 Mobile 20 to 24 Cell Fast Charger. For charging 12, 13.2 and 14.4V, 8AH and 14AH, and 24 to 30V, 4AH and 7AH batteries. Charge time 1 hour for 4 and 8AH batteries, 2 hours for 7 and 14AH batteries. Size 3 1/2" x 5" x 10 1/2". Wgt. 8 lbs. **\$545.00**



Overnite Chargers

9401-5 14-16 Hour Overnite Charger. For Hitch-Hiker and OEM types Anton-Bauer Snap-On® Batteries (with BP3XF charge adaptor). Cine 60 "OB" batteries directly. Line-isolated, line and load regulated. LED indicator, 5-pin XLR. Lightweight, small size. 1 1/2" x 2 7/8" x 4 1/4". Wgt. 8 oz. Operates on 115V, 50/60Hz. . . **\$136.00**

9402-5. As above but for 220V operation.
 Note: Available with 4-pin XLR. Specify 9401-4 & 9402-4.
 (For OB14-4 battery). **\$136.00**



Battery Dememorizer

DM1214A. Equipped with current drain device, voltage sensor, automatic voltage cut off, voltmeter, voltage selector, start switch, 5-pin XLR connector, and BP-90 connector. Requires BP3XFM Charge Adaptor for OEM and Hitch-Hiker On-Camera Batteries. NiCad battery "memory" is created by the build-up of excess crystals in the cell. Repetitive long periods of overcharging and shallow discharging can bring about this condition which is apparent by a loss of capacity. The Dememorizer, properly used will break down the excess crystals in the cell thereby restoring the lost capacity. In the process it will also re-balance the cells. It will "dememorize" 12V, 13.2V, and 14.4V 1.5 to 20AH NiCad batteries. Size 3 1/4" x 5 1/2" x 7 1/4". Wgt. 2 lbs. **\$295.00**



Charge Adaptors

BPA Charge Adaptor. Connects BP-912FC Battery to any Cine 60 Fast/Lifeguard/Quick Chargers	\$46.00
BP3XF Hitch-Hiker Charge Adaptor. Connects Hitch-Hiker or OEM Camera Batteries to any Cine 60 Fast/Lifeguard/Quick Chargers	49.00
BJ3XM "OB" Battery Charge Adaptor. Connects "OB" Camera Battery to Anton-Bauer OEM Battery Chargers	49.00
BP-1C Tektronix Charge Cable. Connects Tektronix BP-1 Battery to Cine 60 9400-U	49.00
4F-5M Charge Adaptor. Connects 4-pin XLR Charger to 5-pin XLR battery	32.00
5F-4M Charge Adaptor. Connects 5-pin XLR charger to 4-pin XLR battery	32.00

CINE 60, INC.

Sun-Gun System/Kits

Sun-Gun System

For ENG/EFP 12 to 30VDC Soft, Wide-Angle Focusing Light.
Ideal camera mounted. Double wall aluminum construction.

- 6201-A Sun-Gun. With integral B' cable terminated in 2-pin Amphenol connector, removable handle, and bulb. (Specify which bulb) **\$218.00**
- 6202 Swing-Away Dichroic Filter. Converts Sun-Gun light to daylight **95.00**
- 6203 Swing-Away Diffusion Filter. Softens Sun-Gun light. Lowers output by f/stop **72.00**
- 6204 Swing-Away Safety Glass. For extra safety when Diffusion or Dichroic Filters are not used **60.00**
- SG-6510 Power Cable Adaptor. Connects to Sun-Gun's cable converting it to 5-pin XLR to run Sun-Gun with 12 or 14.4V battery. 12 or 14.4V bulb required **40.00**
- Sun-Gun Mounting Brackets. Two piece, machined sleeve, machined stud. Allows rapid mounting of Sun-Gun on camera **45.00**
- A-1/2. For all cameras with accessory shoe **45.00**
- B-1/2. For all cameras with 1/4-20 threaded accessory hold **45.00**
- B-1/26. For Ikegami ITC-730 Camera **45.00**
- B-1/25. For JVC KY-1900 Camera **45.00**
- C-1/2. For RCA TK-76 Camera **45.00**
- D-1/2. Universal. For most cameras. Clamps onto the camera's handle **45.00**
- E-1/2. For Ikegami HL-79A-D **45.00**
- F-1/2. For RCA TK76B, TK76C, TK-B6 **45.00**
- Stud only. (Specify which type) **27.00**
- Sleeve only. **27.00**

Bulbs For Sun-Gun:			Run Time With Various Capacities Of Batteries							
Cat. No./ Code	Volts	Watts	4AH	7AH	BAH	10AH	14AH	20AH	Price	
6208/FBT	30V	150W	45 min.	1.2 hrs.		2 hrs.			\$38.00	
6209/FBV	30V	250W	26 min.	42 min.		1.2 hrs.			42.00	
6210/FBW	30V	350W	19 min.	30 min.		50 min.			46.00	
6211/FAV	12V	100W	26 min.	42 min.	52 min.		80 min.	24 hrs.	36.00	
6212/FLP	14.4V	70W	49 min.	74 min.	1.5 hrs.		2.46 hrs.	4.1 hrs.	39.00	

- 6207B. Heavy-duty carrying case. Customized for Sun-Gun, Battery Belt, and Accessories. Size 11 1/8" x 19" x 7 1/4" **\$121.00**
- 6207P. As above, but for Battery Pack **121.00**
- APC. Heavy-duty carrying case. Customized for Sun-Gun, Battery Belt, and Accessories. Size 22 3/4" x 17 1/2" x 8 3/4" **210.00**

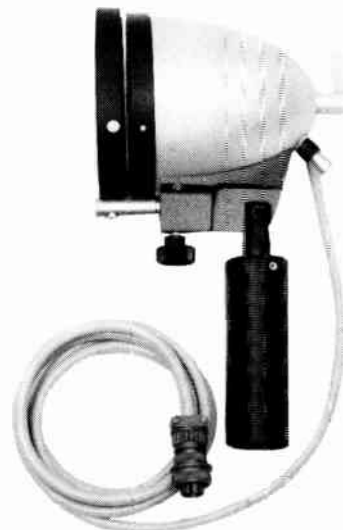
All-Purpose Sun-Gun Kits

APSGK-8 All Purpose Sun Gun Kit. Combines the Cine 60 Sun-Gun to provide 14.4 and 30V portable lighting with a versatile Battery Belt system that runs virtually all portable equipment including 12, 13.2, and 14.4V cameras, VTRs, and TV monitors. The belt can be charged in one hour with a Mobile Fast Charger operating from most vehicles or a Universal 115/220V Fast Charger. This unique kit is a complete working system requiring only one or more of the video cables for connecting the Battery Belt to the manufacturer's equipment. **\$2195.00**

Includes:

- 6201-A Sun-Gun
- 6202 Dichroic Filter; 6203 Diffusion Filter; 6204 Safety Glass
- 6212 14.4V, 70W Bulb; 6209 30V, 250W Bulb
- SG-6510 Power Cable Adaptor
- A-1/2 Sun-Gun Mounting Bracket; B-1/2 Stud only
- 3014FC 30V, 4AH/14.4V, BAH Fast Charge Battery Belt with built-in 115V Overnight Charger
- 6400-Y Power Adaptor. Allows Battery Belt to run Sun-Gun (with 14.4V bulb installed) and a 14.4V camera simultaneously
- VRX Plug-In Voltage Converter. Connects in-line between 6400-Y Power Adaptor and Video Cable. Allows Battery Belt to run Sun-Gun (with 14.4V bulb installed) and 13.2 or 12V camera simultaneously. Maximum drain 4BW
- 94DC30 Mobile Fast Charger. Operates from car battery (with engine running)
- 9400-U Universal Fast Charger. Operates from 115/220V, 50/60 cycles
- APC All-Purpose Sun-Gun Kit Carrying Case

APSGK-14 All-Purpose Sun-Gun Kit. As above but with 30V, 7AH/14.4V 14AH Battery Belt that can be charged in two hours **\$2624.00**



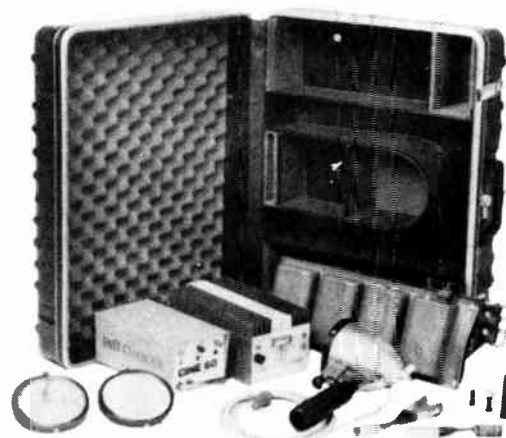
Sun-Gun with Dichroic Filter



Sun-Gun Mounting Brackets



SG-6510 Power Cable Adaptor



APSGK-8 All-Purpose Sun-Gun Kit

Complete Lighting Kits Consisting of:

- 6201-A Sun-Gun with Bulb (specify which bulb), Handle, Integral Cable
- 6202 Swing-Away Dichroic Filter
- Battery Belt or Pack with 115V Overnight Charger
- 6207 Heavy-Duty Customized Carrying Case
- 9400 Fast Charger is included in Fast Charge Sun-Gun Kits
- SG-6510 Power Cable Adaptor is included in 12V, 14.4V and 30V/14.4V Sun-Gun Kits
- 6212 FLP 14.4V Bulb is included in 30V/14.4V Sun-Gun Kits

Note: Sun-Gun Mounting Bracket not included in kits. May be ordered separately.

30V Sun-Gun Kits

SGK-6304PS	Overnite Charge, 30V 4AH, Battery Belt	\$ 1035.00
SGK-8304FC	Fast Charge, 30V 4AH, Battery Belt	1397.00
SGK-7004PS	Overnight Charge, 30V 7AH, Battery Belt	1397.00
SGK-7004FC	Fast Charge, 30V 7AH, Battery Belt	1768.00
SGK-9104PS	Overnight Charge, 30V 4AH, Battery Pack	1065.00
SGK-9104FC	Fast Charge, 30V 4AH, Battery Pack	1432.00
SGK-9704PS	Overnight Charge, 30V 7AH, Battery Pack	1429.00
SGK-9704FC	Fast Charge, 30V 7AH, Battery Pack	1778.00

30V/14.4V Sun-Gun Kits:

SGK-3014PS	Overnight Charge, 30V 4AH, 14.4V 8AH, Battery Belt	\$ 1188.00
SGK-3014FC	Fast Charge, 30V 4AH, 14.4V 8AH, Battery Belt	1558.00
SGK-3017PS	Overnight Charge, 30V 7AH, 14.4V 14AH, Battery Belt	1549.00
SGK-3017FC	Fast Charge, 30V 7AH, 14.4V 14AH, Battery Belt	1920.00
SGK-9014PS	Overnight Charge, 30V 4AH, 14.4V 8AH, Battery Pack	1188.00
SGK-9014FC	Fast Charge, 30V 4AH, 14.4V 8AH, Battery Pack	1558.00
SGK-9017PS	Overnight Charge, 30V 7AH, 14.4V 14AH, Battery Pack	1549.00
SGK-9017FC	Fast Charge, 30V 7AH, 14.4V 14AH, Battery Pack	1920.00

14.4V Sun-Gun Kits:

SGK-6306PS	Overnight Charge, 14.4V 4AH, Battery Belt	\$ 911.00
SGK-8306FC	Fast Charge, 14.4V 4AH, Battery Belt	1276.00
SGK-7006PS	Overnight Charge, 14.4V 7AH, Battery Belt	1016.00
SGK-7006FC	Fast Charge, 14.4V 7AH, Battery Belt	1380.00
SGK-9106PS	Overnight Charge, 14.4V 4AH, Battery Belt	918.00
SGK-9106FC	Fast Charge, 14.4V 4AH, Battery Pack	1293.00
SGK-9706PS	Overnight Charge, 14.4V 7AH, Battery Pack	1067.00
SGK-9706FC	Fast Charge, 14.4V 7AH, Battery Pack	1412.00

12V Sun-Gun Kits:

SGK-6307PS	Overnight Charge, 12V 4AH, Battery Belt	\$ 862.00
SGK-8307FC	Fast Charge, 12V 4AH, Battery Belt	1228.00
SGK-7007PS	Overnight Charge, 12V 7AH, Battery Belt	998.00
SGK-7007FC	Fast Charge, 12V 7AH, Battery Belt	1362.00
SGK-6327PS	Overnight Charge, 12V 8AH, Battery Belt	1069.00
SGK-8327FC	Fast Charge, 12V 8AH, Battery Belt	1434.00
SGK-7027PS	Overnight Charge, 12V 14AH, Battery Belt	1404.00
SGK-7027FC	Fast Charge, 12V 14AH, Battery Belt	1756.00
SGK-9107PS	Overnight Charge, 12V 4AH, Battery Pack	900.00
SGK-9107FC	Fast Charge, 12V 4AH, Battery Pack	1272.00
SGK-9707FC	Fast Charge, 12V 7AH, Battery Pack	1390.00
SGK-9707PS	Overnight Charge, 12V 7AH, Battery Pack	1038.00
SGK-9127PS	Overnight Charge, 12V 8AH, Battery Pack	1106.00
SGK-9127FC	Fast Charge, 12V 8AH, Battery Pack	1470.00
SGK-9727PS	Overnight Charge, 12V 14AH, Battery Pack	1404.00
SGK-9727FC	Fast Charge, 12V 14AH, Battery Pack	1766.00



SGK-8304FC Sun-Gun Kit



SGK-9704FC Sun-Gun Kit

VRX Voltage Converter. For using 14.4V batteries to power all 13.2V cameras, VTRs, Betacams. Converts 14.4V to 13.2V maximum 48W. Plugs in between battery and video cable. 5-pin male XLR input, 5-pin female XLR output. \$49.00

6400-Y Power Adaptor. Allows battery to power a light and camera simultaneously. Plugs in between battery, video cable, and light cable. 5-pin male XLR input, two 5-pin female XLR outputs. \$54.00

CINE 60, INC.

Video Cable/Equipment Run Time Chart

Required Video Cable for connecting Cine 60's Battery Belt or Pack to the manufacturer's equipment. Cables with an (s) are 6' straight type, with a (c) coiled type, 1' retracted, 6' extended. The 1st number in the Run Time Chart, 4, 7, 8, 14, and 20 is the battery's Amp.-Hr. capacity. The number alongside it is the approximate hours of equipment run time using that battery capacity.



Equipment	Video Cable		Price	Approximate Hours of Run Time				
Ampex								
ARC-10 Camcorder 13.2V	6408	(c)	\$65.00	4 1.0	7 1.7	8 2.0	14 3.4	20 5.7
BCC-4 Camera ± 9.6V	6404AMP	(c)	80.00	4 1.4	7 2.2			10 4.0
BCC-14 Camera 14.4V	6473	(c)	80.00	4 1.5	7 2.5	8 3.0	14 5.0	20 8.5
BCC-20 Camera 14.4V	6473	(c)	80.00	4 1.5	7 2.5	8 3.0	14 5.0	20 8.5
FPC-10 Camera 14.4V	6408	(c)	65.00	4 3.2	7 5.2	8 6.4	14 10.0	20 16.0
FPR-10 Recorder 13.2V	6408	(c)	65.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0
VPR-5 Recorder 14.4V	6477	(c)	85.00	4 1.3	7 2.1	8 2.6	14 4.3	20 7.2
VPR-20 Recorder 14.4V	6431	(c)	65.00	4 0.7	7 1.1	8 1.4	14 2.3	20 3.8
ASACA								
ASW-100 Switcher 12V	6402OE	(c)*	\$32.00	4 0.5	7 0.86	8 1.0	14 1.7	20 3.0
ACC-2000 Camera ± 7.2V	6403OE	(c)*	36.00	4 1.6	7 2.5	8 3.2	14 5.0	20 9.1
ACC-3000 Camera ± 14.4V	6403OE	(c)*	36.00	4 1.4	7 2.4			10 4.0
*These ASACA Connecting Cables are open-ended and require the ASACA DC Connector.								
CEI								
310 Camera 14.4V	6412	(c)	\$65.00	4 0.6	7 0.8	8 1.1	14 1.7	20 2.8
330 Camera 14.4V	6412	(c)	65.00	4 0.6	7 0.8	8 1.1	14 1.7	20 2.8
340 Camera 14.4V	6412	(c)	65.00	4 0.8	7 1.1	8 1.6	14 2.3	20 4.0
CP								
MNC-71CP Camera ± 7.2V	6417-4	(c)	\$80.00	4 1.6	7 2.5	8 3.2	14 5.0	20 9.1
MNC-81A Camera 12V	6420	(c)	65.00	4 2.0	7 3.0	8 4.0	14 6.0	20 10.0
Camera Prompter 12V	6408	(c)	65.00	4 2.3	7 3.6	8 4.7	14 7.2	20 11.9
Fernseh								
BCN-5 Recorder 12V	6422	(s)	\$65.00	4 1.4	7 2.24	8 2.8	14 4.5	20 7.4
BCN-20 Recorder 12V	6430	(s)	54.00	4 0.7	7 1.0	8 1.4	14 2.0	20 3.8
BCN-21 Recorder 12V	6400BCN	(s)	80.00	4 1.7	7 2.9	8 3.3	14 5.7	20 9.5
KCA-90 Camera ± 7.2V	6423	(c)	65.00	4 1.6	7 2.5	8 3.2	14 5.0	20 8.0
KCA-100 Camera 12V	6424	(c)	65.00	4 1.6	7 2.5	8 3.2	14 5.0	20 8.0
KCN-1 Camera ± 14.4V	6400KCN	(s)	65.00	4 0.75	7 1.25			10 2.2
Harris								
TC-90 Camera 14.4V	6488	(c)	\$80.00	4 2.0	7 3.0	8 4.0	14 6.0	20 10.0
Hitachi								
FP-5 Camera 12V	6406	(c)	\$65.00	4 5.7	7 8.5	8 11.4	14 17.1	20 28.5
FP-7 Camera 12V	6406	(c)	65.00	4 4.4	7 7.7	8 8.9	14 13.4	20 22.2
FP-10 Camera 13.2V	6406	(c)	65.00	4 3.0	7 5.2	8 6.1	14 10.5	20 17.6
FP-11 Camera 13.2V	6406	(c)	65.00	4 3.3	7 5.0	8 6.7	14 10.0	20 16.7
FP-15 Camera 13.2V	6406	(c)	65.00	4 2.6	7 4.4	8 5.1	14 8.8	20 14.7
FP-20S Camera 13.2V	6406	(c)	65.00	4 2.3	7 3.4	8 4.6	14 6.8	20 11.4
FP-21 Camera 14.4V	6406	(c)	65.00	4 2.5	7 3.8	8 5.0	14 7.5	20 12.5
FP-22 Camera 14.4V	6406	(c)	65.00	4 2.3	7 3.4	8 4.6	14 6.8	20 11.4
FP-40S Camera 13.2V	6406	(c)	65.00	4 2.8	7 4.3	8 5.7	14 8.6	20 14.3
FP-1020 Camera 12V	6406	(c)	65.00	4 2.2	7 3.3	8 4.4	14 6.7	20 11.1
FP-3030 Camera 12V	6407	(c)	65.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0
FP-3060A Camera 12V	6406	(c)	65.00	4 3.0	7 4.6	8 6.1	14 9.2	20 15.4
FP-3060G Camera 12V	6406	(c)	65.00	4 3.0	7 4.6	8 6.1	14 9.2	20 15.4
GP-7 Camera 12V	6406	(c)	65.00	4 5.3	7 8.0	8 10.7	14 16.5	20 27.0
HR-100 Recorder 12V	6421	(c)	65.00	4 0.7	7 1.0	8 1.25	14 2.0	20 3.6
SK-70 Camera ± 14.4V	Special		—	4 1.3	7 2.0			10 3.3
SK-80 Camera ± 14.4V	6405	(s)	65.00	4 1.7	7 2.5			10 4.1
SK-80A Camera ± 12V	6405	(s)	65.00	4 2.6	7 4.0			10 6.7
SK-81 Camera 14.4V	6406	(c)	65.00	4 2.8	7 4.3	8 5.7	14 6.7	20 14.2
KS-90 Camera 13.2V	6406	(c)	65.00	4 1.3	7 2.0	8 2.7	14 4.0	20 6.7
SK-91 Camera 14.4V	6406	(c)	65.00	4 2.8	7 4.3	8 5.7	14 8.6	20 14.2
SK-97 Camera 14.4V	6406	(c)	65.00	4 2.2	7 3.3	8 4.4	14 6.7	20 14.2
SV-340 Recorder 12V	6400JVC	(s)	54.00	4 3.0	7 4.7	8 6.0	14 9.4	20 17.0
V-059B Oscilloscope 12V	6459	(s)	54.00	4 5.0	7 8.0	8 10.0	14 15.6	20 25.0
V-089 Vectorscope 12V	6489	(s)	54.00	4 1.6	7 2.6	8 3.2	14 5.0	20 8.0
V-099 Waveform Monitor	6489	(s)	54.00	4 1.6	7 2.6	8 3.2	14 5.0	20 8.0
Z-31 Camera 13.2V	6406	(c)	65.00	4 2.4	7 3.6	8 4.8	14 7.2	20 12.0

CINE 60, INC.

Video Cable/Equipment Run Time Chart

Required Video Cable for connecting Cine 60's Battery Belt or Pack to the manufacturer's equipment. Cables with an (s) are 6' straight type, with a (c) coiled type, 1' retracted, 6' extended. The 1st number in the Run Time Chart, 4, 7, 8, 14, and 20 is the battery's Amp.-Hr. capacity. The number alongside it is the approximate hours of equipment run time using that battery capacity.



Equipment	Video Cable		Price	Approximate Hours of Run Time					
Ikegami									
EC-35 Camera 14.4V	6485	(c)	\$59.00	4 1.6	7 2.4	8 3.2	14 4.8	20 8.0	
HL33/HL35 Camera ± 12V	6410	(c)	65.00	4 1.0	7 1.0			10 2.9	
HL-37 Camera ± 7.2V	6400IKE	(c)	65.00	4 1.0	7 1.6	8 2.0	14 3.2	20 5.7	
HL-51 Camera ± 12V	6472	(c)	65.00	4 1.0	7 1.6			10 2.9	
HL-77 Camera ± 7.2V	6400IKE	(c)	65.00	4 1.0	7 1.6	8 2.0	14 3.2	20 5.7	
HL-78 Camera 14.4V	6471	(c)	65.00	4 2.0	7 3.0	8 4.0	14 6.0	20 10.0	
HL-79A, D, L, E	6471	(c)	65.00	4 2.0	7 3.0	8 4.0	14 6.0	20 10.0	
HL-83 Camera 14.4V	6483	(s)	80.00	4 2.2	7 3.4	8 4.3	14 6.8	20 12.0	
HL-95/CA95 Camera 14.4V	6483	(c)	80.00	4 2.0	7 3.0	8 4.0	14 6.0	20 10.0	
HL-95/Betacam 13.2V	6475	(c)	65.00	4 1.7	7 2.7	8 3.3	14 5.3	20 8.5	
ITC-350 Camera 14.4V	6471	(c)	65.00	4 2.5	7 4.2	8 5.0	14 8.4	20 14.2	
ITC-730 Camera 14.4V	6471	(c)	65.00	4 2.2	7 3.4	8 4.3	14 6.8	20 12.0	
TM-10-R9H Monitor 12V	6400IKE	(c)	65.00	4 1.0	7 1.5	8 2.0	14 3.0	20 5.0	
JVC									
BR-6200-U Recorder 12V	6401J8	(s)	\$65.00	4 4.5	7 7.0	8 8.8	14 13.3	20 23.5	
CR-4400-LU Recorder 12V	6411	(c)	65.00	4 3.0	7 4.7	8 6.0	14 9.4	20 17.0	
CR-4400-U Recorder 12V	6400JVC	(s)	54.00	4 3.0	7 4.7	8 6.0	14 9.4	20 17.0	
CR-4700-U Recorder 12V	6408	(c)	65.00	4 2.2	7 3.6	8 4.5	14 7.2	20 12.0	
CR-4900-U Recorder 12V	6408	(c)	65.00	4 2.2	7 3.6	8 4.5	14 7.2	20 12.0	
CY-8800-U Camera 12V	6408	(c)	65.00	4 1.3	7 2.0	8 2.5	14 4.0	20 7.2	
HR-2200-U Recorder 12V	6401J7	(s)	65.00	4 4.5	7 7.0	8 8.8	14 13.3	20 23.5	
HR-2650-U Recorder 12V	6401J8	(s)	65.00	4 4.5	7 7.0	8 8.8	14 13.3	20 23.5	
HR-4100-U Recorder 12V	6400JVC	(s)	54.00	4 4.5	7 7.0	8 8.8	14 13.3	20 23.5	
HRC3U/GZ-S3 (separated) 12V	6401J3	(s)	65.00	4 2.4	7 4.1	8 4.8	14 8.1	20 12.0	
GX-S700 Camera 12V	6401J3	(s)	65.00	4 5.0	7 8.1	8 10.0	14 15.6	20 26.0	
KY-210-U Camera 12V	6408	(c)	65.00	4 2.8	7 4.3	8 5.7	14 8.6	20 14.3	
KY-310-U Camera 12V	6408	(c)	65.00	4 2.2	7 3.4	8 4.5	14 6.8	20 11.4	
KY-320-U Camera 12V	6408	(c)	65.00	4 2.4	7 3.6	8 4.8	14 7.2	20 12.0	
KY-900-U Camera 12V	6408	(c)	65.00	4 1.8	7 2.7	8 3.3	14 4.5	20 9.0	
KY-950-U Camera 12V	6408	(c)	65.00	4 1.8	7 2.7	8 3.3	14 4.5	20 9.0	
KY-1900-U Camera 12V	6408	(c)	65.00	4 2.8	7 4.8	8 5.6	14 9.6	20 14.0	
KY-2000-U Camera 12V	6408	(c)	65.00	4 2.0	7 3.5	8 4.0	14 7.0	20 12.0	
KY-2700-U Camera 12V	6408	(c)	65.00	4 2.5	7 4.0	8 5.0	14 8.0	20 12.5	
S-62-U Camera 12V	6401PV2	(s)	54.00	4 3.1	7 5.0	8 6.8	14 10.0	20 16.7	
S-100-U Camera 12V	6401PV2	(s)	54.00	4 3.1	7 5.0	8 6.8	14 10.0	20 16.7	
TM-R9-U Monitor 12V	6402OE*	(s)	32.00	4 1.8	7 2.7	8 3.6	14 5.4	20 9.1	
TM-22-U Monitor 12V	6401J7	(s)	65.00	4 1.6	7 2.6	8 3.3	14 5.3	20 8.0	
TM-41A-U Monitor 12V	6400JVC	(s)	54.00	4 3.0	7 5.4	8 6.0	14 10.8	20 18.2	
TM-63-U Monitor 12V	6401J7	(s)	65.00	4 1.6	7 2.6	8 3.3	14 5.3	20 8.0	
* 6402OE Connecting Cable is open-ended and requires the TM-R9-U.D.C. Connector.									
NEC									
MNC-60/61A Camera ± 9.6V	6404AMP	(c)	\$80.00	4 1.4	7 2.2			10 4.0	
MNC-71CP Camera ± 7.2V	6417-4	(c)	80.00	4 1.6	7 2.5	8 3.2	14 5.0	20 9.1	
MNC-80/81A Camera 12V	6420	(c)	65.00	4 1.75	7 2.8	8 3.5	14 5.6	20 10.0	
SP-3/Betacam 12V	6475	(s)	80.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
SP-3/SP-1AD Camera 12V	64SP3	(c)	65.00	4 2.0	7 3.0	8 4.0	14 6.0	20 10.0	
SP-3A Camera 12V	64SP3	(s)	80.00	4 3.7	7 5.5	8 7.4	14 11.0	20 18.5	
Philips									
LDK-11 Camera ± 12V	8CAM	(s)	\$65.00	4 1.5	7 2.4			10 4.0	
LDK-14 Camera 14.4V	6473	(c)	80.00	4 1.5	7 2.5	8 3.0	14 5.0	20 8.5	
LDK-14SL Camera 14.4V	6473	(c)	80.00	4 2.1	7 3.1	8 4.2	14 6.4	20 10.6	
Video 80 Camera ± 12V	6414-4	(c)	80.00	4 1.9	7 3.1			10 5.5	
Toshiba									
PK-39 Camera 14.4V	6474	(c)	\$65.00	4 1.5	7 2.5	8 3.0	14 5.0	20 8.5	
Videotek									
VM5A/RM5A Monitors 12V	6401KVG	(s)	\$65.00	4 2.7	7 4.0	8 5.4	14 8.5	20 14.3	

CINE 60, INC.

Video Cable/Equipment Run Time Chart

Required Video Cable for connecting Cine 60's Battery Belt or Pack to the manufacturer's equipment. Cables with an (s) are 6' straight type, with a (c) coiled type, 1' retracted, 6' extended. The 1st number in the Run Time Chart, 4, 7, 8, 14, and 20 is the battery's Amp.-Hr. capacity. The number alongside it is the approximate hours of equipment run time using that battery capacity.



Equipment	Video Cable		Price	Approximate Hours of Run Time					
Panasonic									
AG-100 Recorder 12V	6400AG1	(s)	\$ 54.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
AG-2400 Recorder 12V	6400AG4	(s)	54.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
AG-6400 Recorder 12V	6408	(c)	65.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
AU-400 Camcorder 13.2V	6408	(c)	65.00	4 3.3	7 5.0	8 6.7	14 10.0	20 16.7	
AU-500 Recorder 13.2V	6408	(c)	65.00	4 1.8	7 2.6	8 3.5	14 5.2	20 8.7	
WV-V3 Camera 13.2V	6408	(c)	65.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
AK-30 Camera 13.2V	6408	(c)	65.00	4 2.4	7 3.6	8 4.8	14 7.2	20 12.0	
AK-710 Camera 13.2V	6478	(c)	65.00	4 2.5	7 3.7	8 5.0	14 7.5	20 12.5	
AK-750 Camera 13.2V	6478	(c)	65.00	4 2.3	7 3.5	8 4.7	14 7.0	20 11.7	
AK-760 Camera 13.2V	6478	(c)	65.00	4 2.3	7 3.5	8 4.7	14 7.0	20 11.7	
AU/AK100 Camcorder 13.2V	6408	(c)	65.00	4 1.0	7 1.7	8 2.0	14 3.4	20 5.7	
AU-220 Rec./Player 13.2V	6408	(c)	65.00	4 2.1	7 3.1	8 4.2	14 6.3	20 10.5	
BTS-700N Monitor 12V	6408	(c)	65.00	4 1.1	7 1.7	8 2.2	14 3.3	20 5.5	
CT-500V Monitor 12V	6401TS2	(s)	54.00	4 3.7	7 5.5	8 7.4	14 11.1	20 18.5	
CT-700 Monitor 12V	6401TS2	(s)	54.00	4 1.0	7 1.8	8 2.0	14 3.6	20 6.1	
NV-8400 Recorder 12V	6400JVC	(s)	54.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
NV-8410 Recorder 12V	6400JVC	(s)	54.00	4 4.6	7 7.0	8 9.3	14 14.0	20 23.0	
NV-8420 Recorder 12V	6400NV2	(s)	54.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
NV-9400 Recorder 12V	6400JVC	(s)	54.00	4 3.0	7 4.7	8 6.0	14 9.4	20 17.2	
NV-9450 Recorder 12V	6408	(c)	65.00	4 2.5	7 3.7	8 5.0	14 7.5	20 12.5	
WV-555 Camera 13.2V	6408	(c)	65.00	4 2.4	7 3.5	8 4.7	14 7.0	20 11.7	
WV-555B/N-3 Camera 13.2V	6408	(c)	65.00	4 2.4	7 3.5	8 4.7	14 7.0	20 11.7	
WV-777 Camera 13.2V	6408	(c)	65.00	4 2.4	7 3.5	8 4.7	14 7.0	20 11.7	
WV-888 Camera 13.2V	6408	(c)	65.00	4 2.4	7 3.5	8 4.7	14 7.0	20 11.7	
WV-890 Camera 13.2V	6408	(c)	65.00	4 2.4	7 3.5	8 4.7	14 7.0	20 11.7	
WV-3060/NV-8420 12V	6400NV2	(s)	54.00	4 2.8	7 4.6	8 5.7	14 9.2	20 14.2	
WV-3070/NV-8420 12V	6400NV2	(s)	54.00	4 2.8	7 4.6	8 5.7	14 9.2	20 14.2	
WV-3180/NV-8420 12V	6400NV2	(s)	54.00	4 2.7	7 4.3	8 5.3	14 8.4	20 13.4	
WV-3230/NV-8420 12V	6400NV2	(s)	54.00	4 2.7	7 4.3	8 5.3	14 8.4	20 13.4	
WV-3400/NV-8420 12V	6400NV2	(s)	54.00	4 2.7	7 4.3	8 5.3	14 8.4	20 13.4	
WV-3600 Camera 12V	6478	(c)	65.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
WV-3700 Camera 12V	6478	(c)	65.00	4 2.8	7 4.2	8 5.7	14 8.5	20 14.3	
WV-3800 Camera 12V	6478	(c)	65.00	4 3.0	7 4.6	8 6.1	14 10.7	20 15.4	
WV-3900 Camera 12V	6478	(c)	65.00	4 3.0	7 4.6	8 6.1	14 10.7	20 14.4	
WV-3890 Camera 13.2V	6478	(c)	65.00	4 3.3	7 5.0	8 6.7	14 10.0	20 16.7	
WV-3890B Camera 13.2V	6408	(c)	65.00	4 3.3	7 5.0	8 6.7	14 10.0	20 16.7	
WV-3990 Camera 13.2V	6478	(c)	65.00	4 3.3	7 5.0	8 6.7	14 10.0	20 16.7	
WV-3990B Camera 13.2V	6478	(c)	65.00	4 3.3	7 5.0	8 6.7	14 10.0	20 16.7	
WV-6000 (S-1) 13.2V	6408	(c)	65.00	4 2.8	7 5.0	8 6.7	14 10.0	20 16.7	
RCA									
CCD-1 Camera 14.4V	6408-8	(c)	\$ 65.00	4 2.4	7 3.6	8 4.8	14 7.2	20 12.0	
HC-1 Camera 14.4V	6486	(s)	80.00	4 2.1	7 3.1	8 3.7	14 6.3	20 10.5	
HC-2 Camera 14.4V	6486	(s)	80.00	4 2.1	7 3.1	8 3.7	14 6.3	20 10.5	
HCR-1 Camcorder 14.4V	6400-R	(s)	95.00	4 1.4	7 2.1	8 2.7	14 4.3	20 7.1	
HCR-2 Camcorder 14.4V	6400-R	(s)	95.00	4 1.4	7 2.1	8 2.7	14 4.3	20 7.1	
HR-1 Recorder 14.4V	6408-8	(c)	65.00	4 4.4	7 6.6	8 8.8	14 13.2	20 22.0	
HR-1020 Recorder 12V	6411	(c)	65.00	4 3.0	7 4.7	8 6.0	14 9.4	20 17.0	
TH-50R Recorder 12V	6475	(c)	65.00	4 0.9	7 1.4	8 1.8	14 2.8	20 5.0	
TK-76 Camera 14.4V	6476	(c)	170.00	4 1.7	7 2.5	8 3.3	14 5.0	20 8.3	
TK-76B Camera 14.4V	6476	(c)	170.00	4 1.3	7 2.06	8 2.7	14 4.1	20 7.0	
TK-76C Camera 14.4V	6476	(c)	170.00	4 1.1	7 1.7	8 2.2	14 3.4	20 5.7	
TK-86 Camera 14.4V	6486	(s)	80.00	4 1.7	7 2.5	8 3.3	14 5.0	20 8.3	
TK-710 Camera 13.2V	6478	(c)	65.00	4 2.6	7 3.9	8 4.9	14 7.9	20 13.2	
Sharp									
XA-600PA Recorder 12V	6460	(s)	\$ 54.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
XC-A1 Camera 14.4V	6408	(c)	65.00	4 2.7	7 4.0	8 5.3	14 8.0	20 13.4	
DC300/XC500 Cameras 12V	6418	(s)	54.00	4 1.5	7 2.2	8 3.0	14 4.4	20 7.5	
XC320/XC520/XC530 12V	6409	(c)	65.00	4 1.8	7 2.6	8 3.6	14 5.2	20 9.0	

CINE 60, INC.

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Equipment	Video Cable		Price	Approximate Hours of Run Time					
Sharp									
XC-700 Camera 14.4V	6XC700	(c)	\$65.00	4 2.2	7 3.4	8 4.4	14 6.8	20 11.0	
XC-800 Camera 14.4V	6408	(c)	65.00	4 3.0	7 4.5	8 6.0	14 9.0	20 15.0	
XC-800II Camera 14.4V	6408	(c)	65.00	4 3.6	7 5.4	8 7.2	14 10.8	20 18.0	
XC-900 Camera 14.4V	6408	(c)	65.00	4 2.4	7 3.4	8 4.8	14 6.8	20 12.0	
XC-900D Camera 14.4V	6408	(c)	65.00	4 2.7	7 4.2	8 5.4	14 8.4	20 13.5	
Sony									
BVH-500 Recorder 12V	6475	(c)	\$65.00	4 0.8	7 1.3	8 1.6	14 2.6	20 4.0	
BVM-4050 Monitor 12V	6475	(c)	65.00	4 2.6	7 4.3	8 5.3	14 8.6	20 13.3	
BVP-1/CA3 Camera 14.4V	6475	(c)	65.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
BVP-3/CA3 Camera 14.4V	6475	(c)	65.00	4 2.7	7 4.4	8 5.4	14 8.5	20 13.7	
BVP-5 Camera 14.4V	6475	(c)	65.00	4 5.1	7 7.8	8 10.3	14 15.5	20 25.0	
BVP-30 Camera 14.4V	6475	(c)	65.00	4 2.7	7 4.4	8 5.4	14 8.5	20 13.7	
BVP-110 Camera 14.4V	6475	(c)	65.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
BVP-150 Camera 14.4V	6475	(c)	65.00	4 2.8	7 4.2	8 5.7	14 8.5	20 14.2	
BVP-250 Camera 14.4V	6475	(c)	65.00	4 2.7	7 4.4	8 5.4	14 8.5	20 13.7	
BVP-300 Camera 14.4V	6475	(c)	65.00	4 2.7	7 4.4	8 5.4	14 8.5	20 13.7	
BVP-330 Camera 14.4V	6475	(c)	65.00	4 2.3	7 3.5	8 4.7	14 7.0	20 11.8	
BVU-50 Recorder 12V	6475	(c)	65.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
BVU-100 Recorder 12V	6400VOB	(s)	54.00	4 2.0	7 3.0	8 4.0	14 6.0	20 10.0	
BVU-110 Recorder 12V	6475	(c)	65.00	4 4.0	7 6.0	8 8.0	14 6.0	20 20.0	
BVU-150 Recorder 12V	6475	(c)	65.00	4 3.3	7 5.0	8 6.6	14 10.0	20 16.6	
BVV-1/VA3 Recorder 13.2V	6475	(c)	65.00	4 4.8	7 7.8	8 9.5	14 15.0	20 24.0	
BVW-1 Betacam 13.2V	6475	(c)	65.00	4 2.4	7 3.8	8 4.7	14 7.5	20 12.0	
BVW-2 Betacam 13.2V	6475	(c)	65.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
BVW-3 Betacam 13.2V	6475	(c)	65.00	4 1.7	7 2.7	8 3.3	14 5.3	20 8.5	
BVW-20 Player 13.2V	6475	(c)	65.00	4 1.9	7 3.0	8 3.7	14 5.9	20 9.3	
BVW-25 Recorder 13.2V	6475	(c)	65.00	4 2.2	7 3.3	8 4.4	14 6.6	20 11.0	
BVW-30 Betacam 13.2V	6475	(c)	65.00	4 2.4	7 3.6	8 4.7	14 7.0	20 11.8	
BVW-105 Camcorder 13.2V	6475	(c)	65.00	4 2.5	7 3.7	8 5.0	14 7.5	20 12.5	
DXC-M3 Camera 13.2V	6400M3	(s)	54.00	4 2.9	7 4.7	8 5.8	14 9.5	20 14.6	
DXC-M3A Camera 13.2V	6475	(c)	65.00	4 2.9	7 4.7	8 5.8	14 9.5	20 14.6	
DXC-1600 Camera 12V	6400DXC	(s)	54.00	4 2.0	7 3.4	8 4.0	14 6.8	20 11.4	
DXC-1610 Camera 12V	6400VOB	(s)	54.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
DXC-1640 Camera 12V	6400VOB	(s)	54.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
DXC-1800 Camera 12V	6400M3	(s)	54.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
DXC-1820 Camera 12V	6400M3	(s)	54.00	4 3.4	7 5.2	8 6.8	14 10.2	20 17.1	
DXC-1840 Camera 12V	6400M3	(s)	54.00	4 3.4	7 5.2	8 6.8	14 10.2	20 17.1	
DXC-3000 Camera 13.2V	6475	(c)	65.00	4 5.7	7 8.6	8 11.4	14 17.1	20 28.6	
DXC-6000 Camera 12V	6400M3	(s)	54.00	4 2.0	7 3.2	8 4.0	14 6.5	20 10.0	
KV-8000G Monitor 12V	6400KVG	(s)	59.00	4 1.0	7 1.8	8 2.0	15 3.6	20 5.7	
PVM-4000 Monitor 12V	6400W	(s)	65.00	4 2.6	7 4.3	8 5.3	14 8.6	20 13.3	
PVM-8000 Monitor 12V	6400KVG	(s)	59.00	4 1.0	7 1.8	8 2.0	14 3.6	20 5.7	
PVM-8020 Monitor 12V	6400VOB	(s)	54.00	4 1.8	7 2.7	8 3.5	14 5.3	20 8.9	
SLO-340 Recorder 12V	6400DXC	(s)	54.00	4 2.0	7 3.4	8 4.0	14 6.8	20 11.4	
VO-3800 Recorder 12V	6400VOB	(s)	54.00	4 1.6	7 2.6	8 3.2	14 5.2	20 9.1	
VO-4800 Recorder 12V	6400DXC	(s)	54.00	4 4.0	7 6.0	8 8.0	14 12.0	20 20.0	
VO-6800 Recorder 12V	6475	(c)	65.00	4 3.0	7 4.5	8 6.0	14 9.0	20 15.0	
Thompson									
MC-301 Camera 12V	6408	(c)	\$65.00	4 2.5	7 4.0	8 5.0	14 8.0	20 12.5	
MC-501 Camera 14.4V	6475	(c)	65.00	4 2.7	7 4.4	8 5.4	14 8.5	20 13.7	
MC-601 Camera 14.4V	6475	(c)	65.00	4 2.0	7 3.4	8 4.0	14 6.8	20 10.0	
MC-602 Camera 14.4V	6475	(c)	65.00	4 2.0	7 3.4	8 4.0	14 6.8	20 10.0	
MC-611 Betacam 13.2V	6475	(c)	65.00	4 2.4	7 3.8	8 4.7	14 7.5	20 12.0	
MC-613 Betacam 13.2V	6475	(c)	65.00	4 1.7	7 2.7	8 3.3	14 5.3	20 8.5	
MC-614 Betacam 13.2V	6475	(c)	65.00	4 2.6	7 4.0	8 5.3	14 8.0	20 13.3	
MC-701 Camera 14.4V	6475	(c)	65.00	4 2.0	7 3.4	8 4.0	14 6.8	20 10.0	
TTV-1623 Camera 14.4V	6475	(c)	65.00	4 2.8	7 4.3	8 5.7	14 8.6	20 14.3	
TTV-1624 Camera 14.4V	6475	(c)	65.00	4 2.6	7 4.0	8 5.3	14 8.0	20 13.3	

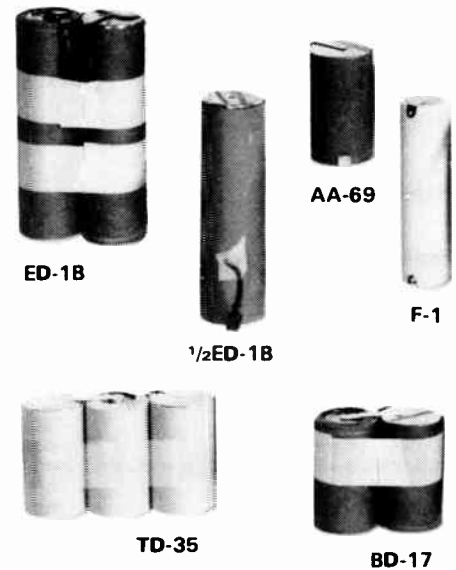
CINE 60, INC.

Accessories

Accessories

ED-18 Cell Module, 4.8V, 4AH. Used in 30V, 4AH and all 8AH belts. BP-90 and Hitch-Hiker camera batteries	\$ 65.75
1/2ED-18 Cell Module, 2.4V, 4AH. Used in BP-90 and 13.2V, 8AH belts	33.85
BD-17 Cell Module, 2.4V, 4AH. Used in 8 to 16V, 4AH belts	32.75
TD-35 Cell Module 3.6V, 4AH. Used in 4 and 8AH softbelts, OB batteries.	48.95
AA-69 Cell Module 1.2V, 4AH. Used in 8 and 13V, 4AH batteries	16.25
F-1 Cell Module 1.2V, 7AH. Used in all 7 and 14AH belts and packs	26.35
SF-1 Cell Module 1.2V, 10AH. Used in all 10 and 20AH packs	65.75
PB-8B ED-18 cell module box	5.00
PB-77 BD-17 cell module box	5.00
PB-2F F-1 cell module box. (For 2 F-1 Cell Modules)	5.00
NRT-1 Non-resettable thermal fuse	5.00
TS-1 Precision ceramic cell sensor	24.75
MRCB Manual reset circuit breaker	11.00
ARCB Autoreset circuit breaker	11.00
TOS1 Toggle switch	24.00
CIL-1 Charger indicating light	5.00
2AMP 2-Pin Amph. receptacle for 30V batteries	15.00
2CNN Cap and chain assembly for #2 Amp receptacle	9.00
C5F 5-pin XLR receptacle	13.00
C4F 4-pin XLR receptacle	13.00
RBBJ Red or black banana jack	5.00
RBBC Red or black insulating cap	2.00
RA4F 4-pin pre-wired connector for OB4-14 Camera Battery.	24.00
RA5F 5-pin pre-wired connector for OB5-14 Camera Battery.	24.00
C4MC 4-pin cable connector, male, XLR	9.00
C5MC 5-pin cable connector, male, XLR	9.00
C4FC 4-pin female cable connector, XLR	13.00
C5FC 5-pin female cable connector, XLR	13.00
CP2M 2-pin male cable connector for Sun-Gun	17.00
115C4 Replacement 115V built-in charger for 4AH and 8AH batteries.	116.00
115C7 Replacement 115V built-in charger for 7AH and 14AH batteries.	127.00
220C4 Replacement 220V built-in charger for 4AH and 8AH batteries.	116.00
220C7 Replacement 220V built-in charger for 7AH and 14AH batteries.	127.00
1120C4 Replacement 115/220V built-in charger for 4AH and 8AH batteries	165.00
1120C7 Replacement 115/220V built-in charger for 7AH and 14AH batteries	176.00
BD-B 13.2 and 14.4V, 4AH replacement battery belt housing, 8-pocket	138.00
BD-9 16.8V, 4AH replacement battery belt housing, 9-pocket	138.00
F-B 13.2 and 14.4V, 7AH replacement battery belt housing, 8-pocket	150.00
ED-B 30V, 4AH, 12 to 14.4V, 8AH replacement battery belt housing, 8-pocket	165.00
HTCH Replacement Hitch-Hiker™ camera battery housing only	\$ 95.00
(Does not include Anton/Bauer battery connector and stud base)	
HOB Replacement Hitch-Hiker "OB" type battery housing complete with Cine 60 Stud Base and 5 or 4-pin XLR (specify)	150.00

Note When ordering replacement parts, it is necessary to furnish with the part number, the catalog number of the battery belt or pack in which the part is used.



High drain, long life NiCad cell modules. Insulated with porous fish-paper to radiate cell heat more efficiently than plastic promoting longer life. Assembled with deep-seated spot welds to minimize "break-away" open circuits. Selected, graded, and matched.



Built-in charger. Precisely matches cell's impedance allowing more efficient conversion of charge current to stored energy in the cell rather than heat. This superior charge acceptance assures fully charged cells. Less heat promotes longer cell life.

Cine 60 Cells and Chargers are designed and matched to each other to provide optimum performance. Use of replacement cells other than Cine 60's is not recommended.



Battery belt housing. Multi-pocket design results in superior cell heat radiation. Allows cells to charge and discharge more efficiently than when clustered together in a block or pack battery. Also lengthens cell life.

Snaplok Mount

6700 Single-Action Snaplok, instantly and safely mounts camera antenna, or any portable device to a tripod, shoulder port, stand, truck, any flat surface. Double pushbutton release permits instant removal. Complete Snaplok Mount includes a precision machined aluminum alloy base, mating camera plate, two 3/8-16, one 1/4-20 mounting screws. Size 3/4" x 3 1/8". Wt. 17 oz. \$180.00

6700B Snaplok base only 160.00
6700A Snaplok camera plate only 33.00
67SS1 3/8-16 Mounting screw 4.00
67SS2 1/4-20 Mounting screw 4.00
6701 Same as 6700 but smaller size (5/8" x 1 1/2" x 4 1/4", Wt. 8 oz.)
 Double action type mount then "push to lock" 160.00
6701B Base only 144.00
6701A Plate only 27.00

Arri Camera Accessories

Battery Cables. Coiled, 1' (6' extended). Supplied with original molded plug and mating connectors to O.E.M. specifications.

6401S For Arri 16S. With 2 prong molded battery connector \$ 52.00
6401S5 For Arri 16S. With 5-pin XLR battery connector 69.00
6401M For Arri 16M. With 2 prong molded battery connector 59.00
6401M5 For Arri 16M. With 5-pin XLR battery connector 79.00
6401BL For Arri 16BL. With 4-pin XLR battery connector 93.00
6401BL5 For Arri 16BL. With 5-pin battery connector 95.00
6401SR For Arri 16SR, 35BL, 35-III cameras 95.00
6402V For Arri 35, variable speed motor. With 2 prong molded connector 52.00
6402V5 For Arri 35, variable speed motor. With 5-pin XLR connector . . 69.00
6402C For Arri 35, constant speed motor. With 2 prong molded connector 52.00
6402C5 For Arri 35, constant speed motor. With 5-pin XLR connector . . 69.00
6900 **Offset Motor Base for Arri 35 IIC or IIB.** A gear box providing a flat camera base and low center of gravity. Essential for professional tripod mounting. Mounts constant or variable speed motor 600.00
6900A As above but with built-in contacts for automatic clapstick . . 787.00
6504 **Focusing Device for Arri 35.** For uninterrupted easy follow focusing by camera man or assistant. Includes 3 lens scales and 3 gears B20.00
6910'C **Lens Mount Adaptor.** Precision machined lens mount permitting the use of Arri mounted lens on cameras with "C" mounts 192.00
6910B As above but for cameras with "Bayonet" mounts 192.00

Arri Camera Batteries

12V/2A. 2AH Arri SR Camera Battery. Totally compatible. No adaptor, special mounting or connections required. 2AH cells provided a 30% increase in run time. Can be charged with Arri SR Battery Charger or Cine 60 Dual Charger. Size 2 1/2" x 3 5/8" x 4 1/2". Wt. 2 lbs. \$357.00

O-NC2000 Dual Charger. Charges two 12V/2A batteries in 8 hours. Independent charge circuit and LED indicator for each channel. Automatic 115/220V operation. Size 2" x 3 1/2" x 4 1/2". Wt. 1 1/2 lbs. \$357.00

9707AOB Arri 35BL-3 "Flat Pack" Camera Battery. Slim 12V 7AH battery designed to mount inside the Arri Geared Head. Features two 5-pin XLR output connectors, Autoreset Circuit Breaker; Built-in 115V Overnite Charger; Charger Cable (in compartment); Charge Indicator, Charge/Operate Switch. Size 1 1/2" x 6 5/8" x 9 5/16". Wt. 7 lbs. \$765.00
Note 1. 9707AOB can be supplied with 4-pin XLR connectors on request.

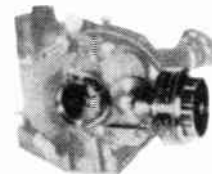
9727HLSP Arri 35-III "Oouble Pack" Camera Battery. Provides two 12V 7AH outputs switchable at the camera to 24V for high speed operation. This battery is 2 complete and independent 12V 7AH battery systems totaling 14AH combined in one housing. Each with a 115V Overnite Charger which automatically disconnects each battery when full charge is reached; Charge indicator, and Autoreset Circuit Breaker to protect each battery against external shorts. With padded shoulder strap and hand grip. Size 4 1/2" x 8" x 10". Wt. 14 lbs. \$1119.00
9727FCHLSP As above but capable of being fast charged in 2 hours with 9400 Series Fast Chargers 121B.00
Note 2. 9727HLSP can be supplied with 4-pin XLR connectors on request.

20120HLSP Arri/Panavision "Double Pack" Camera Battery. Higher capacity model of 9727HLSP. Has two 12V 10AH 5-pin XLR outputs, switchable, total 20AH and two 24V 10AH 3-pin XLR outputs (not switchable) to run Panaflex Camera and associated video assist. Size 6 1/2" x 6 3/4" x 14 3/4". Wt. 22 lbs. \$1975.00
Note 3. 20-120HLSP can be supplied with 4-pin XLR connectors on request.

6900 Offset Motor Base



6401S Cable



6504 Focusing Device

Moviemcam Batteries

The original equipment batteries for the Moviemcam Camera. Equipped with 4-pin XLR, Selector Switch for 12V and 24V operation, built-in 115V Overnite Charger, Charge Indicator, Charge Cable, and Autoreset Circuit Breaker. Padded shoulder strap and hand grip supplied with battery pack.

6316 **Battery Belt, 12V 8AH/24V 4AH** Wt. 10 lbs. \$ 704.00
7016 **Battery Belt, 12V 14AH/24V 7AH** Wt. 14 lbs. 1065.00
9116 **Battery Pack, 12V 8AH/24V 4AH** Wt. 9 lbs. 737.00
9716 **Battery Pack, 12V 14AH/24V 7AH** Wt. 13 lbs. 1105.00
12-224 **Battery Pack, 12V 20AH/24V 10AH** Wt. 22 lbs. 1595.00

Direct Replacement for the OEM Anton/Bauer Snap-On® Batteries.

This premium quality battery features a rugged housing with air vents for life-extending lower charge/discharge temperatures, precision "Lifeguard" ± 5% cell sensors for more accurate charge control, and Cine 60 quality long-life NiCad cells. A built-in Autoreset Circuit Breaker protects the battery against external shorts. Mounts instantly without cables or connectors. Side-ribs in the housing assure non-slip handling. Can be charged directly with OEM Chargers. May also be charged with all Cine 60 Slow, Quick, and Fast Chargers (with BP3XF Adaptor).

Hitch-Hiker™ H-14 14.4V 4AH Camera Battery \$495.00
Hitch-Hiker H-13 13.2V 4AH Camera Battery 485.00
Hitch-Hiker H-12 12V 4AH Camera Battery 475.00
BP3XF Charge Adaptor. Snaps onto Hitch-Hiker or OEM's battery to permit charging with Cine 60 Chargers. 49.00

Direct Replacements for Cine 60 "OB" Newspak Batteries. Same features as "Hitch-Hiker" Camera Batteries but require "Shorty Cable" for connecting to the camera. Mounts onto Cine 60 "NMB" or Anton/Bauer Snap-On® OEM brackets. Can be charged directly with all Cine 60 chargers. May also be charged with OEM chargers (with BF3XM Charge Adaptor).

OB14-5 **14.4V 4AH Camera Battery.** Replaces all OB5-14 type Batteries \$435.00
OB14-4 As above but replaces OB4-14 Battery 435.00
OB-13 **13.2V 4AH Camera Battery.** Replaces all OB5-13 Battery 425.00
OB-12 **12V 4AH Camera Battery.** Replaces OB5-12 type Batteries 412.00
"Shorty" Cables. Required for connecting the OB Battery to the camera

SHB-6XC7 For Sharp XC-700 Camera 49.00
SHB-6400IKE For Ikegami HL-77 Camera 49.00
SHB-6406 For all Hitachi Cameras 49.00
SHB-6408 For all JVC "KY" and Sony BVP Cameras, Betacams 49.00
SHB-6471 For Ikegami HL79A-E, ITC-730 Cameras 49.00
SHB-6473 For Ampex BCC-14, BCC-20, Philips LDK-14 Cameras . . . 73.00
SHB-6476 For RCA TK-76, -A, -B, -C 160.00
SHB-6483 For Ikegami HL-83, HL-95 Cameras 63.00
NMB "OB" Battery Mounting Bracket. (Specify for which camera) 75.00
BJ3XM Charge Adaptor. Connects "OB" Batteries to Anton/Bauer OEM Chargers 45.00

®Snap-On is the registered trademark of Anton/Bauer Inc.

CINEMA PRODUCTS CORP.

Film/Video Camera Prompting Systems

CAMRAPROMPTER

**Complete Camera Prompting System
For 16mm Cine and ENG/EFP Video Cameras**

- Bright, easy-to-read script information. Copy "frame" size: •can be typed (bulletin-style) or handprinted on matte-finish 6 1/4" W x 5" H plastic rolls (7" W x 25' L)
 - Small remote control unit (with 10' detachable cable) provides continuously variable speed control (forward or reverse)
 - Ultra-silent, miniaturized motor drive
 - Power supplies: standard 12V battery packs or belts, as well as AC mains (with a 12V regulated power supply). 1.75A max. **
 - Side-mounted light source utilizes two standard fluorescent lamps (GEF4T5-CW)
 - Weight: Camraprompter unit (complete with universal camera mounting plate, adjustable bracket, remote control, scroll and cables) weighs approximately 9 lbs. 8 oz. (4.3kg.)
- ** Power supplies not included.

Mounted in a matte box-type enclosure, the Camraprompter* utilizes a clear acrylic optical flat set at a 45° angle in front of the camera lens. The optical flat acts as a mirror reflecting the bright, easy to read script to the subject being photographed, with virtually no light loss to the lens.

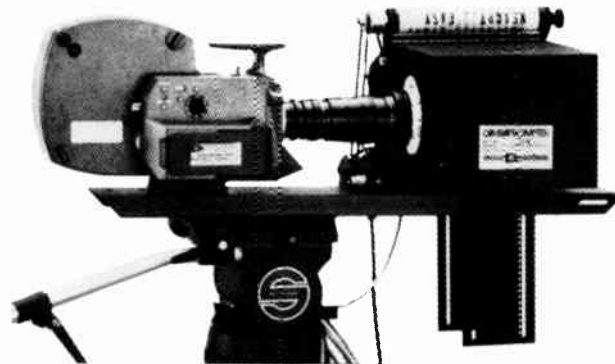
A side-mounted light source is used to back-light the script "scroll." The script copy can be hand-printed or typed (bulletin-style) onto the matte-finish clear plastic 25-foot roll which is advanced by means of an ultra-silent, miniaturized motor drive. (Optional script board/roller unit available for convenient and legible hand-printing).

A compact remote control unit provides continuously variable speed control (forward or reverse). The remote control unit may be operated by the "on camera" subject or by the person in charge of pacing the sequence (who is viewing the script roll from the side of the Camraprompter unit).

Camraprompter can be operated—tripod-mounted or handheld—with most portable motion picture and ENG/EFP cameras currently in use. (It can also be mounted and operated independently on its own stand).

Camraprompter is the ideal prompting system for news/documentary, educational or industrial assignments, as well as TV commercials and other applications shot on location.

* Patents pending.



Camraprompter

5P001	Camraprompter (complete camera prompting system for film and video cameras). Includes universal camera mounting plate	\$2950.00
5P000	Script "Scroll" (plastic, 7" x 25'). Spare roll	11.50
5P011	Script "Scroll" (vellum 7" x 60'). Replacement roll	13.00
5P003	Lamp (replacement fluorescent lamp, GE F4T5-CW)	12.00
5H020	Carrying case, for Camraprompter (only)	200.00
5P009	Scriptboard unit. (Script scroll feed roller assembly is not included)	150.00
5P008	Script scroll feed roller assembly, complete. Includes Spool (5P007) and Spindle (5P006), as spares	185.00
5P007	Script spool, as spare	65.00
5P006	Script feed roller spindle, as spare	120.00
5P005	Clear acrylic optical flat, as spare	30.00
5P004	Base plate with hardware, as spare	265.00
5J008	Extension cable (25'), for speed control box	110.00
5P010	Speed control box with 8' cable, as spare	175.00
5J009	Power cable (supply end uncommitted), as spare	70.00

CAMRAPROMPTER "L"

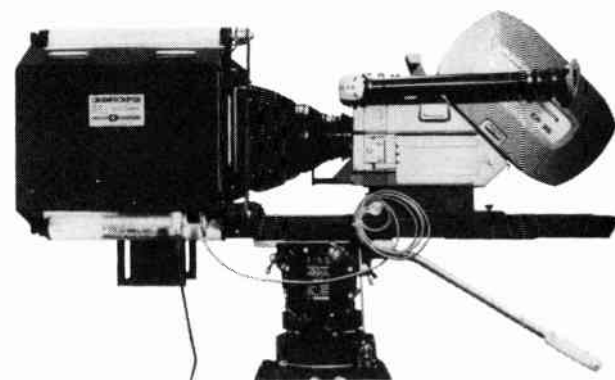
**Complete Camera Prompting System
For 16mm and 35mm Cine and Studio Video Cameras**

- Quick to set up and easy to operate
- Large, clear 8 1/2" x 11" script viewing area
- Matte finish plastic roll, 12 1/8" W x 25' L, on which copy can be typed, handwritten or computer printed
- Compact remote control unit (with detachable cable) provides continuously variable speed control (forward or reverse)
- Silent, miniaturized motor drive
- 6" x 6" Filter and matte holder
- Power supplies (not included): 12V battery packs or belts, as well as AC mains (with a 12V regulated power supply). Under 2A
- Side-mounted light source uses two standard fluorescent lamps (GE F8T5-CW)
- Weight: Camraprompter "L" unit (complete with Universal "L" Mounting Plate Assembly, remote control, script scroll, scroll roller assembly, and cables) weighs approximately 21 lbs. (9.5kgs)
- Unit may be quickly disassembled into three pieces which pack into a compact case (purchased separately)

The Camraprompter "L" is designed to accommodate larger camera systems than the original Camraprompter. Lighter, more portable and lower cost than conventional prompting systems, it operates easily with handheld 35mm film and electronic cinematography cameras, as well as 16mm film and ENG/EFP and compact studio video cameras.

The clear acrylic optical flat is set at a 45° angle in front of the camera lens in a mattebox-type enclosure. The subject being photographed can easily read the script on the flat which acts like a mirror, clearly reflecting the text.

The script "scroll" is available in a 25-foot matte finish plastic roll, or a lighter gauge material, such as vellum, may be used. It is back lighted by a side-mounted light source. Script copy can be hand-printed, typed with a prompting typewriter, or computer printed onto the scroll. A silent, miniaturized motor drive advances the script "scroll".



Camraprompter "L"

5P300	Camraprompter "L" (Complete camera prompting system). Includes Universal "L" mounting plate	\$3600.00
5P305	Script "Scroll" (plastic, 11 7/8" x 35'). Spare roll	18.00
5P012	Script "Scroll" (vellum 11 7/8" x 60')	25.00
5H300	Carrying case for Camraprompter "L" system	250.00

NOTE: Power supplies are not included. Camraprompters require a standard 12V battery pack or belt, or 12VDC regulated power supply.
Prices F.O.B. Factory (Los Angeles).

CINEMA PRODUCTS CORP.

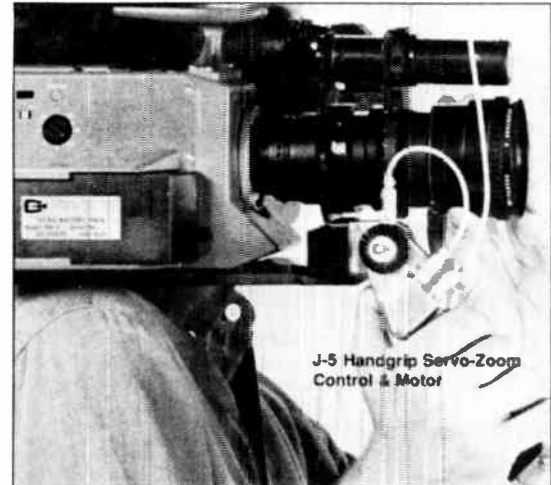
Zoom Control Systems



J-6

J-6 Joystick Power Zoom Control

• Compatible with major professional 16mm, 35mm film cameras, the EC-35 electronic cinematography system, and several EFP video cameras • Operates off internal 12V rechargeable battery or external power of 10VDC-35VDC from the camera head • Provides variable zoom rates from 2 seconds to 30 minutes • Highly responsive Joystick-type sliding thumb control provides logarithmic speed variation (from zero to maximum) in direct response to thumb position • Gradual start/stop system permits extremely smooth precision feathering of the zoom throughout the speed range • Speed rate dial; limits maximum rate of the zoom motor from 2 seconds to 3 minutes per revolution • Field serviceable. The J-6 is easily tested with a standard voltage meter. All parts are standard. I.C.'s (in plug-in sockets) can be replaced without a soldering iron • A pair of zoom direction LEDs blink for positive indication when operating at very slow zoom rates up to 30 minutes • 20X speed fast return button provides for quick return to mark • Direction-reversing toggle switch assures easy motor mounting and realignment with sliding thumb control • Bright LEDs indicating: Low voltage and motor on/off • Convenient camera run on/off switch • Optional VTR start/stop, and return video switches • Highly reliable solid-state electronics featuring LVD transformer (a ceramic core moving within a magnetic coil) eliminates all microswitches, cams and pots. No potted "mystery" modules • Plug-in cables for easy replacement • Highly rugged contoured aluminum case with all controls and connectors recessed • Perfect partner for J-4 and J-5 Zoom Motors



J-5 Handgrip Servo-Zoom Control & Motor

- 2C302** J-6 Joystick/J-5 Motor Power Zoom Control package complete with J-6 self-contained joystick control with rechargeable battery, battery trickle charger, J-5 Zoom Servo Motor, and J-6 Control to J-5 Motor Cable. **\$2,625.00**
- 2C300** J-6 Joystick Power Zoom Control, as spare. Complete with built-in rechargeable NiCad battery, and J-6 Battery Trickle Charger **1,750.00**
- 2C162** J-6 Battery Trickle Charger, as spare. Recharges internal NiCad battery in 14 hrs. Capable of either 120VAC or 240VAC, 50/60Hz operation **90.00**
- 2C320** J-6 Service Tool Kit **100.00**
- 2E263** Tripod handle mounting clamp. Clamps to J-6 to tripod pan handle. **180.00**

J-6 Motor Cables

- 2J223** J-6 control to J-4 motor cable **\$135.00**
- 2J224** J-6 control to J-5 motor cable **135.00**
- 2J225** J-6 control to Heden motor cable **135.00**

J-6 Camera Cables

Note: The J-6 may be powered either by its own internal battery, or from the camera battery. Unless otherwise indicated, cables listed below provide 2 functions, auxiliary power for the J-6 from the camera, and camera remote start/stop from a button on the J-6.

- 2J230** J-6 Camera Cable for Arri 35BL, 35III, and 16SR, (11-pin Fischer connector) **\$150.00**
- 2J231** J-6 Camera Cable for Arri 16SR, and 35III, (4-pin custom connector) **165.00**
- 2J232** J-6 Camera Cable for Arri 35BL, (6-pin Lemo connector) **160.00**
- 2J233** J-6 Camera Cable for Moviecam **160.00**
- 2J234** J-6 Camera Cable for FX35 **140.00**
- 2J235** J-6 Camera Cable for CP-16R, GSMO **140.00**
- 2J236** J-6 Camera Cable, unterminated **120.00**
- 2J237** J-6 Auxiliary Power Cable, with Banana connector **120.00**

J-5 Handgrip Power Zoom Control

- 2G105** J-5 Handgrip Servo-Zoom Control and Motor for GSMO and CP-16R. Includes pover cable (2J119) and motor cable (2J218). Note: For use with GSMO, add 1L009 Mounting Plate **\$1,850.00**
- 2J218** J-5 Motor Cable, as spare (Note: Can also be used as a spare for CL-3 Cable 1J160) **120.00**
- 2J219** J-5 Power Cable, as spare **120.00**
- 2J222** J-5 Remote Operation Cable Set (4 1/2', includes 2J220 and 2J221 Power and Motor cables **275.00**
- 2J220** J-5 Long Power Cable, for remote operation (4 1/2') as spare **140.00**
- 2J221** J-5 Long Motor Cable, for remote operation (4 1/2'), as spare. **140.00**
- 2G132** J-5 Control-to-J-4 Motor Adaptor. Permits J-5 Control Handle (2G225) on CP-16R to drive J-4 Motor (2C123). Requires J-5 Motor Cable (2J218). **70.00**

J-5 Motor Bracketry (Motor to Lens)

- 2H133** J-5 Bracketry for Angenieux 10-150mm **\$275.00**
- 2H115** J-5 Bracketry for Angenieux 9.5-95mm or 12-120mm **275.00**
- 2H125** J-5 Bracketry for Angenieux 9.5-57mm **275.00**
- 2H145** J-5 Bracketry for Angenieux 12-240mm **300.00**
- 2H100** J-5 Bracketry for Angenieux 17.5-70mm **240.00**
- 2H232** J-5 Bracketry for Zeiss 10-100mm T2 **300.00**

J-5 Zoom Motors and Accessories

- 2C123** J-4 Servo Motor, as spare (without D clamp) **\$950.00**
- 2G146** J-5 Servo Motor, as spare **825.00**

NOTE: Bracketry is not included with J-5 or J-6 zoom controls, or with J-5 motor. The same servo motor can be used with different lenses by ordering the appropriate bracketry.

CINEMA PRODUCTS CORP.

Stabilizing System

Steadicam Camera Stabilizing Systems (Universal Model III) for Film and Video Cameras

• Total mobility and portability • Double-jointed stabilizer support arm freeing the arm to move 360° horizontally from the elbow • Cameraman can change support arm from one side of the vest's front plate to the other, allowing left or right hand operation • Operator safety ensured by pin and cone quick-release system • Single Steadicam can be used interchangeably with most handheld 35mm, 16mm and video cameras with no interface

All Steadicam (Universal Model III) systems include:

• Operator's vest • Stabilizer support arm (adjusted for an average camera weight load) • Camera mounting assembly (featuring a 3^{3/4}" high-intensity adjustable viewing monitor) • Camera mounting platform • Two (2) NC-12 NiCad battery packs • Two (2) NCC-12 chargers • West docking bracket • Three cases (accommodating the camera operator's vest, stabilizer support arm, camera mounting assembly, and related accessories)

- 3C015** Steadicam (Universal Model III) with adjustable standard-load stabilizer arm. For use with film and video cameras weighing up to 40 lbs. **\$38,500.00**
- 1C007** Steadicam (Universal Model III) with adjustable light-load stabilizer arm. For use with film and video cameras weighing up to 30 lbs. **\$38,000.00**

NOTE: For most 16mm cameras and EFP video cameras use 1C007. To use Steadicam interchangeably in all formats substitute or adjust the stabilizer support arm and servo control system.

Steadicam Stabilizer Support Arms

- 1L144** Adjustable standard-load stabilizer arm, as spare. May be adjusted in the field. For use with cameras weighing up to 40 lbs. Features include: adjustable springs, articulated elbow, and quick right/left hand connecting system. **\$13,000.00**
- 1L151** Adjustable light-load stabilizer arm, as spare. Features are same as adjustable standard-load arm (1L144) but for cameras weighing up to 30 lbs. **\$12,500.00**

Power Supplies For All Versions Of Steadicam (Universal Model)

- 1K216** Battery pack — NC-12 **\$ 525.00**
 - 1K217** Charger — NCC-12, for above. Overnight charge **425.00**
 - 5K214** Quick charger — NCQC-12. Charges NC-12 battery pack (S/N #709000 and above) in approximately 35 minutes. NCQC-12 Quick Charger is supplied in integral carrying case which features 2 charge wells **4,000.00**
- NOTE: The NCQC-12 Quick Charger will charge NC-12 Battery Packs (with serial numbers below #709000) overnight.

35mm Modifications and Accessories

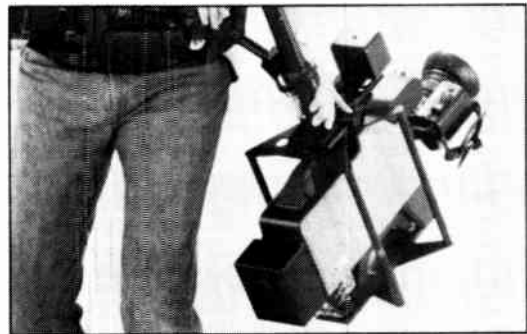
- 3G141** CP/Arri 400' magazine modification, for customer supplied magazine **\$2,000.00**
- 3J184** Power cable for CP/Arri 35 2C, as spare **400.00**
- 3J185** Power cable for Arri 35 III, 35BL, and 16SR. **400.00**
- 3H100** Case for 2 CP/Arri 400' magazines, as spare. **200.00**
- 3J183** Switch cable, for Arri 35BL/Steadicam, as spare **200.00**

Accessories for Steadicam

- 3L140** Steadicam Universal Model III Camera Operator's Vest. Features removable washable pads and "pin-and-cone" parachute-style, quick-release system **\$4,250.00**
- 3M000** Low mode cage, for use with most portable film or video cameras and existing Steadicam **600.00**
- 3M005** Low mode bracket, for use with Arri 35BL and existing Steadicam. **550.00**
- 3M007** Robings J Bracket, required for use with low mode cage (3M000 or 3M005) and existing Steadicam. **150.00**
- 1L260** Camera mounting plate for CP-16R/Steadicam, as spare **100.00**
- 3M001** Camera mounting plate for Moviecam/Steadicam, as spare **385.00**



Steadicam



3M000

- 3M003** Camera mounting plate for Arri 16SR/Steadicam, as spare **\$100.00**
- 3M004** Camera mounting plate for Aaton/Steadicam, as spare **100.00**
- 3M002** Camera mounting plate for Sharp XC-700/Steadicam, as spare **300.00**
- 3M010** Camera mounting plate, multi-purpose for many portable video cameras **100.00**
- 3M008** West Docking Bracket, permits camera mounting platform portion of Steadicam to be mounted on existing lighting stand (5/8" stud) when not in use by operator **225.00**
- 3M009** Wheelchair Mount, permits Steadicam arm to be mounted to moveable or fixed objects **800.00**
- 1L417** "Compact Vehicle" Kit Model III — Ideal for use with Steadicam while shooting in tight quarters, inside a vehicle (helicopter, small airplane and boat, compact car, etc). **675.00**
- 5L100** Garfield Adaptor, mounts existing Steadicam arm to dolly or tripod **750.00**
- 1J273** Ground Strap (for camera mounting plate), as spare **10.00**
- 1J240** Coaxial Cable, 30' length, with terminations to power supply unit and monitor **40.00**
- 3M020** Steadiworm accessory. Facilitates precision left/right balance of camera mounting assembly. Provides fingertip control for rotation of the electronics module **675.00**
- 3M011** Clamp plate assembly for Arri 35BL **300.00**
- 3M022** Clamp plate assembly for Ikegami HL-79 **475.00**
- 3M024** Standard clamp plate assembly, as spare **300.00**

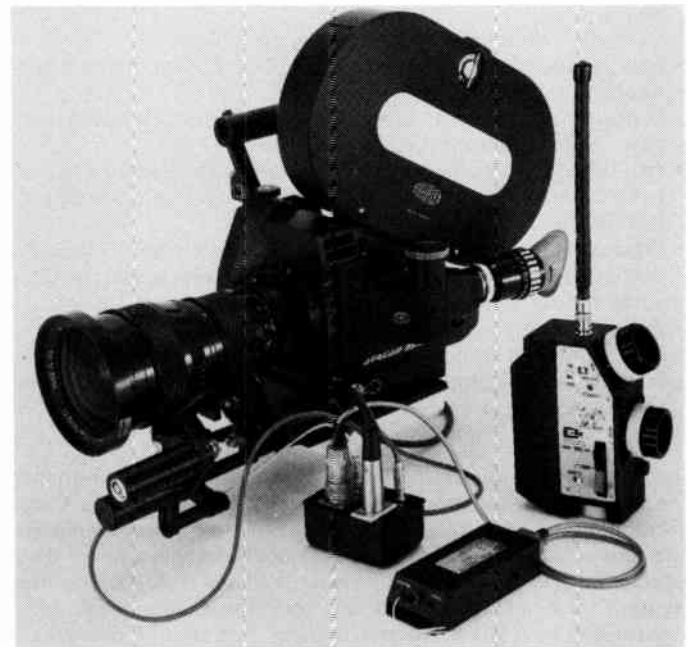
Steadicam Cases

- 3H300** Hard case for Steadicam camera mounting platform **\$475.00**
- 3H302** Soft case for stabilizer support arm. Conveniently made to fit inside of vest case **60.00**
- 3H301** Soft case for Steadicam vest **150.00**

WRC-3A Wireless Lens Control System

- Provides convenient radio control of focus, iris and zoom functions on motion picture and video zoom lenses
- Battery powered system eliminates the need for physical contact between the camera assistant and camera, enhancing flexibility of shooting positions
- Ideal for dolly, crane, or Steadicam shots
- Handheld transmitter features individual dual control knobs
- JB-3 junction box mounts on the shooting camera and permits use of the WRC-3A system when not being used in conjunction with Steadicam
- Universal motor mounting bracketry allows WRC-3A servo-motors to be mounted off of the Steadicam Camera Mounting Plate, so that the lens is free of the motor weight
- This system of support tubes and clamps may be used with most camera/lens combinations

1S306	3-Channel Wireless Servo-Control System Includes WRC-3A 3-channel wireless servo-control transmitter (1S300); RCR-3A 3-channel receiver (1S301); RCR-3A to programmer cable (1J200); NC-4 battery pack (1K152); NCC-6 charger (1K161) NOTE: Add appropriate Motors/Bracketry Kit . . . \$4,000.00
5S306	3-Channel Wireless Servo-Control System for Video Cameras Please specify Fujinon, Canon or Angenieux Lens. Same components as 1S306. \$4,125.00
1S350	Universal Motors/Mounting Bracketry Kit (Video or film cameras). Includes: two (3S400) LM-3 servo motors; two (1S351) long Motor Mounting Brackets for 1/2" rods; two (1S358) 1/2" Main Support Rods. NOTE: For use with wireless or cable operated servo control systems. \$3,000.00
5S350	Universal Motor/Mounting Bracketry Kit (Video or film cameras). Includes: one (3S400) LM-3 servo motor; one (1S351) long Motor Mounting Bracket for 1/2" rod; one (1S358) 1/2" Main Support Rod. NOTE: For use with wireless cable operated servo control systems \$1,500.00
1S300	3-channel wireless servo-control transmitter, as spare. Model WRC-3A (includes antenna). \$3,000.00
1S301	3-channel wireless servo-control receiver. Model RCR-3A (includes antenna). \$900.00
3M006	Junction Box (JB-3), permits WRC-3A 3-channel wireless control to be used with most film camera/lens combinations when Steadicam is not in use \$450.00
3S400	CP LM-3 Servo Motor, high-torque with two operating ranges. Includes: installed idler gear, servo assembly potentiometer and cable \$1,400.00
1S345	Heden Servo Motor. Includes: installed idler gear, servo assembly and potentiometer with cable (1J260) \$1,850.00
1J260	Cable, for focus, zoom or iris motor. NOTE: For use with Cinema Products' servo motors only \$120.00



1S306/1S350/3M006

1S347	Heden Motor Kit for focus, iris, or zoom. Provides Idler gear and potentiometer so that customer may convert existing motor to be used with Cinema Products WRC-3A. Does not include mounting bracketry or lens gears \$1,000.00
1K152	Battery pack — NC-4 \$160.00
1K161	Battery charger — NCC-6 (for use with NC-4 battery pack) \$70.00

Servo-Control Universal Motor Mounting Bracketry, (as spares)

1S358	Universal main support rod, 1/2". Mounts onto Steadicam clamp plate \$ 40.00
1S351	Motor support bracket, long. Clamps around motor and 1/2" rod \$140.00
1S352	Motor support bracket, short. Clamps around motor and 1/2" rod \$110.00
1S353	Parallel rod clamp. Permits "stacking" of 2, 1/2" tubes \$110.00
1S354	Parallel rod adaptor clamp. Adapts 5/8" rod to 1/2" \$110.00
1S355	Parallel rod adaptor clamp. Adapts 15mm rod to 1/2" \$110.00
1S356	Parallel rod. 2" long, 1/2" dia. \$30.00
1S357	Parallel rod. 4" long, 1/2" dia. \$30.00

CM-1

4 Input Professional Microphone Mixer

- A nonvisual distortion control system for one-man camera/sound work
- 12V phantom power for shotgun mikes, switchable for any or all four channels
- Low cut roll-off equalization down 12dBs at 50 cycles, switchable for any or all four channels
- 1000 cycle sine wave tone for lineup. Level adjustable internally
- VU meter which also reads battery condition
- Four balanced microphone inputs. 50 to 250 ohms XLR connectors
- Output in up position: Line output 600 ohms. In down position: Balanced output mike-level 10mV
- Phone plug headset output will accept any impedance from 8 to 400 ohms. Slotted screw adjusts headset volume to comfortable listening level
- Separate twist lock battery compartment allows 30 sec., no harness battery change without exposing electronic circuitry
- Strap brackets for over-shoulder operation
- External power input
- Four individual audio channel controls
- Peak level indication LED: Adjustable to activate at the distortion point or any other desired head room level point before distortion

The CM-1 Mixer was specifically designed to fill requirements which were not satisfied by existing equipment in the TV and motion picture industries. It is ideally suited for one-man camera and sound operation as well as conventional use for ENG and film work. The CM-1 Mixer is a nonvisual distortion control system for one-man camera and sound work. For audio level control without VU meter monitoring, this system provides a distortion-free output to a film or video recorder at a consistent level for best audio without utilizing automatic level control. The CM-1 processes the last audio stage of the amplifier before recording through a clipping circuit which induces easily detected distortion in the headset circuit only. This distorted audio is actually 12dBs before the level at which distortion will occur on the tape. By reducing gain until this distortion is not heard in the headset, the operator restores his 12dBs of head room before audio quality is affected on the tape.

Specifications

- Frequency Response:** 40 to 18,000KC ± 1dB
- Power System:** An extremely versatile power system designed principally to draw power from external sources such as Nagra, ENG camera systems, or any power source 9 to 20VDC with plus or minus ground. The system provides that, if the external source fails or drops below the voltage of the internal 9V batteries, these batteries will automatically take over and supply power without any down time.
- Power Consumption:** 26mA with no phantom power. 7mA additional draw for each channel supplying phantom power.
- Size:** 6.5" x 2" x 3.5"
- Weight:** 31 oz.
- CM-1**\$977.00



Modifications Available for the CM-1 Mixer

- Additional mike level output mini-jack below output selection switch\$30.00
 - Turn all XLR connectors 180° (for use with right angle plugs)NC
 - Phantom power 12V pin 1-, 2+, pin 3+35.00
 - Requires extra switch in battery compartment to switch manually from internal power to external power with positive ground. In the external position, the batteries only supply power to the microphones.
- For Each or Every Input**
- Reversed AB powerNC
 - Input switchable to line level instead of mike power. . . \$25.00
 - Balanced 10dB attenuator in front of input transformer rather than mike power20.00
 - Power connector changed to XLR 4-pin male attached to the side of the mixer.25.00
 - When ordering modifications at a later time, add \$45.00.

Power Supply for 12V Microphones

- Metal-cased power supply
- True balanced in- and outputs
- Twistlock battery cover for rapid battery change
- Activated by a slide switch
- 10dB attenuator and low cut 1dB to 100Hz, 12dB at 30Hz and a phasing switch
- 12V phantom, 12V AB and 12V AB reversed (red dot)
- Built-in battery and cable tester

To test cables, simply connect input to output. LED lights dim or blacken when battery levels are low. LED lights indicate a broken shield, individual broken wires, or reversed phasing.

The unit automatically switches off when microphone is unplugged. Uses two standard 9V batteries. Belt hook included.

Power Supply for 12V Microphones\$175.00

CDI-716A**Microprocessor-Based Time Code Generator**

• Microprocessor-based for future upgrades • Operational parameters and preset easily loaded via front panel • Generates SMPTE, EBU or film code formats • All frame rates • Multi-function jam-sync • Jam-sync coding with user selectable offsets • Generates 4-field NTSC RS-170A or 8-field PAL color code • Internal time of day clock • Selectable SMPTE "Phase Bit" • Programmable operation modes from front panel • Non-volatile memory on user presets and set ups

Specifications

Video Input	
Loophrough:	.5V to 2V, 75 ohm not terminating Black burst composite sync
Color Field ID:	Field ref pulse line 3 to line 20 field 1
Tachometer Input	
Frame Rate:	X1 through X256 per frame
Code Output	
SMPTE/EBU or	
Film Standards:	.5V to 2V p-p, factory set 1V p-p
Jam Code Input	
SMPTE/EBU or	
Film Standards:	300mV to 10V p-p
Rate Output	
2X Frame Rate Tone:	.5V to 2V p-p Factory set 1V p-p
Power:	115V/230V, 50/60Hz
Dimensions:	1 ³ / ₄ "H x 19"W x 14"D Rackmounting ears
CDI-716A	\$2650.00

**CDI-735L Time Code Reader
With Front Panel LED Display**

• Decodes 30-frame SMPTE and 25-frame EBU code formats • Eight-digit front panel display selectable for time or user data • Error bypass eliminates faulty readings by replacing defective code with sequentially correct code • Frames-delete function for uncluttered viewing • Hold for capture of edit points • Wide range decoding and high sensitivity front end • LED time or user data readout • Single rack unit

Specifications

Code Input	
Amplitude:	10mV to 10V p-p
Bandwidth:	1/30 to 80X play speed
Impedance:	10K ohm, balanced, 3-pin XLR connector
Reshaped Code Output	
Format:	Same as input, reshaped
Amplitude:	+ 4dBm in 600 ohm, 3-pin XLR connector
Risetime:	Selectable 25 μ sec/50 μ sec
Controls:	Time/user select Display freeze Frames delete
Indicators:	Drop frame Color frame Data present Error
Options:	Serial RS-232/422 data output Parallel BCD data output
Power:	115V or 230V
Dimensions:	1 ³ / ₄ "H x 19"W x 14"D
CDI-735L	\$1595.00
-300 RS-232 Serial Data Output option .....	.260.00
-400 RS-422 Serial Data Output option .....	.260.00
-500 BCD Data Output option .....	.240.00

**CDI-735L****CDI-735CD Time Code
With 8-Channel Coincidence Detector**

• Error Bypass eliminates faulty readings by replacing defective code with sequentially correct code • Decodes all frame rate formats • 8-digit LED display of time or user data • Built-in coincidence detector with 8 controlled outputs • 3 modes for programming coincident times — Front panel numeric keypad for event times input — Stores capture value on-the-fly from incoming code — Optional remote programming via RS-232/422 serial data port • All set up parameters and event values stored in nonvolatile memory

Specifications

Code Input	
Amplitude:	10mV to 10V p-p
Bandwidth:	1/30 to 80X play speed
Impedance:	10K ohm balanced, 3-pin XLR connector
Restored Code Output	
Format:	Same as input, reshaped
Amplitude:	+ 4dBm into 600 ohm 3-pin XLR connector
Risetime:	Selectable 25 μ sec/50 μ sec
Coincidence Detector:	Coincidence times programmable via front panel controls or optional serial data (RS-422) input
Outputs:	Eight controlled outputs with 1 sec. TTL pulse (Form C relays optional)
Options:	Opto isolator "Form C" relay Parallel BCD output
Power:	115V or 230V, 50/60Hz
Dimensions:	1 ³ / ₄ "H x 19"W x 14"D Rackmounting ears
CDI-735CD	\$2160.00
-040 Opto-Isolator Output option .....	.120.00
-050 Form C Relay Contact Output option .....	.140.00
-300 RS-232 Serial Data Output option .....	.260.00
-390 RS-232 Serial Programming Port option .....	.460.00
-400 RS-422 Serial Data Output option .....	.260.00
-490 RS-422 Serial Programming Port option .....	.490.00
-500 BCD Data Output option .....	.240.00

CIPHER DIGITAL, INC.**Time Code System/Synchronizer Controller****CDI-750 Time Code System**

• Extended sync source selection • Reads longitudinal time code from 1/30th to 80 times play speed • Built-in time-of-day clock • Microprocessor based, software controlled • Programmable jam sync mode operation • Instant selection of 24, 25, 30 or Dropframe Time Code • Two 8 digit LED displays showing reader and generator time code • Clustered Key Switches "operator friendly" • Memory Retention of set-up on power loss • Fully positionable video inserter • Meets both SMPTE and EBU longitudinal time code specifications, including time date, user data, status bits and drop frame or color frame indicators • Accepts color field I.D. pulse required for color video editing • Recognizes 4-field NTSC and 8-field PAL encoding standards • Time base selectable between external video sync or internal crystal reference • Generates a two-times frame rate sine wave output for resolver applications • Generates "burst" and "continuous" time code formats • Full-featured video keyer with two separate outputs and four character sizes • Configured with opto-isolators or optional Form C relays • 16 programmable, time code operable general purpose interfaces control studio or special effects equipment with frame-accurate timing • Communicates with or controlled by a computer via its RS-232/422 computer interface • Fully compatible with the SOFTOUCH™ Audio Editing System

The reader and generator can be individually tailored to immediate needs, while the system's state-of-the-art software controls make it readily adaptable to future enhancement.

Specifications**CODE INPUT**

Amplitude:	10mV to 10V p-p
Bandwidth:	80 bps to 192K bps
Impedance:	10K ohm balanced on 3-pin XLR connector

CDI-4800**Shadow II Synchronizer Controller**

• Typically interlocks in a two to four seconds in play • Exclusive chase mode maintains strict interlock even when the master machine is in fast forward or rewind • Wide Band reader assures time code readability from 1/50th to 80 times normal play speed • At higher wind speeds, the Shadow II utilizes available tach pulses to maintain synchronization until head contact is made again • Interchangeably locks to code, video sync and 50/60Hz tone • A unique software "filter" can eliminate wow and flutter transfer for the smoothest, most stable lock possible in any application • Specifically designed for direct computer interface • RS-232C/RS-422 interface control makes it compatible with video/audio editing systems, mixdown consoles and virtually any computer device, including personal computers

Its powerful internal microprocessor enables the Shadow II to dynamically learn the control characteristics using SMPTE/EBU standard time code as the reference, optionally augmented by an external sync signal, the Shadow II continually adjusts a transport's capstan speed to keep it accurately synchronized to another transport within 1/100th of a frame (1/3000th of a second). When multiple Shadow IIs are connected in a series, numerous transports can be interlocked to a Master transport.

Use a Softouch or Shadowpad controller with Shadow II, for additional power of transport control. Along with standard transport motion and autolocation commands, this power includes offsets up to 24-hours, selection of the speed and type of transport interlock, subframe-accurate record and mute commands, time code and offset memory.

Specifications**SYNCHRONIZATION TOLERANCES**

Accuracy:	± 50µs
Resolution:	± 0.5µs
Transport Speed:	1/50 th to 80 times play speed
Normal Lock Rate:	1/2 play speed or 2x play speed
Slow Lock Rate:	18 subframes/sec. to 15 frames/sec., selectable
Typical Lock-Up Time from Stop:	2-5 sec.

**CDI-750****RESTORED CODE OUTPUT**

Format:	Same as input, reshaped, retimed
Amplitude:	+ 4dBm into 600 ohm 3-pin XLR connector
Risetime:	Selectable 25µs/50µs (internal selection)
Amplitude:	Preset 1V p-p, adj. .5V to 2V p-p

VIDEO INPUT

Format:	NTSC, PAL, SECAM composite video
Level:	0.5V to 2.0V p-p
Impedance:	Non-terminated, bridging, BNC connector

CODE OUTPUT

XLR connector, SMPTE/EBU standards, Factory set 10PK to PK, adj. .5V to 2V

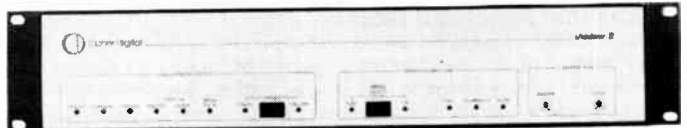
RATE OUTPUT

2x XLR connector, Frame rate (Format C), SMPTE/EBU standards, Factory set 1V p-p, adj. .5V to 2V p-p

VIDEO OUTPUTS (2)

Format:	Same as input with Time/User characters from reader, generator or both
Level:	1.0V p-p (adjustable)
Impedance:	75 ohm unbalanced, BNC connectors, Keyer black & white, Level internally adjustable

CDI-750 \$3995.00

**CDI-4800****INPUTS****MASTER AND SLAVE**

Time Code:	24/25/30 frames/sec. and Drop Frame
Auxiliary:	50/60Hz

Command Indication (tallies):

Active low/variable threshold

Direction Sense:

Floating logic input

Tach Frequency Range

Play:	> 4Hz
Maximum Wind Speed:	< 2.5kHz

OUTPUTS**MASTER AND SLAVE**

Commands: Opto-isolated open collector

SLAVE ONLY**Capstan Speed Override**

Voltage Output (1x): 12V max. swing within ± 12V range

OUTPUTS**SLAVE ONLY**

Voltage Output (2x): 30V, 15V max. swing within ± 30V range (user supply required)

Frequency Output: 45Hz-40kHz floating TTL compatible

SPECIAL INPUTS**Video Reference Input:**

Nominal impedance—1M ohm or 75 ohm, switch selectable

Video Reference Types:

Composite sync, vertical drive, black burst, color bars, composite video

CDI-4800 Shadow II Transport Synchronizer \$3395.00

CIPHER DIGITAL, INC.

Editor Interfaces

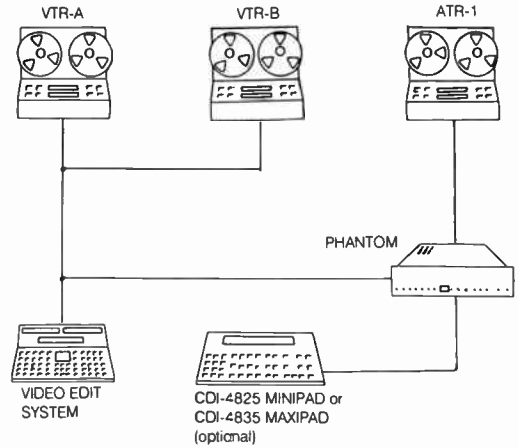


CDI-4810 Phantom VTR Emulator

- Interfaces Video Editing Systems to Audio Transports
- RS-422 in • Parallel out • Compatible with Ampex, Sony and other protocols (Selectable from an externally accessible dip switch)
- Event Controller (x4 Events)
- Interface with Shadowpad Mini and Shadowpad Maxi

The Phantom Emulator accepts information from the video editing system via the RS-422 interface and provides parallel information to the audio transport. In addition, you can use it to control U-Matic type VCRs to video editing systems designed for 1" VTRs.

Designed around a high speed microprocessor, the Phantom also provides control of up to four events. It can interface with the 4835 Shadowpad-Maxi to provide event control and offset entry as well as external control of the slave transport if required.



Specifications

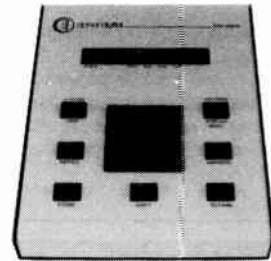
- Mechanical:** Dimensions: 3 1/2" H x 17" W x 13" D, rack-mountable
Weight: 16 lbs.
 - Electrical:** Voltage—115/230, switch selectable
Frequency—50/60Hz
Power—40W (typical)
 - Standard Accessories:** Power Cord
Instruction Manual
- CDI-4810** \$2550.00

CDI-4825 Shadowpad-Mini Offset Controller

- Enter offset register information to the Shadow II Transport Synchronizer
- RS-232 Communications
- Highly Legend Display
- Control of System Registers
- Offset Control

The Shadowpad-Mini allows you to enter offset register information and recall and modify system register information. Plus it enhances the power of the Shadow II Transport and can be used with both the 4700 and 4800 Shadows.

Primarily developed to control offset between transports, the Minipads keyboard display provides status information of the Shadow II and transports connected to it. The Minipad keyboard allows such features as trim, recall, retard, store, advance, message, and display modes.



CDI-4825

Specifications

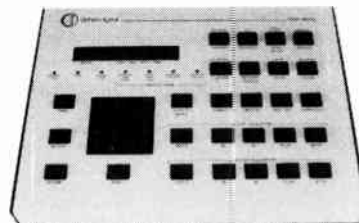
- Mechanical:** Dimensions: 2 3/4" H x 6 1/2" W x 8 1/2" D
Weight: 2 lbs.
 - Electrical:** + 8VDC from Shadow II
 - Standard Accessories:** 20' Interconnect Cable
Instruction Manual
- CDI-4825** \$695.00

CDI-4835 Shadowpad-Maxi Controller

- Team it with the Shadow II Transport Synchronizer
- RS-232 Communications
- Independent Transport Control
- Highly Legend Display
- Control of System Registers
- Full Function Keypad
- Offset Control

The 4835 gives the operator complete control of the Shadow II's information display. Plus the full function keypad displays status and operation of the Shadow II and transports connected to it.

Independent transport control, speed, type of interlock and modification of slave offset parameters are just a few of its extended features.



CDI-4835

Specifications

- Mechanical:** Dimensions: 2 3/4" H x 11" W x 8 1/2" D
Weight: 2 lbs.
 - Electrical:** + 8VDC from the Shadow II
 - Standard Accessories:** 20' Interconnect Cable
Instruction Manual
- CDI-4835** \$995.00

CIPHER DIGITAL, INC.

Audio Edit Controller/TC Generator/Reader

CDI-4890 Softouch-PC Audio Editing Controller

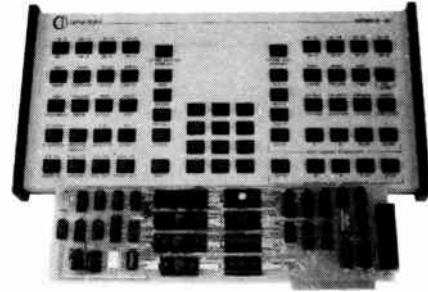
- Simplifies and controls time-code applications. Facilities generating or reading both SMPTE and EBU standard longitudinal or VITC code in choice of 24, 25, or 30 drop-frame format
- Regenerating code or jam syncing code eliminates drop-outs or "patch work" code easily and quickly
- Allows optional triggering of events with frame-accuracy, so special effects cart machines and other studio equipment can be easily brought into the editing process
- Supplies a time-adjustable beep tone for cueing talent
- Permits "hot" or preprogrammed record "punch in" for frame-accurate "on the word" edits and overdubs
- The preview function is a valuable tool, enabling review of edit decisions without recording

The Softouch-PC's power comes from its ability to streamline the audio editing process. Its range of memory functions speeds up editing sessions and helps eliminate costly errors.

Sixteen Softkeys™ permit repetitive or intricate pre- and post-production editing routines to be executed at the touch of a single key. Any command or routine that can be executed manually on the Softouch keyboard can be done automatically with Softkeys. Set up each Softkey to perform a single task, string together multiple tasks or multiple Softkeys, even perform calculations and carry messages and prompts for the operator. Plus, the Softkey sequences can be modified, erased or replaced at any time.

Loop Memory provides the flexibility to define, modify and save all pre- and post-roll data, beep-tone setting, trim, mark in/out and record in/out data for up to 100 loops at one time. Choose to cycle through any individual loop, or execute complex assemblies with a minimum of key-strokes. Additional "scratch-pad" memory (to store edit points) is yet another feature of Softouch's intelligence. A virtually maintenance-free internal battery preserves the programmed keys when the unit is shut off.

As more powerful microprocessors and memory modules become available, Softouch will support them. Standard personal computer operating systems techniques are also employed to allow for integration of a wide variety of future studio-related products. The Softouch-PC's architecture ensures that system functionality can expand at a pace consistent with the latest technical advances in sound recording, engineering, producing and editing.



Softouch-PC

Specifications

Interfaces:	Four Communications Ports: 3 Shadow II (4700 or 4800) 1 CDI-750 or Cypher
Electrical:	All electrical supplied from Host P.C.
Mechanical:	Dimensions: Keyboard: 16.5 x 8.25 x 2.5 P.C. Board 4" x 13"
Weight:	Keyboard: 3 lbs. P.C. Board: 13 oz.
Standard Accessories:	Keyboard Cable Instruction Manual Software
CDI-4890	\$2195.00

CDI-735V Time Code Reader with Video Character Inserter

- Decodes 30-frame SMPTE, 25-frame EBU and 24-frame film formats
- Frame-accurate, wide-speed decoding from 1/30th to 80 times play speed
- Multi-function video character inserter. Switchable to display time or user data. Full-raster positioning via "soft control". Multi-size characters. Remote keyer control
- Unique error bypass eliminates faulty readings by replacing defective code with sequentially correct code
- Front panel frames and mask control
- Reshaped code output to feed edit computer
- Front panel and video display of drop frame and color frame modes
- All set-up parameters stored in nonvolatile memory
- High sensitivity front end

Designed around a high speed microprocessor, this time code reader allows error-free, frame-accurate decoding of time and user data. Plus it has a multi-function integral video character inserter that supplies a monitor display of combined code information superimposed over program video.

The CDI-735V is ideal for generating "burned in" workprints.

Specifications

Code Input	
Amplitude:	10mV to 10V p-p
Bandwidth:	1/30 th to 80 times play speed
Impedance:	10K ohm balanced, 3-pin XLR connector
Reshaped Code Output	
Format:	Same as input, reshaped
Amplitude:	+ 4dBm into 600 ohm, 3-pin XLR connector
Risetime:	Selectable 25µs/50µs



CDI-735V

Video Input	
Format:	NTSC, PAL, SECAM composite video
Level:	0.5V to 2.0V p-p
Impedance:	Non-terminated, bridging, BNC connector
Video Outputs	
Format:	Same as input with time or user characters
Level:	1.0V p-p
Impedance:	75 ohm unbalanced, BNC connector
Video Controls	Char size, H & V position, Time or User, Display delete, Frames delete, Freeze display, Mask delete
CDI-735V SMPTE/EBU Time Code Reader w/Video Inserter . . .	\$1595.00
Options	
300 RS-232 Serial Data Output Option	\$260.00
400 RS-422 Serial Data Output Option	260.00
500 BCD Data Output Option	240.00

CIRCUIT RESEARCH LABS, INC.

Broadcast Audio Processing

FM STEREO PROCESSING SYSTEMS

SGC-800 Stereo Gain Controller

• Audio asymmetry removal • Linearized, dual band automatic gain control • Gating • Attack and release time constants • E.Q. balance • Dynafex® noise reduction • Pulsed or static USASI noise generator

SEC-800 Spectral Energy Controller

• Musically designed four band compressor/limiter • Multiband crossover frequencies and filters • Jumper selectable bass E.Q.

SPM-850 FM Stereo Processor/Limiter

• Stand alone input AGC/compressor • Time constants • Sound field enhancement • Limit or clip priority • Variable transfer pre-emphasis limiting • Final output limiter • High protection low pass filter

SG-800A Digital FM Stereo Generator

• Digitally synthesized carrier • Pulse amplitude modulator • 2 input SCA ports for multiple SCA use • High current output

FM-1G System	\$3500.00
SMP-850 Stereo modulation processor (limiter)	1950.00
SG-800A Stereo generator	1550.00
FM-2G System	5250.00
SGC-800 Stereo gain controller (AGC)	1750.00
SMP-850 Stereo modulation processor (limiter)	1950.00
SG-800A Stereo generator	1550.00
FM-3 System	3795.00
SGC-800 Stereo gain controller (AGC)	1750.00
SEC-800 Spectral energy compressor	2050.00
FM-4 System	5750.00
SGC-800 Stereo gain controller (AGC)	1750.00
SEC-800 Spectral energy compressor	2050.00
SMP-850 Stereo modulation processor (limiter)	1950.00
FM-4G System	7300.00
SGC-800 Stereo gain controller (AGC)	1750.00
SEC-800 Spectral energy compressor	2050.00
SMP-850 Stereo modulation processor (limiter)	1950.00
SG-800A Stereo generator	1550.00

AM MONO/STEREO SYSTEMS

AGC-400 Audio Gain Controller

• Linearized, dual band automatic gain control • Gating • Dynafex noise reduction • Pulsed or static USASI noise generator • Audio asymmetry removal • E.Q. balance • Attack and release time constants

SEC-400 Spectral Energy Compressor

• Multiband crossover frequencies and filters • Selectable multi-band compression ratio • Jumper selectable bass E.Q. • Time constants

PMC-400A Peak Modulation Controller

• Input gain control • Tilt correct • NRSC standard pre-emphasis and low pass filtering • Resonant low pass clipping filter • Jumper selectable bass E.Q.

SMP-900A AM Stereo Matrix Processor

• Stereo enhancement • Input gain control • Modified matrix limiting • Tilt correction • NRSC standard pre-emphasis and low pass filtering • Jumper selectable bass E.Q. • Monaural output

SGC-800 Stereo Gain Controller

• Audio asymmetry removal • Linearized, dual band automatic gain control • Gating • Attack and release time constants • E.Q. balance • Dynafex® noise reduction • Pulsed or static USASI noise generator



FM-4G System



AM-4M System

SEC-800 Spectral Energy Controller

• Musically designed four band compressor/limiter • Multiband crossover frequencies and filters • Jumper selectable bass E.Q.

AM-2M System	\$2500.00
AGC-400 Audio gain controller	1250.00
PMC-400A AM peak modulation limiter	1250.00
AM-4M System	3750.00
AGC-400 Audio gain controller	1250.00
SEC-400 Spectral energy controller	1250.00
PMC-400A AM peak modulation limiter	1250.00
AM-2S System	3700.00
SMP-900A AM stereo matrix limiter	1950.00
SGC-800 Stereo gain controller (AGC)	1750.00
AM-4S System	5750.00
SMP-900A AM stereo matrix limiter	1950.00
SGC-800 Stereo gain controller (AGC)	1750.00
SEC-800 Spectral energy compressor	2050.00

Options

SG-OPT 1	Pre-emphasis/analog LPF for SG-800A	\$ 495.00
DSP-1	Digital signal processing filter for SG-800A stereo generator or SMP-850 FM limiter	1095.00
SLR	Pair of slide rackmounts	75.00
SC-03	Three unit plexiglass cover	40.00
SC-04	Four unit plexiglass cover	50.00
Tri Band -Board	Mono version for PMC-400A (field convertible)	175.00
	Stereo version for SMP-900A (field convertible)	225.00
SPF-300	NRSC pre-emphasis/low pass filter conversion unit	495.00
FL-1K	NRSC pre-emphasis/low-pass filter board for SMP-900	235.00

CIRCUIT RESEARCH LABS, INC.

Processors/Controllers/Limiters

TVS-3001 Studio Audio Controller

- Input sync suppression filtering • Stereo input phase reversal correction • Linearized +30dB AGC range capability • Improved CBS loudness controller • Audio asymmetry removal • On-board pink noise generator • Full functional metering • L/R or L+R/L-R outputs

The TVS-3001 is a state-of-the-art MTS stereo television processing system that offers maximum control of the audio program material. Many features not found on other MTS processing systems have been incorporated, eliminating the need for additional product purchases. When combined with the TVS-3002 Limiter/Generator, the ultimate MTS audio control and stereo generation system is formed.

TVS-3001 \$4595.00

TVS-3002 MTS Audio Limiter/Generator

- L/R or L+R/L-R inputs • 20dB input AGC range • Program controlled stereo enhancement • Variable transfer function pre-emphasis limiting • Sync input/video sync separator • Digitally synthesized stereo signal generation • Advanced 15.734kHz input filtering • Factory dbx® encoding • Improved dbx noise reduction • Full function and diagnostic metering • On-board Bessel tone calibration generator

The TVS-3002 combines a state-of-the-art digitally synthesized MTS Generator with new generation limiter concepts to provide a complete stand-alone stereo television audio system. This allows the station to transmit MTS programming with minimal expenditures of time and money.

TVS-3002 \$5995.00

TVS-3004 Professional Channel Generator

- Crystal controlled digitally synthesized subcarrier generator with audio processing and separate data input facilities

TVS-3004 \$1695.00

TVS-3010 MTS Audio Processor/Limiter

- Compatible with any MTS generator • Linearized +30dB AGC range • Program controlled stereo enhancement • Variable transfer function pre-emphasis limiting • Improved CBS loudness controller • Input sync suppression filtering • Stereo input phase reversal correction • Selectable pre-emphasis/de-emphasis • Peak limiting • Full functional metering • L/R or L+R/L-R outputs

The TVS-3010 combines all the features and circuitry found in the TVS-3001 Processor with the latest in limiter technology to provide the ultimate in audio control. The TVS-3010 is easily interfaced with any MTS Generator to provide the latest in MTS stereo audio control technology.

TVS-3010 \$6495.00

BAP-2000 FM/TV Monaural Audio Processor

- Complete stand-alone audio processor for any mono FM or TV application • Advanced 2-band AGC and variable transfer function pre-emphasis limiter • Linearized AGC action provides over 30dB of AGC range • Integral Fh filter for television applications • dynafex® single ended noise reduction system included • Dual 10-segment LED display for easy set up of gain reduction and relative output • Rugged 1 3/4" rackmount chassis with integral RFI protection

The CRL BAP-2000 is an advanced dual band audio AGC and limiter in a slim 1 3/4" package. The versatile design of the BAP-2000 allows it to be used in a wide range of monaural applications that require exacting level control. Included in the unit is the CRL patented single ended noise reduction system called dynafex™, integral selectable Fh filters on the input to the unit, and an overshoot-corrected low pass filter on the output. User selectable internal options allow the BAP-2000 to be tailored to handle most any audio control job.

BAP-2000 Mono and FM/TV audio processor \$1695.00

SCA-1 System—SCA-300B Subcarrier Limiter/Generator

- Digitally synthesized, frequency locked subcarrier generation • Integral two band audio limiter increases intelligibility of voice or music • User can program different subcarrier frequencies and deviation



TVS-3002



TVS-3010



DX-1

- levels • Full remote control capability • Superior crosstalk protection • Direct modulator inputs via RS-232 or BNC connectors • Rugged 1 3/4" rackmount chassis with integral RFI protection

SCA-1 System SCA-300B subcarrier limiter/generator . . . \$1650.00

SCA-2 System \$2900.00

AGC 400 Audio gain controller \$1250.00

SCA 300B Subcarrier limiter/generator \$1650.00

DX-1 Noise Reduction System

- Single ended—no encoding or decoding • Simple, trouble-free operation • 30dB of noise reduction • Useful on any audio signal • Filter bandwidth control • Extended threshold range • Gain control • Adjustable release time • Brilliance control

DX-1 \$599.00

DX-2 Noise Reduction System

- Single ended—no encoding or decoding • Simple, trouble-free operation • 30dB of noise reduction • Brilliance control • Useful on any audio signal

DX-2 \$679.00

MDF-400/800 De-emphasis/Filter

- NRSC de-emphasis characteristic • HQ notch filter • 9.5kHz or 11kHz steep low-pass filter • Functions can be selected individually or in any multiple combination • Post detection—interfaces to any AM modulation monitor or monitor receiver • Active-balanced or unbalanced audio inputs and outputs • Available in monaural (MDF-400) and Stereophonic (MDF-800) configurations • Rugged 1 3/4" rack-mount chassis with integral RFI protection

MDF-400 \$295.00

MDF-800 \$395.00

Optional Accessories

TV-SLR Rack slide mount kit—High quality roller bearing slide mounts that allow easy access to the chassis and rear panel \$ 75.00

TV-HNDL Matching anodized front panel handles \$30.00

TV-FPNL Filler Panel—Black anodized 1,750 blank panel machined to match appearance of TVS units \$25.00

AGC-400 Audio gain controller for use with the TVS-3004. \$1250.00

CLEAR-COM INTERCOM SYSTEMS Main and Remote Stations/Beltpacks/Station/ Camera ISO System

Main Stations and Rackmount Remote Stations

A "Main Station" is a combination intercom station and system power supply; a "Remote Station" does not include a power supply.

CS-210 Main Station Two-channel headset station, monitors one or both; selectable program input (mike or line-level), Stage Announce. Portable or rackmount. Applications include: theatre, concerts, rental firms **\$625.00**

MS-200C Main Station Two-channel speaker station, monitors one or both channels. Selectable talk/listen/program functions; All Call. Applications include: fixed installations, video/theatre directors . . . **\$715.00**

RM-120A Remote Station Speaker station, Two-channels (monitor A, B, or both). Dynamic/carbon headsets; Stage Announce; selectable talk/listen/program functions. Applications include: video/theatre production. (gooseneck mike optional). **\$499.00**

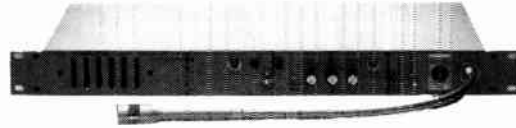
RM-400A Remote Station Four-channel speaker and dynamic headset remote station. Rackmount **\$887.00**

MS-400A Main Station Four-channel speaker and dynamic headset main station. Rackmount with power supply **\$1095.00**

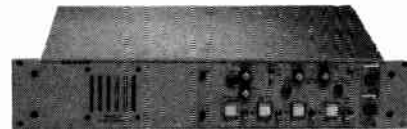
SB-412A Main Station Four-channel, same specs as MS-400A but no speaker (has ext. speaker jack). Has switch matrix to assign each of 12 stations (or 12 groups) to any of the 4 channels or a "disconnected" Off line. Applications include: video production/theatre with constant repatching needs. **\$1630.00**



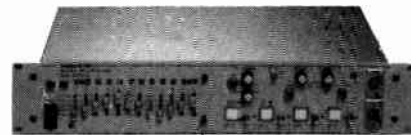
MS-200C



RM-120A



MS-400A



SB-412A

Beltpacks and Wall Mount Headset Stations

RS-501 Beltpack • Single-channel, lightweight beltpack • All digital, noiseless, electronic switching • "Remote Mike Kill" function • Visual signalling • Accepts dynamic or electret microphones • Carbon type headset jack optional • The RS-501 is the standard beltpack station for use in all applications. (Replaces RS-100A and CP-100) **\$198.00**

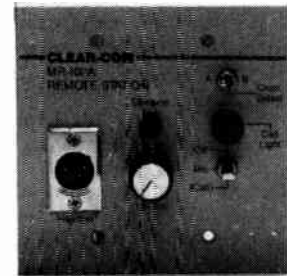
RS-502 Beltpack • Two-channel beltpack • Allows access to either one of two separate intercom channels • Includes all features of the RS-501 Plus • Dual channel signalling • Applications include: video/theatre production, industrial (Replaces CP-100/2CH.) **\$270.00**

RS-522 Beltpack • Two-channel, dual listen, binaural beltpack • Allows completely selectable simultaneous listening and talking on two separate channels • Binaural "split-feed" headset output. (Monaural option available) • Includes all features of the RS-501 and RS-502 • Applications include: video/theatre production, industrial, lighting design • (Replaces RS-201) **\$298.00**

MR-102A Wall-Mount Station • Two-channel wall-mount headset station • Selectable to either one of two channels • Also available as MR-104A, selectable to any one of four channels • Applications include: permanent video • theatre • Industrial facilities **\$198.00**



RS-501



MR-102A

Station/Camera ISO System

The ISO-4000 Station/Camera ISO system is designed to easily and quickly establish private, two-way communications between two (or more) Clear-Com intercom stations. The ISO-400 uses a microprocessor to provide maximum user flexibility and minimum control/tally cabling. It provides priority/override, individual and global reset, and group preset capabilities. It is a modular system that can expand to accommodate up to sixteen "ISO" stations and six "Control" stations. The system is comprised of the following components:

ISO-4000 ISO Central Electronics This unit contains all of the audio, switching, and control/tally logic to implement the "ISO" function. The basic unit will support up to four "ISO" stations and either three or six "Control" stations. It can be expanded in groups of four ISO stations.

IXM-4 ISO Expansion Module This is an add-on module for the ISO-4000 Central Electronics that expands the ISO station capability in groups of four. Up to three IXM-4 modules can be installed in the ISO-4000 to provide the maximum system capacity of sixteen ISO stations.

ITO-1 ISO Transfer Option This is a factory modification to a multi-channel intercom station. It is required to implement the ISO function transfer of the station's listen/talk circuits from the normal intercom paths to the special ISO channel.

ICP-4 ISO Control Panel This is a four button stand-alone control panel to select any combination of four ISO Stations to be isolated with an associated Clear-Com intercom station. Multiple ICP-4's can be linked together to select larger numbers of ISO stations.

ISO-4 ISO Control Module This is a four button control module, electrically equivalent to the ICP-4, designed for installation in a MS-808 Main Station.

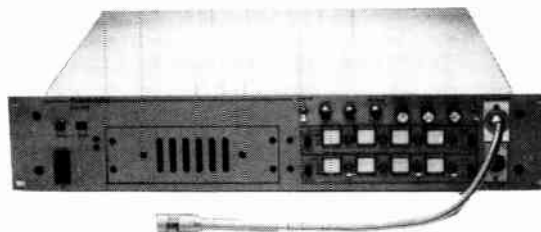
Note: ISO system pricing depends on the specific system requirements and configuration.

CLEAR-COM INTERCOM SYSTEMS

Audio Equipment

MS-808 Master Station

This modular, rackmount master station can provide signalling and communication access to a maximum of 16 separate Intercom, IFB, and Point-to-Point channels plus additional functions through the use of up to four plug-in modules. Additional modules can be conveniently installed providing for ease of future expansion. The MS-808 can operate either hands free (with speaker and gooseneck microphone) or with a headset \$1368.00



MS-808

SP-4 Speaker Module

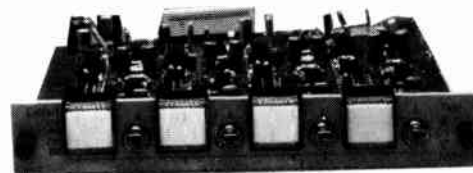
This double space module provides an internal loudspeaker, eliminating the need to use an external speaker. \$69.00

BP-4 Blank Panel

This single space panel is required to fill any spaces not occupied by an operational DLC module. \$24.00

CH-4 Intercom Control Module

This single module provides individual channel listen/talk switching, program insert level control, and sidetone adjustment for four intercom channels \$562.00



CH-4

IFB-4 Program Interrupt Module

This single space module provides access to four channels of IFB (Program Interrupt). It requires the PIC-4000B IFB Control Electronics. \$455.00



IFB-4

ISO-4 ISO Control Module

This is a four button control module, electrically equivalent to the ICP-4, designed for installation in a MS-808 Main Station \$475.00

IFB (Program Interrupt) Systems

The Clear-Com IFB system is a modular system capable of operating as a stand alone system, or being integrated with MS-808 Master Stations. It transmits an interruptible program signal to individual talent receivers via standard two conductor shielded microphone cable. It is a distributed amplifier system with the earphone amplifier located at the talents' position. It features unlimited expansion capabilities (up to 96 talent channels and 50 control locations). Wiring required between Talent Access Stations and the IFB Electronics is only six conductors per each four talent channels, and can be either homerun or loop through wiring method. The system is composed of the following components:

PIC-4000B IFB Electronics

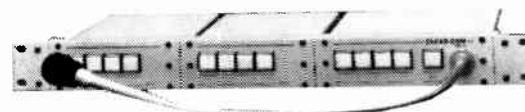
This unit contains all of the audio and switching circuitry for selecting one of two program signals, routing the signals to four independent talent channels, and interrupting, with variable program attenuation, the signals from one or more control points. It requires 24VDC power from a Clear-Com Intercom System or power supply. \$685.00



PIC-4000B

TR-50 Talent Receiver

This small, portable unit contains the amplifier to power the talent's earphone. It connects to the PIC-4000B via standard two conductor shielded microphone cable. A miniature in-the-ear receiver is included with each TR-50 \$118.00



MA-4 Plus 2 AX-4's

TR-532 Stereo/Split Feed Talent Receiver

This unit contains two discrete amplifiers to feed the "Interrupt" and "Non-interrupt" signals from the PIC-4000B on a standard mike cable to separate ears of a sportscaster type headset or standard stereo earphones. It also provides a passive loop through output of the headset's microphone for on-air applications \$270.00

MA-4 Talent Access Master Control Station

This unit provides individual access to four talent channels and All Call access to all of the talent channels in the system. It is designed for direct console mounting or rackmounting in an optional rackmount adaptor. It includes a panel mounted gooseneck microphone and all required local electronics \$615.00



TR-50

AX-4 Talent Access Expansion Station

This unit connects to the MA-4 Control Station, expanding the talent channel selection capabilities by four additional channels per AX-4. Multiple AX-4 units can be linked together to control a maximum of 96 talent channels \$425.00

IFB-4 Program Interrupt Module

This unit is the equivalent of the AX-4, designed for mounting in the MS-808 Master Station \$455.00

CLEAR-COM INTERCOM SYSTEMS

Audio Equipment

Remote Speaker Stations

KB-111A Speaker Station

2-channel select speaker station, uses handset or push-to-talk mike. Mount in 6" x 8" electrical box or portable enclosure. Applications include: theatre/security . . . \$275.00

KB-112 Speaker Station

Speaker station with push-to-talk mike; talk/listen can be controlled by other stations. All functions selectable. Applications include: Dressing rooms/paging/security . . . \$299.00

Power Supplies

PS-20 Portable Power Supply

Portable or rackmount; regulated. Selectable one- or two-channel. Supports up to 60 stations . . . \$365.00

PS-452 2-Channel Power Supply

2-channel; regulated; with short circuit and overload monitoring. Supports up to 100 stations. For all large permanent installations . . . \$562.00

Dynamic Headsets

CC-26 Headset

Single-muff, ultra-lightweight headset with dynamic, noise-cancelling mike element (4-pin XLR) . . . \$142.00

CC-35 Headset

Our lightweight, low-cost headset. Field-serviceable, noise-cancelling; ideal for TV camera operators . . . \$86.00

CC-55 Headset

Double-muff version of CC-35 . . . \$99.00

DT-109/6 Headset

Beyer headset matched to Clear-Com specs and wired with split-feed earphones. Broadcast-quality mike. High noise-attenuation; very comfortable. Applications include: sportscasting . . . \$236.00

DT-108 Headset

Single-muff Beyer headset with straight cord and ear sock. (4-pin XLR) . . . \$215.00

CC-75B Headset

Our most rugged model; good sound-attenuation, flexible boom-mount mike with auto-on/off switch. Indestructible ABS plastic construction, supplied with ear sock for extra comfort. Applications include: theatre, rental firms . . . \$130.00

CC-240B Headset

Double-muff version of CC-75B . . . \$150.00

PH-7 Headset

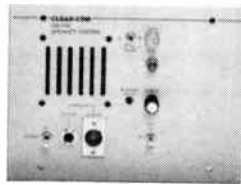
Double-muff, high-fidelity, noise-cancelling mike—our most sound attenuating model . . . \$225.00

HS-6 Handset

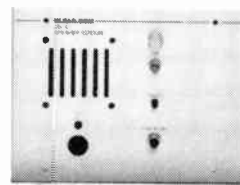
Telephone-style handset with push-to-talk switch . . . \$78.00

PT-4 Mike

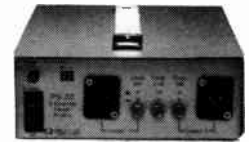
Rugged push-to-talk mike . . . \$48.00



KB-111A



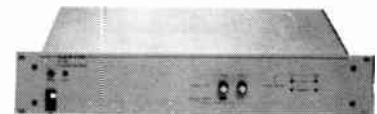
KB-112



PS-20



CC-35/CC-55



PS-452



IF4-4

Minicom

SM-1 Headset

Single-muff headset station with in-line, single-channel intercom electronics (no signalling). Applications include: portable and budget-conscious use . . . \$215.00

DM-1 Headset

Double-muff headset station, same specs as SM-1 . . . \$231.00

PK-3 Power Supply

Portable regulated power supply; low-cost, single-channel. Operates up to 25 Minicom headset stations . . . \$150.00

System Interfaces

AC-10H Interface

Universal interface to two-wire cameras and telephone lines; has holding coil and built-in test tones for balancing . . . \$616.00

TW-12B Interface

Interface to RTS-type systems or allows up to 12 CP-300 or RTS-type belt-packs to work in Clear-Com System. 1 3/4" rack-mount . . . \$532.00

IF4-4 Interface

Interfaces to virtually any 3-wire/4-wire TV camera; up to four cameras per unit. Individual transmit/receive level controls . . . \$625.00

TWC-10 2-Channel/3-Pin Cable Adaptor

Combines two standard Clear-Com channels (on two separate cables) onto a single 3-pin microphone cable. Requires "TW" option on stations . . . \$99.00



CC-26



CC-75B

Accessories

MX-820/MX-840 Matrix Switch

These units are designed for multiple channel intercom systems. They enable individual stations, or groups of stations, to be easily switched to any one of eight channels. The MX-820 handles 20 stations; the MX-840 handles 40 stations.

MX-820 . . . \$475.00

MX-840 . . . \$625.00

WP-2 Wall Plate

Selectable 2-channel wall plate for connection to portable single-channel stations. Ideal for large facilities/permanent installations . . . \$38.00

QP-100A Line Splitter

Interconnect line splitter: one input and three output connectors in a die-cast aluminum box . . . \$75.00

RMK-1 Remote Mike Kill Control Unit

Shuts-off series 500 belt-pack mike circuits . . . \$145.00

CMX CORP.*Editing System***CMX 100 ELECTRONIC EDITING SYSTEM****Integrated:****Edit Controller/Video Switcher/Audio Switcher & Mixer**

- Commercials/news/sports/promos/short segments • A/B roll with cuts/dissolves/fades • 3 lightweight, portable pieces: 3 1/2" rack electronics; console; 12" monitor

Video:

- Sources: VTRs A/B • Aux 1 and 2 • Black keying via customer supplied DSK or CGN

Audio:

- Sources: • VTRs A/B (2 channel) • Aux 1 and 2 (1 channel)—aux can be mike or line • 6 input faders • Built-in tone generator • VU type meters for 2-channel output • Audio-follow-video (user defined) or breakaway

Console Organization:

- Track selection • REC/PVW keys • Video program/preset • Audio program/preset • VTR motion and selection keys • Keypad • Transition keys • Audio faders • 4 GPIs • 2 keyer-triggers • VU metering

Machine Control:

- SRCH knob • Play/stop/still/jog • Allstop

Backspace Editing or Marks**Assemble or Insert Editing:**

- Time code or tape timer (control track)

Time Code/Tape Timer Numbers—Ease of Entry:

- Set in/out • Trim • Duration

CRT Display:

- Menus • Windows • Highlighting • Edit Area: VTR position/status, edit in/out/duration • Display control: remove/display durations, unused zeros, etc.

Keypad:

- Numbers: Becomes number pad when required i.e. setting in timecode • Direct Functions: • Go to • Trigger list • Initialize • More (key): BVB preview, recall marks, match-cut calculate (into last edit) keys 1-4 become GPIs during preview or record • Set/duration/trim • CGN • Help • Replay • Open edit

Initialization:

- Time code/timer • Lock tolerance • Fast/slow dissolve rates • Saves setup in memory • Port assignments • Audio-follow • Marks or backspace • Display control

Trigger List (20 Triggers):

- Triggers made on-the-fly in preview or record • Trigger scroll highlights active trigger

The following can be triggered in an edit: • Track select • GPIs • Audio and video crosspoints • Motion control (speeds not saved) • Keyers 1 and 2 • Cuts/dissolves

Modify individual or all triggers (delete, trim, enable/disable); Create (pre-program) trigger.

**CMX 100****Record List (Non-Volatile Memory saves list even when powered down):**

- Any of previous 50 events can be recalled with triggers
- Memory can be divided into up to 9 segments • Record in-time, duration, tracks and segment are shown

Event	DUR	Track	Segment
1.	10:00:00:00 30:09	VI2	1
2.	10:00:30:09 10:00	VI	3

The CMX 100 is an on-line three-VTR electronic editing system aimed directly at the short segment program production market. The CMX 100 provides control of A and B source VTRs, the record VTR, two auxiliary sources and black. In addition to four General Purpose Interfaces (GPIs), two Keyer triggers are included. The CMX 100 is available in both NTSC and PAL standards.

The 100 combines into a single desktop console all of the equipment needed to do finished product (on-line) television program editing. An operator has at his or her fingertips a 5-input video switcher, a 6-input audio switcher, and motion control of 3 VTRs. There is easy access to video dissolves, cuts and fades, and audio mixing.

The 100 is specifically designed for rapid assembly of short program segments in the most efficient and economical manner. Used as an on-line tool for the effective creation of high-impact promos, commercial spots, news or sports program segments, it can perform all of the necessary editing functions without tying up an entire studio and/or editing suite.

CMX 100 \$13,950.00

CMX CORP.

Editing System

330A Large-Scale Editing System

The 330A is a high-performance, large scale editing system priced to suit the most basic budget. Designed for both offline and online needs, features include Motion Memory, Match-Cut Calculation, Autoclean, Learn Keys, Master/Slave and Sync Roll. The 330A allows for future expansion by being directly upgradeable to the CMX 3100, 3400A, or 3600.

Machine Control Functions

- Rewind • Fast forward • Play • Stop (individual devices) • Slow
- Slow reverse • Shift/retard slow • Shift/retard slow reverse • Cue (individual devices) to head of preroll • Go to • Replay: replays any recorded event • Still frame • Jog forward • Jog reverse • Retard jog rate • Advance jog rate • Search (with GISMO option): up to seven speeds forward and reverse • Variable speed jog (with GISMO option)
- Multiple machine motion control (with GISMO option) • Allstop • Record • Automatic reset of interface communications

Edit Transition Selections

- Cut • Split cut ("L" cut) • Dissolve from/to • Dissolve rate • Short cut dissolve (with last dissolve rate) • Wipe from/to • Wipe code
- Wipe rate • Short cut wipe (with last code and rate) • Key in (background/foreground/duration) • Key out (background/foreground/duration) • Delayed key • Key fade up from black • Key fade to black
- Key cut in • Key cut out • Open end edit • Closed end edit

List Management Functions

Sort modes: Sort by event number, Sort by record in time, Sort off Move event(s) in EDL • Re-edit events in EDL • Insert re-edited events in EDL with list update • Exit re-edit • Single or Block Move event(s) in program with Pull Up • Record start time • Delete events with pull up • Record on/off • Renumber events **Autoclean:** On or off during record, Cleans overrecords, Deletes duplicate events, Cleans multi-line events. **Notes:** Any edit in EDL may have notes, Multiple lines available, Delete a single line, a group or all lines off a note

Edit Decision List Display/Input/Output

• Scroll List Up • Scroll List Down • Scroll to Event Number requested (Display) • Disk On: Saves each edit to disk after record • Punch On: Saves each edit to papertape after record • Print EDL in hard copy • Reads papertape EDL • Disk Out: Stores EDL on disk • Single event • Range of events • All events (default) • Multiple EDL files on floppy disk • Print: Prints EDL in hard copy • Increased display of events in NDF/DF EDL • Initialize Disk: Erases EDL from disk • Autoscroll: EDL scroll with Master (Record) machine motion • Print disk file directories in hard copy

Automatic Edit Assembly Functions

• Sequential assembly ("A" mode) • Enable for assembly (by event number) • Disable for assembly (by event number) • Resume assembly

Hardware Options

• General Purpose Interface (GPI) • Fast, direct access to relays • All information goes to disk • Eight relays controlled • Up to 16 GPI triggers per event • GISMO • Jam sync (machine dependent) • Time code reader board (available with Multi-I²) • Motion memory (M²)

Specifications

System Configuration:	Distributed processing
Central Controller:	DEC microcomputer
Device Interface:	Microprocessor controllers
Device Interface Memory:	EPROM
Communication Format:	Serial/9600 Baud/RS-232
Communication Protocol:	CMX 8-bit binary
Edit Decision List Size:	500 events. 500 additional lines for ancillary data
Edit Decision List Format:	CMX 3400A, CMX 3400, CMX 340X, CMX 3100, CMX 336XL, CMX 330XL, CMX 50, The Edge
Edit Decision List I/O Disk:	8" single-sided, single density, IBM 3740 format (option on 330A)



Edit Decision List

Printer/Paper Tape:	Serial/300-9600 Baud/RS-232
CRT Display Format:	80 Characters per line/25 lines/60Hz refresh rate/non-interlaced
Display Monitor (option):	High resolution CMX terminal/broadcast video monitor
Number of Devices Assignable:	8 (330A)
Number of Devices Controllable:	5 + GPI
Edit Accuracy:	Frame accurate, color framed, PAL-pair self-correcting or manual for 4- or 8-field correction
Time Code Standards:	SMPTE drop/non-drop frame, EBU
Tape Timer (machine dependent):	Alternative to time code with use of Multi-I ²
Television Standards:	NTSC/PAL/SECAM
User's Keyboard:	Alphanumeric Color Coded (330A)
Remote Motion Control Device (option):	Rotary control for search/slow motion/frame jogging (memorized recall available)

330A Including switcher interface and super kit interface for three VTR's from \$16,995.00

330S Large Scale Editing System

The 330S is a compact, yet complete online/offline post-production system which includes the edit controller, 3-VTR interfaces, an internal V/A switcher, and general purpose interface (GPI).

The system is based on the 330A edit controller. The 330S includes features such as Learn keys, match-cut calculation, autoclean, master-slave, and sync roll. The 330S also includes a 3.5" floppy disk drive, providing the standard Edit decision list (EDL), with multiple files per disk.

The electronics for the entire 330S system will fill into 10" of rack space.

Internal Video/Audio Switcher

This option provides cuts, dissolves and fade-to-black for video and two channels of audio. It fits into a CMX Multi-I² chassis. The video switcher fits in one slot, the audio switcher fits into a second slot, and the serial interface fits into a third slot. The video switcher has five inputs: A, B, C machines, auxiliary and black. TBC's are required for source VTR's for dissolves, but a non-TBC mode allows cuts, and fades to black without the use of time base correctors. The audio switcher has six inputs: A, B, C/auxiliary, machines as stereo pairs. There is also a test tone generator output on the audio switcher. Audio input levels may be adjusted on the rear Multi-I² I/O panel to allow for system setup.

330S Includes 330A with internal audio/video switcher, super kit interface for three VTR's and GPI \$24,900.00

3100/3400A/3600 Large-Scale Editing Systems

The 3100 is the industry-standard for large-scale editing systems. It offers the editor major advantages in productivity and speed including such features as Precue Auto Assembly, Auto Clean, eight user-defined keys, multiple EDL files, Match Cut Calculate, and Switcher Memory Upload/Download. The 3100 maintains versatility and plug compatibility with all CMX Intelligent Interfaces (I²s).

The 3400A provides expanded GPI, and Dynamic Motion Memory (DM²). DM² allows speed changes to be programmed, learned on the fly, stored to the EDL, and previous triggers may be modified. Fit/Fill mode allows 3400A to calculate expansion or compression of scenes. The 330XL, 336XL, 340X and 3100 may be upgraded to the 3400A.

The 3600 offers the editor major advantages in productivity and speed, including such features as 4-channel audio control, Precue Auto-Assembly, Dynamic Motion Memory, Switcher Memory Upload/Download, Multiple EDL files, and Match Cut Calculate. The 3600 maintains versatility and plug compatibility with all CMX's Intelligent Interfaces (I²s). Any CMX 330XL, 336XL, 340X, 3100, 3400 or 3400A may be upgraded to a 3600 system.

Machine Control Functions

- Rewind • Fast forward • Scan (dedicated key) • Reverse scan
- Play • Stop (individual devices) • Slow • Slow reverse • Shift/retard slow
- Shift/retard slow reverse • Cue (individual devices) to head of preroll
- GOTO (individual devices) to in-time displayed • Replay: re-plays any recorded event
- Still frame • Jog forward • Jog reverse
- Retard jog rate (machine dependent) • Advance jog rate • Search (with GISMO option): up to seven speeds forward and reverse
- Variable speed jog (with GISMO option) • Multiple machine motion control (with GISMO option) • ALLSTOP • Record • Automatic reset of interface communications

Edit Transition Selections

- Cut • Split cut ("L" cut) • Dissolve from/to • Dissolve rate • Short cut dissolve (with last dissolve rate) • Wipe from/to • Wipe code
- Wipe rate • Change wipe pattern • Short cut wipe (with last code and rate) • Key-in (background/foreground/duration) • Key out (background/foreground/duration) • Delayed key • Key fade up from black • Key fade to black • Key cut in • Key cut out • Open end edit
- Closed end edit

List Management

- **Sort Modes:** Sort by event number, Sort by record in time, Sort off
- Move Event(s) in EDL; Re-Edit events in EDL; Insert Re-edited events in EDL with list update • Exit re-edit • Resequence events in program with pull up • Record start time • Delete events with pull up • Record on/off • EDL text editing: Re-number events, Change A/V modes, Change reel numbers • **Autoclean:** On or off during record, cleans over-records, deletes duplicate events, cleans multi-line events, may clean entire EDL while loading from disk • **Notes:** Any edit in EDL may have notes, multiple lines available, delete a single line, a group or all lines of a note

Edit Decision List Display/Input/Output

- Scroll list up/down • Page scroll up • Page scroll down • Autoscroll: EDL scroll with Master (record) machine motion • Display: move EDL highlight by event number; by record time code • Disk on: saves each edit to paper tape after record • Punch on: Saves each edit to paper tape after record • Punch save: punches paper tape EDL • Reader: reads paper tape EDL • Disk save: stores EDL on disk • Disk load: loads EDL from disk single event; range of events; all events (default) • Multiple EDL files on floppy disk • Print disk file directories in hard copy • Print: prints EDL in hard copy • Increased display of events in NDF/DF EDL • Choice of 3600 or downward compatible output for CMX PDP or LSI based systems (3600) • Event highlight for all lines in event (3600)



3400A

Automatic Edit Assembly Functions

- Sequential assembly ("A mode") • Reel-by-reel assembly ("B mode") • Precue sequential assembly (looks ahead 30 events) • Precue reel-by-reel assembly (looks ahead 30 events) • Enable for assembly (by event number) • Disable for assembly (by event number)
- Resume assembly • List enabled events • List disabled events
- Enabled/disabled status saved on disk, printout (3600)

Hardware/Options

- General Purpose Interface (GPI) (standard on 3400A) • Fast, direct access to relays • All information goes to disk • Eight relays controlled
- Up to 16 GPI triggers per event • GISMO (3400) GISMO II (3400A, 3600 standard) Jam sync (available with conventional I²) • Time code reader board (available with Multi-I²) • Motion memory (M²) (3100)
- Dynamic Motion Memory (3400A standard) • Fast, direct access to relays • One page relay/trigger screen • Devices activated with pulse or on/off trigger • All information goes to EDL and floppy disk • 16 relays standard, 3400A, 3600 • Additional relays (up to 64) optional 3400A, 3600 • Programmable pulse duration • Switchable TTL open collector • Up to 16 GPI triggers per event

Specifications

Central Controller:	DEC microcomputer (LSI 11/73, 3600)
Communication Format:	Serial/9600 Baud/RS-232
Communication Protocol:	CMX 8-bit binary
Edit Decision List Size:	3000 lines/EDL; approx. 6000 additional lines available for ancillary data
Edit Decision List Format:	CMX 3400A, 3400, 3100, 336XL, 340X, 330XL, 50, The Edge
Edit Decision List I/O Disk:	8" single-sided, single density, IBM 3740 format (3 1/2" double-sided, double-density, IBM System 34 modified format)
Edit Decision List Printer/ Paper Tape:	Serial/300-9600 Baud/RS-232
CRT Display Format:	80 characters per line/25 lines/60Hz refresh rate/non-interlaced
Display Monitor (option):	High resolution CMX terminal/broadcast video monitor
Number of Devices Assignable:	24
Number of Devices Controllable:	8
Edit Accuracy:	Frame accurate, color framed, PAL-pair self-correcting or manual for 4- or 8-field correction
Time Code Standards:	SMPTE Drop/non-drop frame, EBU
Television Standards:	NTSC/PAL/SECAM
Remote Motion Control Device (option):	Rotary control for search/slow motion/frame jogging

EDL Optimizer**Superclean, Lookback, Text Editing, Sorting, Speed Assembly, Utilities**

- This is the ultimate tool for edit decision list (EDL) management
- Handles any combination of video, audio 1, audio 2, audio 3 and audio 4
- Handles any combination of non-drop frame or drop frame time code
- Available for NTSC/SMPTE or PAL/EBU
- Program has modules for EDL cleaning, text editing, sorting, auto-assembly optimization, and much more
- Versions available for either CMX LSI-based systems or IBM PC/Compatible
- Accepts CMX-standard EDL format, as well as other EDL formats
- Help function: user has on-line assistance at all levels
- 8 character reel identification

Superclean

- Cleans overrecords on cuts, dissolves, wipes, keys
- Deletes events written over by later events
- Deletes duplicate events
- Places inserts after master edits
- Retains Notes, GPI, SW-MEM, Sync Roll Master-Slave offsets, and Dynamic Motion Memory triggers unless entire event is deleted

Lookback

In off-line videotape editing, the first cut or rough cut of a program will generally be too long and not entirely satisfactory, aesthetically.

When it is necessary to do a second cut on a program, the first cut may be used as a source. In other words, as a time-saving technique, those parts of the first cut that remain satisfactory are recorded in the second cut, unchanged.

The result of this process is one Edit Decision List (EDL) for each edited version of the same show. The EDLs are loaded into the Lookback program module in a specific order (e.g., last EDL first). Each of the EDLs will have a unique record reel number assigned to it. The Lookback program will start with the last EDL and look back to each previous generation of EDL to find the original source reels.

The result of the Lookback process will be a single EDL that will be an accurate representation of the final edited show, with all edits coming from the original source tapes, rather than the edited sub-masters.

5 1/4" Disk Utilities

- Rename EDL files
- Initialize disk
- Format EDL disk
- Merge EDLs
- Set PC configuration
- 3 1/2" EDL disk drive compatible CMX format and MS-DOS

5 1/4" and 8" Disk Utilities

- Upload/download EDL
- Erase EDL files
- Delete EDL files
- Print EDL disk directory

Text Editing

- Change reel numbers
- Change A/V modes
- Change transition type from dissolve to wipe, and vice versa
- Ripple source time codes, global or by reel number
- Ripple record time codes (record start)
- Delete master-slave relationships and offsets
- Delete sync roll sources
- Delete GPI, DM², and switcher memory triggers
- Global trims for GPI absolute triggers

Sorting

- Arranges all edits by edit mode: video and audio 1 and 2; video and audio 1; video and audio 2; video-only; audio 1 and 2; audio 1 only; audio 2 only. User can choose the order of the groups
- Sort by transition type: cut, dissolve, wipe and key. User can choose the order of the groups
- Sort by record-in time codes
- Sort by record-out time codes
- Sort by ascending source in time: all edits from the same reel are arranged from the lowest to highest source time codes
- Sort by source out time
- Sort by edit number
- Sort by reel number

Speed Assembly Auto Assembly Optimization

- B-roll auto-assembly
- Compressed list
- B-mode auto-assembly with sort by source in-time
- B-mode Plus: also arranges list by most efficient record in-times
- Combines cuts with match-frame cuts, dissolves, wipes and keys
- Combines cuts into CMX format split edits where possible

EDL Maker (Option)

- Create a new Edit Decision List (EDL)
- Add edits to an existing EDL
- Add notes to an existing EDL
- Frame code change from drop frame to non-drop frame or non-drop frame to drop frame on any reel number on any single event or range of events
- Delete edit
- Change titles

COHERENT COMMUNICATIONS, INC.

Mixer/Clap Board

MX-80 Portable Mixer

- 6dB midrange equalizer
- Peak overload indicator/VU meter
- Individual channel phase reverse switches
- Plug-in active components
- High pass filters that really work
- Variable gain/attenuation controls
- Built-in line up oscillator
- Internal high-quality electret microphone
- Powerful monitor amplifier
- Rechargeable or throw-away batteries
- Built-in battery compartment
- Modular design and construction for ease of service
- 22dB headroom over Nagra zero level; 34dB headroom over video recorders requiring -10dB for zero VU
- Peak limiter, switchable in or out
- Rugged, taut band meter illumination for use at night or in poorly lit locations
- Extensive EMI and RFI shielding
- Ferrite beads
- Low-battery indicator
- Optional carrying strap and case for over-shoulder use
- Sealed rotary switches
- Conductive plastic rotary potentiometers
- Monitor level adjustment; provisions for external power (between 12 and 24V) and for external charging

The MX-80 offers more features, functions and versatility of application than any other really small mixer; and its sound is second to none.

MX-80 dimensions are 3 1/2" H x 9 1/4" W x 7 3/4" D. Weighs 5 lbs. 3 oz. It uses Jensen transformers, and runs on internal batteries.

- MX-80A** Portable Mixer, DC (12-24V) or AC operation (with AC-80 power supply listed below) **\$1260.00**
- MX-80B** Internal battery operation or external DC (12-24V) or AC operation (with AC-80 power supply listed below) **1330.00**
- AC-80** 115-230V—50-60Hz power supply for MX-80A or MX-80B. **87.50**
- RM-80** Rack module for mounting MX-80, with storage compartment **125.00**
- SC-80** Shipping case, waterproof, very heavy-duty plastic with room for accessories **137.00**

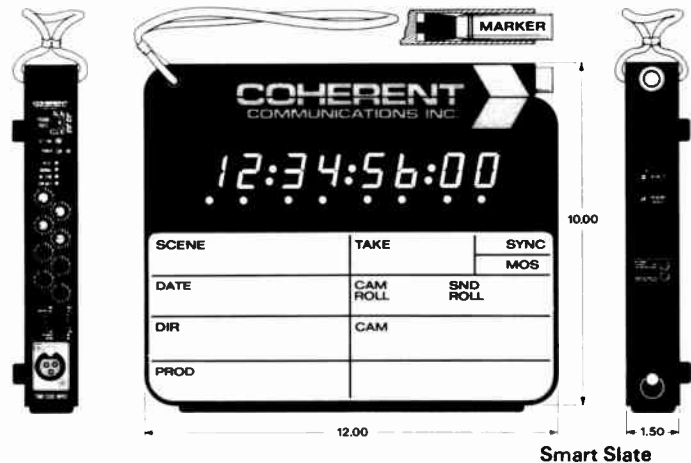
TC-500A Smart Slate™

- Drastically cut time to sync picture and audio
- Automate video/sound transfer
- Eliminate intermediate transfer to mag when syncing to production sound tracks
- See your multi-camera, multi-take footage in sync, almost immediately
- State of the art, ultrabright displays
- Aerospace, weight-saving materials and 1st class construction
- 3M anti-glare filter for top visibility in direct sunlight
- The only time code reader/generator/slate available in one convenient package

The Smart Slate can be used in lieu of a camera module to provide time code information at the beginning or end of a take. It is similar to a conventional slate clapboard, except that there are 8 very bright 1" high LED numbers (hours, minutes, seconds and frames). This information, once filmed, can be used to easily sync picture with audio. The TC-500A must be plugged into a TC-100A Master Module, TC-200A Tape Recorder Module, or other source of standard SMPTE time code. The TC-500A is especially useful for syncing music playbacks.



MX-80



Smart Slate

The inclusion of a precision, crystal timebase (accurate to 1 frame in 16 hours, at 24 fps), allows the TC-500 to function as a completely self-contained time code reader and generator. The Smart Slate can alternately display time and user-bits or two different time codes. If connected to a tape recorder, the Smart Slate™ can optionally display an offset time code to compensate for the time code head placement. For playback applications, the TC-500A can also function as a Dumb Slate™ Time Code Reader. Other features are similar to the TC-200A Tape Module, including user bit display.

Specifications

- Size** 10" H x 12" W x 1.5" D
- Weight:** 3.6 lbs. without batteries, 4.5 lbs. with batteries
- Batteries:** 6 "C" Cells
- Display:** 1" "Super Bright" Light Emitting Diodes, with 3M Contrast Enhancement Filter
- Frame:** Magnesium/Aluminum
- TC-500**
- Accuracy:** ± 0.7ppm, -22°F to 140°F (-30°C to +60°C)
- Time Code:** SMPTE according to ANSI 12M-1986
- Offset:** 2nd time code can be offset ± 15 1/2 frames
- TC-500A** **\$1995.00**

COHERENT COMMUNICATIONS, INC.

Time Code Equipment/Video Transmitters

TC-100A Master Module Time Code Generator/Reader

• Generates and reads SMPTE time code at 24, 25, 29.97, or 30 fps., with or without drop frame • Liquid crystal display shows time, user bits, offset and error messages • User bits may be from an internal or external source • Module can be a master or slave • Low battery warning • 8 hour time code reset reminder • Time code status indicators • Precision crystal timebase (+/-0.7ppm -30C to +50C, or 1 frame in 16 hours at 24 fps.)

TC-100A\$1895.00

TC-200A Tape Recorder Module Time Code Generator/Recorder

• Generates and locks to external SMPTE time code at 24, 25, 29.97, or 30 fps • Module can be a master or slave • User bits may be from internal or external source • Powered by the tape recorder • Internal back-up battery with automatic shutoff. 8 hour reset reminder • Time code status indicators • Precision crystal time base • Automatic record head offset correction

TC-200A\$1495.00

VT-200/300 Professional Video Transmitters

Common Features:

• May be connected to any standard video source. It will transmit a high quality color or black and white picture to any television receiver or video tape deck with a tuner • Difficult to observe or dangerous camera placements can safely be monitored on a regular TV set. A simple scrambler (optional on Model VT-300), helps protect sensitive subject matter when required • Monitoring of helicopter, race car, stunt or other action filming and taping can now be done at a safe distance. News-gathering with remote or hidden cameras can be monitored conveniently • Production personnel can use battery operated TV sets to check the shot from anywhere in the area • Set-up speed is increased by eliminating the need for monitor feed cables • Up to 1/2 mile (0.8km) range is possible under line-of-sight conditions. This range may be greatly limited by metal objects, metal reinforced structures, terrain, poor antennas, etc. • Only slightly larger than a pack of cigarettes, yet protected against abuse by an extremely rugged but light aluminum enclosure

VT-200

• Designed to be used on an unoccupied TV channel between U.S. channels 7 and 13. TV tuner permitting, it may be operated at higher frequencies (equivalent to 2 more channels above 13) • Lower VHF frequencies, compared to the VT-300's UHF channels, have somewhat greater range. Fewer problems seem to arise with objects between the transmitter and receiver causing signal dropouts. Fewer channels are available in the VHF band • Features include: black level control, video gain, video in (BNC), power and video in (multi-pin Fischer connector), antenna (BNC), and pilot light

VT-200\$1395.00

VT-300

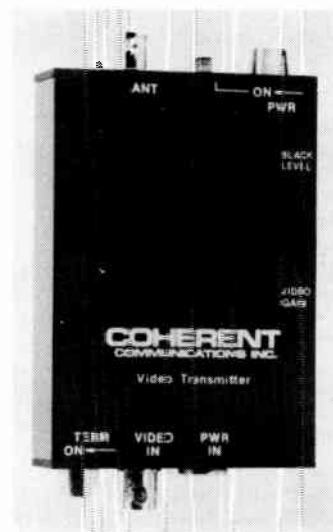
• Up to 7 VT-300s may be operated simultaneously for multiple camera shoots. With the addition of option B, audio from a microphone or line level source will be transmitted as well • Option C adds a simple scrambler that will protect the video information from the casual viewer, but not from a professional video engineer. Some decoder boxes may also unscramble the picture • Features include: black level control, video gain, output power control, audio level, scrambler on/off, video in (BNC), power and video in (multi-pin Fischer connector), audio in (4 pin Fischer), antenna (BNC) and pilot light

VT-3001995.00

Specifications

Model	VT-200	VT-300
Size:	5.5" x 3.0" x 1.0"	5.5" x 3.0" x 1.0"
Weight:	12 oz.	12 oz.
Frequency:	VHF, 174 to 228MHz	UHF, 430 to 554MHz
No. of Channels:	1, crystal controlled, US TV Ch. 7-13 + *	1, crystal controlled, US TV Ch. 14-27 *
Bandwidth:	-3dB at 6MHz	-3dB at 6MHz
R.F. Power:	(unmodulated) 0.5W at 12.5VDC	(unmodulated) 0.5W at 12.5VDC
Voltage In:	10-15VDC at 200mA	10-15VDC at 400mA max
Video In:	1V composite NTSC or PAL. Up to 10dB gain on control	1V composite NTSC or PAL. Up to 10dB gain on control
Audio In:	N/A	(Optional) microphone or line level, soft peak clipper

* Specify TV channel when ordering



VT Series

Transmitter Options

Option A

• 24VDC powering • Required for operation from Panavision cameras\$100.00

Option B

• Video scrambler • Requires modification to TV receiver or tuner to decode scrambled signal\$200.00

Power Amplifiers

VT-400 5W Booster Amplifier

• Available for VHF or UHF • Specify channel number or frequency when ordering\$495.00

VT-500 20W Booster Amplifier

• Available for VHF or UHF • Specify channel number or frequency when ordering\$595.00

Antennas

ANT-10 Replacement VHF specify channel (7-13)\$15.00

ANT-20 Replacement UHF specify channel (14-35)15.00

ANT-30 3dB gain for mobile use. Specify magnet, trunk or gutter mount and channel number.60.00

ANT-40 2.5dB gain for base station. Specify channel no.

Cables For VT-200

VT-104 For use with Steadycam III\$50.00

VT-105 For use with Betacam50.00

VT-106 For use with Arri Video Assist50.00

VT-108 For use with standard 12V, 4-pin XLR battery pack50.00

VT-110 Terminated with tinned leads.....35.00

VT-111 Panavision camera cable for 2-pin zoom lens connector. Must be ordered with Option A. Supplies power only60.00

VT-112 Panavision camera cable for 10-pin aux. jack. Must be ordered with Option A. Supplies power onlyPOR

VT-113 Panavision camera cable for 10 pin Panavid jack. Must be ordered with Option A. Supplies power and video ..POR

VT-114 Terminated with leads, but wired for 24V option ..35.00

VT-115 Same as VT-113, but for Super Panavid cameraPOR

Individual Connectors

VT-202 For VT-200 and VT-300 (Fischer S103 A056) ...\$20.00

VT-203 For Arri Video (Binder 09-0076-00-03)14.00

VT-204 For Betacam (Hirose HR10-7P-6P)20.00

VT-205 For battery pack (Switchcraft A4M)5.00

VT-206 For Steadycam III (TMW R03-PB8M)13.00

VT-207 For Panavision zoom (LEMO F1.302.TEF U/4.2) ...POR

VT-208 For Panavision aux. (LEMO F2.310.TEF U/4.2) ...POR

VT-209 For Panavision video accessoryPOR

COMARK COMMUNICATIONS, INC.

FM Antennas

FM Antennas
Circular Polarized

• 1 1/2 turn circular polarized helix (same phase center for horizontal and vertical field components). Picture A • 1.7" diameter copper elements minimizes corona effects. Allows 20kW testing of basic elements • Available 1 5/8", 3 1/8" as standard feed systems. Larger size feed systems available for special applications • Supplied with triple stub tuner for matching to any supporting structure. (Picture B) • Optional 400W, 230VAC deicers available. Shield cable designed for trouble-free service • Optional directional pattern available

Mechanical Description

The series of FM Circularly Polarized Antennas utilizes identical radiating elements for both the Lower Power (L) and High Power (H) series. The L series utilizes 1 5/8" feed line while the H series uses 3 1/8" feed line. Both series of antennas are available in systems that incorporate 1 to 14 elements. Normally, systems with 8 or less elements are fed at the bottom while above 8, the system is fed from the center.

Each of the radiators is constructed of 1.7" diameter, thick-walled copper with substantially rounded surface that eliminates corona problems.

The element is essentially a 1 1/2 turn helix with a standard 1 5/8" EIA flange fitting which fits into the transmission line feed.

Each side of the helix radiator contains facilities for accepting deicer elements. This permits easy replacement of heating elements in the field.

Each antenna contains a matching tuner which is approximately 6' long. It is extremely simple to adjust and has a fool-proof method of adjustment without losing pressure.

Mounting brackets are supplied with the antenna to assure proper mounting to the supporting structure.

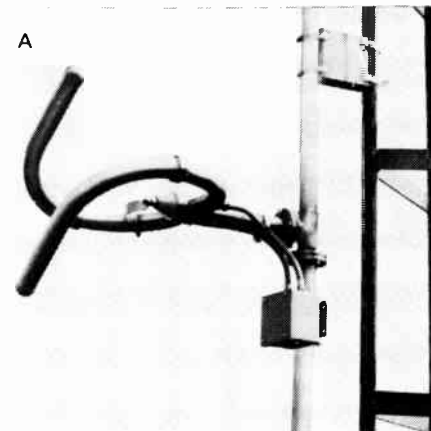
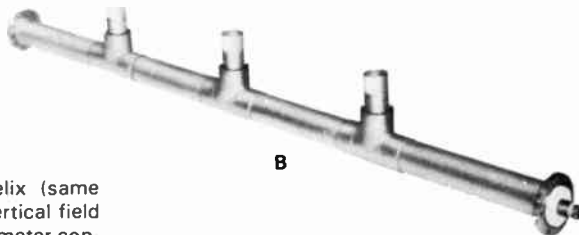
Electrical Description

The FM series of circularly polarized antennas are basically 1 1/2 turns helices separated one wavelength apart.

The radiation centers of both the vertical and horizontal components are identical, thus the FM antennas are one of the few antennas with phase coincidence so essential for true circular polarization.

The basic element with a minimum of retuning can serve as a radiator at any frequency in the standard FM broadcast band.

The free space circularity patterns of the FM antenna are within ± 1dB of optimum circularity. However, when side mounted on a wide tower, the antenna patterns will degrade with some scalloping and loss of circularity. In practice the antenna will provide the urban area with considerably better coverage than a horizontal only radiating system.



The antenna is supplied with a triple stub tuner which provides adjustable capacitors at discrete positions in the feed line. These adjustments are such that they compensate for impedance changes due to mounting environment and still achieve a matched condition.

The deicers of the FM series antennas require approximately 400W of power consumption per bay. They are capable of achieving ice-free operation at ambient temperatures of 0°C and 50 MPH winds. They require 230V, single phase AC power.

FM Model No.	dB Gain	Power Gain	Field Gain 1	MAXIMUM INPUT POWER				Net Weight Pounds 4	Windload 5
				1" 1	3" 2	4" 2	6" 2		
FMCL-1	-3.56	44	66	10	—	—	—	40(1% feet)	55
FMCL-2	-0.13	97	98	10	—	—	—	90	170
FMCL-3	1.76	1.50	1.22	10	—	—	—	140	250
FMCL-4	3.10	2.04	1.43	10	—	—	—	190	325
FMCL-5	4.07	2.55	1.60	10	—	—	—	240	400
FMCL-6	4.97	3.14	1.77	10	—	—	—	290	480
FMCL-7	5.62	3.65	1.91	10	—	—	—	340	560
FMCL-8	6.21	4.18	2.04	10	—	—	—	390	640
FMCL-10	7.16	5.20	2.28	10	—	—	—	490	880
FMCL-12	7.96	6.25	2.50	10	—	—	—	580	1,000
FMCL-14	8.63	7.30	2.70	10	—	—	—	660	1,220
FMHC-1	-3.28	47	69	—	10	—	—	60(3% feet)	130
FMHC-2	-0.04	99	99	—	10	—	—	140	280
FMHC-3	1.88	1.54	1.24	—	15	20	25	220	400
FMHC-4	3.30	2.14	1.46	—	20	25	30	330	525
FMHC-5	4.33	2.70	1.64	—	25	30	35	380	650
FMHC-6	5.19	3.30	1.82	—	30	35	40	460	780
FMHC-7	5.82	3.84	1.96	—	35	40	45	510	910
FMHC-8	6.33	4.30	2.07	—	40	45	50	580	1,030
FMHC-10	7.32	5.40	2.32	—	40	50	75	650	1,380
FMHC-12	8.16	6.54	2.56	—	40	50	75	730	1,580
FMHC-14	8.86	7.70	2.77	—	40	50	75	860	1,880

Notes:

- To obtain the effective free space field intensity at one mile MV/M for one kilowatt antenna power, multiply field gain by 137.6
- Listed for power handling purposes only. Electrical and mechanical data listed is nominal for 1 5/8" and 3 1/8" feed systems
- Includes all hardware
- Windload based on 50 psf on flat surfaces and 33 psf for cylindrical surfaces (actual wind velocity 110 MPH) computed for midband antenna structure

• Power gains are for 50/50 horizontally and vertically polarized ratios • Antenna polarization is circular clockwise, in all directions of azimuth • Prices include complete mounting hardware for leg mounting on uniform guyed towers • Brackets for face mounting or self-supporting towers are extra. Prices upon request • Antenna input flange on H series is 3 1/8" EIA Female. The L series is 1 5/8" EIA Female • Windload ratings are 50/33 PSF, 110 miles per hour • Antenna weights include standard mounting hardware. Add 10 pounds per bay for deicers • Deicers require 230V, single phase AC power with 400W consumption per bay

When ordering be sure to specify:

- Antenna type number • Deicers, if any
- Exact frequency • Description of tower—make and model

FMCL-1	1,995.00	FMHC-6	11,925.00
FMHC-1	2,625.00	FMCL-7	9,250.00
FMCL-2	3,340.00	FMHC-7	13,825.00
FMHC-2	4,680.00	FMCL-8	10,495.00
FMCL-3	4,425.00	FMHC-8	15,235.00
FMHC-3	6,430.00	FMCL-10	12,570.00
FMCL-4	5,595.00	FMHC-10	18,945.00
FMHC-4	8,250.00	FMCL-12	13,650.00
FMCL-5	6,825.00	FMHC-12	21,995.00
FMHC-5	10,140.00	FMCL-14	17,730.00
FMCL-6	7,395.00	FMHC-14	25,800.00

Antenna Accessories

Deicers 1 bay	\$375.00
Deicer control box	.750.00
Replacement deicer element	.40.00
Now standard MTG bracket (face or leg)	.200.00
Standard	.85.00

COMPREHENSIVE VIDEO SUPPLY CORP.

Audio Adaptors/Connectors/Cable

- Audio Adaptors
- Audio Connectors
- Audio Cables

Audio Adaptors

PART NO.	DESCRIPTION	1-4	5-49	50 +
Mini (3.5mm), Phono (RCA), Standard Phone (1/4")				
MP-PJ	Mini Plug to Phono Jack	\$1.99	\$1.79	\$1.59
MP-SPJ	Mini Plug to Standard Phone Jack	1.99	1.79	1.59
MJ-BL	Mini Jack to Jack (Barrel)	1.99	1.79	1.59
PP-MJ	Phono Plug to Mini Jack	1.99	1.79	1.59
PP-SPJ	Phono Plug to Standard Phone Jack	1.99	1.79	1.59
PJ-BL	Phono Jack to Jack (Barrel)	1.99	1.79	1.59
SPP-MJ	Standard Phone Plug to Mini Jack	1.99	1.79	1.59
SPP-PJ	Standard Phone Plug to Phono Jack	1.99	1.79	1.59
SPJ-BL	Standard Phone Jack to Jack (Barrel)	2.19	1.97	1.75
XLR Cannon Type				
PP-XLRP	Phono Plug to XLR Plug	\$11.39	\$10.25	\$ 9.11
PP-XLRJ	Phono Plug to XLR Jack	14.09	12.68	11.27
SPP-XLRP	Standard Phone Plug to XLR Plug	12.69	11.42	10.51
SPP-XLRJ	Standard Phone Plug to XLR Jack	16.99	15.29	13.59
XLRP-PJ	XLR Plug to Phono Jack	12.69	11.94	10.15
XLRJ-PJ	XLR Jack to Phono Jack	13.99	12.59	11.19
XLRP-SPJ	XLR Plug to Standard Phone Jack	16.29	14.66	13.03
XLRJ-SPJ	XLR Jack to Standard Phone Jack	16.99	16.29	13.59
XLRP-8L	XLR Plug to Plug (Barrel)	14.99	13.49	11.99
XLRJ-8L	XLR Jack to Jack	17.99	15.19	14.39
SPP-XLRPS	Standard Phone Stereo Plug to XLR Plug	12.99	11.69	10.39
SPP-XLRJS	Standard Phone Stereo Plug to XLR Jack	18.99	17.09	15.19

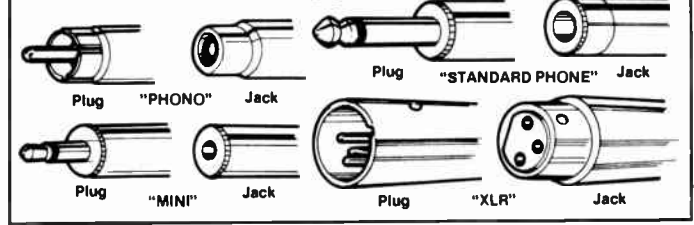
Audio Connectors

Mini (3.5mm)				
MP	Mini Plug, Cable End	\$ 1.09	\$.98	\$.87
MJ	Mini Jack, Cable End	1.09	.98	.87
MJ-CM	Mini Jack, Chassis Mount	.69	.62	.55
Phono (RCA)				
PP	Phono Plug, Cable End	\$.79	\$.71	\$.63
PJ	Phono Jack, Cable End	.79	.71	.63
PJ-CM	Phono Jack, Chassis Mount	.99	.89	.79
P-BLCM	Phono Jack to Jack (Barrel) Chassis Mount	3.19	2.87	2.55
Standard Phone (1/4")				
SPP	Standard Phone Plug, Cable End	\$1.29	1.16	1.03
SPJ	Standard Phone Jack, Cable End	1.99	1.79	1.59
SPJ-CM	Standard Phone Jack, Chassis Mount	.99	.89	.79
SPP-SP	Standard Phone Jack Cable End with Spring Relief	1.79	1.61	1.43
XLR (3-Pin Cannon Type)				
XLRP	XLR Plug, Cable End	\$5.09	\$4.58	4.07
XLRJ	XLR Jack, Cable End	6.09	5.48	4.87
XLRJ-CM	XLR Jack, Chassis Mount	7.09	6.38	5.67
XLRP-CM	XLR Plug, Chassis Mount	5.79	5.21	4.63

Audio Cables

Mini (3.5mm), Phono and Standard Phone Cables					
MP-MP-10	Mini Plug to Plug	10'	\$3.49	\$3.14	\$2.79
MP-MP-25	Mini Plug to Plug	25'	5.19	4.67	4.15
MP-MJ-10	Mini Plug to Jack	10'	3.49	3.14	2.79
MP-MJ-25	Mini Plug to Jack	25'	5.19	4.67	4.15
MP-PP-10	Mini Plug to Phono (RCA) Plug	10'	3.49	3.14	2.79
PP-PP-10	Phono (RCA) Plug to Plug	10'	3.49	3.14	2.79
PP-PP-25	Phono (RCA) Plug to Plug	25'	5.19	4.67	4.15
PP-PJ-10	Phono (RCA) Plug to Jack	10'	3.49	3.14	2.79
PP-PJ-25	Phono (RCA) Plug to Jack	25'	5.19	4.67	4.15
SPP-SPP-10	Standard Phone (1/4") Plug to Plug	10'	4.29	3.86	3.43
SPP-SPP-25	Standard Phone (1/4") Plug to Plug	25'	6.99	5.39	4.79
SPP-SPJ-10	Standard Phone (1/4") Plug to Jack	10'	4.29	3.86	3.43
SPP-SPJ-25	Standard Phone (1/4") Plug to Jack	25'	5.99	5.39	4.79
SPP-MP-10	Standard Phone (1/4") Plug to Mini Plug	10'	3.99	3.59	3.19
SPP-MP-25	Standard Phone (1/4") Plug to Mini Plug	25'	5.99	5.39	4.79
SPP-PP-10	Standard Phone (1/4") Plug to Phono (RCA) Plug	10'	3.99	3.59	3.19
SPP-PP-25	Standard Phone (1/4") Plug to Phono (RCA) Plug	25'	5.99	5.39	4.79

Reference Guide



Audio Adaptor Cables

PART NO.	DESCRIPTION	1-4	5-49	50 +
SP-2-C	Stereo Phone (1/4") Jack to Mini Plug	\$3.29	\$2.96	\$2.63
SP-4-C	Phono (RCA) Plug to Two Parallel Phono (RCA) Jacks	3.29	2.96	2.63
SP-5-C	Phono (RCA) Jack to Two Parallel Phono (RCA) Plugs	3.29	2.96	2.63
O5P-4PP	Din 5-Pin Plug to Four Phono (RCA) Plugs	8.99	8.09	7.19
SPP-PJT	Dual Standard Phone Plugs to Phone Jack	5.99	5.39	4.79

XLR Audio Cables

Microphone Extension Cables				
XLRP-XLRJ-15	15'	\$24.95	\$23.70	\$22.45
XLRP-XLRJ-25	25'	34.95	33.20	31.45
XLRP-XLRJ-50	50'	44.95	42.70	40.45
XLRP-XLRJ-75	75'	54.95	52.20	49.45
XLRP-XLRJ-100	100'	94.99	89.76	85.04

XLR to Mini, Phono and Standard Phone Cables (10')

XLRP-MP-10	XLR Plug to Mini Plug	\$13.79	\$13.10	\$12.41
XLRP-MJ-10	XLR Plug to Mini Jack	13.79	13.10	12.41
XLRJ-MP-10	XLR Jack to Mini Plug	13.79	13.10	12.41
XLRJ-MJ-10	XLR Jack to Mini Jack	13.79	13.10	12.41
XLRP-PP-10	XLR Plug to Phono Plug	13.79	13.10	12.41
XLRP-PJ-10	XLR Plug to Phono Jack	13.79	13.10	12.41
XLRJ-PP-10	XLR Jack to Phono Plug	13.79	13.10	12.41
XLRJ-PJ-10	XLR Jack to Phono Jack	13.79	13.10	12.41
XLRP-SPP-10	XLR Plug to Standard Phone Plug	26.99	25.64	24.29
XLRP-SPJ-10	XLR Plug to Standard Phone Jack	26.99	25.64	24.29
XLRJ-SPP-10	XLR Jack to Standard Phone Plug	26.99	25.64	24.29
XLRJ-SPJ-10	XLR Jack to Standard Phone Jack	26.99	25.64	24.29

Microphone Cable 2 Conductor with Shield

CMC-2-100	100' reel	\$ 65.00
CMC-2-500	500' reel	289.00

Audio Cable CAC-2 2 Conductor with Shield

CAC-2-100	100' reel	\$ 26.00
CAC-2-500	500' reel	115.00
CAC-2-1000	1000' reel	205.00



CA-7

CA-7 Audio and Video Cable Tester

- A single instrument that does the job previously requiring two separate instruments
 - Accepts 3-pin XLR, standard (1/4") phono, BNC, UHF, "F", Phono (RCA), and (3.5mm) Mini plugs
 - Tests for shorts, broken conductors, continuity
 - No meters or technical skills required
 - Built-in lights indicate test conditions
 - 9V battery included
- CA-7 \$72.00

Two Phono (RCA) Plugs, Stereo both ends

PART NO.	DESCRIPTION	1-4	5-49	50 +
4PP-C-1.5	1 1/2'	\$2.09	\$1.88	\$1.67
4PP-C-3	3'	2.69	2.42	2.15
4PP-C-6	6'	3.19	2.87	2.55
4PP-C-10	10'	4.19	3.77	3.35

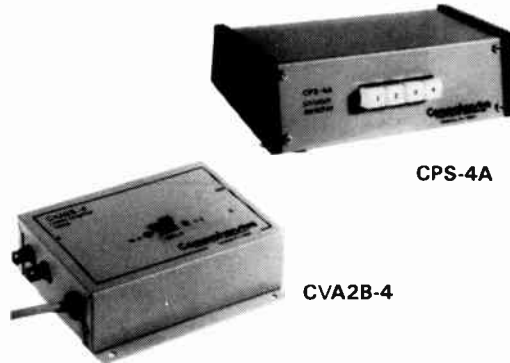
COMPREHENSIVE VIDEO SUPPLY CORP.

Video/Audio Accessories

Video Distribution Amplifier

Overcome line loss, provide additional equipment outputs and line equalization, or any combination of these. 4 output Video Distribution Amplifier contains two input connectors to permit signal looping, thereby allowing the units to be "ganged" if more than four outputs are needed. Mounts easily on any flat surface.

CVA2B-4 \$199.95



Passive Video Switchers

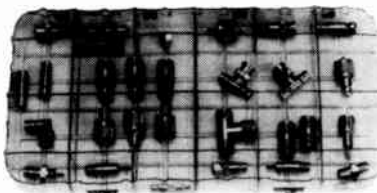
Passive video switchers with audio pass-along offer a fast simple way to interconnect video and audio equipment. Pushbuttons select the input and automatically terminate the other video inputs, for constant impedance.

CPS-4A 4 pair video with audio pass-along \$145.00
CPS-8A 8 pair with audio pass-along 210.00

Comprehensive has recognized the benefits of making all types of video supplies and accessories, and below is listed a small sampling of what is available.

VDAP-1 Video Adaptor Kit

Adapt and interface with Video Connectors — includes 75 ohm terminators.



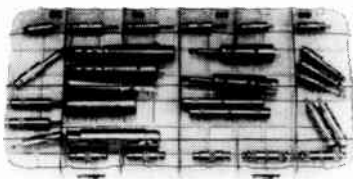
Contents:

- | | | |
|------------------------------------|---------------------------------|----------------------------|
| (2) BNC Jack, Plug, Jack (T) | (2) "F" Jack to Jack (Barrel) | (1) Phono Plug to UHF Jack |
| (1) BNC Jack, Jack, Jack (T) | (1) Phono Jack to Jack (Barrel) | (1) Phono Plug to "F" Jack |
| (2) BNC Jack to Jack (Barrel) | (3) BNC Plug to UHF Jack | (1) Phono Jack to BNC Plug |
| (1) BNC Plug to Plug (Barrel) | (3) BNC Jack to UHF Plug | (1) Phono Jack to UHF Plug |
| (1) BNC Jack to Plug (Right Angle) | (1) "F" Plug to BNC Jack | (1) Phono Jack to "F" Plug |
| (1) UHF Jack, Plug, Jack (T) | (1) "F" Jack to BNC Plug | (2) BNC 75 ohm Terminator |
| (2) UHF Jack to Jack (Barrel) | (1) "F" Jack to Mini Plug | (1) UHF 75 ohm Terminator |
| | (1) Phono Plug to BNC Jack | (1) "F" 75 ohm Terminator |

VDAP-1 \$105.00

ADAP-1 Audio Adaptor Kit

Adapt and interface with Audio Connectors.



Contents:

- | | | |
|---------------------------------------|------------------------------------------|-------------------------------------|
| (3) Mini Plug to Phono Jack | (2) Standard Phone Plug to Mini Jack | (1) Standard Phone Plug to XLR Jack |
| (3) Mini Plug to Standard Phone Jack | (2) Standard Phone Plug to Phono Jack | (1) XLR Plug to Phono Jack |
| (2) Mini Jack to Jack (Barrel) | (2) Standard Phone Jack to Jack (Barrel) | (1) XLR Plug to Standard Phone Jack |
| (3) Phono Plug to Mini Jack | (1) Phono Plug to XLR Jack | (1) XLR Plug to Plug (Barrel) |
| (2) Phono Plug to Standard Phone Jack | | (1) XLR Jack to Jack (Barrel) |
| (3) Phono Jack to Jack (Barrel) | | |

ADAP-1 \$105.00

Field Interface and Repair Kits

The Monster

Shooting on location is like going on safari; small problems that are a nuisance in the studio are monsters to contend with in the field. The "location" jungle is filled with monsters. To tackle them, you need a monster of your own.

The Monster is everything you need to make standard and emergency audio and video hook-ups in the field. Twenty audio and video adaptors. Seventy-three audio and video connectors, including crimp-on, solder-on, emergency fast-fit and right angle types. Plus cables, tools—even a soldering iron and flashlight are included. It all comes packed in the



Monster

revolutionary Roly Kit tool box, and the whole package comes to you at a very special package price.

The Monster Includes:

- (1) Soldering Iron, (1) Tool Set, (24) Assorted Adaptors, (68) Assorted Connectors, (1) BNC Terminator, (1) BNC Crimp Tool, (1) Emergency Solder Pack, (1) Electrician's Knife, (1) Mini Mite Lite, (5) Assorted Cables, (1) Tool Kit, (1) Roly Kit Tool Case

Monster \$399.00

MSTR-A Audio Monster

Monster peace of mind for the audiophile. Helps prevent unwanted "silent movie syndrome" on your next location shoot.

The Audio Monster Includes:

- (23) Assorted Adaptors, (28) Assorted Connectors, (2) Chassis Mounts, (10) Assorted Cables, (1) Tool Kit, (1) Solder, (1) Emergency Solder Pack, (1) Mini Mite Lite, (1) Soldering Iron, (1) Roly Kit Tool Case

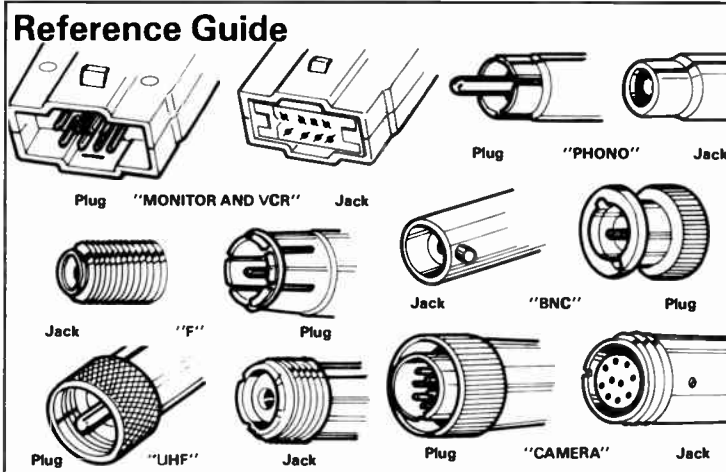
MSTR-A Audio Monster \$260.00

COMPREHENSIVE VIDEO SUPPLY CORP.

Video Adaptors/Cables

Video Adaptors

PART NO.	DESCRIPTION	1-4	5-49	50 +
BNC				
8T	BNC Jack, Plug, Jack (T)	\$9.49	\$8.54	\$7.59
8T-J	BNC Jack, Jack, Jack (T)	7.79	7.01	6.23
8-BL	BNC Jack to Jack (Barrel)	5.29	4.76	4.23
8P-BL	BNC Plug to Plug (Barrel)	8.09	7.28	6.39
BJ-8P-L	BNC Jack to Plug (Right Angle)	9.49	8.54	7.59
UHF				
UT	UHF Jack, Plug, Jack (T)	\$4.99	\$4.49	\$3.99
UJ-UP	UHF Jack to Plug (Push-On)	3.99	3.59	3.19
U-BL	UHF Jack to Jack (Barrel)	1.99	1.79	1.59
UJ-UP-L	UHF Jack to Plug (Right Angle)	4.99	4.49	3.99
"F"				
F-8L	"F" Jack to Jack (Barrel)	\$1.59	\$1.43	\$1.27
FJ-FP	"F" Jack to Plug (Push-On)	2.79	2.51	2.23
FJ-FP-L	"F" Jack to Plug (Right Angle Push-On)	3.19	2.87	2.55
Phono (Video)				
PT	Phono Jack, Plug, Jack (T)	\$4.09	\$3.68	\$3.27
PT-J	Phono Jack, Jack, Jack (T)	4.49	4.04	3.59
PJ-8L	Phono Jack to Jack (Barrel)	1.99	1.79	1.59



Between Series: BNC, UHF, "F", & Phono (Video)

8P-UJ	BNC Plug to UHF Jack	\$5.69	\$5.12	\$4.55
BJ-UP	BNC Jack to UHF Plug	5.09	4.58	4.07
FP-8J	"F" Plug to BNC Jack	5.09	4.58	4.07
FP-UJ	"F" Plug to UHF Jack	4.59	4.13	3.67
FJ-8P	"F" Jack to BNC Plug	5.79	5.21	4.63
FJ-UP	"F" Jack to UHF Plug	4.59	4.13	3.67
FJ-MP	"F" Jack to Mini Plug	4.99	4.49	3.99
MP-UJ	Mini Plug to UHF Jack	2.99	2.69	2.39
PP-BJ	Phono Plug to BNC Jack	4.99	4.49	3.99
PP-UJ	Phono Plug to UHF Jack	2.39	2.15	1.91
PP-FJ	Phono Plug to "F" Jack	4.69	4.22	3.75
PJ-8P	Phono Jack to BNC Plug	6.29	5.66	5.03
PJ-UP	Phono Jack to UHF Plug	4.39	3.95	3.51
PJ-FP	Phono Jack to "F" Plug	4.39	3.95	3.51

PART NO.	DESCRIPTION	1-4	5-49	50 +
UHF Plug to Phono (RCA) Plug				
U-PP-C-6	6'	\$ 8.39	\$ 7.55	\$ 6.71
U-PP-C-10	10'	11.69	10.52	9.35
U-PP-C-25	25'	14.69	13.22	11.75

EIAJ Multi-Pin Cable Assemblies

EIAJ 8-Pin VTR & Monitor Cables				
E8P-E8P-5	5'	\$ 28.89	\$ 27.44	\$26.00
E8P-E8P-10	10'	30.99	29.44	27.89
E8P-E8P-25	25'	42.29	40.17	38.06
E8P-E8P-50	50'	58.89	55.94	53.00
E8P-E8P-100	100'	108.89	103.44	98.00

EIAJ 10-Pin Camera Extension

E10P-E10J-5	5'	\$ 41.99	\$ 39.89	\$ 37.79
E10P-E10J-10	10'	45.99	43.69	41.39
E10P-E10J-25	25'	66.49	63.16	59.84
E10P-E10J-50	50'	96.99	92.14	87.29
E10P-E10J-100	100'	158.99	151.04	143.09

EIAJ 10-Pin Hook-Up Cable

E10P-E10P-5	5'	\$ 43.99	\$ 41.79	\$ 39.59
E10P-E10P-10	10'	49.99	47.49	44.99
E10P-E10P-25	25'	67.99	64.59	61.19
E10P-E10P-50	50'	98.49	93.56	88.64
E10P-E10P-100	100'	158.99	151.04	143.09

Camera Cable (JVC)

E10P-E12P-10	10'	\$53.99	\$51.29	\$48.59
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Professional 14-Pin Camera Cable

E14P-E14J-25	25'	\$126.99	\$120.64	\$114.29
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Multi-Pin Adaptors

E8J-BL	EIAJ 8-pin "GOOF" Plug	\$24.95
E8J-P	EIAJ 8-pin Dubbing Adaptor	24.95
E14P-J	EIAJ 14-pin Acaptor	56.95

Professional 14-Pin Camera Cables

(Equivalent to Sony CCQ) for use with Sony and JVC cameras. EIAJ 14-Pin Plug to EIAJ 14-Pin Jack.

PART NO.	DESCRIPTION	1-4	5-49	50 +
E14P-E14J-5	5'	\$ 88.95	\$ 84.50	\$ 80.05
E14P-E14J-10	10'	97.95	93.05	88.15
E14P-E14J-15	15'	107.95	102.55	97.15
E14P-E14J-25	25'	126.99	120.64	114.29
E14P-E14J-50	50'	197.99	188.09	178.19
E14P-E14J-75	75'	247.99	235.59	223.19
E14P-E14J-1C	100'	297.99	283.09	268.19

Video Cables

PART NO.	DESCRIPTION	1-4	5-49	50 +
Molded Video Cables — Flexible Coax				
BNC Plug to Plug				
88-C-1.5	1 1/2'	\$ 10.39	\$ 9.35	\$ 8.31
88-C-3	3'	10.99	9.89	8.79
88-C-6	6'	12.69	11.42	10.15
88-C-10	10'	13.99	12.59	11.19
88-C-25	25'	16.99	15.29	13.59
88-C-50	50'	23.99	21.59	19.19
"F" Plug to Plug - Push-On				
FF-C-1.5	1 1/2'	\$ 5.99	\$ 5.39	\$ 4.79
FF-C-3	3'	6.29	5.66	5.03
FF-C-6	6'	6.99	6.29	5.59
FF-C-10	10'	7.99	7.19	6.39
FF-C-25	25'	10.99	9.89	8.79
FF-C-50	50'	16.99	15.29	13.59
BNC Plug to UHF Plug				
8U-C-3	3'	\$ 7.99	\$ 7.19	\$ 6.39
8U-C-10	10'	10.99	9.89	8.79
8U-C-25	25'	11.99	10.79	9.59
8U-C-50	50'	20.69	18.62	16.55
Phono (RCA) Plug to Plug — Video				
PP-PP-CV-1.5	1 1/2'	\$ 7.29	\$ 6.56	\$ 5.83
PP-PP-CV-3	3'	7.49	6.74	5.99
PP-PP-CV-10	10'	9.99	8.99	7.99
PP-PP-CV-25	25'	13.29	11.96	10.63
BNC Plug to Phono (RCA) Plug				
8-PP-C-6	6'	\$ 9.39	\$ 8.95	\$ 7.51
8-PP-C-10	10'	12.39	11.15	9.91
8-PP-C-25	25'	15.49	13.94	12.39

Video Connectors

BNC		1-4	5-49	50+
BP	BNC Plug for RG59/U Cable, Solder	\$4.09	\$3.68	\$3.27
BP-C	BNC Plug for RG59/U Cable, Crimp	3.59	3.23	2.87
BP-CA	BNC Crimp Plug for RG59/U	3.69	3.32	2.95
BP-CK	BNC Crimp Plug for RG59/U	3.59	3.23	2.87
BP-SC	UHF Plug for RG59/U Cable, Crimp	2.59	2.33	2.07
BP-E	BNC Plug for RG59/U Cable, Fast-Fit	3.69	3.32	2.95
BP-C-8281	BNC Plug for 8281 Cable, Crimp	3.69	3.32	2.45
BP-E-8281	BNC Plug for 8281 Cable, Fast-Fit	5.69	5.12	4.55
BJ-CM	BNC Jack, Chassis Mount	2.29	2.06	1.83
B-BLCM	BNC Jack to Jack (Barrel), Chassis Mount	7.49	6.74	5.99
B-TM	BNC 75 ohm Terminator	3.69	3.32	2.95

UHF				
UP	UHF Plug & Adaptor for RG59/U Cable, Solder	\$2.29	\$2.06	\$1.83
UP-C	UHF Plug for RG59/U Cable, Crimp	2.49	2.24	1.99
UP-E	UHF Plug for RG59/U Cable, Fast-Fit	4.99	4.49	3.99
UP-E-8281	UHF Plug for 8281 Cable, Fast-Fit	3.49	3.14	2.79
UJ-CM	UHF Jack, Chassis Mount	3.39	3.05	2.71
U-BLCM	UHF Jack to Jack (Barrel), Chassis Mount	4.49	4.04	3.59
U-TM	UHF 75 ohm Terminator	4.59	4.13	3.67

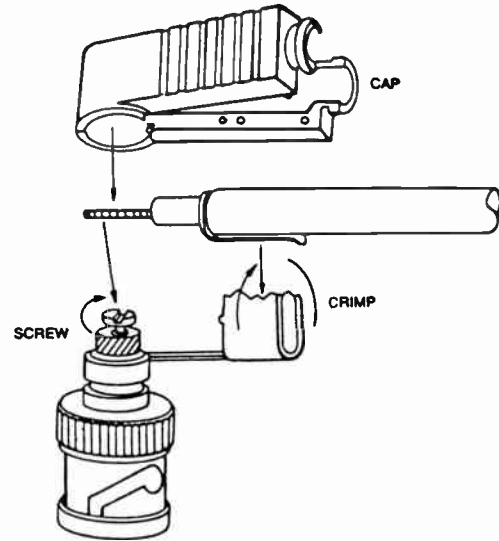
"F"				
FP	"F" Plug for RG59/U Cable, Crimp	\$.49	\$.44	\$.39
FP-E	"F" Push-on Plug-RG59/U Cable, Fast-Fit	.69	.62	.55
FP-ES	"F" Plug for RG59/U Cable, Fast-Fit	.79	.71	.63
FJ-CM	"F" Jack, Chassis Mount	.49	.44	.39
F-BLCM	"F" Jack to Jack (Barrel), Chassis Mount	1.99	1.79	1.59
F-TM	"F" 75 ohm Terminator	.49	.44	.39

Phono (Video)				
PP-V	Phono Plug for RG59/U Cable, Solder	\$.99	\$.89	\$.79
PP-C	Phono Plug for RG59/U Cable, Crimp	.89	.80	.71
PJ-CM	Phono Jack, Chassis Mount	.99	.89	.79
P-BLCM	Phono Jack to Jack (Barrel), Chassis Mount	3.19	2.87	2.55
P-TM	Phono 75 ohm Terminator	2.29	2.06	1.83

EIAJ Monitor and VCR Connectors				
EBP	8-pin Plug, Cable End	\$7.99	\$7.19	\$6.39
EBJ	8-pin Jack, Cable End	7.99	7.19	6.39
EBJCM	8-pin Jack, Chassis Mount	3.59	3.23	2.87
EBPCM	8-pin Plug, Chassis Mount	3.59	3.23	2.87

EIAJ VCR and Editor Remote Control Connectors				
E20P	20-pin Plug, Cable End	\$14.99	\$13.49	\$11.99
E20JCM	20-pin Jack, Chassis Mount	5.79	5.21	4.63
E20J	20-pin Jack, Cable End	15.09	13.58	12.07
E20PCM	20-pin Plug, Chassis Mount	5.39	4.85	4.31
E33P	33-pin Plug, Cable End	22.49	20.24	17.99
E33JCM	33-pin Jack, Chassis Mount	17.99	16.19	14.39
E33J	33-pin Jack, Cable End	22.49	20.24	17.99
E33PCM	33-pin Plug, Chassis Mount	17.99	16.19	14.39
E34P	34-pin Plug, Cable End	20.09	18.08	16.07
E34JCM	34-pin Jack, Chassis Mount	7.99	7.19	6.39
E34J	34-pin Jack, Cable End	18.59	16.73	14.87
E34PCM	34-pin Plug, Chassis Mount	6.89	6.20	5.51
E45P	45-pin Plug, Cable End	18.89	17.00	15.11
E45JCM	45-pin Jack, Chassis Mount	8.99	8.09	7.19
E45J	45-pin Jack, Cable End	18.99	17.09	15.19
E45PCM	45-pin Plug, Chassis Mount	8.39	7.55	6.71

Camera Connectors				
E10P	10-pin Plug, Cable End	\$16.99	\$15.29	\$13.59
E10J	10-pin Jack, Cable End	16.99	15.29	13.59
E10JCM	10-pin Jack, Chassis Mount	11.09	9.98	8.87
E10PCM	10-pin Plug, Chassis Mount	18.49	16.64	14.79
E12P	12-pin Plug, Cable End (JVC)	21.09	18.98	16.87
E12J	12-pin Jack, Cable End (JVC)	18.89	17.00	15.11
E12JCM	12-pin Jack, Chassis Mount (JVC)	11.49	10.34	9.19
E14P	14-pin Plug, Cable End	36.95	33.25	29.56
E14J	14-pin Jack, Cable End	36.95	33.25	29.56
E14JCM	14-pin Jack, Chassis Mount	23.00	20.70	18.40
E14PCM	14-pin Plug, Chassis Mount	23.00	20.70	18.40
D6P	6-pin Plug, Cable End (B & W Cameras)	6.79	6.11	5.43
D6J	6-pin Jack, Cable End (B & W Cameras)	3.39	3.05	2.71
D6JCM	6-pin Jack, Chassis Mount (B & W Cameras)	3.49	3.14	2.79
D8P	8-pin Plug, Cable End (Hitachi, NEC)	4.59	4.13	3.67
DBJ	8-pin Jack, Cable End (Hitachi, NEC)	3.59	3.23	2.87
DBJCM	8-pin Jack, Chassis Mount (Hitachi, NEC)	1.99	1.79	1.59



Solderless Molded Look Video Connectors

SRF-BP	Solderless Rapidfit BNC Plug	1-4	5-49	50+
SRF-FP	Solderless Rapidfit "F" Plug	\$3.89	3.50	\$3.11
SRF-PP	Solderless Rapidfit Phono Plug	1.49	1.34	1.19
SRF-UP	Solderless Rapidfit UHF Plug	1.49	1.34	1.19
SRA-BP	Solderless Right Angle BNC Plug	2.49	2.24	1.99
SRA-BP	Solderless Right Angle BNC Plug	3.89	3.50	3.11
SRA-FP	Solderless Right Angle "F" Plug	2.09	1.88	1.67
SRA-PP	Solderless Right Angle Phono Plug	1.59	1.43	1.27
SRA-UP	Solderless Right Angle UHF Plug	2.49	2.24	1.99

Bulk Video Cable

RG59/U Solid Center Conductor CVC-59

CVC-59-100	100 ft. reel	\$ 25.95
CVC-59-500	500 ft. reel	99.95
CVC-59-1000	1000 ft. reel	177.75

RG59/U Stranded Center Conductor CVC-59S

CVC-59S-100	100 ft. reel	\$ 24.95
CVC-59S-500	500 ft. reel	109.95
CVC-59S-1000	1000 ft. reel	188.95

Belden 8281 75 ohm Precision Broadcast Coax Cable

8281-500	500 ft.	\$369.00
8281-1000	1000 ft.	739.00

EIAJ 8-Pin VCR Cable CVC-8

CVC-8	1-499 ft.	\$1.00 per ft.
	500-999 ft.	.90 per ft.
	1000 + ft.	.80 per ft.

EIAJ 10-Pin Camera Cable CVC-10

CVC-10	1-499 ft.	\$1.99 per ft.
	500-999 ft.	1.79 per ft.
	1000 + ft.	1.59 per ft.

EIAJ 14-Pin Camera Cable CVC-14

CVC-14	1-499 ft.	\$2.10 per ft.
	500-999 ft.	1.99 per ft.
	1000 + ft.	1.89 per ft.

20-Pin Remote Control Cable CVC-20

CVC-20	1-499 ft.	\$1.95 per ft.
	500-999 ft.	1.75 per ft.
	1000 + ft.	1.56 per ft.

COMPREHENSIVE VIDEO SUPPLY CORP.

Heads/Lighting Kits

Medium-Duty Tripod and Fluid-Effect Head

A medium-duty but lightweight assembly featuring a 30 lb. capacity fluid-effect head with adjustable quick-release platform, dual-handle operation, tilt safety stop, fluid-action pan and tilt, and reversible 1/4" or 3/8" camera mounting screw.

Collapsed Length: 30" Weight: 14 3/4 lbs.
 Extended Length: 70" 3142 Tripod Capacity: 65 lbs.

1473 Fluid-Effect Head Capacity: 30 lbs.
3148 \$799.00

Compact Tripod with Fluid-Effect Head

Compact and lightweight, this tripod is specially designed for today's lightweight industrial and consumer color cameras.

Collapsed Length: 20"
 Extended Length: 54"
 Weight: Less than 6 lbs.
 Tripod/head Capacity: 18 lbs.

6144 \$169.00



6144



Lighting Kits
Comprehensive

Lighting Kits

Virtually all lighting kit suppliers face a similar challenge—selecting component pieces that best handle the requirements of the largest number of users. Comprehensive kits are therefore divided into two general categories: kits featuring a full assortment of accessories for a wide variety of locations; and kits that offer the bare necessities, but provide extra room for accessories of your choice. Either way, Comprehensive lighting kits offer you a substantial savings over purchasing individual component pieces.

B-2 Basic 2 Kit

- (1) VL-601 light
- (1) VL-601 VF focusing light
- (1) VL-BD-2 Barndoors for VL-601 VF
- (1) GUH Gel/Umbrella holder
- (1) MS Modular stud
- (1) U-30 Umbrella (30")
- (2) LS-2 light stands
- (2) DYH lamps
- (1) C-2 kit case
- Size: 8 1/4" H x 10" W x 25" L
- Weight: 18 lbs. 5 oz.
- (Lamps included) \$438.00

B-3 Basic 3 Kit

- (1) VL-601 light
- (2) VL-601 VF focusing light
- (1) VL-BD-1 Barndoors for VL-601
- (1) VL-BD-2 Barndoors for VL-601 VF
- (1) GUH Gel/Umbrella holder
- (1) MS Modular stud
- (1) U-30 Umbrella (30")
- (1) VLS-1 Single scrim for VL-601
- (1) VLS-V Single scrim for VL-601 VF
- (3) LS-2 light stands
- (3) DYH lamps
- (1) C-2 kit case
- Size: 8 1/4" H x 10" W x 25" L
- Weight: 25 lbs.
- (Lamps included) \$667.00

UM-300 Ultra-Mini Kit

- (3) VM-300 lights
- (1) UAMV umbrella/ stand adaptor
- (1) UMMV Mini umbrella
- (2) SAMV stand adaptors
- (1) TCMV table clamp
- (1) HGMV handgrip
- (2) TRS mini stands
- (3) FNB lamps
- (1) MC mini case
- Size: 15 1/4" H x 4" W x 20 1/2" L
- Weight: 14 lbs. 6 oz.
- (Lamps included) \$969.00

UM-1

Same as UM-300 with M-250 lights and ELH lamps instead of VM-300 lights and FNB lamps. \$579.00

T-2 Take 2 Kit

- (2) K-600 focusing lights
- (2) KBD Barndoors for K-600
- (1) GUH Gel/Umbrella holder
- (1) MS Modular stud
- (1) UMMV mini umbrella
- (2) TRS mini stands
- (2) DYS lamps
- (1) KC kit case
- Size: 16" H x 6 3/4" W x 22" L
- Weight: 19 lbs. 14 oz.
- (Lamps included) \$689.00

ENG-3 Kit

- (2) K-600 focusing lights
- (1) VM-300 focusing light
- (2) KBD Barndoors for K-600
- (1) DFK diffusion filter for K-600
- (1) DIV dichroic filter for VM-300
- (1) CSMV camera mount for VM-300
- (1) VC-30 30V battery cable for VM-300
- (1) HGMV handgrip for VM-300
- (1) SAMV stand adaptor for VM-300

- (3) TRS mini stands
- (2) DYS lamps
- (1) FNB lamp
- (1) EPL lamp
- (1) KC case
- Size: 16" H x 6 3/4" W x 22" L
- Weight: 23 lbs. 5 oz.
- (Lamps included) \$995.00

ENG-312C ENG-3 kit with 12V battery mode option set up for Comprehensive batteries with 7-pin connector \$995.00

ENG-312D Same as above for use with 12V batteries with 4-pin XLR connectors \$995.00

ENG-312E Same as above for use with 12V batteries with 5-pin XLR connectors \$995.00

T-4 Take 4 Kit

- (2) V-10/6 focusing light
- (2) VBD barndoors for V-10/6
- (2) VAH accessory holders for V-10/6
- (2) MF-10 flood lights
- (4) LSP light stands
- (2) DXW lamps
- (2) FHM lamps
- (1) PRC Kit case
- Size: 15 3/4" H x 11 1/2" W x 35" L
- Weight: 45 lbs.
- (Lamps included) \$1359.00

P-4 Production 4 Kit

- (2) V-10/6 focusing light
- (2) VBD barndoors for V-10/6
- (2) VAH accessory holders for V-10/6
- (2) VSS single scrim for V-10/6
- (1) VDS double scrim for V-10/6
- (2) MF-10 flood lights
- (2) FLS-1 single scrim for MF-10
- (4) GUH Gel/Umbrella holders
- (4) MS Modular studs
- (1) U-43 Umbrella (43")
- (4) GF gel frames

- (1) LGP Location gel pack
- (2) CSC Ceiling scissor clip
- (2) CC C-clamp
- (4) LSP Light stands
- (2) DXW lamps
- (2) FHM lamps
- (1) PRC Kit case
- Size: 15 3/4" H x 11 1/2" W x 35" L
- Weight: 53 lbs. 13 oz.
- (Lamps included) \$1629.00

T-3 Take 3 Kit

- (2) V-10/6 focusing light
- (2) VBD Barndoors for V-10/6
- (2) VAH Accessory holder for V-10/6
- (1) MF-10 flood light
- (3) LSP light stands
- (2) DXW lamps
- (1) FHM lamp
- (1) PRC Kit case
- Size: 15 3/4" H x 11 1/2" W x 35" L
- Weight: 36 lbs. 14 oz.
- (Lamps included) \$1079.00

EFP-3 Kit

- (2) V-10/6 focusing light
- (2) VBD barndoors for V-10/6
- (2) VAH accessory holder for V-10/6
- (2) VSS single scrim for V-10/6
- (1) MF-10 flood light
- (1) FLS-1 single scrim for MF-10
- (3) GUH Gel/umbrella holders
- (3) Modular studs
- (1) U-43 umbrella (43")
- (3) GF gel frames
- (1) LGP location gel pack
- (1) CSC ceiling scissor clip
- (1) CC C-clamp
- (3) LSP light stands
- (2) DXW lamps
- (1) FHM lamp
- (1) PRC Kit case
- Size: 15 3/4" H x 11 1/2" W x 35" L
- Weight: 43 lbs. 4 oz.
- (Lamps included) \$1285.00

COMPREHENSIVE VIDEO SUPPLY CORP.

Computer Video Software

Edit Master™

Turn your personal computer into the world's most powerful cuts-only editing system

Edit Master brings the features and capabilities of sophisticated computer editing systems to cuts only editing. Edit Master consists of a set of 3 compact and easy to install hardware interfaces and a control program for MS-DOS computers.

Edit Master works with either time code or control track, and is compatible with NTSC and PAL standards. You have complete control of all tape transport functions from your computer's keyboard, including variable-speed tape shuttle.

You can mark in and out points on the fly, or with tape paused. You can then preview, perform and replay the edit. Edits that have already been performed may be re-opened, modified and rehearsed at any time.

Edit Master is the perfect tool for off-line editing. Dissolves, wipes and keys are performed as cuts, but are entered into the list in their designated form, ready for assembly during the on-line edit.

You have available a generous 900-event memory, along with high-powered list management capabilities which include re-edit with ripple, block move and delete, and multi-mode automatic list cleaning, plus many other features.

Text notes may be added to edits in memory. You can search the list by note or note fragment.

Auto assembly of edit lists may be performed in either A-mode (sequential) or B-mode (checkerboard). Single events, groups of events or the entire list can be enabled or disabled for assembly.

Edit Master provides frame-accurate control of virtually all of today's popular editing recorders and players, from half-inch industrial to one-inch broadcast. It's the perfect way to move up to time code editing. Its local area network design leaves room for future growth. Its compact size also makes it an ideal portable editing system. With the hardware components in a briefcase and using a laptop computer, you can now edit even on location.

Edit Master is also fully compatible with Edit Lister, Edit Tracker, with the D-Link 8" disk drive, and with other editing systems that save and load edit lists as MS-DOS text files. It supports CMX, Convergence and Grass Valley list formats.

Edit Master supports the following VTRs: Ampex VPR 3, VPR 6, VPR 80; JVC CR-850, CR-600, CR-8250, CR-6650, BR-8600; Panasonic MII AU-650, AU-500, AG-6500, AG-7500; Sony BVU, BVW and BVH series, VO-5800, VO-5850, Type VII, Type IX

Edit Master requires an MS-DOS compatible computer with at least 256K memory, an RS-232 serial port and two disk drives or a hard disk.

An optional color coded keyboard using industry standard key layout is also available.

The Edit Master package includes Edit Master software, manual and 2 VTR hardware interfaces and one master computer interface. A set of keyboard overlays is provided for use with a standard PC keyboard.

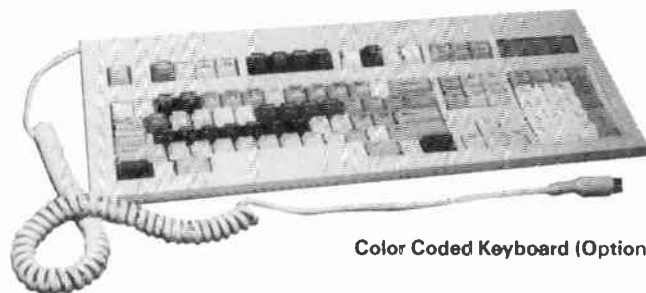
Note: Interfaces are also available for the following machines: Sony Type 7 with BKU-701, Type 9 with BKU-701, JVC CR-850, 600 Panasonic MII, Ampex VPR-3, VPR-6 and VPR-80. When ordering an inter-format system or additional node, please specify the model number of your player and/or recorder machines.

*Edit Master's distributed-processing Network Design allows for expansion. Users will be able to upgrade to A/B Roll and beyond with hardware and software updates to be offered.

EM-2-S5U	For Sony 5850, 5800	\$3995.00
EM-2-J85	For JVC BR-8600, 8250, 6650	3995.00
EM-2-AG6	For Panasonic AG-6500	3995.00
EM-2-AG7	For Panasonic AG-7500	3995.00
EM-2-SBV/TC	For Sony BVU Series without built-in time code reader	3995.00
EM-2-SBV	For Sony BVU, BVW and BVH Series with built-in time code reader	3495.00
Color coded keyboard (optional)	. . . . .	650.00



Edit Master System



Color Coded Keyboard (Optional)



VTR Hardware and Master Computer Interfaces

COMPUTER PROMPTING CORP.

1511 K Street, N.W., Suite 831, Washington, DC 20005 (202) 783-2051

IBM-PC BASED COMPUTERIZED TELEPROMPTERS

CPC-1000: Computerized Teleprompter

Features:

- Operates on IBM-PC/XT/AT and most compatibles including several LAPTOP computers
- Over 5 hours of smooth continuous scroll capacity
- Hard copy printout with line numbers coordinated with the built-in word processor line numbers
- 3 crisp, clear fonts (All upper or upper/lower case)
- 16 text/background colors
- Instant help screens
- 3 different controls—Dial/Mouse/Keyboard—available to get smooth variable scroll in forward and reverse directions
- Scripts (in ASCII format) typed on any computer may be down loaded using a modem and scrolled
- Scripts (in ASCII format) from most word processors running on an IBM PC may be directly loaded without using a modem



System Requirements:

- IBM PC or Compatible with a parallel printer port and at least 256K of memory
- Enhanced Graphics Adaptor (EGA) with 256K of internal memory on board
- RGB or composite monitor
- Game adaptor to be connected to the "Dial" type hand control
- Optional Mouse for additional "Mouse" type hand control
- Optional Serial port to be connected to the optional mouse control

CPC-1750: Computerized Teleprompter to Interface to a Newsroom System

Features: All the features of the CPC-1000 computerized teleprompter as described above

- Simultaneously edits script while prompting
- Interfaces to Newsroom systems, and acts as a "dumb" display unit
- Down loads and up loads scripts from other computers

System Requirements: In addition to the system requirements for the CPC-1000, one monochrome adaptor, one TTL monochrome monitor, and a modem are also required

CPC-2000: Computerized Teleprompter with Closed and Open Captioning Option

Features: All the features of the CPC-1000 computerized teleprompter as described above

- Real-Time Closed Captioning: It allows text which is entered and scrolled for teleprompting, to be simultaneously entered and output as closed captions with no additional cost or effort
- Post Closed Captioning: Any prerecorded video tape can be easily closed captioned using only one key stroke per line of text that has been previously entered into the CPC's word processor
- Open Captioning: Both Real-Time and Post Captioning may be used to create open captions on a video tape, and may also be used for sub-titling foreign language video tapes

System Requirements: In addition to the system requirements for the CPC-1000, a line 21 Encoder is also required

CPC-500: Closed and Open Post Captioning System

- Features:**
- Post Closed Captioning: Any prerecorded video tape can be easily closed captioned by using only one key stroke per line of text that has been previously entered into the CPC's word processor
 - Open Captioning: Both Real-Time and Post Captioning may be used to create open captions on a video tape, and may also be used for sub-titling foreign language video tapes

System Requirements: An IBM PC with a serial port and a line 21 Encoder

-
- **CPC Software packages:** CPC-1000, CPC-1750, and CPC-2000 software systems come with an EGA card which outputs both composite B&W and RGB signals, a game adaptor, hand control and manual. CPC-500 system consists of software
 - **Mount/Computer System:** Computer Prompting Corp. is a distributor for several camera mount, monitor and computer manufacturers and can provide a choice of Mount/Monitor/Computer systems at a price below the list price

COMTEK COMMUNICATIONS TECHNOLOGY, INC.

Microphone Transmitter

M-72 Wireless Microphone Transmitter

- Professional quality
- Reliable
- Versatile
- Easy to use
- Small size
- No external antenna

The M-72 wireless microphone transmitter meets the highest professional standards, yet because of its design, it offers operational success to even the nonprofessional user. When used with our receivers, the M-72 transmitter reproduces the microphone's quality with indistinguishable difference. The wide dynamic range of this transmitter is made possible because of its soft compressor system which, along with very linear modulation characteristics and low residual FM noise, gives the most natural sound possible from a wireless microphone.

Transmitter circuitry allows biasing of electret condenser microphones, or the M-72 can also be used with dynamic microphones. The M-72 transmitter has an LED indicator to monitor RF output and battery condition, and a microphone sensitivity adjustment is provided to optimize the signal-to-noise ratio for different applications. The M-72 transmitter utilizes a body induction antenna system. Only the microphone cord extends from the transmitter package enabling the transmitter to have a more uniform radiation pattern when the unit is placed on the body or held in the hand. A new slide-open battery compartment exposing only the battery makes changing batteries fast and easy. Higher efficiency circuitry provides even longer battery life while maintaining the same high fidelity and maximum FCC allotted power.

Specifications

Audio Input:	Low impedance (150 to 600 ohms) with external control to adjust sensitivity for -60 to -40dBm input level. Also, will self power electret condenser microphone
Microphone Connectors:	1/8" mini jack, micro "lock plug," Tini TA4F
Controls and Indicators:	Microphone level input sensitivity control, and LED for RF output and battery condition indicator
Modulation Limiter:	Soft compressor type with high linear overload protection, attack time—less than 1ms, recovery time - 10ms
Frequency Modulation:	Up to 30kHz deviation
Residual FM Noise:	Less than 20Hz (30kHz BW)
Frequency Stability:	.005% crystal controlled
Operating Radio Frequency:	70 to 216MHz
Harmonic and Spurious Emissions:	-45dB below carrier
RF Power Output:	8000µV at 30m (72 to 76MHz) 50mW at output port (174 to 216MHz)
Antenna:	Body induction type with microphone cable or plug-in handheld microphone (no external antenna)
Current Drain:	15mA 72—76MHz 20mA 174—216MHz
Battery:	9V alkaline NEDA 1604 type (Eveready 522)
Dimensions:	1 1/16" x 2 1/4" x 3 1/4" (27mm x 57mm x 83mm)



M-72

Transmitters

- M-72L** Wireless microphone transmitter for use with electret condenser or dynamic microphones. P-1 belt-clip carrying pouch included. \$404.00
- M-72C** High performance wireless microphone transmitter with companded audio. Will self power ± electret condenser microphones. Comes with P-1 belt-clip carrying pouch. \$445.00

Transmitter Connector Options

- 750 Mono mini connectorN/C
- 850 Micro mini connectorN/C
- 851 Micro mini locking connectorN/C
- TA4 ConnectorN/C
- Special 4-pin Lemo connector. \$15.00

Options for M-72 Transmitters

- Option 1.** Separate microphone muting switch for quiet audio switching. \$20.00
- Option 2.** Permanently mounted boom for handheld applications in interviewing and group participation. \$76.00
- Option 3.** Detachable boom microphone with TA4F connector enables transmitter to be used as either a handheld or lavalier microphone. Available only from 169 to 216MHz. C-12 carrying case included. \$96.00
- Option 4.** XLR-3 connector allows transmitter to plug directly into boom of any low impedance dynamic or electret condenser handheld microphone. C-12 carrying case included 15.00
- Option 5.** Push-to-talk power switch with extended pushbutton for use in P-1 carrying pouch. For use with half duplex operation with RPT-182 repeater. Not available on M-72C transmitters . .N/C
- Option 6.** Push-to-talk audio switch with extended pushbutton for use in P-1 carrying pouch. For use with full duplex operation with RPT-182 repeater system. May be used with M-72L or M-72C transmitters 20.00
- Option 7.** BNC RF output with 851 micro mini locking connector for line level audio input. Comes complete with BNC whip antenna for battery powered remote transmitter applications. 40.00

COMTEK COMMUNICATIONS TECHNOLOGY, INC.

Transmitter Adaptor/
Companion Receiver



M-72BS

M-72BS Base Station Transmitter Adaptor

- AC powered for permanent installation
- Adds versatility to wireless sound transmission
- Quick frequency change capability

The M-72 base station adaptor was designed to add flexibility and variety to the M-72 wireless microphone transmitter. The M-72 wireless microphone transmitter conveniently plugs into the back of the base station adaptor enabling the M-72 transmitter to operate in a permanent, AC powered installation and, if necessary, with an external antenna. This "base stationed" transmitter accepts its audio input from any line level output (microphone level optional) audio system and transmits this signal to any of our receivers.

The base station adaptor is equipped with RF output indicator that monitors normal RF output level and a modulation meter to insure normal modulation for maximum signal-to-noise performance. While it is self contained for portable applications, it may be rackmounted for permanent installations.

The base station adaptor allows the M-72 wireless microphone transmitter to be used in a variety of applications. In churches, theaters, and auditoriums, it retransmits the audio from the sound system to the hearing impaired. It may also be used as part of a wireless intercom system for duplex communications, as a transmitter to monitor live soundtrack, or as a base transmitter providing a wireless audio point-to-point link.

Specifications

- Audio Input:** Line level +5dBm or speaker level up to 50V (microphone level optional)
- Connectors:** XLR-3 for line level (microphone level optional), RCA connector for high speaker level
- Operation Indicators:** Meter displays audio input (modulation). LED displays normal RF power output
- Antenna:** Telescopic antenna mounts directly into top of transmitter or optional external antenna through type "F" RF connector
- Power Requirements:** 115VAC or optional 12VDC battery pack
- Dimensions:** 2 1/2" H x 8" W x 7 1/2" D (63mm x 203mm x 190mm), a rackmounting adaptor kit is available (RMK-1) for standard 19" rackmount

System Performance with Receivers

- Frequency Response:** 40Hz to 15kHz
- Audio Distortion:** Less than 1% at 80% modulation
- Signal-to-Noise Ratio:** Better than -70dB with MR-72 receiver
- Operating Range:** Typical range of 500' when used with Com-Tek receivers

M-72BS (Includes M-72L plug-in transmitter) \$590.00

Options for M-72BS Base Station

- Option 1.** M-72C transmitter included in place of M-72L for use with MR-182 receiver \$45.00
- Option 2.** Microphone level input \$8.00

PR-72b Companion Receiver

- Narrow and wide band reception
- Phase lock loop detection
- Extended frequency response
- Plug-in channel selection
- No external antenna

The PR-72b Companion Receiver is a high performance miniature receiver. This receiver may be used for a variety of applications due to its excellent performance. While its primary use is individual auditory assistance, the PR-72b receiver may be used for many specialty applications including remote personal cueing and professional studio and industrial communications. Because of its extended frequency response and low noise level, the PR-72b is a convenient receiver to use with video cameras and portable tape recorders.

The PR-72b incorporates state-of-the-art technology offering a lower power efficiency circuit for even longer battery life (up to 50 hours). The PR-72b receiver includes a plug-in channel selector, LED battery condition indicator, automatic on/off power switch, battery charging access through the output jack, slide open battery compartment, and no external antenna—only the output cable extends from the receiver unit. Its small size and light weight make it easy to conceal in a pocket or pouch. The low cost of this receiver is an added plus.

Specifications

- Audio Outputs:** 2.5VRMS, adjustable volume control nominal load 50-100 ohms
- Connectors:** 1/8" mini jack (locking plug optional)
- Indicators:** LED battery condition indicator
- Audio Frequency Response:** 100Hz to 10kHz with M-72 transmitter
- Operating Radio Frequency:** 50-216MHz
- Frequency Stability:** .005% crystal controlled
- RF Sensitivity:** 1µV for 20dB of quieting
- Adjacent Channel Rejection:** -55dB with 50kHz channel spacing (72-76MHz)
- Image and Spurious Response:** At least -60dB (72-76MHz)
- Ultimate Quieting:** Better than -65dB related to output
- Bandwidth Acceptance:** Up to 30kHz deviation
- Antenna:** Integral with output cable (no external antenna)
- Current Drain:** 14mA nominal
- Battery:** 9V alkaline NEDA 1604 or 9V NiCad Varta Type TR 7/8 or equivalent
- Dimensions:** 1 1/16" x 2 1/4" x 3 1/4" (27mm x 57mm x 83mm)
- Special Attractions:** Charging access through output jack or use with RBC 9-2 battery conditioner of NBC 9-12 NiCad battery charger, automatic receiver turn off if output plug is removed, LED battery indicator, plug-in channel selector

PR-72b \$184.00

Options for PR-72b Receiver

- Option 0.** PR-72b receiver without plug-in crystal selector for single channel operation. N/C
- Option 1.** Has plug-in frequency selector. Comes standard with PR-72b personal receiver N/C
- Option 2.** External microphone input for specialty application. Will self power electret microphones. Not available with PR-72b options 3, 4 or 5 \$50.00
- Option 3.** Switch for 2-channel operation. Not available with PR-72b Option 1, 2, 4 or 5 \$35.00
- Option 4.** On/off switch for PR-72b personal receiver. Not available with PR-72b Option 2, 3 or 5 \$15.00
- Option 5.** Extremely rugged volume control for general public use. Not available with PR-72b options 2, 3 or 4 \$15.00

Refer to Green Section for Addresses and Telephone Numbers.

COMTEK COMMUNICATIONS TECHNOLOGY, INC.

Wireless Microphone Receivers

MR-72 Wireless Microphone Receiver

- Reliable
- Easy to operate
- High signal-to-noise ratio
- High fidelity
- High sensitivity

The MR-72 receiver when used with the M-72 transmitter reproduces the most natural sound possible from a wireless microphone system. This advanced receiver design offers successful operation even under adverse conditions.

The MR-72 receiver requires no adjustments. The output levels have been factory set for a typical low impedance microphone level and for an auxiliary line level output. The noise-activated automatic squelch circuit silences the output until the transmitter is turned on. Excellent quieting is achieved by high abrupt limiting characteristics, and the MR-72 receiver has features for hum rejection. LED indicators monitor presence of RF carrier and analog meter displays audio output.

The MR-72 was designed for fixed or portable installations. The receiver has rugged all metal construction and operates from 115VAC power supply. It is also available with an optional internal rechargeable battery providing ten hours of continuous operation. A telescopic antenna mounts directly on top of the receiver cabinet, or a remote external antenna can be used for permanent installations.

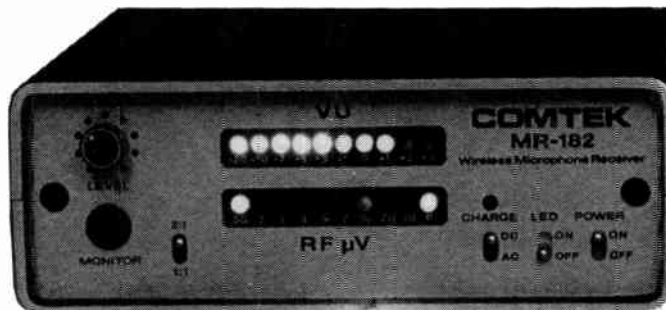
Specifications

Audio Outputs:	Microphone balanced 150 ohms with -40dBm max. output, or auxiliary line level with 0dBm max. output.
Audio Frequency Response:	40Hz to 15Hz
Operating Radio Frequency:	70 to 216MHz
Frequency Stability:	.005% crystal controlled
RF Sensitivity:	Less than 1µV for 35dB of quieting
Image and Spurious Response:	-65dB
Ultimate Quieting:	Better than 70dB
Bandwidth Acceptance:	± 30kHz
Antenna:	Telescopic antenna mounts directly into top of receiver or external antenna through type "F" conductor
Dimensions:	2 1/2" H x 8" W x 7 1/2" D (63mm x 203mm x 190mm)

MR-72 \$402.00
 Option 1. Internal NiCad battery pack and internal charging circuit \$60.00

MR-182 Wireless Microphone Receiver

- Helical resonator for maximum front end RF selectivity
- Switchable processing for companded/noncompanded transmitters
- DC isolated audio outputs for use with phantom powered mike inputs
- Headphone output can also serve as high quality auxiliary output
- LED peak level monitoring for audio status
- Extended frequency response with absolute minimal distortion
- Operates on 115/230VAC, internal/external battery power
- Compact and durable all metal styling for field/studio
- Separate amplifiers for each audio output
- Optional "Phase-Right" antenna for greater signal gain



MR-182

Field tough enough for electronic news gathering punishment, sophisticated enough for studio, film production, and the performing arts. Abrupt-quieting feature maintains surprisingly high signal-to-noise performance even with weak RF signals. Our receiver's IF filter system allows the highest level of channel selectivity while maintaining full audio fidelity.

The MR-182 tells you the exact RF field strength signal the transmitter is producing. Result: better antenna placement, better critical distance determination.

Squelch circuit operates so fast you hear no squelch-tail noise when you turn off the transmitter.

Specifications

Carrier Frequency:	174 to 216MHz
RF Input:	50 ohms
RF Sensitivity:	45dB quieting at 1µV (squelch setting)
Ultimate Quieting:	95dB typical (flat)
Image, Spurious and Adjacent Channel Rejection:	Better than 90dB
Antenna:	Nylon flex 1/4 wavelength whip. Or optional 1 1/4 wavelength long "Phase-Right" external remote antenna system
Deviation Acceptance:	Up to ± 30kHz
Audio Outputs:	Line level balanced: ± 10dB 600 to 250 ohms (± DC isolated). Mike level balanced: -40dB 200 ohms (± DC isolated). Headphone unbalanced: +10dB 20 ohms
Squelch System:	Ultra high speed, double-gated, silent switching type
Dimensions:	2" H x 5.5" W x 7.6" D (5.1cm x 14cm x 19.3cm)

General System Performance

Operating Range:	Up to 1500' under good conditions
Frequency Response:	40Hz to 15kHz ± 2dB
Signal-to-Noise Ratio:	95dB typical (flat)
Harmonic Distortion:	.5% maximum below compressor action
Operating Temperature Range:	-20°C to + 55°C

MR-182 \$650.00
 Option 1. Internal nickel-cadmium battery pack and internal charging circuit \$60.00
 Option 2. Cascadable audio input for repeater and mixing applications \$20.00
 Option 3. Internal 25W audio amplifier for driving 4 ohm speaker system. Not available with option 1 \$250.00
 Option 4. Phantom power for Phase Right + 1 antenna system \$20.00

COMTEK COMMUNICATIONS TECHNOLOGY, INC.

Cuing System

RC-72 Receive-A-Cue Cuing System

- A complete RF wireless cuing system
- Easily concealed—no wires to the ear
- Up to 500' of operating range
- Extremely small and lightweight

We have developed a complete, long range cuing system providing a performer with first quality auditory assistance. The RC-72 Receive-A-Cue System transmits clear, high fidelity cues up to 500'. It's simple and easy to use. The director wears the M-72 Wireless Microphone Transmitter. The performer wears the small PR-72b Companion Receiver and neck-loop transducer which transmits the audio to the miniature wireless inductor receiver which is comfortably concealed in the ear. It's possible for more than one transmitter to cue the same performer with the additional use of the RPT-72 Repeater.

Specifications**M-72L Transmitter and PR-72b Receiver**

Frequency Response: 100Hz to 10,000kHz with AT-831A microphone

Signal-To-Noise Ratio: Better than 65dB related to output

Receiver Audio Output Level: 2.5VRMS adjustable with volume control

Transmitter Modulation

Limiter: Soft compressor with 35dB overload range protection
Attack time—less than 1ms
Recovery time—10ms

Connectors: 1/8" mini jack or optional "microlock" jack

RF Carrier Frequency: 70 to 216MHz

Receiver Channel Separation: 50kHz

Receiver Channel Selection: Plug-in frequency module

Frequency Tolerance: .005% crystal controlled

Transmitter Modulation: Frequency modulation up to 30kHz deviation with 100µs transmitter pre-emphasis

System Range: Usable range up to 500' under favorable conditions

Antenna: No external antenna, integral with microphone and neck-loop

Battery Life: Up to 40 hours when used with a 9V alkaline NEDA 1604 type battery or six hours with a rechargeable NiCad VARTA type TR7/8 battery

Construction: Impact resistant cyclac case with shock mounted .050" glass-epoxy circuit board, easy slide open battery compartment with pull tab

Size: 1 1/16" x 2 1/4" x 3 1/4"
(27mm x 57mm x 83mm)

Special Attractions: Charging access through input and output jacks for rechargeable batteries, automatic receiver turn off when output plug is removed, LED operation indicators

RC-72\$955.00



M-72L



PR-72b



RC-72 Kit



NBC 9-12

NBC 9-12 Charger/Carrying Case

- Charges 12 receivers/transmitters overnight
- Convenient carrying case
- Easy to use—just insert units

The NBC 9-12 charger/carrying case is designed for storage and overnight charging of 12 PR-72b personal receivers and/or M-72AT transmitters which are equipped with NiCad batteries (VRT 9-100).

Light emitting diodes (LEDs) give indication of charging for each receiver and transmitter being charged. Twelve hours of charging will give a full charge. Although longer charging will not damage the batteries, extended storage in the charging mode is not recommended.

NBC 9-12 charger/carrying case comes complete with power cord for 115VAC, 60Hz power. Dimensions: 12 1/2" x 15 1/2" x 4 3/4".

NBC 9-12\$195.00

CONRAC DISPLAY PRODUCTS GROUP

Color Monitor System

6545/6550 Micromatch™ Color Monitor System

- Automatic setup with 6550 Micromatch Photometer
- Soft-touch user controls
- SMPTE "C" Phosphors (Colormatch™)
- Beam current feedback and comb filter
- Auto-sensing of NTSC and PAL B signals
- 13" or 19" in-line dot matrix CRTs
- Selectable RGB or decoder inputs

Designed for the professional studio environment, its advanced technology sets standards in performance, stability and operation. Critical evaluation of broadcast signals, color balancing and matching, animation and graphics are among the many uses.

Available in 13" and 19" screen sizes. For ready access and convenience, all user controls are mounted on the front panel. The 6545 is set up at the factory to match broadcast standards, however, if you desire to change the factory default settings to better fit your environment or professional preferences, just use the soft-touch controls. Your new settings can be stored in memory, and by using Conrac's exclusive 6550 photometer, new settings can be duplicated on other 6545 monitors in just a few seconds—automatically. Whether you use default settings or your own, patented signal processing circuitry assures unequalled stability.

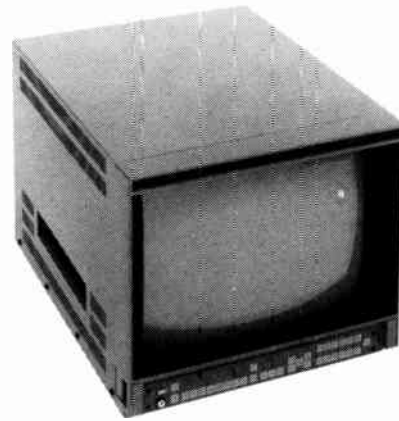
Front panel controls provide convenient, quick and precise control of all critical parameters, soft-touch controls and accurate digital electronics replace tricky knobs and potentiometers.

The parameters of the display are stored in two areas of working memory. Initially, one memory area contains the factory presets (default) and these parameters are used at power-up. The other memory area is your "working" memory which changes at the touch of a front panel control. At any time, you can store your working settings into default memory (replacing the factory settings) for future reference as you adjust the 6545, and other 6545s, to suit your application. When desired, the front controls can be locked out preventing unauthorized entry to the memory settings. Some controls can be operated remotely via a rear panel jack.

Specifications

Visual Performance

- Resolution:** > 800 TV lines
- Linearity and Geometry:** ± 1.5% of raster height
- Black Level Stability:** < 1% change of peak luminance from 10% to 90% APL
- Raster Size Stability:** < 0.4% change from 0 to 100% APL at 20fL peak luminance
- Max. Usable Brightness:** 60 fL with a sine² window
- Interface:** 2:1 > 90%
- Aspect Ratio:** 4:3
- CRT Type:** 13V or 19V precision-in-line gun, dot mask, clear faceplate
- Pitch:** 13V: 0.31mm
19V: 0.44mm



6545C19



6550



Phosphor Colorimetry: Chromaticity	American Standard Phosphors (Colormatch) Phosphor	X	Y
Coordinates (± 0.005 Tolerance):	Red	0.630	0.340
	Green	0.310	0.595
	Blue	0.155	0.070
Convergence	Display Portion	13V	19V
Max. Deviation (mm):	Center circle = height	0.5	0.5
	Elsewhere	0.7	0.9
Color Stability:	Photometer readings of red, green and blue displays show differential variations of less than 1% over a 500-hour period. The color temperature of white does not change by more than one MPCD (Minimum Perceptible Color Difference) unit between monochrome and color input signals		
Protection:	High voltage shut-down with loss of horizontal or vertical deflection		
Frequency:	47-63Hz		
Power:	200W max.		
Weight:	13"	75 lbs.	
	19"	85 lbs.	
Options			
Component video (special quote)			
6545RS19	19" monitor with rack slides and bezel		\$5565.00
6545C19	19" monitor with cabinet		5565.00
6545Y19	19" monitor with cabinet and ceiling or pedestal mount capability		5615.00
6545RS13	13" monitor with rack slides and Bezel		5375.00
6545C13	13" monitor with cabinet		5295.00
6545Y13	13" monitor with cabinet and ceiling or pedestal mount capability		5425.00
6550	Micromatch Photometer (optional)		1795.00

CONRAC DISPLAY PRODUCTS GROUP

Monochrome Monitors

2600 Series 9" Medium and High Resolution Monochrome Monitors

- 9" diagonal CRT
- 750 lines minimum resolution
- P4 or P45 phosphor standard; many other phosphors available
- Wide range of scan frequencies; up to 34kHz
- 12, 25 or 30MHz video bandwidths
- 50 fL brightness

The various models in the 2600 9" series give you a choice of high performance, low cost monitors to best fit your application. Excellent linearity, geometry and raster size stability ensure consistently superior display quality.

2620C9 9" CRT Broadcast Monitor

Additional features are added to the 2600 to create the 2620. Switchable pulse cross, underscan and notch filter are provided as front panel controls. In addition, an audio speaker with volume control, VTR input connector and AFC select are included to give you the features and flexibility you require in broadcast and video production environments. The 2620 is also available in many rackmount configurations.

The 2620 is capable of displaying a minimum of 10 discernible shades of gray. This highly stable, high performance monitor also features 525/60 or 625/50 line rates, 12VDC operation, composite video or external sync, solid-state circuitry, single board design for easy maintenance and service, front panel adjustments for display height, vertical hold and horizontal hold and convenient brightness, contrast and volume controls.

2620C9 \$460.00
 Rackmounts 175.00

2640C9 9" Medical Monochrome Monitor

The 2640 offers a crisp, stable and distortion-free display for critical evaluation of images generated by CT scanners, MR, ultrasound and many other medical diagnostic equipment. High video bandwidth, high scan rates and switchable reverse video are additional features of the 2640.

2640C9 \$695.00

2680C9 9" CRT Medical High Performance Monitor

A P45 phosphor CRT, greater brightness stability (G2 regulation), 25MHz video and dynamic focus—all standard features—the 2680 easily meets the stringent requirements for a medical display. Analysis of images generated by medical diagnostic equipment is an application best suited for the 2680.

2680C9 \$1695.00
2680N9 1585.00

2600 Series 15" / 19" Low to High Resolution Monochrome Monitor

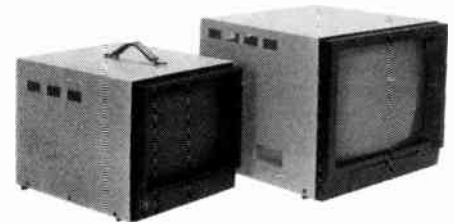
- 15" and 19" CRT sizes
- 800 line resolution
- 25MHz video bandwidth
- Non-synchronous operation
- Internal/External sync
- Dynamic focus
- Differential video input
- Modular electronics
- Back porch clamp (jumper select sync tip)

The 2600 Series monochrome raster scan monitors for broadcast, computer display, medical and other high resolution applications. Premium components, excellent geometry and linearity, and careful craftsmanship provide for consistently superior display quality.

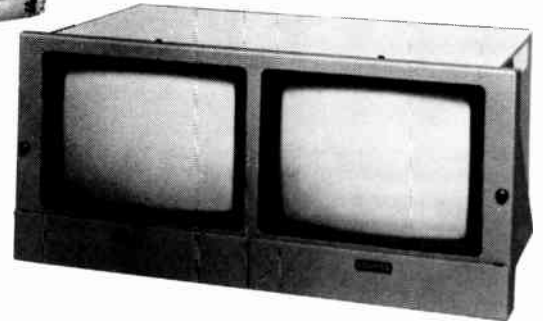
2600N15 Chassis only \$1295.00
2600NR15 Chassis only (from rackmount model) . . . 1395.00
2600C15 Cabinet 1395.00
2600N19 Chassis only 1495.00
2600NR19 Chassis only (from rackmount model) . . 1595.00
2600C19 Cabinet 1595.00



2400C19



2600N15 2600N19



2620C9

2400 High Resolution Monochrome Raster Scan Displays

- 1280 horizontal x 960 vertical pixels, at 1225 line scan resolution
- 19" diagonal, 90° deflection, 19V CRT
- 50 fL calibration, 150 fL maximum
- 50Hz to 40MHz, -3dB video bandwidth
- 15kHz-37kHz interlaced or non-interlaced. Up to 3 selectable line rates optional—525/60, 875/60, 1024/60, or customer specification

The 2400 is ideally suited to applications requiring a high resolution, high performance monochrome display. Such demands may be found in computer-aided design (CAD), computer-aided manufacturing (CAM), medical imaging, process control and similar sophisticated systems.

2400 C19 19" Cabinet model (plastic) \$3225.00
2400 C19 19" Cabinet model (metal) 3495.00
2400 R/S19 19" Rackmount with slides 3225.00
2400 N19 19" Chassis only 3045.00

QQA Series High Resolution Monochrome Monitors

- 3 switch-selectable preset line rates, from 500-1225 lines, internally adjustable
- Locks to any field rate, from 37 to 60 fields per second
- Variable aspect ratio; width and height controls are continuously adjustable to provide a range sufficient to adjust from a full to a square raster
- Differential video input to minimize hum and other extraneous pickup on long video cables
- Accepts composite video or non-composite video plus separate composite sync
- Dynamic focus
- Linearity within ± 1.5% of picture height
- DC restoration: Keyed sync tip, keyed back porch, or zero DC restoration may be selected
- Video bandwidth flat within ± 1dB to 30MHz
- Video polarity inversion, switch selectable from the front panel, option
- Separate horizontal and vertical sync input option

The QQA series high resolution monitors are used widely in such applications as medical X-ray, displays of varying scan rates, document viewing, high resolution television, and display of computer-generated images.

QQA15/C 15" Cabinet model \$3490.00
QQA15/RS 15" Rackmount with slides 3570.00
QQA15/N 15" Chassis only 3260.00
QQA17/C 17" Cabinet model 4335.00
QQA17/RS 17" Rackmount with slides 4435.00
QQA17/N 17" Chassis only 3970.00

Refer to Green Section for Addresses and Telephone Numbers.

COOL-LUX LIGHTING INDUSTRIES, INC.**Lighting/Lamps/Accessories****Mini-Cool Portable, Photographic Light**

The Mini-Cool is designed especially for photography. All its interchangeable lamps provide light which is essentially free of heat, infrared and ultraviolet radiation.

The Mini-Cool is small and light enough to attach to any video, motion picture or still camera, using the camera adaptor supplied. Or it may be handheld, using the handle included with each unit. (The handle has a hollow underside which can be fitted over a 5/8" diameter light stand column or post, but this is recommended only as an occasional practice. A far more secure mounting is provided by the stand adaptor.)

The Mini-Cool is operable from a variety of AC and DC power sources, simply by installing a lamp of corresponding voltage and an appropriate adaptor cord. The lamp socket, switch and wiring are all heavy-duty construction, easily capable of handling DC currents as well as AC. A 120V, 250W lamp is included.

Depending upon which lamp is installed, the Mini-Cool will require a power source of 120, 30, 14.4 or 12V. 12V battery packs and belts are available in several capacities (running times) and provide portable 12V power, completely independent of wall outlets.

When a wall outlet is used, the 120/12V Power Transformer (C4455) provides adequate power (up to 100W) for any of the 12V lamps. More than one lamp may be powered from the transformer, so long as their combined wattages do not exceed 100W.

The following are specific voltage requirements for each of the lamps:

FOS-1 (the standard lamp supplied with the Mini-Cool). This lamp requires 100 to 120VAC, which is the standard voltage.

FOS-2 This lamp requires 30VDC, provided by some battery packs and belts, most of which have a 2-pin receptacle. An adaptor cord for connecting this receptacle to the Mini-Cool is available (C4444).

FOS-3 through FOS-9. These lamps all require 12V, provided by a transformer or battery pack. Commercially available battery packs and belts use several styles of connector, including 3-pin, 4-pin, 5-pin and cigarette-lighter types. Adaptor cords for all these are available from Cool-Lux, as well as cords with clamps to fit posts of automotive-type batteries.

FOS-10. This lamp requires 14.4V, which is the voltage used by many video cameras and recorders. Using this lamp the Mini-Cool allows using a common power source for all items.

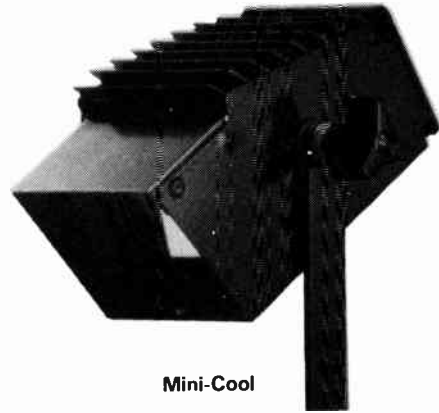
The Mini-Cool is supplied with a 1' power cord, which includes an in-line switch and terminates in a standard (household) 3-prong plug. This plug is connected to battery packs through an appropriate adaptor cord, or to a wall outlet or transformer through an extension cord. It is advisable to use 16-gauge extension cords, especially with 12V lamps. The extension cord (C4442) is 10' long, 16-gauge, with 3-wire safety construction (provides a safety ground when used with household voltage).

C4440 Mini-Cool Standard Pack (AC). Includes one each Mini-Cool Light, FOS-1 lamp, camera adaptor (C4447), and handle (C4441). Supplied in foam carton. \$99.95

C4460 Mini-Cool AC/DC Pack. Includes all items listed in standard pack plus FOS-9 lamp and 12VDC adaptor cord (C4453). Supplied in foam carton \$129.50

C4461 Cool Kit I. Includes Mini-Cool Light, Olympic L-5 battery pack (12V, 5AH), with charger, 12VDC adaptor cord (C4453), Extension cord (C4442), FOS-1 Lamp, FOS-9 lamp, stand adaptor (C4446), camera adaptor (C4447), handle (C4441), spring-clamp mount (C4452), and diffusion lens (C4449). Supplied in foam-fitted carrying case \$299.95

C4462 Cool Kit II. Includes two Mini-Cool lights, two light stands (C4451), three FOS-1 lamps, one FOS-4 lamp, two stand adaptors (C4446), two camera adaptors (C4447), two spring-clamp mounts (C4452), two scissor-clip mounts (C4469), one putty-knife mount (C4464), one 12VDC adaptor cord (C4453), three extension cords (C4442), one daylight filter (C4448) and one diffusion lens (C4449). Supplied in foam-fitted carrying case \$675.00



Mini-Cool



AC/DC Pack

C4463 Cool Kit III. Includes three Mini-Cool Lights, five FOS-1 lamps, one FOS-3 lamp, three stand adaptors (C4446), one camera adaptor (C4447), three spring-clamp mounts (C4452), two scissor-clip mounts (C4469), one putty-knife mount (C4464), one 12VDC adaptor cord (C4453), three extension cords (C4442), one cube tap (C4471), one daylight filter (C4448) and one diffusion lens (C4449). Supplied in foam-fitting carrying case \$675.00

Mini-Cool Lamp Data**Cool-Lux™ Lamps for Mini-Cool**

FOS-1	Lamp, 120V, 250W, Wide Beam.	\$24.95
FOS-2	Lamp, 30V, 200W, Wide Beam	29.95
FOS-3	Lamp, 12V, 100W, Wide Beam.	29.95
FOS-4	Lamp, 12V, 50W, Wide Beam.	24.95
FOS-5	Lamp, 12V, 25W, Wide Beam.	24.95
FOS-6	Lamp, 12V, 50W, Narrow Beam	24.95
FOS-7	Lamp, 12V, 25W, Narrow Beam	24.95
FOS-8	Lamp, 12V, 75W, Narrow Beam	24.95
FOS-9	Lamp, 12V, 75W, Wide Beam.	24.95
FOS-10	Lamp, 14.4V, 95W, Wide Beam	28.95
FOS-11	Lamp, 120V, 150W, Wide Beam.	24.95

Mounting Devices

C4447	Camera Adaptor	\$ 9.95
C4446	Stand Adaptor	9.95
C4493	Universal Two-Light Mount	14.95
C4452	Spring-Clamp Mount.	16.95
C4469	Scissor-Clip Mount.	9.95
C4464	Putty-Knife Mount	14.95
C4476	Sliding-Jaw Clamp Mount	24.95
C4490	5/8" Dia. Mounting Post (1/4" -20 hole)	4.95
C4441	Handle	2.95
C4451	Collapsible Light Stand	79.95
C4420	Dummy Battery	19.95

COOL-LUX LIGHTING INDUSTRIES, INC.

Lighting/Power Belts and Packs

Micro-Lux Camcorder Light

- Greatly improves picture quality of Low-Lux cameras
- Uses only 35W at 12VDC (or AC via adaptor)
- Will run off (Olympic) L-6.5 for two full hours
- Quartz 3200°K lamp (included)
- Life 2000 hours
- Capable of producing 9000 candle beam power
- Built-in diffusion lens
- Capable of delivering high volumes of halogen treated luminescence, from a near point tungsten source, encapsulated in an all-quartz envelope, and delivered through its efficiently engineered, interchangeable reflector system
- Size: 3 1/4" x 1 3/4" x 1 3/4"
- Weight: 3 oz.
- Material: High grade aluminum
- Finish: 25µ anodized (high temp.)
- Colors: Black, silver, red, gold or blue

C4401 Micro-Lux \$79.95

Olympic™ 12V Power Belts and Packs

- 12V power belts, 13AH and 20AH models
- 6.5AH power pack
- Advanced technology starved electrolyte cells
- Long life, up to 2000 charge/discharge cycles
- No "memory" effect
- Exceptional deep discharge recovery
- Built-in heavy-duty charger and solid-state voltage monitoring with all power belts
- Power packs and belts designed for maximum wearer comfort
- More power than NiCads, less than half the cost
- Also available with 4-pin connector
- Power packs available in 8 colors

Olympic Batteries, Chargers and Transformers

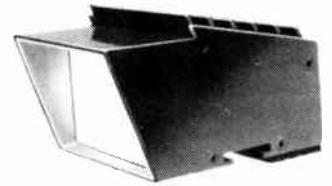
- C4494** Olympic L-13 Battery Belt, standard model \$279.95
- C4495** Olympic L-13 Battery Belt, 4-pin model 294.95
- C4496** Olympic L-20 Battery Belt, standard model 329.95
- C4497** Olympic L-20 Battery Belt, 4-pin model 344.95
- C4499** Olympic L-6.5 Battery Pack 99.95
- C4455** Power transformer, 117V/12V, 100W 49.95
- C4480** Plug-in battery tester 29.95
- C4466** Universal Quick Charger, 117VAC or 220VAC to 12VDC 49.95
- Olympic N-2.5 Battery Pack designed primarily for low-current camcorders 129.95

Replacement Parts

- C4491** Single cell for Olympic L-13 belt \$28.00
- C4492** Single cell for Olympic L-20 belt 32.00
- C4485** Case only for Cool Kit I (includes foam set) 40.37
- C4486** Foam set only for Cool Kit I case 8.71
- C4411** Extra cubed foam for bottom of starcase 9.50
- C4412** Extra wave foam for top of starcase 5.00
- C4413** Extra long partition (330mm = 13") for starcase 2.50
- C4414** Extra short partition (127mm = 5") for starcase 1.50

Light Controlling Devices

- C4448** Daylight filter \$19.95
- C4449** Diffusion lens 4.95
- C4450** Precision light framer 39.95
- C4456** Photo Dimmer™ 29.95



Micro-Lux



Olympic

Connecting Cords, Battery to Light

- C4444** Cord, 2-pin plug to household female \$24.95
- C4443-3** Cord, 3-pin plug to household female 19.95
- C4443-4** Cord, 4-pin plug to household female 19.95
- C4443-5** Cord, 5-pin plug to household female 19.95
- C4453** Cord, cigarette lighter plug to household female 10.95
- C4473** Cord, battery clamps to household female 14.95

Connecting Cords, Battery to VCR

- C4504** Cord, cigarette lighter plug to 4-pin DIN plug \$12.95
- C4505** Cord, cigarette lighter plug to 5-pin DIN plug 12.95
- C4508** Cord, cigarette lighter plug to 8-pin DIN plug 12.95
- C4511** Cord, cigarette plug to 11-pin DIN plug 12.95
- C4514** Cord, cigarette lighter plug to 14-pin JVC plug 12.95
- C4525** Cord, cigarette lighter plug to 2.5mm coax plug 9.95
- C4530** Cord, cigarette lighter plug to 3.0mm coax plug 9.95

Other Connecting Devices

- C4442** 10' extension cord, 16 gauge, 3-wire \$ 7.95
- C4471** 3-way cube tap, 3-wire (grounded) 4.95
- C4475** Cord, cigarette lighter to dual cigarette lighter receptacles 10.95

MICHAEL COX ELECTRONICS LTD.

Color Corrector/Encoder

600J Color Corrector

- Exceptionally wide range of color correction
- Accepts any NTSC video signal from any source
- Virtually transparent, does not decode
- User friendly control panel cuts post-production time
- Full control of chroma gain, luminance gain, set-up and black stretch/compression
- Up to 350ns of chroma/luminance delay correction
- Each correction parameter may be switched in or out independently, together with correction in or out
- Sync, blanking and subcarrier regenerated from input video, no external pulses required
- Optional SMPTE time code control for frame by frame correction and event storage

The 600J is available with either a manual "on the fly" control panel or a time code control system for integration into a VTR edit suite, enabling frame by frame color correction.

The color corrector may be ordered with time code control or may be field updated at any time with this option.

The time code control system consists of three separate units: a color corrector control panel, a time code control panel and a time code electronics unit.

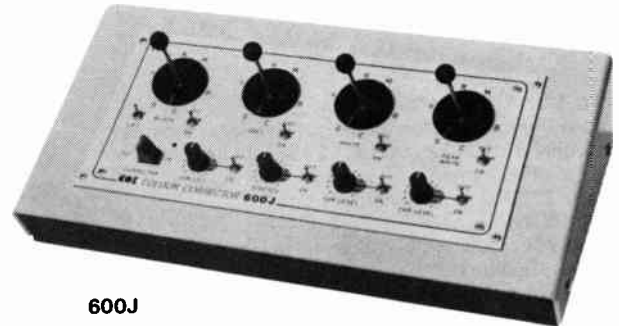
As all remote functions must be digitized in order to be stored, a different remote control panel must be used with the time code control option. This panel has "sprung center" joysticks and pots with two color LEDs on all correction parameters to give a visual indication of control panel settings. All correction on/off switching is done via push-buttons.

A second control panel contains readouts for the self-contained SMPTE time code reader plus current event and next event readouts.

A fourth readout indicates preset information from the on-board keypad. Pushbuttons for entering and modifying time code, previewing, etc. are also contained on this remote panel.

Specifications

Input Level:	1V p-p composite, 75 ohm
Input Return	
Loss:	46dB up to 100kHz 40dB up to 5.5MHz
Output Level:	1V p-p composite, 75 ohm



600J

Output Return	
Loss:	35dB up to 5.5MHz
Insertion Gain:	0 ± 0.1dB
Frequency Response:	± 0.1dB 100kHz to 5.5MHz ± 0.2dB-1dB 5.5MHz to 8MHz smooth roll off above 8MHz
50Hz Square Wave	
(Field Tilt):	1%
2T Pulse to	
Bar Ratio:	0.5%K
2T Bar Slope:	0.5%K
2T Pulse	
Shape:	1.0%K
Luminance-Chrominance	
Gain Inequality:	± 1%
Luminance-Chrominance	
Delay Inequality:	± 10ns
Line Time	
Non-Linearity:	1%
Differential Phase:	0.5°, 10-90% APL
Differential Gain:	0.5%, 10-90% APL
Hum On Output:	1mV p-p
Noise On Output:	-65dB, 10kHz-5.5MHz unweighted
Switching Transients:	± 10mV
Total Path Length:	1.6µs approx.
Basic 600J	\$13,500.00
660 Component Color Corrector	13,500.00
Time Code Control System (option)	13,500.00

204N NTSC Encoder

- Rugged mechanical construction
- All user controls behind hinged front panel
- Six composite NTSC outputs
- Switchable inputs RGB/YRGB/Y, R-Y, B-Y
- Component input level user adjustable
- Internal horizontal sync timing
- Blanking regenerated from input sync
- 360° subcarrier phasing
- Switchable luminance notch filter
- 18 on-board test signals

Specifications

Inputs:	Looping, high impedance. Switchable between the following: RGB: 700mV; YRGB: 700mV; Y, R-Y, B-Y: 1V p-p; R-Y, B-Y: user presettable to all formats Sync: 1V-6V auto level sensing, looping, high impedance Subcarrier: 0.5V-2V p-p, looping, high impedance Return loss on all inputs: 41dB to 5MHz
Outputs:	6 composite NTSC, 1V p-p into 75 ohms return loss 40dB to 5MHz
Video Performance	
Luminance Response:	± 0.15dB to 5.5MHz
Chrominance Response:	As per FCC Rules and Regulations, Vol. III, part 73
Luminance Non-Linearity:	1%



204N

Chrominance	
Non-Linearity:	1%
Insertion Delay:	1100ns nominal
Luminance/Chrominance	
Delay Inequality:	± 7ns
Tilt (Line and Field):	< 1%
Sync Risettime:	125ns
Sync Delay:	Adjustable up to 1.5µs
Residual Subcarrier:	< 2mV (-54dB)
Subcarrier Phasing:	> 360°
Set-Up:	Adjustable 0 to 10 IRE and switchable on/off
Mechanical and Electrical	
Dimensions:	1 3/4" x 19" x 12"
Weight:	7 1/2 lbs.
Power:	95-130VAC/190-265VAC, switchable 50/60Hz < 20VA
204N	\$4,200.00

CROSSPOINT LATCH CORP.**Post-Production Switcher****6129AHK Post-Production Switcher****Six Levels of Video:**

- Background level
- Level 1 (A Bus)
- L2 (C Bus)
- Insert Chroma key (option)
- DSK matte
- DSK insert/outline (option)

Effects Generator:

- Two ME systems
- 32 patterns (standard) for ME1
- 32 patterns (option) for ME2
- ME2 shares ME1 generator when second pattern option not installed
- Each ME system has keyer
- MIX/WIPE with independent MIX and WIPE in each ME system
- Symmetry, Hard/Soft, Borders, Positioners

Chroma Keying:

- RGB Chroma keyer standard uses buses for video
- Second Chroma keyer RGB or Encoded (option) has separate encoded input and is an additional video level
- 2 modes switch in, with background fade out or dissolve foreground in

Luminance Keys:

- 2 keys on in each ME system Wipe key, Mix key, Mask key
- Downstream key (matte)
- DSK with shadow and border (option)

Pulse Drive System:

- Inputs: Sync and Subcarrier (360° adj.) PAL requires additional Blanking & B. Gate
- Genlock Sync Generator (option) Auto change-over on loss of inputs

Signal Processing:

- Blanking processor
- Test Mode for system timing
- Dual clamps on all video inputs
- Master Fade to Black

Video Inputs:

- 8 looping primary
- 2 external ME key inputs
- 4 inputs for optional DSK
- RGB and ENC for optional Chroma key
- RGB for standard Chroma key

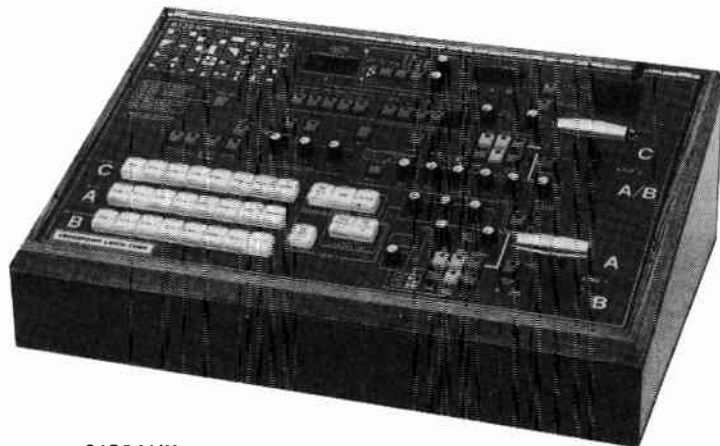
Downstream Keyers:

- 2, standard matte keyer optional matte or insert keyer with drop shadow and outline (outline only in matte mode)
- 4 input selector for optional DSK

Colorizers:

- Three, one background, two for borders (one border colorizer for DSK fill)

Over a background video signal, the 6129AHK can insert two video signals each with a different pattern, a chroma key between the two pattern levels, a matte DSK over that, with a second DSK having border and drop shadow capability (insert or matte key) over the entire combination. Its Insert Chroma keyer is an additional video input which permits foreground dissolve-in or background dissolve-out. Each Mix-Effects system has its own keyer which can be wiped, masked, or mixed in. Fader arms can be delegated to Effects transitions, Chroma keyer, DSK and Fade to Black. All fader arm operations can be controlled by 0-999 Frame auto transitions, GPI or Panel triggerable (Five ramps).

**6129AHK**

Automation is very sophisticated. Two modes, five independently triggerable, resettable ramps with different durations, and 100 Sequences which can run all stored analog functions smoothly between Events (border color, positioner, symmetry etc.) Automated effects can be controlled from Editor.

Specifications

Video Inputs:	8, looping
Signal-to-Noise:	> 65dB
Crosstalk:	> 53dB
Path Difference:	± 1°
Differential Phase:	< 1°
Differential Gain:	< 0.04°
Tilt:	< 0.25%
Power:	110/220V, 70W
Black Burst Outputs:	4
Genlock Inputs (option):	1
Pulse Inputs:	Sync, subcarrier (PAL requires Burst Gate and Blanking)
Weight:	45 lbs.
Dimensions:	Control panel table mount — 20.5" x 12.5" — 3.5" front 7" rear Rackmount: 19" x 12.5" — 3.5"D Electronics: 19" x 7" — 20"D

6129AHK \$10,995.00

Options

PCC1001846	Editor module (specify editor) Smart Interface	\$1,500.00
PCC1001731	Convergence Interface	1,500.00
PCC1001193	Insert Chroma keyer (RGB)	1,675.00
PCC1000695	Insert Chroma keyer, encoded	1,675.00
PLA9000510	Downstream keyer, outline, drop shadow ..	1,995.00
PCC1001695	Genlock Sync Generator NTSC Version ..	1,000.00
PCC10002322	Genlock Sync Generator PAL Version	1,000.00
PCC1001314	Second Pattern Generator	1,087.00
PCC1002386	Next Event Preview	1,200.00
	Stereo Audio follow, seven inputs; (6800); Auto Disc (7215)	
PCC1002433	16 video inputs	1,995.00

CROSSPOINT LATCH CORP.

Switchers/Interface Unit

8200 Dual TBC Full Switcher

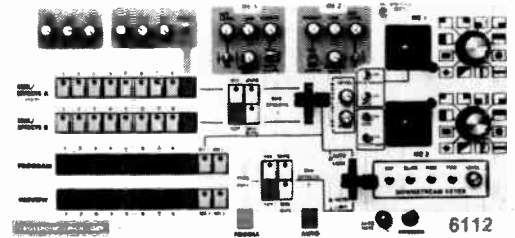
• 5 input video switcher with 2 built-in TBC's • 2 levels of keys (1 insert key one matte key) • Mix key, wipe key, mask key and Mosaic key • 16-line windows on TBC's with digital effects • 8-bit luminance and two 6-bit chroma channels • Mosaic, posterization, push, pull and slide • Separate outputs for each TBC • Blanking processor and test mode for timing • 12 wipe patterns with joystick positioner • Variable soft edges, colored borders • Auto transitions GPI triggerable • Background colorizer • Genlockable sync generator (RS170A) • 4 blackburst outputs • 2 advanced blackburst outputs • 2 advanced sync outputs • 2 input audio mixer • Audio follow and breakaway



8200

Accessory Models

- 6045 Color Bars and RGB Chroma Keyer \$ 895.00
- 6065 Encoded Chroma Keyer 1,428.00
- 6053 BVE800 Trigger Box 175.00
- 6800 Stereo Audio Follow Mixer 3,623.00
- 6061 Expansion Pattern Generator (32 matrix patterns) 1,800.00
- 8200C Super VHS TBC's, Composite Switcher 10,995.00



6112

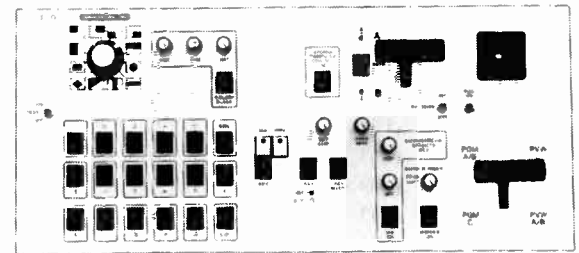
7282 Editor Interface Unit

This option allows the 8200 to communicate serially with editors or computers and to perform frame accurate transitions under editor control. RS232/RS422.

- 7282 \$2,995.00
- Parallel to Serial Converter (PCC-1002370) 895.00

6112 Production Post-Production Switcher

• 8 inputs, 4 buses • 2 mix effects systems • 12 patterns on each ME • Wipe, mix, mix/wipe modes • 2 positioners • Downstream keyer with matte and insert key modes • Downstream keyer accepts external border input • Pattern modulator • Bordered wipes • Adjustable soft edges • Chroma keyer can be switched into either ME system • Each ME has internal, external and chroma keyer • Blanking processor



6119

Accessory Models

- PC C1001695 Genlock Board (on loss of Genlock signal, automatically switches to external drive, and then automatically switches to internal Sync Generator). Tally Relay Board (NTSC). \$1,000.00
- PC C1000695 Second chroma keyer (NTSC) (RGB and Enc.) 1,675.00
- 7209 Computerized effects controller 3,105.00
- 6800 Stereo Audio Mixer. 3,623.00

6109 Production Switcher

• 3 buses, 7 inputs • 32 patterns • RGB chroma keyer • Auto transitions GPI triggerable • Downstream keyer with matte and insert modes • Automatic preview • Pattern modulator • Colorizer • Colored borders • Variable soft edges • Blanking processor

Accessory Models for 6109

- PC C1000695 Encoded chroma keyer (plug in board) (NTSC) \$1,675.00
- PC C1002195 RGB chroma keyer (plug in board). 1,675.00
- PC C1001824 Encoded chroma keyer PAL 1,675.00
- Slimline control panel (4" deep) (6112 only) 500.00
- PC B1000984 Tally relay board 156.00
- PC A1001542 OVE output specify ME 176.00
- 6800 Stereo audio mixer 3,623.00

6700 RGB Matrix Switcher

• 8 sets of 3 inputs • Designed to switch RGB signals for chroma keyers • Follows inputs on 6112, 6124, 6139 switchers

- 6700 \$1,500.00

6119 Compact Self Contained Production Switcher

• Built-in genlockable sync generator (RS170A in genlock mode) • 5 inputs, 3 buses • 2 levels of keying • Master fade-to-black • Auto transitions GPI triggerable • 12 wipe patterns with true joystick positioner • Variable soft edges • Adjustable colored borders • Colorizer • Dissolve to a split screen • Key invert on DSK • 2 fader arms • 4 black burst outputs • Test mode for system timing

- 6119 \$2,995.00

Accessory Models

- 6045 Color Bars and RGB Chroma Keyer \$ 895.00
- 6065 Encoded Chroma Keyer 1,428.00
- 6053 BVE800 Trigger Box 175.00
- 6800 Stereo Audio Follow Mixer 3,623.00
- 6061 Expansion Pattern Generator (32 matrix patterns) 1,800.00

Editor Interface Unit

This option allows the 6119 to communicate serially with editors or computers and to perform frame accurate transitions under editor control RS232/RS422.

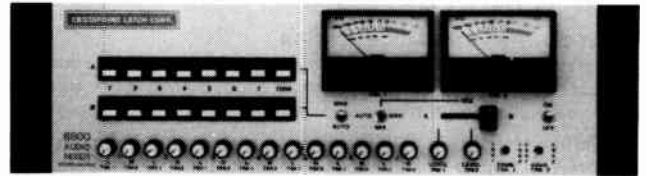
- PCE 1002150 \$2,850.00

Accessory Model

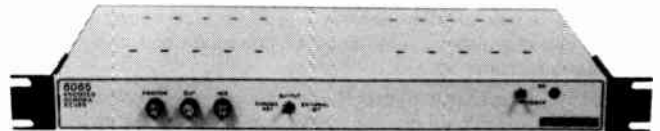
- 6055 Parallel to Serial Converter \$895.00
- (For Convergence editors only. Must accompany PCE 1002150.)

CROSSPOINT LATCH CORP.

Signal Processing Equipment



6800



6065



6045

6800 Programmable VTR Audio Mixer

- Designed primarily for use with VTR editing controllers
- Can perform automatic cuts and mixes, with durations accurately programmable up to 999 frames
- Seven stereo inputs with individual gain controls for each channel
- The two channels (tracks) may be reversed at the output, or combined into either output channel
- This allows the use of the SMPTE time code on the free audio channel of the recording VTR
- Input selection may be manually overridden by switches on the front panel
- Mixing may also be performed manually from the front panel, if required
- Each output channel has a gain control
- A separate VU meter is provided for each set of stereo inputs
- Both mixers are simultaneously controlled by a single slider or by the automatic ramp generator

6800 \$3,623.00

8105 Digital Timebase Corrector

- 16 line window
- 8 bit resolution producing 320 lines
- 4X subcarrier sampling
- Heterodyne operation also features mosaic, posterization, built-in sync generator and other unique features

8105 \$4,990.00

6065 Encoded Chroma Keyer

- Provides key output for any switcher
- Self contained
- Requires no external drives
- Accepts external key input
- Keys on any color

6065 \$1,428.00

6045 RGB Chroma Keyer, Color Bars Tone

- Full field bars
- RGB chroma keyer
- External key input
- Provides key output for any switcher
- Derives power from any CLC switcher or from 6030 power supply

6045 \$895.00

6030 Power Supply 296.00

6070 Sync Generator

- RS170A; genlockable
- 3 1/2" rackmount
- Field identification pulse
- 6 black burst outputs
- SMPTE color bars
- Special test outputs for checking Sc/H phase on any video signal
- High stability subcarrier oscillators without ovens (oven available as option)
- 5Hz (1.4p-p m), or 1Hz (0.3p-p m) without oven or 0.1Hz (0.03p-p m) with oven
- Available in PAL or NTSC PAL version has PAL ID and line switching
- Locks to correct 4 field sequence in NTSC and 8 field sequence in PAL
- Subcarrier adjustable through 360°
- Horizontal adjustable plus or minus 5µs

6070 Subcarrier stability ± 10Hz \$1,595.00

6070 Subcarrier stability ± 1Hz 2,265.00

6051 Precision RGB Encoder

- Broadcast quality, RS170A
- Genlockable with internal sync generator
- Locks to correct 4 field NTSC; 8 field PAL
- Sync and subcarrier outputs
- Locks to black burst, comp video or sync
- Operates with non-standard sync
- Internal color bars for test
- Front panel subcarrier and horizontal controls for genlock mode
- 1 3/4" rackmount

6051 \$2,400.00

CROWN INTERNATIONAL, INC.

Microphones and Accessories

PZM®, PCC®, GLM™ and CM
Microphones and Accessories

PZM (Pressure-Zone Microphone) works on a principle of sound detection, utilizing the pressure zone at an acoustic boundary to eliminate phase-cancellation problems common to other microphones.

The active element in a PZM mike is an electret-condenser capsule, mounted so it faces the boundary and lies within the pressure zone. All incoming sound is received free of coloration caused by phase interference between direct and reflected sound. The sound pickup pattern of the PZM is hemispherical with no axis.

The PZM family of microphones will reproduce sound levels up to 150dB without distortion. Whispered conversations thirty feet away are clearly reproduced.

The GLMs (Great Little Microphones) are miniature condenser microphones of professional quality. They attach to musical instruments or clothing for sound reinforcement and recording. A full line of mounting accessories is available.

PZM-30RB, 30RG Studio PZM, 5" x 6" boundary plate, black or gold, XLR connector. Emphasized high-frequency response \$349.00

PZM-30FS Studio PZM with flat high end. 6" x 5" silver-colored boundary plate, XLR connector349.00

PZM-6RB, 6RG Low-profile PZM for conference or plexiglass panel. Emphasized high-frequency response, 2 1/2" x 3". Male XLR connector on 15' cable, black or gold.349.00

PZM-6FS Low-profile PZM, flat high end. Silver-colored boundary plate, 2 1/2" x 3". Male XLR connector on 15' cable349.00

PZM-20RG Mounts flush with a table, or in a standard 4" x 4" electrical box. Built-in electronics adapt the unit for phantom powering319.00

PCC-160 Supercardioid surface-mounted microphone for stage floors, lecterns, and news desks. Increases gain-before-feedback and rejects unwanted sounds to the rear. Male XLR connector on 15' cable275.00

PH-4 48V phantom power supply for all types of microphones. XLR connectors for four mikes. Slave units (PH-4S) can be daisy chained for up to twenty PZM mikes per system. 12" x 7 1/10" x 1 3/4". Ears available for rackmounting. Operates on 120 or 240VAC189.00

PZM-180 Table-top, handheld or adaptor-mounted microphone. Built-in power supply interface, phantom power or internal battery. Fiber-reinforced high-impact plastic body and boundary. 7" long. XLR connector189.00

PZM-12SP Black, phantom only139.00

GLM-100 Miniature omnidirectional condenser microphone. High SPL capability; reduced pickup of handling noise and wind noise. Male XLR connector on 8' cable199.00

GLM-100/E Comes without connector for connection to a wireless mike transmitter98.00

GLM-100/ENG Miniature omnidirectional electret-condenser microphone. Battery or phantom powered. Wide, smooth frequency response (80Hz-15kHz). Includes tie mount and two styles of windscreens for outdoor use239.00

GLM-100/D Low profile. Dual lavalier omnidirectional condenser microphone. Wide-range frequency response (50-18kHz). Very high overload level (150dB SPL) and very low vibration pickup379.00

GLM-200 Miniature hypercardioid condenser microphone. Increases gain-before-feedback; reduces pickup of leakage, background noise and room acoustics. Male XLR connector on 8' cable229.00

GLM-200/E Comes without connector for connection to a wireless mike transmitter (through a bass-boost interface)110.00

GLM-200/D Low profile. Dual lavalier unidirectional condenser microphone. Rejects background noise and room acoustics.429.00

GLM-OHM Boom stand mount. Boom arm length is 60"; boom diameter is 1/4"49.00



PZM-30R



CM-200



PZM-6R



PCC-160



PZM-180



PH-4



PZM-20RG



GLM-100



CM-100 PZM* Hand-held mike for stage vocals. Natural sound. Omnidirectional. Extremely low handling noise and pop. Lo-Z balanced. \$189.00

CM-200 Hand-held cardioid condenser mike for stage vocals/instruments. Smooth, articulate sound. Very low handling noise and pop. Lo-Z balanced209.00

CM-300 Differoid™ Hand-held differential condenser mike for stage vocals. Cardioid. Warm, crisp sound. Extremely high gain-before-feedback. Lo-Z balanced259.00

Add \$50.00 for wood handles for CM select series mikes.

Sound Grabber Black, Hi-Z, built-in battery power supply . . . \$ 99.00

PH-4S Slave unit for PH-4119.00

PH-1 Single channel battery phantom unit69.00

A240 2' x 2' boundary99.00

ASA1 Mike stand adaptor15.00

RMP Kit Rack ears for PH-4 or PH-4S.15.00

CM-1 Video camera mount accessory for Sound Grabber use with ASA120.00

WS-1 Windscreen for PCC-16029.00

GLM-DM Mounts a GLM to a drum4.50

GLM-CM Mounts a GLM to a cymbal.29.00

GLM-TM Mounts a GLM to a tie or garment7.00

GLM-TT A "tie tac" accessory for GLM.4.50

GLM-UM Universal clip GLM accessory7.50

GLM-HM Mounts a GLM to a horn16.50

GLM-WS2 GLM windscreen.4.50

GLM-SM Surface mount accessory.7.00

GLM-SP Stick pin mounting accessory7.00

PZMicrophone®, PZM, Pressure Zone Microphone, PCC and Phase Coherent Cardioid are registered trademarks, and GLM™ is a trademark of Crown International, Inc.

DATATEK CORP.**Video-Audio Routing Switchers****D-2000 SERIES ROUTING SWITCHERS**

• Compatible matrix frames of 50 x 25, 25 x 25 and 25 x 20 used as building blocks for systems of up to 256 inputs, with up to 8 levels of control • Easily field expandable—no need to specify initially the future matrix size • Switcher is output oriented with each output bus having its own microprocessor control system, independent of every other output bus • Serial data control system using RG-59/U coax—with opto-isolators in the control lines to avoid compromising reliability due to ground loop hum • D-4300 series switching units can be furnished with compatible microprocessor controls, for use where small auxiliary switchers are needed for special purpose additional levels • Non-proprietary components, available through electronics distributors, used throughout • All plug-in modules interchangeable with other modules of same type. Switcher remains within specifications, without readjustment, when modules interchanged.

The Datatek D-2000 series of Video and Audio Routing Switchers use a variety of compatible matrix frames to make up systems of various sizes for video, audio, SMPTE time code and intercom.

The D-2000 series switchers are easily field expandable without down time, by adding matrix frames and interconnecting them with plug-in cables. There is no need to specify initially the future size of the switcher, provided the ultimate size is not greater than 256 inputs.

The switchers are output oriented both from a signal and a control standpoint. Output modules are either 25 x 1 or 50 x 1 and each output module has its own microprocessor control system which is completely independent of the control system on any other output bus. This provides maximum bus security since failure of a microprocessor or shorting a control line will affect only one bus and not the entire matrix.

Further, since each output bus has its own control system, the crosspoint tally fed back to the control panel is generated on the same module as that on which the crosspoint is located. A positive crosspoint tally status for the bus is generated, rather than a tally generated from a central control module serving many output busses.

Serial data is used over standard RG-59/U coaxial cable to connect the matrix frames to the control panels. This simplifies installation and reduces cost. To insure that ground loop hum does not compromise the reliability of the serial data control system, control panels are equipped with opto-isolators.

By combining a video matrix frame with one or more audio, time code, etc. matrix frames, multi level systems can be assembled for video, audio, stereo audio (left and right), SMPTE time code, intercom, tally, and machine assignment. The control system provides for up to 8 levels of control, any of which may be "follow video" or "breakaway".

Where an auxiliary matrix of small size is needed, D-4300 series switching units can be equipped with compatible microprocessor control modules, and controlled as part of the D-2000 switcher. This is useful where a small video or audio auxiliary matrix is needed for special purpose additional levels for switching audio, tally, intercom, SMPTE time code, synclock, cursors, time base correctors, etc.

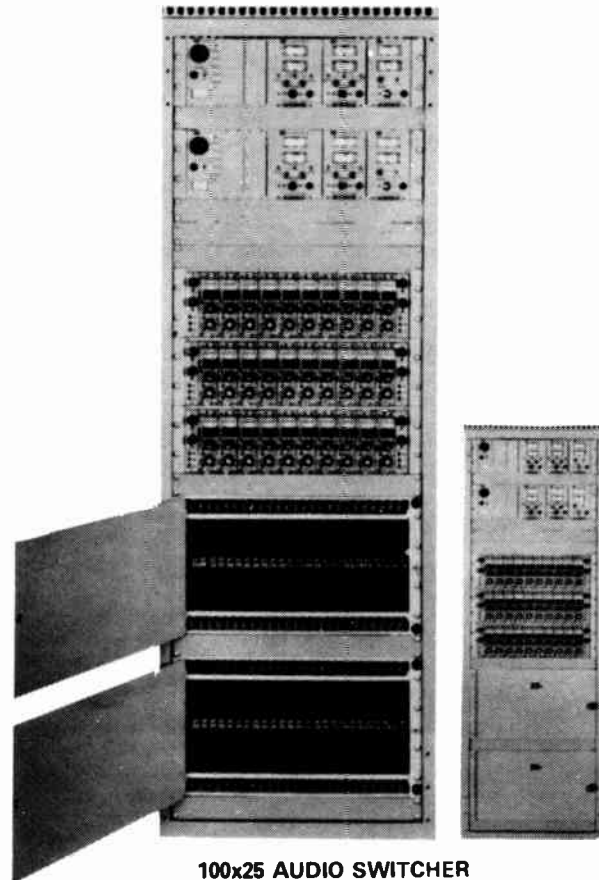
D-2000 Series Video and Audio Routing Switchers

The D-2000 Series Routing Switchers use a serial data control system and have expansion capability to 250 inputs x 250 outputs.

- D-2000-25x20V** Video Routing Switcher. Basic "Building Block" matrix frame capacity is 25 inputs x 20 output busses. Frame size is 7 inches.
- D-2000-25x25V** Video Routing Switcher. Basic "Building Block" matrix frame capacity is 25 inputs x 25 output busses. Frame size is 8-3/4 inches.
- D-2000-50x25V** Video Routing Switcher. Basic "Building Block" matrix frame capacity is 50 inputs x 25 output busses. Frame size is 10-1/2 inches.
- D-2000-25x20A** Audio Routing Switcher. Basic "Building Block" matrix frame capacity is 25 inputs x 20 output busses. Frame size is 7 inches.
- D-2000-25x25A** Audio Routing Switcher. Basic "Building Block" matrix frame capacity is 25 inputs x 25 output busses. Frame size is 8-3/4 inches.

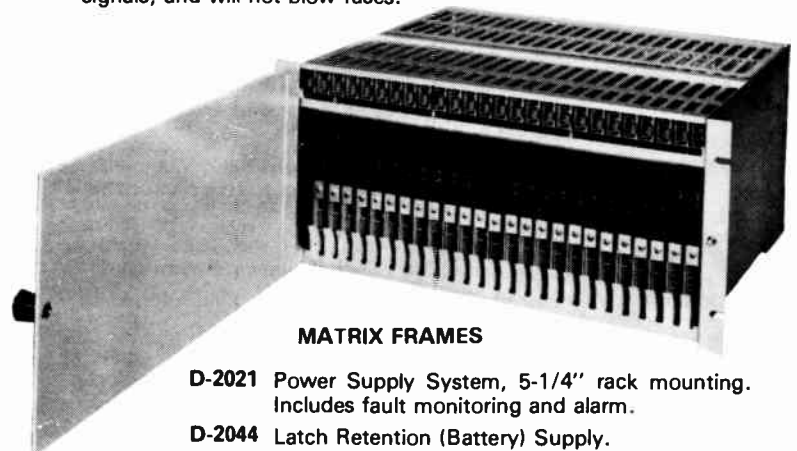
D-2000-50x25A

Audio Routing Switcher. Basic "Building Block" matrix frame capacity is 50 inputs x 25 output busses. Frame size is 10-1/2 inches.

**100x25 AUDIO SWITCHER**

There are no proprietary components used in the Datatek switching systems. All components are available through electronics distributors as standard items.

All plug-in modules are interchangeable with other modules of the same type, and the switcher will remain within specification, without adjustment, when modules are interchanged. If cable equalization is used, the cable equalizer would of course normally need to be reset. Removal or insertion of modules with power on will not disturb other signals, and will not blow fuses.

**MATRIX FRAMES**

- D-2021** Power Supply System, 5-1/4" rack mounting. Includes fault monitoring and alarm.
- D-2044** Latch Retention (Battery) Supply.
- D-2045** Control Buffer Frame, 3-1/2", for use with X-Y Control Panels.
- D-2014** Source Tally Relay Frame, 1-3/4"
- D-2019** Parallel Interface Frame, 5-1/4"

Refer to Green Section for Addresses and Telephone Numbers.

B-445



D-2047 Three Bus Lever Switch Control Panel



D-2029 Single Bus Touch Pad Control Panel

D-2000 Series Control Panels

Each Datatek control panel is equipped with its own microprocessor to communicate with an associated output bus microprocessor in the matrix frame. The serial data control system uses RG-59/U coaxial cable, with an optoisolator in each bus to prevent errors due to ground loop hum.

Control panels are available to operate either a single bus, or multiple busses. They are also available for audio-follow-video, audio or video breakaway, and for controlling multiple levels, either on a follow or breakaway basis. In addition, the control panels can be lever switch, touch pad keyboard, or pushbutton per input.

Modems and RS-232-C interfaces are available to operate single or multiple busses over standard telephone lines, or connected to automation systems.

Control Panels — Some of the D-2000 series control panels are listed below.

- D-2029** Single Bus Touch Pad Control Panel, 1-3/4" Rack Mounting, for video-only, audio-only, or audio-follow-video switching. With two LED displays, one for preset (selection) and one for line. With reset and take button.
- D-2030** Single Bus Touch Pad Control Panel, 1-3/4" Rack Mounting, for one video and two audio channels, with provisions for switching audio-follow-video or breakaway of one or both of the audio channels. Includes three LED displays, one each for video and audio channels 1 and 2. Includes switch level select switch, reset and take button.
- D-2031** Single Bus Touch Pad Control Panel, 1-3/4" Rack Mounting, for audio-follow-video or audio breakaway switching. With two LED displays, one for video source and one for audio source. Includes split-audio switch, reset and take button.
- D-2032** Portable Diagnostic Control Unit, for checking matrix status from front of rack. Includes LED displays and touch pad keyboard. May also be used as a single bus control panel.
- D-2033-25** Single Bus Pushbutton Control Panel, 1-3/4" Rack Mounting, with 25 illuminated pushbutton switches.
- D-2033-25S** Single Bus Control Panel, 1-3/4" Rack Mounting, with 25 illuminated pushbutton switches. Provision for split audio switching.
- D-2033-25P** Single Bus Control Panel, 1-3/4" Rack Mounting. Programmed to control any 25 specified inputs out of the matrix.
- D-2033-50** Single Bus Pushbutton Control Panel, 3-1/2" Rack Mounting, with 50 illuminated pushbutton switches.
- D-2033-50S** Same as above, but with additional switch for split audio switching.
- D-2034 S** Multi-Bus Touch Pad Control Panel, 3-1/2" Rack Mounting, for operation of the full matrix or a portion of the matrix, including provision for split audio operation. Includes two LED displays, one for output bus and one for input selected. With touchpad, reset and take button. Equipped with key-lock inhibit of the take switch to prevent accidental interference with individual bus control panels. Requires also D-2045 Control Buffer Frame.

B-446

Refer to Green Section for Addresses and Telephone Numbers.

- D-2037** Single Bus Control Unit, 2-digit lever switch input selection, no take button. Signal switches as lever switch changed. In miniature housing.
- D-2040** Single Bus Desk Top Control Panel, touch pad input selection with reset and take button, and LED status display.
- D-2041** Single Bus Desk Top Control Panel, lever switch input selection with take button.
- D-2042** Single Bus 2-Digit Lever Switch Control Panel, 1-3/4" Rack Mounting, with LED status display and take button.
- D-2042A** Single Bus 3-Digit Lever Switch Control Panel, 1-3/4" Rack Mounting, with LED status display and take button.
- D-2047** Three Bus 2-Digit Lever Switch Control Panel, 1-3/4" Rack Mounting.
- D-2049** Two Bus 2-Digit Lever Switch Control Panel, 1-3/4" Rack Mounting.
- D-2049A** Two Bus 3-Digit Lever Switch Control Panel, 1-3/4" Rack Mounting.
- D-2050** Supervisory CRT Terminal and X-Y Control Panel. Requires also D-2045 Control Buffer Frame.
- D-2036** Alpha-Numeric Single Bus Control Panel, 1-3/4" Mounting, 10 Alphas and 10 numerics/Alpha.
- D-2069A** Alpha-Numeric Single Bus Keypad Control Panel, 1-3/4" Rack Mounting, 12 Alphas and 99 numerics/Alpha.
- D-2098** Two Bus Keypad Control Panel, 3-1/2" rack mounting.
- D-2100** Single Bus Keypad Control Panel, 3-1/2" rack mounting.
- D-2103** Eight Bus Keypad Control Panel, 3-1/2" rack mounting, permits split audio, with nine LED displays.

Machine Assignment and Control System

The Datatek Machine Assignment and Control System is designed for operation in conjunction with the D-200 Video-Audio Routing Switcher.

- D-2000-25x25D** Bi-Directional Data Matrix, 8-3/4", for 25 Source Buffer Modules and 25 Destination Switch Modules.
- D-2000-50x25D** Bi-Directional Data Matrix, 10-1/2", for 50 Source Buffer Modules and 25 Destination Switch Modules.
- D-2204** Source Buffer Module (one needed for each machine interfaced into system).
- D-2205** 25x1 Destination Switch Module (one needed for each machine control panel).
- D-2206** 50x1 Destination Switch Module (one needed for each machine control panel).
- D-2207** Machine Interface Unit, 8 function.
- D-2208** Machine Interface Unit, 16 function.
- D-2213** Machine Control Panel Module. Provides: (A) RS 422 connection to 25x1 or 50x1 Destination Switch Module and (b) Connection to readouts and momentary normally open switches on console for up to 8 functions.

Control Panels—Price dependent on customer requirements. Customer can use existing switches if desired or can build own panels.

Because of options and system configuration affecting price, all prices are on a "Price on Application" basis.

D-2400 Routing Switcher

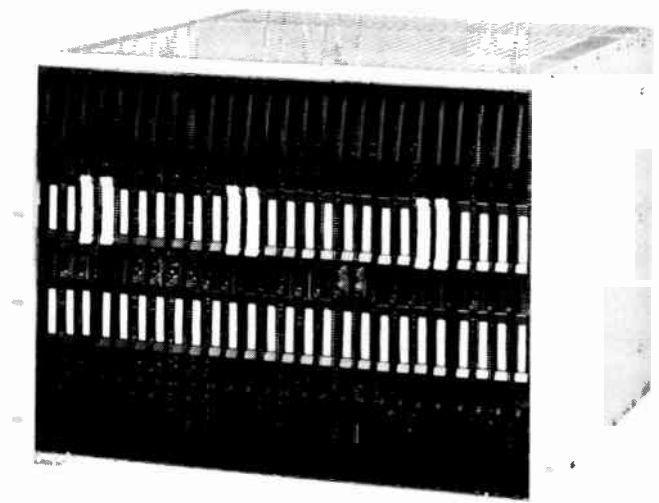
- Compact design—up to 450 crosspoints per RU
- Inherent capability for up to 8 levels—individually addressable
- Up to 4 levels accommodated in one card frame
- Unlimited expansion, inputs and outputs
- Field expansion without rewire
- Wide video bandwidth (60MHz) to handle HDTV, MAC or Digital Video signals
- Vertical interval switching standard—external reference not used
- High audio level and low noise give wide dynamic range of 116dB minimum
- Very short, consistent access time, regardless of size
- Independent control microprocessor for each two buses in the system
- Minimum of two X-Y control ports for overall matrix control, with computer control capability
- Control system compatible with D-2000, D-2200, D-2300, D-4300 systems and control panels
- Modules are not slot conscious—no PROM nor switch changes required
- All crosspoints computer tested at factory

An extremely flexible control system is used, providing for comprehensive control of up to eight levels, for field programming either the whole or part of the matrix, for external RS-232/422 control, etc. The system is compatible with D-2000, D-2200, D-2300 and D-4300 series systems.

Unlimited field expansion of inputs and outputs is available, using building blocks of various configurations. Knowledge of, or an estimate of, ultimate system size at the point of initial installation is not required. Terminating inputs and internally bused-together card frames are not used.

Very wide bandwidth and high slew rate in the video matrix prepare the D-2400 to handle HDTV, MAC, Digital Video, etc. signals. Similarly, the high quality, high level and wide bandwidth of the audio matrix provide for a wide range of audio signals, including time code.

D-2400 systems are based on the use of 20 x 10 matrixed crosspoint boards and 10-bus output amplifier boards, arranged in various configurations and accommodated in 14" (8 rack units) card frames.



D-2400

Standard building block configurations are used. They range from 160 x 20 by 1 level to 40 x 20 by 4 levels. Modules and rear assemblies may be deleted for systems of smaller or intermediate size—or for an initial less-than-capacity installation that may later be brought up to full capacity by adding the deleted items. Other configurations within a card frame are available for special applications.

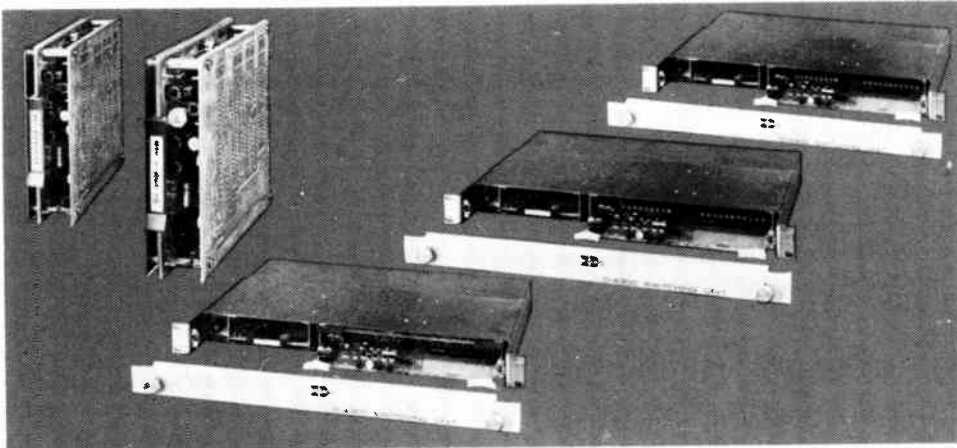
Regardless of system size and configuration, modules are not slot conscious. A module of a particular type will operate correctly in any slot where that type is used. PROM changes or switch changes, etc., are not required.

Datatek does not internally bus card frames together to initially provide an assembly of some specified ultimate system size. This practice, although convenient to a manufacturer, penalizes the customer with the necessity to specify an "ultimate" size, the necessity of occupying rack space with unused or partially unused card frames, and the necessity of higher initial cost.

All Datatek systems are expanded by external cabling, and the addition of system hardware as it becomes necessary. This, to a very large extent, relieves the customer from initial commitment to system size and configuration, to rack space and location, to hardware type and to higher initial cost.

DATATEK CORP.

Routing Switchers



VIDEO-AUDIO SWITCHING UNITS

D-4300 Series Video and Audio Switching Units

• Video and Audio switcher "building blocks" of 6 x 1, 16 x 1 and 20 x 1
 • Each building block equipped with self contained power supply
 • Choice of video-only switching, audio-only switching, audio-follow-video and split audio operation
 • Video and Audio inputs are high impedance bridging, permitting stacking units for multiple output bus applications
 • Vertical Interval video switching
 • Video switching units equipped with 4-section cable equalizer on output
 • Differential Phase/Differential Gain performance of 0.15°/0.15%
 • Video crosstalk 60 dB or better to 6.0 MHz

• Audio maximum output level +30 dBm, balanced
 • Audio distortion 0.15% maximum, 20 Hz to 20 kHz
 • Audio dynamic range in excess of 100 dB
 • Audio inputs and outputs on connectors
 • Balanced audio crosspoint, audio common mode gain -60 dB, 10 Hz -20 kHz
 • Remote control panels using momentary switches with choice of LED or incandescent lamps for feedback tally
 • Remote control cable is RG-59/U coax with BNC connectors
 • Local control panels available
 • Switching units are plug-in modules
 • Optional tally relays available for source tallies, intercom, etc.

SWITCHING UNITS

D-4301A	6 x 1 Video Switching Module, bridging inputs, occupies 2 module widths in 10-module DF-603 Rack Frame. Less rack frame and remote control panel.	\$395.00
D-4310A	6 x 1 Video Switching Module, terminating inputs occupies 1 module width in DF-603 Rack Frame or DF-603H Rack Frame. Less rack frame and remote control panel.	\$385.00
D-4302A	6 x 1 Audio Switching Module, bridging inputs, occupies 1 module width in 10-module DF-603 Rack Frame or in 3-module width DF-603H Rack Frame. Less rack frame and remote control panel.	\$405.00
D-4304A	20 x 1 Video Switching Unit, bridging inputs, including 1-3/4" rack frame, less remote control panel.	\$895.00
D-4305A	20 x 1 Audio Switching Unit, bridging inputs, including 1-3/4" rack frame, less remote control panel.	\$895.00
D-4317A	20 x 2 Audio Switching Unit, bridging inputs, including 1-3/4" rack frame, less remote control panel.	\$1800.00
D-4307A	16 x 1 Video-Audio Switching Unit, audio-follow-video switching, bridging inputs. Includes 1-3/4" rack frame, less remote control panel.	\$1250.00
DF-603	Rack Frame, 5-1/4"	\$185.00
DF-603H	Rack Frame, 1-3/4"	\$155.00

REMOTE CONTROL PANELS

D-4320A-6	Pushbutton Remote Control Panel, 6 inputs, for video only, audio-only or audio-follow-video switching. 1-3/4" rack mounting, less control cable (coax). Uses switches with LED tallies.	\$375.00
D-4322A-6	Pushbutton Remote Control Panel, 6 inputs, for video-only, audio-only or audio-follow-video switching. 1-3/4" rack mounting, less control cable (coax). Uses switches with lamps for tally, and clear plastic lenses for inserting legends.	\$385.00
D-4320A-6S	Pushbutton Remote Control Panel, 6 inputs, audio-follow-video or split-audio switching. 1-3/4" rack mounting. Uses switches with LED tallies.	\$395.00
D-4322A-6x2	Pushbutton Remote Control Panel, 6 inputs, 2 output buses, for controlling two of 6 x 1 type switching units. 1-3/4" rack mounting, less control cable (coax). Uses lamps for tally and clear plastic lenses for inserting legends.	\$475.00
D-4320A-16	Pushbutton Remote Control Panel, 16 inputs, for audio-follow-video switching. For use with D-4307A Switching Units. 1-3/4" rack mounting, less control cable (coax). Uses switches with LED tallies.	\$435.00
D-4322A-16	Pushbutton Remote Control Panel, 16 inputs, for video-only, audio-only or audio-follow-video switching. For use with D-4307A Switching Units. 1-3/4" rack mounting, less control cable (coax). Uses switches with lamp for tally, and clear plastic lenses for inserting legends.	\$460.00
D-4320A-20	Pushbutton Remote Control Panel, 20 inputs, for video-only, audio-only or audio-follow-video switching. For use with 20 x 1 Switching Units. 1-3/4" rack mounting, less control cable (coax). Uses switches with LED tallies.	\$455.00
D-4322A-20	Pushbutton Remote Control Panel, 20 inputs, for video-only, audio-only or audio-follow-video switching. For use with 20 x 1 Switching Units. 1-3/4" rack mounting, less control cable (coax). Uses switches with lamps for tally, and clear plastic lenses for inserting legends.	\$490.00
D-4320A-20S	Pushbutton Remote Control Panel, 20 inputs, for audio-follow-video or split-audio switching. For use with 20 x 1 Switching Units. 1-3/4" rack mounting. Requires 2 control cables (coax). Uses switches with LED tallies.	\$465.00

DATATEK CORP.*Routing Switcher***D-4325 Routing Switcher**

- 25 x 1 routing configuration in 2 rack unit frame:
 - Video and Stereo Audio
 - Video and single Audio Channel
 - Video Only
 - Stereo Audio
 - Single Channel Audio
- Control arrangements:
 - Local Control Panel
 - Remote Control Panel over coax line
 - RS-232/422 serial interface (standard)
 - "Wire per crosspoint" parallel
 - Binary parallel port (5 bit)
- All control arrangements operable in parallel with full tally
- Control system fully compatible with D-2000 series routing switchers
- Crosspoint status retained in event of power loss. Memory maintained for years
- AC coupled video inputs with DC restoration
- Vertical Interval video switching referenced to present output signal
- Precision video cable equalizing for outputs
- Differential Phase/Differential Gain of 0.08°/0.08%
- Audio inputs are balanced high impedance bridging, with high common mode rejection
- High audio output level capability, .03% total harmonic distortion at +32dBV
- Wide bandwidth audio for time code usage
- Provisions included to expand from 25 x 1 to 50 x 1

The D-4325 25 x 1 routing switcher provides "on-air" performance switching of video and audio signals. It is contained in a 2 rack unit mounting frame providing up to one 25 x 1 video and two 25 x 1 (stereo) audio channels, and redundant power supply modules. Modules can be deleted where less than maximum capacity is desired.

Twenty-five looping video inputs using BNC connectors are at the rear of the frame and allow expansion to more outputs by adding frames. Audio inputs are by way of 15-pin "D" connectors and, as in the case of the video inputs, looping audio input connectors are provided. A set of mating audio connectors is included with the system.

The rear of the frame also includes a 9-pin "D" connector for RS-232/422 control, which is included in the D-4325 package as standard. Loopthrough BNC connectors are included for use with D-2000 type control panels.

The front of the D-4325 frame can be equipped either with a blank front panel with power supply status LEDs, or a local control panel with audio/video breakaway capability. The front panel is hinged to provide access to the plug-in modules for adjustment or maintenance purposes. There are no active components in the rear of the frame; all active components are on the plug-in modules.



D-4325

Control System

Control electronics for the D-4325 system is included on each of the video or audio switching/output modules. For audio-only switching, a separate control module is not needed.

The microprocessor based control system is D-2000 switcher compatible, allowing use of any of the D-2000 series control panels, as well as the control panels designed specifically for the D-4325 system. Pushbutton remote control is over a single coax cable using BNC connectors, and maximum control cable length is over 1,000'.

A local control panel, D-4325LC, mounts on the front of the rack frame in lieu of a front cover and provides audio/video breakaway switching. The D-4325LC local control panel also includes connectors for remote "wire per crosspoint" and binary parallel controls. This is useful when it is desired to operate the D-4325 system from existing control panels.

The D-2184-25 is a 1 rack unit remote control panel providing breakaway switching and also a "chop" facility to toggle automatically between two selected inputs. This is particularly useful in adjusting and comparing video levels, color levels and timing in amplifiers and program sources.

The D-2033A-25S Remote Control Panel, with relegendable button caps, is available as an alternative to the D-2184-25 Remote Panel.

An RS-232/422 control port is included in the D-4325 as standard, with baud rates up to 38.4K baud plug selectable on the switching/output modules. This allows control from computers, editors, terminals and modems.

A significant feature of the D-4325 control system is that all control methods may be operable in parallel, with normal tallies. For example, a switch made via the RS-232/422 port will be displayed as a tally on both the D-4325LC local control and D-2184-25 remote control panels.

The control system on each switching/output module includes a EEPROM to store crosspoint status in the event of a power loss. Data retention is specified as a number of years.

DATATEK CORP.**Audio Amplifiers****D-507G Audio Distribution Amplifier**

• Bridging • Balanced or unbalanced inputs • 30dBm maximum output capability on each of six 600 ohm source terminated outputs • 20dB gain adjustable \pm 6dB from front panel • Individual power supply • Requires D-507GRA \$195.00

D-507GRA Power Supply and Connector Assembly \$100.00

D-507GRA-1 Power Supply and Connector Assembly for VCR duplicating, to provide 12 unbalanced high impedance outputs \$110.00

D-512D Audio Preliminary/Program Amp

• Microphone of line bridging inputs • Output levels up to +30dB/150 ohm • Transformers on input and output • DC remote gain control • Individual power supply • Requires D-512RA \$340.00

D-512RA Power Supply and Connector Assembly \$145.00

D-513 Audio Distribution Amplifier

• Line bridging • Balanced or unbalanced floating transformer coupled input • Six 150 ohm transformer coupled balanced or unbalanced floating and isolated outputs of up to +30dBm/150 ohm • Individual power supply • Occupies 2 slots in DF-609 frame • Requires D-513RA \$590.00

D-513RA Power Supply and Connector Assembly \$145.00

D-513-600 Audio Distribution Amplifier, same as D-513, wired for 600 ohm output. Requires D-513RA \$590.00

D-513RA Power Supply and Connector Assembly \$145.00

D-514 Audio Monitor Amplifier

• 20W output into 8 load direct or into 150 ohm load by way of a transformer • DC remote gain control • Individual power supply • Occupies 2 slots in DF-609 frame • Requires D-514RA \$405.00

D-514RA Power Supply and Connector Assembly \$200.00

D-514-8 Audio Monitor Amp, same as D-514, but only 8 ohm output available. Requires D-514RA \$355.00

D-514RA Power Supply and Connector Assembly \$200.00

D-518 SMPTE Time Code — Cue Track Distribution Amplifier

• Bridging • Balanced input • Six balanced outputs • 150 or 600 ohm distribution • Individual power supply • Requires D-518RA . . . \$210.00

D-518RA Power Supply and Connector Assembly \$100.00

D-522 SMPTE Time Code — Cue Track Amplifier

• Bridging • Balanced input • Six balanced outputs • 150 or 600 ohm distribution • Individual power supply • Requires D-522RA . . . \$235.00

D-522RA Power Supply and Connector Assembly \$100.00

D-523 Audio Distribution Amplifier

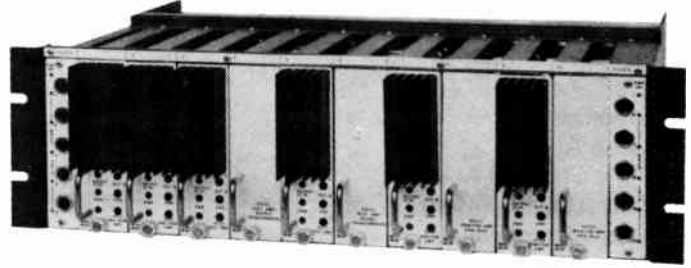
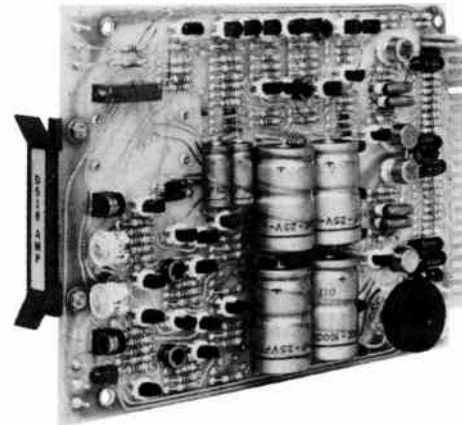
• High output level capability for 150 or 600 ohm systems • Six outputs and front panel mounted LEDs to indicate signal overload conditions • Individual power supply • Requires D-523RA \$290.00

D-523RA Power Supply and Connector Assembly \$100.00

D-524 Audio Preliminary/Line Amplifier

• Microphone or line level inputs with front panel VU meter • Input select and level adjustments • Front panel mounted LEDs to indicate signal overload conditions • Individual power supply • Requires D-524RA \$375.00

D-524RA Power Supply and Connector Assembly \$100.00

**D-512/513/514****D-518****D-525 Dual Channel/Stereo Audio Distribution Amplifier**

• 2 Channels, each channel 1 input and 6 outputs • May also be used as a 1-in 6-out stereo DA. With front panel mounted LEDs to indicate signal overload conditions • Individual power supply • Requires D-525RA \$380.00

D-525RA Power Supply and Connector Assembly \$115.00

Frames

DF-603 5 $\frac{1}{4}$ " Rack Frame, accepts 10 D-507G, D-518, D-603G, D-604, D-605, D-606, or D-607A modules, intermixed if desired \$185.00

DF-603H 1 $\frac{3}{4}$ " Rack Frame, accepts 3 D-507G, D-518, D-603G, D-604, D-605, D-606, or D-607A modules, intermixed if desired \$155.00

DE-400A Module Extender for D-507G, D-518, D-603G, D-604, D-605, D-606, and D-607A \$30.00

DF-609 5 $\frac{1}{4}$ " Rack Frame, provides 10 module slots, accepts D-512, D-513, D-514, D-609, D-609F, D-619, D-657, D-658, D-660 or D-664 modules, intermixed if desired \$235.00

DF-609H 1 $\frac{3}{4}$ " Rack Frame, provides 3 module slots, accepts D-512, D-609, D-609F, D-619, D-657, D-658 or D-660 modules, intermixed. \$195.00

DATATEK CORP.

Video Amplifiers

D-603G Video Distribution Amplifier

- Differential input • 6 outputs • Front access for adjustment of gain
- Output DC • Continuously adjustable cable equalization 0 to 1000' of Belden 8281 • Individual power supply • Requires D-603RA

.....\$195.00

D-603RA Power Supply and Connector Assembly100.00

D-604 Pulse Distribution Amplifier

- Differential input • 6 outputs • Regenerative type • Front access adjustment of output DC and levels • Individual power supply • Requires D-603RA

.....\$205.00

D-605 Subcarrier Distribution Amplifier

- Differential input • 2 independently adjustable channels each with 3 outputs • Individual power supply • Requires D-603RA

.....\$285.00

D-606 Video Distribution Amplifier-Precision D.A.

- Differential input • 6 outputs • Selectable DC restorer or AC coupled operation • High gain up to 18dB available • Individual power supply • Optional cable equalizer • Requires D-603RA

.....\$280.00

D-6061 Cable Equalizer for D-606, provides continuously adjustable control of equalization vs cable length. Up to 1500' of 8281\$20.00

D-609 Video Distribution Amplifier, Precision D.A.

- Differential input • 6 outputs • Individual power supply • Cable equalization in 50' steps and gain control in 3dB steps are mounted on rear of frame, not on plug-in module • Substitution of standardized VDA modules does not require adjustment for frame slot • Requires D-609RA

.....\$295.00

D-609RA Power Supply and Connector Assembly115.00

D-609F Video Distribution Amplifier

- Same as D-609, but cable equalization and gain controls are accessible from front of rack frame • Controls are not on plug-in module • Requires D-609FRA

.....\$295.00

D-609FRA Power Supply and Connector Assembly155.00

D-619B Pulse Distribution Amplifier

- Differential input • 6 regenerative Gaussian shaped outputs • Pulse presence indicated on front panel • Individual power supply • Requires D-619RA

.....\$300.00

D-619RA Power Supply and Connector Assembly100.00

D-663 Video Distribution Amplifier

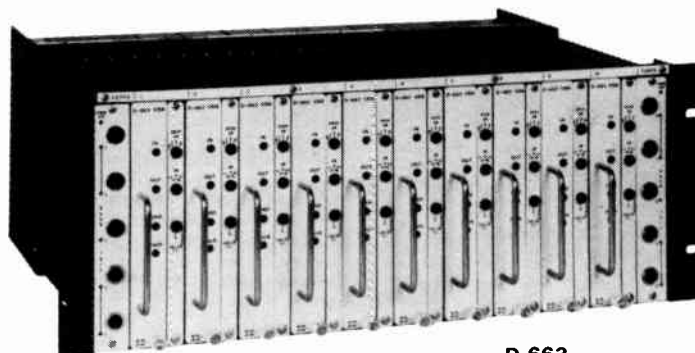
- Differential input • 10 outputs • Individual power supply • Cable equalization—continuously adjustable • Gain control in 2dB steps with vernier mounted on front of rack frame and not on plug-in modules • Individual power supply • Requires D-663RA

.....\$385.00

D-663RA Power Supply and Connector Assembly115.00

DF-663 7" Rack Frame, provides 10 module slots325.00

DE-663 Module Extender 30.00



D-663

D-664 Video Distribution Amplifier

- Differential input • 6 outputs • Front access adjustment of gain and continuously adjustable cable equalization • 0 to 1000' of Belden 8281 • Gain and equalization on plug-in sub-module to allow amplifier substitution without adjustment for gain, equalization or timing • Individual power supply • Requires D-619RA

.....\$245.00

D664RA Power Supply and Connector Assembly100.00

D-665 Precision Video Distribution Amplifier

- 6 outputs • AC coupled or DC restored operation • Differential input • Front access adjustment of gain and continuously adjustable cable equalization • Gain and equalization on plug-in sub-module to allow amplifier substitution without adjustment • Individual power supply • Requires D-664RA

.....\$280.00

Frames

DF-603 5 1/4" Rack Frame, accepts 10 D-507G, D-518, D-603G, D-604, D-605, D-606, or D-607A modules, intermixed if desired\$185.00

DF-603H 1 3/4" Rack Frame, accepts 3 D-507G, D-518, D-603G, D-604, D-605, D-606, or D-607A modules, intermixed if desired\$155.00

DE-400A Module Extender for D-507G, D-518, D603G, D-604, D-605, D-606, and D-607A\$30.00

DF-609 5 1/4" Rack Frame, provides 10 module slots. Accepts D-512, D-513, D-514, D-609, D-609F, D-619, D-657, D-658, D-660 or D-664 modules, intermixed if desired\$235.00

DF-609H 1 3/4" Rack Frame, provides 3 module slots. Accepts D-512, D-609, D-609F, D-619, D-657, D-658 or D-660 modules, intermixed\$195.00

DF-609BP Blank Panel for DF-609 and DF-609H 10.00

DE-609 Module Extender 30.00

DBX, INC.

Signal Processing Equipment

900 Series Modular Signal Processing System

902 De-esser Module

- Variable frequency de-essing
 - Full band ducking
 - Auto threshold sensing
 - User may choose conventional crossband attenuation or attenuate only the necessary portion of HR range
 - 10-LED display shows gain reduction 0-20dB
 - Maximum output level: +24dBv into 600 ohms or more
- 902**\$359.00

903 Compressor/Limiter Module

- Stereo strappable
 - OverEasy® characteristic
 - Infinity plus compression
 - Independent detector input permits compression pre-emphasis, anticipatory compression or other effects
 - 10-LED display allows monitoring over a 40dB range
 - +24dBv into 600 ohms or more maximum output level
 - 20Hz-20kHz ± 1dB frequency response
- 903**\$359.00

904 Noise Gate Module

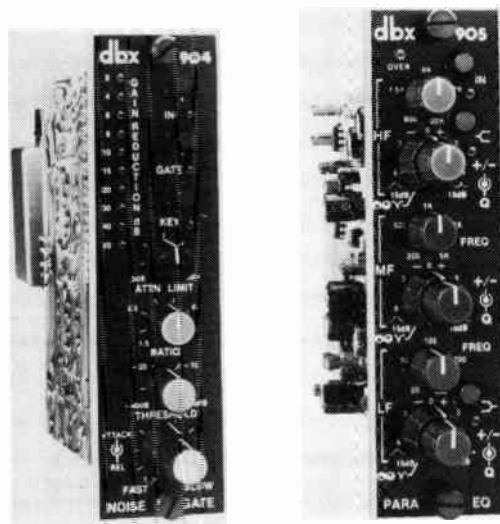
- Key input
 - Downward expansion capability
 - Programmed latch mode
 - OverEasy threshold
 - Adjustable attack and release rates
 - Flexible parameter settings
 - Attenuation limit control
 - Programmed latch mode (PLM) circuit
 - 10-LED display monitors gain, reduction over a 60dB range
 - +24dBv into 600 ohms or more maximum output level
- 904**\$359.00

905 3-Band Parametric Equalization

- Three simultaneous bands of equalization
 - Infinite notch on each band
 - Shelving or contour on hi and low
 - Each EQ band has controls that vary the boost or cut by 15dB
 - HF and LF bands have a switch for contouring (shelving)
 - Clip light shows overdriving (distortion) anywhere within the circuit
- 905**\$379.00

929 Single-Ended Noise Reduction Module

- Sharply reduces constant hiss in a variety of applications. Constant audio- and videotape and optical-sound-track hiss is the main target
 - Adjustable for maximum effectiveness and flexibility
 - No encoding required
 - Balanced inputs and outputs
 - Two channels; stereo-strappable
 - Fast sliding-filter design
 - Multi-function quieting knob
 - 20Hz-20kHz ± 1dB frequency response
- 929**\$399.00



904

905



929

933 Mixer/Distribution Amplifier

- Offers user a choice of either three inputs to one output or three outputs from one input
 - Changeover is easily accomplished via internal switching
 - Each channel, as well as gain and discreet muting, is completely isolated from the others
 - Fully balanced inputs and outputs
 - Possible application for the 933 are: master signal feed to transmitter, studio monitor and archival tape recorder
- 933**\$199.00

FS-900/FS-900A Rackmount Powered Frames

The FS-900 is a slip-line (1U high) rackmount powered frame for a pair of 900 Series modules. Typical broadcast applications could include—in any combination—a 941A Type II encoder or 942A Type II decoder for STL noise reduction; 902 de-esser module; 903 OverEasy compressor/limiter; 905 parametric equalizer with variable Q; and/or the 933 switchable 3-1 mixer/1-3 distribution amplifier

FS-900 2 active slots\$199.00
FS-900A 9 active slots\$499.00

Accessories

- BP-900A** Blank panel module for use with F-900A and FS-900 frames\$12.00
- 900-EXT** Extender card for 900 Series\$99.00

DBX, INC.

Noise-Reduction Systems



180A



140A



150X

**Type I (180A, 150X, 911)
Noise Reduction Systems**

The 180A is a 2-channel record/play (encode/decode) noise-reduction unit for linear transmission media (± 1 dB 20Hz-20kHz response up to high input levels), principally tape decks operating at 15 ips or greater. The 180A is a 600 ohm, balanced unit with terminal-strip connections and a transformer-balancing option, and is designed for nominal +4 levels.

The 150X is similar to the 180A except that it is designed for high-impedance, nominal -10, unbalanced (RCA jack) operation.

The 911 (single-channel simultaneous encode/decode) module, which is designed for use in the 9-bay F900A powered mainframe, gives the same performance as the 180A.

In the 180A and 150X, each channel's encoder and decoder can be used independently at the same time, so full (decoded) monitoring is possible, as is separate use of the encode half for mastering with a second machine. The full encode/decode cycle results in a doubling of media dynamic range, with or without signal present, to a maximum of 115dB, which exceeds all 16-bit PCM systems. Depending on the individual channel noise of the medium, this translates into at least 40dB of noise reduction using the Type I format. Such a feat is achieved by compressing the signal by a 2:1 ratio and applying a carefully tailored frequency-response pre-emphasis during record, and expanding the signal 1:2 with a precisely complementary de-emphasis during playback. The companding is linear over a 100dB range and requires no pilot tones or special calibration.

Applications

Type I units are designed to provide two-step, encode/decode noise reduction around tape recorders with flat frequency response (± 1 dB Hz-20kHz) and headroom maintained at high frequencies. Usually this means a 15 ips machine. (Some recordists may wish to investigate using dbx® noise reduction with a 14- or 16-bit PCM digital recorder to increase its dynamic range significantly). For multi-channel configurations, units may be easily combined and/or stacked.

The 180A is designed for 600 ohms, +4dB levels, and fully balanced operation; balancing transformers are an option. The 150X is a high-impedance, unbalanced -10dB (RCA jack) unit. Both are rackmountable and standard height. The 911 is single-channel encoder/decoder, also a 600 ohm, +4, balanced unit, is a 5 1/4" high module for use in the F900A and FS900 frames.

180A	\$569.00
150X	269.00
911	239.00

**Type II (140A, 224XDS, 941A/942A)
Noise Reduction Systems**

The 140A is a 2-channel record/play (encode/decode) noise reduction unit for use with tape and cassette decks, cartridge machines, VTRs/VCRs, microwave links or land lines, and other less-than-optimum broadcast/transmission/recording media or consumer-grade equipment of non-linear frequency response. The 140A is a 600 ohm, balanced unit with terminal strip connections and a transformer balancing option, and is designed for nominal +4dB levels.

The 224XDS is similar to the 140A except that it is designed for high impedance, nominal -10dB, unbalanced (RCA jack) operation.

The 941A (2-channel encode) and 942A (2-channel decode) modules, which are designed for use in the 9-bay F900A powered mainframe, give the same performance as the 140A. The advantage to having separate units for record and play is that the broadcaster or duplicating house may purchase them according to need, e.g., having only one 941A for production or STL but multiple 942As for individual decoding.

With the 224XDS and 140A, each channel's encoder and decoder can be used independently at the same time, so full (decoded) monitoring is possible, as is separate use of the encode half for mastering with a second machine. The full encode/decode cycle results in a doubling of media dynamic range, with or without signal present, to a maximum of 115dB (105dB for the 224XDS). These figures exceed all 16-bit PCM systems. Depending on the individual channel noise of the medium, this translates into at least 40dB of noise reduction using the Type II format. Such a feat is achieved by compressing the signal by a 2:1 ratio and applying a carefully tailored frequency response pre-emphasis during playback. The companding is linear over a 100dB range and requires no pilot tones or special calibration.

Applications

Type II units will provide two-step, encode/decode noise reduction around 2-channel, non-linear transmission media of greater than 45dB dynamic range. Tape and cassette decks, cartridge machines, VTRs/VCRs, and microwave links or land lines are typical uses. (Type II works fine with linear media too, of course. Some recordists may wish to investigate using dbx noise reduction of either type with a 14- or 16-bit PCM digital recorder to increase its dynamic range significantly.) For multi-channel configurations, units may be easily combined and/or stacked.

The 140A is designed for 600 ohm, +4-level, fully balanced operation; balancing transformers are an option. The 224XDS is a high impedance, unbalanced -10 (RCA jack) unit. Both are rackmountable and standard height. The 941A 2-channel encoder and 942A 2-channel decoder, also 600 ohm, +4, balanced units, are 5 1/4" high modules for use in the F900A and FS900 frames.

140A	\$569.00
224XDS	299.00
941A	259.00
942A	269.00

"dbx" is a registered trademark of dbx a Division of BRS North America, Ltd.

DBX, INC.

De-Esser/Expander/Equalizer

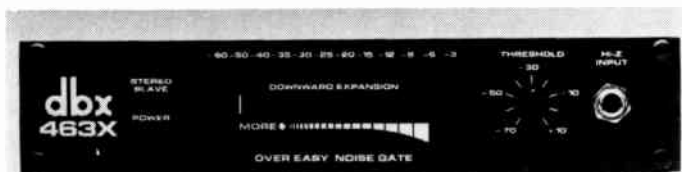


263X

263X De-esser

- Single-slider action
- Selectable bandwidth
- Knot-adjustable sensitivity
- 1/4" front panel high impedance mike input
- 600 ohm output to +18dBV
- Designed for the working vocalist, sound contractor, band-leader and announcer or DJ
- Single-ended input and output
- 20Hz-20kHz ± 1dB frequency response
- Automatic de-essing operating range: +18 to -35dBV

263X \$149.00



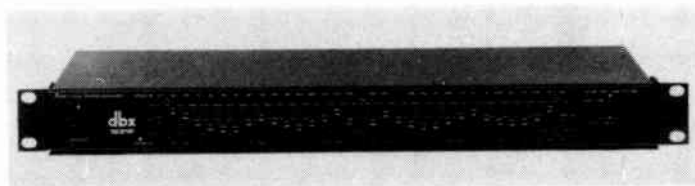
463X

463X Noise Gate Expander

- Single-slider action enables quick setting of the amount and severity of gating
- Adjustable threshold knob
- Single-ended input and output
- 1/4" front-panel high impedance input
- Stereo strappable
- 600 ohm output to +18dBV
- Key input for special applications
- Designed for the recordist/mixer, instrumentalist, ENG technician, sound contractor—indeed, for anyone who needs a friendly processor that gets rid of unwanted noise between notes or sounds
- In an instant change the gating characteristics—and the noisiness and overall sound of the program—by ear
- 20Hz-20kHz ± 1dB frequency response

Two 463Xs become a master/slave stereo pair of noise gates at the push of a button and a single connection cable. However, if you pair a 463X with a 163X OverEasy® compressor/limiter, you have a choice of configurations. If the 163X is the slave and the 463X the master, you'll have a stereo pair of 463Xs—the 163X turns into a 463X. And if it's the other way around (the 163X the master and the 463X the slave), then the 463X turns into a 163X and you have a stereo pair of 163X Compressor/Limiters.

463X \$149.00



1531P

1531P Switchable Stereo/Mono Graphic Equalizer

- 1/3-octave 1-channel or 2/3-octave 2-channel
- Constant-Q filters, selectable range (7.5/15dB)
- Balanced ins and outs, +24dBV
- XLR and phone connections
- Switchable highpass bass filters

The 1531P is a precision equalizer of unusual power, accuracy, and versatility. It is configurable into single-channel 1/3 octave or dual-channel 2/3 octave use. In either mode its filters are of constant-Q topology and its boost/cut ranges are switchable. It works in balanced and unbalanced operation. Its design is low-noise for quiet professional operation. For specialized applications it has a range of highpass (lowcut) filters. And it has precise overall attenuators for each channel level.

Specifications

Filter Type:	ISO centers ± 6%, 1/3-octave or 2/3-octave bandwidths, constant-Q, symmetrical peak/dip
Control Range:	± 15 or ± 7.5dB nominal
Switchable Highpass Filter Sliders	
Centered:	-3dB at 20, 60, or 120Hz, 18dB/octave
Frequency Response:	20Hz-20kHz ± 0.5dB
Equivalent Input Noise:	-90dBVA
Total Harmonic Distortion (THD):	0.01% (0dBV input)
Intermodulation Distortion (IMD) SMPTE:	0.05%
Maximum Input:	+24dBV
Maximum Output:	+20dBV into 600 ohms single-ended, +21dBV into 600 ohms balanced
Input Impedances:	30K ohms balanced, 18.8K ohms single-ended
Output Impedance:	22 ohms
1531P	\$395.00

DBX, INC.

Compressor/Limiters

160 SERIES COMPRESSOR/LIMITERS

The 160 series is a complete line of OverEasy® compressor/limiters. Through sophisticated circuit design, the disturbing side effects often associated with compressor/limiters have been eliminated. All models incorporate the patented dbx® OverEasy circuit, which provides inaudible transition into compression even at high ratios.

The rms detector—a unique circuit for detecting true rms levels—simulates the reaction of the human ear to audio signals, providing compression that sounds natural and appropriate to the music. And because the response of this unique detector accurately correlates to the thermal limits of loudspeakers, dbx compressor/limiters can provide optimum driver protection in high-power applications.

The 160 series also features the patented dbx VCA (voltage—controlled amplifier), which gives precise, low-distortion control of audio levels over a very wide dynamic range. Feed-forward gain control allows beyond infinity: 1 compression ratios without gain instability. DC control of all functions eliminates “noisy pot” problems because no audio signals pass through front-panel controls.

160X Compressor/Limiter

- OverEasy or classic hard-knee compression
- Dual rms display system: Monitors input or output with a 19 LED display. Simultaneously monitors gain reduction over a 40dB range with 12 LED display
- Hardwire bypass
- Stereo-strappable (two units required)
- Infinity + compression provides “dynamic reversal” effects
- Compression ratio continuously variable from 1:1 through infinity: 1 to -1:1
- Threshold variable from -40 to +20dBv
- Output gain variable from -20 to +20dB
- +24dBv input and output levels
- Input and output connectors via a barrier strip or 1/4” tip/ring/sleeve phone
- Active balanced input provides hum and RF rejection
- Provision for optional active-balanced output

160X \$399.00

163X Compressor/Limiter/Preamp

- OverEasy compression controlled by a single slider
- Three-step set-up with front panel level set
- Front panel Hi-Z input with rear panel gain trim
- Rear panel line input/output
- +18dBv maximum output level
- Accessory kit for rackmounting 1 or 2 163Xs (or other dbx _63X products)

163X \$149.00

165A Compressor/Limiter

- Compression ratio continuously variable from 1:1 to infinity: 1
- In automatic mode, compressor attack and release times are determined by program material dynamics. In manual mode, variable attack and release rates allow the 165A to be used as an ultra-fast or slower rms-detecting limiter
- PeakStop® circuit prevents unwanted peaks from getting through
- Separate detector input allows compression preemphasis and other effects



160X



165A

- Each 165A is equipped with matched rms detectors for stereo-strapping operation without the signal-summing errors of conventional strapped compressors
- Analog rms meter is switchable to read input or output levels or the amount of gain reduction over a 30dB range
- Active balanced input for hum and RF rejection
- 24dBv input/output capability

165A \$799.00

166 Compressor/Limiter/Noise Gate

- Noise gate with switchable release rate
- LED shows gate operation
- Variable OverEasy compressor with infinity :1 effects
- PeakStop for good-sounding clipping
- Side-chain monitoring for easy set-up of frequency-dependent or anticipatory processing
- Output level control, +21dBv maximum output
- Hardwire bypass
- 1U-high rackmount
- Gate threshold control allows an 80dB input range. The attack of the gate is very fast and the release is switchable (fast or slow)
- Dual-mono or stereo operation is possible

166 \$575.00

Accessories

- AB-1** Active-balanced-output card for use with the 160X \$30.00
- CA-165** Coupling cable to connect two 165As for stereo operation. \$30.00

“dbx”, “OverEasy” and “PeakStop”, are registered trademarks of dbx a Division of BRS North America, Ltd.

DBX, INC.**Program-Route Selectors/
Synthesizer/Expander****400XG/200XG Program-Route Selectors**

- Connects 3 decks, 3 processors, 1 NR unit
- Hardwired; no signal degradation
- Pre/Post tape processing
- 400X permits processing and NR during dubbing, 200X during playback only
- 400X LED complement shows signal path through processors
- Rackmountable, low-profile
- RCA phono jacks

You can connect all these components in the signal path and switch each one in and out at the push of a button. Moreover, signal processors can be placed in front of the tape decks ("Pre" of pre/post) for processing during recording.

The 400X differs in appearance from the 200X in that a full-function color coded LED display tells you at a glance what's in and out of the signal route. More important, with the 400X you can signal-process during all dubbing operations or use either side (encoder or decoder) of the NR unit. For example, you can make a Dolby cassette of a dbx*-encoded tape as well as the dbx backup copy and an unencoded copy, and you can process the copy with the equalizer, compressor/limiter, expander, etc. (except for encoded-to-encoded dubbing).

In the 200X all the dubbing is direct from deck to deck, with no processing possible.

Both units are rackmountable and are designed for line-level, -10 (RCA jack) unbalanced operation. Best of all, they're hardwired, which means no loss, no gain, no distortion, no signal degradation.

400XG \$279.00
200XG 149.00

**120X-DS Subharmonic Synthesizer
with Subwoofer Crossover**

- Synthesizes 27-54Hz subharmonic fundamentals from 54-110Hz program input
- Precision, phase-coherent crossover for subwoofer applications
- Rackmountable, low-profile
- RCA phono jacks
- 2 channel
- Frequency response (no synthesis, full-range mode): ± 1 dB 25Hz-20kHz
- Dynamic range: 102dB

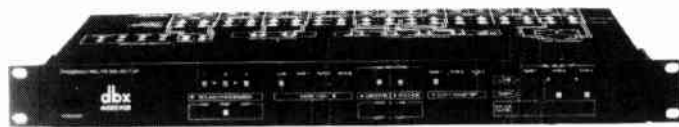
Included in the 120X is a precision zero-sum (12dB/octave high pass [-3dB at 120Hz], 6dB/octave derived lowpass) crossover for subwoofer and sound-reinforcement applications.

Sliders control the amount of newly restored bass and the overall low-frequency and subwoofer-output levels. An LED display shows where and when the subharmonic synthesis is taking place. The 120X is designed for line-level, -10 (RCA jack) unbalanced operation.

120X-DS \$299.00

3BX-DS Series III Dynamic-Range Expander

- Expansion variable up to 50% (1.5:1)
- Impact restoration variable up to a potential +12dB, signal-dependent
- 3 separate bands of processing
- True stereo RMS expansion (channels ganged) preserves imaging and L/R balance
- Full 4-band LED display

**400XG****120X-DS****3BX-DS**

- Controls and switches for all functions including level match/expansion midpoint (the point between upward and downward expansion) and pre/post tape processing
- Rackmountable, low profile
- Hardwire bypass
- RCA phono jacks
- Expansion: To 50% increase, maximum 12dB upward and 20dB downward
- Frequency Response: ± 0.5 dB 20Hz-20kHz, any setting
- Dynamic range: 107dB

The opposite of a compressor, a dynamic-range expander makes loud sounds louder and quiet ones quieter, thereby increasing dynamic range. An expander is useful, then, in a variety of sound reinforcement applications for improving the excitement and drama of both music and effects. The 2 channel 3BX-DS has sophisticated sounding expansion circuitry, including a fast-acting impact restoration circuit that works only on the initial attack of a transient. The result is a significant increase in "punch" in the music. Old, tired analog sources may be said to take on some of the presence of digital recordings.

Dividing the audio band into three parts—low, mid-, and high—means the dynamic-range expansion is audibly seamless, with no adverse interactions among instruments having different frequency ranges. Expanding the bass guitar will not modulate the ride cymbal.

The 3BX-DS will prove useful in any sound-reinforcement or similar situation calling for an increase in the power and impact of the louder passages along with a reduction in noise. An example would be a system mixing LPs and CDs: dynamic-range expansion with impact restoration permits LPs to take on some of the life and power of compact discs.

3BX-DS Series III \$499.00

*dbx® is a registered trademark of dbx, Inc.

DBX, INC.

Real Time Analysis System

RTA-1 Real Time Analysis System

- Frequency-response analysis using music, the unit's own stereo (uncorrelated) pink noise, or tones
- Precision 1/3rd-octave topology using triple-tuned (IEC class 3) filters, ISO-centered 31 bands (20Hz-20kHz); 0.3dB resolution, 100+dB dynamic range; true rms-level detection
- Analyses performed in real time; battery-backup memories have averaging, subtracting, inverting, or normalizing capabilities; A, C, or CCIR-ARM weighting, or flat; selectable display range
- Accumulation with variable time constants including exclusive "forever" averaging
- Help screens at the touch of a button; easy-to-use menu-driven operating system with flexible (8088) microprocessor-based architecture
- High-resolution, high-visibility amber CRT display; output for color monitor (IBM EGA standard)
- RS-232 and Epson FX80 (or equivalent printer) parts for PC compatibility
- Mike preamps built-in with 48V phantom power supply
- Automatic calibration

The RTA-1 professional realtime analysis system computes, displays, stores, and manipulates response curves using external signal generators, its own pink noise, or the actual music program. It offers unprecedented flexibility in measuring audio frequencies.

The self-contained, PC-compatible RTA-1 includes an 8088-based microcomputer, an amber CRT monitor, two uncorrelated pink-noise generators, soft keys, and cursor joystick, and all processing including self-calibration.

Menu-driven, the RTA-1 offer an infinite accumulation mode, several averaging and peak-hold modes, battery-backup multi-memory storage and manipulations, and has a color-monitor output and a printer port. Curves may be saved, averaged, subtracted, normalized or inverted, copied or erased; memory is handled with graphic menus that display 16 subscreens.

Inputs are all balanced and include two at microphone level with 48V phantom powering and four at line level. All inputs may be monitored on the screen, by themselves or in combination. Version 1.0 operating modes, all keypad-chosen, comprise RTA functions, RRC (room-response curve derived using music), and memory analysis. The cursor permits scrutiny of levels or responses in each band.

The front controls of the RTA-1 include the cursor joystick, brightness, on/off, six soft-key screen-labeled buttons for RTA operation, a "back" (previous menu) button, access to help, pink-noise mute, printout, and XLR inputs for self- or phantom-powered microphones. Sturdy handles make lifting and rackmounting easy.

The rear of the RTA-1 comprises two pairs of inputs and parallel outputs, pink-noise outputs, D-type connectors for various digital and computer equipment, AC power, and battery backup. Protective feet let the unit be set on its back.

Specifications

Filters:	31 ANSI class III bandpass-type, monolithic switched-capacitor; 18dB/octave asymptotic slope, triple-tuned, flat-passband (maximum ripple 0.5dB)
Center Frequencies:	20-20kHz, $\pm 6\%$ (ISO)
Detectors:	32, rms
Time Constants:	20-31.5Hz bands: 360 ms, 40-60Hz bands: 160 ms, 80-125Hz bands: 76 ms, 160-500Hz bands: 54 ms, 630-20kHz bands: 16 ms, SPL (wideband): 54 ms
System accuracy (in relative mode; in absolute mode include gain accuracy) (after auto calibration, with 0dB line gain or +40dB microphone gain and at 25°C/77°F)	
From +10 to -30dB	$\pm 0.57\text{dB}$ (i.e., ± 2 pixels) for noise or broadband signal $\pm 0.86\text{dB}$ (± 3 pixels) for sine waves*
From +10 to +15dB	$\pm 1.1\text{dB}$ (± 4 pixels) for all sources
Temperature	
Coefficient:	+0.33%/°C of (the reading plus 28dB)



RTA-1

Gain Accuracy (at 25°C/77°F):	Line: $\pm 0.03\text{dB/dB}$ of gain Microphone, 40dB of gain or more: $\pm 0.03\text{dB/dB}$ of gain Microphone, < 40dB of gain: $\pm 0.06\text{dB/dB}$ of gain
Temperature Coefficients:	-0.33%/°C of gain setting, line inputs -0.33%/°C of (the gain setting minus 40dB), microphone inputs with more than 40dB of gain -0.33%/°C of (the gain setting minus 20dB), microphone inputs with < 40dB of gain
Pink Noise Levels:	0 to -63dBV, software-controlled, in 0.25-dB steps plus Off; 0.5dB interchannel tracking
Display	9" (diagonal) video monitor, amber, 640 x 400 pixel resolution
Horizontal Scanning Frequency:	21.86kHz
Dynamic Range displayed, 1:1	70dB, 0.29-dB/pixel resolution
Line Inputs:	
Impedances:	20 k-ohms/50 pF differential 10 k-ohms/100 pF single-ended, pin 2 15 k-ohms/100 pF single-ended, pin 3 +24dBV (0dBV = 0.775 V rms)
Maximum Input Level:	
Common-Mode Rejection Ratio:	> 30dB at 10 kHz
Mike Inputs:	
Impedances:	2.5 k-ohms/100 pF differential 100 k-ohms/200 pF single-ended, phantom off 5 k-ohms/200 pF single-ended, phantom on 48VDC $\pm 10\%$ through 4.99 k-ohms to both signal lines; 20 mA maximum current with 2 mV ripple
Phantom power:	
Common-Mode Rejection Ratio:	> 50dB at 10 kHz (80dB at 1 kHz)
Crosstalk, Any Two Inputs:	< -60dB
Dimensions:	7"H x 19"W x 19.25"D

RTA-1.....\$6950.00

* The RTA-1 is intended for analyzing broadband signals and therefore its self-calibration uses pink noise for highest accuracy in such measurements. The triple-tuned filters used to achieve ANSI class III response have three bumps (ripple) across the flat portion of their response, so a sinewave swept across the passband of any one filter will appear to vary in amplitude approximately up to $\pm 0.3\text{dB}$. For broadband sources the noise-based calibration averages out these errors.

DELTA ELECTRONICS, INC.

Exciter/Monitor

C-QUAM® AM STEREO SYSTEM*ASE-1 AM Stereo Exciter****ASM-1 AM Stereo Modulation Monitor**

C-QUAM Stereo Exciter and Stereo Modulation Monitor produce an AM stereo quadrature modulated signal having superior separation and low distortion throughout the audio spectrum. The ASE-1 Exciter and ASM-1 Monitor C-QUAM System is completely compatible with existing monaural receivers and multimode decoder receivers.

C-QUAM Stereo transmission system is a full spectrum system providing separation from 50 Hz to over 10 kHz. Its signal can be demodulated by simple envelope detectors to produce a low distortion monophonic audio signal while stereo receivers demodulate the same signal to full stereo.

The ASE-1 C-QUAM Exciter produces the signals needed for stereo operation of an AM broadcast transmitter. From stereo audio input, the Exciter generates an audio drive signal for the transmitter's modulator and an RF signal to replace the transmitter's crystal oscillator output.

ASE-1 Exciter circuitry includes all required processing features. Limiters are provided to prevent excessive positive and negative modulation. A blend processor makes high single channel modulation possible, by blending a little of each channel with the other. Additional processing is not necessary. Unlike FM stereo, C-QUAM AM modulation does not require pre-emphasis.

Meters and convenient controls simplify use of the ASE-1. Large lighted meters display either left and right audio levels or L + R and L-R audio levels, in dB and percentage modulation. The mode switch selects stereo or mono operation. The pilot switch controls the 25 Hz tone, allowing the tone to be turned off as required in testing. The switch labeled Day/Night selects one of two audio equalization circuits, adjusted to match separate, alternate transmitters. The equalization circuits also can be remotely selected through contacts on the rear panel.

The ASM-1 Stereo Modulation Monitor houses a high performance C-QUAM decoder which demodulates the RF sample. The ASM-1 provides all the demodulated signals necessary for annual proof of performance when used with standard AM proof equipment.

The demodulated signals available on the rear panel of the Monitor include L + R, L-R, Envelope Detector Output, and Left and Right audio, both balanced and unbalanced. The 25 Hz pilot tone used in the C-QUAM system also is available on a rear panel connector.

Front panel meters display the pushbutton selected parameters: positive and negative L + R, L-R, L and R modulation levels. Peak flashers indicate -100%, +125%, L-R Limit, and negative limit modulation conditions. Two additional thumbwheel controlled peak flashers can be set to flash at any desired level of modulation. The modulation meters and the thumbwheel controlled peak flashers are accessible through rear panel connectors for remote indication.

SPECIFICATIONS

The following is typical closed loop performance of the Exciter operating into the Monitor.

Stereo Separation:

35 dB minimum

Frequency Response:L,R 40 Hz to 15kHz \pm 1.0 dB**EXCITER****Audio Input:**

Right 0 dBm to 10 dBm balanced 600 Ohms

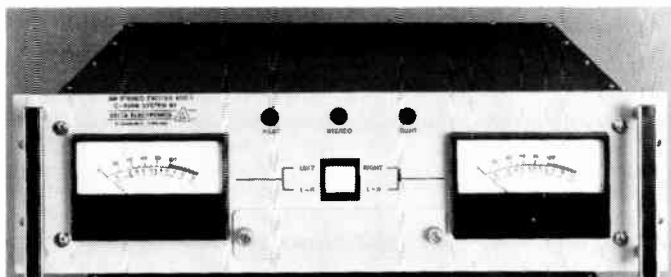
Left 0 dBm to 10 dBm balanced 600 Ohms

Both inputs adjustable with factory installed pad per customer requirements.

*Registered Trademark, Motorola, Inc.

*Mfg. under License from Motorola, Inc.

ASE-1



ASM-1

Meter Range:

-20 to +3 dB

0 dB = 100% modulation

RF Output:

Adjustable internally up to 5 watts into 50 ohms.

(L + R) :

Adjustable under cover on front panel via 10-turn potentiometer up to 16 dBm, 600 ohms balanced.

Phase Equalization:

Internally adjustable phase equalization is provided to compensate for phase variations in the transmitter chain.

MONITOR**RF Input:**

Frequency crystal controlled

Input level 1 volt to 10 volts RMS

Impedance 50 ohms

Modulation Meters:

Meter range 0 to 133% -20 dB to +2 dB

Attenuator range 0 to -50 dB in -10 dB steps

Accuracy at 100% modulation 400 Hz \pm 2% Meters switchable to + or - L, R, (L + R), (L-R)**Peak Modulation Indicators:****(L + R) Group:**

-100% indicator internally set to flash when modulation exceeds -99%

+125% indicator internally set to flash when modulation exceeds +124%

Peak Indicator adjustable via thumbwheel switches from 30% to 150%. Modulation selectable via pushbutton switches + or -

(L-R) Group:

Negative limit set internally to flash at 1.46 radians or 83.67°

(L-R) limit set internally to flash when modulation exceeds 99%

Peak flasher adjustable via thumbwheel switches for 30% to 125%

Output BNC connectors on rear:

Remote Flashers (L + R), (L-R)

Remote Meters (L + R), (L-R)

Left Audio 600 ohms balanced and unbalanced

Right Audio 600 ohms balanced and unbalanced

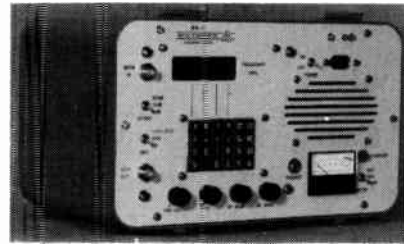
(L + R), (L-R), and 25 Hz Pilot tone

C-Quam AM Stereo System \$12,500.00

Includes Installation

DELTA ELECTRONICS, INC.

Receiver/Generators



RG-4

RG-3A Receiver/Generator

- Frequency counter on generator
- Correlation detector circuit
- Heavy gauge weatherproof aluminum case
- Operates on line current or gel cell batteries (optional)
- Double shielded coaxial cables
- Front panel meter indicates generator output voltage, battery voltage, and receiver IF

The RG-3A is designed to be used in conjunction with any conventional impedance bridge for antenna measurements in the AM broadcast band. However, a dramatic improvement in signal-to-noise ratio will be realized when the RG-3A is used with the Delta model OIB-1 or OIB-3. The unique patented circuit of the Delta impedance bridges places the high-level output (two watts) directly in parallel with the interfering signals on the antenna. The generator is attenuated by the measuring network in other bridges before competing with the interfering signals.

A solid state linear power amplifier provides two watts (10V across 50 ohms) of RF output. Modulation (90% AM) is selectable with a front panel switch. The generator output may also be pulsed with a 50Hz square wave for use with the correlation detector in the receiver. Digital readouts display the generator frequency (10Hz resolution) for accurate setting of the desired frequency. The generator and the receiver track together utilizing a single tuning control.

The receiver uses a correlation detector circuit. The correlation detector switches the generator on and off at a 50Hz rate. The detector output during generator off periods is subtracted from its output during generator on periods. Interfering signals are thus removed from the indicated receiver output, permitting excellent null indication on the front panel meter.

A voltage sensing circuit automatically disconnects the battery supply to prevent excessive discharge of the gel cell battery. An LED indicator indicates charging. The power supply permits operation of the RG-3A while charging batteries or even with the batteries removed.

Specifications

- Frequency:** 0.5 to 1.65MHz in 2 bands
- Accuracy:** Digital display with 10Hz resolution
- Tuning Control:** Single knob tunes generator and receiver, ± 5 kHz vernier on receiver
- Output Level:** Adjustable: 10V RMS (2W) into 50 ohms, 20V RMS Open circuit
- Modulation:** 400Hz 90% AM, 50Hz square wave
- Connector:** BNC female
- Receiver**
 - Sensitivity:** 5 μ V nominal
 - Selectivity:** -3dB bandwidth 3.2kHz (± 1 kHz)
-45dB bandwidth 34.0kHz (± 4 kHz)
- Receiver BFO:** Variable
- Weight and Dimensions:** 28 lbs., 16" wide, 10" deep, 11.5" high

- RG-3A with batteries \$4245.00
- RG-3A without batteries 3995.00

RG-4 Receiver/Generator

- Up to 2W output
- 10 microvolt receiver sensitivity
- Receiver/generator isolation > 120dB
- 100kHz to 30MHz operating range
- Digital frequency synthesizer design
- Keypad entry operations
- 9 frequency test storage registers
- Coincidence detector
- LCD readout
- Gel-cell battery pack

The RG-4 Receiver/Generator is designed as the ideal companion instrument for Delta's OIB-1, OIB-2, and OIB-3 impedance bridges. These bridges and the RG-4 thus form a complete, portable impedance measuring system. Its lightweight construction, combined with a rugged weatherproof aluminum case, make this instrument equally at home on the service bench or in the field.

The generator output level is 2W, 100kHz to 20MHz, and 1W, 20MHz to 30MHz. Receiver sensitivity is 10 microvolts, with separate front panel gain controls for RF and audio. Generator/receiver isolation is > 120dB.

Frequency selection is accomplished by a front panel keypad assembly, controlling a precision phase locked loop digital frequency synthesizer. Selected frequencies are displayed on a large LCD readout panel. To help speed test processes, nine storage provide store and recall of your frequently used test frequencies.

Frequency increment and decrement keys provide manual sweeps of a chosen frequency in 1, 10, 100, or 1000kHz steps. Separate 5kHz step keys simplify FCC required antenna resistance measurements.

Modern gel-cell batteries power the unit for field measurements, for up to four hours from a full charge condition. The AC supply/charger operates from either 120VAC or 240VAC. The power supply will both power the unit and charge the batteries at the same time. Automatic switching in the power supply to a "trickle" charge condition prevents battery damage.

Specifications

- Generator**
 - Modulation:** 400Hz 90% AM, 50Hz squarewave
- Receiver Type:** Dual conversion superheterodyne with AGC
- Receiver**
 - Selectivity:** -3dB band width 3.8kHz
-45dB bandwidth 18kHz
- Metering:** Generator output in VRMS receiver AGC level

- RG-4 with batteries \$5800.00
- RG-4 without batteries 5695.00

AMP-1 AM Stereo Tri-Band Audio Processor

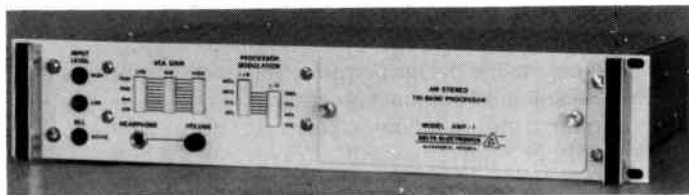
- Digital control
- Tri-band processing in matrix mode
- Active, balanced input/output circuits
- VCA gain display for each band
- L + R and L-R processor modulation display
- User adjustable density for each band
- User adjustable L + R positive peak limiter
- User adjustable gated bands
- Input high and input low indicators
- Single channel limiter indicator (audio loss indicator)
- Auxiliary mono output
- Block diagram and setup information on top cover
- Front panel stereo headphone jack and level control

The AMP-1 AM stereo tri-band audio processor is a high performance processor which combines state-of-the-art technology with ease of operation. The processor design complements ASE-1 AM stereo exciter and C-Quam® stereo systems. The AMP-1 delivers a loud, clean, and bright sound. Stations contemplating a move to AM stereo may initially use the AMP-1 in a monaural mode to provide an improvement over older processor technology and then convert the AMP-1 to AM stereo processing through simple jumpers.

The AMP-1 AM stereo tri-band audio processor provides state-of-the-art processing techniques. The input audio signal amplifiers are digitally controlled for precise level adjustment. The input gain control circuit uses a broadband AGC with slow attack and release times.

All processing occurs in the L + R and L-R matrix mode for optimum stereo performance. For both the L + R and L-R signals, three frequency filters divide each signal into low, mid and high bands. Each frequency band is independently processed for a more consistent and pleasing sound regardless of the program material. The three bands are then summed and applied to an integrated clipping circuit which can be adjusted according to the station's programming. Individual L + R output level and L-R output level controls provide independent adjustment of modulation levels. The left channel and right channel signals are then derived from the L + R and L-R signals. All input and output circuits are balanced, active circuits. A high quality, front panel accessed headphone driver permits easy setup and adjustment in typically noisy transmitter environments. The AMP-1 design maintains the Delta tradition for rugged mechanical construction.

Ease of adjustment and operation was a primary goal in the design of the AMP-1. This goal was realized with a straightforward front panel design and easily adjusted controls. The input circuit is jumper selectable for a -15 to +15dBm input level and for balanced or unbalanced operation. The gain of each low, mid and high band voltage controlled amplifier (VCA) is displayed for each band from 2 to 20dB in 2dB increments by three ten-segment LED displays. Two additional ten-segment LED displays show processor modula-



tion for both the L + R and L-R signals. The processor operation can be monitored using the front panel headphone jack and volume control.

The eight processor controls are accessed by removing a front panel security cover. Three controls determine the density of the low, mid and high VCA outputs. The gate threshold control adjusts the aggressiveness of the processor. A stereo enhancement control widens the stereo image. Individual L + R output level and L-R output level controls permit individual adjustment of the modulation levels. Output gain is adjustable from 0 to +20dBm. A positive peak control permits full adjustment of the L + R positive peaks of from 100% to 150%.

Specifications

Audio Input:	20K ohms, balanced, -15dB to +15dB 20K ohms, unbalanced, -5dB to +5dB
Audio Output:	600 ohms, balanced, 0dB to +20dB < 10 ohms, unbalanced, +6dB to +26dB
Input CMRR:	> 40dB
Gain Control Range:	10dB, differential input amplifiers 25dB, tri-band VCA's 8dB, peak limiter
L-R Gain Adjustment Range	
(Stereo Enhance):	0dB to 4dB (Mid band) 0dB to +6dB (High band)
Crossover Frequency:	Low band Fc (-3dB) = 20Hz to 200Hz Mid band Fc (-3dB) = 200Hz to 2000Hz High band Fc (-3dB) = 2000Hz to 20kHz
Metering:	VCA Tri-band Gain: 2dB to 20dB 2dB increments
	L + R Processor Modulation: 40% to 130%, 10% increments
	L-R Processor Modulation: 10% to 100%, 10% increments
Input Connections:	6-terminal barrier strip, left (+, GND, -) right (+, GND, -)
Output Connections:	Main: 6-terminal barrier strip, left (+, GND, -) right (+, GND, -) Aux: 3-terminal barrier strip, mono (+, GND, -)
Dimensions and Weight:	3 1/2" H x 19" W x 14" D, 10.5 lbs.
AMP-1	..... \$3500.00

DELTA ELECTRONICS, INC.**Splatter Monitor****SM-1 AM Splatter Monitor**

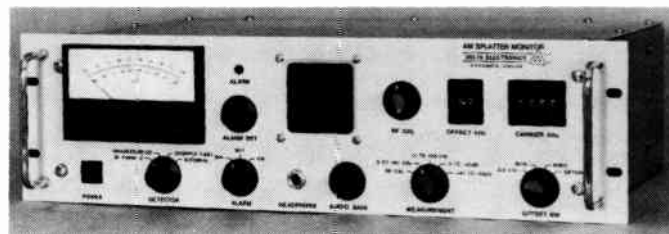
- Means of verifying FCC and NRSC compliance
- Easy to operate and to interpret measured results
- Measurement of I, Q, I+Q (chopped) and external audio signals
- 450kHz to 1700kHz phase-locked operation with 10kHz or optional 9kHz channel spacing
- Portable operation from external 12VDC supply and optional active antenna
- Meter detector circuit ballistics matched to splatter levels as perceived by a listener
- Front panel speaker and headphone jack permit audible monitoring of interference
- Adjustable alarm output permits remote control monitoring
- Rear panel I and Q outputs and buffered meter output

The model SM-1 AM Splatter Monitor provides AM broadcast engineers with a means of accurately and easily measuring off-channel emissions to ensure compliance with the FCC regulations or the more stringent recommendations of the NRSC. Manufactured in response to the recommendations of the National Radio Systems Committee (NRSC) for AM improvement, the instrument provides many of the features of an expensive spectrum analyzer at a significantly reduced price. The AM Splatter Monitor measures the level of splatter or any other spurious emissions which fall between 11kHz and 100kHz away from both sides of the carrier.

Designed to be installed in an equipment rack and fed with an RF sample from the transmitter or common point, the AM Splatter Monitor is also portable and can operate from a twelve volt DC source, such as the cigarette lighter in an automobile. An RF sample is provided via an optional active antenna. This portability feature makes the Splatter Monitor attractive for investigating interference complaints.

Because splatter level normally decreases with frequency away from the carrier, the AM Splatter Monitor measures the most important segment of spectrum associated with splatter. This same segment of spectrum is where the changes in splatter level occur. These changes are due to factors such as shifts in modulation level, changes in program material, audio processor adjustments, and tube aging. The AM Splatter Monitor has an alarm that may be set to detect such changes. The station can use this alarm through a remote control system to signal the occurrence of a splatter problem.

The AM Splatter Monitor is normally installed in a rack at the transmitter site to continuously monitor the transmitter's output spectrum. Although the regulations regarding emission limitations require field measurement to assure compliance, the intervening elements between the transmitter's output and the far field are usually quite



linear, so continuous monitoring of a transmitter's output is a reasonable indication of operational compliance. The AM Splatter Monitor is portable, and may be removed from the rack for field monitoring to assess compliance of the close-in spectrum (within 100kHz) to emission limitations rules. The unit may also be used for field monitoring in the strong signal areas of other AM stations to investigate interference complaints. For these purposes, the AM Splatter Monitor derives power from an automobile's cigarette lighter jack (+12V) and receives its RF input signal from an optional, active antenna.

A 3 $\frac{1}{2}$ digit thumbwheel switch labeled Carrier kHz adjusts the operating frequency of the AM Splatter Monitor from 450kHz to 1700kHz. Simple crystal and jumper changes allow operation at either 9kHz or 10kHz channel spacing. When tuned to 450kHz, the AM Splatter Monitor can be connected to the 450kHz IF output of a synthesized receiver, taking advantage of the AM Splatter Monitor's synchronous detectors to evaluate the I and Q modulation of received stations.

Specifications

SM-1	Splatter Monitor, 10kHz channel
SM-1A	Splatter Monitor, 9kHz channel
RF Input:	50 ohm unbalanced, 1 to 20VRMS
Measurement Range:	0 to -85dBc
Measurement Accuracy:	± 2 dB
Detector Modes:	I, Q, I and Q (chopped) and external audio
Measurement Functions:	RF Cal 0-100kHz Spectrum 11-100kHz Spectrum Variable (offset) Spectrum 0 to -45dBc -40 to -85dBc
Offset Range:	11-99kHz
Offset Bandwidths (Receiver Models):	Spectrum analyzer mode (± 0.5 kHz) Narrow Band Receiver (± 3.0 kHz) NRSC Wide Band Receiver
Dimensions and Weight:	5 $\frac{1}{4}$ " H x 19" W x 12" D, 14 lbs.
SM-1	.....\$2150.00

DELTA ELECTRONICS, INC.**Remote Control System****RCS-1V****Remote Control System**

The RCS-1V Remote Control System provides radio and TV broadcast studio personnel with constant monitoring and control of unattended transmitter facilities.

- Continuous video display of digital readings and equipment status indicators
- Automatic update of channel readings and status
- Highlighted out-of-tolerance and alarm flags
- User-designated screen format
- A number of system options including autologging, telephone access with voice synthesizer, and modulation bargraph displays

The RCS-1V is designed to eliminate the need for operator intervention in monitoring, and to simplify that intervention when control action is required. The operator interface is provided by a video display screen and keypad. The machine interface is provided by specialized input and output modules. System memory and logic are provided by integral microprocessors.

Measurement and status information from station equipment is read by the Remote Control System. The system interprets this information and makes it constantly available to the operator. No operator action is required for normal monitoring. Station log entries are simply copied from the screen, or the system can be equipped to print the log automatically.

Video flags and alarm messages alert the operator when a control action is required. Simple keypad pushbutton manipulations allow the operator to adjust equipment in response to instantaneous readings, and to change equipment status and operating modes as necessary. All control actions are confirmed by corresponding changes in screen display data.

SPECIFICATIONS**RCS-1V Transmitter and Studio Unit:**

Height: 10.5" (26.7cm)

Width: 19" (48.3cm) standard EIA rack mount

Depth: 20" (50.8cm) including mating connectors

Color: Light gray front panel, green phosphor display (optional white)

Weight: 36 lbs. (16.3kg)

Power: 115VAC +/-10%, 50/60Hz approximately 100 watts depending on options (optional 230VAC)

Fuse: 3AG-1A SLO BLO (0.5A for 230VAC)

Battery Backup: Video refresh memory, channel definition memory, and digital clock circuit are backed up by three C size alkaline cells. Estimated life: 2 years

Modem Port: RS-232C, 1200 baud full duplex, 25-pin miniature "D" receptacle

Printer Port: RC-232C, 50-19, 200 baud internally selected (nominally 4800 baud) 25-pin miniature "D" receptacle 20mA loop — TB1-4 and TB1-5

External Video: BNC female, 2.25V p-p non-interlaced composite video

I/O (Input/Output) Unit:

Height: 10.5" (26.7cm)

Width: 19" (48.3cm) standard EIA rack mount

Depth: 12" (30.5cm) including mating connectors

Color: Light gray front panel

Weight: 14 lbs. (6.4kg) plus optional cards

Power: Derived from RCS-1V transmitter unit

Mounting: Must be immediately above or below the RCS-1V transmitter unit or another I/O unit

Number I/O Units per System: Maximum 3 for up to 88 channels

**RCS-1V****RCS-1V Remote Control System Control Units**

RCS-1V Transmitter Site Unit w/integral video display and bus buffer assembly	\$6200.00
RCS-1V Studio Site Control Unit w/integral video display	5400.00

I/O Assembly

RCS-1V I/O Chassis w/Mother Board	\$2325.00
D33-244 8-Channel Raise/Lower Board (maximum of 2 per I/O Unit)	410.00
D33-245 8-Channel On/Off Board (maximum of 1 per I/O Unit)	400.00
D33-252 16-Channel Status/Alarm Board (maximum of 1 per I/O Unit)	173.00
D33-293 16-Channel Additional Status Board	232.00
D33-297-2 8-Channel Analog Input Board	420.00
D33-251 Analog Antenna Monitor Board (Specify Monitor Model)	460.00
D33-285 Digital Antenna Monitor Board	460.00

System Options and Accessories

Autologging Option. Includes electronics package, system cables, and Centronic 150-3 Serial Printer with paper.	\$2160.00
Modulation Display Option for transmitters and studio control units.	810.00
Telephone Access Option. Includes electronics package, system cables, and station coupler w/power transformer.	1566.00
Communications Modems, UDS-12/12, 1200 Baud, set of two, w/interconnect cables.	2970.00
National Multiplex Model DC-3 Digital Data Recorder	572.00

DELTA ELECTRONICS, INC.**Power Controller****APC-1 Automatic Power Controller**

- Automatically controls the antenna current of AM stations to insure that the power is kept within FCC limits
- Requires DC signal from linear rectifier or from Delta's TCA/TCT line of current transformers and ammeters. Provision for controlling up to three power levels for day, night, and pre-sunrise operating modes
- Long time constant circuit minimizes effects of modulation and carrier shift
- Meter shows deviation from correct power level. LED indicators show status of power controller
- Relay chatter and "hunting" is prevented by using special digital logic circuits to provide selectable increments for on-off timing of raise and lower motors, depending on the characteristics of the raise/lower controls. Different timing available for main and alternate transmitters (or for day and night transmitters).

The APC-1 Automatic Power Controller measures the operating power of an AM station, and by interconnection to the transmitter's Raise/Lower controls causes the power to remain well within FCC limits. The unit monitors a DC voltage from an external linear rectifier driven by an RF sample of the common point or base antenna current. A special long time constant circuit removes modulation components and averages carrier shift variations. The DC voltage is then compared to several fixed voltages and the comparator outputs enable appropriate operation of the Raise/Lower controls and front panel indicators. A relative power meter provides continuous display of the power level and facilitates setup adjustments.

The input circuits provide for adjusting the gain of up to three instrument amplifiers and selecting the appropriate signal depending on mode of operation. (Day, night or pre-sunrise authority.) Front panel adjustments are provided to set the power meter to 100% when the correct power is indicated by the official RF ammeter.

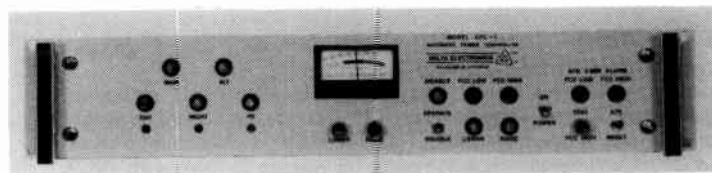
Comparator circuits provide for operation of the Raise and Lower relays and LED indicators and provide rear panel alarm outputs and LED indicators when the power exceeds the FCC high limit of 105% or the FCC low limit of 90%. A front panel pushbutton permits testing the FCC high alarm at 100% power level instead of 105% power level. An additional comparator determines when the power is below a selectable value of 70 or 80% so as to prevent operation of the Raise relay, should the power be well below the normal level.

Special digital timing circuits permit separate adjustments (by changing circuit board jumpers) for two transmitters so that the power controller will return the power to near 100% on each correction. This prevents relay chatter and hunting which would otherwise occur as the power level remains near the Raise or Lower limit.

The Raise and Lower limits may be set to select from three incremental thresholds at which power correction occurs (by changing circuit board jumpers). Front panel controls are available for manual transmitter control when needed.

The ATS option includes additional circuits and indicators to determine if the FCC power levels are exceeded for three minutes.

The APC-1 circuits utilize CMOS digital circuitry and conservatively rated IC operational and instrument amplifiers. A single printed circuit board accommodates the input and control logic circuits and two additional boards are used for the regulated power supply and the ATS option circuits. Adequate RF shielding and filtering are provided to insure reliable operation in high RF fields as experienced by some transmitting stations.

**Specifications****Main/Alternate**

Indicators: Two LEDs to indicate transmitter in use

Power Level**Indicators:**

Disable (70% or 80%), FCC Low (90%), Raise (90%, 93.3% or 96.7%), Lower (101.5%, 103.3% or 105%), FCC High (105%)

Remote Inputs for**Raise/Lower****Relays:**

Parallels front panel pushbuttons—relay or open collector pulldown (40mA, 24V) enables relays

Power Level Meter:

Taut band meter with scale from 80 to 110%

Signal Level Range:

0.5 to 4.5VDC for 100% power

Mode Select Inputs:

Normally on day mode. Relay or open collector transistor pulldowns (5mA, 12VDC) selects night or PS mode

Transmitter Select**Input:**

Normally on main mode. Relay or open collector transistor pulldown (5mA, 12VDC) selects Alternate mode

Disable Input**(Remote):**

Relay or open collector pulldown (5mA, 12VDC) disables all outputs except disable output

Alarm Outputs:

Available on rear panel terminal strip: FCC High, FCC Low (both outputs normally low, high if FCC limits exceeded)

Disable Status:

Output low when in disable mode. Rear panel terminal strip

Output Signal**Levels:**

Open collector grounded emitter NPN transistors rated at 40V, 500mA. Will operate relays or digital logic circuits

ATS Resets (Order**ATS Option):**

Contact closures or solid state pulldown from ATS system will reset 3 minute FCC Low and FCC High relays

Accuracy of**Power Level****Comparators:**

Within $\pm 0.5\%$ for 90 to 105% power levels

Remote Antenna**Meter Output:**

4.0V for 100% power for all modes. Source impedance 10K ohms

Dimensions:

3 1/2" H x 19" W x 12" D rackmounting cabinet

Operating**Temperature for****Stated Accuracy:** 10° to 40°C (50° to 104°F)

APC-1 with AM/FM \$1750.00

APC-1 with AM/FM and ATS option 1950.00

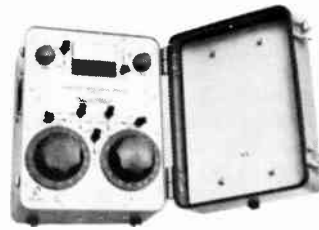
CPB-1/CPB-1A

Common Point Impedance Bridges

The CPB-1 and CPB-1A Common Point Impedance Bridges* are operating impedance bridges similar to the OIB-1, but designed for permanent installation in your phasing equipment at the antenna common point. The CPB-1 will handle common point powers up to 5kW with 100% amplitude modulation on a continuous basis. The CPB-1A is designed for transmitter powers up to 50kW. Both instruments have two 4" dials calibrated directly in resistance and reactance. A panel meter is provided for use as a null detector. The R and X dials are manipulated as a normal bridge to give a null indication on the panel meter while the transmitter is operating at full or reduced power. The value of the common point resistance and reactance can then be read directly from the two dials.

- CPB-1 Common Point Impedance Bridge, 5kW **\$2205.00**
- CPB-1A Common Point Impedance Bridge, 50kW **.2625.00**

Note: CPB-1 and CPB-1A available with or without front panel.



OIB-3

OIB-1

Operating Impedance Bridge

The OIB-1 Operating Impedance Bridge* measures the operating impedance of the individual radiators, networks, transmission line sections, and common point of directional antenna systems while they are functioning under normal power. This "operating impedance" cannot be measured by usual impedance bridge methods because the systems' characteristics are disrupted when the bridge is inserted in the circuit. The OIB-1 thus satisfies a critical requirement long felt by consulting and broadcast station engineers. In addition it has many applications in other fields that cannot be duplicated by any other instrument.

- OIB-1 Operating Impedance Bridge (Specify lead length 12" or 18") **\$2095.00**
- Extended R and X Ranges **.2890.00**
- Permits reading resistance to 1000 ohms.
- Reactance to 900 ohms. Includes calibration.

*U.S. Patent No. 3,249,863.

OIB-3

Operating Impedance Bridge

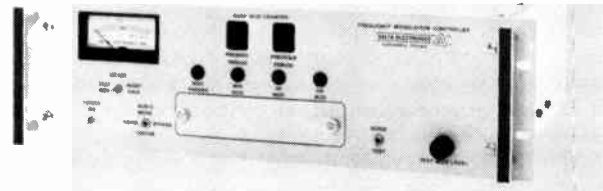
The OIB-3 is an advanced version of the industry standard OIB-1 operating impedance bridge. It has all of the OIB-1 features plus an extended resistance and reactance range and an improved meter amplifier. It is built in a heavy drawn aluminum case and no additional carrying case is required.

- OIB-3 Operating Impedance Bridge (Specify 12" or 18" Leads) **\$2890.00**
- Bridge Leads 12" Replacement Leads for OIB-1 or OIB-3 (2 each) **105.00**
- Bridge Leads 18" Replacement Leads for OIB-1 or OIB-3 (2 each) (Changing lead length requires recalibration) . . **105.00**
- Recalibration Cleaning and recalibration of OIB-1, OIB-3 and CPB-1/1A **.280.00**
- Repair labor and parts additional.
- Return authorization not required.

FMC-1

Frequency Modulation Controller

• Automatically controls the modulation level of an FM or Aural television transmitter to prevent excessive or undesirably low modulation • Uses an input sample from the audio or composite output of modulation monitor • Interfaces monaural or stereo composite signal with 600 ohm balanced input and output circuits • Provides A +/-8dB window of adjustment of stereo, audio or composite • Front panel meter indicates audio operation gain of system, and test modulation percentage • Two one-digit counters with overflow indicators separately display over modulation peaks for present and previous one minute count period • Recessed front panel controls provide adjustment of four modulation control levels and the audio level adjustment rates



FMC-1

- Test mode checks operation of controller and facilitates parameter adjustment
- Proof of performance tests may be conducted with unit in circuit
- Reverts to hardwire through mode on power or circuit failure

The FMC-1 frequency modulation controller provides automatic control of the modulation levels of an FM broadcast transmitter or audio channel of a TV transmitter. The FMC-1 provides a closed loop system around the transmitter which allows the broadcast engineer to maintain modulation at the desired level despite variations in the audio level from different program sources and other system variances. Through fail in is controlled by a digital attenuator maintaining true transparency at all gain settings. No clipping or compression is used.

By using a closed loop approach, the FMC-1 allows modulation levels to be maintained independent of audio program levels, output level variations of the stereo generator or other exciter/transmitter variations which may affect the audio baseband level.

- FMC-1S Single Channel **\$4130.00**
- FMC-1S With ATS **.4675.00**
- FMC-1D Dual Channel **.4550.00**
- FMC-1D With ATC **.5125.00**

TCT-1/TCT-2 and TCT-3

Toroidal Current Transformers

The TCT-1, TCT-2 and TCT-3 are precision toroidal current transformers designed primarily for obtaining sampling voltages for phase and magnitude measurements on broadcast arrays. The units are housed in rectangular aluminum shield enclosures with a 1 1/4" teflon lined pass hole through which the current carrying conductor is passed.

The TCT-1 and TCT-2 may both be used in the same system since they have identical tracking characteristics. The TCT-3 has somewhat different characteristics and preferably should not be mixed with the other two types.

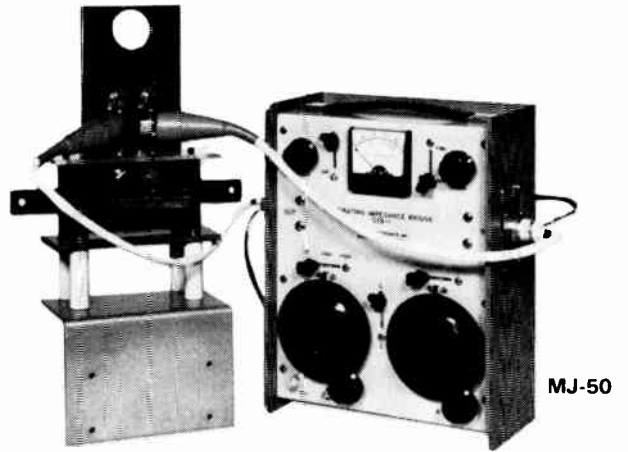
- TCT-1 Toroidal current transformer 0.5V/A **\$300.00**
- High voltage (HV) model **500.00**
- TCT-2 Toroidal current transformer 0.25V/A **.300.00**
- High voltage (HV) model **.500.00**
- TCT-3 Toroidal current transformer 1.00V/A **.300.00**
- High voltage (HV) model **.500.00**

DELTA ELECTRONICS, INC.

Broadcast Products

MJ-50 In-Line High Power Meter Jack

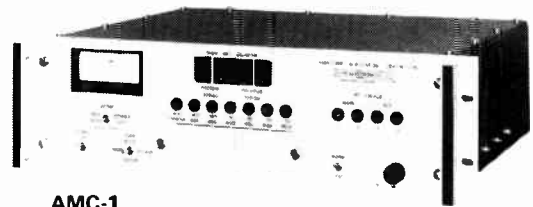
The MJ-50 Meter Jack is a make-before-break in-line jack assembly especially designed for permanent installation in broadcast antennas, transmission lines, and networks to permit the "hot" insertion of the OIB-1 operating impedance bridge or ammeter without interruption to normal program operation. The Meter Jack is rated for continuous operation at currents of up to 50 amperes and is insulated for 10kV RMS. Accessory plug panels are available for use with the OIB-1 and for all of the most commonly used ammeters. The BP-50 bridge panel is a plug panel designed for insertion in the meter jack and has terminals suitable for connection to the OIB-1 bridge leads and is also rated for 50 ampere operation. The MP-308 as depicted above is a plug-panel for use with a Weston model 308 ammeter for "hot" ammeter insertion. Plug panels for use with other meters are also available on request.



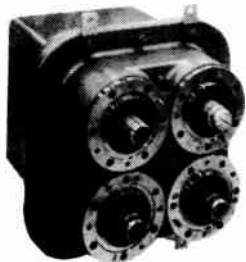
MJ-50	Meter Jack	\$205.00
BP-50	Bridge Plug	105.00
MP-308	Meter Plug	105.00

AMC-1 Amplitude Modulation Controller

The automatic modulation controller is the only modulation controlling system that provides a completely closed loop around the transmitter. The sampling of actual modulation levels after the PA output network assures precise adjustment for optimum modulation levels. The AMC-1 also keeps a digital count of positive and negative over-modulation bursts for both present and previous one minute periods.



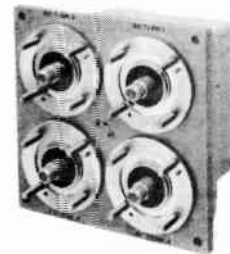
AMC-1	Amplitude Modulation Controller . . .	\$4515.00
	(With ATS option)	5040.00



6740B/6742B
3 1/8" Coaxial
Transfer Switch



33630A
Coaxial Switch
Control Panel



6730E/6732E
1 5/8" Coaxial
Transfer Switch

Transmission Line Switches

The manually or remotely operated coaxial transfer switches are designed to change coaxial connections with a minimum of change-over or off-air time. They can switch pairs of transmission lines in less than two seconds.

The 6730E and 6732E coaxial transfer switches are manufactured for use with 1 5/8" 50 ohm transmission line. The 6740B and 6742B coaxial transfer switches are designed for use with 3 1/8" 50 ohm transmission line. The 6730E and 6740B operate on 120V, 50/60Hz. The 6732E and 6742B operate on 220/240V, 50/60Hz.

Transfer switches are used to switch transmitters, transmission lines, antennas, dummy loads and auxiliary equipment quickly and efficiently when failures occur, when operating

procedure is changed, or during scheduled maintenance periods. They also simplify equipment tuning, testing, and emergency repairs by facilitating quick checks under actual operating conditions.

6700 Transfer Switches

6730E	Coaxial transfer switch, 1 5/8", 120V, 50/60Hz	\$1890.00
6732E	Coaxial transfer switch 1 5/8", 220/240V, 50/60Hz	1995.00
6740B	Coaxial transfer switch 3 1/8", 120V, 50/60Hz.	4675.00
6742B	Coaxial transfer switch 3 1/8", 220/240V, 50/60Hz	5200.00
33630A	Control panel for any transfer switch	590.00

DELTA ELECTRONICS, INC.

Variable Inductor/Reflectometer

RVI 30135U0/35125V7 High Current, Long Life Rotary Variable Inductor

The RVI is especially suited for commercial and military applications, where long life and high reliability are prime requirements.

All metal components of the RVI are heavily silver plated, and the winding is black passivated. Insulating materials have been selected for high voltage and high temperature operation: Teflon over glass reinforced epoxy for the coil winding support; steatite for bearing and roller mounts; glass reinforced epoxy for the base plate.

End contacts to the coil are made through silver plated wipers on the end bearings. The moving contact is a massive contoured roller riding on a roller rod which is in turn supported at each end by heavy silver plated brass end mounts. Steel springs housed in wells in the end mounts maintain constant roller pressure at any position along the coil but are out of the current path.

Coil shaft bearings are sized to provide extremely long life, even under continuous rotation. The inductor is therefore well suited for motor-tuning applications. A wide range of inductance values is available from the standard RVI series. Special sizes, shaft dimensions, and other features are available on special order.

Specifications

RVI 30135U0

Maximum Inductance: 12 μ H
Minimum Inductance: 0.06 μ H
Distributed Capacity: 9.1pF
Halfwave Resonance (Coil Shorted): 37.5MHz
Current Rating (Free Air): 40A (4MHz), 20A (30MHz)
Number of Turns: 13
Turn Pitch: 9/16"
Base Plate and Coil Frame Material: Glass-reinforced epoxy (G10)

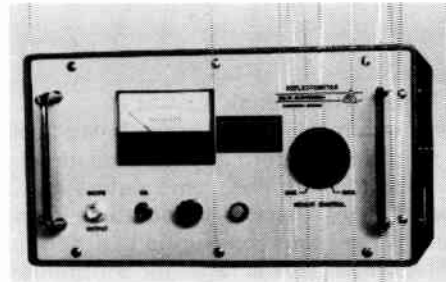
RVI 35125V7

Maximum Inductance: 10 μ H
Minimum Inductance: 0.10 μ H
Distributed Capacity: 13.5pF
Halfwave Resonance (Coil Shorted): 42MHz
Current Rating (Free Air): 40A (4MHz), 25A (30MHz)
Number of Turns: 12
Turn Pitch: Variable — 9/16" to 7/8"
Base Plate and Coil Frame Material: Glass-reinforced epoxy (G7)

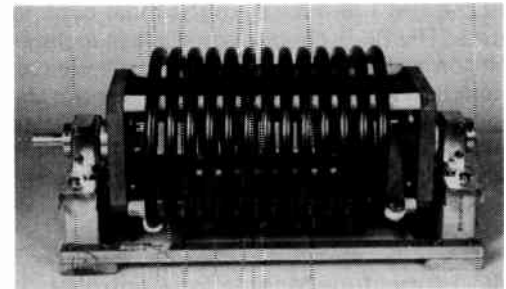
RVI 30135U0/35125V7 \$995.00

PRH-1 High Power Pulse Reflectometer

The PRH-1 is a high power pulse reflectometer intended for measurements on rf transmission line systems. It is useful for determining the location and nature of faults and for the periodic routine surveillance of these systems.



PRH-1



RVI

It is especially designed to operate in the high field environments found at HF transmitting installations. As an example, useful data has been obtained on a line terminated in a rhombic antenna immediately adjacent to a second rhombic antenna operating with 500kW power applied.

The Reflectometer drives the transmission line with a high voltage, short duration, gaussian shaped pulse. A time versus amplitude display of the echoes is examined on an oscilloscope. These echoes originate from line discontinuities and faults, and from the antenna or load terminating the line. The nature of the line faults or other echo sources can be determined from the shape of the echo displays. The distance to the echo sources can be measured using the time calibration of the oscilloscope display.

Specifications

Characteristic Impedance: 50 ohms (unbalanced)
Pulse Voltage: Adjustable to 5kV maximum
Peak Pulse Power: Adjustable to 500kW maximum
Pulse Duration: 30 ns nominal
Pulse Repetition Rate: Internally adjustable to 10kHz maximum
Range Resolution: 5 - 10 feet (dependent on internal adjustment and oscilloscope bandwidth)
Range Accuracy: 2% typical (dependent on oscilloscope sweep accuracy)
Maximum Induced Power Level: 500W continuous; 1000W intermittent
Power Requirement: 115V; 50/60Hz; 40W
Size (rackmounting): 7" H, 19" W, 10" D
Size (portable): 7" H, 12" W, 10" D
Weight: 20 lbs.
Accessories Supplied: 10' terminated scope cable
Pulse Output Connector: Type N

PRH-1 \$3100.00

TCA Series Ammeters

The TCA (Transformer Coupled Ammeter) series uses a toroidal current transformer (TCT) to obtain a sample voltage proportional to the RF current flowing in a conductor. This sample is connected by a 50 ohm coaxial cable to a special rectifier circuit where it is converted to a DC current to drive the indicating instrument. A DC voltage output for driving a remote indicating instrument which may be calibrated to agree with the primary meter and used for remote indication is also provided.

The primary winding of the transformer is the current carrying conductor passed through the hole in the transformer box. This is usually a tubular lead feeding a tower base, a network lead, or the conductor connecting the transmitter output to the "common point" of the antenna phasing networks.

The meter circuit has a 50 ohm load resistor for proper termination of the cable. Thus, the cable is both source and load terminal for a match. A patented three-diode rectifier circuit converts this sample to a DC voltage for display.

A switch is provided on all meters to remove and ground the rectifier portion of the circuit when not required. This greatly enhances its immunity from lightning damage.

Every TCA system is calibrated at an RF frequency of 1MHz. Since the frequency response is extremely flat, accuracy is assured over the entire range of broadcast frequencies. The accuracy specification of $\pm 2\%$ of full scale is guaranteed without corrections.

The TCA-EX and TCA-XM series of RF ammeters include a wide variety of scales, scale combinations, and optional features, all of which are uniquely defined in the model numbering system.

TCA-N-EX. This model is a single-scale meter with external output. The system consists of a current transformer; a six-foot coaxial cable; and a meter box housing the meter movement, rectifier circuitry, and external output connector.

TCA-N-EXR, TCA-N/N-EXR. Meters with the "-EXR" suffix provide an auxiliary output connector along with an internal relay to ground the rectifier circuit (turn the meter off). The dual-scale models include a second relay for changing scales remotely.

TCA-N-XM3R. The addition of the "XM" after the range number specifies a metering system in which the rectifier circuit is housed in a metal box, and the indicating instrument is unmounted and provided with a six foot shielded-pair cable for separate panel mounting. Both 3" and 4" meter movements are available.

TCA-N-EXHV. The suffix "HV" appended to any of the TCA series model numbers specifies that the current transformer supplied with the meter is the high voltage type.

TCA-Jr. RF-Ammeter

- Accurate and reliable means of measuring low power common point and antenna base currents
- To reduce susceptibility to lightning, the meter is designed for temporary installation
- When the engineer needs to verify operating power or adjust power levels, the meter is simply inserted into either a standard J-plug or Delta MJ-50 meter jack and the current readings made
- Assembly is mounted on a 10" x 4" XXXP plate with contacts that permit the plug to be inserted in either a standard J-plug or Delta meter jack
- Linear, mirrored-scale meter permits measurement of currents from either 0.2 to 1.0 amperes RF for the TCA-Jr. 1 or from 0.4 to 2.0 amperes RF for the TCA-Jr. 2
- TCA-Jr. is designed for temporary insertion; no remote output is necessary
- Meter accuracy exceeds the 2% specified by the FCC and is limited essentially by the linearity error of the meter

TCA Accessories

Remote Meter Sets

Meter movements and calibration potentiometers are available in separate sets in both single and dual scale models with 3" or 4" movements. All are available for EX and EXR TCA series meters and are complete with mirror scales identical to the TCA meters. Single



TCA Jr.

scale sets can be mounted on the customer's panel with the potentiometer in series with the meter movement and connected to the TCA-N-EX by a shielded pair cable. Dual scale models are available for use with the TCA-N/N-EXR series meters. A set consists of an appropriate dual meter, two calibration potentiometers and a three position switch for operation of the relays and selection of separate potentiometers for the two scales.

Standard Meter Panels

Standard 19" wide panels are available to accommodate Delta's remote meters. The panels are equipped with mounting holes for the remote meter selected as well as holes for the calibration potentiometer and the On/Off or scale select toggle switch. Please note that remote meters and meter panels are sold as separate items but will be supplied assembled if requested.

Enclosed Meter Panels

The enclosed meter panel has all the features of the standard meter panel plus a rear panel enclosure with connections for each meter circuit and a power supply, and has provision for an integrating buffer amplifier board. The rear panel also provides a hole pattern for an output connector used for connecting automatic logging, remote control or ATS equipment to the meter circuits.

Integrating Buffer Amplifier Board

This printed circuit board contains up to four integrating instrumentation amplifiers to be used when metering outputs for automatic logging, remote control or ATS applications. Each amplifier accepts the output of one TCA-EX or TCA-EXR meter, removes the modulation components and raises the level to 10VDC full scale. The outputs are low impedance so that the panel meters and auxiliary equipment can operate simultaneously. The board requires a ± 15 VDC supply at 10mA for the four amplifiers. This board is intended for use in the enclosed meter panel but may be incorporated in customer designed circuits.

TCA Power Supply

This modular power supply is for use in the enclosed meter panel and is available for incorporation in customer designed circuits. The TCA-PS2 operates from 115/230VAC, 50/60Hz and provides two outputs: a regulated ± 15 VDC at 100mA for the integrating buffer amplifier; and 24VDC at 0.5A for operating the relays in the EXR series ammeters.

Mounting Brackets

There are three special mounting brackets available for mounting TCA meters on network panels. The TCA-MB1 is used for mounting one TCA current transformer on a panel. The TCA-MB2 mounts two TCA current transformers on a panel (the second transformer is typically used for a phase monitor sample). The TCA-MB3 mounts a TCA meter box to TCA-N-XM rectifier box.

Conductor Bushings

A conductor bushing can be used to increase the voltage rating of a TCA or TCT to approximately 15kV (RMS crest). The TCA/LS-8 has a 5" teflon bushing and an 8" conductor for use with a single TCA or TCT current transformer. The TCA/LS-11 has an 8" bushing and an 11" conductor for use with two TCA or TCT current transformers.

DELTA ELECTRONICS, INC.

RF Ammeters/Accessories

RF Ammeters Single Scale Remote Output

Model	Order Number	Description	Unit Price	Model	Order Number	Description	Unit Price
TCA-5-EX	924-0003-001	5A	\$ 485.00	TCA-5-XM4HV	924-0012-001	5A w/high voltage XFMR	895.00
TCA-10-EX	924-0003-002	10A	485.00	TCA-10-XM4HV	924-0012-002	10A w/high voltage XFMR	895.00
TCA-20-EX	924-0003-003	20A	510.00	TCA-20-XM4HV	924-0012-003	20A w/high voltage XFMR	895.00
TCA-40-EX	924-0003-004	40A	630.00	TCA-40-XM4HV	924-0012-004	40A w/high voltage XFMR	1025.00
TCA-80-EX	924-0003-005	80A	630.00	TCA-80-XM4HV	924-0012-005	80A w/high voltage XFMR	1025.00
TCA-5-EXHV	924-0004-001	5A w/high voltage XFMR	840.00	TCA-5-XM4R	924-0013-001	5A w/on/off relay	630.00
TCA-10-EXHV	924-0004-002	10A w/high voltage XFMR	840.00	TCA-10-XM4R	924-0013-002	10A w/on/off relay	630.00
TCA-20-EXHV	924-0004-003	20A w/high voltage XFMR	840.00	TCA-20-XM4R	924-0013-003	20A w/on/off relay	630.00
TCA-40-EXHV	924-0004-004	40A w/high voltage XFMR	945.00	TCA-40-XM4R	924-0013-004	40A w/on/off relay	725.00
TCA-80-EXHV	924-0004-005	80A w/high voltage XFMR	945.00	TCA-80-XM4R	924-0013-005	80A w/on/off relay	725.00
TCA-5-EXR	924-0005-001	5A w/on/off relay	550.00	TCA-5-XM4RHV	924-0014-001	5A w/on/off relay, high voltage XFMR	970.00
TCA-10-EXR	924-0005-002	10A w/on/off relay	550.00	TCA-10-XM4RHV	924-0014-002	10A w/on/off relay, high voltage XFMR	970.00
TCA-20-EXR	924-0005-003	20A w/on/off relay	575.00	TCA-20-XM4RHV	924-0014-003	20A w/on/off relay, high voltage XFMR	970.00
TCA-40-EXR	924-0005-004	40A w/on/off relay	720.00	TCA-40-XM4RHV	924-0014-004	40A w/on/off relay, high voltage XFMR	1075.00
TCA-80-EXR	924-0005-005	80A w/on/off relay	720.00	TCA-80-XM4RHV	924-0014-005	80A w/on/off relay, high voltage XFMR	1075.00
TCA-5-EXRHV	924-0006-001	5A w/on/off relay, high voltage XFMR	1015.00				
TCA-10-EXRHV	924-0006-002	10A w/on/off relay, high voltage XFMR	935.00				
TCA-20-EXRHV	924-0006-003	20A w/on/off relay, high voltage XFMR	935.00				
TCA-40-EXRHV	924-0006-004	40A w/on/off relay, high voltage XFMR	1050.00				
TCA-80-EXRHV	924-0006-005	80A w/on/off relay, high voltage XFMR	1050.00				

RF Ammeters Dual Scale

TCA-5/10-EXR	924-0005-006	5A/10A dual scale	\$ 725.00
TCA-10/20-EXR	924-0005-007	10A/20A dual scale	760.00
TCA-20/40-EXR	924-0005-008	20A/40A dual scale	760.00
TCA-40/80-EXR	924-0005-009	40A/80A dual scale	915.00
TCA-5/10-EXRHV	924-0006-006	5A/10A dual scale w/high voltage XFMR	1210.00
TCA-10/20-EXRHV	924-0006-007	10A/20A dual scale w/high voltage XFMR	1105.00
TCA-20/40-EXRHV	924-0006-008	20A/40A dual scale w/high voltage XFMR	1105.00
TCA-40/80-EXRHV	924-0006-009	40A/80A dual scale w/high voltage XFMR	1260.00

RF Ammeters External Meter 3"

TCA-5-XM3	924-0007-001	5A	\$ 510.00
TCA-10-XM3	924-0007-002	10A	510.00
TCA-20-XM3	924-0007-003	20A	510.00
TCA-40-XM3	924-0007-004	40A	630.00
TCA-80-XM3	924-0007-005	80A	630.00
TCA-5-XM3HV	924-0008-001	5A w/high voltage XFMR	840.00
TCA-10-XM3HV	924-0008-002	10A w/high voltage XFMR	840.00
TCA-20-XM3HV	924-0008-003	20A w/high voltage XFMR	840.00
TCA-40-XM3HV	924-0008-004	40A w/high voltage XFMR	945.00
TCA-80-XM3HV	924-0008-005	80A w/high voltage XFMR	945.00
TCA-5-XM3R	924-0009-001	5A w/on/off relay	580.00
TCA-10-XM3R	924-0009-002	10A w/on/off relay	580.00
TCA-20-XM3R	924-0009-003	20A w/on/off relay	580.00
TCA-40-XM3R	924-0009-004	40A w/on/off relay	720.00
TCA-80-XM3R	924-0009-005	80A w/on/off relay	720.00
TCA-5-XM3RHV	924-0010-001	5A w/on/off relay, high voltage XFMR	1015.00
TCA-10-XM3RHV	924-0010-002	10A w/on/off relay, high voltage XFMR	935.00
TCA-20-XM3RHV	924-0010-003	20A w/on/off relay, high voltage XFMR	935.00
TCA-40-XM3RHV	924-0010-004	40A w/on/off relay, high voltage XFMR	1050.00
TCA-80-XM3RHV	924-0010-005	80A w/on/off relay, high voltage XFMR	1050.00

Remote Meters

TCA-5-EXM3	924-0015-001	5A 3" meter	\$ 105.00
TCA-10-EXM3	924-0015-002	10A 3" meter	105.00
TCA-20-EXM3	924-0015-003	20A 3" meter	105.00
TCA-40-EXM3	924-0015-004	40A 3" meter	105.00
TCA-80-EXM3	924-0015-005	80A 3" meter	105.00
TCA-5/10-EXM3	924-0015-006	5A/10A 3" meter	130.00
TCA-10/20-EXM3	924-0015-007	10A/20A 3" meter	130.00
TCA-20/40-EXM3	924-0015-008	20A/40A 3" meter	130.00
TCA-40/80-EXM3	924-0015-009	40A/80A 3" meter	130.00
TCA-5-EXM4	924-0016-001	5A 4" meter	130.00
TCA-10-EXM4	924-0016-002	10A 4" meter	130.00
TCA-20-EXM4	924-0016-003	20A 4" meter	130.00
TCA-40-EXM4	924-0016-004	40A 4" meter	130.00
TCA-80-EXM4	924-0016-005	80A 4" meter	130.00
TCA-5/10-EXM4	924-0016-006	5A/10A 4" meter	145.00
TCA-10/20-EXM4	924-0016-007	10A/20A 4" meter	145.00
TCA-20/40-EXM4	924-0016-008	20A/40A 4" meter	145.00
TCA-40/80-EXM4	924-0016-009	40A/80A 4" meter	145.00

RF Ammeter Single Scale External Meter 4"

TCA-5-XM4	924-0011-001	5A	\$ 520.00
TCA-10-XM4	924-0011-002	10A	520.00
TCA-20-XM4	924-0011-003	20A	546.00
TCA-40-XM4	924-0011-004	40A	685.00
TCA-80-XM4	924-0011-005	80A	685.00

RF Ammeters Dual Scale External Meter

TCA-5/10-XM3R	924-0009-006	5A/10A dual scale w/3" ext. meter	\$ 725.00
TCA-10/20-XM3R	924-0009-007	10A/20A dual scale w/3" ext. meter	760.00
TCA-20/40-XM3R	924-0009-008	20A/40A dual scale w/3" ext. meter	760.00
TCA-40/80-XM3R	924-0009-009	40A/80A dual scale w/3" ext. meter	920.00
TCA-5/10-XM3RHV	924-0010-006	5/10A dual scale w/3" ext. meter, high voltage XFMR	1105.00
TCA-10/20-XM3RHV	924-0010-007	10/20A dual scale w/3" ext. meter, high voltage XFMR	1105.00
TCA-20/40-XM3RHV	924-0010-008	20/40A dual scale w/3" ext. meter, high voltage XFMR	1105.00
TCA-40/80-XM3RHV	924-0010-009	40/80A dual scale w/3" ext. meter, high voltage XFMR	1260.00
TCA-5/10-XM4R	924-0013-006	5A/10A dual scale w/4" ext. meter	825.00
TCA-10/20-XM4R	924-0013-007	10A/20A dual scale w/4" ext. meter	825.00
TCA-20/40-XM4R	924-0013-008	20A/40A dual scale w/4" ext. meter	825.00
TCA-40/80-XM4R	924-0013-009	40A/80A dual scale w/4" ext. meter	945.00
TCA-5/10-XM4RHV	924-0014-006	5/10A dual scale w/4" ext. meter, high voltage XFMR	1260.00
TCA-10/20-XM4RHV	924-0014-007	10/20A dual scale w/4" ext. meter, high voltage XFMR	1175.00
TCA-20/40-XM4RHV	924-0014-008	20/40A dual scale w/4" ext. meter, high voltage XFMR	1175.00
TCA-40/80-XM4RHV	924-0014-009	40/80A dual scale w/4" ext. meter, high voltage XFMR	1260.00

Meter Panels and Control Panels

TCA-EXMP3-1	922-0008-001	Meter panel, mounts 1 ea. 3" meters	\$ 95.00
TCA-EXMP3-2	922-0008-002	Meter panel, mounts 2 ea. 3" meters	105.00
TCA-EXMP3-3	922-0008-003	Meter panel, mounts 3 ea. 3" meters	115.00
TCA-EXMP3-4	922-0008-004	Meter panel, mounts 4 ea. 3" meters	115.00
TCA-EXMP4-1	922-0009-001	Meter panel, mounts 1 ea. 4" meter	95.00
TCA-EXMP4-2	922-0009-002	Meter panel, mounts 2 ea. 4" meters	115.00
TCA-EXMP4-3	922-0009-003	Meter panel, mounts 3 ea. 4" meters	115.00
TCA-EXMCP3-1	922-0010-001	Control panel/chassis mounts 1 ea. 3" meter	385.00
TCA-EXMCP3-2	922-0010-002	Control panel/chassis mounts 2 ea. 3" meters	420.00
TCA-EXMCP3-3	922-0010-003	Control panel/chassis mounts 3 ea. 3" meters	460.00
TCA-EXMCP3-4	922-0010-004	Control panel/chassis mounts 4 ea. 3" meters	485.00
TCA-EXMCP4-1	922-0011-001	Control panel/chassis mounts 1 ea. 4" meter	390.00
TCA-EXMCP4-2	922-0011-002	Control panel/chassis mounts 2 ea. 4" meters	420.00
TCA-EXMCP4-3	922-0011-003	Control panel/chassis mounts 3 ea. 4" meters	460.00
TCA-EXMCP3-1/IBA-1	922-0013-001	CP/chassis mounts 1 ea. 3" meter w/TCA-IBA-1	525.00
TCA-EXMCP3-2/IBA-2	922-0013-002	CP/chassis mounts 2 ea. 3" meters w/TCA-IBA-2	605.00
TCA-EXMCP3-3/IBA-3	922-0013-003	CP/chassis mounts 3 ea. 3" meters w/TCA-IBA-3	685.00
TCA-EXMCP3-4/IBA-4	922-0013-004	CP/chassis mounts 4 ea. 3" meters w/TCA-IBA-4	760.00
TCA-EXMCP4-1/IBA-1	922-0014-001	CP/chassis mounts 1 ea. 4" meters w/TCA-IBA-1	535.00
TCA-EXMCP4-2/IBA-2	922-0014-002	CP/chassis mounts 2 ea. 4" meters w/TCA-IBA-2	615.00
TCA-EXMCP4-3/IBA-3	922-0014-003	CP/chassis mounts 3 ea. 4" meters w/TCA-IBA-3	695.00

Buffer Amplifier

TCA-IBA-1A	933-0302-001	Printed wiring assembly w/1 buffer amp	\$ 140.00
TCA-IBA-2A	933-0302-002	Printed wiring assembly w/2 buffer amps	180.00
TCA-IBA-3A	933-0302-003	Printed wiring assembly w/3 buffer amps	215.00
TCA-IBA-4A	933-0302-004	Printed wiring assembly w/4 buffer amps	300.00
TCA-IBA-FMK	944-0012-001	Field mod kit to add one buffer amp to existing assy	60.00

Accessories

	051-0027-003	Non-standard coax cable for TCA-20"	\$ 55.00
	051-0027-004	Non-standard coax cable for TCA 12"	55.00
	660-0006	Spring return switch(on-off) single scale TCA	40.00
	660-0011	Spring return switch (on-off) dual scale TCA	40.00
	971-0674-001	Mounting bracket for TCT series, mounts 1 ea.	20.00
	971-0675-001	Mounting bracket for TCT series, mounts 2 ea.	20.00
	971-0616-001	Mounting bracket for TCA series	20.00
	981-0114-001	Line section 8"	100.00
	981-0114-002	Line section 11"	115.00
	933-0183-002	Power supply for buffer amp and relays	160.00

CE1700^{nm} CompuEffectron®

- Studio quality performance
- 20-20kHz bandwidth
- 90dB dynamic range
- Less than 0.2% distortion
- Built-in library of 128 effects permanently stored in memory
- Road-worthy design
- All steel chassis
- Single rack space
- Touch control front panel
- Remote accessibility
- Non-volatile user memory with 219 locations
- Sample mode with full edit capabilities
- Setup mode—create a whole new effect while using another
- Glitch-free operation when instantly changing from one effect to the next
- Real time processing
- 100:1 flange ratio
- Delay gliding
- Sample editing

The CE1700^{nm} is a fast, smart computer that lets you control both the digital delay system and the way that delayed signals are used in generating effects. All of the signal processing is done in real time.

The "micro" is programmed to manage the delay memory by instantly performing whatever calculations are necessary for each effect. The CE1700^{nm} can glide through the delay memory without changing the tap-off point...absolutely no clicks, pops or glitches. By controlling the glide rate, the CompuEffectron is able to approach "zero" delay and sweep to any predetermined delay to create ultra wide "flange" ratios.

Another benefit of real time processing is the Record, Play and Repeat functions. This feature allows you to sample sound for up to 1.5 seconds. If you want to edit the end of the sample you can stretch or reduce it. You can edit the beginning of the sample and even add up to 224ms of previous information.

The CE1700^{nm} comes completely programmed with a permanent library of preset effects. These include "patches" for Flanging, Doubling, Chorus and Echoes. Each program in the library can be simply and independently called up. Once activated, the preset can be altered, if desired, and stored in the non-volatile user memory.

When you do wish to create a "new" effect, the "preset" that is closest can be used as a starting point. Your "new" effect can also be stored in the non-volatile user memory.

The user memory allows you to build sequences, mixing both user and preset effects, to perfectly tailor your performance. Remote access, via a foot switch, gives you complete on stage control.

CE1700^{nm}

In addition to its tremendous processing capability, the CompuEffectron is also a high performance, easy to use, basic signal processor. All of its parameters can be directly accessed via the front panel touch key pad.

Specifications

Input:	Max. level: +14dBV (5.0VRMS)
Sensitivity:	Line level: -8 to +8dBV (0.4 to 2.5VRMS) Instrument level: -34 to -8dBV (20 to 400VRMS)
Output:	Max. level: +8dBV (2.5VRMS)
Dynamic Range:	90dB
Frequency Response:	20 to 20kHz (all delay settings)
Distortion:	0.2% max. at 1kHz
Modulation:	Width (max.): > 100:1 Speed: 0.05 to 10Hz
Feedback:	0 to 100%
Mix:	0 to 100% Delay vs Source
Memory:	Library: 128 preset programs Setup: 1 location User (non-volatile): 219 locations
Sample:	Record: Stores up to 1723ms Play: Plays recorded sample Repeat: Stores and repeats sample
Bypass:	Source output only
Power:	< 10W
Dimensions:	1.75" x 19" x 10"
Weight:	12 lbs.
CE1700^{nm} CompuEffectron	.....\$999.00

CompuController Footswitch

The capabilities of the CompuEffectron can be greatly expanded with the addition of the CompuController.

This accessory accepts MIDI signals to control one or two CE1700^{nm} from any MIDI source. The CompuController is an intelligent device that can be programmed to accept any MIDI source signal to control any of its outputs. With the CompuController you will have direct access to the Bypass, Repeat and Program functions of the CE1700^{nm} with the flexibility of the MIDI medium.

CompuController.....\$25.00

DESISTI LIGHTING

Discharge Fresnel Lens Spotlights

Rembrandt 575W/1200W/2500W/4000W/6000W Discharge Daylight Fresnel Lens Spotlights

- Double-ended, medium length arc discharge lamp with a color temperature of 5600°K and color rendering index in excess of 90
- High voltage igniter mounted in an external protective enclosure at side of lamphouse base. This allows improved cooling and enhances electrical insulation of critical component
- Ballasts and accessories are interchangeable with other luminaires in DeSisti range
- Can be used as key or fill light on location
- Rugged octagonal shape of light sheet steel, allowing strong air flow to pass the lamp, lens and reflector, particularly when the unit is tilted down
- Quick acting spot to flood is accomplished with smooth non-slip focusing mechanism
- On/off momentary pushbuttons mounted on enclosure at side of lamphouse base
- Elapsed time indicator, non-resettable
- Power cut-off microswitch acts if Fresnel lens is broken or removed or the lens door is not properly closed
- Anodized aluminum reflector
- High temperature heat resistant matte black paint

Accessories

- Wire guard
- 4-leaf rotating barndoor
- 8-way rotating barndoor
- Color frame
- Cone with set of discs
- Complete set of scrims

Rembrandt 575W

Discharge Daylight Fresnel Lens Spotlight

- 6" (150mm) diameter convex Fresnel lens, complete with wire guard
- Flat bar aluminum manual stirrup with 1 1/8" (28.57mm) spigot (B.S.)
- 25' (7.5m) cable, 7 core x 1.5 sq. mm with mating connector

Accessories

- Extension cable, 25' (7.5m), 7 core x 1.5 sq. mm
- Extension cable, 50' (15m) 7 core x 1.5 sq. mm

2400/System	Rembrandt 575W HMI system with: #2400 575W, 6" Fresnel, #2004 ballast 120V, #316 barndoor, #317 color frame, #315 wire guard	\$3,475.00
2400	Rembrandt 575W HMI 6" Fresnel with #315 wire guard, 25' cable and yoke with 1 1/8" pin	1,800.00

Rembrandt 1200W

Discharge Daylight Fresnel Lens Spotlight

- 10" (250mm) diameter convex Fresnel lens, complete with wire guard
- Flat bar aluminum manual stirrup with 1 1/8" (28.57mm) spigot (B.S.)
- 25' (7.5m) cable, 7 core x 1.5 sq. mm with mating connector

Accessories

- Extension cable, 25' (7.5m), core x 1.5 sq. mm
- Extension cable, 50' (15m), 7 core x 1.5 sq. mm

2410/System	Rembrandt 1200W HMI system with: #2410 1200W 10" Fresnel, #2014 ballast 120V, #326 barndoor, #327 color frame, #325 wire guard	\$4,500.00
2410	Rembrandt 1200W HMI 10" Fresnel with #325 wire guard, 25' cable and yoke with 1 1/8" pin	2,400.00

Rembrandt 2500W

Discharge Daylight Fresnel Lens Spotlight

- 12" (300mm) diameter convex Fresnel lens, complete with wire guard
- Flat bar aluminum manual stirrup with 1 1/8" (28.57mm) spigot (B.S.)
- 25' (7.5m) cable, 3 x 4 sq. mm + 4 x 1 sq. mm; with mating connector

Accessories

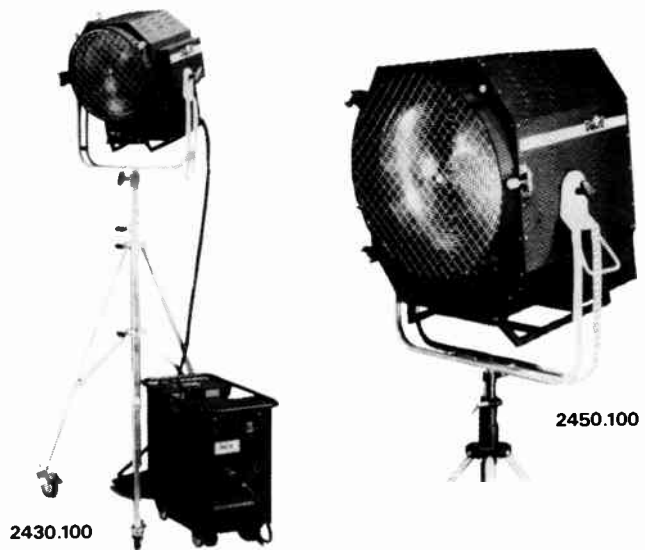
- Extension cable, 25' (7.5m), 3 x 4 sq. mm + 4 x 1 sq. mm
- Extension cable, 50' (15m), 3 x 4 sq. mm + 4 x 1 sq. mm

2420/System	Rembrandt 2500W HMI system with: #2420 2500W 12" Fresnel, #2024 ballast 120V, #356 barndoor, #357 color frame, #355 wire guard	\$6,100.00
2420	Rembrandt 2500W HMI 12" Fresnel with #355 wire guard, 25' cable and yoke with 1 1/8" pin	3,400.00

Rembrandt 4000W

Discharge Daylight Fresnel Lens Spotlight

- 14" (350mm) diameter convex Fresnel lens, complete with wire guard



2430.100

2450.100

- Double reinforced steel tube stirrup with 1 1/8" (28.57mm) spigot (B.S.)
- 25' (7.5m) cable, 3 x 4 sq. mm + 4 x 1 sq. mm with mating connector

Accessories

- Extension cable, 25' (7.5m), 3 x 4 sq. mm + 4 x 1 sq. mm
- Extension cable, 50' (15m), 3 x 4 sq. mm + 4 x 1 sq. mm

2430/System	Rembrandt 4000W HMI system with: #2430 4000W 14" Fresnel, #2434 ballast 120V, #356 barndoor, #357 color frame, #355 wire guard	\$7,900.00
2430	Rembrandt 4000W HMI 14" Fresnel with #355 wire guard, 25' cable and yoke with 1 1/8" pin	4,400.00

Rembrandt 6000W

Discharge Daylight Fresnel Lens Spotlight

- 14" (350mm) diameter convex Fresnel lens, complete with wire guard
- Double reinforced steel tube stirrup with 1 1/8" spigot and special handles for transport and positioning
- 25' (7.5m) detachable cable, 3 x 10 sq. mm + 4 x 1 sq. mm and connectors

Accessories

- Extension cable, 25' (7.5m) 3 x 10 sq. mm + 4 x 1 sq. mm
- Extension cable, 50' (15m) 3 x 10 sq. mm + 4 x 1 sq. mm

2440/System	Rembrandt 6000W HMI system with: #2440 6000W 14" Fresnel, #2443 ballast 208/220V, #356 barndoor, #357 color frame, #355 wire guard, #2441.100 25' extension cable	\$12,800.00
2440	Rembrandt 6000W 14" Fresnel with #355 wire guard, #2441.100 25' cable and yoke with 1 1/8" pin	8,500.00

Rembrandt 12000W

Discharge Fresnel Lens Spotlight

- Same common features as Daylight Fresnel Lens Spotlights except:
- Structure in welded rectangular section tube covered by slotted sheet steel
- Double wall housing provided to allow appropriate ventilation of lamphouse
- Finned aluminum clamping support with allowance for thermal expansion
- 20" (500mm) convex Fresnel lens, mounted on a hinged door, complete with safety wire guard
- Double reinforced steel tube stirrup with a 1 1/8" (28.57mm) spigot (B.S.) with handles
- 25' (7.5m) detachable cable, 7 conductor, 3 x 25 sq. mm + 4 x 1.5 sq. mm with mating connectors

2450/System	Rembrandt 12,000W HMI system with: #2450 12,000W 20" Fresnel, #2453 ballast 208/220/240V, #2456 barndoor, #2457 color frame, #2455 wire guard, #2451.100 25' cable	\$22,000.00
2450	Rembrandt 12,000W HMI 20" Fresnel with #2455 wire guard, #2451.100 25' cable, and yoke with 1 1/8" pin	14,000.00

DESISTI LIGHTING

Fresnel Lens Spotlights

**LEONARDO 1000W, 2000W, 5000W
FRESNEL LENS SPOTLIGHTS**

Common Features

- Front and rear spot-flood focusing • Highly efficient optical system
- Manual or pole operation • Innovative lens door accessory clips which can be positioned to suit various applications • Engineered ventilation system ensuring extended lamp life • Rugged octagonal shape of light sheet steel, allowing strong air flow to pass the lamp, lens and reflector, particularly when the unit is tilted down • Quick acting spot to flood action is accomplished with a smooth no-slip focusing mechanism • Anodized aluminum reflector • High temperature heat resistant matte black paint • All purposes spot used for basic set lighting either in studio or on location • Available either with 23' (7m) cable and switch or with 3'-3" cable, no switch

Accessories

- Wire guard • Four leaf rotating barndoor • 8-way rotating barndoor
- Color frame • Complete set of scrims

LEONARDO 1000W Fresnel Lens Spotlight

- G 22 bi-post, heavy-duty socket • Recessed 10A toggle switch mounted on the unit, rated for AC and DC • 6" diameter convex Fresnel lens mounted on the hinged front door • 23' (7m) cable, 3 core x 1.5 sq.mm

Accessory

- Cone with two discs (front aperture: 55 x 80 x 105mm)

310.100 Manual (M.O.)

Focus: Directly controlled by front and rear T-handles
Stirrup: Flat bar or cast aluminum with various mounting options
 (Please specify with order)

310. LEONARDO 1000-750-500W, 6" Fresnel, manual operated, 25'-0" cable, switch, connector and 5/8" adaptor on yoke \$465.00

310/ST LEONARDO 1000-750-500W, 6" Fresnel, manual operated for hanging, with 3'-0" cable, connector, flat yoke and c-clamp 91.100 450.00

311.100 Pole Operated (P.O.)

Focus: Front mounted angle cast aluminum cup coded yellow and rear T-handle
Stirrup: Constructed from precision diecast parts and steel tubing allowing control of the following functions through colored diecast aluminum cup:
 Vertical movement: (Tilt) – White
 Horizontal movement: (Pan) – Blue

311. LEONARDO 1000-750-500W, 6" Fresnel, pole operated, 3'-0" cable, c-clamp and connector . . \$635.00

LEONARDO 2000W Fresnel Lens Spotlight

- G 38 bi-post, heavy-duty socket • Recessed 20A toggle switch mounted on the unit, rated for AC and DC • 10" (250mm) diameter convex Fresnel lens mounted on the hinged front door • 23' (7m) cable, 3 core x 2.5 sq. mm

Accessory

- Cone with two discs (front aperture: 110 x 150 x 190mm)

320.100 Manual (M.O.)

Focus: Same as 310.100
Stirrup: Aluminum flat bar with various mounting options
 (Please specify with order)

320. LEONARDO 2000-1500-1000W, 10" Fresnel, manual operated, 25'-0" cable, switch, connector and 1 1/8" adaptor on yoke \$750.00



310.100 (M.O.)



321.100 (P.O.)



350.100 (M.O.)



351.100 (P.O.)

320/ST LEONARDO 2000-1500-1000W, 10" Fresnel, manual operated for hanging, with 3'-0" cable, connector, flat yoke and c-clamp 91.100 \$695.00

321.100 Pole Operated (P.O.)

Focus: Same as 311.100
Stirrup: Same as 311.100
Switch: Rotary 20A switch with angled diecast aluminum cup coded red

321. LEONARDO 2000-1500-1000W, 10" Fresnel, pole operated, 3'-0" cable, c-clamp and connector . \$855.00

LEONARDO 5000W Fresnel Lens Spotlight

- G 38 bi-post, heavy-duty socket • Recessed 45A lever switch mounted on the unit, rated for AC and DC • 12" (300mm) diameter convex Fresnel lens mounted on the hinged front door • 23' cable (7m), 3 core x 4 sq. mm

Accessory

- Cone with two discs (front aperture: 155 x 215 x 275mm)

350.100 Manual (M.O.)

Focus: Same as 310.100
Stirrup: Same as 320.100
350. LEONARDO 5000W, 12" Fresnel, manual operated, 25'-0" cable, switch, connector and 1 1/8" adaptor on yoke \$1100.00

350/ST LEONARDO 5000W, 12" Fresnel, manual operated for hanging, with 3'-0" cable, connector, flat yoke and c-clamp 91.100 1100.00

351.100 Pole Operated (P.O.)

Focus: Same as 311.100
Stirrup: Same as 311.100
Switch: Rotary 40A switch with angled diecast aluminum cup coded red

351. LEONARDO 5000W, 12" Fresnel, pole operated, 3'-0" cable, c-clamp and connector \$1250.00

DESISTI LIGHTING

HMI/Portable Lighting

Desisti HMI Softlights

The Desisti Softlight is developed to extend the usage of the HMI, DMI, Brite-Arc or QMI High Intensity Discharge Lamps into fill light applications. Suited for Film, Video or Photographic media, the low current draw of the lamps coupled with the soft, virtually shadowless light output of the unit offer many possibilities for the lighting professional. Housed in heavy sheet metal, the unit has the appearance of a traditional softlight with the lamp and starting circuitry mounted in a removable bottom panel for easy maintenance. A protective glass is mounted above the optical system to limit the ultraviolet emission of the lamp. The glass protection is seated on a safety cut-out switch to ensure the unit can only be turned on if the glass filter is in place.

The top hood contains the secondary reflector which can be easily changed from a white painted reflector to an anodized aluminum reflector for different effects. Robust and compact, the Desisti Softlight is available in 575W, 1200W and 2500W sizes. Units have a full complement of accessories and are available with 120V or 220/240V ballasts.

Desisti Softlight 575W

Raffaello 2000/System	.....	\$3900.00
#2004.200	575W, 120V, 60Hz ballast	1930.00
#2003.100	575W, 220-240V, 50Hz ballast	1800.00
#2001.100	25' Extension cable	250.00
#2001.200	50' Extension cable	310.00
#2005.100	Color/diffusion frame	55.00
#2006.200	Eggcrate with removable 5" louvers and CF holder	145.00
#2006.100	Eggcrate with 2.5" louvers and CF holder	120.00

Desisti Softlight 1200W

Raffaello 2010/System	.....	\$5000.00
1200W	Softlight with anodized aluminum, CF—#2010.100	2950.00
#2014.200	1200W, 120V, 60Hz ballast	2450.00
#2013.100	1200W, 220-240V, 50Hz ballast	2200.00
#2011.100	25' extension cable	250.00
#2011.200	50' extension cable	310.00
#2015.100	Color/diffusion frame	66.00
#2016.2005	Eggcrate with removable louvers and CF holder	180.00
#2016.100	Eggcrate with 2.5" louvers and CF holder	145.00



HMI Softlights

RC80/F 650-120V 800W-220/240V

RC100/F 1000W 120V or 220/240V

The Varibeam 650W and 100W units are variable focus softlights with a full range of interchangeable accessories. The unit is suited for key or fill light applications. Features include a rugged stainless steel strap for support to the lamp sockets, even field of light with focus from spot to flood by means of an external plastic knob. The attachment of the barndoor is simplified without the need of an accessory holder unless additional accessories are required. The RC80/F650W can also be used for mounting 800W 220V lamps, 650 or 1000W unit . . . \$190.00

Accessories

RC101	Accessory holder	45.00
RC103	4-leaf barndoor	40.00
RC104	Dichroic filter	184.00
MX63	6 5/8" scrim set	40.00
240.100	Lightweight alum. kit stand (replaces RC240)	70.00
RC413	Gaffer grip with 5/8" spigot	33.00

RC200 2000W-120V or 220/240V

The Varibeam 2000W variable focus spotlight is a smartly priced unit with variable focus control providing a smooth even field of light in the spot or flood position. The rugged metal housing ensures protection of the reflector and sockets and will withstand the treatment of location handling. Ideal for key, fill or special effect applications in studio or on location. The RC200 can operate at 120 or 220/240V by simply changing the lamp. The power cable comes complete with 15' of cable and in-line switch. A full range of accessories are available and the barndoors can be mounted to the unit without the traditional need for accessory holder. . . . \$370.00



RC110



RC200 Head

Accessories

RC201	Accessory holder	79.00
RC202	4-leaf barndoor	111.00
RC204	Dichroic filter	393.00
MX10	10" scrim set	56.00
RC220	Light alloy folding stand	161.00
G227	Heavy metal grip	98.00
RC205	Protective glass	65.00

RC110 "Minilite" 1000W-120V, 800W-240V

The 1000W Minilite-RC110 is a floodlight with a fixed lamp position suitable for illumination of small backgrounds or for fill light applications. The even field of light is extremely smooth from side to side and can be neatly cut with the integral barndoor leaves. The unit is also provided with 12' of cable, an on/off switch, and a fiberglass back. The rugged construction of the unit will withstand the rough handling of location lighting. A range of mounting equipment is available for use with the RC110. . . . \$225.00

DESISTI LIGHTING

Lighting Systems

TIZIANO 200W Portable Discharge

Daylight Lamp Open-Face Luminaire

• Focusable open-face luminaire for single-ended discharge lamp • Pistol handle is provided for handheld operation and for stand mounting • Stirrup for hanging is available as accessory • Easily focusable from spot to flood position by thumbwheel • On/off pushbutton can be activated by the same hand that holds the unit • Color temperature is balanced for daylight (5600°K) • Powered with AC normal ballast or with DC special electronic ballast • DC power supply can be any 24V or 30V battery • Unit is "flicker-free" and can be 30% dimmed • Lightweight "TIZIANO" is optimum for remote television, ENG and location filming • Solid and slotted sheet steel, octagonal shape with flat corners, safety glass front frame and diecast accessory clips • GY 9.5 socket—Model GL 1221 • High voltage igniter mounted inside the housing in a thermally insulated compartment. Hot restrike permitted, but 20 seconds lag suggested between two strikes • Sandblasted anodized aluminum reflector • Cables 5' (1.5m), 2 x 1 sq. mm + 6 x 0, 30 sq. mm (head to ballast), 6' (1.8m), 3 core x 1 sq. mm delivered with AC ballasts, 7' (2.0m), 2 core x 1.5 sq. mm (ballast to DC source), delivered with DC ballast

- 2200/Kit** "TIZIANO" 200W kit for 30/24VDC operation with:
 #2200 200W "TIZIANO", #2201 yoke, #2202 case, #2205 ballast, #2206 barndoor, #2207 color frame, #2208.100 ext. cable, #2209/set scrims \$5,700.00
- 2200.** "TIZIANO" 200W, CID open face focusing spotlight with 5'-0" cable and connector 1,700.00



2200.100

TIZIANO 2500W

Discharge Daylight Lamp Open-Face Luminaire

• Focusable open-face luminaire designed for the single ended discharge lamp • Combination of an accurately constructed ellipsoidal aluminum reflector with the high output compact source lamp produces high performance fitting suitable for the most stringent conditions • Focus range of 8.5:1, spot to flood extends the use of this versatile luminaire • Unsurpassed in long throw applications • 5600°K color temperature and rugged lightweight construction make the "TIZIANO" a particularly useful keylight or daylight fill on film or video locations • Rugged octagonal shape of light sheet steel with rear handle and diecast accessory clips. Spot to flood action is accomplished with a smooth no-slip mechanism • G 38 bi-post socket • High voltage discharge lamp igniter housed in a thermally insulated compartment at the rear of lamphouse. Hot restrike permitted, but 20 seconds lag is suggested between two strikes • Ellipsoidal sandblasted anodized aluminum reflector • Flat bar aluminum manual stirrup with 1 1/8" (28.57mm) spigot (B.S.) • 10" (0.5m), 3 x 4 sq. mm + 4 x 1 sq. mm with mating connector

- 2230/System** "TIZIANO" 2500W system with:
 #2230 2500W "TIZIANO", #2024 ballast 120V, #2236 barndoor, #2237 color frame, and #2021.100 extension cable \$6,100.00
- 2230.** "TIZIANO" 2500W, CID open face focusing spotlight with 3'-0" cable, connector and yoke 3,300.00



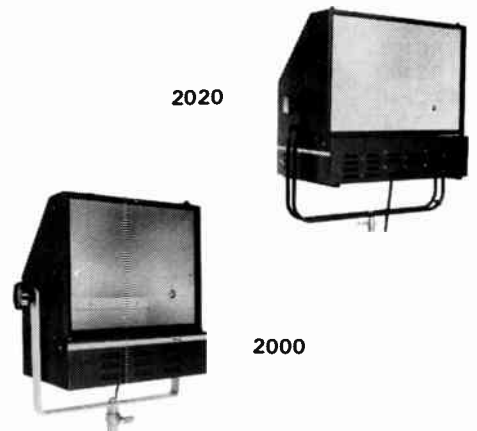
2230.100

RAFFAELLO 575W and 2500W

Discharge Lamp Softlights

• Extends the use of the high intensity discharge lamps • Offers users a soft, virtually shadowless light output • Efficiency of the lamp is very high with daylight quality light beam (5600°K) (3200°K lamps also available) • Low power requirement and cold source • Protective glass is mounted above the source optical system to limit the ultraviolet emission • Power cut-off microswitch is provided if the glass is broken or removed • Nickel plated brass socket with expansion allowance • On/off pushbutton mounted on control panel. Hot restrike permitted, but 20 seconds lag suggested between two strikes • Solid and slotted sheet metal, without spill light and appropriate ventilation • Sandblasted anodized aluminum reflector • Aperture: 12 5/8" x 15" (320 x 380mm) (575W) 17" x 24 3/4" (430 x 630mm) (2500W) • Yoke: flat bar with 1 1/8" (28.57mm) spigot (to B.S.) (575W) • Double reinforced tubes with 1 1/8" (28.57mm) spigot (to B.S.) (2500W) • Built-in elapsed time indicator • Heat resistant matte black paint • 25" (7.5m) cable, 7 core, 1.5 sq. mm with mating ballast connector

- 2000/System** "RAFFAELLO" 575W HMI system with:
 #2000 575W softlight, #2004 ballast 120V, and #2005 color frame \$3,900.00
- 2000.** "RAFFAELLO" 575W HMI softlight with aluminum reflector, #2005 color frame, 25'-0" cable, and yoke 2,300.00
- 2020/System** "RAFFAELLO" 2500W HMI system with:
 #2020 2500W softlight, #2024 ballast 120V, and #2025 color frame 6,400.00
- 2020.** "RAFFAELLO" 2500W HMI softlight with aluminum reflector, #2025 color frame, 25'-0" cable, and yoke 3,900.00



2020

2000

"CARAVAGGIO" 1200W Discharge Par 64 Luminaire

• Luminaire utilizing the 1200W PAR 64 Discharge Lamp • Each unit comes complete with on/off switches and power cable • Oval shaped beam pattern may be oriented by rotating the lens in front of the lamp • Various additional combinations for flood, spot and intensity control are made possible by special snap-in lenses on hinged front-door • Lightweight unit can be used in applications from ENG work to large scale outdoor productions • Can be mounted to double or triple headers to act as a multi-PAR system for area coverage • Strong output of the lamp delivers its maximum punch in a rugged lightweight housing offering more light per pound of weight than most comparable units of the same wattage range

- 2320/System** "CARAVAGGIO" 1200W PAR system with:
 #2320 1200W "CARAVAGGIO", #2014 ballast 120V, #2326 barndoor, #2327 color frame, and #2011.100 ext. cable \$4,300.00
- 2320.** "CARAVAGGIO" 1200W, PAR 64 sealed beam discharge floodlight with 3'-0" cable, yoke and adaptor (for HMI PAR 64, or CID Par 64) 1,800.00



2320.100

Refer to Green Section for Addresses and Telephone Numbers.

DESISTI LIGHTING

Lighting Kits

DLK 200

"Punch" light kit for lighting through windows and other transparent materials. 2000W units for long throw applications 120 or 220V. Stands extend to 8'-3", folds to 35". Accessory holder not required for barndoor.

- 2 RC200 2000W varibeams
 - 2 RC201 2K accessory holders
 - 2 RC202 4-leaf barndoors—2K
 - 2 RC220 2K stands
 - 2 MX10 Set of full single and full double scrims (10" dia.)
 - 1 DC121638 Large 2K case (12" x 36" x 38")
- Total kit weight: 54 lbs.

DLK 200 \$1747.00
 DLK 200/L with 2-FEY 2000W lamps 1948.00

DLK 380

Draws under 20A for ENG or ETV applications. Accessory holder not required for barndoor.

- 3 RC80/F 650W varibeams
 - 3 RC103 4-leaf barndoors
 - 3 240.100 Nano stands
 - 1 DC81632 Compact 3 light case (8³/₄" x 16" x 32")
- Total kit weight: 30 lbs.

DLK 380 \$1133.00
 DLK 380/L with lamp(s) 1197.00

DLK 3100

3—1K's in compact rugged case. Barndoors attach without accessory holder

- 3 RC100/F 1000W varibeams, plus same accessories as DLK 380
- Total kit weight: 30 lbs.

DLK 3100 \$1133.00
 DLK 3100/L with 3-DXW 1000W lamps 1244.00

DLK 480

Can be used in 220V applications. Ideal for EFP applications or documentaries.

- 4 RC80/F 650W varibeams
 - 4 RC101 Accessory holders
 - 4 RC103 4-leaf barndoors
 - 4 RC240 Nano stands
 - 4 MX63 Set of full single and full double scrims (6⁵/₈" dia.)
 - 1 DC 111638 Extended 4 light case (11" x 16" x 38")
- Total kit weight: 44 lbs.

DLK 480 \$1794.00
 DLK 480/L with 4-FAD 650W lamps 1879.00

DLK 4100

Full accessories including scrims, barndoors, and accessory holders. Lightweight compact case carries all items.

- 4 RC100/F 1000W varibeams
- Plus same accessories as DLK 480
 Total kit weight: 44 lbs.

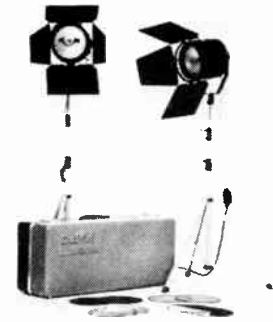
DLK 4100 \$1794.00
 DLK 4100/L with 4-DXW 1000W lamps 1943.00

DLK 3801

Variety of ENG and ETV applications, draws under 20A. Accessory holders and scrims included. Additional accessories available including dichroic filters and black flags. 120V or 220V use.

- 3 RC80/F 650W varibeams
 - 2 RC101 Accessory holders
 - 2 RC103 4-leaf barndoors
 - 3 240.100 Nano stands
 - 1 MX63 Set of full single and full double scrims (6⁵/₈" dia.)
 - 1 DC111632 Extended 3 light case (11" x 16" x 32")
- Total kit weight: 34 lbs.

DLK 3801 \$1228.00
 DLK 3801/L with lamp(s) 1292.00



DLK 200



DLK Mix 5

DLK Mix 4

Industrial or documentary lighting applications, 120 or 220V. Extremely flexible Mix kit with two 650's and two 1K fill lights. Four lightweight rugged stands. Case allows for storage of varibeams with accessory holders attached to units.

- 2 RC80/F 650W varibeams
 - 2 RC110 Minilites—fixed focus fill lights
 - 2 RC101 Accessory holders
 - 2 RC103 4-leaf barndoors
 - 4 RC240 Nano stands
 - 2 MX63 Set of full single and full double scrims (6⁵/₈" dia.)
 - 1 DC111632 Extended 3 light case (11" x 16" x 32")
- Total kit weight: 43 lbs.

DLK Mix 4 \$1599.00
 DLK Mix 4/L with 2-FAD 650W and 2-FLM 1000W lamps . . . 1702.00

DLK Mix 5

"Portable Studio" for indoor or location. 5 lights in one case, 5000W. Good for CCTV or CATV. Minilites used for fill, set or cyc lights. Includes 4 Nano stands and fiber grips.

- 2 RC100/F 1000W varibeams
 - 3 RC110 Minilites, fixed focus fill lights
 - 2 RC101 Accessory holders
 - 2 RC103 4-leaf barndoors
 - 1 RC413 Gaffer grip with 5/8" spigot
 - 4 240.100 Nano stands
 - 2 MX63 Set of full single and full double scrims (6⁵/₈" dia.)
 - 1 DC111638 Extended 4 light case (11" x 16" x 38")
- Total kit weight: 50 lbs.

DLK Mix 5 \$1862.00
 DLK Mix 5/L with 2-DXW 1000W and 3-FCM 1000W lamps . . 2027.00

DLK Pinza 2 "Hollywood Special" 2-RC50 kit with:
 2-RC50 and 1-DC81632. 573.00

DLK Pinza 3 3-RC50 kit with: 3-RC50 and
 1 DC81632. 720.00

DLK Pinza 4 4-RC50 kit with: 4-RC50 and
 1 DC111632 872.00

DIELECTRIC COMMUNICATIONS

FM Antennas

DCR-C Series**FM Broadcast Antennas**

- Circularly polarized
- Radomes or de-icers optional
- Arrays to sixteen sections
- Tower-side or pole-mount
- Input power up to 40kW
- VSWR field adjustable

The DCR-C is circularly polarized with a power rating of 4kW per section (10kW with radomes), and is available in stacked arrays of up to 16 sections with an input rating to 40kW. For situations where ice formation is common, the arrays can be equipped with electrical de-icers or radomes. Both are options at extra cost.

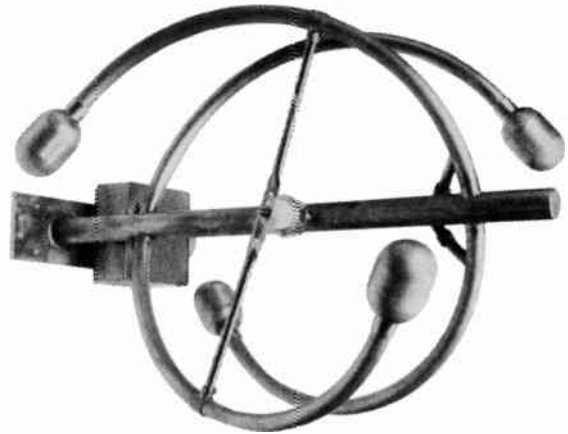
Radomes Optional

For operating situations where icing conditions are frequent and/or severe, radomes are made available for DCR-C arrays. Using radomes instead of de-icers saves about 50 pounds of dead weight per section and increases windload by about 134 pounds per section at 50/30 lbs./ft.² wind pressure. Using radomes increases the maximum power per section from 4 to 10kW in arrays of four sections and fewer. DCR-C antennas supplied in radomes are slightly modified to accommodate the radome.

Beam Tilt and Null Fill, Directional Arrays

Beam tilt and/or null fill is an optional extra on the DCR-C series. These options are ordinarily specified for the larger arrays (eight sections and more). However, arrays of seven sections and fewer may include one or both options. When such is the case, the array is supplied as a center-fed system (rather than end-fed) at additional expense.

The DCR-C antenna is available in directional arrays which are custom-built to the needs of the directivity situation.

**General Specifications**

Polarization: Circular

Horiz. Pattern Circularity in Free Space: ± 1 dB

Vert. Pattern Circularity in Free Space: ± 1 dB

VSWR at Input, Top Mounted, w/o Field Trim: 1.2:1 max.

VSWR at Input, Side Mounted, w/o Field Trim: 1.5:1 max.

VSWR at Input, Top- or Side-Mount, w/Field Trim (200kHz): 1.1:1

Input Connection Diameter (50 ohm, EIA Flange): 3 1/8"

De-Icer Power (Nominal, per section): 750W

De-Icer Voltage: May be wired for 208 or 240V service.

Transformed to 3V at element.

Section Dimensions: 20.7" dia.; 20"H

Feedpoint Locations (Approx.):

Seven Sections and Fewer (below lowest section): 10.5'

Eight Sections and More (below array center): 13'

DCR-C Series FM Antennas

TYPE	NO. OF BAYS	LESS DEICERS and RADOMES			WITH DEICERS		WITH RADOMES	
		POWER GAIN PER POLARIZATION	POWER RATING	PRICE	POWER RATING	PRICE	POWER RATING	PRICE
DCR-C1	1	.46	4 kw	2,830.00	4 kw	4,153.00	10 kw	3,629.00
DCR-C2	2	1.0	8 kw	4,718.00	8 kw	7,363.00	20 kw	6,316.00
DCR-C3	3	1.5	12 kw	6,780.00	12 kw	10,744.00	30 kw	9,178.00
DCR-C4	4	2.1	16 kw	8,795.00	16 kw	14,085.00	40 kw	11,996.00
DCR-C5	5	2.7	20 kw	10,832.00	20 kw	17,441.00	40 kw	14,826.00
DCR-C6	6	3.2	24 kw	12,729.00	24 kw	20,657.00	40 kw	17,524.00
DCR-C7	7	3.8	28 kw	14,876.00	28 kw	24,242.00	40 kw	20,571.00
DCR-C8	8	4.3	32 kw	18,092.00	32 kw	28,259.00	40 kw	24,070.00
DCR-C10	10	5.5	40 kw	22,225.00	40 kw	35,443.00	40 kw	29,668.00
DCR-C12	12	6.6	40 kw	25,702.00	40 kw	41,571.00	40 kw	34,892.00
DCR-C14	14	7.8	40 kw	30,598.00	40 kw	49,179.00	40 kw	40,178.00
DCR-C16	16	8.9	40 kw	34,479.00	40 kw	55,903.00	40 kw	45,587.00

DCR-G Series**Tri-Pole FM Broadcast Antennas**

- Circularly polarized
- Adjustable polarization ratio
- Integral de-icers optional
- Arrays to 16 sections
- Pole or tower-leg mount
- VSWR field adjustable under pressure

The DCR-G Series of antennas consists of circularly polarized elements with a power rating of 6kW per section. They are available in stacked arrays up to 16 sections with an input rating to 40kW. The DCR-G antenna is a three-pole system with factory-adjustable elements that allow control of the ratio between vertical and horizontal polarization. The elements of the antenna section may be adjusted to provide maximum ERP in the horizontal plane and less in the vertical plane. This is most useful where available transmitter power is less than necessary for maximum ERP in both planes.

Pattern Circularity ± 1 dB

The arrays described here offer radiation circularity within 1dB in free space. In side-mount situations, tower metal and guy wires affect the circularity to varying degrees. We recommend that side-mounted arrays be above the highest guy wire. When this is impractical, the guy wires can be insulated from the tower and at 3.5-foot intervals for a distance of 14' from the point where the guy wire touches the tower.

**General Specifications**

Polarization: Circular

Horiz. Pattern Circularity in Free Space: ± 1 dB

Vert. Pattern Circularity in Free Space: ± 1 dB

VSWR at Input, Top Mounted, w/o Field Trim: 1.2:1 max.

VSWR at Input, Side Mounted, w/o Field Trim: 1.5:1 max.

VSWR at Input, Top- or Side-Mount, w/Field Trim (200kHz): 1.1:1

Input Connection Diameter (50 ohm, EIA Flange): 3 $\frac{1}{8}$ "

De-Icer Power (nominal, per section): 750W

Section Dimensions: 25" dia.; 20" H

Feedpoint Locations (approx.):

Seven Sections and Fewer (below lowest section): 10.5'

Eight Sections and More (below array center): 13'

DCR-G Series Tripole FM Antennas

TYPE	NO. OF BAYS	LESS DEICERS and RADOMES			WITH DEICERS	
		POWER GAIN PER POLARIZATION	POWER RATING	PRICE	POWER RATING	PRICE
DCR-G1	1	.46	6 kw	3,970.00	6 kw	5,432.00
DCR-G2	2	1.0	12 kw	6,077.00	12 kw	9,780.00
DCR-G3	3	1.5	18 kw	8,695.00	18 kw	14,240.00
DCR-G4	4	2.1	24 kw	11,592.00	24 kw	18,931.00
DCR-G5	5	2.7	30 kw	14,250.00	30 kw	23,507.00
DCR-G6	6	3.2	36 kw	16,829.00	36 kw	27,806.00
DCR-G7	7	3.8	40 kw	19,264.00	40 kw	32,130.00
DCR-G8	8	4.3	40 kw	21,761.00	40 kw	36,632.00
DCR-G10	10	5.5	40 kw	26,421.00	40 kw	44,981.00
DCR-G12	12	6.6	40 kw	31,145.00	40 kw	53,395.00
DCR-G14	14	7.8	40 kw	35,870.00	40 kw	61,803.00
DCR-G16	16	8.9	40 kw	40,845.00	40 kw	70,159.00

DIELECTRIC COMMUNICATIONS

FM Antennas

DCR-H Series

Economical FM Broadcast Antennas

- Circularly polarized
- Radomes or integral de-icers optional
- Arrays to eight sections
- For Class A stations
- VSWR field adjustable

The DCR-H antenna series is intended for the Class A FM stations seeking superior performance. The DCR-H antenna is a low-power version of the DCR-C and is available in one through eight sections with a power-input rating to 12kW. The DCR-H antenna provides DCR-C antenna performance to the Class A FM station at purchase prices significantly lower than those of the high-power antenna.

End-Fed or Center-Fed Arrays

Two power distribution methods are used with the DCR-H antenna. The array is usually end-fed unless it includes beam tilt and/or null fill. In this case, the sections are fed from a center point. The input connection in either case is a 1⁵/₈" diameter, 50 ohm, EIA flanged copper transmission line.

Radomes Optional

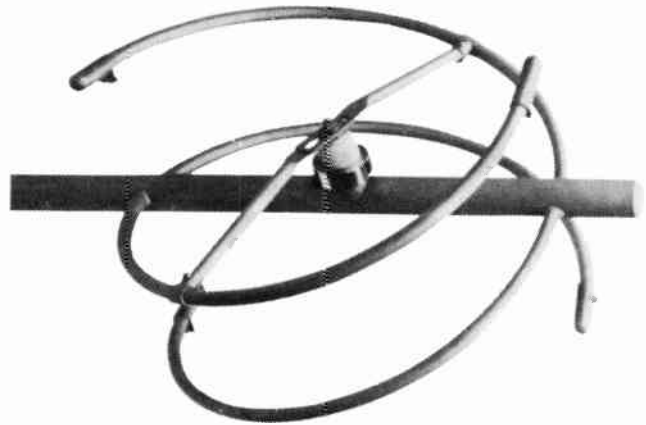
For operating situations where icing conditions are frequent and/or severe, radomes are made available for DCR-H arrays. Using radomes instead of de-icers saves about 60 pounds of dead weight per section and increases windload by about 60 pounds per section at 50/30 lbs./ft.² wind pressure. DCR-H antennas supplied in radomes are slightly modified to accommodate the environment of the radome.

Power Gain Proportional to Sections in Array

Each section of a multi-section array provides slightly less than 0.5 power gain in each polarization. This factor improves slightly as the number of sections in the array increases. To illustrate, an 8-section array provides a power gain of 4.3 in each polarization while a one-section array provides 0.46 power gain.

Beam Tilt and Null Fill, Directional Arrays

Beam tilt and/or null fill are optional extras on the DCR-H series. These options are ordinarily specified for the larger arrays (eight sections). However, arrays of seven sections and fewer may include one or both options. When such is the case, the array is supplied as a center-fed system (rather than end-fed) at additional expense.



General Specifications

- Polarization: Circular
- Horiz. Pattern Circularity in Free Space: ± 1dB
- Vert. Pattern Circularity in Free Space: ± 1dB
- VSWR at Input (adjusted at factory): 1.1: 1
- VSWR at Input, Top-Mounted, no Field Trim: 1.2: 1 max.
- VSWR at Input, Side-Mounted, no Field Trim: 1.5: 1 max.
- Input Connection Diameter (50 ohm, EIA flange): 1⁵/₈"
- De-Icer Power (nominal, per section): 750W
- Section Dimensions: 17" dia.; 15" H
- Feedpoint Locations (approx.)
 - End Feed (below lowest section): 6'
 - Center Feed (below array center): 6'

Weight in Pounds*	Less	With	With
	De-icers	De-icers	Radomes
Single Section	42	130	57
Two Sections	89	238	119
Three Sections	136	373	181
Four Sections	183	481	243
Five Sections	230	616	305
Six Sections	277	724	367
Seven Sections	324	859	429
Eight Sections	371	967	491

*Weight includes elements, feed system to antenna input and 13" to 18" extension brackets for mounting.

DCR-H Series Economical FM Antennas

TYPE	NO. OF BAYS	LESS DEICERS and RADOMES			WITH DEICERS		WITH RADOMES	
		POWER GAIN PER POLARIZATION	POWER RATING	PRICE	POWER RATING	PRICE	POWER RATING	PRICE
DCR-H1	1	.46	2 kw	3,485.00	2 kw	4,865.00	2 kw	4,092.00
DCR-H2	2	1.0	4 kw	4,561.00	4 kw	7,613.00	4 kw	5,775.00
DCR-H3	3	1.5	6 kw	5,771.00	6 kw	9,902.00	6 kw	7,597.00
DCR-H4	4	2.1	8 kw	7,118.00	8 kw	12,659.00	8 kw	9,550.00
DCR-H5	5	2.7	10 kw	8,384.00	10 kw	15,284.00	10 kw	11,420.00
DCR-H6	6	3.2	12 kw	9,599.00	15 kw	17,858.00	15 kw	13,242.00
DCR-H7	7	3.8	12 kw	11,082.00	15 kw	20,735.00	15 kw	15,332.00
DCR-H8	8	4.3	12 kw	11,573.00	15 kw	23,803.00	15 kw	17,630.00

Refer to Green Section for Addresses and Telephone Numbers.

DIELECTRIC COMMUNICATIONS

FM Antennas

DCR-M Series**Quadrapole FM Broadcast Antennas**

- Wideband. Suitable for multi-station operation
- Circularly polarized
- Integral de-icers optional
- Arrays to 16 sections
- Pole or tower-leg mount
- Low ice sensitivity
- VSWR field adjustable

The DCR-M Series of antennas are circularly polarized elements with a power rating of 18kW per section and available in stacked arrays of up to 16 sections with an input rating to 40kW. Special arrays suitable for multi-station operation and/or having higher power input ratings are available.

Beam Tilt and Null Fill, Directional Arrays

Beam tilt and/or null fill are optional extras on the DCR-M series. These options are ordinarily specified for the larger arrays (eight sections and more). However, even numbered arrays of six sections and fewer may include one or both options. When such is the case, the array is supplied as a center-fed system (rather than end-fed) at additional expense.

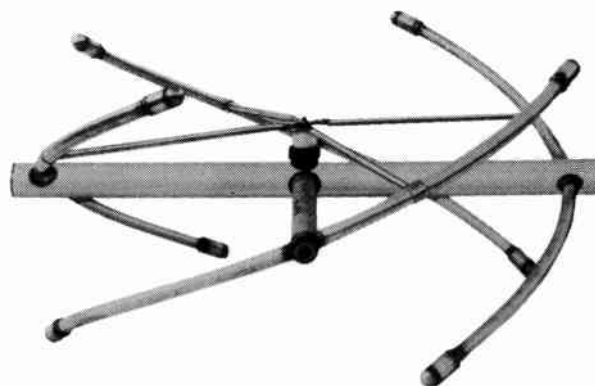
The DCR-M antenna is available in directional arrays which are custom-built to the needs of the directivity situation.

High Power Input Capability

The DCR-M antenna is available at extra cost with 4¹/₁₆ feed system having a power input rating (for five or more bays) of 80kW.

Multi-Station Operation

The wide bandwidth and high power input capability of the DCR-M antenna permits multi-station operation at extra cost. Dual station antennas having a frequency separation of less than 3.0MHz employ a standard shunt feed system.



Multi-station antennas for more than two stations or for two stations within a 5.0MHz bandwidth employ a branch feed system.

Branch feed systems are also employed for multi-station antennas requiring null fill and/or beam tilt.

General Specifications

Polarization: Circular

Horiz. Pattern Circularity in Free Space: ± 1 dB

Vert. Pattern Circularity in Free Space: ± 1 dB

VSWR at Input, Top Mounted, w/o Field Trim: 1.2:1 max.

VSWR in Input, Side Mounted, w/o Field Trim: 1.5:1 max.

VSWR at Input, Top- or Side-Mount, w/Field Trim (200kHz): 1.1:1

Input Connection Diameter (50 ohm, EIA Flange): 3¹/₈"

De-Icer Power (nominal, per section): 1500W

De-Icer Voltage: May be wired for 208 or 240V service.

Transformed to 3V at element.

Section Dimensions: 36" dia.; 29" H

Feedpoint Locations (Approx.):

Seven Sections and Fewer (below lowest section): 10.5'

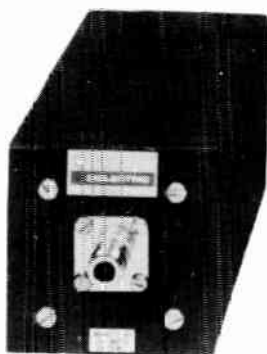
Eight sections and More (below array center): 13'

DCR-M Series Quadrapole FM Antennas

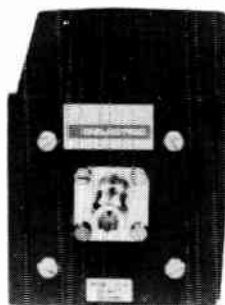
TYPE	NO. OF BAYS	LESS DEICERS and RADOMES			WITH DEICERS	
		POWER GAIN PER POLARIZATION	POWER RATING	PRICE	POWER RATING	PRICE
DCR-M1	1	.46	18 kw	6,247.00	18 kw	9,238.00
DCR-M2	2	1.0	36 kw	6,742.00	36 kw	15,530.00
DCR-M3	3	1.5	40 kw	12,092.00	40 kw	21,726.00
DCR-M4	4	2.1	40 kw	15,202.00	40 kw	27,988.00
DCR-M5	5	2.7	40 kw	18,315.00	40 kw	34,186.00
DCR-M6	6	3.2	40 kw	21,426.00	40 kw	40,445.00
DCR-M7	7	3.8	40 kw	24,348.00	40 kw	46,516.00
DCR-M8	8	4.3	40 kw	27,508.00	40 kw	52,825.00
DCR-M10	10	5.5	40 kw	33,229.00	40 kw	64,896.00
DCR-M12	12	6.6	40 kw	39,075.00	40 kw	77,051.00
DCR-M14	14	7.8	40 kw	45,172.00	40 kw	89,447.00
DCR-M16	16	8.9	40 kw	51,267.00	40 kw	101,839.00

DIELECTRIC COMMUNICATIONS

Terminating RF Load Resistors



4150 150W



4100 100W



4050 50W



4025 25W



4010 10W



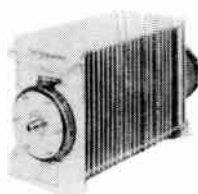
4005 5W

4000 Series Dry Loads Terminating Load Resistors Dry-Air Dielectric-50 ohms

RF Dry Loads range from 5W to 150W CW power ratings, and may be operated in any position. Unless otherwise requested, Dielectric RF Dry Loads are equipped with type-N female Quick Match connectors.

Model	CW Power Rating	VSWR	Frequency Range	H In.	W In.	D In.	Price
4005	5W	1.05:1	DC-1000MHz	1.25	1.25	2.75	\$121.00
		1.10:1	1GHz-4GHz				
4010	10W	1.05:1	DC-1000MHz	1.25	1.25	2.75	125.00
		1.10:1	1GHz-4GHz				
4025	25W	1.05:1	DC-1000MHz	1.50	1.50	4.19	189.00
		1.10:1	1GHz-4GHz				
4050	50W	1.05:1	DC-1000MHz	2.00	2.00	4.19	195.00
		1.10:1	1GHz-4GHz				
4100	100W	1.05:1	DC-1000MHz	3.50	3.50	4.80	271.00
		1.10:1	1GHz-4GHz				
4150	150W	1.05:1	DC-1000MHz	3.50	3.50	7.75	352.00
		1.10:1	1GHz-4GHz				

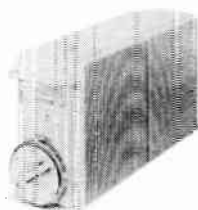
Ambient air temperatures for CW power ratings is -40°C to +45°C.



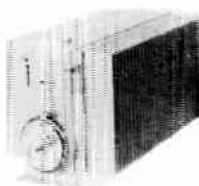
5600 600W



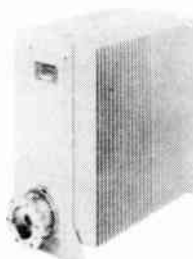
5700 1000W



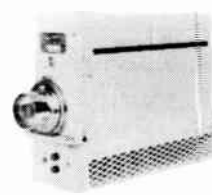
5750 1500W



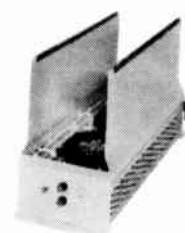
5800 3000W



5900 5000W



5755 5000W
(with forced air blower assembly)



BA-572
Forced Air Blower Assembly

5000 Series Liquid/Air Loads

Seven models of these loads are available from 600W to 10,000W CW power ratings. Five of them—models 5750, 5755, 5800, 5900 and 5975—are equipped with thermal overload switches that interface to the user's interlock or other warning circuits.

Terminating Load Resistors Liquid Dielectric-Air Convection-50 ohms

Model	CW Power Rating	VSWR	Frequency Range	H In.	W In.	L In.	Wt. lbs.	Price
5600	600W	1.1:1	DC-1000MHz	9.16	6.00	17.88	23	\$1129.00
5700	1000W	1.1:1	DC-1000MHz	11.25	7.00	20.00	33	1234.00
5750	1500W	1.1:1	DC-1000MHz	13.25	6.38	21.25	50	1449.00
5755*	5000W	1.1:1	DC-1000MHz	18.13	7.75	24.63	62	1948.00
5800	3000W	1.1:1	DC-1000MHz	13.25	12.00	26.25	69	1845.00
5900	5000W	1.1:1	DC-1000MHz	23.50	12.00	26.25	106	2195.00
5975*	10kW	1.1:1	DC-300MHz	27.63	12.00	27.25	152	3399.00
BA572			Blower assembly					710.00

Ambient air temperatures for CW power ratings are -40°C to +45°C.

*Equipped with forced air blower assembly—specify 115 or 230VAC input

DIELECTRIC COMMUNICATIONS

Terminating RF Load Resistors

6000 Series Water Cooled Loads

Several versions of water cooled loads provide power dissipation for systems of 10,000W to 50,000W CW power ratings. The basic Series 6000 water cooled load requires a water supply, and accepts a 1/2" pipe thread or 3/4" garden hose water connection. A family of control thermostats are available for use with these loads.



Terminating Load Resistors –
Water Cooled—50 ohms

Model	CW Power Rating	VSWR	Frequency Range	Input Connector	Minimum Water Flow	DIA	L	Weight	Price
						in.		lbs.	
6010	10kW	1:1.1 DC-1000MHz	all models	3 1/8" EIA fl.	4 GPM	5.19	19.13	18	\$1,721.00
6011	10kW		3 1/8" unfl.	4 GPM	4.75	19.13	18	1,721.00	
6015	15kW	1:1.1 DC-1000MHz	all models	3 1/8" EIA fl.	5 GPM	5.19	19.13	18	1,721.00
6016	15kW		3 1/8" unfl.	5 GPM	4.75	19.13	18	1,721.00	
6025	25kW	1:1.1 DC-1000MHz	all models	3 1/8" EIA fl.	6 GPM	5.19	19.13	18	1,721.00
6026	25kW		3 1/8" unfl.	6 GPM	4.75	19.13	18	1,721.00	
6050	50kW	1:1.1 DC-1000MHz	all models	3 1/8" EIA fl.	10 GPM	5.19	19.13	18	1,721.00
6051	50kW		3 1/8" unfl.	10 GPM	4.75	19.13	18	1,721.00	
6100	100kW			4 1/16" EIA fl.	18-20 GPM	6.2	27	24.5	2,925.00

6500 Series Heat Exchanger

Loads (Self Contained, Water Cooled)

The 6500 Series offers self contained heat exchanger loads with a coolant pressure gauge, sight glass, and casters for portability.



6500 Series
Heat Exchanger

Terminating Load Resistors—Heat Exchanger-Water Cooled-50 Ohms

Model	CW Power Rating	VSWR	Frequency Range	Input Connector	H	W	D	Weight	Price
					in.	in.	in.	lbs.	
6510	10kW	1:1.1 DC-1000MHz	all models	3 1/8" EIA fl.	29.00	26.25	39.00	210	\$ 7,094.00
6511	10kW		3 1/8" unfl.	29.00	26.25	39.00	210	7,094.00	
6525	25kW	1:1.1 DC-1000MHz	all models	3 1/8" EIA fl.	32.00	33.00	37.00	250	7,110.00
6526	25kW		3 1/8" unfl.	32.00	33.00	37.00	250	7,110.00	
6550	50kW	1:1.1 DC-1000MHz	all models	3 1/8" EIA fl.	41.8	24.00	48.00	380	10,520.00
6551	50kW		3 1/8" unfl.	41.8	24.00	48.00	380	10,520.00	

6600 Series Dolly Loads

(Water Cooled)

For transmitter buildings, Dielectric offers a Dolly Load in three models, with pressure and flow interlocks if desired. These loads can be wheeled easily from one location to another. Dolly Loads require a water supply and accept a 1/2" pipe thread or 3/4" garden hose water connection. Overall dimensions are: Height 31.5"; Base—width 24", depth 20"; Dry Weight 64 lb.



6600 Series
Dolly Load
Either EIA flanged or
unflanged available—
specify when ordering

Model	CW Power Rating	Minimum Flow Rate (Water)	RF Input	Price
6610	10kW	4 GPM	3 1/8"	\$3,620.00
6625	25kW	6 GPM	3 1/8"	3,660.00
6650	50kW	10 GPM	3 1/8"	3,750.00

DIELECTRIC COMMUNICATIONS

Coaxial Switches/Patch Panels

Coaxial Switches A 5000 Series

Line Size (Inches)	Impedance in ohms	Number of Ports	Motor Drive Voltage	Control Relay Coil Voltage	Catalog Number	Price
1 5/8	50	4	115VAC	12VDC	A 50000-200	\$3200.00
1 5/8	50	4	115VAC	24VDC	A 50000-201	3200.00
1 5/8	50	4	115VAC	115VAC	A 50000-203	3200.00
1 5/8	50	4	230VAC	12VDC	A 50000-205	3230.00
1 5/8	50	4	230VAC	24VDC	A 50000-206	3230.00
1 5/8	50	4	230VAC	115VAC	A 50000-208	3230.00
1 5/8	50	4	230VAC	230VAC	A 50000-209	3230.00
1 5/8	50	3	115VAC	12VDC	A 50000-210	3050.00
1 5/8	50	3	115VAC	24VDC	A 50000-211	3050.00
1 5/8	50	3	115VAC	115VAC	A 50000-213	3050.00
1 5/8	50	3	230VAC	12VDC	A 50000-215	3080.00
1 5/8	50	3	230VAC	24VDC	A 50000-216	3080.00
1 5/8	50	3	230VAC	115VAC	A 50000-218	3080.00
1 5/8	50	3	230VAC	230VAC	A 50000-219	3080.00
3 1/8	50	4	115VAC	12VDC	A 50000-300	3725.00
3 1/8	50	4	115VAC	24VDC	A 50000-301	3725.00
3 1/8	50	4	115VAC	115VAC	A 50000-303	3725.00
3 1/8	50	4	230VAC	12VDC	A 50000-305	3755.00
3 1/8	50	4	230VAC	24VDC	A 50000-306	3755.00
3 1/8	50	4	230VAC	115VAC	A 50000-308	3755.00
3 1/8	50	4	230VAC	230VAC	A 50000-309	3755.00
3 1/8	50	3	115VAC	12VDC	A 50000-310	3540.00
3 1/8	50	3	115VAC	24VDC	A 50000-311	3540.00
3 1/8	50	3	115VAC	115VAC	A 50000-313	3540.00
3 1/8	50	3	230VAC	12VDC	A 50000-315	3570.00
3 1/8	50	3	230VAC	24VDC	A 50000-316	3570.00
3 1/8	50	3	230VAC	115VAC	A 50000-318	3570.00
3 1/8	50	3	230VAC	230VAC	A 50000-319	3570.00
4 1/16	50	4	115VAC	12VDC	A 50000-400	4000.00
4 1/16	50	4	115VAC	24VDC	A 50000-401	4000.00
4 1/16	50	4	115VAC	115VAC	A 50000-403	4000.00
4 1/16	50	4	230VAC	12VDC	A 50000-405	4000.00
4 1/16	50	4	230VAC	24VDC	A 50000-406	4000.00
4 1/16	50	4	230VAC	115VAC	A 50000-408	4000.00
4 1/16	50	4	230VAC	230VAC	A 50000-409	4000.00
4 1/16	50	3	115VAC	12VDC	A 50000-410	3950.00
4 1/16	50	3	115VAC	24VDC	A 50000-411	3950.00
4 1/16	50	3	115VAC	115VAC	A 50000-413	3950.00
4 1/16	50	3	230VAC	12VDC	A 50000-415	3950.00
4 1/16	50	3	230VAC	24VDC	A 50000-416	3950.00
4 1/16	50	3	230VAC	115VAC	A 50000-418	3950.00
4 1/16	50	3	230VAC	230VAC	A 50000-419	3950.00

All ports are terminated with EIA flanges.

80 Series High Power Motorized Switches

Line Size (Inches)	Impedance in Ohms	Number of Ports	Control Relay Coil Voltage	Catalog Number	Price
4 1/16	50	4	12VDC	DC 485-640	\$ 9,845.00
4 1/16	50	4	24VDC	DC 485-641	9,845.00
4 1/16	50	4	115VAC	DC 485-643	9,845.00
6 1/8	50	4	12VDC	DC 685-640	11,400.00
6 1/8	50	4	24VDC	DC 685-641	11,400.00
6 1/8	50	4	115VAC	DC 685-643	11,400.00
6 1/8	75	4	12VDC	DC 687-640	11,400.00
6 1/8	75	4	24VDC	DC 687-641	11,400.00
6 1/8	75	4	115VAC	DC 687-643	11,400.00
8 3/16	75	4	12VDC	DC 887-640	13,500.00
8 3/16	75	4	24VDC	DC 887-641	13,500.00
8 3/16	75	4	115VAC	DC 887-643	13,500.00

* All ports are terminated with EIA flanges.

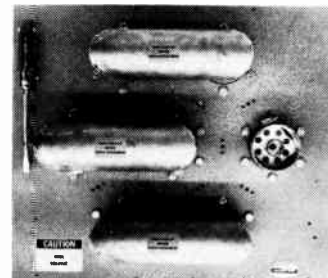
Manual Coaxial Switches 80 Series

Line Size (Inches)	Number of Ports	Number of U-Links	Impedance in ohms	Catalog Number		Price
				Without Interlocks	With Interlocks	
1 5/8*	3	NA	50	NA	DC-285-534	\$2349.00
1 5/8*	4	NA	50	NA	DC 285-544	2525.00
3 1/8*	3	NA	50	NA	DC 385-534	3025.00
3 1/8*	4	NA	50	NA	DC 385-544	3278.00

*EIA flanged ports.



A 5000 Series



80 Series Patch Panels

Pressurized Switches 80 Series with heater for outdoor use

Line Size (Inches)	Impedance in ohms	Number of Ports	Motor Drive Voltage	Control Relay Coil Voltage	Catalog Number	Price
1 5/8	50	4	115VAC	115VAC	D 40587-501	\$4570.00
3 1/8	50	4	115VAC	115VAC	D 27035-501	5500.00
4 1/16	50	4	115VAC	115VAC	-	5900.00

Coaxial Patch Panels 80 Series

Line Size (Inches)	Number of Ports	Number of U-Links	Impedance in ohms	Catalog Number		Price
				Without Interlocks	With Interlocks	
1 5/8*	3	1	50	DC 285-430	DC 285-431	\$ 973.00
1 5/8**	3	1	50	DC 285-432	DC 285-433	973.00
1 5/8*	4	2	50	DC 285-440	DC 285-441	1617.00
1 5/8**	4	2	50	DC 285-442	DC 285-443	1617.00
1 5/8*	7	3	50	DC 285-470	DC 285-471	1911.00
1 5/8**	7	3	50	DC 285-472	DC 285-473	1911.00
3 1/8*	3	1	50	DC 385-430	DC 385-431	1229.00
3 1/8**	3	1	50	DC 385-432	DC 385-433	1229.00
3 1/8*	4	2	50	DC 385-440	DC 385-441	1769.00
3 1/8**	4	2	50	DC 385-442	DC 385-443	1769.00
3 1/8*	7	3	50	DC 385-470	DC 385-471	2336.00
3 1/8**	7	3	50	DC 385-472	DC 385-473	2336.00
4 1/16*	3	1	50	DC 485-430	DC 485-431	1943.00
4 1/16**	3	1	50	DC 485-432	DC 485-433	1943.00
4 1/16*	4	2	50	DC 485-440	DC 485-441	2646.00
4 1/16**	4	2	50	DC 485-442	DC 485-443	2646.00
4 1/16*	7	3	50	DC 485-470	DC 485-471	3691.00
4 1/16**	7	3	50	DC 485-472	DC 485-473	3691.00
6 1/8*	3	1	50	DC 685-430	DC 685-431	2268.00
6 1/8**	3	1	50	DC 685-432	DC 685-433	2268.00
6 1/8*	3	1	75	DC 685-430	DC 687-431	2268.00
6 1/8**	3	1	75	DC 687-432	DC 687-433	2268.00
6 1/8*	4	2	50	DC 685-440	DC 685-441	3512.00
6 1/8**	4	2	50	DC 685-442	DC 685-443	3512.00
6 1/8*	4	2	75	DC 687-440	DC 687-441	3512.00
6 1/8**	4	2	75	DC 687-442	DC 687-443	3512.00
6 1/8*	7	3	50	DC 685-470	DC 685-471	5675.00
6 1/8**	7	3	50	DC 685-472	DC 685-473	5675.00
6 1/8*	7	3	75	DC 687-470	DC 687-471	5675.00
6 1/8**	7	3	75	DC 687-472	DC 687-473	5675.00
8 3/16*	4	2	75	DC 887-430	DC 887-441	5675.00
8 3/16**	4	2	75	DC 887-440	DC 887-441	5675.00

1 Interlocks: DPDT Interlocks can be located between each port.

(If required, add \$85.00 for each interlock position).

Customer to specify number and location.

* EIA flanged ports.

** Unflanged ports.

Coaxial Switch Accessories

- B 40715-501** Transformer 220VAC to 115VAC (Included in the price of 220VAC). \$119.00
- C 48112-501** Local Control Panel. \$475.00
- B 44920-502** Adaptor 1 5/8 EIA or 1 5/8 Unflanged. \$70.00
- B 44900-502** Adaptor 3 1/8 EIA or 3 5/8 Unflanged. \$69.00
- 15751** Adaptor 4 1/16 Bolt or 4 1/16 Unflanged. \$69.00
- B 46449-507** Adaptor 4 1/16 F EIA or 3 1/8 M EIA 50 ohm. \$425.00
- B 43916-501** Adaptor 6 1/8 EIA or 6 1/8 Unflanged. \$175.00
- A 40706-501** Replacement Heater for 1 5/8 and 3 1/8 Pressurized Switch. \$255.00

DIELECTRIC COMMUNICATIONS

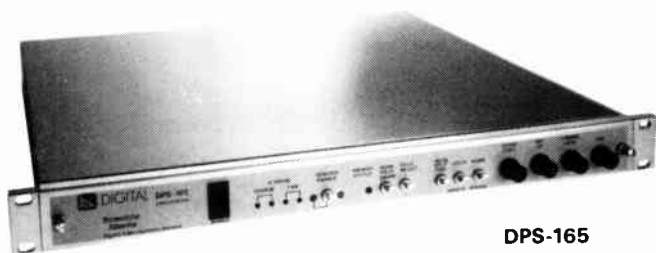
Coaxial Transmission Line

	Cat. #	Price		Cat. #	Price
4 1/8" 50 Ohm "60 Series" Unflanged					
20' Transmission Line	DC 465-002	775.00	Reducer, 6 1/8" to 3 1/8"	DC 665-061	446.00
Elbow, 90° Equal Leg	DC 465-017	215.00	Hose Clamp	DC 660-009	2.75
Elbow, 90° Unequal Leg	DC 465-018	250.00	Cutoff Guide (Outer Conductor)	DC 660-040	125.00
Elbow, 45° Unequal Leg	DC 465-020	250.00	Cutoff Guide (Inner Conductor)	DC 665-041	85.00
Coupling Assembly	DC 465-008	130.00	Soft Solder Kit	DC 660-050	8.00
Connector (Inner Conductor)	DC 465-007	42.00	6 1/8" 75 Ohm "60 Series" Unflanged		
Flange, Mechanical	DC 460-015	85.00	20' Transmission Line	DC 667-002	1300.00
Flange, Swivel, Silver Solder			8 1/8" 75 Ohm "70 Series" Bolt Flanged		
	DC 460-013	95.00	20' Transmission Line with		
Flange, Fixed, Silver Solder			Expansion Inner Conductor	DC 877-004	2390.00
	DC 460-016	43.00	19.5' Transmission Line with		
Reducer, 4 1/8" to 3 1/8"	DC 465-060	280.00	Expansion Inner Conductor	DC 877-003	2390.00
Clamp	DC 460-009	2.75	Transmission Line Random Length,		
Cutoff Guide (Outer Conductor)	DC 460-040	195.00	Fixed Flange	DC 877-006	P.O.A.
Cutoff Guide (Inner Conductor)	DC 465-041	80.00	Elbow, 90° Mitre Equal Leg	DC 877-017	1375.00
Soft Solder Kit	DC 460-050	8.00	Elbow, 90° Mitre Unequal Leg	DC 877-018	1498.00
			Elbow, 90° Mitre Equal Leg,		
6 1/8" 50 Ohm "70 Series" Bolt Flanged			Reinforced	DC 877-021	1416.00
20' Transmission Line with			Elbow, 90° Mitre Unequal Leg,		
Expansion Inner Conductor	DC 675-004	1550.00	Reinforced	DC 877-022	1540.00
19.5' Transmission Line with			Gas Stop	DC 877-005	1625.00
Expansion Inner Conductor	DC 675-003	1550.00	Flange, Soft Solder	DC 870-014	396.00
Transmission Line Random Length,			End Cap	DC 870-024	395.00
Fixed Flange	DC 675-006	P.O.A.	Connector, Anchor Insulator	DC 877-011	220.00
Elbow, 90° Mitre Equal Leg	DC 675-017	791.00	Reducer, Quick-step, 8 1/8" to 6 1/8"	DC 877-060	1065.00
Elbow, 90° Mitre Unequal Leg	DC 675-018	960.00	Cutoff Guide (Outer Conductor)	DC 870-040	215.00
Elbow, 45° Mitre Unequal Leg	DC 675-020	960.00	Cutoff Guide (Inner Conductor)	DC 877-041	160.00
Elbow, 90° Mitre Equal Leg,			"O" Ring	DC 870-010	9.50
Reinforced	DC 675-021	900.00	Hardware Kit	DC 870-012	44.00
Elbow, 90° Mitre Unequal Leg,			Soft Solder Kit	DC 860-050	10.00
Reinforced	DC 675-022	995.00	8 1/8" Hangers		
Gas Stop	DC 675-005	1425.00	Horizontal Anchor, Single	DC 870-028	379.00
Flange, Soft Solder	DC 670-014	115.00	Horizontal 3 Point Suspension,		
End Cap	DC 670-024	145.00	Single	DC 870-032	378.00
Connector, Anchor Insulator	DC 675-011	140.00	Lateral Brace	DC 870-038	75.00
Reducer, Quick-step, 6 1/8" to 4 1/8"	DC 675-060	627.00	Horizontal Roller Assembly	DC 870-027	592.00
Reducer, Quick-step, 6 1/8" to 3 1/8"	DC 675-061	751.00	Vertical Fixed, Single	DC 870-034	130.00
Cutoff Guides (Outer Conductor)	DC 670-040	125.00	Vertical Expansion, Single (for use		
Cutoff Guides (Inner Conductor)	DC 670-041	85.00	w/vertical runs up to 1200')	DC 870-036	330.00
"O" Ring	DC 670-010	5.00	Vertical Spring, Single (for use w/		
Hardware Kit	DC 670-012	20.00	vertical runs at 1200' and higher)	DC 870-039	380.00
			Vertical Fixed, Single, Heavy Duty		
6 1/8" 75 Ohm "70 Series" Bolt Flanged			(for use w/750' vertical runs or higher.	DC 870-042	754.00
20' Transmission Line with			9 1/8" 75 Ohm "70 Series" Bolt Flanged		
Expansion Inner Conductor	DC 677-004	1400.00	20' Transmission Line, Fixed Flange		
19.5' Transmission Line with			with Expansion Inner Conductor	DC 977-004	2900.00
Expansion Inner Conductor	DC 677-003	1400.00	19.5' Transmission Line, Fixed Flange		
Transmission Line Random Length,			with Expansion Inner Conductor	DC 977-003	2900.00
Fixed Flange	DC 677-006	P.O.A.	Transmission Line Random Length,		
Elbow, 90° Mitre Equal Leg	DC 677-017	785.00	Fixed Flange	DC 977-006	P.O.A.
Elbow, 90° Mitre Unequal Leg	DC 677-018	866.00	Elbow, 90° Mitre Equal Leg	DC 977-017	1680.00
Elbow, 45° Mitre Unequal Leg	DC 677-020	866.00	Elbow, 90° Mitre Unequal Leg	DC 977-018	1832.00
Elbow, 90° Mitre Equal Leg,			Elbow, 90° Mitre Equal Leg,		
Reinforced	DC 677-021	885.00	Reinforced	DC 977-021	1772.00
Elbow, 90° Mitre Unequal Leg,			Elbow, 90° Mitre Unequal Leg,		
Reinforced	DC 677-022	970.00	Reinforced	DC 977-022	1932.00
Gas Stop	DC 677-005	1425.00	Gas Stop	DC 977-005	2000.00
Flange, Soft Solder	DC 677-014	110.00	Flange, Soft Solder	DC 970-014	478.00
Connector, Anchor Insulator	DC 677-011	120.00	End Cap	DC 970-024	400.00
Cutoff Guides (Outer Conductor)	DC 677-040	125.00	Connector, Anchor Insulator	DC 977-011	472.00
Cutoff Guides (Inner Conductor)	DC 677-041	85.00	Reducer, Quick-step, 9 1/8" to 8 1/8"	DC 977-060	1325.00
			Reducer, Quick-step, 9 1/8" to 6 1/8"	DC 977-061	1530.00
6 1/8" Hangers			Cutoff Guides (Outer Conductor)	DC 970-040	255.00
Horizontal Anchor, Single	DC 670-028	210.00	Cutoff Guides (Inner Conductor)	DC 970-041	165.00
Horizontal Anchor, Dual	DC 670-029	339.00	"O" Ring	DC 970-010	9.50
Horizontal 3 Point Suspension,			Hardware Kit	DC 970-012	49.00
Single	DC 670-032	300.00	Soft Solder	DC 960-050	12.00
Horizontal 3 Point Suspension,			9 1/8" Hangers		
Dual	DC 670-033	575.00	Horizontal Anchor, Single	DC 970-028	435.00
Lateral Brace	DC 670-038	75.00	Horizontal 3 Point Suspension,		
Horizontal Roller Assembly	DC 670-027	180.00	Single	DC 970-032	382.00
Vertical Fixed, Single	DC 670-034	100.00	Lateral Brace	DC 970-038	75.00
Vertical Expansion, Single	DC 670-036	190.00	Horizontal Roller	DC 970-027	630.00
Vertical Fixed, Single, Heavy Duty			Vertical Fixed, Single	DC 970-034	184.00
(for use w/1000' vertical runs or higher.	DC 670-042	475.00	Vertical Expansion, Single (use w/		
			vertical runs up to 1000')	DC 970-036	335.00
6 1/8" 50 Ohm "60 Series" Unflanged			Vertical Expansion, Single (use w/		
20' Transmission Line	DC 665-002	1385.00	vertical runs at 1000' and higher.	DC 970-039	358.00
Elbow, 90° Equal Leg	DC 665-017	450.00	Not illustrated)	DC 970-039	358.00
Elbow, 90° Unequal Leg	DC 665-018	490.00	Vertical Fixed, Single, Heavy Duty (for		
Elbow, 45° Unequal Leg	DC 665-020	490.00	use with 750' vertical runs or higher.	DC 970-042	800.00
Coupling Assembly	DC 665-008	137.00	Miscellaneous		
Connector (Inner Conductor)	DC 665-007	81.00	Gassing Kit	DC 570-043	68.00
Flange, Mechanical	DC 660-015	136.00	Silicone Grease	DC 570-045	25.00
Flange, Swivel, Silver Solder					
	DC 660-013	93.00			
Flange, Fixed, Silver Solder					
	DC 660-016	63.00			
Reducer, 6 1/8" to 4 1/8"	DC 665-060	425.00			

Prices and Specifications Subject to Change Without Notice.

DIGITAL PROCESSING SYSTEMS, INC.

Time Base Correctors/Synchronizers



DPS-165



DPS-175

DPS-165 Frame Synchronizer

- 525-line buffered memory • Monochrome or direct color input • Synchronous or non-synchronous switching • Auto diagnostic memory • Internal test signal generator • Two true RS-170A outputs • Optional remote control • Freeze frame/field (field 1/2 selectable) • Horizontal phase control

DPS-165	Frame Synchronizer	\$4,990.00
DPS-165A	Frame Synchronizer with adaptive comb filter . . . . .	.5,990.00
RC-165	Remote Control for DPS-165 and DPS-165A	1,340.00

DPS-175 TBC/Framestore

- High performance, low cost • Freeze frame/field (field 1/2 selectable) • Synchronous and non-synchronous switching to tape • Wide dynamic tracking range of -1 to +3 and clear viewing up to $\pm 30X$ play speed • Heterodyne capability • Direct color capability with 3.58MHz feedback • 525-line buffered correction window and TTL/RF selectable drop out compensator • Two true RS-170A video outputs • Horizontal phase control • Editing and assembly • Match frame editing

DPS-175	T.B.C./Framestore	\$6,450.00
DPS-175A	T.B.C./Framestore with adaptive comb filter . . . . .	.6,990.00



DPS-170



DPS-185

DPS-170 Time Base Corrector

- High performance/low cost • Heterodyne capability • Direct color capability with 3.58MHz feedback • Wide dynamic tracking range of -1 to +3 with clear viewing at up to $\pm 30X$ normal tape speed • Tape source flexibility, with a 16-line buffered correction window and RF/TTL selectable drop out compensator output • Two true RS-170A video outputs • Editing and assembly • Horizontal phase control • Match frame editing

DPS-170	Time Base Corrector	\$4,990.00
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DPS-185 Test Signal Generator

- 32 test signals • 2 independent outputs per channel • 7 auxiliary outputs—sync drives • Genlockable • RS-170A specs • Dedicated color black outputs

DPS-185	Sync/Test Generator	\$4,250.00
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DIGITAL SERVICES CORP.

Digital Effects System

Illusion Digital Effects System

- Multi-channel system
- Perspective with variable vanishing point (option)
- Shape manipulation (optional)
- Still store option: Can store field (256) and frames (128) separately and perform slide changes
- Bubble memory. Non volatile and with 2000 event storage
- Performs as dual channel system when in the A/B video switching mode
- Variable expansion control to infinity
- Freeze
- Preprogrammed effects
- User programmable
- Three dimensional joystick control, horizontal, vertical and circular
- Rotation
- Unlimited expansion and compression
- Vertical and horizontal aspect control
- User control of: effect duration and speed, picture size, screen placement, perspective orientation, rotation
- Manual or automatic execution
- Smoothly executed effects
- 100% digital processing
- Can be used as an additional channel to other digital effects systems
- Switcher and editor compatible
- Small rack equipment, can be installed in remote vans
- Integral keyer with mask key capability
- Frequency response: $\pm .5$ dB to 5MHz
- Sample rate/signal processing: 4xSC/8 Bit
- Signal inputs: A Video, B video, key (terminating), keyer fill video (terminating), keyer background video. Reference: color black
- Signal outputs: 2 PGM, 1 key, 2 illusion keyer and 1 shadow key
- System timing: per RS-170A; color phase adjusted over 360°, H phase adjustable over approx. 100nS
- Interconnect: mainframe to control panel, serial RS-422, 1000 feet max/50 feet standard
- Control Panel: drop-in or table-top configuration. Rack electronics: 11 RUs; 19 1/4" high by 17 3/4" deep, 90 lbs.

Effects

Slide	Double image	Posterization
Flip	Split image	Mosaics
Skew	Mirror	Freeze
Squeeze	Invert	Strobe
Spin	Combinations	Variable border
Rotate	Barrel roll	Shape manipulation
Spiral	Aspect control	Drop shadow
Expand	Alternate line	
Compress	Image	

Feedback effects:

A bordered picture spun with "feedback" to give multi-image geometrical effect. Unique to Illusion, the effect is internally generated and does not tie up a switcher M/E. The image geometry is manipulated and controlled through Illusion's panel.

Mosaic:

Captured from live video or freeze frame, the resolution (tile size) may be varied with Illusion's fader permitting easy on-air execution.

Posterization:

As with mosaic, any signal source may be posterized. Variations are available to compensate for highly illuminated and dark subjects.

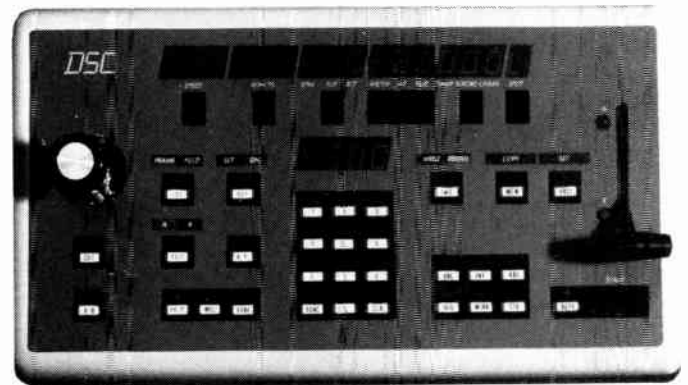
Alternate line split image with perspective

Split image is formed by separating the image into alternate lines. The solid video (seen in the monitor picture) is the unsplit portion of the signal. The perspective vanishing point is variable.

Double image with axis offset:

A double image over a background can be manipulated into any number of creative effects with Illusion. The double image could be posterized independent of the background...or put into perspective (cut-in monitor picture) are just two examples.

* All these pictured effects can be performed on dynamic live video or frozen images.



The system consists of a CRT terminal, disk drive and rack electronics that are added to an existing Illusion mainframe. The CRT is menu driven. Up to two additional disk drives may be added which would provide storage space for up to 10,000 "slides". A removable cartridge drive is also available.

ILN7000 Composite Illusion
Designed for composite inputs and outputs

.....\$23,900.00

ILN9000 Component Illusion
Designed for component inputs and outputs. Configured RGB. Can be configured Beta on request when ordered.25,900.00

Options

RTN100 Rotation
Includes rotation and spiral effects\$1,000.00

PSP100 Perspective
Adds keystoning to video image for 3-dimensional perspective. Can be on either X or Y axis. Adds particular dimension to flips, spins and barrel rolls5,000.00

ICP100 Additional Control Panel
Loop-through additional panels can be placed at other editing locations for added convenience. The active panel closest to the frame electronics is the one that functions at a given time3,200.00

Eclipse 3-Dimensional Optical Digital Effects System

- 68020, 32-bit processor
- Curved effects option
- Programmable effects
- Picture placement
- Picture cropping
- Automatic cube builder
- Rotation
- Picture twist
- Perspective
- Perspective with Rotation
- Trajectory: smooth on all continuous parameters
- Drop shadow
- A/B switch simulates dual channel effects
- User programmable
- Removable micro floppy disk storage integral with control panel
- Shape manipulation option
- Software based. System is expandable with continuing developments.
- Optical Perspective: Perspective controlled by 3 dimension joystick
- Compression and expansion ratio: H and V, infinite
- Integral keyer with mask key capability

Additional Effects

- Slide
- Flip
- Skew
- Squeeze
- Spin
- Spiral
- Expand
- Compress
- Mirror
- Axes offsets
- Push-on/Pull-off
- Invert
- Combinations
- Barrel Roll
- Aspect Control
- Posterization
- Mosaics...multiple levels
- Freeze
- Strobe
- Variable Border
- Feedback
- Shadow effect color background

Menu driven, the system includes a high resolution CRT terminal and an easy access control panel. Its many discrete function controls permit creative and operating staffs to quickly become comfortable with Eclipse.

Specifications Preliminary

	NTSC Component	NTSC Composite
Frequency Response	± .5dB to 5MHz	± .5dB to 5MHz
Luminance	± .5dB to 1.0MHz	
Chrominance	-2.0dB to 1.3MHz	
Signal-to-Noise		
Signal Inputs	* Component A video * Component B video Key (terminating)	A Video B Video Key (terminating) Keyer fill video (terminating) Keyer bkgnd video A/B switch Color black
Reference	Color black	Color black
Signal Outputs	1 ea: Luminance, R-Y, B-Y, RGB, Key Shadow Key	2 ea: PGM, Eclipse Keyer 1 ea: Key, Shadow Key, A/B switch
System Timing		Per RS-170A; Color Phase adjusted over 360°, H phase adjustable over approx. 100nS
Interconnect	Mainframe to control panel, Serial RS-422, 1000' max/50' std.	
Mechanical	Control panel: 1B 1/2" L x 10 1/2" H x 3" D Rack Electronics: Std 19" rack, 11RUs (19 1/2" H), 17 3/4" D 90 lbs.	
Power	120VAC, 50/60Hz. 800VA	115/120VAC, 50/60Hz. 750VA

* Choice of Y, R-Y, B-Y or RGB inputs, jumper selectable (both A and B inputs must have the same format.)



- ECL4000 Composite only \$42,900.00
- ECL5500 Composite/Component 42,900.00
- ECL6000 Component only 44,900.00

Options

CVE200 Curved Effects

Includes curved effects, picture twists and automatic cube builder. Concave and convex curves can be programmed into effects sequences. The twist capability of the CVE 200 package is fully programmable. A twist can be from left to right, right to left, top to bottom, bottom to top, or curved. The automatic cube builder assists in building up complex three sided cube effects. The programming mode places all three sides alternately on the screen to aid in visualizing the cube effect while defining the individual key frames.

- CVE200 \$5,900.00

PGT100 Page Turn

Includes page turn, page scroll

The Page Turn Option will enhance the already powerful effects features of Eclipse with CVE 200 Curved Effects. Authentic two dimensional page turns and page scrolls can be added to effects sequences.

Page Turn (Effects 1 and 2)

The effect, when run in real time, will show the mirror image of the front side video on the rear (effect 1). If a different image is desired on the rear, a second pass mode has been included to provide this feature (effect 2). Both modes can be bordered (effect 1).

Page Scroll (Effect 3)

The amount of scroll or turn is definable in seven discrete steps. The scroll or turn can be adjusted to start or finish from any corner, side or point in between.

- PGT100 \$6,900.00

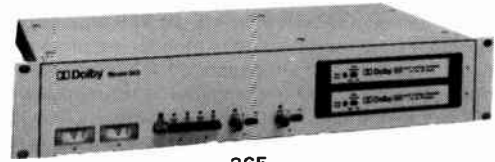
KYM200 Key Manipulation

This option adds the ability to do an internal, linear key and manipulate it. The key manipulation can be combined with Eclipse's digital effects. If Page Turn PGT 100 and Curved Effects CVE 200 options are installed, then the key manipulation can be combined with these extremely powerful and varied effects. The system generates a self key from a composite video signal supplied by a variety of equipment including title cameras, character generators and graphic systems. Complex shapes or characters are keyed with 8 bit edge resolution. Even a soft edge on the input video is maintained. Key Clip and Key Gain are adjustable from the control panel.

- KYM200 \$2,500.00

DOLBY LABORATORIES, INC.**Noise Reduction Units**

361



365

361 Single Channel Noise Reduction Unit With Automatic Changeover

• Overall Frequency Response: ± 1 dB from 30Hz to 20kHz (encode/decode) • Total Harmonic Distortion: At +4dB, less than 0.1% at 1kHz; less than 0.2% from 40Hz to 20kHz • Bridging transformer, input 10K ohms balanced and floating • Transformer, 20 ohms output impedance, balanced and floating. Will drive any load impedance from 200 ohms upwards • Input and output levels adjusted by multi-turn potentiometers accessible from front of unit. Minimum input of 350mV for Dolby level on both calibrated and uncalibrated inputs. Maximum output level of +22dB into bridging load; +21dB into 600 ohms; +20dB into 200 ohms (0dB=0.775VRMS) • Dolby A-type noise reduction characteristic providing 10dB of noise reduction from 30Hz to 5kHz, rising to 15dB at 15kHz • Overall Noise Level: Record-playback (NR out), better than 80dB below Dolby level, unweighted 30Hz to 20kHz bandwidth, or weighted CCIR/ARM • Matching Between Units: ± 1 dB at any level and any frequency, 30Hz to 20kHz • Signal Delay: Constant with frequency, 24 μ s. Overall encode-decode process, 48 μ s. • Phase Error: Less than 5°, 20Hz to 20kHz overall encode-decode • Steel case, zinc passivated finish; front panel clear anodized with black characters • 1 $\frac{3}{4}$ " x 19" rackmounting • 12 lbs. • 3-pin XLR input and output connectors for line-in, to recorder, from recorder, and line-out • Pushbutton switches for selection of: Record/Play, NR in/out/remote operation, Dolby tone on/off, Normal Signal (monitor line-in during record, decoded signal during playback), Check Tape (monitor encoded signal directly from tape) • Mono jack socket for linking and/or remoting Dolby tone (plugs are provided with unit). 5-pin XLR connector for remote control of record/play mode and Dolby NR in/out.

The 361 is a single-channel Dolby A-type noise reduction unit with built-in record/playback changeover facilities. This unit is suited for tape recorder applications where changeover between record and playback is necessary. The changeover function may be accomplished by either using front panel pushbutton switches or, remotely, by command from the tape machine. Signal reconnection is not required for changeover. The noise reduction in/out function may be controlled by a pushbutton switch on the front panel or remotely.

During recording, the incoming signal may be monitored at the line input or the encoded signal may be monitored in the "tape check" mode.

361	Single-channel noise reduction unit, record or playback (automatic changeover)	\$1350.00
361SR	Equipped with Cat. No. 280	1725.00
Manual	Extra copy of manual 361 (one provided with each unit)	25.00

365 Two-Channel Noise Reduction Unit

• Overall frequency response: ± 1 dB, 30Hz-20kHz, encode/decode • Total harmonic distortion: at +4dB, less than 0.1% at 1 kHz; less than 0.2% from 40Hz-20kHz • Noise Reduction: Dolby A-type characteristic providing 10dB of noise reduction from 30Hz to 5kHz, rising to 15dB at 15kHz • Overall Noise Level: record/playback (NR out), bet-

ter than 80dB below Dolby level, unweighted 30Hz to 20kHz bandwidth, or weighted CCIR/ARM • Matching Between Units: ± 1 dB at any level and any frequency, 30Hz-20kHz • Signal Delay: constant with frequency, 19 μ sec per channel, 38 μ sec overall encode/decode, including delay of Model 360 series interfaces • Set-up: Dolby tone oscillator for establishing correct levels via built-in meter amplifier and interface meter • Two independent processors per unit • XLR inputs and outputs • Bridging transformer input, 10k ohms balanced and floating • Transformer, 20 ohms output impedance, balanced and floating. Will drive any load impedance from 200 ohms upwards • Input levels adjusted either by single-turn "uncal" or multi-turn "cal" potentiometers accessible from front of unit • Minimum input of 350mV for Dolby level on both calibrated and uncalibrated inputs • Maximum output level of +22dB into bridging load; +21dB into 600 ohms; +20dB into 200 ohms. (0dB=0.775V) • Jack sockets for linking and/or remoting Dolby level set-up operation • Stereo jack socket for independent In/Out remote operation, achieved by grounding the terminals for In/Out and Dolby level set-up. Maximum grounding resistance 25 ohms • LED status indicators are also remotable • The system is highly stable with either Cat. No. 280 or Cat. No. 22 modules, and does not need routine alignment • Crosstalk: better than 70dB over 20Hz-20kHz • Plug-in processing module (Cat. No. 280 or Cat. No. 22) • Fiberglass printed circuit board and solid-state devices throughout • Steel case, zinc passivated finish; front panel clear anodized aluminum with black characters • 3.5" x 19" rackmounting • 18 lbs.

The 365 is ideal for simultaneous encode/decode of a single channel, or for applications requiring two channels of dedicated recording or playback. Front panel switches operate encode/decode functions for each channel.

The 365's processing circuitry is contained in a pair of modules which are easily accessible from the front panel. Push-buttons on the front panel control the process in/out function. Dual meters and built-in reference generators simplify Dolby level set-up. The process in/out and Dolby level set-up functions may be operated remotely.

Each channel of the 365 has a play uncal control which permits temporary recalibration to match a tape recorded at a different level while retaining the unit's preset Dolby level.

365	Two channel noise reduction unit, independent record or playback.	\$2100.00
365SR	Two channel Dolby SR unit, (Cat. No. 280) independent record or playback.	2700.00

Accessories

280	Single-channel Dolby spectral recording module for use with 361 and 365 and in M-series frames	\$900.00
22	Dolby A-type noise reduction module, single-channel	600.00
35	NRM tester and test extender for Cat. No. 22.	650.00
225	Compact Dolby A-type noise reduction module, single-channel, low power.	600.00
100	Dolby 'A' labels per 1000	10.00

DOLBY LABORATORIES, INC.

Noise Reduction Units/Module

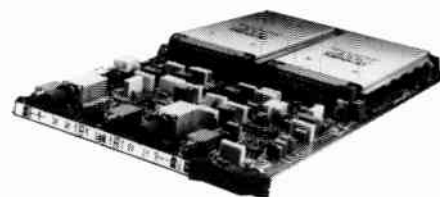
372 Portable Two-Channel Noise Reduction Unit

- Overall Frequency Response: ± 1 dB from 30Hz to 20kHz (encode-decode)
- Dolby A-type characteristic providing 10dB of noise reduction from 30Hz to 5kHz, rising to 15dB at 15kHz
- Matching Between Units: ± 1 dB at any level and any frequency, 30Hz to 20kHz
- Compact size with self-contained power source
- 3-pin XLR inputs and outputs. 7-pin Tuchel/Binder from recorder and to monitor are provided
- Differential input, 6K ohm minimum impedance
- Output Circuit will drive any load impedance from 600 ohms upwards (to recorder, 1K ohms upwards)
- Minimum input level -10dB for Dolby level, all inputs. Maximum line output level +21dB into 600 ohms or above. Maximum to recorder output level +16dB into 600 ohms or above. (0dB=0.775VRMS)
- Slide switches for selection of: Cal/Uncal level controls, Dolby tone on/off, Record/Play, each channel, NR on/off, each channel, Monitor norm/check, each channel, Power on/off
- Two separate, or ganged Uncal level controls, internally selectable for record level setting or playback Dolby level calibration
- Headphone 1/4" stereo jack socket and rotary level control, independent of line output
- Total Harmonic Distortion: At +4dB, maximum 0.1%, 1kHz to 20kHz
- Overall Noise Level: Record/playback (NR off), 75dB below Dolby level over a 20Hz to 20kHz bandwidth unweighted
- Signal Delay: Constant with frequency, 15 μ s overall encode-decode process
- Phase Error: Less than 5 $^\circ$, 20Hz to 20kHz overall encode-decode
- Black cast aluminum with steel covers • 1 $3/4$ " x 7 $1/4$ " x 8 $1/2$ " • 3.3 lbs. without batteries • Battery (4 "C" cells or Nicad, rechargeable via rear panel) or 5-30VDC input

372 Portable two-channel noise reduction unit \$2500.00



372



234

380 Two-Channel Noise Reduction Unit

- Dolby A-type characteristic providing 10dB of noise reduction from 30Hz to 5kHz, rising to 15dB at 15kHz
- Frequency Response—Record Input to Play Output (NR off, Record Output Connected to Play Input): ± 1 dB, 35Hz to 20kHz ± 3 dB, 27Hz to 32kHz
- Frequency Response of Noise Reduction Processors: ± 1 dB, 20Hz to 20kHz, at any level, back-to-back for simultaneous encode-decode
- Matching Between Channels: ± 1 dB, 20Hz to 20kHz, any level
- Input/Output Level (Intended for VPR-3 and VPR-80): Capable of adjustment between 160mVRMS to 1.0VRMS
- Total Harmonic Distortion: Less than .1%, 35Hz to 20kHz
- S/N Ratio (NR off): Record output, reference to Dolby level: Better than -87dB, CCIR/ARM weighted. Better than -87dB, 20Hz to 20kHz. Play output, reference to 100nWb/m: Better than -83dB, CCIR/ARM weighted. Better than -84dB, 20Hz to 20kHz
- Single, rackmounted unit with all-steel chassis, incorporates two Cat. No. 55 noise reduction modules mounted on a circuit board, and is interfaced with the VTR via two 10' interface cables
- Incorporates a Dolby calibration tone oscillator and switching logic
- Cat. No. 199 Remote Control unit is provided as standard equipment with a 15' connecting cable • 1 $3/4$ " x 19" rackmounting

The 380 provides two independent channels of Dolby A-type noise reduction for the Ampex VPR-3 and RCA TH-900, Ampex VPR-80 and RCA TH-400, and Ampex VPR-6 videotape recorders.

With the VPR-3 and TH-900, the 380 is fully operational upon plug-in and calibration. Two 380s may be used to provide four channels of noise reduction when the four-channel option is used. With the VPR-80, TH-400 and VPR-6, a single 380 provides noise reduction on channels 1 and 2 via connectors on the back.

For use with the VPR-80 and the TH-400, a Cat. No. 235 interface must be installed on the audio board of the VTR which will provide connectors to the back of the machine.

An LED meter for each channel is located on the front panel for ease of calibration. A playback "Uncal" feature is also included which permits temporary recalibration for non-standard-level tapes without changing the standard level of the unit.

380 Two-channel noise reduction unit \$2250.00
Cat.

No. 235 Interface board for interfacing 380 noise reduction system with Ampex VPR-80. Installs on audio board in place of 6 ICs. Cables to back of VTR provided. \$250.00

Cat.
No. 217 'Dolby A' labels for 1" video tape per 100. \$10.00

234 Two-Channel Noise Reduction Module

- Dolby A-type characteristic providing 10dB of noise reduction from 30Hz to 5kHz, rising to 15dB at 15kHz
- Playback Frequency Response (NR out): ± 1 dB, 50Hz-15kHz (limits of test tape)
- Frequency Response of Noise Reduction Processors: ± 1 dB, 20Hz-20kHz, at any level, back-to-back for simultaneous encode-decode
- Matching Between Channels: ± 1 dB, 20Hz-20kHz, any level
- Record/Playback Frequency Response (NR out): ± 1 dB, 45Hz-15kHz (typically +1,-3dB from 35Hz to 20kHz)
- Record/Playback S/N Ratio (Scotch 479): Referred to standard peak level (8dB above 100nWb/m)

	CCIR/ARM	Unweighted
NR out:	60dB	57dB
NR in:	70dB	57dB

- Playback Crosstalk: At 1kHz NR out: better than -60dB. NR in: better than -70dB
- Record Crosstalk: Record on one channel, simultaneous playback from other channel: 200Hz-10kHz NR out: better than -40dB NR in: better than -50dB
- A 6-pin connector is provided for remote control of NR functions, Dolby tone, and indication of their status.

The 234 has been designed to incorporate two independent channels of Dolby A-type noise reduction in the Sony BVH 2000 Series including the Sony High Definition videotape recorder. It plugs directly into the VTR in place of its AU-27 audio board, duplicating the record/play functions while adding the noise reduction feature. No modification of the VTR is required.

In addition, an LED meter for each channel is built in to simplify Dolby level calibration. The 234 also features playback "uncal" controls which permit temporary recalibration for nonstandard level tapes without changing the standard studio calibration level.

234 Two-channel Dolby A-type noise reduction module for Sony BVH 2000 (includes 2 X Cat. No. 225 and record/play audio circuitry) \$2350.00

225 Compact low power consumption Dolby A-type noise reduction module, single channel (for use with Cat. No. 221B, Cat. No. 226, Cat. No. 234, and models 372 and 380) \$600.00

DOLBY LABORATORIES, INC.

Noise Reduction Units

XP Series Multi-Track Noise Reduction Unit

The XP Series contains up to 24 channels of Dolby A-type noise reduction in 12 1/4" of rack space, including power supply. The XP Series utilizes an on-board, integrated noise reduction circuit instead of the interchangeable No. 22 modules.

Each XP noise reduction channel consists of a plug-in. No. 331 module which contains the integrated Dolby A-type noise reduction circuitry, precision input and output amplifiers with low distortion, controls, and an accurate LED calibration display. The separate, regulated PS3 power supply, designed for rackmounting directly above the noise reduction unit chassis, contains fan cooling and electronically-controlled output protection.

The XP Series includes "uncal" controls, permitting convenient resetting of Dolby level for playback of and punch-in on tapes from studios with different Dolby level standards. The user can select the option of "hardwired" or electronically-buffered bypass of individual channels or all channels simultaneously. The XP offers discrete FET switching for reliable, noise-free routing of audio signals.

Overall Frequency Response: 20Hz to 20kHz ± 1dB, encode-decode, at any level.

Total Harmonic Distortion: Less than 0.1%, 20Hz-20kHz, Less than 0.04% at 1kHz

Signal Connections: Custom input/output connectors on backplane, with provisions for locking to main chassis.

Individual Track Controls: NR In/Standby: electronically switches noise reduction characteristic in and out.

Bypass: provides relay-controlled "hard" bypass of all circuitry.

Uncal: permits temporary recalibration of Dolby system (± 6dB) for playback of and punch-in on non-standard-level tapes without disturbing the preset studio Dolby Level (pull to activate recalibration, push to restore preset level). In the Uncal mode, record calibration automatically matches the modified playback calibration.

LED mode indicators for NR In, Uncal, and Record.

Common Facilities Controls (on PS3 Power Supply): NR Off: User-selectable choice of electronic (soft) bypass or hard-wired (hard) bypass of all tracks simultaneously by means of switch on backplane of main XP series mainframe.

Dolby Tone/Cal: Activates internal master Dolby Tone oscillator.

Monitor: Selects the output to be monitored by Normal (automatic switching between line-in during recording and decoded tape during playback), Check Tape (in recording mode monitors encoded signal directly from tape without decoding), or Line In switches.

Reset ± 12V: Restores power after overload has occurred

LED mode indicators for power On, NR In, the selected monitor output mode, and Dolby Tone; LEDs for status of power supply (High Temp and High/Low Power Line) and for each of the five power supply rails.

Remote Control: Remote control of common facilities can be selected by positioning a link on the rear of the PS3; a front panel LED indicates Remote mode when selected.

Calibration Display: Eight-LED display for each track permits accurate calibration of Dolby Level (within ± 0.1dB if desired) by matching intensity of LED pairs, indicates the presence of signals and clipping, and assists in alignment with high-level reference tapes.

Signal Levels: Multi-turn potentiometers for each track adjust levels to and from the console and to and from the recorder. The minimum input is -5dB for Dolby Level, all inputs. The maximum output is 12VRMS (+ 24dBr) into 600 ohms and above (0dBr = 0.775V).

Switching Circuits: Noise-free discrete FET switching for all internal functions; relay switching for "hard" bypass.

Remote Mode Changeover: Record/play changeover designed for remote control by recorder. Opto-isolator on logic input requires +4 to +25VDC voltage differential to activate changeover logic (the current requirement is approximately 5mA, any voltage).

Record-Play Changeover Time: 3ms maximum.

Input Circuitry: Switch-selectable for floating balanced differential or unbalanced bridging impedance (approximately 10K ohms).

Input Common-Mode Rejection: 45dB at 100Hz (balanced condition).



PS3

XP Series

Output Circuitry: Hum-cancelling, single-ended outputs drive any load impedance from a minimum of 200 ohms. Each output is switch-selectable for operation with balanced or unbalanced loads.

Output Ground-Noise Rejection: 40dB (driving single-ended load, output adjusted for + 4dBr at Dolby Level, 100Hz).

Overall Noise Level Record-Playback: > 80dB below Dolby Level (A weighted, unweighted 20Hz to 2kHz, or CCIR/ARM); > 70dB below Dolby Level (CCIR 468.2 weighting).

Noise Reduction: Standard Dolby A-type characteristic, providing 10dB of noise reduction from 30Hz to 5kHz, rising to 15dB at 15kHz.

Matching Between Units: ± 1dB at any level and frequency, 30Hz to 20kHz, between any Dolby A-type units.

Signal Delay: 13.5µs per channel; overall encode-decode process, 27µs

Phase Error: + 26° at 20Hz; -7.5° at 20kHz; less than ± 5° from 50Hz to 15kHz (overall, NR in).

Dimensions: Mainframe: (8 1/4" x 19"), rackmounting

PS3: (3 1/2" x 19") rackmounting

Weight: Mainframe (number in model designation indicates number of tracks supplied):

XP8 21 lbs. (9.4kg)

XP16 29 lbs. (12.8kg)

XP24 36 lbs. (16.3kg)

PS3 30 lbs. (13.6kg)

Power Requirements: Mainframe operates from PS3 Power Supply; power and interconnecting cables are provided. User-selectable voltage ranges (50-60Hz, single-phase): 85-115V; 102-132V; 187-242V; 204-264V. Consumption with Cat. No. 331 card: XP8, 90VA; XP16, 150VA; XP24, 200VA. Note: All specifications apply with input and output controls set for Dolby Level equal to + 4dBr (1.23VRMS). (0dBr + 0.775V)

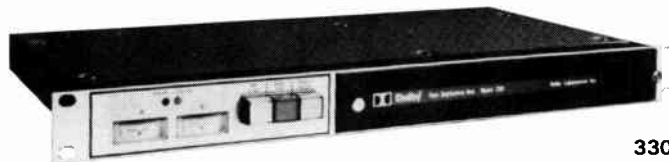
XP8	8 channel noise reduction unit	\$ 9,260.00
XP16	16 channel noise reduction unit	13,270.00
XP24	24 channel noise reduction unit	16,500.00
XP8SR	8 channel XP Series frame with Cat. No. 431 Dolby SR modules	11,790.00
XP16SR	16 channel XP Series frame with Cat. No. 431 Dolby SR modules	17,800.00
XP24SR	24 channel XP Series frame with Cat. No. 431 Dolby SR modules	22,500.00

Accessories

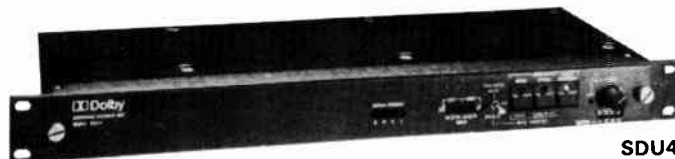
331	Dolby A-type noise reduction module for use with XP series (single-channel)	\$ 660.00
PS3	XP Series power supply (one provided with each XP unit)	3,000.00
232B	Extender board for XP series	150.00
231	Bypass band for XP Series (one included with each unit)	50.00
Manual	Extra copy of manual, XP Series (one provided with each unit)	50.00
431	Single channel Dolby SR module for use with SP Series and XP Series frames	925.00
356	Auto tester for Dolby SR modules	1,000.00
357	Encode/decode tester for Dolby SR modules	500.00
400	Dolby SR labels per 1000	10.00

DOLBY LABORATORIES, INC.

Tape Duplication/Surround Decoder Units



330



SDU4

330 Tape Duplication Unit

- Overall Frequency Response: 30Hz-15kHz, ± 1 dB (encode-decode)
- Total Harmonic Distortion: At +4dB, less than 0.1% at 1kHz; less than 0.2% from 40Hz to 20kHz • Dolby B-type characteristics: (40dB below Dolby level) +3dB at 500Hz; +6dB at 1000Hz; +10dB from 4kHz upwards • Dolby C-type characteristics: (60dB below Dolby level) +8dB at 200Hz; +16dB at 500Hz; +20dB from 2kHz to 7kHz
- With noise reduction switched out, system becomes line amplifier
- Built-in 16kHz low-pass filter giving 45dB attenuation at 80kHz. Filter response below 15kHz, ± 0.5 dB • Overall Noise Level: Better than 80dB (unweighted or according to CCIR/ARM) below Dolby level
- Crosstalk: Better than 50dB between channels, 20Hz to 20kHz • Signal Delay: 20 μ sec. • Phase Difference Between Channels: Less than 5°, 20Hz to 12kHz, overall encode-decode • Matching Between Units: Better than 1dB at any level and any frequency • Two independent signal processors per unit • 3-pin XLR input and output connectors for each processor • Balanced floating transformer. Input impedance; 10K ohm or 600 ohm, selected by rear-mounted switch • Transformer, 20 ohms output impedance, balanced floating; will drive any load impedance from 200 ohms upwards • Input and output levels adjusted by multi-turn potentiometers accessible from front of unit. Minimum input 350mV for Dolby level. Maximum output level +22dB into bridging load; +21dB into 600 ohms; +20dB into 200 ohms (0dB=0.775RMS) • Pushbuttons for selection of: NR in/out, Dolby tone, Remote/local operation • Toggle switch mode selector behind access plate for selecting encode or decode (quality monitoring) mode • 5-pin XLR connector for remote control of NR in/out and Dolby tone oscillator is provided • Fiberglass printed circuits, solid-state devices throughout • Steel case, gray stoved plastic textured finish; front panel clear anodized with black characters • 1 $\frac{3}{4}$ " x 19" rackmounting • 12 lbs.

The 330 is designed for use in the preparation of master tapes for high speed duplication onto cassettes, cartridges, and open-reel tapes to be played back on home equipment incorporating Dolby B-type and/or C-type noise reduction circuitry.

The 330 can accommodate either the Cat. No. 66 B-type module or the Cat. No. 219B C-type module. The Cat. No. 66 comes standard with the 330 and the Cat. No. 219B is available as an option. User may specify the inclusion of either module upon ordering the unit.

For monitoring of the master or the final product, the 330 can be operated in the playback mode by activating a switch under the removable access plate on the front panel.

330	Duplication processor includes Cat. No. 66 B-type noise reduction module	\$1900.00
330C	Duplication processor includes Cat. No. 219 C-type noise reduction module	2050.00
66	Dolby B-type noise reduction module, two-channel	900.00
219B	Two channel Dolby C-type noise reduction module (retrofit for Model 330)	1050.00
101	'Dolby B' labels per 1000	10.00
99	'Dolby C' labels per 1000	10.00

SDU4 Surround Decoder Unit

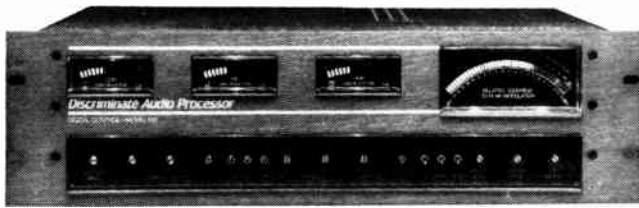
- Rackmount unit incorporating a professional surround decoder module, interface circuitry, and power supply • (On rear panel) Lt (left total) and Rt (right total) XLR inputs for two-channel encoded signal; left, center, right, and surround XLR outputs. Additionally, Lt and Rt internal monitor points and left, center, right, and surround external processor loops are provided at a 25 pin female D connector • One toggle switch and three push-button switches control system operating modes and internal test signals. A single rotary knob controls four-channel master level. Screwdriver adjustable controls recessed behind panel for adjustment of input and output levels. Signal present LEDs indicate left, center, right, and surround decoder outputs • Two balanced floating transformerless inputs. Input gain adjustment will accommodate a range of 250mV (-9.8dBr) -2V rms(+8.2dBr). Input impedance is greater than 10K ohms. Common mode rejection greater than 60dB up to 1kHz, greater than 50dB at 10kHz. Maximum common mode voltage 4V rms, 5.8V peak. • Four balanced floating transformerless outputs. Output gain adjustment will accommodate a range of 250mV (-9.8dBr) -2.5V(+10.2dBr) at the normal master level control setting. Output impedance 25 ohms. Maximum output voltage +26dBr into balanced 600 ohm load, less into lower impedances. Maximum output +20dBr into unbalanced 600 ohm load • Dolby surround, conventional stereo, and mono modes, selected by front panel pushbutton or remote control • A two-channel single-ended monitor output is provided, located after the input amplifier and gain control. Dolby level is 500mV (-3.8dBr) at these outputs. Output impedance is 100 ohms and these outputs can drive loads greater than 10K ohms • Overall frequency response: 20Hz-20kHz ± 1 dB (L, C, and R) 100Hz-7kHz ± 3 dB (surround output) • S/N Ratio: (referenced to Dolby level) greater than 80dB (left, center, right), CCIR/ARM weighted. Greater than 70dB (surround), CCIR/ARM weighted. (master level control at normal setting) • Total harmonic distortion (THD) at the main balanced outputs will not exceed 0.25% into balanced loads 600 ohms or greater at any output level up to 12.5V rms at any master level control setting. THD at Dolby level at 1kHz with input and output adjusted for +4dBr, 0.1% typical • Two plug-in modules: one Dolby surround decoder and one facilities module. Fiberglass printed circuit cards, gold-plated connectors, solid-state devices throughout • Bottom tray gold alodine, extrusion black anodized. Front panel black anodized with white and yellow lettering, cover black textured paint. • 1 rack unit (1.75") high, (10.25") deep behind mounting surface • 11 lbs.

The SDU4 is designed for reference monitoring of Dolby stereo or Dolby surround program material in broadcast, audio-for-video, music recording and some film applications. The unit contains a reference 2:4 matrix decoder, identical to that used in the Dolby stereo monitoring equipment found in film production centers. The 2:4 decoder takes a two-track matrix encoded signal as its input and generates four output signals (left, center, right and surround).

An internal calibrate mode, using channel-sequenced pink noise, allows easy verification of monitor levels and equalization. Internal logic allows the correct reproduction of program material either with or without a center loudspeaker.

DORROUGH ELECTRONICS

Audio Processor/Loudness Monitors/Console



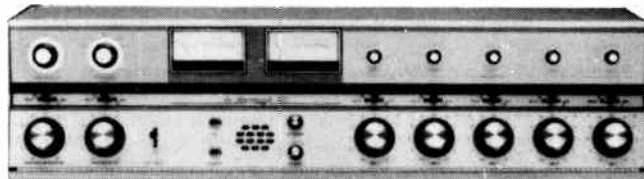
610

610 Discriminate Audio Processor

- LED metering provided for each channel plus an LED output meter designed for precise setting of the modulation to the relative loudness level desired
- Peak clipping circuit
- Entry portals available for interfacing with any of the AM stereo systems
- Available for AM, FM and television

The 610 is a digitally designed tri-band audio processor with attack and release times a function of a programmable EPROM. Units track with digital perfection.

610-AM\$3400.00
 610-FM with stereo generator6200.00



700

700 Monophonic Audio Console

- Seven mixing positions
- Two microphone positions with switchable third
- Five line level positions with 3 inputs per position
- Two program buses (Audition—Program)
- Two VU meters—loudness meters optional
- Three selectable external monitor inputs
- 10W monitor amplifier
- Self-contained cue amplifier and loudspeaker
- Muting optional on all mixing positions
- Shallco stepped attenuators in each mixing position
- Telephone type key switches for program/audition switching
- Plug-in IC circuit boards
- Aluminum cabinet construction

Specifications

Mike Input: Active balanced -50dBm at 150 ohms
Line Input: Buffered unbalanced -10dBV nominal adjustable per mixing position 10K ohms or 600 ohms, switchable
System Gain: Mike 70dB, line 30dB for +4dBm output
Max. Output: +26dBm at 600 ohms
 700\$2825.00

Loudness Monitors

- Integrates on the same scale, two ballistics, showing the relationship between the average and the peak
- Simultaneously displays peak and average, and the relative difference, in dB, between these two ballistics is derived from the integration time of the persistence scale



40-A

- Right and Left inputs for use in stereo mixing applications. With one instrument, the operator can easily see the stereo mix and avoid the classic in-phase/out-of-phase problem. "Center channel build-up," the addition of in-phase or monophonic material, which causes the mix to be perceived as louder, will appear as a sudden increase in level.

Research has established the relationship between integration time, RMS metering and the display of peak levels. It displays, in an easy to read format, the actual energy content of the program material regardless of frequency, while still indicating the peak amplitude of the complex audio signal. The Loudness Monitor allows the operator to ride levels in a manner such that all program material can be adjusted for equal perceived loudness while protecting the peak of the waveform. One meter gives you more complete and more usable information than any combination of peak hold, VU and PPM indicators.

With the Loudness Monitor's long scale, even clicks and pops that should be difficult to locate in the mix, appear on the meter scale.

Observation of the complex audio signal on an oscilloscope will indicate the average and the peak excursions of the program material. The use of an oscilloscope with a variable or long persistence CRT will show additional information relative to recurrent amplitudes which are displayed by the persistence of the screen as a concentrated band of energy about the center of the CRT. It is these two pieces of information which compose the acoustically related visual indication of the complex audio signal, and is the basis for the Loudness Monitor. Those sources which are more sinusoidal in their energy content, such as female voices and bass, are indicated in the persistence scale, and program material with more transient information, male voices or drum tracks, are indicated in the peak scale.

10-A Single meter, console or panel, 3/16" LEDs in arc configuration. Dimensions: 4.25" x 2.0"\$475.00

12-A Dual meter (two side by side), console or panel mount, 3/16" LEDs in arc configuration. Dimensions: 8.562" x 2.0" ..\$950.00

20-A Single meter, console or panel mount, straight lined 1/2" LEDs, designed to be used in the horizontal position. Dimensions: 7.93" x 1.3"\$475.00

21-A Same as the 20-A but designed to be used in the vertical position.....\$475.00

40-A Single meter 1/2" LEDs in arc configuration, complete enclosed cabinet for tabletop use.\$475.00

Single or double standard rackmounting available for the 40-A.....\$45.00

DUBNER COMPUTER SYSTEMS, INC.

Character Generators

10-K/20-K Character Generators

• Full function real-time character generators • 30 standard fonts with border and drop shadow edges are included. Additional packages of styles and sizes available on disk. Foreign language fonts and keyboards available • Optional packages of 16 high-resolution typefaces are used to build fonts in any size from 4 to 150 (upper case height) scan lines high • Kerning, spacing, positioning, coloring, and edging—by letter, row or page, with user controllable complete overlap and tuck • Separate background plane for “weaving,” with unlimited weave capability • 256 simultaneous colors, from a total 16.7 million for characters, edges and backgrounds—selectable by palette, RGB, or HSV • Sophisticated digital filtering produces graphics with 16 intermediate shading levels of any color. Both character and edges are generated this way • Complete directories with user comments, selectable by message type • Full sequence control of message time, speed, type, and duration • Alphanumeric message storage, up to 31 digits in any order • Full-color edit output with cursor and adjustable safe-title marks • Integrated sync generator, encoder, and linear downstream keyer • Menu-driven • Separate menu screen output for prompts, error messages, system information and “preview text” • Help key, along with a “help screen display” for every operational key on the keyboard • Recordable tabs and justified tabs (right, left, and center) • Centering and positioning—top, middle, bottom in both horizontal and vertical • Instant italicizing of any font—right or left, in multiple positions • Automatic message retype, with different font, color, or edge • Multiple playback choices—fade, wipe, and reveal, for any message in any sequence • Linear key signal output for anti-aliased fonts • As many as 4 plug-in keyboards • GPI trigger controls sequences • User-formattable disks • 4M bytes of internal memory, allowing approximately 24 fonts and 1,000 text pages on line, depending on size • Anti-aliased and standard fonts • Flash • 40ns start or stop, 80ns minimum width, no maximum (up to full screen). The “apparent resolution” of anti-aliased font is < 10ns • Characters or background colors from 1 to 485° scan lines (full screen) • Horizontal linear adjustment range of $-17/+1\mu s$. Phase adjustment continually variable through 360° • Compatibility: Dubner CBG and Texta: Animations and graphics can be transferred to a 20-K cartridge on a 20-K; and to a 10-K diskette on a 10-K equipped with optional lomega drive. Full Color Graphics: CBG Third Plane, Textra 500 and DPS-1 full color images can be converted on a 20-K to a 20-K background with reduced color resolution

Dubner 20-K and 10-K Character Generators are identical systems, except for the disk drive.

The 20-K system includes a 10M byte lomega cartridge disk drive.

Cartridge contains system software and standard fonts. Approximately 10,000 text pages fit on a disk. Background graphics, fonts and animations reduce text storage capacity.

A connector for additional external disk drives is standard. An lomega disk drive connected to a 10-K functions as a 20-K.

The 10-K features a 1M byte 5 1/4” floppy disk drive.

Diskette capacity is 800K. Four diskettes included contain system software, standard fonts and messages. Approximately 1,000 text pages fit on a diskette. Background graphics and animations reduce text storage capacity.

* PAL Specifications available upon request.

Specifications

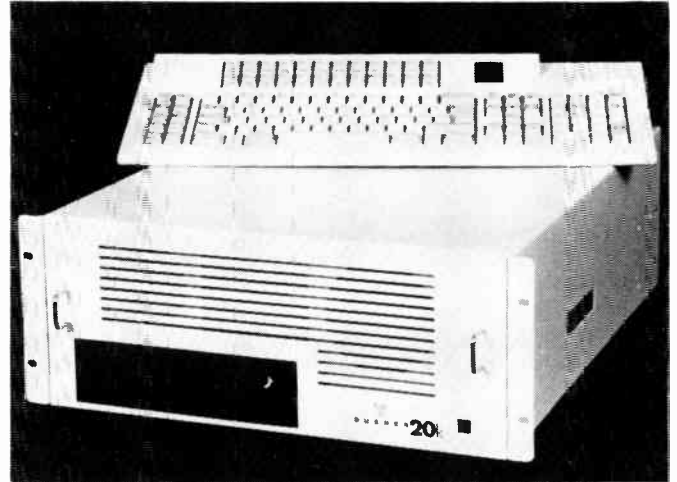
Video Inputs

Genlocking: 1.0V p-p NTSC black burst or composite video. 4.0V p-p sync and blanking may be used alternatively

Background: 1.0V p-p NTSC composite video for internal keying

Video/Key Outputs

R, G, B: 0.7V p-p non-composite video for use with external encoder or RGB monitor



10-K/20-K

- Air:** 1.0V p-p character generator NTSC composite video
 - Edit:** 1.0V p-p NTSC composite video with cursor
 - Mixed:** 1.0V p-p composite video with character generator keyed into background. (Linear key with anti-aliased fonts)
 - Status/Preview:** 1.0V p-p monochrome video showing status messages or preview of next display
 - Key:** 1.0V p-p keying signal for use with external keyer; composite or non-composite; output is linear (256 steps) for external linear keyers when anti-aliased fonts are used
- 10-K \$15,000.00
 20-K \$18,500.00

Options

Presentation Graphics Software

Combines versatile text composition and high resolution fonts with multi-faceted graphical displays. 16.7 million colors to choose from with 256 displayable simultaneously \$2,500.00

K-Dig Digitizer

Hardware/software product for anti-aliased camera capture. 16 level gray scale. Includes font compose software \$4,000.00

K-PNT Painting

Combines the ease of K Series text operation with the artistry of K-Paint design. With an artist’s tablet and stylus and K-paint software, this hardware/software option offers a separate interface for using font compose software. Choose 256 colors from a palette of 16 million or match screen color directly for fills and brushes \$5,000.00

5-K Character Generator

• Full resolution font character generator • Included as standard are: floppy disk storage of images and text pages, 256 colors on-screen from the full 16,700,000 possible, and eight regular fonts or four anti-aliased fonts with four sizes each on line for instant access • Gives the operator selection of different colors for the character itself and for its edge and shadow • Sequencing of moves and pages has nine selectable speeds • Animation playback of up to 40 frames from the Dubner Texta or DBG-2 is possible, plus displaying all backgrounds from Texta and CBG-2 • All the pre-packaged Backgrounder programs will run on the Dubner 5-K

5-K \$9,500.00

DUBNER COMPUTER SYSTEMS, INC.

*Video Painting Systems/
Graphics Generator*

DPS-1 Video Painting System

- 4, 2, or 1-field NTSC frame buffer • Keyboard and status display
- Tablet • 10M byte lomega drive for storage and recall of up to 8 pictures • Color selection: by hue, saturation, and luminance or from the picture; all legitimate NTSC colors allowed • Millions of colors displayable simultaneously • Cut and paste • Targeted color correction: contrast, brightness, hue • Frame averaging • Fill • Motion suppression
- X, Y, Z, tilt, scale and perspective • Pictures in internal memory
- Posterize • Mosaic • Magnify • Compatible with CBG-2 3rd plane
- Brushes: Hard and soft solid, airbrush, transparency (window) soft and hard, square, stamp, luminance, wash, calligraphy, multi-color, soft and hard trim, fuzz, smear; all brushes anti-aliased • Soft stencils, reverse stencil • Emboss • Cropping • Draw lines and curves (anti-aliased) • Color ramps: vertical, horizontal, diagonal, 4-way • Tilt and pressure sensitive stylus • Text generation (anti-aliased)

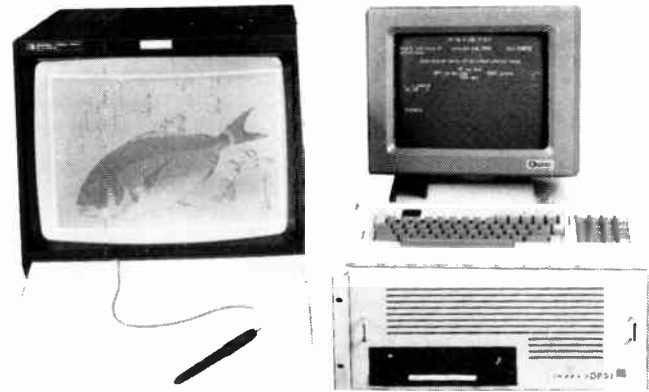
Options

- VTR control • Animation • Larger disk drives

The DPS-1 is a full-color video painting system that grabs images from any NTSC source for storage and modification. For perfect picture quality, the DPS-1 stores and uses all four fields of the NTSC color sequence.

The DPS-1 is based on software innovation that allows the composite NTSC signal to be digitally sampled and manipulated without decoding and re-encoding.

DPS-1 \$23,000.00



DPS-1

TBS-20 Turbo Paint System

- + 20 Meg cartridge disk • Image manipulation along the X, Y, and Z axis • Rotate with roll • Pitch and yaw • Perspective moves • Both real time and frame by frame effects • Automatic assembly onto disk
- VTR and still store • Digitizing tablet and Grass Valley Group™ • 9505 sync generator

Options

- 300M byte disk
- 2 gig optical laser disk that stores 2000 stills

The Turbo Paint System incorporates leading edge technology to increase process speed and memory making it more powerful than its small brother the DPS-1 Painter.

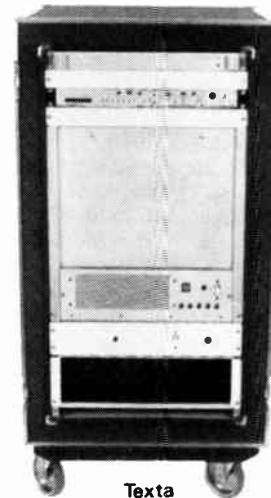
TBS-20 \$40,000.00

Texta Video Graphics Generator

- Proportional spacing • 9-speed roll • Crawl and slow reveal • Diagonal typing • 3-D shadows • 64-color logo characters • Scanwipe
- Tumble • Timed roll • Animate any sequence of frames in real time
- Unlimited border and shadow combinations • Optional second channel permits read next previewing, dual user operation, merged output for creating complex imagery and curve drawer software • Options include a Video Digitizer, for creating new fonts and logos, a weather service interface, for receiving hourly satellite pictures and forecasts, and a tablet with pen and four-button "mouse" drawing directly into Texta's display memory • Texta disks are fully compatible with the CBG-1 and CBG-2 and can be used for playback on Dubner's 20-K character generators • Texture mapping on dual channel systems permits design of 3-D objects and "mapping" of a flat Texta graphic onto geometric shapes • Can store over 500 fonts and 20,000 pages of text on twin removable disk cartridges • Full-screen image composition, combining text and a variety of graphic tools: Lines, Grids, Ellipses, Scale, Rotate, Area Fill, and more • Anti-aliasing circuitry generates over 16 million intermediate shades • Palette of 4096 colors
- Texta 500 adds full color NTSC paint system

Texta

400	Single channel Texta—Basic configuration	\$42,000.00
410	Single channel Texta—Studio configuration	48,500.00
420	Dual channel Texta—Basic configuration	49,500.00
430	Dual channel Texta—Production configuration	56,000.00
440	Dual channel Texta—Studio configuration	59,500.00
450	Dual channel/dual user Texta—Studio configuration	62,500.00
460	Dual channel Texta—Graphic configuration	69,500.00
470	Dual channel/dual user Texta—Graphic configuration	72,500.00
480	Dual channel Texta—3-D configuration	89,500.00
490	Dual channel/dual user Texta—3-D configuration	92,500.00
500	Dual channel Texta—3-D animator, NTSC paint system, picture grab and still store	96,500.00



Texta

Options

401-N	GVG CV24N color encoder	\$ 1,500.00
401-C	Cox color encoder	3,600.00
403	Video digitizer/font compose module	5,000.00
404	Merged output	4,000.00
405	Digitizing tablet with pen	6,000.00
406	Preview plane	6,500.00
407	Additional I/O ports	2,000.00
408	Additional keyboard	3,000.00
409	Curve drawer	10,000.00
412-4	Megomem (4M board of RAM)	5,000.00
413	Printer	1,500.00
428	Recall keypad	1,200.00
433	Interface for weather graphics	3,000.00

Refer to Green Section for Addresses and Telephone Numbers.

B-493

DYNAIR ELECTRONICS, INC.*Distribution Equipment***SERIES 5300 DISTRIBUTION EQUIPMENT**

Series 5300 Distribution Equipment mounts in a 5-1/4" x 19" rackmounting frame (13.34 x 48.26 cm). The frame has a total of twenty mounting spaces. Two power supply modules can be used to provide redundant power supply operation. All amplifier modules include "on-board" power regulators, fuses and blown fuse indicators. AC input power is 115/230 VAC \pm 10%, 50/60 Hz.

FR-5300B Frame

Module Mounting Frame. Provides twenty spaces for Series 5300 modules. All modules can be installed without soldering. (Frame shown with modules installed.)

Size: 5-1/4"H x 14-1/4"D x 19"W Net Weight: 9 pounds

PS-5305B Power Supply Module

Power Supply Module. Mounts in FR-5300B Frame and provides unregulated dc for amplifier modules. Requires four spaces in frame. Two power supplies can be installed for redundant operation.

AD-5370B 5 Output Audio Distribution Amplifier Module

High performance audio distribution amplifier module. Indefinite short circuit protection. Can be used in same frame with other Series 5300 modules.

DA-5310B Dual 1 Input 2 Output Video Distribution Amplifier Module

Video Distribution Amplifier Module for high performance video systems. Two identical amplifier sections on one module, each providing 1 terminating input to 2, 75 ohm outputs. Equalization available for up to 1000 ft. (305 m) of cable.

DA-5310B/10A Video DA, Non Equalized

DA-5310B/11A Video DA, Equal., Belden 8281, Unbal. In.

DA-5310B/21A Video DA, Equal., WECO 16 PEVL, Bal. In.

DA-5310B/22A Video DA, Equal., WECO 760, Bal. In.

DA-5320B 5 Output Video and Subcarrier Distribution Amplifier Module

Video Distribution Amplifier Module for high performance video systems. Sync-Tip reference maintains dc level with changing APL. Equalization available for up to 1000 ft. (305 m) of cable.

DA-5320B/10A Video DA, Non-Equalized

DA-5320B/11A Video DA, Equal., Belden 8281, Unbal. In.

DA-5320B/12A Video Equalizer, 30MHz

DA-5320B/21A Video DA, Equal., WECO 16 PEVL, Bal. In.

DA-5320B/22A Video DA, Equal., WECO 760, Bal. In.

DA-5330B 10 Output Video and Subcarrier Distribution Amplifier Module

Video Distribution Amplifier Module for high performance video systems. Sync-Tip reference maintains dc level with changing APL. Equalization available for up to 1000 ft. (305 m) of cable.

DA-5330B/10A Video DA, Non-Equalized

DA-5330B/11A Video DA, Equal., Belden 8281, Unbal. In.

DA-5330B/21A Video DA, Equal., WECO 16 PEVL, Bal. In.

DA-5330B/22A Video DA, Equal., WECO 760, Bal. In.

DA-5340B 4 Output Video Distribution Amplifier Module

4-Output Video Distribution Amplifier Module and Frame Adaptor for high performance video systems. 1 high impedance looping input and 4, 75 ohm outputs provided.

EQ-5350 Post-Equalizing Amplifier Module

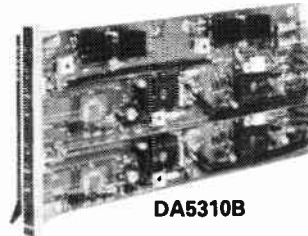
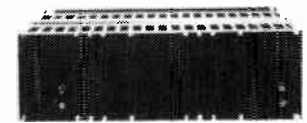
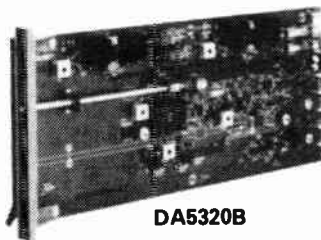
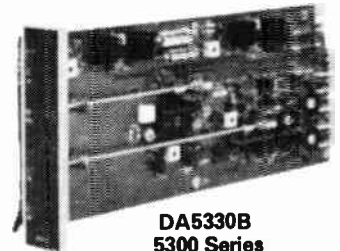
Post-Equalizing Amplifier Module. Provides up to 24dB of equalization at 8 MHz. Will equalize up to 3000 ft. (914.4m) of Belden type 8281 cable or 5000 ft. (1524 m) of WECO 16 PEVL. Provides 2,75 ohm outputs.

EQ-5350B/51A Post-Equalizing Amp., Belden 8281, Unbal. In.

EQ-5350B/61A Post-Equalizing Amp., WECO 16 PEVL, Bal. In.

LA-5353B Unbalanced to Balanced Line Amplifier Module

75 ohm unbalanced input, 124 ohm balanced line driving amplifier module. Available with pre-equalization for up to 2500 ft. (762 m) of WECO 16 PEVL cable to provide 7500 ft. (2286 m) equalized circuit when used with EQ-5350B/61A.

**DA5310B****FR5300B****DA5320B****DA5330B
5300 Series****LA-5353B/10A Line Amplifier, Non Equalized**

LA-5353B/22A Line Amplifier, Equalized, WECO 760

LA-5353B/41A Line Amplifier, Equalized, WECO 16 PEVL

PD-5360B 5 Output Pulse Distribution Amplifier Module

Pulse Distribution Amplifier Module for high performance video systems. Regenerative input, linear output with controlled, adjustable, rise time. Front panel input pulse presence indicator. Normal output with up to 1000 ft. (305 m) Belden 8281 input cable.

Series 5300 Blank Filler Panels

BP-5390A Blank Filler Panel. Mounts in FR-5300B Frame and fills one unused amplifier space. Net Weight: 4 oz.

BP-5391A Blank Filler Panel. Mounts in FR-5300B Frame and fills two unused amplifier spaces. Net Weight: 5 oz.

BP-5392A Blank Filler Panel. Mounts in FR-5300B Frame and fills four unused amplifier spaces. Net Weight: 6 oz.

CC-5398A Power Supply Service Cable

Power Supply Service Cable. Allows power supply to be extended from frame for maintenance.

CE-5396A Module Extender

Module Extender for all Series 5300 modules (except power supply). Allows modules to be extended from frame for maintenance. Net Weight: 2 lbs.

CN-9860A Cable Mating Connector

Cable Mating Connector. For use with Western Electric type 760 or equivalent 124 ohm balanced cable. Mates with Trompeter BJ-77.

CN-9861A Cable Mating Connector

Cable Mating Connector. For use with Western Electric type 16 PEVL or equivalent 124 ohm balanced cable. Mates with Trompeter BJ-77.

FA-5308A Frame Adaptor, Power Supply, 18" Power Cord

FA-5309A Frame Adaptor, Power Supply, 72" Power Cord

FA-5315A Frame Adaptor, Unbal. In.

FA-5316A Frame Adaptor, Bal. In.

FA-5335A Frame Adaptor, Unbal. In.

FA-5336A Frame Adaptor, Bal. In.

FA-5345A Frame Adaptor, Unbal. In.

FA-5355A Frame Adaptor, Unbal. In.

FA-5356A Frame Adaptor, Bal. In.

FA-5357A Frame Adaptor, for 1 x 5 Audio

FA-5375A Frame Adaptor, Audio

SP-5359A Transient Protection

Dynasty/Dynasty 100 Routing Switchers

Dynasty routing switchers are available in 30, 40 and 60MHz bandwidths, while the Dynasty 100 has a bandwidth of 100MHz. The Dynasty 100 permits clean processing of even the most complicated signals including 1280 x 1024, 60Hz, non-interlaced computer generated graphics as well as NTSC, PAL, HDTV, audio and control signals.

Laser Trimmed Hybrids let the user "Hot Change" modules without any PROMs to change, module adjustments or DIP switches to set. These time saving improvements also aid in increased bandwidths for overall system performance not to mention reduced down-time for maintenance, repair, upgrade and modification.

The use of custom printed circuit baluns provide for minimum input return loss. Further, the utilization of true 75 ohm, high density, BSM connectors allows for rapid system modification and expansion without the previously common system down time and realignment. System expansion is just about as simple as Plug 'n' Play. All the way to 1000 x 1000.

Dynasty may be easily upgraded to 100MHz performance by the addition of Dynasty 100. For those users that require high definition and computer generated graphics, Dynasty 100 offers the maximum in signal processing performance, yet still at only about twice the price of a conventional (competitor's) 10MHz switch. Dynasty 100 offers 250V/ μ s slew rates. The combination of Dynasty and Dynasty 100 switchers allows the system designer to Mix 'n' Match bandwidths in a given switching environment.

Specifications

30MHz Systems

VIDEO 100 x 100 system
Input: 1.0V p-p, 75 ohm, composite video (0.714V, 0.286 S)
Input Return Loss: > 30dB at 5MHz (for 10 loops)
Output Return Loss: > 40dB at 5MHz
Output DC Ref.: Adjustable -0.2 to +0.2V; maintained \pm 0.02V 10-90% APL; composite and non-composite video

Chrominance/Luminance

Gain: Adjustable to unity. Any input to any output \pm 0.05dB
Crosstalk Isolation: > 60dB to 5MHz. Worst case, all inputs and outputs active

Electrical Length: 25ns nominal (frame input to output)
Differential Delay: 1° at 5MHz
Bandwidth: 30MHz (1MHz reference)
Frequency Response: 100kHz-5MHz: \pm 0.15dB; 8MHz \pm 0.3dB; 20MHz \pm 1.0dB (1MHz reference)

Slew Rate: 50V/ μ s
Envelope Delay: < 5ns 100kHz-5MHz

Chrominance/Luminance

Delay, 12.5 T Pulse: < 5ns

Chrominance/Luminance:

Gain: < 0.05dB
Differential Gain: 0.05%, 10-90% APL, 5MHz
Differential Phase: 0.05°, 10-90% APL, 5MHz
Transient Response: 0.5% 2T pulse, 1.0% T pulse
Tilt: < 1% line or field
Hum and Noise: 80dB RMS below 1V p-p, 10MHz bandwidth

40MHz Systems

VIDEO 100 x 50 system
Input: 1.0V p-p, 75 ohm, composite video (0.714V, 0.286 S)
Input Return Loss: > 35dB at 5MHz (for five loops)
Output Return Loss: > 40dB at 5MHz
Output DC Ref.: Adjustable -0.2 to +0.2V; maintained \pm 0.02V 10-90% APL composite or non-composite video

Gain: Adjustable to unity. Any input to any output \pm 0.05dB
Crosstalk Isolation: > 60dB to 5MHz. Worst case, all inputs and outputs active

Electrical Length: 25ns nominal (frame input to output)
Differential Delay: 1° at 5MHz
Bandwidth: 40MHz (1MHz reference)
Frequency Response: 100kHz-5MHz: \pm 0.15dB; 8MHz \pm 0.3dB; 20MHz \pm 1.0dB

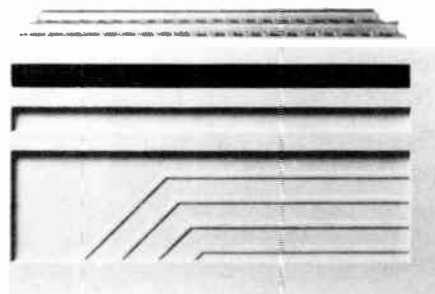
Slew Rate: 50V/ μ s (1MHz reference)
Envelope Delay: < 5ns 100kHz-5MHz

Chrominance/Luminance

Delay: < 5ns

Chrominance/Luminance

Gain: < 0.05dB
Differential Gain: 0.05%, 10-90% APL, 5MHz



Dynasty

Differential Phase: 0.05°, 10-90% APL, 5MHz
Transient Response: 0.5% 2T pulse, 1.0% T pulse
Tilt: < 1% line or field
Hum and Noise: 80dB RMS below 1V p-p, 10MHz bandwidth

60MHz Systems

VIDEO 100 x 20 system (100 x 80 with DA-1580A input distribution)
Input: 1.0V p-p composite video (0.714V, 0.286 S)
Frequency Response: 100kHz to 10MHz \pm 0.10dB, to 20MHz \pm 0.25dB, to 30MHz \pm 0.75dB, to 60MHz \pm 1.5dB (1MHz reference)
Slew Rate: 100V/ μ s

Pulse Response (10MHz S.W. 2ns rise and fall times): 8ns, equal rise and fall times with 20% maximum overshoot and ringing

Differential Gain: 0.1% at 5MHz
Differential Phase: 0.1° at 5MHz
Crosstalk Isolation: > 55dB to 5MHz, > 25dB to 60MHz, worst case all inputs and outputs active

Hum and Noise: 55dB RMS noise below 1V p-p signal, 60MHz bandwidth unweighted

100MHz System

VIDEO 50 x 80 system
Input: 1.0V p-p, 75 ohm composite video (0.714V, 0.286 S)
Input Return Loss: 40dB at 5MHz
Output Return Loss: 30dB at 5MHz
Signal Connectors: 8NC
Gain: Unity
Worst Case Crosstalk: 50dB at 5MHz, 25dB at 100MHz

Pulse Response (10MHz S.W. 2ns rise and fall times): 5ns equal rise and fall times with 15% maximum overshoot and ringing

Slew Rate: 250V/ μ s
Bandwidth: 100MHz (1MHz reference)
Frequency Response: 100kHz-5MHz: \pm 0.25dB; 8MHz \pm 1.0dB; 100MHz + 1.0, -3.0dB (1MHz reference)

Envelope Delay: < 10ns 100kHz to 80MHz
Differential Gain: 0.2% 1V p-p, 10-90% APL at 5MHz
Differential Phase: 0.2° 1V p-p, 10-90% APL at 5MHz
Tilt: 1% maximum line or field
Hum and Noise: 65dB RMS noise below 1.0V p-p signal, 10MHz bandwidth unweighted; 50dB, 100MHz

Switching Time:

< 5 μ s

Audio Specifications

Inputs: Balanced high impedance bridging, + 24dBm max. at 600 ohms (+ 30dBm at 150 ohms)

Common Mode

Rejection: > 60dB, 50-120Hz; 50dB, 30Hz-15kHz
Outputs: Balanced low impedance, indefinite short-circuit protection. + 24dBm max. with 600 ohm load. + 30dBm max. with 150 ohm load
Output Level Variation: \pm 0.2dB max. between inputs

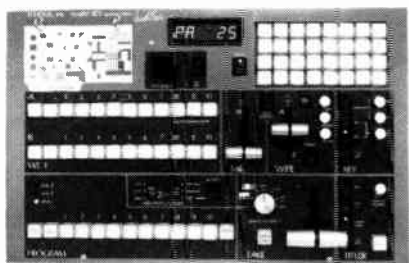
Connectors, Input-

Output: 37-pin "D" subminiature
Gain: Adjustable to unity
Crosstalk Isolation: > 80dB below max. out to 15kHz (worst case)
Frequency Response: 30Hz-20kHz \pm 0.2dB (Time Code Output - > 220kHz bandwidth)

Harmonic Distortion: 0.1% to 15kHz + 8dBm in/out; 0.25% to 15kHz max. in/out
Hum and Noise: -75dBm max.

ECHOLAB, INC.

Production/Audio Follow Switchers



SE-3

SE-3 Production Switcher/Special Effects Generator

- 3 mix-effects circuits, 2 border generators
- 1 color background, 2 color matte generators
- Front-panel programmable with up to 5,000 steps
- Quad splits
- Re-entrant effects
- ECHOLab's patented Soft Take
- 1 3/4" front panel depth
- 12 video inputs total, 10 are looping impedance or 75 ohm terminated, inputs 1 and 2 are black and color background. Composite or non-composite, sync or non-sync sources may be used
- 5 keying inputs, comp or non-comp, must be synchronous Genlock source (black or composite video). 75 ohm terminated

The SE-3 makes exceptional performance available for a low price. A powerful built-in Z-80 microcomputer replaces most of the digital logic found in other switchers and also allows user programming.

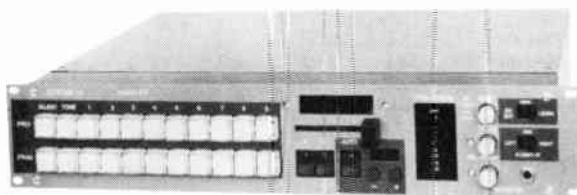
SE-3 \$ 12,200.00

Options

- SYSCAL** System Calibration program for SE-3 \$ **285.00**
- APL-3** Apple offline storage program for SE-3 **875.00**
- RPS-3** Remote Power Supply for SE-3 front panel **100.00**
- DSG-3** Drop Shadow Generator (15 lines) for SE-3 titler . **2,250.00**
- NTSC-3** NTSC encoded chromakey generator for SE-3. . . **1,650.00**
- RGB-3** RGB chromakey generator for SE-3 **1,650.00**
- SERIAL-3** SMPTE serial interface **2,225.00**
- SPK-3** Spare parts kit for SE-3 **1,000.00**
- SVC-3** Service manual for SE-3 (basic unit includes 1) . . **50.00**
- OPS-3** Operators manual for SE-3 (basic units include 2) . . **25.00**
- EXT-3** Extender board for SE-3 (basic unit includes 1) . . **100.00**

Upgrades

SE-3 to SE-6 upgrade (includes CPU, EFF, FPL, TLY, DSK swap) \$ 12,000.00



AFS

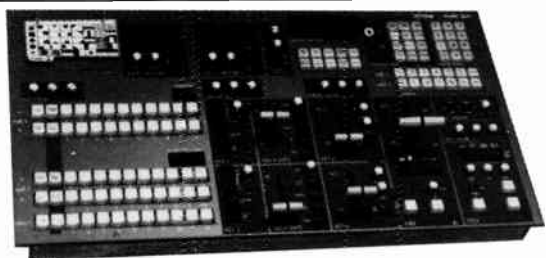
AFS-Audio Follow Switcher

- 9 inputs plus silent and tone, voiceover. Stereo optional
- 600 ohm balanced line, XLR type connectors
- Programmable, computer controlled audio switching and fading
- SMPTE link to ECHOLab's SE-3 or edit controllers
- Parallel link to other video switchers

The AFS is a computer-controlled switcher for audio mixing in a video environment. Intended to complement the SE-3 switcher, the AFS can be a stand alone programmable mixer or it can be controlled by the SE-3 or other video switchers. In this mode, the AFS will automatically switch audio to follow video, that is, selecting direct bus video 5 will cause the AFS to switch to audio source 5. Up to four sources can be designated as audio-only and will not respond to video switching.

Eleven input sources are selectable, including a low distortion 450Hz tone and silent, and voiceover can be added to the output. Pushing a single button will select its input in the normal fashion, and if two or more buttons are pushed simultaneously all buttons will remain lit and all sources will be selected.

- AFS-M** Monaural **\$4,500.00**
- AFS-S** Stereo **5,500.00**
- AFS-D** Audio follow stereo daughter board **1,000.00**
- SPK-A** Spare parts kit for AFS **500.00**
- SVC-A** Service manual for AFS (basic unit includes 1) . . **50.00**



SE-6

SE-6 Production Switcher

- Quad splits, re-entrant effects
- ECHOLab's patented Soft Take
- Computer control of all switching and effects
- Front-panel programmable with up to 200 shots or 500 transitions
- Contact closure editing interface (standard) will initiate any pre-programmed event
- Remote fully digitized control panel with two wires to chassis
- 12 video inputs total, 10 are looping impedance (47K ohm) or 75 ohm terminated. Two inputs are internally generated black and background colors. Composite or non-composite sync or non-sync sources may be used
- 6 linear keyers (Key 1-Key 5 and CGEN), one RGB or composite chromakeyer. Key 1, Key 3, and CGEN may be used with cut and fill signals

The SE-6 adds convenience and flexibility for fast-paced teleproduction. Two independent mix-effects systems and direct bus switching handle up to 12 video inputs, including black and background. Two built-in Z-80A microprocessors handle digitization of front panel controls (no heavy cables) and allow full control by edit controllers as well as user programmability. A front-panel programming system has been developed for enhanced ease of use.

The SE-6 is used in two modes: In production mode, the switcher is a normal 5-bus switcher. In program mode, the programming capability is turned on with a keyswitch, and the programming keypad is used to store control sequences for later playback. Any operation which can be done manually can also be programmed.

SE-6 \$ 19,900.00

- DSG-6** Drop shadow generator (15 lines) for SE-6 titler **2,250.00**
- NTSC-6** NTSC encoded chromakey generator for SE-6. . . **1,650.00**
- RGB-6** RGB chromakey generator for SE-6. **1,650.00**
- SERIAL-6** SMPTE Serial interface **2,225.00**
- SPK-6** Spare parts kit for SE-6 **1,300.00**
- EXT-6** Extender board for SE-6 (basic unit includes 1) . . **100.00**
- SVC-6** Service manual for SE-6 (basic unit includes 1) . . **50.00**
- OPS-6** Operators manual for SE-6 (basic unit includes 2) . . **45.00**

DV-5 Production Switcher

• Designed for teleproduction and post-production in small and medium-sized broadcast studios • Automatic calibration • 12 inputs, including black and background • 3 keyers • 3 digital color generators • Front-panel programmable with TimeTracker • Two mix-effects systems for effects and autotake • Switching power supply • Soft Take • Computer control of all switching and effects • Contact-closure editing interface will initiate any pre-programmed event • Remote fully digitized control panel with two wires to chassis • 39 wipe patterns • Command will return 28 parameters to factory calibration

The DV-5 video switcher is a compact and powerful tool for advanced teleproduction. Innovative circuit design allows packaging in a compact two rack-unit chassis and a 12¹/₄" remote front control panel. The electronics chassis uses just two printed circuit cards.

Built-in computers handle advanced features such as front-panel programmability, calibration, and fault diagnosis.

The DV-5 is used in two modes: Production or Programming. In Production Mode, the switcher allows control of wipe patterns and effects. In programming Mode, a keypad is used to store control sequences for later playback. When sequences have been programmed, they may be recalled in Production Mode for fast accurate recreation of effects that are difficult or impossible to perform manually.

Specifications**Effects Pattern**

Generator: 40 patterns available; border, symmetry, normal-reverse, soft controls

Take Pattern

Generator: 4 patterns plus mix, key and effects

Downstream Keyer: Fill with matte or external character generator video; fade-to-black; reverse keys

Color Generators: Three, background/border/DSK; digitally settable

Effects Keyer: Mix/Wipe/Key; keyer is internal, external, DVE, or chroma. Key mask and key reverse

Edit Control Interface: Optional RS-422 or 423 interface to popular edit controllers

Audio Follow: Optional 10-input audio follow switcher is available

Chroma Keyer: Optional RGB or NTSC chroma keyer

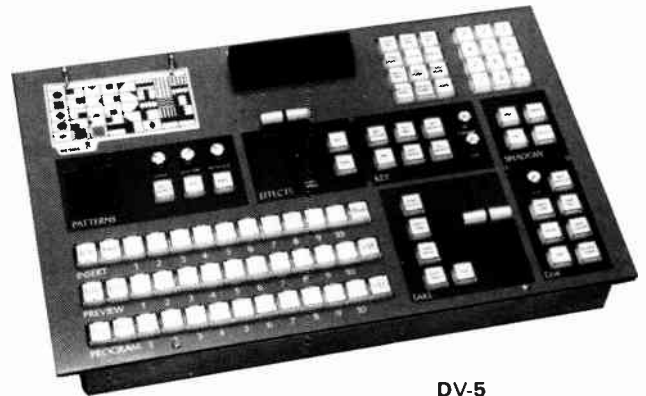
Drop Shadow Generator: Optional Drop Shadow Generator with variable 0-15 line drop, black or white pre-shadow, outline

Programmable: Time Tracker follows control movements, or normal mode follows button pushes. 6 full panel setups can be stored or optionally to 99. Up to 999 step sequences of control operations can be stored. Expandable, battery backed-up CMOS memory allows optional multiuser memory areas with password protection

Video Inputs: 10, looping impedance, 1V p-p composite or non-composite, synchronous or non-synchronous video inputs. 1, Character Generator Fill. 1, Digital Video Effects (DVE). 1, Genlock input. 1 DSK fill

Key Inputs: 1, External chroma key; 75 ohm terminated. 1, External Effects key; 75 ohm terminated. 1, Character Generator key; 75 ohms terminated. 3, looping impedance Red/Green/Blue chroma-key inputs. 1 DSK Video Key

Video Outputs: 1, Preview; 1V p-p 75 ohm source terminated. 2, Program, 1V p-p 75 ohm source terminated. 1, DVE feed from insert bus. 3, Black, 1V p-p 75 ohms source terminated



DV-5

Sync Inputs: NTSC: Sync, Blank, CBF; 75-ohm terminated, 2-4V p-p; or use optional genlock sync generator
PAL: PAL ident flag added, external PAL sync generator required

Data: 1, Tally connector, 10 form C relays. 2, BNC, RS-423 link to front panel. 1, RCA phono jack for contact closure editing. 1, 9-pin D connector for RS-232 or RS-422 link to edit controller. 1, 9-pin D connector for RS-232 or RS-422 link to DVE or Audio Follow Switcher

Differential Phase: .5°
Differential Gain: .5%
Bandwidth: .1dB-6MHz
Path Length: ± 1°
Absolute Delay: 170ns

Program Output
Isolation: 45dB
Crosstalk: 52dB at 3.58MHz
Fade Linearity: 1%
Signal-to-Noise Ratio: 65dB signal to RMS noise, unweighted
Power Consumption: .65W, 110 or 220V, 50-60Hz
Mechanical: Control panel: 12¹/₄" x 2" x 19" rackmountable. Chassis: 3¹/₂" x 18" x 19" rackmountable. Shipping weight: 34 lbs.

DV-5 \$9995.00

Options

DSG-5 Drop Shadow Generator (15 lines) for DV-5 titler \$2000.00
GLS-5 Genlock Sync Generator for DV-5 1000.00
RWP-5 Rotary Wipe Package for DV-5 650.00
QSP-5 Quad Split Package for DV-5 500.00
MEX-5 Memory Expansion for DV-5 350.00
BPS-5 Back-up Power Supply for DV-5 650.00
NTSC-5 NTSC encoded chromakey generator for DV-5 .. 1650.00
RGB-5 RGB chromakey generator for DV-5 1650.00
Serial-5 SMPTE Serial interface to any editor controller using the GVG 100 protocol 1500.00
SPK-5 Spare Parts Kit for DV-5 1000.00
EXT-5 Extender board for DV-5 300.00
SVC-5 Service manual for DV-5 50.00
OPS-5 Operators Manual for DV-5 (basic units includes 1) . 45.00

EECONOLINE® TIME CODE READER PERIPHERALS

TCR-65 Time Code Reader

- Rackmount package • 1/20 to 20 times play speed reading range • 0.4" red LED • Updates from tach pulses during code dropouts • Front panel controls for time code level and display hold • 117VAC, 60Hz, 4W max.

The TCR-65 can be used to read and decode longitudinally recorded time code from video tapes, audio tapes, and magnetic film.

The TCR-65 receives standard serial (longitudinal) SMPTE time code through a rear-mounted XLR connector and converts the code into eight digits of clock time.

The error-detection system pulse train is obtained from an external tachometer when the rear-mounted toggle switch is in the on position. When the toggle switch is in the off position, pulses are delivered by an internal code bit counter. The TCR-65 automatically switches back to time code reader mode when a good time code frame is again detected. The LED display is then loaded with the current time code data.

TCR-65 \$1350.00

MTG-55 Master Time Code Generator

- Drop frame or non-drop frame operation • Color frame synchronization through a rear-mounted BNC connector. This feature permits using an external 15Hz color framing pulse
- Loophrough video input/output connectors (BNC) to assure that time code transmission starts at the beginning of a frame, per ANSI-V98, 12M • A video input designed to accept composite video or composite sync • An XLR connector that provides for time code output on the rear panel

The MTG-55 outputs serial time code. Time code is formatted in hours, minutes, seconds, and frames. It is a useful instrument for indexing video and audio tapes for subsequent material location and editing.

The front panel includes six thumbwheel switches for setting initial time of day. Frames are automatically preset to zero. Other front-panel controls include an on/off switch, a drop frame/non-drop frame selector, a start button, a stop button, and a load button.

Output of the MTG-55 is 0dBm, 600 ohm, balanced.

The unit is 1 3/4" H and 10" D. It has a standard 19" W rack-mount front panel. Power required is 117VAC, 60Hz, 3W maximum.

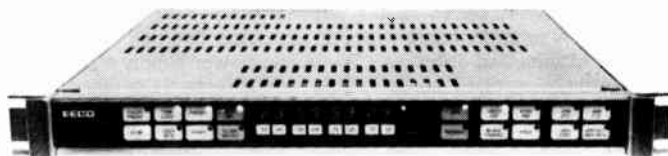
MTG-55 \$1350.00

TIME CODE READER/INSERTERS

Each unit can read drop or non-drop time codes and provides controls to adjust character size and screen position.

VCG-75 Video Character Generator

- Compact rackmount package • 1/20 to 20 times play speed reading range • Front panel controls for time code level, size, position, brightness, insert on/off, and display hold • 117VAC, 60Hz, 3W max.



VIG-850

The VCG-75 reads SMPTE time code from video tape or other sources and outputs this data as video characters. The output data can be burned into or superimposed over the source video on a monitor. Time code is read at 1/20 to 20 times normal playback speed, in either forward or reverse mode.

Using the VCG-75, you can correlate specific video frames with time code information without looking away from the video monitor.

Time code is received through a rear-mounted XLR connector. Video is received and transmitted through rear-mounted BNC connectors with two isolated outputs of 75 ohms each, unbalanced.

Video input and output levels are 1V p-p, nominal, NTSC format. SMPTE input sensitivity is 50mV minimum. Input impedance is 2.5K ohms.

VCG-75 \$1350.00

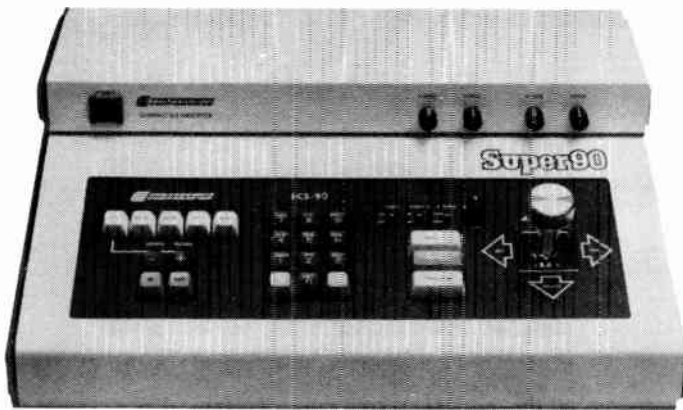
VIG-850 Premium Multi-Format Time Code Generator/Reader

- Compact, rackmount package • Generates longitudinal and VITC time code • Reads and displays longitudinal and VITC time code • Generates slaved time code from 10 commandable generator slave modes • Compatible with NTSC and PAL/SECAM video standards • Built-in broadcast quality VITC video inserter • Drop and non-drop frame • Generates, reads, and displays user bits • 105-125VAC, 47-30Hz, 30W max.

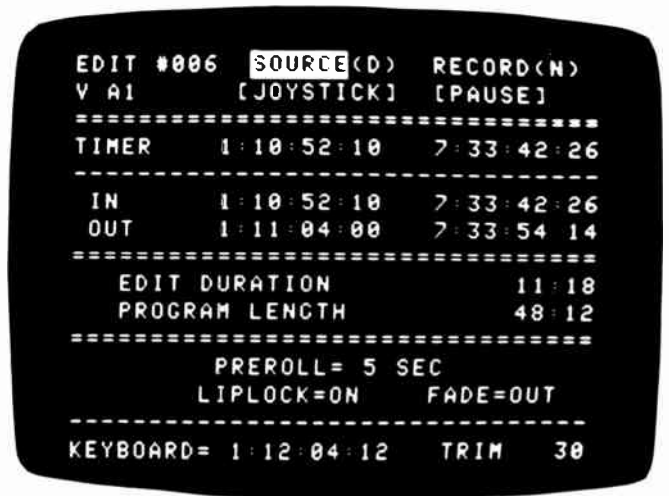
The VIG-850 can generate drop or non-drop time code with or without user bits in all modes. It incorporates techniques using microprocessor multi-level interrupt firmware programming that allows simultaneous operation of generator and reader functions.

Vertical interval time code is an integral part of the video signal. It can be read whenever a usable video picture is being reproduced at tape speeds ranging from high speed shuttle all the way down to freeze-frame. Unlike longitudinal time code, VITC does not require a dedicated track. This frees up both audio tracks for stereo programming. VITC provides tape indexing resolution down to the video field. Redundant recording methods and an integral error detection code give VITC a high immunity to dropout reading errors.

VIG-850 \$5490.00



Super 90



Super 90 Edit Control System

- Plugs into most 3/4" and 1/2" VTRs
- Joystick control of tape speed
- Pulse Scan
- Interchangeable VTR formats
- High speed search
- Cruise
- Full VTR remote control
- Auto-tag
- Recall feature
- Built-in sync generator
- On-board computer
- Dynamic Edits
- Mark, set and trim in/out edit points
- Programmable pre- and post-rolls
- Insert or assemble edits
- Independent control of audio and video channels
- Control track or SMPTE/EBU time code
- Abort capability
- Status display generator
- Fastest edit controller available

The Super 90 is a low cost microprocessor-based editing system designed to bring sophisticated joystick editing within the budget of every videotape producer. It is a plug-in system that provides variable speed tape motion control with most 3/4" and 1/2" editing VTRs.

The multi-format Super 90 is particularly suitable for high speed ENG (electronic news gathering), EJ (electronic journalism), remote production vans, educational and industrial productions, broadcast productions requiring a single source, and as an off-line system for commercial post production.

The Super 90 can be used for single or dual monitor editing, remote VTR rolls, back-timed edits, animation and manual edit listing. The Super 90 operates on control track or industry standard SMPTE/EBU time code, and is available in NTSC or PAL versions.

The Super 90 is human-engineered for ease of operation and is the fastest editor available in the industry. The dedicated twelve-button keyboard permits quick initiation of edit functions and communication with the editor and its options, Liplock® audio pitch control, and Blade™ black/fade module.

Super 90 Single Source, Cuts-Only Edit Controller

Includes two time code readers and one generator, all built-in. RS-232 edit list out capability, two VTR interfaces, one each operator and maintenance manual.

Super 90 \$4950.00

Accessories

CI Character Inserter

Inserts or displays time code digits into video. Provides "window dubs." \$1200.00

BL-90 Blade Black Generator And Fade Module

Fades up from and/or down to black at in or out edit points. Includes internal black burst generator for prerecording color black on video tapes. (Fades NTSC and PAL, Black Burst Generator NTSC only.) \$925.00

CCA-90 Control Cable Assembly

Interfaces VTR to 90 Series Edit Controller. Specify VTR manufacturer and model number \$650.00

RGL-90 Time Code Reader/Generator/Listener Module

Installed in a ECS-90 it will generate and read drop and non drop frame SMPTE or EBU time code. Lists edit decisions via RS-232 serial port to storage devices \$3250.00

Manuals

ECS-90/Super 90 Operators \$25.00
 ECS-90/Super 90 Installation and Maintenance \$50.00

EECO, INC./CONVERGENCE CORP.

Video Edit Controllers

ECS 195 Series Editing Systems

A powerful, low cost A/B roll video edit-controller. Standard features include the ability to mix tape formats, including 1", exclusive tag features simplify backtiming for match frame edits and matching video to narration; scene store for quick storage and retrieval of key scenes, and an internal 50 edit line memory that is expandable to 200 lines.

The basic system may be expanded to include three time code readers and one generator, and a list management package with sequential auto-assembly.

ECS 195, Basic System

ECS 195LM with a list management package and sequential auto-assembly, three time code readers, one generator

The Console

- Joystick • Cruise • SMPTE time code or control track
- High speed search • Manual bump

Edit Entry

- Switcher effects and notation • Split audio/video edits

Auto Edit Cycle

- Preview modes • Allstop • Replay • Status display generator • Dual Serial EDL ports • TwoCom • Color framed time code generator on the 195LM

Tags

- AutoTag • AutoMatch® • Scene store and recall
- Syncroll • Manual bump

List Search

- JoyScrol® on the 195LM • ListScrol®

List Management

- Internal memory 50 edit line memory storage is standard on the 195; 200 edit lines are included in the 195LM
- Add, delete or replace edits with or without ripple in the 195LM • Pending clean • CleanIt® • Format selection
- Reel-numbers • Edit numbers • Recall edits • Renumbering

Auto Assembly

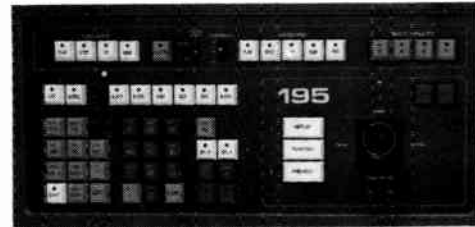
- Auto assembly provides for automatic editing of a sequence or an entire program, following the instructions in the edit list • Manual assembly calls up the next edit automatically, but actual performance of each edit list is initiated by the operator allowing for modifications or adjustments • Auto and manual assembly are available on the 195LM

Other Features

- Audio monitoring • Three channel audio insert selection • Trim function • Auto duration • Automatic dialog replacement

Engineering Notes

- Assemble/Insert • Time code with offset • Switcher/Mixer control • VTR interfaces • Color framing • Multiple or single monitor • Smart start • Programmable personality • Preroll/Postroll time select



ECS-195 A/B Roll, Three VTR Controller with 50 event memory, tag features, edit list in and out, add, delete and CleanIt. Includes three parallel VTR interfaces

..... **\$ 10,505.00**

ECS-195 Plus includes all features of the ECS-195 in addition to: internal time code readers and one generator. Complete list management package including add, delete and replace with or without ripple, JoyScrol (list slaved to VTR motion), 450 event edit memory, sequential auto-assembly and Operation/Maintenance Manual

..... **\$ 15,000.00**

Conversion Kits

LM Option A Upgrades earlier 195TCRG to ECS-195LM. Adds list management package with Ripple, JoyScrol 200 event memory and sequential auto-assembly

..... **\$ 2,200.00**

LM Option B Upgrades basic 195 to ECS-195LM. Adds three time code readers and one generator, list management package with Ripple, JoyScrol and sequential auto-assembly

..... **\$ 6,000.00**

LM Option C Upgrades the ECS-195LM to the ECS-195 Plus if the unit was purchased after January 1, 1987

..... **\$ 2,200.00**

ECCO, INC./CONVERGENCE CORP.**Video Editing Systems****200 Series Video Editing Systems**

- **ActionMatch:** Calculates edit points to match action and sound anywhere within an edit segment. Audio-only or video-only inserts can be precisely matched to corresponding action or sound with joystick control and a single keystroke
- **Amber Status Monitor:** An amber status monitor is included with each 200 System
- **Auto Duration:** Utilizes the trim register to set the edit duration relative to either an in or an out point
- **Auto/Manual Assembly:** Provides for automatic editing of a sequence or an entire program following the instructions in the edit list. Manual Assembly calls up the next edit automatically but actual performance of the edit relies on the operator
- **AutoMatch:** Allows the operator to create matching source and record in edit points at any location within the previous edit. This automatically provides match frame edits for A/B rolls and effect transitions
- **Auto Scene Store:** In this mode a single keystroke snapshots scene location by time code and reel number. Up to 99 locations can be stored or listed
- **Automatic Dialogue Replacement:** ADR provides cue tones and a continuous audio record cycle for "looping" or post-dubbing of sound. It can also be used to replace video material
- **CleanIt:** CleanIt automatically cleans overlapped edits in the EDL one edit at a time during the off-line edit process. This program constantly checks the preceding edit to see if an overlap has occurred
- **Color Framing:** A Color Framing routine allows the edit system to monitor the color frame relationship for 1" VTRs based on time code
- **Control Track or SMPTE/EBU Time Code:** The editing system has the capability to operate in either control track or industry standard SMPTE/EBU drop frame or non-drop frame time code. The system also operates with any combination of control track or SMPTE/EBU time coded tapes
- **High Speed Search:** Allows the operator to program any tape time location (control track or SMPTE/EBU time code), and have the selected VTR search to that tape location
- **List Scroll:** Gives you joystick control to shuttle forward and backward through the edit list, including "cruise" for no-hands scrolling of EDL
- **Manual Bump:** Allows for small adjustments to rolling VTRs from the keyboard to achieve precise synchronization of multiple machines for syncroll
- **Programmable Personality:** Each model of VTR has an individual "personality" with regard to speed and response characteristics. Personality switches tell the system what specific VTRs are connected
- **Smart Start:** Learns the characteristics of the VTRs in the system and makes adjustments in the synchronization routines to accommodate variations in performance
- **Split Audio/Video Edits:** Can be programmed with independent selection of audio and video in edit points

ECS-204X

A four VTR, advanced list management A/B roll edit controller with assignable record, three built-in time code readers, 1000 line edit memory, 409 list cleaning program, CleanIt, block moves, comments, sequential and checkerboard auto-assembly. Includes three VTR interfaces, electronic control unit with rackmount kit, monitor, the PC-300 list storage program, Operation and Maintenance Manuals. Fourth VTR interface and Time Code channel optional \$19,000.00

ECS-205

An eight VTR advanced list management A/B roll edit controller with four built-in time code readers (expandable to eight), with assignable record. Includes list management and assembly features of the 204.

Includes four VTR interfaces, two electronic control units, editing console, status monitor and operations/maintenance manuals. Additional VTR interfaces and time code channels optional, monitor, the PC-300 list storage program and Operation/Maintenance Manuals. . . . \$27,000.00

**Conversion Kits**

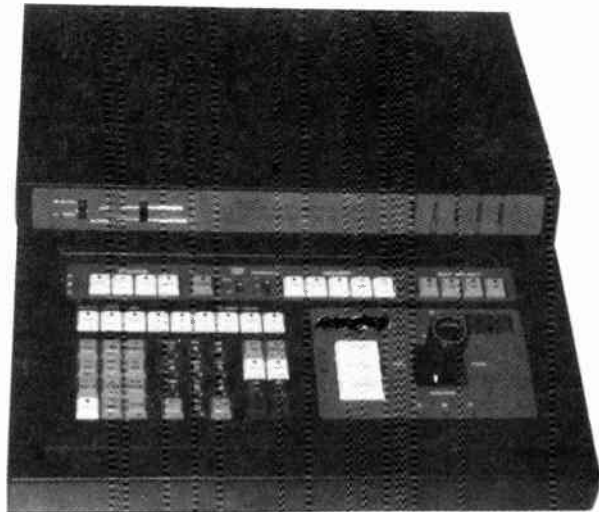
- CK-201/204** Upgrades the ECS-201 to the ECS-204. Includes a memory board and keycaps \$10,800.00
- CK-202/204** Upgrades the ECS-202 to the ECS-204. Includes a memory board and keycaps 6,480.00
- CK-203/204** Upgrades the ECS-203 to the ECS-204. Includes a memory board and keycaps 5,400.00
- CK-204/205** Upgrades the ECS-204X to the ECS-205. Includes one VTR interface, an additional electronic control unit with rackmount kit, and time code reader channel 5,200.00

Options and Accessories

- AVS-100** Audio Follow Video Switcher \$1,200.00
- CG-100** Command Generator 1,000.00
- CI** Character Inserter 1,200.00
- ICC-100/5'** Interconnect cable for parallel I/O 175.00
- ICC-100/20'** Interconnect cable for parallel I/O 300.00
- IIFP-100** Interface Package (Specify VTR manufacturer and model number intermixable formats available) 1,000.00
- IIFP-100/VSI** Serial VTR interface package, provides dual range joystick control. Time code is carried through VSI to 204X, 1205 or 1000 Series Edit Controller—no additional time code cables required 1,500.00
- JB-100** Junction Box 200.00
- PIO-100** Parallel input/output 175.00
- SE-100** Switcher Effects Unit 7,000.00
- SWI-100/110** Switcher Interfaces includes JB-100 and appropriate cables; specify model/manufacturer of switcher to be interfaced 2,000.00
- SWI-120** Switcher Interface includes JB-100 and appropriate cables; specify model/manufacturer of switcher to be interfaced 3,000.00
- RMK-200E** Rackmount kit 250.00
- PC-300** Software program for outboard edit list management 1,000.00

ECCO, INC./CONVERGENCE CORP.**Video Edit Controller****ECS 900 Plus Video Edit Controller**

- A six serial VTR controller
- Any serially interfaced VTR may be assigned record functions from the 1000 keyboard
- Combinations of parallel and serial interfaces may be used
- Serial time code generator is standard with optional longitudinal time code reader
- The edit decision list can be transmitted in and out of the controller via dual RS-232 serial data streams to personal computers, independent disc drives, punched tape reader/generators and printers
- An edit list of 1000 lines may be stored internally
- List management includes pending and actual addition and deletion of edit events
- The controller may be fully interfaced to most major manufacturers' production switchers for A/B roll effects
- CleanIt...The dynamic edit list cleaning program that cleans lists as edits are performed
- TenCom...Set of ten general purpose interfaces, can trigger external digital video effects units, graphics generators, audio tape decks and external VTRs
- ActionMatch...Provides single keystroke backtiming that matches audio and video points for in-scene synchronization
- AutoMatch...For single keystroke matchframing
- AutoTag...For automatically extending events from a match frame point
- ListTag...For single keystroke matchframing to any point within previously recorded material
- SyncRoll Tag...Single keystroke re-synchronization among several source and record reels for edit-by-edit synchronized rolls
- Split Audio/Video Edits...A logical keystroke/joystick sequence that quickly establishes separate in-points for audio and for video
- 99-Frame Scene Store...A separate memory that can store 99 different time code locations by reel number, accessible via two-digit addresses. Locations can be entered "on the fly" as music beats, chord changes, scene changes, etc.
- Joystick VTR Control...All interfaced VTRs can be placed in high speed forward or reverse scan, play, jog and still-frame pause from the joystick
- ListScrol...The joystick can be used to scroll and cruise the edit list through a highlighted line in the edit decision list register
- Last and Next Edit Recall...One shifted keystroke pulls any edit in the highlighted line up to the edit register for modification, trimming and/or re-recording
- Five Preview Modes...VVV, VBV, BVB, Preview-In and Preview-Out
- Manual Bump...Up to four rolling VTRs can be manually synchronized—and locked into sync—for SyncRoll
- SyncRoll...Three sources and one record VTR can be rolled "in-sync" while cuts, wipes and dissolves are performed from the keyboard of the 1000. Each transition/event is automatically loaded into the edit list
- List Management Package...Features Add, Delete and Replace, with or without Ripple
- The PC-300 personal computer program...for outboard list storage and manipulation
- JoyScrol...A feature that locks the position of the edit list to the motion of a delegated VTR

**ECS 900 Plus**

- Sequential auto-assembly
- 409...An advanced stepthrough list cleaning program unique to Convergence edit-controllers
- Move...A feature that can literally edit the list by defining blocks of edits and copying—or deleting—them anywhere in the list, with or without Ripple
- Comments...Entry into the list from the keyboard of an MS DOS based personal computer (with the PC-300)
- Checkerboard auto-assembly
- User bits display
- Exchange register...used for alternating active edit events

ECS 900 Plus

A complete high-end six serial VTR list management edit system with assignable record, 1000 line edit memory, list in and out, add, delete and replace with or without ripple, CleanIt and 409 list cleaning programs, block moves, comments, JoyScrol, sequential checkerboard auto-assembly. Includes three VTR VSI serial interfaces, one time code generator and Operations/Maintenance Manual. Three additional VSI serial interfaces and time code channels optional \$16,200.00

TCR-4 Internal time code reader, 3 channels \$3,500.00

TCR-1 Time code reader expansion channel for existing TCR-4 \$300.00

Accessories

Video Switcher Source cuts-only systems. Audio follow \$1,200.00

CI Character Inserter Inserts time code digits into video being recorded, providing "window dubs" 1,200.00

ICC-100/5' Interconnect cable for Parallel I/O 175.00

ICC-100/20' Interconnect cable for Parallel I/O 300.00

IFP-100 Interface Package Specify VTR manufacturer and model number (1", 3/4", 1/2") 1,000.00

JB-100 Junction Box Required for multiple connections to Parallel I/O. 200.00

PC-300 Personal computer software program (MS, DOS, IBM compatible) 200.00

SE-100 Switcher Effects Unit Audio follow video switcher with 23 wipe patterns, dissolves. 7,000.00

SWI-100/110 Switcher Interfaces includes JB-100 and appropriate cables; specify model/manufacturer or switcher to be interfaced 2,000.00

SWI-120 Switcher Interface Includes JB-100 and appropriate cables; specify model of switcher to be interfaced . . 3,000.00

EECO, INC./CONVERGENCE CORP.**Editing Systems****IVES® II Desktop Postproduction Editing System**

In its standard configuration, the IVES II can easily handle all editing and machine control functions for a typical 2-VTR editing bay without additional peripheral equipment. And when expanded through the addition of its A/B option, your IVES II increases its power even more, giving you full A/B roll and separate Special Effects Generator (SEG) control in one package.

- SMPTE/EBU time code or control track editing, so you can edit whichever way you find more comfortable. And to safeguard your efforts, the system will automatically switch to control track pulses should the time code source be interrupted
- An internal routing switcher that automatically routes all your video, audio and time code inputs based on your selections. No recabling is necessary
- Dedicated Mark/Set keys that let you easily mark in and out edit points on-the-fly or set them numerically
- Back-to-back matched edits that are as precise as possible because the system automatically matches last out points with next in points for both video and audio
- Programmable general purpose interface (GPI) relay closure that can trigger auxiliary equipment at any time before or during an edit
- Video and audio fade control that allows you to program video and audio fades directly from the keyboard, for durations of 1 to 9 seconds
- Scene-thru and replay, the IVES II's unique commands that let you replay any sequence of edits or just the last edit performed
- A rapid go-to search that lets you find any scene location, including last in and last out points, within seconds
- A print command that generates an edit decision list (EDL) of your edits in CRT display or industry standard edit list formats
- Preview out, a time-saving command that permits you to preview and fine tune your edit out point without having to preview the entire edit
- Aux video input that allows you to conveniently insert camera or title video into your production
- The ability to insert IVES II color black as a video source
- Copy source or master tapes for workprints or backup copies. IVES II's one-button Copy command automatically rewinds both VTRs to the beginning, then quickly makes a direct copy from the play VTR to the record VTR, or vice versa. While copying, you can add time code to just the copy or to both tapes if you need two tapes that have identical time code. This is especially helpful for A/B editing situations. And because all video, audio and time code signal routing is performed automatically, no cable repatching is required
- Stripe the play and/or record tapes with continuous SMPTE/EBU time code, control track pulses and video color-black. All at the touch of single-button controls. And possible because the IVES II includes its own sync and video color-black generators and dual time code generator/readers. So you won't need additional time code equipment, either in the field or in the postproduction room
- Print out rough cut edit lists in CRT or industry standard EDL formats, so you can review important scenes and possible edit points without actually performing the edit
- Mix audio directly onto your edited master tape. Add background music, sound effects and voice-overs, complete with fades and adjustments of the mix ratio from front panel or auxiliary audio line inputs. A 3W amplifier is included so you can monitor audio from either VTR
- Change from one tape format to another quickly and easily, allowing you to move from 1/2" to 3/4", 3/4" to 1", etc., with remarkable speed

IVES II Single Source, Cuts-Only Edit-Controller. Includes two VTR interfaces, two built-in time code readers and generators, internal sync and black generators, programmable fades to and from black, audio mixer, non-volatile memory, operators manual. System is expandable to include second source VTR for A/B roll effects \$5,350.00



IVES II



IVES Pro

IVES® Pro A/B Roll Editing System

Three VTR Edit Controller with Remote Rackmountable Electronics and Detached Keyboard.

- Ability to intermix 1/2", 3/4", 1" formats
- Self-contained SMPTE/EBU time code generator/readers
- RS-232 serial port
- Parallel output to printer
- Pre-stripe capability with color-black and time code
- Programmable fade to and from color-black
- Audio mixer with programmable fade
- Automatic dubbing of source material and edited master
- Internal sync and color-black generators with outputs
- Split audio/video edits
- Auto assembly from external source
- Learn mode — repeats series of keystrokes
- E-E preview for setting audio/video record levels
- Ability to edit with drop/non-drop time code formats
- Non-volatile memory for edit and function data storage

IVES PRO A/B Roll, Three VTR Edit-Controller with remote rackmountable electronics, auto-assembly from external source, three VTR interfaces, three built-in time code readers and two generators, internal sync and black generators \$7,950.00

EECO, INC./CONVERGENCE CORP.**Computerized Editing Systems****EMME® Computerized Editing Systems**

• A workstation optimized for creative video editing • Fast, comprehensive edit decision list • Time-saving cluster events function • Multiple workstation configurations • Built-in expansion • Integrated time code modules • Fast, smooth, control of up to nine 1", 3/4" or 1/2" VTRs/Multitrack ATRs and a production switcher

Fast, Comprehensive Edit Decision List

A powerful edit decision list program allows you to select functions quickly and efficiently. As you edit, each of your decisions goes directly into the list. You can insert a multisource event such as a dissolve by pressing the DISSOLVE key, then entering the desired number of frames. Follow the same procedure to re-edit a multi-source event.

The EMME list also lets you correct entry errors. If an entry is made into an existing event by mistake, that event is not destroyed. To restore the event to its original form, press the O.S. (Out Sequence) key on the keyboard, and the system reverts to the beginning of the event, thereby automatically deleting the erroneous entry.

Along with these shortcuts, you still get a full selection of time proven features like selective update, block move, sort, change sequence, auto clean, list clean and global search.

Time-saving Cluster Events Function

With the powerful editing tool of cluster events, create complex, multiple-source decisions as elements of the cluster, then treat them as a single event. To dissolve back and forth from a person on camera to a character generator graphic, for example, you no longer have to create an event for each dissolve. Instead, create a cluster that is previewed and recorded as one event. By controlling the character generator through the Relay key, you can dissolve to the person on camera, trigger the relay and change the graphics, dissolve back to the person, and continue through the entire sequence.

And you can use cluster events to great advantage with today's "intelligent" switchers, capable of displaying multiple sources in a wide variety of modes.

Multiple Workstation Configurations

An optional workstation has been customized for the unique needs of today's professional film editors. This Cinemagraphic Editing Workstation is easily interchangeable with the Video Editing Workstation. Each is plug compatible with the EMME computer.

If your specialty is filmstyle editing, you can make all editing decisions using the "Mouse" Contoller, a single-button device that moves a corresponding cursor on a display of all system functions on a data display monitor.

Integrated Time Code Modules

An LTC reader is included in each EMME machine interface, and you can order additional time code accessories to suit your applications. These include the time code inserter, VITC reader, LTC generator and combined LTC/VITC generator, all plugging into the system's smart interface chassis.

VITC capability lets you use all audio tracks available for applications like multiple language programs and stereo audio mixes. And it gives you the added flexibility of editing in slow motion—all the way down to still frame.

Prioritizing time code formats in the absence of a particular code is easily accomplished. If you're reading LTC, for example, and this code drops out, the system automatically reverts to VITC, or to the control track. Similarly, when the VITC reader is in use, the order of priority can be from VITC to LTC, and finally to control track, so that you always have automatic backup capability.

Auto Assemble with Full Look-ahead Search

Auto Assemble lets you automatically assemble all of your edit decisions onto a master tape. With our look-ahead search, you can even auto assemble a half-hour program in a half hour of real time. Once you've completed your edit decision list, you select Auto Assemble on the control panel. The system automatically looks ahead in the list for the next edit, cues a selected VTR, then pre-parks it to wait for the right time to play.

**E-Key Registers for Repetitive Functions**

The Video Editing Workstation gives you 10 E-key registers, each a set of up to 80 keystrokes that the workstation remembers and executes with a single stroke. You can quickly execute special functions like center cut dissolve and automatic offset just by pressing one key. When a weekly show opens with a standard sequence of special effects, for example, the commands used to perform the opening can be stored into one or more E-key registers.

Multitrack ATR Control

You can match video to audio for perfect lip synchronization, time special audio effects to match video action, and expand the total number of synchronous audio channels.

Smooth, Efficient Editing At Your Command

EMME's Video Editing Workstation features a dedicated function editing control panel. Keys are grouped by function into clusters, and the clusters logically arranged on the panel to maximize your efficiency and creative freedom. You'll find the most frequently used keys placed in a triangular pattern where you can easily locate and use them. Also included is a special Help key as part of the control panel to give you instant, on-screen information about specific functions as you need it.

A shuttle knob lets you manipulate the powerful edit decision list to select list management functions and control machine motion.

All functions that require a status display are highlighted with LED indicators on the keytops, so that as you scroll through the list, you are constantly kept informed of in-use status, right up to the current event.

EMME 3000/3100 Includes three VTR interfaces, three longitudinal or vertical interval time code readers, rackmountable electronics chassis and interface chassis (E-Box with E-bus control module), rackmountable single 8" disk drive. Choice of either Video Workstation or Computer station (color coded keyboard), operator and technical/installation manual. \$24,950.00

VMI VTR Interface Package For Parallel Or Serial VTRs. Package includes P.C. and time code reader boards (longitudinal or vertical interval), 10' RS-422 cable (from main frame to interface), 50' control cable (from interface to VTR). VTR make and model number and time code cables must be supplied by customer. \$2,995.00

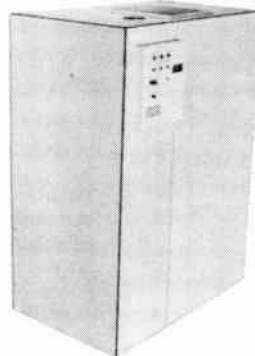
AMI ATR (Audio) Interface Package For Parallel Or Serial ATRs. Includes two P.C. boards, time code reader (longitudinal only), 10' RS-422 cable (from main frame to interface), 15' cable (from interface to ATR). ATR make and model and time code cables must be supplied by customer. \$4,750.00

ELECTRO IMPULSE LABORATORY, INC.

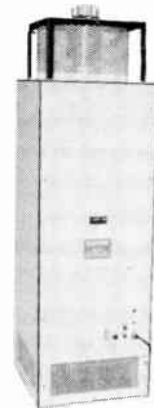
RF Coaxial Loads



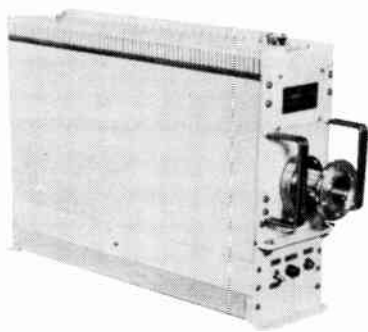
**CPTN-3000
2500-3000W**
Oil Dielectric
Frequency: DC — 1000MHz
VSWR: 1.15 Max. 1.1 typ.
Power: 2500W continuous; 3000W intermittent
Ambient: -40° to +45°C
Input: LC (f), 1 5/8 EIA opt.
Weight: 35 lbs.
Op. Position: Horizontal only
Finish: White enamel



**CPTC-50K
50kW**
Calorimeter Version CPM-50,000
Water Load with Integral Heat Exchanger
Frequency/VSWR: DC-1 GHz 1.1:1*
Power: 50kW continuous
Ambient: 0° to +35°C
Input: 3 1/8 EIA, 6 1/8 opt.
Weight: 500 lbs.
Air Flow: 4500 CFM
Op. Position: Upright
Finish: White Enamel
AC Power: 220VAC, 15A, 60Hz, 3 (50Hz available optional)
Fully Interlocked: Load Resistor is field replaceable



**DPTC-50KFM
55kW**
Dry, Forced Air Cooled
Frequency: DC-110MHz
VSWR: 1.15:1
Power: 55kW continuous
Ambient: -40° to +45°C
Input: 3 1/8
Weight: 143 lbs.
Op. Position: Upright
Finish: White enamel
Air Flow: 1600 CFM
Interlocked for line power, air flow, and over-temperature
AC Power: 208/230VAC 7A 60Hz (50Hz available option) Reject Load option available



**CPTC-5K
5000W**
Oil Dielectric/Forced Air
Frequency: DC-1000MHz
VSWR: 1.15 Max., 1.1 typ.
Power: 5000W max.
Ambient: -40 to +45°C
Input: LC (f), 1 5/8, 3 1/8 opt.
Weight: 57 lbs.
Op. Position: Horizontal only
Finish: White enamel
AC Power: 115VAC, 60Hz (220/50 optional extra)

RF COAXIAL LOADS

Model	Avg. Power (Watts)	Price
CPTN-500	500/750	\$ 750.00
CPTN-1500	1500/2000	1,500.00
CPTN-3000	2500/3000	1,800.00
CPTC-5K	5000	2,100.00
DACT-5KFM	5000/7500	1,925.00
DACT-7.5KFM	7500	1,925.00
** DACT-14	10,000/12,000	2,400.00
++ DPTC-10KFM	10,000/12,000	2,275.00
** DPTU-153	15,000	2,975.00
** DACT-153	15,000	2,975.00
*** CPTC-15K	15,000	9,500.00
++ DPTC-25KFM	25,000	3,850.00
** DACT-253	30,000	10,000.00
*** CPTC-25K	Use CPTC-30K	
*** CPTC-30K	30,000	11,000.00
** DPTU-50K	Use DPTC-50KFM	
** DPTC-50KFM	55,000	6,750.00
*** CPTC-50K	50,000	17,500.00
DPTC-75KFM	75,000	10,500.00
*** CPTC-80K	80,000	Inquire
** DPTU-75K	80,000	9,500.00

Larger Loads Available

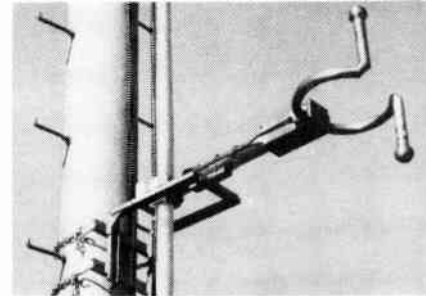
- * Also accepts other mfgs. changeable connectors.
- ** Voltage divider type power meter optional (\$1,250.00 add'l.)
- *** Detail Frequency/VSWR specs of loads may change slightly.
- ++ Reject Load Option (Controls Fan) \$350.00 Add'l. Field Kit — \$400.00

ELECTRONICS RESEARCH, INC.

FM Antennas

1100 Series High Power Circularly Polarized FM Antennas

• Rugged, heavy-duty antennas capable of handling powers from 5kW (single bay) to 40kW (eight or more bays) • May be purchased in arrays of up to 16 bays • End fed in combinations from one to eight bays • In off center fed antenna arrays, the center feed "T" is located one half bay spacing below the center of the array. In even numbered arrays, the center feed "T" is located at the center of the array • Input flange is approximately 7' below center feed "T" • Radiating elements are fed using a 3 1/8" coax stem which is supported using a stainless steel support bracket • Interbay 50 ohm coax is 3 1/8" rigid • Standard 1100 Series antennas have coaxial input 3 1/8" 50 ohm EIA female, and input power rating 32kW or less depending on the number of bays in the array. Higher input power ratings up to 64kW can be achieved using optional 6 1/8" center feed sections



1100 Series

Polarization: Circular (clockwise)
Azimuthal Pattern: ± 2dB in free space, both horizontal and vertical
Ellipticity: ± 3dB in free space
VSWR at Input: (Without field matching) 1.25:1 top mounting, 1.5:1 or better side mounting
VSWR at Input: (With field matching) 1.1:1 or better

Specifications

Frequency Range: 88 to 108MHz, factory tuned to one frequency

Type	Power Gain		dB Gain		Field Gain		Input Power Rating kW	Weight Including Brackets lbs.	Wind Load Based on 50/33 lb. sq. ft.	Weight in lbs. with Radomes Incl. Brackets	Wind Load in lbs. with Radomes on 50/33 lb./sq. ft.
	Horiz	Vert	Horiz	Vert	Horiz	Vert					
1100-1AE	0.4611	0.4611	-3.3623	-3.3623	0.6790	0.6790	5	84	144	104	265
1100-2AE	0.9971	0.9971	-0.0128	-0.0128	0.9985	0.9985	10	184	318	224	560
1100-2AC	0.9971	0.9971	-0.0128	-0.0128	0.9985	0.9985	10	209	333	249	575
1100-3AE	1.5588	1.5588	1.9278	1.9278	1.2485	1.2485	15	274	492	334	855
1100-4AE	2.1332	2.1332	3.2903	3.2903	1.4605	1.4605	20	364	666	444	1150
1100-4AC	2.1332	2.1332	3.2903	3.2903	1.4605	1.4605	20	389	681	469	1175
1100-5AE	2.7154	2.7154	4.3384	4.3384	1.6478	1.6478	25	454	840	554	1445
1100-6AE	3.3028	3.3028	5.1888	5.1888	1.8174	1.8174	30	544	1014	664	1740
1100-6AC	3.3028	3.3028	5.1888	5.1888	1.8174	1.8174	30	569	1029	689	1755
1100-7AE	3.8935	3.8935	5.9034	5.9034	1.9732	1.9732	35	634	1187	774	2034
1100-8AE	4.4872	4.4872	6.5197	6.5197	2.1183	2.1183	40	724	1361	884	2329
1100-8AC	4.4872	4.4872	6.5197	6.5197	2.1183	2.1183	40	749	1376	909	2344
1100-9AC	5.0826	5.0826	7.0608	7.0608	2.2545	2.2545	40	835	1608	1015	2697
1100-10AC	5.6800	5.6800	7.5435	7.5435	2.3833	2.3833	40	925	1782	1125	2992
1100-11AC	6.2783	6.2783	7.9785	7.9785	2.5057	2.5057	40	1015	1956	1235	3287
1100-12AC	6.8781	6.8781	8.3747	8.3747	2.6226	2.6226	40	1105	2130	1345	3582
1100-13AC	7.4785	7.4785	8.7381	8.7381	2.7347	2.7347	40	1195	2303	1455	3876
1100-14AC	8.0800	8.0800	9.0741	9.0741	2.8425	2.8425	40	1285	2477	1565	4171
1100-15AC	8.6818	8.6818	9.3861	9.3861	2.9465	2.9465	40	1375	2651	1675	4466
1100-16AC	9.2846	9.2846	9.6776	9.6776	3.0471	3.0471	40	1465	2825	1785	4761

1105 Series Circularly Polarized FM Antennas

• End-fed antenna having a maximum input power of 7.5kW and power gains ranging from 0.46 for one bay up to 4.48 for the 8-bay model • Single bay for one bay has in input power limitation of 3kW • DC short puts the antenna at ground potential for added protection against lightning damage • Beam tilt and null fill are not available with the 1105 series and no power splits other than 50/50 are offered with these antennas • 6' matching transformer extends below the bottom bay of the antenna and terminates in a 1 5/8" EIA input flange • Brass, copper and stainless steel construction

Specifications

Frequency Range: 88 to 108MHz
Polarization: Circular (clockwise)
Azimuthal Pattern: ± 2dB in free space, both horizontal and vertical
Ellipticity: ± 3dB in free space
VSWR at Input: (without field tuning) 1.1:1 top pole mounting; 1.5:1 or better side mounting
VSWR at Input: (with field tuning) 1.1:1 or better

Type	Power Gain		dB Gain		Field Gain		Input Power Rating kW	Approx. Length ft.	Weight (Including Brackets) lbs.	Wind Load Based on 244/121 kg/sq.m 50/33 lb./sq. ft.	Weight With Radomes Incl. Brackets lbs.	Wind Load With Radomes Based on 244/161 kg/sq.m 50/33 lb./sq. ft.
	Horiz	Vert	Horiz	Vert	Horiz	Vert						
1105-1	0.4611	0.4611	-3.3623	-3.3623	0.6790	0.6790	3	—	36	74	54	161
1105-2	0.9971	0.9971	-0.0128	-0.0128	0.9985	0.9985	6	10	77	104	115	338
1105-3	1.5588	1.5588	1.9278	1.9278	1.2485	1.2485	7.5	20	118	254	172	515
1105-4	2.1332	2.1332	3.2903	3.2903	1.4605	1.4605	7.5	30	159	344	231	693
1105-5	2.7154	2.7154	4.3384	4.3384	1.6478	1.6478	7.5	40	200	434	290	870
1105-6	3.3028	3.3028	5.1888	5.1888	1.8174	1.8174	7.5	50	241	524	349	1047
1105-7	3.8935	3.8935	5.9034	5.9034	1.9732	1.9732	7.5	60	282	614	408	1224
1105-8	4.4872	4.4872	6.5197	6.5197	2.1183	2.1183	7.5	70	323	704	467	1402

Note: All antenna brackets are stainless steel. All weights given include brackets, interbay line, and transformer section. Factory-installed deicers are available using either 300W or 500W per bay. Specify 120 or 230V. Heater elements are replaceable in the field. Shielded

interbay heater cable and junction boxes are supplied. Heater weight, including junction boxes and interbay cable, is 6 lb. (2.7kg) additional per bay.

ESPRIT™ SERIES PROJECTION SYSTEMS**Features Common To All Models**

- Greater video bandwidth and smaller spot size for sharp pictures and high contrast ratio
- User friendly remote control to facilitate set-up and operation
- 16 digit alphanumeric display of operational status and diagnostics
- Modular plug-in single function circuit board design with independent regulation for ease of servicing and reliability
- Automatic horizontal and vertical sweep frequency sensing with autolock
- Autosensing or manual selection of NTSC 3.58, NTSC 4.43, PAL and SECAM video formats
- RS-170 capability to accept RGB with auto-sensing for plus or minus sync
- Drift-free convergence that is immune to typical temperature, voltage and frequency variations
- Adjustable blue video enhancement to improve both foreground and background color resolution when used with personal computers
- Front and rear projection capabilities on flat or curved screens
- High efficiency thermally isolated switch mode power supply for cooler operation and longer life
- Dual 120/240V switchable input with built-in surge protection
- Throw distance approximately 1.5 times the image width
- Precision parallax optical system allows an adjustable image from 4' to 12' in width (up to 25' in width with an optional lens)
- Automatic video gain control
- Sweep direction LED indicators
- May be mounted in any position: floor, table, ceiling
- Vertical and horizontal focus modulation for improved corner resolution
- Adjustable four-sided blanking for sharp edges and elimination of VCR head switching noise



Esprit

all major circuit functions • Wide range of RGB source compatibility • Electronic resolution: 1024 lines per picture width; 330 lines per picture width (NTSC) • Scanning rates: horizontal: 14-28kHz; vertical: 40-100Hz

Esprit 500 \$8,995.00

Esprit 300 Color Video/Computer Projection System

- Upgradable to Esprit 535
- Simple installation with independent nine zone registration
- Compatible with most low resolution computers
- High light output—400 lumens (peak white)
- Self diagnostic capability
- Liquid cooled phosphors
- Wide band RGB video amplifiers (13MHz bandwidth)
- $\pm 15^\circ$ keystone correction
- Error diagnostics of all major circuit functions
- Electronic Resolution: 768 lines per picture width (RGB); 330 lines per picture width (NTSC)
- Scanning Rates: Horizontal—14kHz to 17kHz; Vertical—40Hz to 100Hz
- High resolution coated f/1.01 lenses

Esprit 300 \$5,995.00

Esprit 535 Color Video/Computer Projection System**Same features as Esprit 300 plus:**

- Compatible with most low and medium resolution computers
- 9 pin "D" TTL RGB input connector with loopthrough connector (CGA and EGA compatible)
- RS-232 (computer control system compatible)
- Horizontal frequency width tracking
- Remote adjustable horizontal phasing
- Automatic keystone tracking
- Wide band RGB video amplifiers (30MHz bandwidth)
- Electronic Resolution: 1024 lines per picture width
- Scanning Rates: Horizontal: 14kHz to 36kHz

Esprit 535 \$10,995.00

Esprit 700 Color Video/Computer Projection System**Same features as Esprit 535 plus:**

- High light output—350 lumens max.
- 6 element hybrid super-high resolution coated f/1.01 lenses
- Upgradable to Esprit 1000
- Compatible with most low, medium, and high resolution computers
- RS-232 network capability
- Sweep direction LED indicators
- Wide band RGB amplifiers (100MHz bandwidth)
- \pm to 7° keystone correction
- Electronic Resolution: 4096 lines per picture width RGB
- Scanning Rates: Horizontal—14kHz to 48kHz; Vertical: 40Hz to 150Hz

Esprit 700 \$14,995.00

Esprit 1000 Color Video/Computer Projection System**Same features as Esprit 700 except:**

- Internal frequency tracking test pattern generator
- 8 element ultra high resolution glass lenses
- Scanning Rates: Horizontal—14kHz to 75kHz

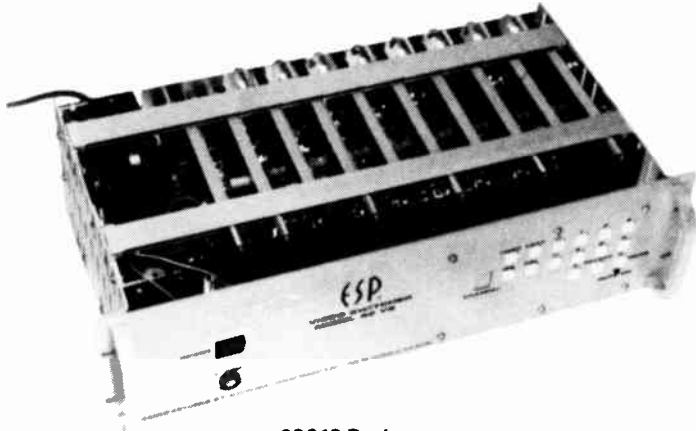
Esprit 1000 \$24,995.00

Esprit 500 Color Video/Computer Projection System

- Simple installation with independent nine zone registration
- Compatible with most low and medium resolution computers
- High light output—400 lumens (peak white)
- Fully automatic sweep frequency sense and hold
- 9-pin "D" TTL RGB input connector with loop through connector (CGA and EGA compatible)
- Automatic vertical sync polarity select
- Liquid colled phosphors
- Horizontal frequency width tracking
- Adjustable blue video enhancement
- Remote adjustable horizontal phasing
- Automatic keystone tracking
- Large 16 character LCD operational status display
- Integral comb filter for improved resolution (NTSC 3.58 only)
- Wide band RGB video amplifiers (20MHz bandwidth)
- Composite sync, separate H and V or sync on green
- High efficiency thermally isolated switch mode power supply for cooler operation and longer life
- Complies with all HHS and FDA requirements
- Plus or minus 15° keystone correction
- Error diagnostics of

ESP/ELECTRONIC SYSTEMS PRODUCTS, INC.

Video Computer/Audio Switcher



69019 Rackmount



69021 Tabletop

69019/69021 High Definition Video Switchers

- Modular design
- 19" rackmountable
- Stereo audio switching
- Front panel controls
- Wired remote control station
- Bright LED channel indicator
- High impedance loopthrough capability for paralleling switchers
- Up to 8 RGB, video, and stereo audio input channels
- Micro-processor controlled
- Computer terminal control via RS-232 input
- Gain and brightness level adjustment on each RGB input to match output levels between channels
- All remote connectors are 6-conductor telephone modular connectors
- Front panel controls include channel selects, volume control, mute audio, main power/illuminated switch and momentary contact switches

Options

- Modular input assemblies for system expansion
- Remote control extension cables available in 25' increments up to 100'
- Wired remote control
- Infrared wireless remote control
- Decor cabinet
- System interconnect cables available in 25' increments up to 100'
- Computer interface box for IBM-PC and PC compatible computers

This system has been developed to meet the needs of those who require wide bandpass control, and distribution of video, computer (RGB), and audio signals.

The system is housed in a 5 $\frac{1}{4}$ " high, 19" wide rackmountable enclosure. It also can be supplied in an optional attractive decor/tabletop for desk/tabletop installation.

The switcher is expandable to accommodate up to 8 computer (RGB) inputs and/or 8 video inputs with stereo audio. A high impedance feed-through feature allows the capability of paralleling multiple switchers for a multi-output switching matrix. Individual gain and brightness controls match all output levels.

The system is micro-processor controlled, accessed by front panel controls or remotely via an optional wired remote control station or an infrared wireless transmitter.

The switcher may be controlled also by a computer keyboard via RS-232 interconnect.

Pushbutton operation offers automatic switching between input signal channels. The effect is smooth and professional switching with no delays or adjustments. A bright LED digit channel indicator prominently displays which input channel has been selected.

Specifications

Power Requirements:	115VAC, 60Hz 220VAC, 50Hz
Consumption:	28W max.
Input	
Number:	Up to 8 video, 8 RGB (sync) and 8 stereo audio sources
Impedance:	15K ohms unterminated 75 ohms terminated
Level:	Up to 2.0V p-p video Up to 5.0V p-p RGB Up to 7.0V p-p sync
Output	
Adjustable:	Up to 3.0V p-p into 75 ohms
Number:	Two, separate and buffered
Impedance:	75 ohms
DC Component:	< ± 0.1 VDC
Tilt:	< 0.1%
Video	
Frequency Response:	60MHz RGB 15MHz video
Noise:	> 40dB below 1.0V p-p
Crosstalk:	> 40dB below 1.0V p-p to 40MHz
Dimensions:	Rackmount 5 $\frac{1}{4}$ " H x 19" W x 9" D Decor cabinet 6 $\frac{1}{8}$ " H x 17" W x 18 $\frac{3}{4}$ " D
Audio	
Responses:	20Hz-30kHz
Input Impedance:	10K ohms terminated 10M ohms unterminated
Output Impedance:	600 ohm
Gain Control:	0 to unity (600 ohm load) 60dB range in 1dB increments
Internal Controls	
RGB Channels:	Gain 0 to 1.5—brightness 0V to 5V pedestal adjustment when using four wire RGB inputs

69019 Rackmount, basic 2-channel \$2495.00

69021 Tabletop, basic 2-channel 2695.00

6901B Modular input assemblies for system expansion. 325.00

ELECTRO-VOICE, INC.**Microphones****Professional Microphones****635A Dynamic Omnidirectional Microphone**

The 635A is a rugged, durable microphone. The moderately high output level (-55dB) is appropriate for a broad range of studio and field applications. Its response has been specially shaped for up-close vocals.

Specifications

• Frequency Response: 80-13,000Hz • Impedance: 150 ohms • Output: -55dB • Diaphragm: Acoustalloy® • Case: Steel • Finish: Fawn beige micomatte • Size: 5¹⁵/₁₆" (151mm) long; 1³/₃₂" (36mm) dia. • Weight: 6 oz. (170g) • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 312A clamp

635A\$116.00

649B Miniature Dynamic**Omnidirectional Lavalier Microphone**

Created especially for TV, the 649B is our most popular dynamic lavalier. Frequency response is tailored for balanced performance in the lavalier chest position.

Specifications

• Frequency Response: 80-10,000Hz • Impedance: Lo-Z (150 ohms) • Output Level: -61dB (0dB = 1mW/10 dynes/cm²) • Case: High-tensile, lathe-turned aluminum • Finish: Non-reflecting gray • Cable: 30' (9.1m), 2-conductor, shielded, brown synthetic rubber-jacketed cable • Size: .75" (19mm) diameter; 2.25" (57.2mm) long • Net Weight: 1.1 oz. (31g), less cable and neck cord assembly

649B\$170.00

DL42 Cardiline®**Dynamic Unidirectional Microphone**

The DL42 is state-of-the-art in superdirectional dynamics. "Cardiline" is a patented combination of line and cardioid design. Compared to other "shotguns", the DL42 has more uniform response in the critical mid and high frequencies and much more uniform directivity.

Specifications

• Frequency Response: 50-12,000Hz • Impedance: 150 ohms • Output: -50dB • Diaphragm: Acoustalloy • Case: Aluminum and steel • Finish: Fawn beige micomatte • Size: 16³/₄" (425mm) long; 3³/₄" (95mm) max. dia. • Weight: 1 lb., 11 oz. (800g) complete; 13 oz. (369g) mike only • Cable: Special coil cord to extend from mike connector (Switchcraft A3M) to shock mount bail for mechanical isolation • Included: Screw-on handle, windscreen, shock mount and carrying case

DL42\$692.00

DO54 Dynamic Omnidirectional Microphone

Based on the RE55, the DO54 is a moderately priced microphone with essentially flat response over its rated frequency range of 50-18,000Hz. It is useful in applications where the RE55 would excel but where the 1/3 octave additional response below 50Hz is not required, or where small microphone-to-microphone variation is acceptable.

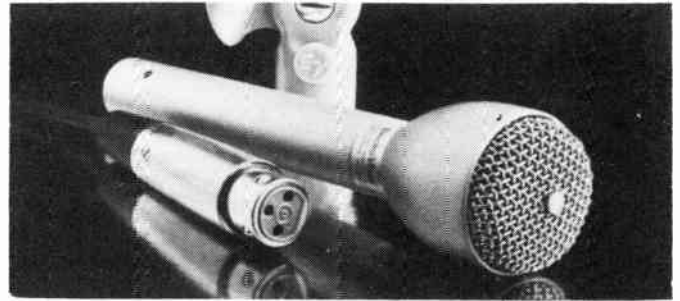
Specifications

• Frequency Response: 50-18,000Hz • Impedance: 150 ohms • Output: -58dB • Diaphragm: Acoustalloy • Case: Steel • Finish: Fawn beige micomatte • Cable: 15' (4.6m) Switchcraft A3F conn. • Size: 5³/₄" (146mm) long; 1¹/₈" (29mm) max. dia.; 3/4" (19mm) shank dia. • Weight: 6.5 oz. (184g) • Included: 310A clamp, metal carrying case

DO54\$171.00

DO56 Shock-Mounted**Dynamic Omnidirectional Microphone**

The DO56 is a shock-mounted omnidirectional microphone for handheld broadcast and sound reinforcement applications. All handling noises and cord vibration are isolated from the microphone element.



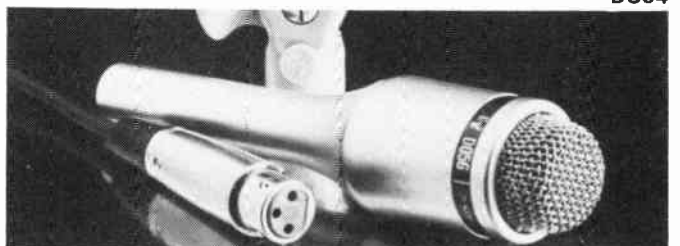
635A



649B



DO54



DO56

Specifications

• Frequency Response: 80-18,000Hz • Impedance: 150 ohms • Output: -61dB • Diaphragm: Acoustalloy • Case: Steel and aluminum • Finish: Silver tone beige • Cable: 15' (4.6m) Switchcraft A3F conn. • Size: 6¹/₄" (159mm) long; 1¹⁵/₃₂" (37mm) max. dia.; 3/4" (19mm) shank dia. • Weight: 6.5 oz. (185g) • Included: 312B stand adaptor, protective vinyl carrying pouch

DD56\$143.00

DO56L (long case)162.00

DS35 Single-D Dynamic Cardioid Microphone

Created especially for the professional entertainer, the DS35 has become a connoisseur's microphone. Its Single-D design emphasizes the low frequencies in up-close, handheld applications.

Specifications

• Frequency Response: 60-17,000Hz • Impedance: 150 ohms • Output: -60dB • Diaphragm: Acoustalloy, polystyrene Volumetric Dome • Case: Steel • Finish: Fawn beige micomatte • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 312A clamp, metal carrying case • Size: 7¹/₄"L (184mm) x 1⁷/₈" max. dia. (48mm) x 3/4" shank dia. (19mm) • Weight: 9.2 oz. (261g)

DS35\$182.00

Professional Microphones**RE10****Variable-D® Dynamic Super-Cardioid Microphone**

A fine, moderate-cost microphone for sound reinforcement, broadcasting, choir pickup and stage work. The RE10 is similar in design to the RE15, but meets requirements where somewhat more unit-to-unit variability is acceptable.

Specifications

• Frequency Response: 90-13,000Hz • Impedance: 150 ohms • Output: -56dB
• Diaphragm: Acoustalloy® • Case: Steel • Finish: Fawn beige micomatte • Size: 6³/₄" (172mm) long; 1³/₈" (35mm) max. dia.; ³/₄" (19mm) shank dia. • Weight: 6 oz. (170g) • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 310A clamp, metal carrying case

RE10\$197.00

RE11**Variable-D Dynamic Super-Cardioid Microphone**

An excellent microphone for broadcast and quality sound reinforcement, the RE11 is a modestly priced unit with many of the features of the RE16 but where the most precise unit-to-unit matching is not necessary.

Specifications

• Frequency Response: 90-13,000Hz • Impedance: 150 ohms • Output: -56dB
• Diaphragm: Acoustalloy • Case: Steel • Finish: Fawn beige micomatte • Size: 7³/₈" (187mm) long; 1²⁵/₃₂" (45mm) max. dia.; ³/₄" (19mm) shank dia. • Weight: 8 oz. (227g) • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 310A clamp, metal carrying case

RE11\$209.00

RE15**Variable-D Dynamic Super-Cardioid Microphone**

Literally born in a Hollywood TV studio, the performance and reliability of the RE15 have made it the workhorse directional microphone for broadcast and high quality sound reinforcement.

Specifications

• Frequency Response: 80-15,000Hz • Impedance: 150 ohms • Output: -56dB
• Diaphragm: Acoustalloy • Case: Steel • Finish: Fawn beige micomatte • Size: 6⁹/₁₆" (167mm) long; 1³/₈" (35mm) dia.; ³/₄" (19mm) shank dia. • Weight: 6 oz. (170g) • Cable 15' (4.6m) Switchcraft A3F conn. • Included: 310A clamp, metal carrying case

RE15\$298.00

RE16**Variable-D Dynamic Super-Cardioid Microphone**

Another professional favorite, the RE16 is like the RE15 except it has a different blast filter. An integral part of the RE16, the blast filter makes possible the closest handheld use without any "P-pops". In all other respects, the RE16 is like the RE15. Its rugged, mechanically "nested" design is highly resistant to damage.

Specifications

• Frequency Response: 80-15,000Hz • Impedance: 150 ohms • Output: -56dB
• Hum Pickup Level: -57dBm (re: .001 gauss field) • Diaphragm: Acoustalloy
• Case: Steel • Finish: Fawn beige micomatte • Size: 7³/₈" (187mm) long; 1²⁵/₃₂" (45mm) max. dia.; ³/₄" (19mm) shank dia. • Weight: 8 oz. (227g) • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 310A clamp, metal carrying case

RE16\$308.00

RE18**Shock-Mounted Variable-D Dynamic Cardioid Microphone**

The RE18 is a direct descendant of the popular RE15 and RE16 microphones. While maintaining the accurate frequency response characteristics and super-cardioid polar pattern of the RE15, the RE18 has added an integral shock mount for even better performance.

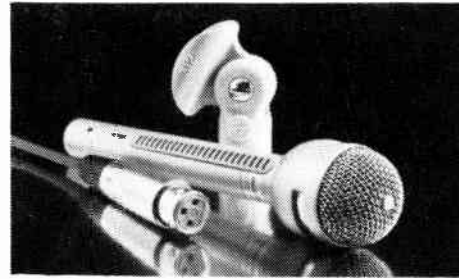
Specifications

• Frequency Response: 80-15,000Hz • Impedance: 150 ohms • Output: -57dB
• Diaphragm: Acoustalloy • Case: Steel • Finish: Silver tone beige • Size: 7" (178mm) long; 1²⁵/₃₂" (41mm) max. dia.; ³/₄" (19mm) shank dia. • Weight: 8 oz. (230g) • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 312B stand adaptor, protective vinyl carrying pouch

RE18\$320.00

B-510

Refer to Green Section for Addresses and Telephone Numbers.



RE10



RE11



RE15



RE16



RE18

RE20**Variable-D Dynamic Cardioid Microphone**

The RE20 was created especially for critical recording, broadcast, and sound reinforcement applications which require response that extends to the frequency extremes. Combined with a subtle elevation of response in the 5000 to 15,000Hz range, the RE20 provides performance heretofore available only from the most expensive condenser microphones.

Specifications

• Frequency Response: 45-18,000Hz • Impedance: 150 ohms (changeable to 50 or 250 ohms) • Output: -57dB • Diaphragm: Acoustalloy • Case: Steel • Finish: Fawn beige micomatte • Size: 8¹⁷/₃₂" (216.7mm) long; 2⁹/₆₄" (54.4mm) max. dia.; 1¹⁵/₁₆" (49.2mm) body dia. • Weight: 1 lb., 10 oz. (737g) • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: Stand adaptor, metal carrying case

RE20\$545.00

ELECTRO-VOICE, INC.**Microphones****RE50****Shockproof Dynamic Omnidirectional Microphone**

The RE50 was designed expressly for handheld news gathering work. It has the same tailored frequency response and high output level as the 635A.

Specifications

• Frequency Response: 80-13,000Hz • Impedance: 150 ohms • Output: 55dB • Diaphragm: Acoustalloy® • Case: Aluminum • Finish: Fawn beige micomatte • Size: 7³/₄" (197mm) long; 1⁵/₁₆" (49mm) max. dia.; 1" (25mm) shank dia. • Weight: 9¹/₂ oz. (269g) • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 301A clamp, metal carrying case

RE50 \$172.00

**RE50****RE55 Dynamic Omnidirectional Microphone**

The RE55 is a dynamic omnidirectional microphone designed for the most demanding professional applications. Ideal for boom or stand mounting in recording and broadcast use, it is excellent also for close-up handheld use in stage and interview situations.

Specifications

• Frequency Response: 40-20,000Hz • Impedance: Lo-Z (150 ohms) • Output: -57 (0dB = 1mW/10 dynes/cm²) • Diaphragm: Acoustalloy • Case: Steel • Finish: Fawn beige micomatte • Size: 10.5"L (266.7mm) x 1.22" major dia. (30.9mm) x .75" shank dia. (19mm) • Weight: 8.5 oz. (241g) without cable • Cable: 15' (4.6m), 2-conductor, shielded, rubber-jacketed, broadcast type with Switchcraft A3F connector • Included: 310A clamp and vinyl pouch

RE55 \$285.00

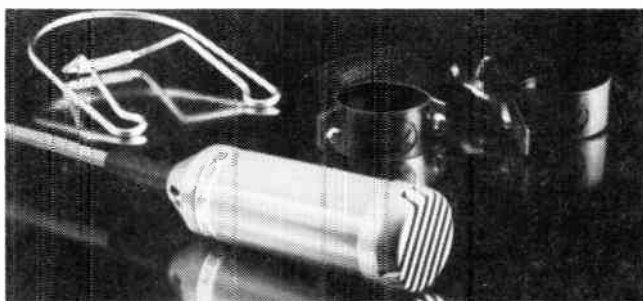
**RE55****RE85 Shock-Mounted Miniature Dynamic Omnidirectional Microphone**

Here's a lavalier microphone that offers professionals in the TV industry great protection from cord and case-conducted mechanical noise. The RE85 has an internally shock-mounted microphone capsule which is "floating" in high-compliance rubber inside the durable steel case. "Slippery" cable and case finishes reduce transmission of mechanical disturbances to the shock mount. Response is tailored for the lavalier chest position.

Specifications

• Frequency Response: 90-10,000Hz • Impedance: 150 ohms • Output: -61dB • Diaphragm: Acoustalloy • Case: Steel • Finish: Champagne • Size: 2⁵/₈" (67mm) long; 5⁹/₆₄" (23mm) max. dia. • Weight: 8 oz. (229g) • Cable: 30' (9.14m) • Included: Neck cord, tie clasp, cable belt clip, protective pouch

RE85 \$172.00

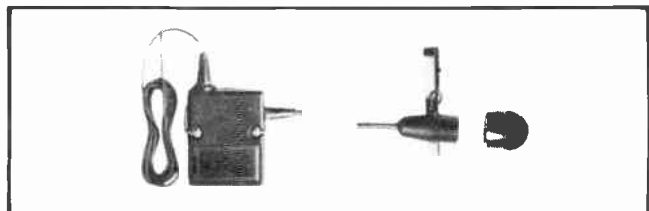
**RE85****RE98 Electret Condenser Microphone**

The RE98 is an omnidirectional lavalier microphone. It has phantom power, a 9V battery, 20dB greater input before overload, and a high tensile-strength cable. The finish is a non-reflecting black.

Specifications

• Frequency Response: 80-15,000Hz • Output: -45dB • Impedance: 150 ohms

RE98 \$227.00

**RE98**

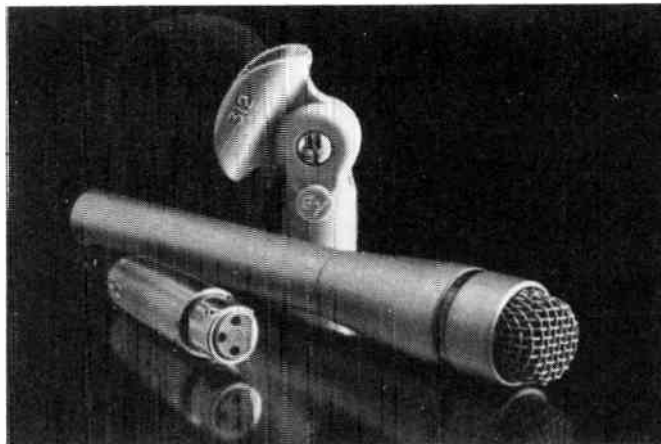
Professional Condenser Microphone Systems**CO 15P Phantom Powered Condenser (Electret) Omnidirectional Microphone**

The CO 15P is the finest omnidirectional microphone we manufacture. Its element is used in precision real time acoustic analyzers. Response extends from below 20 to 20,000Hz. Unlike typical "omnidirectional" microphones, the CO 15P maintains true omnidirectional performance at the highest frequencies.

Specifications

• Frequency Response: 20-20,000Hz • Impedance: 150 ohms • Output: -45dB • Case: Steel • Finish: Fawn gray micomatte • Cable: 15' (4.6m) Switchcraft A3F conn. • Included: 315A windscreen, 310A clamp, metal carrying case • Size: 6¹³/₁₆" L (173mm) x 1¹/₁₆" max. dia. (27mm) x 3/4" shank dia. (19mm) • Weight: 7.5 oz. (213g)

CO15P \$328.00



CO 15P

CS 15P Cardioid Electret Condenser Microphone

The CS15P is a professional remotely powerable electret condenser cardioid microphone designed especially for recording, broadcast and sound reinforcement applications where the smooth, wide range response of a studio microphone is desired. The machined steel case and rugged internal design enable the CS 15P to withstand abuse.

Specifications

• Frequency Response: 40Hz-18kHz • Impedance: 150 ohm nominal (balanced) • Output: -45dB ref. • Case: Steel • Finish: Fawn beige micomatte • Cable: 15' (4.6m) 2-conductor, shielded, brown rubber-jacketed cable with Switchcraft A3F connector • Included: 315A windscreen and 312A stand clamp • Size: 6.94" L (176mm) x 1.06" max. dia. (27mm) x .75" shank dia. (19mm) • Weight: 8 oz. (227g)

CS15P \$304.00



CO90

CO90 Miniature Condenser**(Electret) Omnidirectional Microphone**

Perfect for today's broadcasting and wide range sound reinforcement systems. They are more reliable and more versatile than many condenser lavaliers. The 2-conductor cable incorporates 2 nylon stay cords for high breaking strength. The cable-to-case interface is built to last. The cable assembly is field replaceable.

Specifications

• Frequency Response: 40-15,000Hz • Impedance: 150 ohms • Output: -57dB • Operating Voltage: 1.1-1.8V battery • Battery Life: Over 1000 hours • Case: Mike, brass; electronics, aluminum; battery/transformer housing, steel • Finish: Fawn beige micomatte • Mike Size: .851" L (21.6mm) x .415" max. dia. (10.5mm) • Cable: Mike to battery housing, 6' (1.83m) • Weight: 4 oz. (114g) complete, less battery; 8 oz. (23g) less battery/transformer housing and belt clip • Included: Tie clasp, 385 windscreen, protective pouch, belt clip

CO90 \$165.00



CO94

CO94 High Performance Miniature**Condenser (Electret) Omnidirectional Microphone**

The CO94 does not have the limited dynamic range typical of miniature microphones powered by low voltage batteries. A CO94 is typically 10dB greater in sensitivity than conventional designs and will accept 20dB greater input SPL before overload (141dB). Thus, the CO94 may be used where other miniature microphones are simply unacceptable. A high-pass filter cuts off unwanted noise below 80Hz. The CO94 may be phantom or battery powered, including a dual-power mode where a battery ensures against loss of signal should the phantom power fail.

Specifications

• Frequency Response: 70-16,000Hz • Impedance: 150 ohms • Output: -56dB • Operating Voltage: 1.1-1.8V battery • Battery Life: Over 1000 hours • Case: Steel and high impact plastic • Finish: Fawn beige micomatte • Size: Mike, 1³/₃₂" dia. (10.3mm); 1/4" deep (6.4mm); electronics, 1¹/₂" L (38.1mm) x 1⁷/₃₂" W (13.5mm) x 3/8" D (9.5mm) • Weight: Mike, 1 oz. (2.8g); Electronics, 1/4 oz. (7.1g) • Included: 385 windscreen, belt clip, tie clip adaptor, metal carrying case

CO94 \$256.00

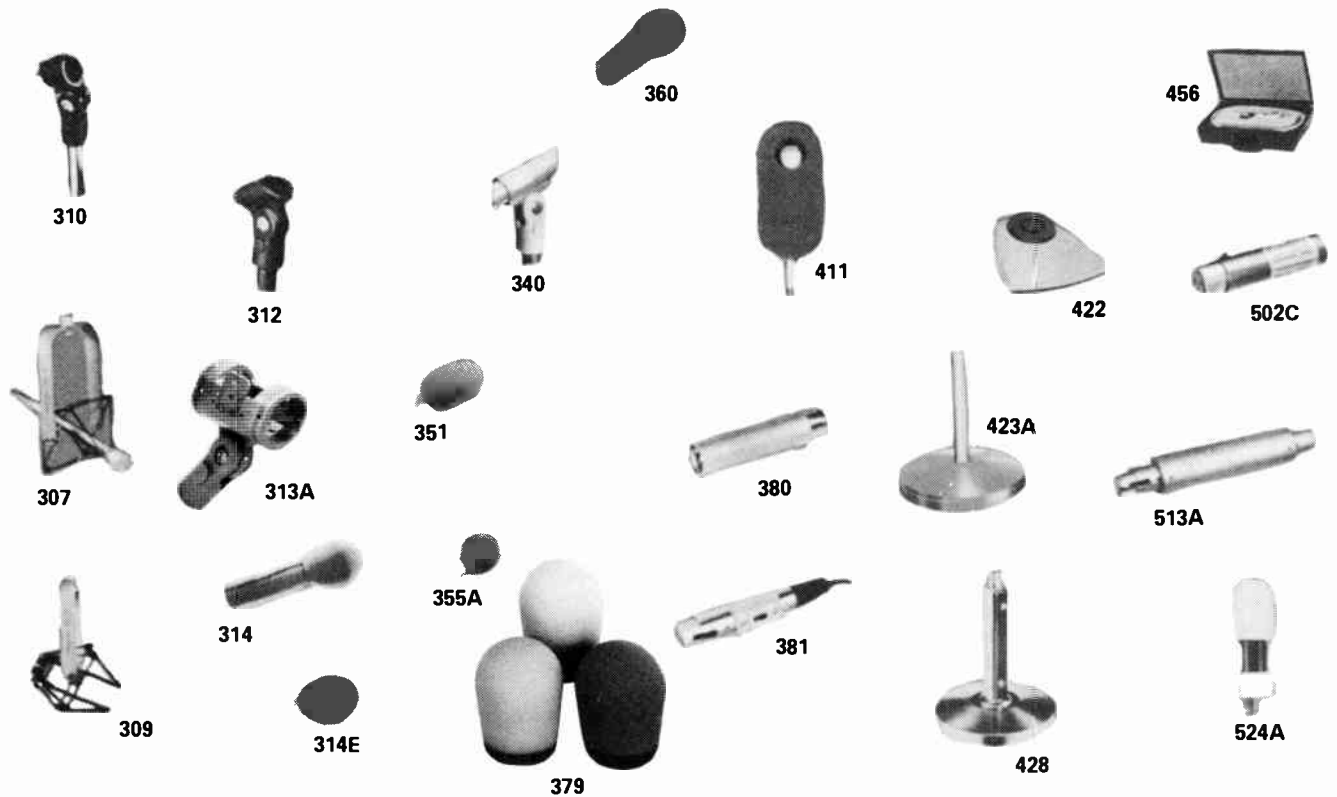
Omnidirectional Microphone Capsules

The CO90E eliminates the battery/transformer housing, for direct interface with wireless transmitter, miniature recorder, etc.

CO90E \$110.00

ELECTRO-VOICE, INC.

Microphone Accessories



- 307 Shock mount for 3/4" dia. microphones \$56.00
- 309 Shock mount for RE20 and SE15B 74.00
- 310 3/4" Clamp, black (635A, 649B, DO54, DS35, PE15A, RE10, RE11, RE15, RE16, RE55, 631B) 9.00
- 310A 3/4" Clamp, gray (same applications as 310) 9.00
- 312 3/4" Snap-out Clamp, black (same applics. as 310) 9.00
- 312A 3/4" Snap-out Clamp, gray (same applics. as 310) 9.00
- 313A Shock mount for 3/4" diameter microphone 33.00
- 314 Windscreen (RE10, RE15). 19.00
- 314E Windscreen (635A, 631B) Pop only for 664A, 660. 9.00
- 315A Windscreen (foam—CH15E, CO15E, CS15E) 9.00
- 323S Clamp for N/D 257, 357, 457, 757 9.60
- 337 Windscreen (626, 627) 10.60
- 338 Windscreen (foam-RE18) 19.00
- 340 Security Clamp—3/4" dia. mikes 21.00
- 351 Windscreen (DO56), Popfilter (RE18). 10.00
- 355A Windscreen (RE55, DO54, 654A, 655C). 9.00
- 360 Windscreen (660, 661, 664A) 17.85
- 370 Barrier Adaptor Plate—(Surface mounting plate for CO94, CO90, CO90P) 4.50
- 376 Windscreen (DS35, 1776, 1777, 658, 671, 681), Popfilter (RE11, RE16) 15.30
- 379* Colored Windscreens (PS35, RE11, RE16, RE50, 1777A, 1776B, 661, 671B, 658) 9.00
- 380 10dB Attenuator 40.00
- 381 Switch/Connector Cable 15' 42.20
- 390 Dual microphone tie clasp (CO90, CO90P, CO94) 7.50

- 400 Desk Stand, for all stud or clamp-type mikes \$ 21.00
- 411 Stage Mike Mount 21.00
- 422 Desk Stand, clamp-type mike (CS15, DO54, DO56, DS35, PE15A, RE10, RE11, RE15, RE16, RE18, RE50, RE55, 340, 635A, and 649B) 22.00
- 423A Desk Stand, 5/8" — 27 threaded 5" riser 19.00
- 428 Touch-to-Talk Stand DPDT, 5/8" — 27 thread 57.75
- 456 Single Carrying Case (Universal: fits all variations of 626, 627, 631, 660, 661, 664, 670, 671, 672) 22.50
- 458 Zippered Protective Vinyl Pouch for 635A, 649B, DO54, DO56, DS35, RE10, RE11, RE15, RE16, RE18, RE50, RE85, CS15P, CO15P, most pipes 10.00
- 502C Matching Transformer, Lo to Hi-Z, inline 35.60
- 502CP Matching Transformer, Lo to Hi-Z, with plug 35.60
- 513A Low-frequency cutoff filter for use with Lo-Z mikes 105.00
- 521 25' Professional Cable, with Professional 3-Pin Connectors, both ends 37.20
- 523 4.5V Alkaline battery—1776 (12 per box) 47.50
- AC24M Remote AC power supply for condenser microphones from standard 117VAC power. Expandable in multiples of four to accept up to 10 microphones by using AC24S Expander Modules. 149.00
- AC24S Expander Module (cannot be used without AC24M) 126.00
- RM-1 Rackmount bracket assembly for ELX-1 31.00

***Specify Color**

379-1 Charcoal, 379-2 Red, 379-3 Orange, 379-4 Yellow, 379-5 Green, 379-6 Blue, 379-7 Violet.

ELECTRO-VOICE, INC.

Mixer/Loudspeaker Systems

ELX-1™ Audio Mixer

The ELX-1 rackmounts in 1 rack unit (1.75") with optional RM-1 brackets. It is powered from AC line, internal batteries, or external source, with automatic switchover. An Electro-Pulse® indicator shows power status and battery condition. Includes detachable line cord and shoulder strap. It has an all metal case construction with 4 balanced transformerless inputs, switchable to mike or line level, extensive RF shielding and protection circuitry. Input controls set actual gain of preamps for optimum noise performance with any input signal. Phantom power is available at microphone inputs. Low-cut filters switchable at each input. Pushbuttons are used throughout so there are no intermittent slide switches. An LED clip indicator at each input and 3-color bargraph meter shows peak output level. Switchable output limiter prevents clipping; Yellow LED lights when limiting occurs. 1kHz tone oscillator and transformer-isolated output; split windings present signal to 5-way binding posts and XLR-type jack. One output switchable to mike or line level. Headphone output, with separate power amp and level control can drive any headphones or a cue speaker. Two 1/4" stacking jacks allow interconnecting other mixers; modifiable for insert patching. 1/4" auxiliary input jack for fifth input or for stacking additional mixers. Input control color-coding markers supplied; may be coordinated with EV 379-series colored windscreens.

ELX-1 \$567.00

Sentry® 500/505 Professional Monitor Systems

These systems have been designed for the broadcast/recording studio engineer. The design meets the needs of professionals by combining high efficiency with extended low frequency response, high power capacity across the entire frequency range, uniform frequency response and constant directivity. Each system employs a Super-Dome™ tweeter capable of handling 25W of input power, while reproducing program material with response out to 18kHz.

Specifications

Frequency Response: 40-18,000Hz
Impedance: 8.0 ohms
Long-Term Average Power Handling Capacity (at 8 ohms): (40-40,000Hz) 100W

Sentry® 500

The Sentry 500 was designed for 1/4- to 1/2-space use. The speaker system should be mounted as close as possible to floor/ceiling and/or wall surfaces. When coupled with the WB23 wall mount kit, the Sentry 500 can be integrated into virtually any environment.

Specifications

Dimensions: 23 3/4" H x 27" W x 13" D
Weight: 70 lbs.

Sentry 500 \$520.00
WB23 Wall Mount Kit 28.00

Sentry 505

The Sentry 505 must be used in quarter-space to achieve specified low frequency performance. Installation of the system on a wall can be accomplished with the mounting brackets included with the system. It is possible to mount the Sentry 505 so that the drivers are angled at 60° or 30° from vertical.

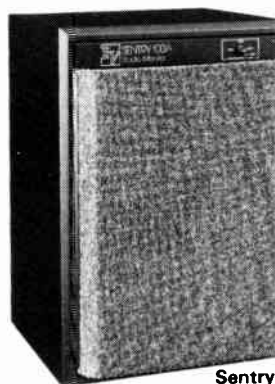
Specifications

Dimensions, 30° from Vertical: 19.50" H x 25.63" W
Top: 18.75" D
Bottom: 7.50" D
60° from Vertical: 18.75" H x 25.63" W
Top: 19.50" D
Net Weight: 60 lbs.

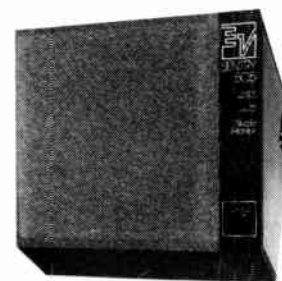
Sentry 505 \$520.00



ELX-1



Sentry 100A



Sentry 505

Sentry 100EL Professional Powered Monitor System

The Sentry 100EL powered monitor speaker system combines the advantages of the Sentry 100A monitor with a self-contained, high performance power amplifier. It is designed with the broadcast/recording studio engineer in mind, although it is well suited for a wide variety of professional applications. It offers uniform frequency response and dispersion across a wide range, extended low frequency response.

A Super-Dome tweeter is used to reproduce program material at high levels, with response out to 18kHz and uniform dispersion (120° at 5kHz). The low frequency section is an 8" direct radiator woofer installed in an optimally vented enclosure. The Sentry 100EL is housed in a utility cabinet wrapped in a special scratch-resistant, matte black vinyl. The cabinet size is intentionally designed for rackmounting. When coupled with the SRB-7 rackmount/wall mount kit, the Sentry 100EL can be integrated into virtually any environment that demands conservation of space such as mobile recording studio facilities. The steel reinforced grille is covered with a custom gray cloth.

Specifications

Frequency Response: 40-20,000Hz

Sentry 100EL \$545.00

Sentry 100A Monitor Speaker System

The Sentry 100A monitor speaker system meets the needs of professionals with high efficiency and extended low frequency response, high power capacity across the entire frequency range, uniform frequency response and dispersion, all in a compact package. The Sentry 100A is housed in a utility cabinet wrapped in a special, scratch-resistant, matte black vinyl. The cabinet size is intentionally designed for rackmounting. With the SRB-7 rackmount/wall mount kit, the Sentry 100A can be integrated into virtually any environment that demands conservation of space such as mobile recording studio facilities. The steel reinforced grille is covered with a custom gray cloth.

Specifications

Frequency Response: 45-18,000Hz
Impedance: 6 ohms

Long-Term Average Power-Handling Capacity

(above 40Hz): 30W
Dimensions: 17.25" H x 12.00" W x 11.125" D
Net Weight: 28 lbs.

Sentry 100A \$265.00

SRB-7 Rackmount/wall mount brackets for 100EL and 100A 26.00

ELECTRO-VOICE, INC.**Speaker Systems****SOUND REINFORCEMENT SPEAKERS****S-1803**

The S-1803 Keyboard Reinforcement System offers low distortion and wide frequency response (useable response 35Hz to 18kHz) making it ideal for synthesizers and other keyboards. Capable of handling 200W continuous power.

Specifications

Frequency Response: 50Hz-16kHz
Nominal Impedance: 8 ohms
Sensitivity: 99.5dB
Dimensions: 35.5"H x 28.0"W x 19.4"D
Net Weight: 134 lbs.

S-1803 \$1242.00

S-1503

The S-1503 Three-Way High-Level Music Playback/Sound Reinforcement System features a higher power EV-exclusive VMR® vented midrange speaker. Capable of handling 200W continuous power.

Specifications

Frequency Response: 65Hz-16kHz
Nominal Impedance: 8 ohms
Sensitivity: 100dB
Dimensions: 28.7"H x 24.4"W x 13.8"D
Net Weight: 105 lbs.

S-1503 \$992.00

S-1202

The S-1202 Full Range Compact Sound Reinforcement System is a time coherent, constant-directivity, high efficiency design, capable of handling 300W continuous power. The high frequency section of this two-way system utilizes a flat-mouth 90° x 40° diecast horn coupled to the pro-music titanium driver.

Specifications

Frequency Response: 75Hz-20kHz
Nominal Impedance: 8 ohms
Sensitivity: 101.5dB
Dimensions: 24.7"H x 19.1"W x 11.7"D
Net Weight: 66 lbs.

S-1202 \$667.00

FM-1202

The FM-1202 Compact High-Level Floor Monitor, like the S-1202, is a time coherent constant-directivity, high efficiency system. Capable of handling 300W continuous power.

Specifications

Frequency Response: 75Hz-20kHz
Nominal Impedance: 8 ohms
Sensitivity: 101.5dB
Dimensions: 19.4"H x 19.4"W x 24.4"D
Net Weight: 65 lbs.

FM-1202 \$618.00



S-1503



SH-1502ER



FM-1202



SH-1512ER

FM-1502

The FM-1502 High-Level Floor Monitor is the heavy-duty model of the FM-1202. It features the same exciting high-frequency components as the FM-1202. Coupled through a specially designed crossover/equalizer network to the proprietary, extended coil, 15" low-frequency speaker in an optimally-vented enclosure the FM-1502 has a useable frequency response from 47Hz to 23kHz. It offers the ultimate in high-level, high-clarity, floor monitoring. Capable of handling 300W continuous power.

Specifications

Frequency Response: 65Hz-20kHz
Nominal Impedance: 8 ohms
Sensitivity: 102dB
Dimensions: 22.0"H x 22.5"W x 27.9"D
Net Weight: 75 lbs.

FM-1502 \$786.00

STAGE SYSTEM SPEAKERS**SH-1502ER**

The SH-1502ER is a 200W, 2-way, high-efficiency, constant-directivity stage system featuring a vented, horn-loaded woofer section. It combines professional quality components arranged in a vertical array with an unusually durable enclosure. The result is wide-range, accurate sound reproduction with transparent highs and "punchy" bass response.

The bass section of the SH-1502ER is designed as a vented-horn format of system for

a projected midrange sound quality combined with low-frequency performance extending to below 60Hz.

Specifications

Frequency Response: 10' on axis, swept 1/3-Octave, Half-Space An-echoic Environment: 62-20,000Hz

Nominal

Impedance: 8 ohms
Dimensions: 31.9"H x 24.7"W x 16.0"D
Net Weight: 81 lbs.

SH-1502ER \$580.00

SH-1512ER

The SH-1512ER is a 200W, 2-way, high-efficiency, constant-directivity stage system featuring a vented, direct-radiating woofer section. It combines professional quality components arranged in a vertical array with an unusually durable enclosure. The result is wide-range, accurate sound reproduction with transparent highs and "full" bass response.

The bass section of the SH-1512ER is designed using Thiele-Small parameters for efficient performance to below 55Hz.

Specifications

Frequency Response: 10' on axis, swept 1/3-Octave, Half-Space An-echoic Environment: 50-20,000Hz

Nominal

Impedance: 8 ohms
Dimensions: 31.9"H x 24.7"W x 16.0"D
Net Weight: 75 lbs.

SH-1512ER \$610.00

EMCEE BROADCAST PRODUCTS

UHF TV Translators

1 Watt/10 Watt UHF Solid-State Television Translators

- Quality color performance • Completely solid-state • Includes low noise pre-amplifier (which incorporates a channel preselector) to optimize signal-to-noise ratio • 50dB dynamic range adaptive AGC • FCC type accepted • Dual auto on sensing (carrier and sync sense) • Front panel monitoring of power output, AGC, and power supply voltages • Front panel local oscillator sample ports • Single plug-in channel selection • Modular design • Optional remote interrogator • Built-in test voltmeter • Color transmission compatible with PAL, NTSC, SECAM Systems • Output frequency FCC-470-890MHz—CCIR-Band IV, V • Output impedance 50 ohms • Output connector type N

These "All Solid-State" translators and amplifiers are designed for automatic unattended operation in remote areas where reliability and performance are prime considerations. All versions incorporate VSWR protected emitter ballasted silicon power amplifier transistors and low noise high dynamic range "front end" transistors. All power supplies are electronically regulated to allow for line voltage variations.

Types TU1A/V and TU1A/U

- Interchangeability of plug-ins with minimum retuning

Specifications

Output Power:	1W peak visual—1W average aural
Input Signal Range:	-80dBm to -30dBm
Recommended Input Level:	UHF 1000 μ V—VHF 500 μ V
Input Frequency:	FCC-Channel 2 to 83—CCIR-Channel E2 to E69
Input Impedance:	50 ohms standard
Input Connector:	Type N

Types TU 10D/U and TU 10D/V

UHF or VHF input, 10W output

TUA10A

10W UHF Amplifier

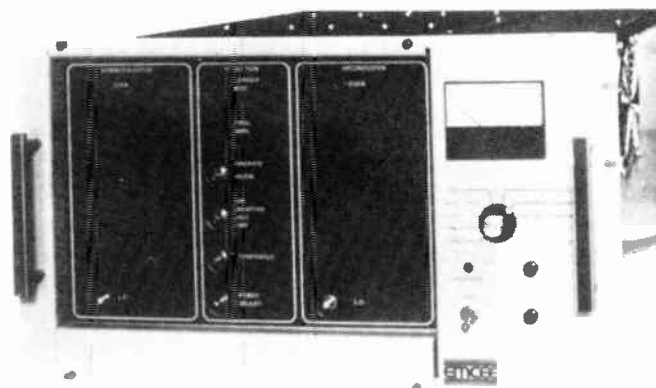
Type TTU-10RM

Baseband input/10W output

- Solid-state FSK code ident • Interchangeability of plug-ins without retuning

Specifications

	TU10D/U—TU10D/V	TTU10RM
Output Power	10W peak visual—1W average aural	
Input Signal Range	-80dBm to -30dBm	
Recommended Input Level	UHF 1000 μ V—VHF 500 μ V	Video: IV P/P—Audio: 0dBm
Input Frequency	FCC-Channel 2 to 83—CCIR-Channel E2 to E69	—
Input Impedance	50 ohms standard	Video: 75 ohms unbalanced—Audio: 600 ohms balanced
Input Connector	Type N	Video: Type F—Audio: screw terminals



100 Watt UHF Television Translators 470-890MHz Band IV and V

TU1A/V TU1A/U

Type TU100D/U

Input Ch. 14-83

Type TU100D/V

Input Ch. 2-13

Type TTU100RM

Baseband input

- Predistortion enhanced linearity • 50dB dynamic range adaptive AGC • FCC type accepted • Excellent multi-hop color performance • High reliability • Remote mounting, low noise preamplifier • Automatic code identifier • Exciter portion available as a solid-state 1W translator (TU1A/U or TU1A/V) • Amplifier portion also available as 100W linear amplifier (TOA100A) • FCC type accepted for use with Emcee 1000W amplifier TOA1000B and TUA1000CP • Dual auto on sensing (carrier and sync sense) • Front panel L.O. sample ports • Front panel monitoring of AGC voltages • Interchangeability of plug-ins with minimum retuning • Single plug-in channel selection • Modular design • Optional remote interrogator • Digital control circuitry w/control ladder display

The TU100 Series is a solid-state, modular translator line with all the features necessary for automatic, unattended NTSC or PAL color operation. Models are completely solid-state with the exception of the final amplifier tube. All models utilize a ceramic triode capable of 750W plate dissipation to assure linearity and long life at 100W output.

Each 100W UHF translator is contained in a single cabinet. UHF and VHF input versions operate on the dual conversion principle to convert the input signal to a 45MHz IF frequency.

Low noise, remote mounting preamplifiers, when appropriate, assure the ultimate reception of distant signals and minimize antenna lead loss.

Specifications

	Translator TU100D/U—TU1000/V	Remodulated Translator TTU100RM
Output Power	100W peak visual—10W average aural	
Input Signal Range	-80dBm to -30dBm	
Recommended Input Level	UHF 100 μ V—VHF 500 μ V	Video: IV P/P—Audio: 0dBm
Color Transmission	Compatible with PAL, NTSC, SECAM Systems	
Output Frequency	FCC-470-890MHz—CCIR-Band IV, V	
Input Frequency	FCC-Channel 2 to 83—CCIR-Channel E2 to E69	—
Input Impedance	50 ohms standard	Video: 75 ohms unbalanced—Audio: 600 ohms balanced
Input Connector	Type N	Video: SO239 UHF—Audio: 3 Pin XLR
Output Impedance	50 ohms	
Output Connector	Type N	

EMCEE BROADCAST PRODUCTS

**UHF Transmitters/Translators/
ITFS Down Converter**

1000W UHF LPTV Transmitter/Translator 470-890MHz Band IV and V

Type TU1000EP/U UHF Input (Bands IV and V)

Type TU1000EP/V VHF Input (Bands I and III)

- Compact single cabinet design • Digital control circuitry • Interchangeability of plug-ins with minimum retuning • Modular design

The TU1000E series of LPTV transmitters/translators offers high performance, design versatility and space efficiency.

Self contained in a single bay cabinet, the unit is a complete 1KW UHF transmitter/translator including modulator or receiver, solid-state driver, final amplifier and all required power supplies.

Type TTU1000E Baseband Input

Type TUA1000E 1000W Amplifier

- Front panel L.O. sample ports • Dual auto on sensing • 50dB dynamic range AGC

High reliability timing and control functions are based upon digital circuitry rather than being entirely dependent upon electromechanical devices. The amplifier is available separately for use with an existing driver and features a ceramic tetrode with inherently low intermodulation products.

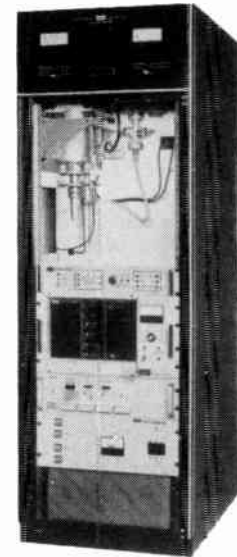
LPTV Transmitters Translators

For Translator Service in UHF-TV/Bands IV and V (470-890MHz)

Type Number	Output Power	Dimensions (HWD)
TU1E/V (VHF Input)	1W	16 1/2 x 20 5/8 x 21 9/16"
TU1E/U (UHF Input)	1W	16 1/2 x 20 5/8 x 21 9/16"
TU10E/V (VHF Input)	10W	16 1/2 x 20 5/8 x 21 9/16"
TU10E/U (UHF Input)	10W	16 1/2 x 20 5/8 x 21 9/16"
TU100D/V (VHF Input)	100W	69 x 23 x 31"
TU100D/U (UHF Input)	100W	69 x 23 x 31"
TU1000E/V (VHF Input)	1000W	69 x 69 x 31"
TU1000E/U (UHF Input)	1000W	69 x 69 x 31"

For UHF Low Power Television or Remodulated Translator Service

TTU1E (baseband input)	1W	16 1/8 x 20 5/16 x 21 3/16"
TTU10E (baseband input)	10W	21 3/8 x 20 5/16 x 21 3/16"
TTU100RM (baseband input)	100W	69 x 23 x 31"
TTU1000E (baseband input)	1000W	69 x 23 x 31"



TU100 Series

	Translator TU 1000EP/U TU 1000EP/N	LPTV Transmitter TTU 1000E	Amplifier TUA 1000E
Output Power	1000W peak visual — 100W average aural		
Input Signal Range	-80dBm to -30dBm	—	—
Recommended Input Level	UHF 1000µV VHF 500µV	Video: IV P/P-Audio: 0dBm	1W or 50W peak visual .1 or 5W aural
Color Transmission	Compatible with PAL, NTSC, SECAM Systems		
Output Frequency	FCC-470-890MHz-CCIR-Band IV,V		
Input Frequency	FCC-Channel 2 to 83 CCIR-Channel E2 to E69		470-890MHz
Input Impedance	50 ohms standard	Video: 75 ohms unbalanced Audio: 600 ohms balanced	50 ohms
Input Connector	Type N	Video: S0239 UHF Audio: 3 Pin XLR	Type N
Output Impedance	50 ohms		
Output Connector	7/8" EIA flange		

MC2127 2.15-2.7GHz MMDS/ITFS Broadband Down Converter

- Dual input capability enables simultaneous reception of both MDS channels 1 and 2, at 2150 to 2162MHz, and MMDS/ITFS channels at 2500 to 2680MHz • Output bandwidth, from 100 to 400MHz, is complementary to modern decoding systems and CATV compatible television receivers • Surface mount topology • PLL crystal controlled • Compact • Weatherproof

The MC2127 is a sixth generation downconverter designed expressly for application in large scale Multichannel Multipoint Distribution Systems.

Specifications

- Input Frequency: 2.5-2.7GHz w/2.15-2.162GHz option
- Conversion Gain: 25dB min.
- Frequency Response: ± 1dB/50MHz segment
- Maximum Input: 35 channels at -47dBm ea.



MC2127

Refer to Green Section for Addresses and Telephone Numbers.

EMT 246 Digital Reverberator

• Reverberation algorithm, free of coloration through optimized eigentone distribution • Individually adjustable reverberation times at low and high frequencies • Separate amplitude control of the group of early reflections (cluster) • Wide reverberation time range (0.2-20s), selectable in three overlapping programs with individually matched densities • Initial delay of up to 999ms • As a special program: the original sound of the EMT 250 • Additional programs: Delay, Echo, Non-Lin • Supplementary low-pass filter with linked control of cluster and reverberation • Remote control of all functions — may be implemented via a two-conductor audio line

The EMT 246 Digital Reverberator employs a tandem circuit consisting of two TMS 320 signal processors. A high clock frequency of 19.2MHz and a suitable hardware complement enable a large number of instructions per program to be executed for the intricate computations involved.

The input signal is converted into 16-bit information using the well-known method of successive approximation. The conversion is uniform; a floating point technique is not employed.

Internally, certain computations are performed in the processor with 32-bit information to prevent errors in rounding off data. A 16-bit word length is used for storing intermediate results.

This technique insures the highest possible signal-to-noise ratio obtainable with a 16-bit architecture.

To insure optimum operating efficiency of the main processors, a third processor (Z80) is employed for control functions. All commands are converted into control information by this system, in order to be utilized directly by the signal processors.

The following command modes are provided:

- On the front panel of the unit: The individual commands are entered via pushbuttons and EMT slideway controls
- Additionally or alternatively through a remote control unit that incorporates the same arrangement of buttons and controls. For distances up to 10m, remote control of the main unit is accomplished through a five-conductor cable, which likewise implements the power supply feed. For control over greater distances, a separate power supply must be employed; but in this case the connection to the main unit may be made through a two-conductor audio line
- Remote control via MIDI, whereby only certain parameters may be altered. (Preprogrammed settings may be called up by addressing memory locations)

The main unit is designed for 19" rackmounting.

Six programs are provided for use.

Programs A, B, and C are reverberation programs that include a unique algorithm for optimizing the eigentone distribution. The programs provide different ranges of reverberation time and thus correspond to a small, medium-size, or large reverberation chamber with idealized properties.

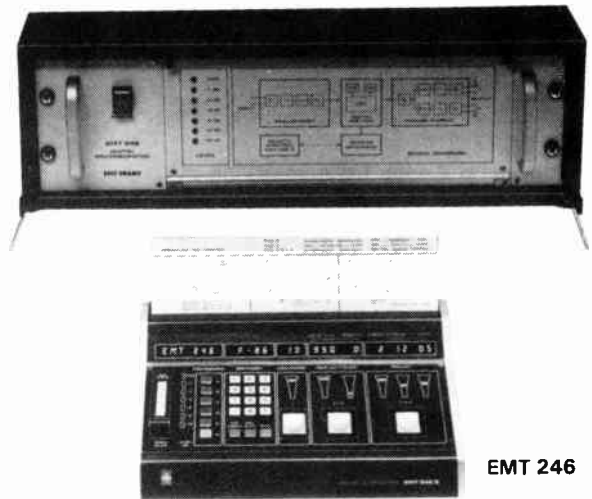
In addition to the reverberation time, adjustments may be made with respect to the decay time at low and high frequencies (as a factor of the basic reverberation time), the amplitude of a group of early reflections (cluster), and the initial delay time.

Program D produces delay and echo. The delay time and the feedback amplification are individually adjustable in the left and right channels for echo generation.

Program E is exactly equivalent to the program of the EMT 250 Electronic Reverberation Unit. However, additional adjustment capabilities and an extended initial delay range are provided.

Program N is a non-linear reverberation program in which the early and late reverberation phases may be adjusted independently of one another. In addition, the time span of the early phase may be set.

A selected setting of program parameters may be stored in a memory with 99 user-accessible locations. An additional 90 settings have been factory implemented. All stored settings may be called up simply by



EMT 246

keying in the appropriate memory address; the parameters may then be modified, if desired, and the results stored as required in the user-accessible memory.

This user memory is designed as a plug-in module, enabling each operator to employ an individually programmed memory. The identity of such a user memory module is displayed whenever power is applied to the unit.

The fixed programs F91 through F99 fulfill special requirements, for example, the execution of test routines for simplifying unit servicing. The special program F91 enables alphanumeric displays to be entered via the keyboard, thus permitting the name of an artist, etc., to be indicated along with a memory location.

Specifications

Input:	Electronically balanced
Impedance:	Min. 10K ohms
Nominal Level	
(Factory Set):	+ 6dB
Adjustable:	-10dB to + 15dB
Output:	Electronically balanced
Impedance:	Max. 50 ohms
Nominal Level	
(Factory Set):	+ 6dB
Adjustable:	-10dB to + 15dB
Frequency Response of Delay Program:	30Hz to 12kHz (+ 1/-3dB)
Overdriving Margin Referred to Nominal Level:	6dB
Signal-To-Noise Ratio of Delay Program Referred to Nominal Level:	RMS, unweighted — 88dB; Peak, unweighted (CCIR 468-2) — 82dB; Peak, weighted (CCIR 468-2) — 76dB
Signal-To-Noise Ratio of Reverb Program Referred to Nominal Level:	RMS, unweighted — 73dB; Peak, unweighted (CCIR 468-2) — 69dB; Peak, weighted — (CCIR 468-2) — 64dB
Harmonic Distortion in Delay Program:	Max. 0.03% at nominal level (f = 1kHz)
Power Consumption:	Max. 50VA

EMT 246 000	Digital reverb system with remote control panel and EMT 250 program.	\$10,520.00
EMT 246 010	Above system with digital I/O 1610 format.	13,095.00
EMT 246 001	Digital reverb system with built-in control panel	9695.00
EMT 246 020	Above system with digital I/O 1610 format.	12,460.00

EMT 445 Digital Audio Delay Unit

- Audio-frequency delay unit with 16 bit resolution and 48kHz sampling frequency
- Variable delay time between 1ms and 10.9s in two channels (stereo)
- Twice the delay time in mono operation
- Full audio bandwidth of 20kHz even for long delay times
- Delay-time switching without clicking
- 99 memory units for preset delays
- Remote control via two leads (serial)

In the standard version of the EMT 445 Digital Audio Delay Unit, a sampling frequency of 48kHz is used to achieve a flat frequency response between 30Hz and 20kHz.

A special version for telecommunication authorities employs a sampling frequency of 32kHz.

Different memory capacities may be selected, resulting in a variety of configurations with the individual maximum delay times indicated in the table below.

Maximum Delay Times

MEMORY		32 kHz		48 kHz		
No. of boards	Banks employed	64 k	256 k	64 k	256 k	
1	1	2 s	8.1 s	1.3 s	5.4 s	M
1	2	4 s	16.3 s	2.7 s	10.9 s	O
2	3	6.1 s	24.5 s	4 s	16.3 s	N
2	4	8.1 s	32.7 s	5.4 s	21.8 s	O
1	1	1 s	4 s	0.6 s	2.7 s	S
1	2	2 s	8.1 s	1.3 s	5.4 s	T
2	3	3 s	12.2 s	2 s	8.1 s	R
2	4	4 s	16.3 s	2.7 s	10.9 s	E
						O

The EMT 445 Digital Audio Delay Unit employs a digital word length of 16 bits in all versions and with all memory configurations supplied. A signal-to-noise ratio of minimally 88dB is thereby achieved.

The digital audio-signal delay unit may be alternatively equipped with a mono or stereo input. The number of audio signal outputs is also selectable: two, four or six.

An additional CPU is assigned to the front panel for manual control. Remote control capabilities are thus provided through a serial interface, similar to the case of the EMT 252 Digital Reverberation System and the EMT 245 Digital Reverberator. In addition, as many as 100 preset delays may be stored for specific applications (parameter memory).

Specifications**Operating Modes**

Mono: Input 1 to Outputs 1–6
Stereo: Input 1 to Outputs 1, 3, 5
 Input 2 to Outputs 2, 4, 6
Test: Various test programs for calibration and service. Complete memory test with front-panel indication of defective chip and board 48kHz

Sampling Frequency:**Amplitude**

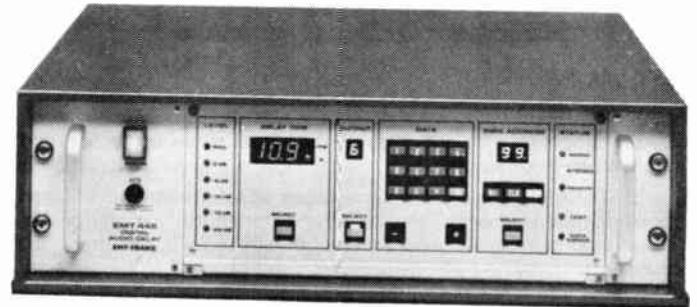
Quantization: 16 bit, uniform
Storage Time (with 48kHz sampling frequency): Minimum configuration (Memory) 500µs to 600ms, stereo (500µs to 1.3ms, mono)
 Maximum configuration 500µs to 10.9s, stereo (500µs to 21.8s, mono)

Processors:

8035 microprocessor
 TMS 320 signal processor

Parameter Memory:

99 settings for all channels in buffered CMOS RAM (non-volatile)



EMT 445

Analog Section

Inputs: (0dB = 0.775V) active, balanced

Impedance: min. 10K ohms

Nominal Level, factory +6dB

adjusted variable: -10dB to +15dB

Outputs: active, balanced

Impedance: max. 50 ohms

Nominal Level, factory +6dB

adjusted variable: -10dB to +15dB

Signal-to-Noise Ratios,

referred to max. level

Signal-to-Noise Ratio, linear, RMS: 88dB

Signal-to-Noise Ratio, linear, peak (CCIR 468-2): 82dB

Signal-to-Noise Ratio, weighted, peak (CCIR 468-2): 76dB

Harmonic Distortion (1kHz, nominal level): <0.03%

Frequency Response: 30Hz-20kHz; +0.5/-1dB

Group Delay Time: compensated

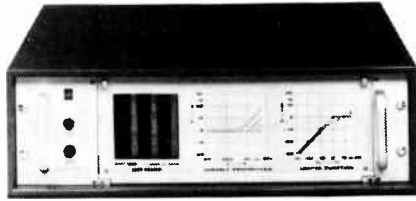
Max. Driving Level: 6dB above nominal level

Power Consumption: max. 100VA

Interfaces: 5-pin XLR female jack for serial remote control

Dimensions: 19" rack unit (without tabletop cabinet)

EMT 445 000	Mono in, 2 outputs; 1.3 seconds delay . . .	\$ 7,735.00
EMT 445 001	Mono in, 2 outputs; 5.4 seconds delay . . .	7,870.00
EMT 445 002	Mono in, 2 outputs; 10.9 seconds delay . . .	8,140.00
EMT 445 003	Mono in, 2 outputs; 21.8 seconds delay . . .	9,190.00
EMT 445 221	Conversion to stereo (reduces delay by one half)	1,010.00
EMT 445 222	2 additional outputs	1,265.00
EMT 445 900	Remote control cassette	1,555.00
EMT 445 010	Disk preview delay with digital input and dual synchronized D/A converter outputs	10,250.00



EMT 266X

**EMT 266X
Transient Limiter**

Limiting amplifier with pre-delay of the signal to be controlled and adaptive pre-emphasis.

The EMT 266X Transient Limiter enables absolute limiting of even rapidly rising wavefronts (transients) and the shortest signal peaks. The unit can be employed to advantage with radio transmitters, for record cutting, and in cassette dubbing. For FM and T.V. broadcasts, an adaptive pre-emphasis option is available to prevent overdriving beyond the permissible deviation limit, as would otherwise occur due to the pre-emphasis stage ahead of the transmitter.

The EMT 266X Transient Limiter delays the program to be limited by about 0.3 msec. The input for the control process is extracted from the program signal before the delay is initiated. The control information can thus be fully formulated before the signal to be limited reaches the control stage.

A specially derived transient-response function prevents the appearance of perceptible "holes" in the modulation. Similarly, the release characteristics have been optimized with reference to human auditory perception for fixed or programmable release times.

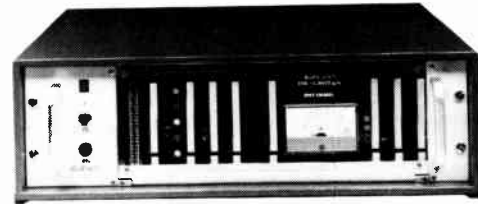
Technical Data

Inputs	balanced, floating
Input impedance	min. 5kohms
Nominal input level	-20 to +15dB, continuously adjustable in two plug-in ranges
Maximum input level	+24dB (Δ 12,28V)
Outputs	balanced, floating
Output impedance	max. 40 ohms
Nominal output level	-20 to +15dB, continuously adjustable in two plug-in ranges
Maximum output level	+22dB on min. 200 ohms (Δ 9.76V)
Frequency response	
without adaptive pre-emphasis	30Hz to 15kHz, \pm 0.3dB, -0.5dB at the band limits
Signal-to-noise ratio, rms, unweighted, referred to nominal level without adaptive pre-emphasis	92dB
with adaptive pre-emphasis, measured after de-emphasis	87dB

- EMT 966 023 Transient limiter, mono \$3870.00
- EMT 266 022 Transient limiter, mono with adaptive pre-emphasis 4360.00
- EMT 266 020 Transient limiter, stereo, with adaptive pre-emphasis 5945.00
- EMT 266 021 Transient limiter, stereo 4695.00

**EMT 277 DX
Limiter**

Control amplifier with pre-delay for use in the modulation of AM transmitters.



EMT 277 DX-LIMITER

With the EMT 277DX-Limiter, overdriving of AM transmitters may be effectively prevented. Absolute protection against control voltage peaks is achieved by employing the transient-limiter principle. (Note the description of the EMT 266X Transient Limiter).

In addition, a compressor/expander is employed with a controlled program-dependent release time, to permit the highest possible increase of the average modulation. Two separate adjustments for compressor gain and ratio may be set and activated through an external contact. In this manner, separate adjustments may be made for day and night operation to compensate for differing propagation conditions, or separate settings may be provided for speech and music, when an appropriate detector precedes the input of the EMT 277 DX-Limiter.

OPTIONS

AM Band-Pass

A band-pass filter with a bandwidth of 60Hz to 4.5kHz may be inserted. Without this filter, the unit exhibits a wideband frequency response.

Adaptive Presence

Boosting the frequency band immediately below the steep rolloff point of 4.5kHz (mentioned above) produces the impression of a wider frequency response. In the EMT 277 DX-Limiter, this boost is produced not with a fixed filter but instead by means of a program-dependent adaptive presence network.

Polarity Reverse

This feature insures that the input signal always arrives at the transmitter with the proper polarity when different limiting thresholds are in use for the two half-waves. The polarity of the input signal is corrected inaudibly.

TECHNICAL DATA

Input	balanced
Input impedance	min. 5kohms
Nominal input level, continuously adjustable	-20 to +15dBm
Max. input level	+24dBm
Output	balanced
Output impedance	max. 40ohms
Nominal output level, continuously adjustable	-20 to +15dBm
Max. output level	+21dBm, or 6dB above nominal level
Frequency response	30Hz to 15kHz, or 60Hz to 4.5kHz determined by plug-in filter
Signal-to-noise ratio, referred to nominal level	72dB RMS, unweighted
Distortion (at nominal level over entire frequency range)	max. 0.25%

EMT 277 000 Version for 19" rackmounting \$6270.00

Accessories

- EMT 277 012 AM band-pass \$750.00
- EMT 277 004 Adaptive presence 830.00
- EMT 277 013 Polarity reverse 725.00



EMT 938

EMT 938 Broadcast Disk Reproducer

Turntable in tabletop cabinet with direct drive and quick starting of the platter. The Cabinet serves as the installation base for stationary operation.

The EMT 938 Broadcast Disk Reproducer fulfills user requirements for highest reliability at the lowest possible cost.

The platter of the 938 Broadcast Disk Reproducer is driven directly, i.e., the platter shaft is rigidly connected to the rotor of the motor, mounted concentrically underneath. The fact that no elastic coupling is employed in the drive system makes possible an extremely rapid platter acceleration, and thus the "quick starts" so necessary for broadcast programming, without the use of an auxiliary platter.

Operation is controlled with the "Start/Stop" and "Tone Arm Lift" buttons. The rotary switch to the right enables the speeds 33 1/3, 45 and 78 rpm to be selected. The rotary knob to the left of the buttons is the main power switch.

The motor drive circuitry and the equalizer amplifiers are located on printed circuit boards, which may be swiveled out for servicing. The amplifiers produce a nominal level of 1.55V (+6dB) on 200 ohms (max. +21dB), and they are equipped with a circuit for muting during run-up. The monitor outputs, mono and stereo, continuously deliver the necessary level for cueing.

The chassis of the 938 Broadcast Disk Reproducer is spring mounted in its supporting frame to achieve the necessary mechanical absorption characteristics without employing additional external damping measures.

- EMT 938 110 Direct drive for Lo-Z pickup cartridge \$3700.00
- EMT 938 120 Direct drive for 47K cartridge3720.00
- EMT 938 900 Acrylic dust covers for above75.00
- EMT 938 901 Flush mounting brackets40.00
- EMT 938 903 Cue amp and speaker310.00



EMT 948

EMT 948 Broadcast Turntable

Direct drive turntable, ready to install, with fast start and back cueing of platter, remote control capability.

The EMT 948 Broadcast Turntable has been conceived for ease of operation and highest reliability.

The platter is directly driven on the shaft of a special Hall commutated motor. A high-precision magnetic tacho-generator delivers a reference frequency which is proportional to the rotational speed for precise phase control of the drive system. The direct drive system provides exceptionally stable speed characteristics; because of the rigid coupling of the rotor to the platter and the high torque, individual syllables may be spot cued.

Pickup cartridges with built-in magnifying lens are preferred for use with the turntable. The proven 929 Tone Arm is statically and dynamically balanced in all directions and is insensitive to chassis vibrations and mechanical shocks.

Operation is controlled with three buttons: "Start/Stop," "Reverse Rotation," and "Tone Arm Lift Motor." Speed selection is accomplished with rotary switch. These and other functions, such as variable speed and Mono/Stereo switching, can be directed by remote control through a 36-pole connector.

The chassis of the 948 is spring-mounted in its supporting frame to achieve the required mechanical absorption characteristics without additional damping. The use of constructional element, a stiff ring, inhibits all rotational oscillations.

- EMT 948 110 Turntable for Lo-Z pickup cartridge \$5320.00
- EMT 948 120 Turntable for 47K cartridge5280.00
- EMT 948 970 Console for above1245.00
- EMT 948 971 Console with cue amp and speaker1835.00
- EMT 948 030 Acrylic dust cover for above145.00

Pick-Up Cartridges and Tone Arms

- TSD 15 Stereo Lo-Z cartridge with fine line stylus \$485.00
- TND 25 Mono microgroove455.00
- TND 65 Mono standard groove455.00
- XSD 15 Stereo Lo-Z cartridge with fine line stylus for hi-fi tone arms720.00
- XSD/TSD Repair/exchange price280.00
- OFD Mono pickup cartridges205.00
- OFS Mono pickup cartridges170.00
- EMT 929 001 Tone arm for installation on hi-fi turntables390.00
- EMT 929 013 12" tone arm for 16" turntables805.00

Refer to Green Section for Addresses and Telephone Numbers.

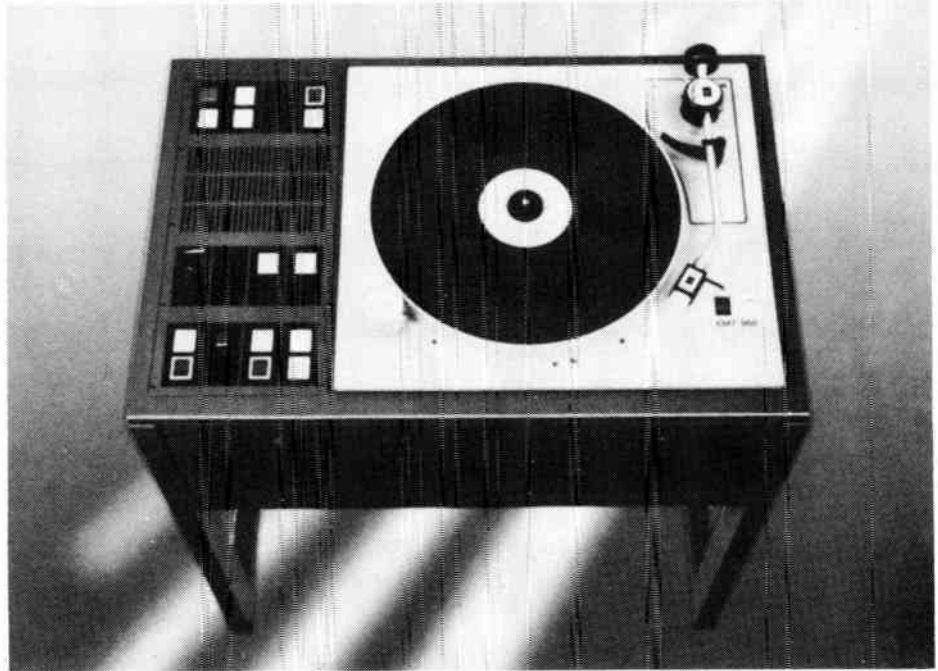
EMT 950 Direct Drive Studio Turntable

The EMT 950 employs a highly advanced inverted-mass configuration with lightweight turntable platter, heavy chassis plate, and a ribbed motor housing of gray cast iron.

The specially designed cylindrical motor with Hall effect commutation is driven by a power amplifier. It incorporates a slender rotor exhibiting especially low momentum to drive the thin, ribbed main platter attached to the rotor shaft. A high precision tachometer disk with a photoelectric transducer enables exact control of the motor speed. Exceptionally low wow and flutter figures are attained with this drive system. Since rotating masses have been reduced to a minimum, the rumble-free main bearing is relieved of substantial thrust, and fast, exact starts are assured. An electrical disk brake enables the platter to be stopped quickly and affords controlled drag for manual cueing. Rapid lowering of the tone arm is effected by the motorized arm rest. The stylus contact point is illuminated by a flood-light beam.

Specifications

Deck	
Turntable Diameter:	13" (33cm)
Turntable Speeds:	33 $\frac{1}{3}$, 45, 78rpm ± 0.1%
Wow and Flutter	
(DIN 45 507/ANSI/IEC):	Max. ± 0.05%
Run-up Time:	Max. 0.2s
Rumble (DIN 45 539)	
Unweighted:	> 56dB
Weighted:	> 70dB
Mains Power:	100 to 130V 200 to 240V 50Hz or 60Hz Approx. 100VA
Power Consumption:	
Dimensions:	
Standard model chassis alone:	27.6" x 18.4" x 13.2" (693 x 462 x 332mm)
With floor supports (free-standing):	27.8" x 18.6" x 34" (697 x 466 x 854mm)
Depth Below Panel:	
Weight:	9.8" (245mm) Approx. 154.32 lbs. (70kg)
Amplifier: (plug-in cards)	
Equalization	
DIN, NAB, IEC, RIAA:	75/31B/3180 μ s
FLAT:	0/31B/3180 μ s
Input Sensitivity:	0.2 to 1mV For EMT, T-Series cartridges 2 to 10mV with 47K ohm version
Output Level:	
Adjustable	0 to +15dBm
Max. Output Level:	10V (+22dBm)
Frequency Response:	40Hz to 15kHz ± 0.5dB 20Hz-3dB below 20Hz approx. 12dB/octave rolloff above 25kHz approx. 6dB/octave rolloff
Total Harmonic Distortion:	
	< 0.1% 30Hz to 12kHz



Signal To-Noise Ratio	
RMS, Unweighted:	Min. 75dB
Peak, Weighted:	Min. 70dB
Crosstalk:	> 55dB
Headphone Output:	Stereo, max. 2V on 200 ohms
Stereo/Mono Switching:	Remote controlled (24VDC or from internal voltage)

Tone Arm	
EMT929 for EMT or OF Series pickup cartridges	
Tracking Force:	Adjustable 0 to 50mN (0 to 5g)
Antiskating Device:	With compensation weight

Bearing Friction	
Horizontal and Vertical:	< 5-10 \cdot N (50mg)
Tone Arm Lift, Motor Driven, Lowering and Raising Time	
Adjustable:	Approx. 0.2 s
Empty Shell	For mounting magnetic pickup cartridges

EMT 950 Standard model, single chassis construction, with control panels on the left.	
995110	Stereo with equalizer-preamplifier for TSD-15 stereo cartridges
9950111	Stereo with equalizer-preamplifier, cue loudspeaker and amplifier for TSD-15 stereo cartridges
9950112	Stereo, with equalizer-preamplifier, cue speaker and amplifier, monitor circuit board for TSD-15 stereo cartridges

9950120	Stereo (47K ohm), with equalizer-preamplifier and empty pickup shell for mounting a magnetic cartridge
9950121	Stereo (47K ohm), equalizer-preamplifier, cue loudspeaker and amplifier, empty pickup shell for mounting a magnetic cartridge
9950122	Stereo (47K ohm), with equalizer-preamplifier, cue speaker and amplifier, monitor circuit board and empty pickup shell for mounting a magnetic cartridge

Please indicate the desired mains voltage.

Accessories	
9950970	Metal stand, for all series 99501... with two side frames, fitted with legs and cover panels for the front and back.
9950903	Optional "Vario" (variable speed) (parts kit) for all series 99501..
950PC	Dust cover, transparent plastic
7950030	Frequency-voltage converter board
7950031	Control unit board
7950032	Cue amplifier board
7950034	Interface I board
7950035	Interface II board
7950033	Motor Power supply board
7950036	Interface III board
7950038	Stereo equalizer board, for TSD cartridges
7950088	Stereo equalizer board, 47K ohm
7950039	Line amplifier board
7950040	Monitor board



ES 391



ES 992E/994E

70 Series Console Mount Clocks and Timers

ES 172 Six Digit—12 Hour Clock. Three setting controls: Fast Advance, Slow Advance, and Hold.

ES 172 \$183.00

ES 174 Six Digit—24 Hour Clock. Otherwise identical to the ES 172.

ES 174 \$183.00

ES 370 Four Digit, One Hundred Minute Up/Down Timer. Six controls: Count Up, Count Down, Stop, Minutes Advance, Seconds Advance, Reset.

ES 370 \$233.00

ES 371 Up/Down Timer. Similar to the ES 370 except with Leverwheel Preset capability for faster setting of the desired time.

ES 371 \$370.00

ES 570 Four Digit, Sixty or 100 Minute Timer. Select 60 or 100 minute mode on rear connector. Start, Stop and Reset controls. Runs continuously unless stopped. Reset will return all displays to zero. Unit will run if reset while running or will stay at zero if reset when stopped.

ES 570 \$174.00

ES 572 Six Digit—12 Hour Clock or Timer. Five controls: Start, Stop, Reset, Fast Advance, Slow Advance. Will run continuously to 12:59:59. Advances to 1:00:00 and continues as clock unless stopped or advanced.

ES 572 \$223.00

ES 574 A 24 hour version of ES 572 \$223.00

ES 575 Exactly like ES 570, with the addition of a "freeze" button. When the button is released, the display "catches up" with the correct elapsed time. Dimensions: 2.16" H x 4.5" W x 4.13" D.

ES 575 \$223.00

ES 562E/564E Six Digit Clock/Timers with Memory

ES 562E/564E is a combination six digit clock and 24 hour timer with memory, allowing the user to set the clock to the correct time of day, switch to timer mode, then switch back to time of day by pushing one button; time of day will be correctly displayed, in hours, minutes and seconds. Six pushbutton controls are mounted on the top of the unit, near the front of the desktop case. When panel mounting is specified, they will be mounted on the front panel, below the display. The controls may also be remoted, through two rear-mounted five pin connectors (Option R or Option D). These controls are Reset, Timer, Fast/Start, Slow/Stop, Hold and Clock. Display: Six digits of .55" Planar Gas Discharge Display.

562E/564E \$362.00

ES 112E/124E Digital Clocks

ES 112E (12 hr.) and **ES 124E** (24 hr.) are solid-state, six digit clocks. Can drive 80 Series and 90 Series slaves. Displays are gas discharge, .55" high. Dimensions: 2 1/2" H x 8" W x 6" D.

ES 112E/124E \$191.00

80 Series Jumbo Clocks and Timers

Large, bright 1" gas discharge displays provide effortless long distance viewing from 40 feet.

ES 182E Six Digit—12 Hour Clock. Three rear-mounted setting controls: Fast Advance, Slow Advance, and Hold.

ES 182E \$315.00

ES 184E Six Digit—24 Hour Clock. Otherwise identical to the ES 182E.

ES 184E \$315.00

ES 380AE Four Digit, 100 Minute Up/Down Timer Displays minutes and seconds, with rear-mounted connector to allow remote wiring of six momentary SPST Controls: Count Up, Count Down, Stop, Minutes Advance, Seconds Advance and Reset. Other features similar to ES 301AE.

ES 380AE \$366.00

ES 381AE Up/Down Timer. Similar to ES 380AE, except that leverwheel preset is used.

ES 381AE \$482.00

ES 580E Four Digit, 60 Minute Timer Displays minutes and seconds. Rear connector allows remote wiring of three momentary SPST controls: Start, Stop and Reset. Reset returns all displays to zero, and timer will continue to run from zero if reset while running.

80 Series slaves are also compatible with other ESE clocks and timers: ES 112E/124E, 301AE, 302AE and 510E. Dimensions: 4.45" H x 10.38" W x 6.58" D.

ES 580E \$264.00

ES 510E Four Digit 60 Minute Timer

ES 510E is a four digit, sixty minute timer (59:59) with Start, Stop and Reset controls. If stopped, display will hold time reading and when restarted will continue with next count from last displayed figure. If reset while running, timer will continue to run. ES 510E can drive 80 Series and 90 Series Slaves. Dimensions: 2 1/2" H x 6" W x 6" D.

ES 510E \$174.00

ES 232 Time Calculator

ES 232 is an eight digit, 24 hour, Up/Down Timer/Time Calculator displaying Hours, Minutes, Seconds, and Frames (30 frames per second) on bright red .4" LED's. In the Calculator mode, data may be added or subtracted, or stored in memory, or recalled from memory. There are 10 memory locations available. Data may be added or subtracted from the timer value, while the timer is counting either up or down, but not while the timer is stopped. When stopped, data moved from calculator to time serves to preset the timer. In the timer mode, ES 232 counts up or down, and can be reset while running or stopped. It can be preset to any number in the 24 hour range. While timer is running or stopped, it is possible to enter the value into memory without disturbing the operation. It is also possible to recall a value from memory and add or subtract while timer is counting up or down. ES 232 uses 24 keys, mounted on a desktop case, measuring 2" H x 5" W x 6" D.

ES 232 \$250.00

90 Series 2-Inch Displays Viewable at 60 Feet

ES 391AE Presettable Up/Down Timer. 100 Minute Range, Displays Minutes and Seconds, uses Leverwheel Preset. Controls are Count Up, Count Down, Stop, Reset and Preset. Dimensions 4.45" H x 10.38" W x 6.58" D.

ES 391AE \$564.00

ES 590AE Sixty Minute Timer Displays Minutes and Seconds. Rear-mounted connector provides for wiring to user's single pole, momentary, push-button controls—Start, Stop and Reset. Reset returns all displays to zero, and timer will continue to run from zero if reset while counting. Dimensions: 4.45" H x 10.38" W x 6.58" D.

ES 590AE \$395.00

ES 992AE/994AE—6 Digit Clocks. ES 992AE (12 hr.) and ES 994AE (24 hr.) Hours and Minutes on Two Inch Gas Discharge Displays, Seconds on One Inch Gas Discharge Displays. Three to mounted setting controls—Fast Advance, Slow Advance, and Hold. Dimensions: 5" H x 12" W x 3 1/2" D.

ES 992AE/994AE \$495.00

ES 301AE/302AE 100 Minute Up/Down Timers

ES 301AE is a four digit, one hundred minute timer (99:59) with six controls: Count Up, Count Down, Stop, Minutes Advance, Seconds Advance, Reset. Counting can be activated up or down or set back to zero. When "Stop" control is pressed, the four digit display is held. Counting direction (up or down) can be changed or time can be reset to zero without stopping the count. The ES 301AE can drive 80 Series and 90 Series Slaves. Displays are gas discharge .55" high.

With the ES 302AE, the user can preset time much faster than with the ES 301AE, because lever-wheel type switches are used for the preset feature. The ES 302AE can drive 80 Series and 90 Series Slaves. Dimensions: ES 301AE—2 1/2" H x 8" W x 6" D, ES 302AE—2 1/2" H x 10" W x 6" D.

ES 301AE \$271.00

ES 302AE \$350.00

Master Clocks

ESE Masters provide a means of keeping all time displays in the system in agreement, through the use of a Serial Time Code. Only one pair of wires is needed to distribute the time code to all remote serial input displays. An ESE Master Clock System can operate digital displays, clocks with sweep second hands, printers, and in addition, tell your computer what time it is. Twelve hours of standby battery operation is standard in ES 160 and 160/1.

ES 160. Mounted in a 5 $\frac{1}{4}$ " relay rack panel and chassis, displays six digits of time information on .4" LED displays, in 12 hour format. The ES 160 has 3 sec. per month accuracy. Its standard output is serial BCD, CMOS compatible, and drives ES 161E, 166E, 171, 991, or 993 Remote Displays without buffering. All inputs and outputs are through rear-mounted connectors. Dimensions: 5 $\frac{1}{4}$ " H x 19" W x 15" D \$1250.00*
ES 160/1. One second per month version of ES 160 \$1450.00*

ES 180. NBS Master Clock receives and decodes the radio time broadcasts transmitted by the U.S. National Bureau of Standards (NBS). The unit provides an extremely accurate time reference that is available in several forms. These include:

- 1 $\frac{3}{4}$ " front panel, with LED display of hours, minutes and seconds
- Serial time code output of the displayed time data • 1 PPS output (1 Pulse Per Second) • RS-232C output (1200 baud, switchable to other rates) • Audio output (speaker)

Optional outputs available:

- Parallel BCD output • Relay contact closure on the hour and half hour

The unit is supplied with a built-in battery backup supply to maintain clock timekeeping for up to 10 hours in the event of a power outage. Time Accuracy \pm 10ms of UTC \$1987.00

ES 199. Our most accurate Master, providing better than .5 seconds per month. It contains a 10MHz receiver, with audio output, to synchronize with WWV at the push of a button. WWV transmits a 1000Hz tone at the start of each minute, except for the first minute of each hour, when a 1500Hz tone occurs. If the button is pushed and held during this time, the seconds' counters of the clock will be reset to zero. The ES 199 is supplied with an antenna, battery and charger. An external sync input connector is provided, to allow introduction of a periodic logic 'O' or contact closure at a once per second or slower rate. In order to simplify maintenance, test points are provided on the 1000Hz decoder board, to allow recalibration of the oscillator using only an oscilloscope. The serial output will drive 100 ES 161E, 166E, 171, 991 or ES 993E Remote Displays. Dimensions: 5 $\frac{1}{4}$ " H x 19" W x 15" D. Electrical: 117VAC, 50/60Hz. Options: B (CMOS, 5V) J, 1 PPS Output, Relay Closure on Hour and 1/2 Hour, Impulse Driver (ES 162) \$1687.00*

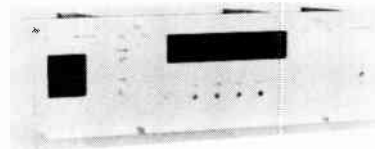
ES 192E/ES 194E. The most economical Masters, ES 192E (12 Hr.) and ES 194E (24 Hr.) are constructed using ES 112 or ES 124 digital clocks and adding the ES 167B Serial Time Code Generator to provide the output needed to drive Remote Serial Displays ES 161E, 166E, 171, 991 and 993E. Displays are 6" incandescent type. Dimensions: 2 $\frac{1}{2}$ " H x 8" W x 6" D \$376.00

Accessories

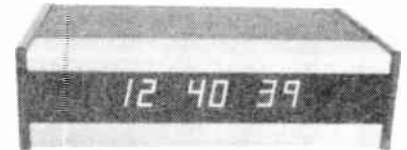
ES 161E Remote Digital Display decodes serial time data and displays six digits of time on .55" Gas Discharge Displays, in either 12 or 24 hour format. Dimensions: 2 $\frac{1}{2}$ " H x 8" W x 6" D \$191.00

ES 161TZ Remote Slave Displays with Time Zone Offset. Displays six digits of clocktime. Available in 12 or 24 hour format. Unit will be in 12 hour unless otherwise specified. To display 24 hour format master must also be 24 hour format. \$266.00

ES 162 Impulse Driver plugs into the ES 160 chassis, and can drive 20 Impulse Clocks. Designed so that if power fails, impulse always comes on with the same polarity when power is restored \$232.00



ES 199



ES 160

ES 165 Impulse Driver was designed to provide synchronized power to the ES 168 Impulse Clocks. It is capable of driving 50 ES 168 clocks, and will keep them running accurately through 12 hours of power failure. The ES 165 derives its synchronizing pulse from any one pulse per second source, such as the ESE Master Clock, and can also accept the once per second, alternating 12 or 24V impulses from an existing impulse clock system \$220.00

ES 166E Jumbo 1" Clock Display features six digits of 1" Gas Discharge Displays in 12 or 24 hour format. Receives serial time code input from any ESE Master Clock or ES 167B. Dimensions 4 $\frac{1}{2}$ " H x 10 $\frac{1}{2}$ " W x 6 $\frac{1}{2}$ " D. \$294.00

166ETZ Remote Slave Displays with Time Zone Offset. Six digit display. 12 or 24 hour format. Unit will be 12 hour unless otherwise specified. To display 24 hour format master must also be 24 hour format. . . . \$369.00

ES 167B Serial Time Code Generator is an integral part of ES 160, 190, 192E/194E and 196 Master Clocks, this unit can be added to many other ESE products, including ES 112, 124, 182, 184, 992, 994, 750, 751, 753, 754 and all 780 Series Time Programmers. Drives ES 161E, 166E, 171, 991, or 993 Remote Displays \$169.00

ES 168 Impulse Clock operates from the 8 PPS output of the ES 165 Impulse Driver. As many as 50 ES 168s can be connected to a single driver, and they will continue to run during a power outage of at least 12 hours \$149.00

ES 171 Console Mount Remote Display receives the serial time code generated by any ESE Master Clock, or any ESE product containing the ES 167B serial time code generator, and displays it on bright red .3" LEDs. Dimensions: 2 $\frac{1}{4}$ " H x 4 $\frac{1}{2}$ " W x 4" D \$183.00

Impulse Clock. When a sweep second hand is desired specify the 3201 .003" "Extra Flat" Impulse Clock. It has a 12" dial protected by a glass cover and metal bezel and is approximately 1" thick. As many as twenty impulse clocks can be driven by a Master Clock which has ES 162 as an accessory \$236.00

ES 991AE 4-Digit Serial Input Slave decodes serial time data and displays four digits of time on large 2" Gas Discharge Displays. Dimensions: 4 $\frac{1}{2}$ " H x 10 $\frac{1}{2}$ " W x 6 $\frac{1}{2}$ " D, Desktop Case \$376.00

991TZ Remote Slave Displays with Time Zone Offset. Four digit display. 12 or 24 hour format. Unit will be 12 hour unless otherwise specified. To display 24 hour format master must also be 24 hour format \$451.00

ES 993AE 6-Digit Serial Input Slave features four digits of 2" high Gas Discharge Displays, and two digits (Seconds) of 1" Gas Discharge Displays. Receives serial time code input from any ESE Master Clock or ES 167B. Dimensions: 5" H x 12" W x 3" D (Wall Mount) . . . \$520.00

993TZ Remote Slave Displays with Time Zone Offset. Six digit display. 12 or 24 hour format. Unit will be 12 hour unless otherwise specified. To display 24 hour format master must also be 24 hour format. . . \$595.00

* Battery and charger are included in the ES 160, ES 160/1 and ES 199.

Time Code Readers

ES 453 SMPTE Time Code Reader is an eight-digit SMPTE Time Code Reader displaying Hours, Minutes, Seconds and Frames \$395.00

ES 452 Play Speed SMPTE Time Code Reader/Window Dubber is a microprocessor-based eight digit SMPTE time code video character inserter which displays either the time data or the eight user bit characters \$550.00

ES 455 is a bi-directional, multi-speed, eight-digit SMPTE Code Reader, that can add the information to a video stream for recording time code on the video portion of a tape, or for displaying it on a monitor. Reading speed is 1/30 to 20 times playback speed \$795.00

ES 456 "Smart" SMPTE Time Code Reader. The ES 456 is a bi-directional multi-speed, eight digit SMPTE Time Code Reader which displays Hours, Minutes, Seconds and Frames on .4" red LED's. The ES 456 incorporates a digital error detection system: When a bad frame of time code is detected, the unit will switch to a frame-counting mode \$750.00

ES 257 SMPTE Time Code Reader/Comparator is capable of making two comparisons, as established by the two sets of thumbwheels located on the front panel. By specifying option "B" (four-line parallel BCD, 5V CMOS compatible), additional comparisons may be made by connecting one or more ES 258 "expander" units \$875.00

ES 258 SMPTE Time Code Comparator has been designed as an "expander" for the ES 257. Two sets of eight-digit thumbwheels are on the front panel, to allow comparison of two SMPTE code locations . . \$395.00

ES 270 IRIG 8 Time Code Reader Nine digits of time are shown on bright red LED's .4" character height. An RS232C interface (Hrs., Min., Sec. only) can be supplied as an option. ES 270 comes in a rackmounting enclosure 1 3/4" H x 19" W x 10" D \$405.00

ES 280 Audio Time Code Generator/Reader is a 10 Digit Audio Time and Code Generator/Reader, capable of laying down a serial 8CD time code on audio tape in the Generator Mode, and recovering and displaying it in digital form in the Reader Mode. The code has been designed by ESE. It is not a standard code, such as SMPTE or IRIG. The frequencies used to produce the code have been selected to be compatible with cartridge machines as well as other tape recording and playback equipment. Amplitude adjustment assures the right amount of signal for the particular machine being used \$578.00

720 Series Programmable Clocks, Timers and Time Code Readers

10 events occur on 10 isolated output channels, in the form of momentary reed relay contact closures. Latched outputs may be specified at the time of order. When latched, the next event to occur serves to "unlatch" the previous event.

Programming is done through the front panel keyboard, or "on the fly" in the "Run" mode. As the keys are actuated, the data is displayed on bright red .4" LED's. Re-programming is accomplished by "writing" the new data over the old data.

A battery, battery charger and crystal timebase are provided, to prevent malfunction caused by a power interruption.

The 720 Series units have a 3 1/2" H front panel, 19" W, with chassis extending 8" behind the etched and clear anodized panel.

ES 720 Contains its own 24 hour clock for comparison. \$845.00

ES 722 Contains its own 24 Hour Presettable Up/Down timer for comparison \$845.00

ES 727 Contains a SMPTE Time Code Reader. Code is received through a rear-mounted female XLR connector \$1150.00

Programmings

780 Series Ram Time Programmings are the most cost-effective way of programming more than eight events. They are flexible, easy to use, and



ES 790



ES 280



ES 727

provide 32 events (expandable to 96). The size of the unit is 5 1/4" H x 19" W x 10" D—Relay Rack construction, totally enclosed, with a screen top. 780 Series units operate from the power line with a backup crystal time base and 72 hour battery/charger as an integral part of the equipment.

Eight Digits of Programming Capability

ES 780 10 Days, 10 Outputs, Hours, Minutes, Seconds. \$1575.00

ES 781 100 Days, Hours, Minutes, Seconds. \$1433.00

ES 782 16 Outputs, Hours, Minutes, Seconds \$1654.00

Six Digits of Programming Capability

ES 783 Hours, Minutes, Seconds \$1365.00

ES 784 100 Days, Hours, Minutes. \$1365.00

ES 786 16 Outputs, Hours, Minutes \$1600.00

ES 787 16 Outputs, Minutes, Seconds \$1600.00

Four Digits of Programming Capability

ES 788 Hours, Minutes \$1313.00

ES 789 Minutes, Seconds. \$1313.00

ES 790 Microprocessor-Based Programmable Timer is a 1,000 event, 32 channel, microprocessor-based programmable clock. Events occur as reed relay contact closures (single pole, normally open). These closures may be all momentary, all latching, or 16 of each, at the user's option. A simple modification allows the use of 16 double pole relays, instead of 32 single pole relays.

1,000 time events can be programmed into the memory and they can be entered randomly, as opposed to chronologically.

An internal crystal with battery and battery charger is provided for uninterrupted operation.

The size of the unit is 5 1/4" H x 19" W x 10" D.

ES 790 Totally enclosed in rackmounting chassis w/screen top. . \$2300.00

ES 790/1 790 w/1 Sec/Mo accuracy, Master Clock Option \$2888.00

ES 790/3 790 w/3 Sec/Mo accuracy, Master Clock Option \$2730.00

750E Series Thumbwheel Programmer Comparators are recommended when programming up to eight time events. Thumbwheel switches are set to compare the time information from an ESE Clock or Timer.

One set of thumbwheels is required for each event. The standard 750 Series units are enclosed in 3 1/2" high relay rack panel and chassis.

ES 750E ES 112 and one 6 Digit Program \$364.00

ES 751E ES 124 and one 6 Digit Program. \$364.00

ES 753E ES 112 and two 4 Digit Programs (Hrs. & Min.) \$435.00

ES 754E ES 124 and two 4 Digit Programs (Hrs. & Min.) \$435.00

ES 756E ES 510 and one 4 Digit Program (Min. & Sec.) \$358.00

ES 758E ES 510 and two 4 Digit Programs (Min. & Sec.) \$452.00

ES 760E ATS Clock is a six digit, 24 hour, programmable clock designed specifically for Automatic Transmission Systems.

On the front panel are a six digit display of time, in hours, minutes and seconds, and two sets of four thumbwheels. These thumbwheels are used to program mode switching times in hours and minutes. 3 1/2" H x 19" W x 8" D.

Under normal operating conditions, the ES 760E will operate from the 60Hz power line. If, for any reason, normal power is interrupted, ES 760E will automatically switch to its internal battery and crystal time base. A built-in battery charger keeps the battery ready for such emergencies. Battery operation can continue for up to eight hours.

ES 760E \$717.00

ESE**Generators/Distribution Amplifiers/
Interfaces/Audio Level Indicators****ES 206A Video Time and Date Generator**

Designed to allow the addition of Time and Date information to a video signal. Two rear-mounted video jacks permit "looping" the video information through the 206A to add the data.

ES 206A \$550.00

ES 207/ES 208 Video Distribution Amplifiers

Controls are available through the top plate with a miniature screwdriver for video gain, DC level, and HF equalization. The amplifiers are clamped, providing a very stable output signal to the output terminals. A single pair of BNC connectors are wired for a loop-through input, although provision is made on the circuit board for a terminating resistor if desired. If operated with internal input termination, the terminal used as a loop-through input can be internally wired as a fifth output, in the case of ES-207.

These amplifiers can be used for distribution and for signal conditioning, equalizing up to 1000' of coaxial cable. A very wide range of chroma level control can be obtained with the DA. Output video is expected to be set for OVDC on the blanking or porch level, with video extending positive and sync negative. Nominal input and output signal level is 1V p-p. Typical gain control range is from 1/2V to 1 1/2V p-p.

ES 207 \$175.00
ES 208 300.00

ES 209 Video/Stereo Distribution Amplifier

A 1 x 12 video distribution amplifier combined with a dual audio distribution amplifier. It was designed primarily to meet the needs of tape duplicating systems, especially the VHS and Beta Hi-Fi formats. It is housed in a rackmounted cabinet 1 3/4" H. Two BNC input connectors provide a loop-through video input signal. RCA jacks provide looped inputs for audio. Twelve outputs are provided per channel. An option is available on the circuit board to internally terminate the video input at 75 ohms, if desired. All twelve outputs will deliver identical signals, and unused outputs need not be terminated.

It may be used for signal distribution and for signal conditioning. It will equalize and compensate gain for up to 1000' of RG-59 cable (and up to 3000' of the higher grade video cables).

The audio portion of the DA package is designed to create twelve exact copies of the stereo input drive signals.

The audio DA is transformerless, and unbalanced. The input is hi-impedance, while the outputs are medium, and will drive either 600 ohm or hi-impedance inputs.

ES 209 \$495.00

ES 461 SMPTE Time Code Generator

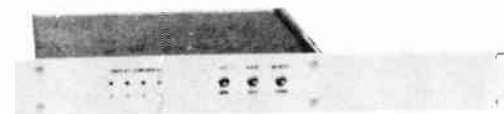
A pre-settable, eight-digit SMPTE/Time Code Generator, capable of Drop Frame or Non-Drop Frame operation, user bits and jam sync.

ES 261 \$795.00

ES 86U Edit Control Interface "The Enhancer"

The ES 86U Edit Control Interface has been designed for "insertion" into existing VHS and 3/4" video tape editing systems. The additional features provided by ES 86U are: • Black Generator • Automatic or Manual Video Fade • External Source Editing • Stereo Mixing

ES 86U \$1250.00

**ES 206A****ES 209****ES 212 Hybrid Telephone Interface "Phone Patch"**

ES 212 uses a "heavy iron" transformer hybrid network, 600 ohm balanced line level inputs and outputs, switched metering, with full level and dynamics control.

ES 212 \$995.00

ES 214 Dynamic Audio Level Indicator

A highly accurate audio level indicator, which is designed to simulate the action of a conventional VU meter but with superior dynamic characteristics. The LED meter is five to one hundred times faster in responding to complex waveforms than mechanical meters without sacrificing the familiar meter "movement."

The ES 212 has 14 LED Lamps in 3 colors. Scale +4, +3, +2, +1dB-Red. 0dB-yellow. -1, -2, -3, -5, -7, -10, -15, -20, -25dB-Green, with an input impedance of 2200 ohms at maximum sensitivity. 6800 ohms at +8dBm "House Level," 10,000 ohms at minimum sensitivity. The input circuit is transformer isolated, balanced bridging.

ES 214 \$131.00

ES 216 Dynamic Audio Level Indicator

The unit displays audio levels in ten discrete steps using ten LED indicators. Levels of -20, -10, -7, -5, -3, -1, 0, +1, +2 and +3dB are displayed. Levels below 0dB are displayed using green LED's, 0dB is yellow and levels above 0dB are red. The ES 216 can be ordered in either the peak reading mode or in the VU response mode.

The ES 216 is designed to be console or panel mounted and can fit in the same space as many commonly used mechanical VU meters. It consists of a printed circuit board assembly mounted to a black plastic front bezel.

The audio input is balanced and presents an impedance of approximately 6000 ohms.

The input sensitivity is adjustable via a potentiometer located at the rear of the printed circuit board. Maximum sensitivity provides a 0dB reading with an input of -14dB ("Peak" mode) or -10dB ("VU" mode)

ES 216 \$63.00

EVENTIDE, INC.

Audio Processing Equipment



BD980

BD980 Broadcast Delay Line

• Stereo operation with two independent audio channels and ten seconds of delay are standard • Advanced de-glitched catch-up system for cleaner, faster delay rebuild • Superb audio quality with 16-bit linear PCM design and 50kHz sampling rate • Frequency response extends to 20kHz • Ramp to zero and wait and exit modes eliminate switching and monitoring hassles when entering and exiting delay • BD980 is also capable of stereo time compression without a variable speed tape deck • Manual delay mode for production effects • Large, easy-to-read alphanumeric front panel readout displays modes, timings and delay "safe" information • Remote control compatible with the BD955 delay • On-board self-test diagnostics

BD980 \$5495.00



BD955

BD955 Broadcast Digital Delay Line

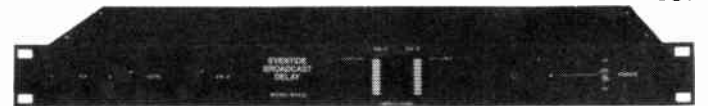
• Designed specifically for the broadcast industry • This RAM based digital delay line offers delay up to 6.4 sec • DUMP button cancels the objectionable program and, if desired, cuts off the caller • Auxiliary relay contacts may be used to control the telephone and/or a cartridge machine • "Catch up" feature allows the program to continue in real time, without the necessity for filling the delay period with a jingle or announcement • This feature does not introduce wow, and is virtually undetectable in operation • When not used as an editing delay, the delay line may be used as a production tool • Front panel switches allow setting of delay from 6.5ms to the unit's maximum delay • 15kHz 6.4 sec

BD955 Including variable delay dump and catch up features, 115V or 230V:

- 7.5Hz, 6.4 sec delay \$3350.00
- 15kHz, 3.2 sec delay 3350.00
- 15kHz, 6.4 sec delay 4300.00
- Stereo interconnect—plus cost of two units 150.00



931

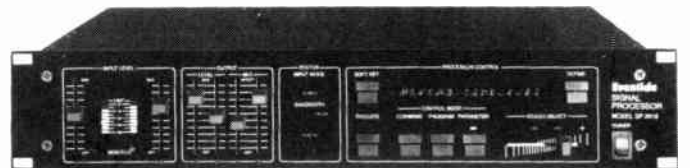


932

BD931/932 Broadcast Digital Delay Lines

• Features full 16kHz bandwidth and greater than 90dB dynamic range • Employs advanced circuitry and 64K RAM chips to deliver full bandwidth • Stereo stations stay in stereo during delay operation with BD932

- BD931** 16kHz, mono, 115 or 230V, 3.2 sec fixed delay \$1795.00
- BD931** 6.4 sec fixed delay 2295.00
- BD932** 16kHz, stereo, 115 or 230V, 3.2 sec fixed delay 2595.00
- BD932** 6.4 sec fixed delay 4495.00



SP2016

SP2016 Effects Processor/Reverb

• Most versatile digital reverberator and audio effects processor • Modular design and software updates accommodate advances in the art of digital signal processing • 24 standard effects programs include stereo room, plate, inverse and special effect reverbs, flanging, chorus, loop edit sampling, comb filter effects, and many more • Optional additional software includes mono to stereo synthesizer, digital vocoder, autopanner • Still more software programs are available from third-party suppliers • Up to 65 different sets of program and parameter presets can be stored and recalled by the user • Full stereo operation • Frequency response is 20kHz to 16kHz for most programs • Extensive self-test capability • Balanced XLR stereo inputs and outputs • Optional MIDI interface and handheld remote controls are available • Optional signal processor user development (SPUD) system allows users to create their own programs for custom and specific applications, and to create all-new effects (SPUD system requires IBM PC or Hewlett-Packard desktop computer and user knowledge of audio signal processing techniques)

- SP2016** \$6895.00
- MIDI Interface** 495.00
- Mini remote** 195.00
- Automatic Panner program ROM** 195.00
- Vocoder program ROM** 495.00
- Stereo synthesis program ROM** 275.00
- PC 25 ROM expander kit (retrofit—standard on current units)** 495.00

EVENTIDE, INC.

Audio Processing Equipment



2830

2830 Omnipressor® Dynamic Modifier

- Combines the characteristics of a compressor, expander, noise gate and a limiter • Dynamic reversal feature makes high level input signals lower than corresponding low level inputs • Provides wide range of controls • Useful in all program-controlled gain changes • Continuously variable expansion/compression control goes from an expansion range of 10 to 1 to a compression range of -10: 1 • Attenuation and gain limit controls adjust the gain control range from 60dB to as little as ± 1 dB • Bass cut switch • Limits low frequency response in the level detector • Metering system employs a logarithmic amplifier to generate information on input, output and gain

2830 Omnipressor \$700.00

2830 Balanced in/out transformer coupling (must be ordered with unit)..... 40.00



H949

H949 Harmonizer® Digital Special Effects

- Combination digital delay line, pitch changer, and all-around special effects unit • When used with a tape recorder, is capable of shortening or lengthening a piece of program material to fit a given time slot while maintaining normal pitch • Pitch change feature offers one octave up and two octaves down continuously variable with a four-digit readout for precise ratio • In the delay mode, there are two outputs, each with up to 400ms • Long delay permits simulated reverb • Time reversal and other distinctive effects are available on this versatile unit • The frequency response at any delay (unity pitch ratio) is 20Hz to 15kHz ± 1 dB

H949 Includes LU618 De-Glitch Card \$3500.00



H969

H969 Pro Pitch Harmonizer®

- Delivers unprecedented pitch change quality • Incorporated 16 bit linear PCM circuitry • Bank of twelve "instant" pitch change presets • Two independent four digit readouts display selected pitch ratio and delay times simultaneously • Dual concentric coarse and fine adjust control pots make it a snap to set exactly the pitch ratio or delay time you want • Flanging offers many creative options • Live performance is made easy with the inclusion of front panel preamplified input and effect output phone jacks • Standard rear panel XLR-type studio level jacks

H969 \$4500.00



H3000

H3000 Ultra-Harmonizer

- Program key for loading, saving, removing, up loading and downloading presets • Function key for MIDI sequencing and parameter control, also adjusts LCD display contrast • Parameter key for control of user-adjustable parameters for each program • Control and data entry group to perform data entry functions in three ways: "knob", keypad and up/down buttons • 2 line x 40 character LCD readout display • Four control "softkeys" serve a variety of functions determined by the software programming • Level indicators show input levels of each channel on a pair of tri-color 10 segment LED bars • Level key is used to change input or output levels for either or both channels • Complete, receive/transmit MIDI control of all parameters in real time • Sequence front panel controls with virtually any sequencer (not just with system exclusives) • Sync delays to MIDI clock (they stay right in time) • Mix effects levels and input/output levels via MIDI—gives you an automated mix • Control effects through MIDI modulation functions—change parameters with pitch wheel, mod wheel, note ranges, etc.



H910 Harmonizer®

- Pitch ratio readout • Second output for delay only • 230V • 50/60Hz

H910 \$1500.00

H910 Balanced in/out transformer coupling 100.00

“They Work Alone Or Together”**610 System Controller**

All communications within the EV-BLOC system are supervised by a system controller. The function of the system controller is to establish the location and type of each module installed in the system, and to schedule the use of the EV-COM bus by other modules. The 610 System Controller module is specifically designed to perform this task and provide a gateway to the EV-BLOC system. The standard RS-232C serial port allows an external computer or computer based editor to control and monitor the status of any of the 610 Series modules installed in the system. Fitting the 422 option changes the serial port to a SMPTE/EBU compatible RS-422 configuration.

611 Time Code Reader/Translator

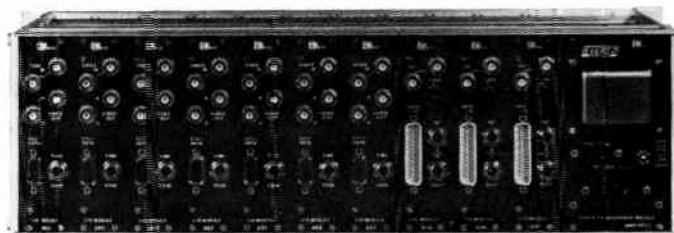
- VITC/LTC Reader. Reads longitudinal time code from 1/30th play speed to 70 times providing time and user bits out as multiplexed parallel BCD (with BCD option fitted) or as serial ASCII (with 232 option fitted). Custom interfaces are available for other OEM applications
- LTC Jam-Sync Generator. Regenerates and re-synchronizes LTC code to eliminate edit aborts due to mis-phased or unreadable time code
- VITC/LTC to LTC Translator. Permits LTC only editing equipment to read both codes providing frame accuracy at all tape speeds

612 Time Code Generator

- VITC/LTC Generator. 4/8 field color framed, free running or jam-synced to data from a 611 Reader module. When jam-synced to the record VTR reader in VITC only editing, continually ascending code is inserted on the edit master as edits are assembled. VITC coded workprints can be prepared for frame accurate edit decisions without a character burn-in
- Multi-Source VITC Keyer. Any number of isolated video sources may be encoded with identical VITC using multiple 612 Generator modules

613 Video Character Generator

- Off-Line Editing. Inserts time/user bit character data from another 610 series module into program video for burning time code into workprints. Frame accurate edit decisions can also be made directly from VITC without the need of a window dub
- Video Typewriter. Used in conjunction with a computer or keyboard, the 613 module is a low cost alphanumeric character generator for preparing tape indexes, slate boards, etc.



610



611



612



613

614 Transport Control Module

- Issues commands, receives tallies and provides capstan control for the slave transport
- Handles wide variations in machine characteristics
- Programmable interface contains novel hardware and advanced software algorithms that are optimized to take advantage of each transport's unique functions
- Ability to learn individual transport characteristics, which can vary with different reel sizes and the relative amount of tape on each reel
- Continually measures and interpolates with previous data to build trajectory templates in memory. Thus, locating and synchronizing response times are optimized, resulting in significant savings in time and gentle transport handling
- Contains a high speed LTC reader which recovers time code from the slave transport, and makes it available to the 610 system controller via the EV-COM bus

Each module requires a companion I/O module as outlined below:

- For 610 — 605 Serial I/O Module
- For 611 — 604 Parallel I/O Module
- 605 Serial I/O Module when 232 option fitted
- For 612 — 603 Parallel I/O Module
- & 613 — 605 Serial I/O Module when 232 option fitted
- For 614 — 6141 Serial I/O Module

EVERTZ MICROSYSTEMS LTD.*Terminal Equipment***Teach Your Editor VITC****620 VITC/VITS Deleter****621 VITC Generator/Translator****622 VITC Reader/Translator**

Powerful VITC/LTC translator modules. Source identification and remote control via video signals.

The 620 series modules are basically stand-alone units, i.e., no provisions are made for direct data transfer between modules, except via external code or video connections. For more complex systems 610 series modules should be used. Their "EV-COM" communications bus permits direct command/data interchange with other modules within a frame.

620 VITC/VITS Deleter

This is a general purpose vertical interval signal deleter. A high quality programmable video keyer substitutes black level for any type of code or test signal present on lines 10 to 21 (6 to 22 for PAL) of the vertical blanking interval. A group of DIP switches is used to select any line or group of lines. Color burst is not affected.

EV-BLOC Rack Frame Components**Backplane Assembly #601**

The Backplane circuit board has been developed specifically to meet our design goal of maximum flexibility on the system level with reliability and performance on the module level. Circuit conductors for data, video and audio signal transfers, from each circuit block to its associated I/O module, have been carefully laid out to eliminate any chance of cross-talk between program video and high frequency microprocessor signals.

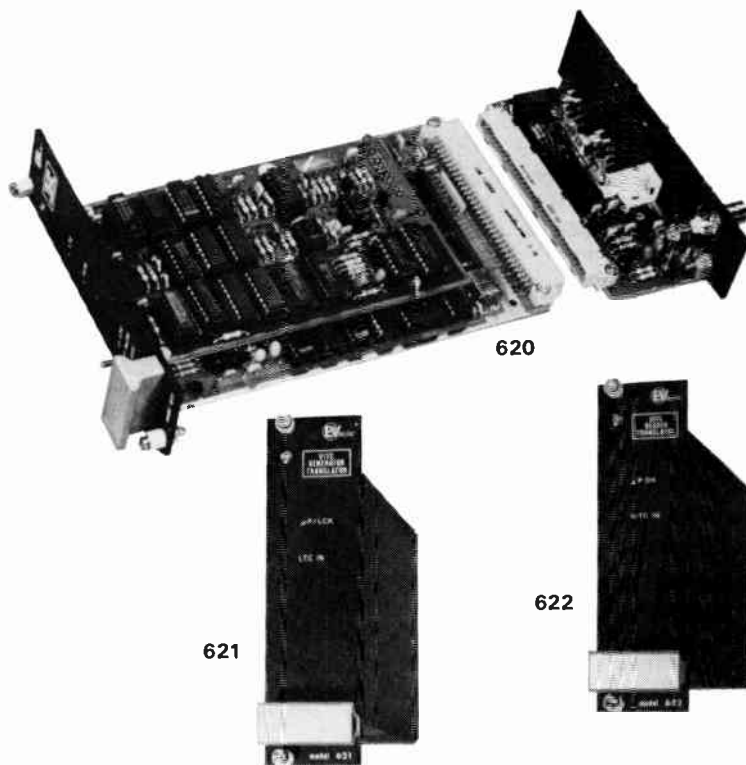
The assembly comes complete with 21 64-pin euro-card connectors (DIN 41612), one for the power supply regulator module, and 10 pairs for the EV-BLOC modules and their companion I/O modules.

621 VITC Generator

- VITC generator: 4/8 field color framed, resettable to 00:00:00:00 or jam-synced to longitudinal time code (LTC option) with error by-pass (a terrific LTC to VITC translator; teach your editor VITC)
- Multi-source VITC keyer: any number of 621's can be synchronized to a common time code generator to accommodate isolated video sources. User bits may be transferred from the common generator or preset locally, using easily accessible DIP switches. This provides an added benefit.
- Source identification: the user bits in each module can be encoded to uniquely identify its video source. The time code bits can be set to zero, for camera, etc., or jam-synced to time-coded sources such as VTR's.
- Remote machine control: six control inputs can be utilized to control VTR's, etc. via the program video path

622 VITC Reader

- VITC reader. Reads vertical interval time code from about 20 times play speed down to still frame, providing time and user data out as LTC and multiplexed parallel BCD. An optional video inserter (VCG) keys the data into the picture
- VITC to LTC translator for use with LTC only editing equipment or readers
- Source ID decoder. User bits encoded with a special code from an EV-BLOC 621 module or Model 4000 are displayed as unique source identification, e.g., CAM 3, TC 1, VTR 5, etc., using the optional VCG



- Remote machine control. Six grounding output switches respond to specific user bit codes from a 621 encoder to remotely control a variety of devices via the program video path or off tape. Just think of the application potential

623 Time Code Reader

- Microcontroller (MCU) based module contains a full speed (1/30 to 70 times play) longitudinal time code (LTC) reader and LTC translator/phase restorer • VITC sub-module can read at speeds from still frame to in excess of 40 times play speed, and contains a full wind speed (still to over 45 times play speed) VITC reader, designed for use with non-time base corrected video signals • Front panel mode switch allows the LTC/VITC reader pair to operate in either an LTC or VITC only mode or in an automatic switchover mode • MCU firmware automatically selects valid code from either source and provides accurate time code reading from still frame to 70 times play speed

Power Supply Regulator #602**Power Transformer #6025**

The power supply consists of two separate assemblies.

The plug-in regulator module provides regulated +5V for microprocessor and logic circuits, and $\pm 8V$ for signal processing elements.

The power transformer module contains all line/mains voltage circuits enclosed in a heavy duty stainless steel shielding case. Appropriate RFI protection is provided by LC filters.

The power supply provides enough DC current to handle a full complement of 10 EV-BLOC modules. Except for special custom applications, the two units are generally supplied together.

Each EV-BLOC module in this series requires an I/O module as outlined below:

For 621 & 622—I/O module 603

For 623—I/O module 605

EVERTZ MICROSYSTEMS LTD.

*Character Generator/
Clocks/Timers*

VCG-1260 Character Generator

The VCG-1260, designed primarily to display time information in video, has limited text and logo capabilities too. It decodes DQS-B6 or SMPTE/EBU time code from your master clock system and displays the time or user bit information. In addition, a built-in elapsed time counter with 0.01 sec resolution and a remote START/STOP control may be used for timing sporting events, etc.

The VCG-1260 may be used as a low cost alphanumeric generator using the optional serial ASCII port. Limited custom logo capabilities are optionally available.

Eight front panel keys allow user selection of 4 character sizes; horizontal and vertical positioning, inverse video, input code, and display formats to suit individual applications. The configuration parameters are stored in non-volatile memory, eliminating the need to reprogram the setup after a power failure.

A broadcast quality keyer and high resolution characters combine to give a high quality presentation for on-air use. A separate preview output is provided for setup to preserve the integrity of the program output on air.

VCG-1260 Video character generator including video keyer to convert master clock and SMPTE inputs to video output. Sports timer function with remote control stop/start facility — internal clock system, H-V positioning, inverse, video-preview output. Optional serial ASCII input for alphanumeric display information and tape leader generator function.

VCG-1260 \$2480.00

PT-26 Production Timer

The PT-26 Production Timer is a very versatile and easy to use production tool. Two independent timers with separate displays allow up-counting, down counting with automated count reverse at 00:00, totalizing program segments, real time use in 24 hour format, etc. Timer A may be used as a 24 hour real time clock and gives a DQS-B6 serial code output to drive many Evertz accessories such as remote displays, video character generators, serial-to-parallel decoders, etc. A programmable transistor switch output is available on each timer and will operate in either the up or down mode. A front panel slide switch permits the two timers to operate with seconds in sync.

Data entry follows calculator format for ease of operation. Separate function keys for each timer control Up/Down, Set/Reset and Start/Stop. Each timer is provided with an external input for remote control using a single pushbutton for stop, start or reset.

A quartz crystal timebase provides an accuracy of approximately 1 sec per week. Power is supplied from a separate 9-14V, 300mA DC line adaptor. The unit is packaged in an attractive, lightweight enclosure.

PT-26 Deluxe production timer features two event count up, count down, real time and two displays, time calculator function **\$595.00**

Remote Time Displays

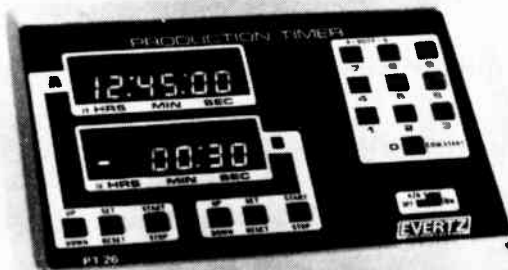
A variety of remote time displays is available, all operating off our well established DQS-B6 serial time code. The code can be distributed over large areas using a twisted or shielded pair cable. In addition, a simulated analog display, 1275A, also reads SMPTE/EBU edit code.

120/125 General Purpose Data Display

The 120 can be used for display of time code, real time, programmable user messages, machine status, and source identification. The wide viewing angle and large characters make the display legible to over 100'. Four brightness levels and up to three fonts (dependent on display format) can be selected to best suit your individual application and ambient lighting.



VCG-1260



PT-26



1275A



120

The 120 reads SMPTE or EBU time code at play speed, forward and reverse (full speed range is available on Model 125). Display "freeze" and user bit data are enabled via the front panel push buttons or remote control inputs.

120 \$595.00

120e Enhanced version with RS-232/422 serial I/O and column/row dot addressing **.695.00**

125 Full speed range (1/30th to 70 x play) time code reader only **.995.00**

1275A Time Display

1275A has 60 LEDs mounted in a circular arrangement, simulating an analog second hand. In addition, the hours, minutes and seconds are displayed in digital format. The unit reads DQS-B6 or SMPTE/EBU time code or may be used as a totally self contained 12 or 24 hour clock. A dip switch allows user selection of 8 different operating and display modes. Beautifully finished with wood trim, ideally suited for studio, lobby, board room, etc.

1275A \$595.00

EVERTZ MICROSYSTEMS LTD.*Chaser/Emulator***Chaser™ 7000 Series Chase Synchronizer**

- Time code based chase synchronizer
- Continually reads edit code from two tape machines, a master and a slave
- Maintains a pre-determined time relationship between the two by directly controlling the slave's transport functions and capstan motor
- Full speed time code readers allow the slave to chase the master in wind speeds, reducing cueing and lock up times
- Capable of a high degree of synchronization accuracy, so that overall system stability is only limited by the slave transport mechanics

Three different synchronization modes give Chaser tremendous flexibility. In "frame-lock" mode, Chaser maintains absolute alignment of the time code numbers, including offset, and subframe phasing. The "phase-lock" mode maintains only the relative phase between two tapes without regard for absolute time code numbers. A third mode, "auto-lock" is a combination of both. After initial synchronization using time code numbers, "phase-lock" continues using only the frequency component of the code.

Two different, though functionally similar, control panels are available: the integral front panel with display/keypad or a remote control unit with expanded capabilities. The integral control panel contains an alphanumeric LED display and a number of clearly labelled pushbuttons logically arranged in a display group, a data entry group and a function group.

The remote control unit is connected to Chaser's SMPTE/EBU RS-422 serial remote control port, allowing it to be conveniently located at the edit console, while the Chaser electronics are located near to the audio transport. In addition to the functions on the integral front panel, the remote control unit constantly displays the slave transport's status. This optional remote control unit replaces the integral front panel display/keypad.

7000 DSP Integral Front Panel/Local Control \$3950.00
7000 RCT Remote Control Version 4950.00

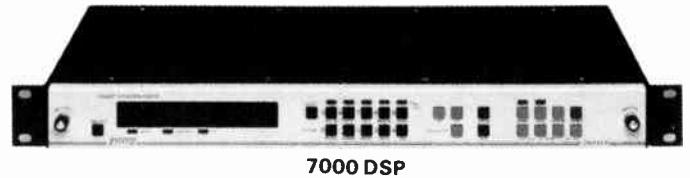
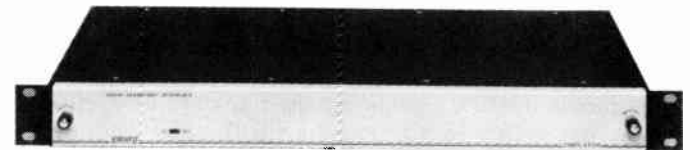
7100 Emulator Audio Transport Interface

- Audio transport interface that integrates audio into the video edit suite
- Performs audio insert edits without tying up a VTR to synchronize the audio tape machine
- Simplify the list management process by integrating the ATR edit points into the edit decision list
- Uses the same transport interface and control electronics as Chaser
- Receives commands from the edit controller, in the specified RS-422 serial VTR protocol format
- Controls all the cueing, pre-roll synchronization, record in/out, and other functions necessary in an integrated editing environment

To make use of Emulator, all you require is an edit controller that uses the SMPTE/EBU serial remote control protocol for controlling video tape machines. Emulator interfaces are available for several VTR protocols (BVU, BVH, VPR, etc.). The edit controller must be capable of sync rolling the source VTRs. An extra channel of control is required to communicate with Emulator.

If multiple record machine capability is available on the edit controller, an additional Emulator may be added to control a master record ATR sync rolled with the record VTR. All the ATR functions, edit points, etc. are controlled from the main edit controller keyboard. Separate synchronizer control panels are not required.

7100 \$3950.00

**7000 DSP****7100****e²****e² Emulator Transport Interface**

- Provides an intelligent serial interface between VHS machines and video tape editors or machine control computers
- Basic unit uses control track
- Optional LTC reader (reads down to 1/10th play)
- Optional VITC reader accurately decodes multi-generation time code even off low cost VHS machines, leaving full audio track availability (reads down to still frame)
- It will cue-up, pre-roll, synchronize, shuttle, jog frame by frame, with 100% position accuracy
- Controls most professional/industrial VHS and S-VHS machines
- Compatible with your existing edit controller (CMX, GVG, Sony, Ampex, Convergence, Calaway, Paltex, etc.)
- Compact size, fits in the palm of your hand
- Built-in diagnostics
- Uses 1/2" VCRs for off-line editing or go on-line with S-VHS
- Capable of "fast" frame accurate editing of ENG footage shot on S-VHS
- Precise picture accurate edit decisions with the ability to "mark" edit points

The e² is an intelligent transport interface that graduates your VHS or S-VHS machine to the professional editing environment. e² communicates directly with your edit controller or computer and provides complete transport control at all speeds. The VITC or LTC reader options permit frame accurate editing, auto-location, and more.

e² control track version \$1395.00
e² with LTC 1795.00
e² with VITZ (no LTC) 1795.00

EVERTZ MICROSYSTEMS LTD.

Synchronizer/Time Code Equipment

7600/7600-MST

EV-BLOC Multi-machine Synchronizer

- Aligns or synchronizes a tape on a transport under control of the 7600 (the slave) with a reference signal from another machine (the master) • Slaves an ATR to a VTR for the integration of audio editing into the video editing suite • Synchronizes multi-track ATR's to video during mixdowns of audio for video • Synchronizes an ATR to a VTR for audio lay-backs • Synchronizes multiple ATR's to increase the number of available audio tracks • Controlling standard slave transport functions such as fast forward, rewind, and auto cueing of the transport • Standard 19" x 3 rack units high rackframe c/w power supply, transformer, and backplane, houses up to 10 modules • 610 system controller/time code generator module • 611 LTC reader for the master transport (reads from 1/30th to 70X play speed) • 614 transport control module for the slave (includes the cable to slave) • Remote control unit

7600 Multi-machine chaser with remote and one slave **Starting at \$5495.00**

ECM-4010 Edit Code Master

- Designed to take full advantage of the multitude of application possibilities for vertical interval time code • Combination generator and high speed reader for both, LTC and VITC • High resolution character inserter can be used to burn in a window from either the generator or reader data • Powerful microprocessor software and proprietary reader and generator circuitry combine to offer a time code system that will outperform any other • Modular construction using euro-card style EV-BLOC modules in a one rack unit high frame • High resolution character generator/keyer • Time and user bits presettable from front panel • Parallel and serial remote control • RS-232/422 serial port to interface to external computers • Alphanumeric user bit capability • Wide speed range in both LTC and VITC readers • Reads last valid code from either VITC or LTC in auto mode or manual priority selection • Several Jam-Sync modes with and without user bit transfer • Adjustable LTC output level to + 12dBm • Keypad lock-out prevents unauthorized tampering

ECM-4010 **\$4995.00**

3700D Edit Code Master

- Longitudinal time code generator and full speed reader (over 2000:1 speed ratio) • Video character generator with high resolution characters and alphanumeric user bit decoding is standard • Separate generator and reader displays are particularly useful in Jam-Sync modes and when operating reader and generator independently • High flexible Jam-Sync modes allow transfer of reader time and user bits into the generator in a variety of configurations • Full alphanumeric user bit functions can be used to record tape index, captions, source identification or other data along with the time code • RS-232C serial port permits interfacing to remote control panels, computers, editors, etc. • Multiplexed parallel BCD output of reader time and user bits • An aural alarm signals genlock problems. This can be disabled if, for example, the generator is locked to a VTR rather than house Sync or PGM video

3700D **\$3650.00**



ECM-4010



3700D



4900

3600D Edit Code Generator/Reader

- SMPTE/EBU edit code generator, a full speed reader and a video character inserter in a slim one rack unit package • True dual standard, NTSC and PAL. Generates time code in accordance with SMPTE RS-170 or RS-170A, or EBU 4 or 8 field standards (4 switch selectable modes), locked to the PGM video source • Front panel format switches, no need to disassemble whenever certain system parameters need to be changed, e.g., field 1 or 2 update of VCG, color framing, drop frame, etc. • Reads time code from 1/30X to 70X play speed • High resolution character generator in two character sizes, full screen positionable, keys time and user bits into the picture • Momentary and continuous Jam-Sync modes. In Cont Jam, good code is automatically substituted when synchronizing to poorly recorded or disrupted code

3600D **\$3150.00**

4900 Edit Code Reader/VCG/Translator

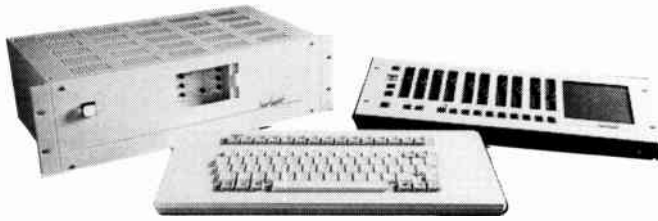
- Capable of hesitation-free time code display from 70X down to 1/30X play speed • VITC option all the way down to still frame • Full speed range LTC reader • Optional VITC decoder module • Easily accessible formatting DIP switches • High resolution character inserter; 2 sizes • VITC source ID decoder • Byte-wide parallel data output for easy editor interface • Play speed LTC translator output incorporating a soft-lock feature provides continuous time code at all reading speeds from still frame to maximum wind • LTC code phase corrector/regenerator for dubbing

4900 **\$1995.00**

49V VITC Reader Module for 4900 **300.00**

FAIRLIGHT INSTRUMENTS, INC.

Digital Effects Processors



CVI Plus

Computer Video Instrument CVI Plus

• 2MHz 6809 processor • Icon based menus • Memory module as standard with 7 fonts, 108 brush shapes and 108 textures, up to 100 titles stored in its "library" and large sequence memory • Full screen frame store • Alphanumeric keyboard as standard • Digital and analog circuit boards • 2 fields or 1 frame of memory • Diagonal wipes, live picture inversions and reverses • Stencil facility • Push-on-off fields

The CVI Plus is ideally suited to the economics and capabilities of $\frac{3}{4}$ " and $\frac{1}{2}$ " production facilities. It's also a unique tool for music video, storyboarding, video artistry, live performance, and educational and commercial applications—even some forms of video animation.

The CVI Plus can take any video image from a live camera, tape, film, still or slide and enhance or manipulate the image in real time through effects as well as by on-screen painting and drawing.

Still images, presets and sequences can be stored digitally onto video tape and recalled for later use.

The CVI Plus is a computer based "real time" digital effects processor with paint, A/B wipes, keyer, sequencer and titling facilities, available in both NTSC and PAL. The CVI Plus has a palette of 4096 colors, 108 brush shapes, and 108 textures. Since the CVI Plus is menu driven and the control panel has "slider" controls of such functions as: Zoom, Stretch, Horizontal and Vertical Pan, Hue, Saturation, Value and Color Depth control, it allows the user a "user friendly" atmosphere in which to create. Use any of the 100 factory presets or modify to your liking and store them for future use. There is an RS232 port for communications with other computers. Supplied with a 2 meter control panel cable.

CVI Plus 42291 \$9,950.00

Graphics Pad

A large drawing tablet with a 12 x 12 active area. Gives the user greater control in drawing and pixel placement. The menu area allows for complete control of menus. Comes standard with 4 button cursor, stylus and holder and cables.

Graphics Pad #32402 \$650.00

Stylus and Holder #32403 (for use with Graphics pad) 190.00

Keyboard Piggyback Cable #32277 (allows Alphanumeric Keyboard to be used in line with Graphics Pad) 60.00

CVI Link-Amiga

• Save and load presets • Save and load sequences • Save and load images • Save and load fonts • Upload presets from CVI • Mouse control • CVI menus resident in software • Active control panel on Amiga screen • All ROM presets accessible by name and number • 7,920 user (RAM) defined presets per diskette • Entire parameters of presets are printable • Create presets within Amiga • ASCII commands from Amiga alphanumeric keyboard

Software and interface cable package to allow the CVI and CVI Plus to communicate with the Amiga Computer. Software package allows controlling of the CVI/CVI Plus from the Amiga, by using the Amiga to display the Fairlight menus. Future software updates will include SMPTE lock, IFF to/from CVI format.

CVI Link—Amiga #32602 \$795.00

CVI Link—IBM #32603 795.00

Memory Module REV 7

For use with the CVI. Adds additional onboard memory to allow for storage of: 36 user defined brushes and textures, adds 72 new brushes/textures, 100 pages of title memory, and 8 fonts (1 user definable). The sequencer memory has been increased to allow for 10 sequences totaling 9000 lines of data.

Memory Module REV 7 #32101 \$595.00

Note: Memory module is required for use on the CVI.

Video Producer

• Real-time video digitizing • Real-time pixelation • Real-time drawing over video • Real-time colorization to music • Strob- ing, audio strobing • 18 brushes and 18 textures • 7 font/5 size/12 variation titling feature • GPI input • Luminance or chroma keying • Available in NTSC or PAL • Optional alphanumeric keyboard • Real-time continuous pan and zoom control • Real-time aspect ratio control • Real-time colorization of video images • Real-time reversals and inversions • 4096 colors • 10 factory or user definable sequencer • 100 page title library (4000 characters) • 100 preset effects • Built-in digitizing pad • RGB outputs • Workstation design • 64K ROM memory, 24K system RAM, 454 Video RAM • 2MHz 6809 processor • Resolution: Analog: > 300 lines (composite in- composite out); Digital: 235 pixels per line (field store)

The Video Producer is not just a video effects processor and not just a paint box. It combines both with unique control capabilities. It is ideally suited to the economics and capabilities of three-quarter inch and half inch production and post production facilities. The Video Producer can take any video image from a live camera, tape, laser disc, or tuner and enhance or manipulate the image in real time through effects as well as by on-screen painting and drawing.

Video Producer #52292 \$4,990.00

Alphanumeric Keyboard #32300 (for use with CVI and Video Producer) 595.00

FAROUDJA LABORATORIES, INC.

Decoder/Transcoder/Flesh Tone Corrector

CFD-N NTSC Decoder with Chroma Enhancer

The CFD-N is a high quality NTSC to RGB comb filter decoder for use in critical applications where high resolution and absence of artifacts are required. Among these applications are large screen projection, precision color monitoring, tape-to-film transfer, computer generated information display, color keying and standard conversion.

The CFD-N uses an active comb filtering method which leads to a much more effective suppression of color subcarrier dot crawl problem present with standard comb filter designs. In addition, the resultant image has no visible loss of resolution. The luminance bandwidth extends to 10MHz, making the CFD-N the closest thing to true RGB possible. This comb filter approach results also into an inherent improvement in signal-to-noise ratio.

Features of the CFD-N include also, a luminance enhancer to improve narrow band input signals, and chroma enhancement circuitry which eliminates ringing, chroma/luminance delay errors, and apparent loss of chroma bandwidth often associated with NTSC signals.

With a standard NTSC input signal, the CFD-N decoder provides on the back panel: Separate RGB signals, combed chroma and luminance, R-Y, B-Y, G-Y, and sync outputs. All sources drivers are capable of handling three outputs.

The CFD-N is a moderately priced professional unit, housed in a rugged mount case only one module high.

Specifications

Inputs (75 ohms)

- Video: 1V p-p NTSC
- Subcarrier: 4V p-p 3.58MHz

Outputs (75 ohms)

- R, G, B: 1V p-p
- R-Y, B-Y, G-Y: 1V p-p
- Luminance: 1V p-p
- Chroma: 3.58MHz, 1V p-p
- Sync: 4V p-p

Performances, Luminance Channel

- Bandwidth: ± 1dB to 5MHz, -3dB at 8MHz
- 2T Sine-Square Pulse K Factor: < 1.5%
- Vertical Tilt: < 2%
- Signal-To-Noise Ratio: 60dB
- Subcarrier Rejection: 32dB

Performances, Chrominance Channel

- Demodulated Chroma Bandwidth: 1.5MHz
- Demodulation Quadrature: 90° ± 1°
- DP: < 1.5°
- DG: < 1.5%
- Chroma-Luminance Delay Error: < 25ns

- CFD-N\$6250.00
- CFD-1H 1H Delay Option375.00

CTC-N Transcoder

The CTC-N is a high quality bidirectional (RGB to components or components to RGB) transcoder. It contains a genlock sync generator with blanking processor and sync reinsertion.

A certain amount of color correction is provided through two black balance front panel controls.

The proc-amp controls provide for a ± 15 IRE set-up control, which allows for removal of set-up from the luminance signal if required. BNC and Betacam style 12-pin connectors are provided.

An internal color bar generator is available as an option.

Specifications

- Inputs:** Y/R-Y/B-Y, or R/G/B Looping BNC or 12-pin terminated
 - Y .7143V p-p non-composite or 1V p-p composite (100% white)
 - R-Y .7V p-p (75% saturation)
 - B-Y .7V p-p (75% saturation)
 - or
 - R .7V p-p non-composite or 1V p-p composite (100% white)
 - G .7V p-p non-composite or 1V p-p composite (100% white)
 - B .7V p-p non-composite or 1V p-p composite (100% white)
- Sync: 4V p-p or Blackburst: .3V p-p
- Outputs:** R/G/B or Y/R-Y/B-Y 2 BNC and 1 12-pin of each
 - R .7V p-p non-composite or 1V p-p composite (100% white)



CFD-N

- G .7V p-p non-composite or 1V p-p composite (100% white)
- B .7V p-p non-composite or 1V p-p composite (100% white)
- or
- Y .7143V p-p non-composite or 1V p-p composite (100% white)
- R-Y .7V p-p (75% saturation)
- B-Y .7V p-p (75% saturation)

Video Performance

- Bandwidth: ± .3dB to 8MHz
- T Pulse K Factor: < 1%
- Tilt: < 1%
- Signal-To-Noise Ratio: 60dB
- Matrix Accuracy: ± .1%
- Input to Output Accuracy: ± .2%
- Relative Delay: < 5ns
- Return Loss (Power On): > 50dB

Processing

- Functions: Blanking; Sync insertion; set-up adjustment; Y level adjustment; Output clamping

- CTC-N\$1800.00
- CTC-N With Color Bar Generator2200.00

FTC-N Flesh Tone Corrector

The FTC-N addresses itself to the problem of sensitivity of the NTSC system to phase errors, and to the resulting hue shifts which are particularly visible on skin colors. This device automatically reestablishes proper skin tone in a +/15° or +/30° window without affecting other colors, and therefore eliminates the major effects of chroma path distortion without introducing errors in other areas.

Front panel color balance adjustments as well as screwdriver adjustment of video level, chroma level and hue are provided.

Specifications

- 2T Sine Square Pulse K Factor: 1%
- Frequency Response: ± 0.5dB (0 to 4.2MHz)
- Differential Gain and Phase: < 1.5%, 1.5°
- Tilt: 1.5%
- Signal-to-Noise Ratio: > 65dB
- Weight: 7 lbs.
- Front Panel Controls**
 - Power On-Off: Automatically in "bypass" when power is off
 - Bypass/Operate: Hardwire relay control in bypass mode
 - Chroma Saturation: Screwdriver adjustment, ± 3dB range
 - Output Level: Screwdriver adjustment, ± 3dB range
- Flesh Tone Correction Controls**
 - Hue Reference: Screwdriver adjustment, controls the flesh tone hue reference by ± 30° from I axis
 - Flesh Tone On-Off: Two position switch
 - Flesh Tone Range Selector: Two position selector switch providing 15°, 30° correction window
- Color Balances:** Two independent potentiometer controls: R-Y and B-Y = ± 40 IRE units

- FTC-N\$4,750.00

FAROUDJA LABORATORIES, INC.

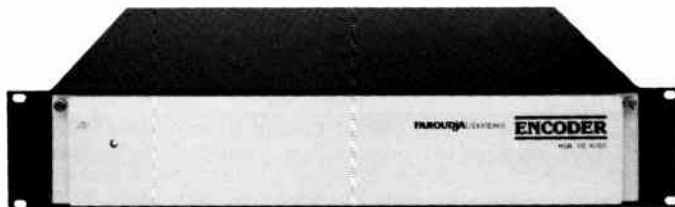
Encoder/Detail Processor

CTE-N NTSC Encoder

The CTE-N pre-filters luminance and chrominance informations prior to mixing, in order to avoid spectral overlap and artifacts. It is the only NTSC encoder which generates an NTSC signal free of cross-color and cross-luminance components. If the signal generated by the CTE-N is decoded through a CFD-N decoder, the result is virtually indistinguishable from R,G,B.

Even if the CTE-N signal is observed on a home receiver, the picture quality will be noticeably improved, as cross-color and cross-luminance artifacts are much lower.

In fact, the quality of Faroudja encoding and decoding processes is such that now NTSC Video Matting is possible, under a form which defies detection and which is indistinguishable from R,G,B matting. As a result, high quality matting from 1" tape sources is now practical. Furthermore, computer graphics can be manipulated or stored under NTSC form and displayed or transmitted without loss of quality.



CTE-N

Specifications

Inputs—Loopthrough (High Impedance) Level

R:	0.7V p-p non-composite
G:	0.7V p-p non-composite
B:	0.7V p-p non-composite
Composite Sync:	4V p-p non-composite
Composite Blanking:	4V p-p non-composite
Subcarrier:	2V p-p non-composite

Return Loss

R:	45dB at 45MHz
G:	45dB at 45MHz
B:	45dB at 45MHz
Composite Sync:	45dB at 45MHz
Composite Blanking:	45dB at 45MHz
Subcarrier:	45dB at 45MHz

Outputs (75 ohms)

NTSC1	1V p-p composite 40dB
NTSC2:	1V p-p Sw/composite/non-composite 40dB
Monochrome:	1V p-p composite 40dB

Performances, Luminance Channel

Bandwidth:	± 1dB to 5MHz, -6dB at 6MHz
2T Sine-Square Pulse K Factor:	< 1%
Tilt:	< 1%
Signal-To-Noise Ratio:	60dB
Propagation Delay:	1H + 1.6µs

Performances, Chrominance Channel

I Channel Bandwidth:	< 2dB at 1.3MHz > 20dB at 3.6MHz
I Channel Transient Response, 2T Pulse:	Preshoot under 2% Overshoot under 2%
Q Channel Bandwidth:*	< 2dB at 400kHz < 6dB at 500kHz
Q Channel Transient Response, 2 Pulse:	Preshoot under 2% Overshoot under 2%
Quadrature:	90°, ± 0.5°
Modulator Linearity:	Under 1% error
Modulator Carrier Unbalance:	< 0.5 IRE
White Balance:	< 1 IRE
Chroma to Luminance Delay:	< 25ns

*Q Bandwidth switchable to 1.3MHz

CTE-N\$7850.00

Encoder Options

CTE-Y Transcoder: Y, R-Y, B-Y Inputs	.....\$ 500.00
CTE-K Key Signal Delay Board	.....1200.00
CTE-X Extender Board	.....150.00
CTE-DP Detail Processor	.....1200.00

Vertical and Horizontal Detail Processor

The Vertical and Horizontal Detail Processor (VHP), which uses the patented boost principle, improves the visibility of small details whether they are present in the horizontal or vertical direction without enhancing large outlines. This approach presents numerous advantages over the use of a conventional enhancer: the picture is more natural and acquires a certain film-look, and does not show the plastic or "cartoon" effect typical of conventional enhancers or low-cost, limited bandwidth cameras and VTRs.

Available in the PAL/SECAM or NTSC standards, VHP is equipped with detail and video level threshold controls which make its operation virtually noise-free in noisy and dark picture areas. Horizontal and vertical boost levels are separately controllable.

Specifications

Input/Output	
Input Signal:	1V p-p composite video, 75 ohms
Output Signal:	1V p-p composite video, 75 ohms

Overall Performance (Detail Boost Off)

2T Sine Pulse K Factor:	2%
Chroma-Luminance Delay:	< 20ns
Frequency Response:	± 1dB until 4.2MHz
Differential Phase:	2.5%
Differential Gain:	2.5%
Signal-To-Noise Ratio:	60dB

Performance at Maximum Detail Boost Level

2T Sine Pulse	
K Factor:	2.5%

Detail Boost Performance for Maximum Detail Boost Increase In Transitional Level

Under 10 IRE Units:	+ 200%
20 IRE Units:	+ 100%
100 IRE Units:	5%

Connections: BNC Video In
BNC Video Out

VHP-N NTSC standard	.....\$2200.00
VHP-P PAL/SECAM standard	.....2200.00

FIDELIPAC CORP.

Cartridge Machines/Eraser/Splice Detector

**THE DYNAMAX CTR100 SERIES
CARTRIDGE MACHINES**

OPERATIONAL

- CARTSCAN System—automatic activation of Elevated Level, Aux, Mono* and Matrax* modes • All front panel switches illuminated • Fast forward • Vary Speed—motor speed continuously variable from 1.875 to 30 ips from external reference • Cue tone tracking within $\pm 30\%$ of preselected speed • Front panel diagnostics • On-board test oscillator

MECHANICAL

- Playback units—1/3 rack width • Record/Play units—1/2 rack width • 1/2" anodized tool plate deck • Brushless variable speed 3 phase DC servo motor with electrolyzed nonmagnetic stainless steel shaft and permanently lubricated ball bearings, strappable for 3.75, 7.5 and 15 ips • Micro-adjustable tape guides

ELECTRICAL

- Crystal controlled reference for all internal functions • 144kHz bias oscillator • Audio transformerless circuitry • All power supplies regulated • 110/220V 50-60Hz operation

*Stereo machines only

Model No.	Description	Dimensions		
		Height	Width	Depth
CTR111	A Size Mono Play	5.625"	6"	16"
		14.29cm	15.24cm	40.64cm
CTR112	A Size Stereo Play	5.625"	6"	16"
		14.29cm	15.24cm	40.64cm
CTR123	B Size Mono Record/Play	5.625"	8.75"	16"
		14.29cm	22.23cm	40.64cm
CTR124	B Size Stereo Record/Play	5.625"	8.75"	16"
		14.29cm	22.23cm	40.64cm



CTR100 SERIES

CTR111	.....	\$2190.00
CTR112	.....	2380.00
CTR123	.....	3680.00
CTR124	.....	4000.00
CTR112MX	With Matrax Head Package	2530.00
CTR124MX	With Matrax Head Package	4200.00

ACCESSORIES

RM-1	19" Rackmount Shelf	.....	\$100.00
FP-2	Filler Panel, 1/2 Rack Width	.....	20.00
FP-3	Filler Panel, 1/3 Rack Width	.....	20.00
FP-6	Filler Panel, 1/6 Rack Width	.....	20.00
HG-1	Head Height/Zenith Gauge	.....	40.00
PC-1	Play Cable, "D" to Female XLR	.....	25.00
RC-1	Record Cable, "D" to Male XLR	.....	25.00
TE-1	PC Board Test Extender	.....	35.00

OPTIONS

Options are field selectable, but will be provided on shipment at no charge if specified at time of order. 220V, 50Hz; IEC Equalization; 15 ips or 3.75 ips; RM-1 (with purchase of machines and cover exchange.)

**THE DYNAMAX CTR10 SERIES
CARTRIDGE MACHINES**

OPERATIONAL

- Versatile, switch-selectable audio/test metering • Bar graph LED VU meters • Fast forward • Selectable high speed recue • 150Hz control of audio muting • Audio switcher and mixer • Strappable repeat play disable • All front panel switches illuminated • Front panel 1kHz defeat w/dedicated indicator

MECHANICAL

- Compact size — 1/3 rack width • 1/2" anodized aluminum deck plate • Micro-adjustable tape guides • Removable head nest w/precision reference surfaces • Low voltage air damped solenoid • Premium-quality switches

ELECTRICAL

- Transformerless audio inputs/outputs • Fully regulated DC power supplies • Complete remote control • Active bias/signal mixing



CTR10 SERIES

CTR11	A Size Mono Play	.....	\$1545.00
CTR12	A Size Stereo Play	.....	1710.00
CTR13	A Size Mono Record/Play	.....	2495.00
CTR14	A Size Stereo Record/Play	.....	2725.00

OPTIONS

Options are field selectable, but will be provided on shipment at no charge if specified at time of order. 220V; IEC Equalization; RM-1 (with purchase of machines and cover exchange).
50Hz \$50.00

CTR30 SERIES RECORDER/REPRODUCERS

- Record electronics built-in as standard equipment on every unit • Possible to record one cartridge while simultaneously playing two others • Three CTR30s fit easily in a single 19" rack

CTR33	Three Deck Recorder/Reproducer, Mono	.....	\$4300.00
CTR34	Three Deck Recorder/Reproducer, Stereo	.....	4750.00

THE DYNAMAX ESD10 ERASER/SPLICE DETECTOR

- Provides clean erasures with machine precision—erasure depth of 75dB or more • Improved S/N ratio and on-air sound • Uses dual, high-quality heads • Desktop or rackmountable • Duplicates reel-to-reel recorder technology

ESD10	Eraser/Splicer Detector	\$1125.00
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ESD10

FIDELIPAC CORP.

Broadcast Cartridges

PROFESSIONAL NAB ENDLESS LOOP TAPE CARTRIDGES

Dynamax Cobalt

• Recommended for critical stereo applications requiring elevated recording levels and extended high frequency headroom.

Dynamax Cobalt (NAB Type AA—Charcoal Base, Smoke Gray Cover)

Load with Dynamax DYN-1000X Cobalt Tape

Number	Length In Feet	Time At 7 1/2 IPS	Price
1000-7	7	10 Second	
1000-13	13	20 second	
1000-25	25	40 second	
1000-44	44	70 second	\$5.40
1000-57	57	90 second	
1000-63	63	100 second	
1000-75	75	2 minute	
1000-94	94	2.5 minute	
1000-113	113	3 minute	
1000-132	132	3.5 minute	6.00
1000-150	150	4 minute	
1000-169	169	4.5 minute	
1000-188	188	5 minute	
1000-207	207	5.5 minute	
1000-225	225	6 minute	6.50
1000-244	244	6.5 minute	
1000-282	282	7.5 minute	
1000-300	300	8 minute	
1000-375	375	10 minute	7.00
1000-394	394	10.5 minute	

Master Cart

• Low friction tape path for minimum wow and flutter and longest tape life
 • Nylon composite front corner post for precise tape alignment and excellent stereo phase stability

300

• Low price and high performance • Quality controlled construction • Low friction pressure pads extend tape life • Tape braking on the reel • Brass reel post

350

• Adjustable corner post guidance • Curved pressure pads for extended tape life and greater tracking accuracy • Tape braking on the reel • Brass reel post • Adjusted to within 10° of 0° phase at 10kHz prior to shipment

600

• Brass reel post • Tape braking on the reel • Ideal for delay use, with optional third pressure pad and low friction treatment • Extended play • Maximum recommended length of load is 750' (20 minutes at 7.5 ips)

1200

• Pressure pads not required for long tape lengths • Rotating corner post • Brass reel post and brass corner post mounting • Record and play multiple selections • Extended play • Maximum recommended length of load is 1500' (40 minutes at 7.5 ips)

Master Cart (NAB Type AA—Red Base)

Loaded with Dynamax Series 400X Standard Tape

Number	Length in Ft.	Time At 7 1/2 ips	Price
380-E*	Empty (100/box, bulk)	—	\$3.90
380-C	Empty (10/box, 10 pack)	—	4.10
380-7	7	10 second	
380-13	13	20 second	
380-25	25	40 second	
380-44	44	70 second	4.85
380-57	57	90 second	
380-63	63	100 second	
380-75	75	2 minute	
380-94	94	2.5 minute	
380-113	113	3 minute	
380-132	132	3.5 minute	5.30
380-150	150	4 minute	
380-169	169	4.5 minute	
380-188	188	5 minute	
380-207	207	5.5 minute	
380-225	225	6 minute	5.75
380-244	244	6.5 minute	
380-282	282	7.5 minute	
380-300	300	8 minute	
380-375	375	10 minute	6.25
380-394	394	10.5 minute	



300

300 (NAB Type A) Load with Dynamax Series 400X Standard Tape

Number	Length in Ft.	Time at 7 1/2 ips	Price
140-E*	Empty (100/box, bulk)	—	\$2.80
140-C	Empty (100/box, 10 pack)	—	3.00
140-7	7	10 second	
140-13	13	20 second	
140-25	25	40 second	
140-44	44	70 second	3.85
140-57	57	90 second	
140-63	63	100 second	
140-75	75	2 minute	
140-94	94	2.5 minute	
140-113	113	3 minute	
140-132	132	3.5 minute	4.35
140-150	150	4 minute	
140-169	169	4.5 minute	
140-188	188	5 minute	
140-207	207	5.5 minute	
140-225	225	6 minute	4.80
140-244	244	6.5 minute	
140-282	282	7.5 minute	
140-300	300	8 minute	
140-375	375	10 minute	5.25
140-394	394	10.5 minute	

350 (NAB Type A) Loaded with Dynamax Series 400X Standard Tape

Number	Length in Ft.	Time at 7 1/2 ips	Price
350-E*	Empty (100/box, bulk)	—	\$3.50
350-C	Empty (10/box, 10 pack)	—	3.70
350-25	25	40 second	
350-44	44	70 second	
350-57	57	90 second	4.60
350-63	63	100 second	
350-94	94	2.5 minute	
350-113	113	3 minute	
350-132	132	3.5 minute	5.00
350-150	150	4 minute	
350-169	169	4.5 minute	
350-188	188	5 minute	
350-207	207	5.5 minute	
350-225	225	6 minute	5.45
350-244	244	6.5 minute	
350-282	282	7.5 minute	
350-300	300	8 minute	
350-375	375	10 minute	5.90
350-394	394	10.5 minute	

600 (NAB Type B)

Number	Description	Price
149-E*	Empty (40/box, bulk)	\$5.50
149-C	Empty (36/box, 2 pack)	5.65
149-XXX	Loaded	POR

1200 (NAB Type C)

150-E*	Empty (25/box, bulk)	\$7.85
150-EP*	Empty with pads (25/box, bulk)	8.25
150-C	Empty (24/box, 2 pack)	8.55
150-CP	Empty with pads (24/box, 2 pack)	9.00
150-XXX	Loaded	POR

* Must be ordered in multiples of the standard package.

FIDELIPAC CORP.

Cartridges/Labels and Tapes

Program Delay Cartridges

Program Delay Cartridges are a sure way to protect your listeners and your station from the airing of undesirable talk show information while retaining a "live" sound. Four long life program delay cartridges are available for use with cartridge tape machines equipped with delay head configurations. These delay cartridges, available in 8 and 10 second versions (at 7 1/2 ips) have precision tape lengths, curved pressure pads and specially lubricated reel hub. The 600 Delay Cartridge contains 3 pressure pads while the 300 contains 2 pressure pads.

Delay Cartridges

- 140-5DL** Model 300, 8 sec., curved pressure pads and special reel lubrication **\$7.35**
- 140-6DL** Model 300, 10 sec., as described above **7.35**
- 149-5DL** Model 600, 8 sec., curved pressure pads and special reel lubrication **.8.75**
- 149-6DL** Model 600, 10 sec., as described above **.8.75**

Cartridge Labels

Available in 6 distinctive colors, these cartridge labels provide an attractive method for identifying prerecorded cartridge tape information. These self-adhesive labels hold securely to the cartridge but remove easily without liquids or chemicals even after a year of use. No unsightly adhesive remains. A typewriter, pen or pencil can be used as the marking instrument. Net weight: 2.6 lbs. per 250 sheets.

Cartridge Labels

Part Number	Standard Package	Unit Price
403-Blue*	100*	\$.15
403-Orange*	100*	.15
403-Black*	100*	.15

Dynamax Bulk 1/4" Back Lubricated Tape

Series 400X Standard Tape

(Used in Models 300, 350, 600, 1200 and Master Cart)

Part Number	Reel Size	Length (Feet)	Length (Meters)	Standard Package	Unit Price
DYN-400X*	10" Hub	3600	1097	10*	\$11.53
DYN-400X*	10" Hub	3600	1097	50*	8.67
DYN-401X*	7" Reel	1800	547	40*	7.07

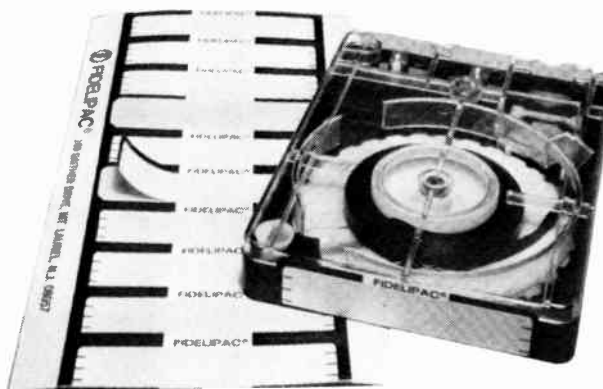
Series 1000X Cobalt Tape (Used in Dynamax Cobalt)

Part Number	Reel Size	Length (Feet)	Length (Meters)	Standard Package	Unit Price
DYN-1000X*	10" Hub	3600	1097	10*	\$24.00
DYN-1000X*	10" Hub	3600	1097	50*	19.50
DYN-1001X	7" Reel	1800	547	40*	10.50

NAB Plastic 1/4" Tape Reels and Boxes

Part Number	Description	Standard Package	Unit Price
PR7HD-B	7" Heavy-duty Reel, 2 1/4" Hub, Bulk Packed	180*	\$1.00
PR7-HD	7" Heavy-duty Reel in box, Bulk Packed	40*	1.30

*Must be ordered in multiples of the standard package.



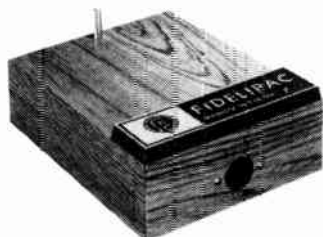
Cartridge Labels



Lubricated Tape

FIDELIPAC CORP.

Tape Erasers/Lights/Racks



400



395



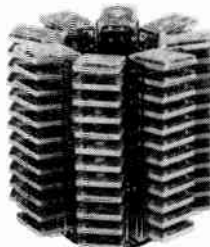
340-REC



340



MR-200



TR-96

400 TAPE ERASER

- Erases all audio, video and computer tapes up to 1" • Erases down to virgin tape level
- Removable aluminum guide pin for erasing large format tapes • Attractive and durable case
- High current horsepower-rated switch for long reliable life • Thermally-protected core — will not burn out • Scuff-resistant top • Non-marring skidproof feet

400 Tape Eraser (110V)	\$120.00
400-2 Tape Eraser (220V)	160.00

395 BLANK-IT BULK ERASER

The Multi Format Magnetic Tape Eraser For:

- NAB cartridges • 8 Track cartridges • 1/4" to 1" reel-to-reel audio tape • 8, 16 or 35mm magnetic film • Audio cassettes • Video cassettes — VHS or Beta • Computer tape • Dictation Cassettes • Long on duty cycle • Continuous erasure of more tape • Internal thermal overload coil protection • Can't burn out • Faster and better erasure of video tape than possible with internal erase circuitry of any VTR, VHS or Beta • Handsome, rugged, shock-proof case • No-mar work surface • Won't scratch items being erased

395 Blank-It Bulk Eraser (110V)	\$65.00
395-2 Blank-It Bulk Eraser (220V)	80.00

ACCESSORIES

395-FP 6-Pack felt pads for Blank-It Eraser	\$ 2.50
395-SW Switch for Blank-It Eraser	9.00

CARTRIDGE MACHINE PRECISION ALIGNMENT EQUIPMENT

452 Wow and flutter cartridge — 3150Hz	\$37.00
455 Fast sweep cartridge — monophonic	45.00
456 Fast sweep cartridge — stereophonic	45.00
326 Height gauge	29.00
328 Head insertion gauge	8.00
387 Right angle zenith gauge	34.50
HG-1 Head height/zenith gauge (for use with Dynamax Cartridge Machines)	42.00

CARTRIDGE MAINTENANCE & TAPE ITEMS

TAS-431 Splicing tape-7/32" wide x 100 feet long roll (2400 1/2" splices)	\$11.00
406 Professional splicing block, for 1/4" tape	27.50
310 Professional splicing kit — 1/4" tape	33.00
380-WA Winding adaptor for 558 reel (used in Master Cart and Master Cart II)	4.00

WORLD STANDARD STUDIO WARNING LIGHTS

Your broadcast or recording studio will really be "off-limits" when Studio Warning Lights are lit. Their brilliant red lettering on jet black background can be seen even in the brightest ambient light conditions. With a faceplate of unbreakable plexiglass, the light includes lamps and mounting hardware.

340 ON AIR	\$55.00
340-S ON AIR in French, German, Greek, Japanese, Polish, Russian, Spanish or Swedish. Specify when ordering	55.00
340-REC RECORDING	55.00
340-REC-S GRABANDO (RECORDING in Spanish)	55.00
340-CUS* Warning light with custom legend	75.00
346-OA Lens assy. for ON AIR light	16.00
346-REC Lens assy. for RECORDING light	16.00
346-S Lens assy., other Standard legends	16.00
346-CUS* Lens assy., custom legends	21.00

*Must be ordered in multiples of 6 (standard package).

WALL-MOUNT OR MOBILE RACKS

Unique versatility has been built into the WR-25 Wall-Mount Cartridge Rack. The modular design of the basic WR-25 is a single 25 cartridge rack that mounts either on a wall (using the mounting bracket included) or as one of eight racks that form the MR-200 Mobile Cartridge Rack. Fully loaded, the WR-25 rack removes easily from the wall bracket and transfers to an MRB-1 carousel rack base. The sturdy MRB-1 supports up to eight wall racks.

TABLE-TOP CARTRIDGE RACKS

Table-Top Cartridge Racks are available in two sizes. Each offers the same versatile features as the mobile rack, MR-200. Each 12-cartridge bank is an integral unit that mounts on a revolving center support.

TR-48

Storage for 48 cartridges. Four separate removable racks store 12 cartridges each. Outside diameter when fully loaded is 15", height is 20". Racks are chrome plated welded steel. Base is black panned steel.

TR-96

Storage for 96 cartridges. Eight separate removable racks store 12 cartridges each. Outside diameter when fully loaded is 20", height is 20". Racks are chrome plated welded steel. Base is black panned steel.

WR-25 Wall Rack — Holds 25	\$32.00
90-3 Extra mounting bracket for WR-25 .....	.75
MRB-1 Mobile rack base — Holds 8 WR-25 racks	79.00
MR-200 Mobile cartridge rack — Holds 200	335.00
TR-48 Table top cartridge rack — Holds 48	95.00
TR-96 Table top cartridge rack — Holds 96	170.00

Refer to Green Section for Addresses and Telephone Numbers.

FOR-A CORP. OF AMERICA

Mixers

CVM-500 Component Video Mixer

• 8 inputs including black and color background independent for RGB, Y/R-Y/B-Y or YIQ signals • Full bandwidth for sharp colorizing in RGB graphics applications • Mix/effect system with 22 programmable wipes, key inputs, matte generator and auto transition

• Program mix row with auto transition between program and preset buses • Downstream keyer for titling • 3 independent color matte generators • 4 auto transition modes • 6 camera sync outputs, 3 black burst and 3 composite sync • Control panel can be interfaced with the Extrol Effects Memory and Edit Controllers • Y only output on program and preview line for B/W monitoring • GPI control extends editing capabilities, increases system flexibility • Tally interfaces have been designed into both CVM and PVM mainframes • Edge noise is reduced to minimum during keying, matting and wipe operations • High resolution image is produced for all modes of mixer operation • Compact, portable, interfaces easily with existing equipment • Optional CCK-500 Exkey Chroma Keyer and FXM-500 Extrol Effects Memory

CVM-500 \$14,900.00
CCK-500 Exkey Component Chroma Keyer 1,000.00
FXM-500 Extrol Effects Memory models 2,950.00

CVM-600 Component Video Mixer

• 4 buses—Program, Preset, A and B • 14 inputs • Internal color background and black level generators • Independent colorizers for background, border and matte for downstream keyer • 24 wipe patterns with modulation • Auto transition for Program, Effects, DSK and Fade-to-black • 2 independent component program outputs • 1 component preview output • Program and preview (Y) luminance outputs • 2 M/E key inputs with component insert video • Built-in edge functions for M/E and DSK inputs • Component signal transcoders on all inputs and outputs • 3 reference black burst outputs • Optional CCK-500 Exkey Chroma Keyer; FXM-500 Extrol Effects Memory

CVM-600 \$22,900.00
CCK-500 Exkey Chroma Keyer 1,000.00
FXM-500 Extrol Effects Memory 2,950.00

CVM-1000 Component Video Mixer

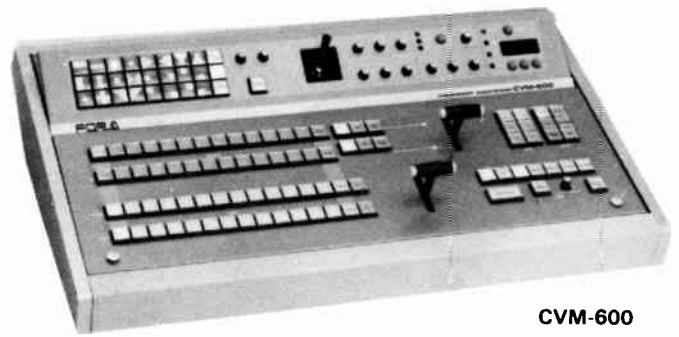
• RGB, Y/R-Y/B-Y, YIQ inputs and outputs • Full transcoding at all inputs and outputs • 16 or 24 (optional configuration) inputs plus color background and black level • 2 or 3 M/E configurations available; 3 crosspoint rows per M/E, mix or wipe of background, video key or title key via lever arm or autotransition • Wipe transitions with hard or soft edges; hard or soft border edges; variable softness and width controls; pattern limit wipe; pattern modulation; expanded wipe patterns • Joystick positioner with rate control and centering button • 1 of 3 external title keyer inputs plus key bus inputs; insert video from key bus or title key matte; border, shadow or outline; edge colorizers; independent autotransition • 1 of 2 external video keyer inputs, plus key bus or chroma keyer inputs; insert video from key bus, video key matte, M/E preset bus or external source; key invert function; edge; independent colorizers; independent autotransition • Chroma keyer with component inputs; upto 4 optional units • All controls addressable by optional serial interface • GPI and tally interfaces • Look-ahead preview system

CVM-1000 **POR**

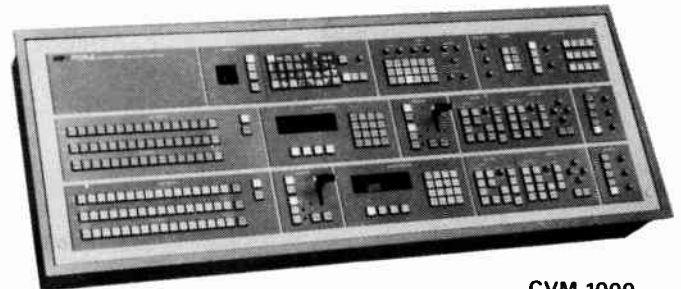
PVM-500 Production Video Mixer

• 4 bus, 6 input plus black and color background • Independent transition rates for Effects, Program, Downstream Keyer and Fade to Black • 3 independent colorizers for Background, Effects Keyer and Downstream Keyer • 22 wipe patterns • Program mix row with auto transition between program and preset buses • Downstream keyer for titling • 6 independently adjustable camera and video source Black Burst reference outputs • 2 Program Line outputs and Preview Monitor output • Edge generator in the DSK • Compact size, easy operation and easy interface with other equipment • Optional CCK-500 Exkey Chroma Keyer, FXM-500 Extrol Effects Memory and Editor Interface

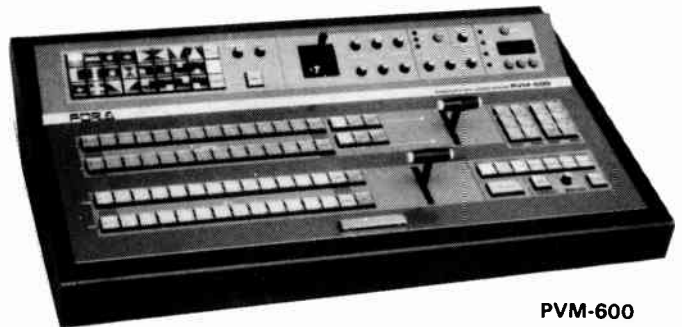
PVM-500 \$8,950.00



CVM-600



CVM-1000



PVM-600

CCK-500

Exkey Component Chroma Keyer 1,000.00

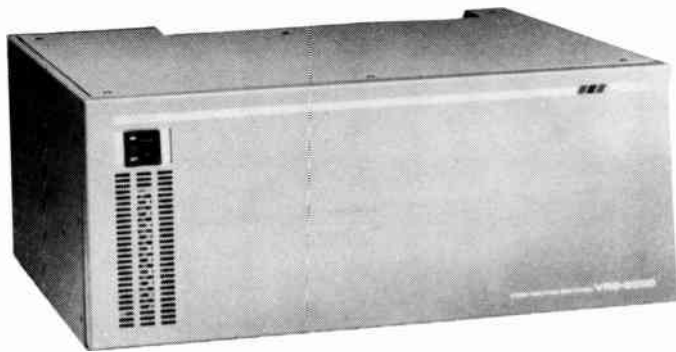
FXM-500

Extrol Effects Memory 2,950.00

PVM-600 Production Video Mixer

• 4 buses—Program, Preset, A and B • 12 inputs for effective editing capability • Internal backcolor and black signal generator for easy title composition • 24 wipes plus hard and soft border with modulation function • 2 program outputs, 2 preview outputs, 2 Mix/Eff outputs for system connection expansion • Auto transitions for effects, program, downstream keyer and fade to black; can be preset from 0 to 999 frames • Colorizing functions for background, border and downstream keyer • 2 key inputs can be colorized • 3 reference black burst outputs • Tally outputs • GPI and serial interface ports for editor interface

PVM-600 \$14,950.00



VRS-2000

VRS-2000/ARS-2000

Video/Audio Routing Switchers

- 8 x 8 crosspoint matrix, expandable to 32 x 32
- Serial and parallel control standard
- Balanced audio inputs and outputs; XLR-3
- Audio-follow-video switching capability—either 2 channel mono or stereo channel audio switching with breakaway
- Vertical interval switching
- 8MHz bandpass + 3dB
- External remote control via RS-232C or parallel interfaces
- Optional RS-2110 control unit

VRS-2000	\$4,650.00
ARS-2000	6,690.00
RS-2110 Control Unit	2,700.00



CCS-4360

CCS-4360 Color Corrector

- Improves inferior sync and burst by consistently inserting new signals at the output when input signal disturbances occur
- Black stretch function enhances detail in low light level scenes
- Vertical blanking can be in 1 H steps within a range of 11 H to 21 H
- Independent R, G and B controls for white, black and gamma
- All operation modes (bypass, operate, off) have equal delay between input and output to eliminate system timing differences
- Differential and balance operation modes
- Rackmountable main frame and remote operation panel; can be used with up to 1,000' of multi-cable

CS-4360	\$6,950.00
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MF-2000DC

MF-2000 Multiflex Digital Effects System

- Composite and component inputs and outputs
- Accepts asynchronous video input
- Built-in mixing circuit for composite background video output
- Proportional "joystick" motion control
- Variable borders with selectable tracking
- Internal keyer
- Effects/event memory
- Full serial control operation of mainframe
- Compression, wipe, push, freeze, multi-freeze
- Posterization, mosaic
- Frame/field freeze with variable strobe
- Variable internal and external windows
- Adjustable H and V ratios
- A/B input selection
- Removable memory medium
- 5.5MHz bandwidth (approx. 440 line resolution)
- Optional MF-2000DC Dual Unit Controller allows simultaneous effects on 2 channels without video switcher

MF-2000	\$19,500.00
MF-2000DC Dual Unit Controller	4,000.00
MF-2000MU Main Unit (2 required for dual channel operation)	14,625.00



CCS-4400

CCS-4400 Component Color Corrector

- Y/R-Y/B-Y input and output interface with several internal level scaling capabilities
- RGB black and white level control
- Individual gamma correction for RGB
- Overall gamma correction
- NTSC (encoded) monitoring output
- Serial interface control unit; operates with up to 1000' of remote cable
- Color correction function can be inhibited for VITS
- Video and chroma gain and set up controls

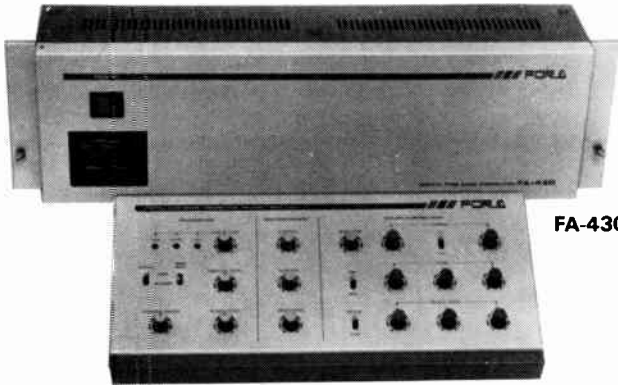
CCS-4400	\$7,750.00
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Prices and Specifications Subject to Change Without Notice.

B-543

FOR-A CORP. OF AMERICA

Time Base Correctors/Frame Synchronizer



FA-430

FA-430

Digital Time Base Corrector/Image Processor

- Full feature processing for 3/4" and 1/2" VTR formats
- Includes Time Base Correction, Image Enhancement, Digital Color Correction and Noise Reduction
- System consists of the basic 19" rackmount main control unit and a compact remote controller containing controls for all correction functions
- Incorporates the major design and performance features of the Model FA-410
- Combines both H detail enhancement and selective noise reduction to provide pleasing pictures with appearance of greater bandwidth
- Color correction allows RGB correction to compensate for poorly aligned camera white and black levels as well as for camera-to-camera differences in shooting the same scene
- Special Black Stretch circuit that provides improved contrast in low light level scenes
- Allows directors to "paint" scenes to create special moods by changing overall picture hue
- Time Base Correction capabilities provide professional broadcast level performance
- Composite or non-composite video outputs, built-in sync pulse generator, and composite sync and VTR subcarrier outputs
- Dub-In, Dub-Out mode for editing and duplicating

FA-430 **\$9,950.00**

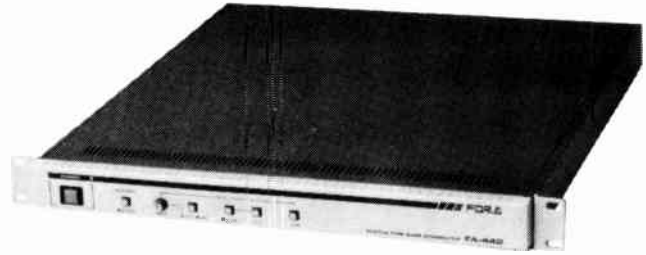


FA-450

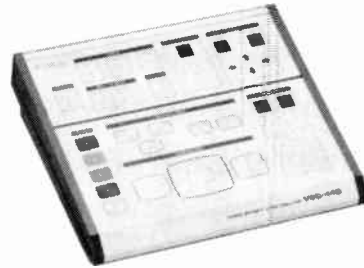
FA-450 Component Time Base Corrector

- Advanced 8-bit digital design providing full-frame TBC performance of the highest quality for PAL or NTSC systems
- Full color frame memory with field/frame picture freeze
- Highly versatile, with input capability for both component (RGB, YUV, Y, C685 (Y, C924) for PAL; RGB, Y, R-Y, B-Y, YIQ and Y, C688 for NTSC) and composite signals
- M-dub and Y/C dub input and output
- DOC
- Compatible with a wide range of existing and future video technology including component VTR, CVM-500 Component Video Mixer, U-matic VTR with dynamic tracking
- Compatible with both low and high band VTR (PAL only)
- M-dub connector for both YIQ and Y, R-Y and B-Y (NTSC only)

FA-450 **\$9,950.00**



FA-440



VEC-440

FA-440 Digital Time Base Corrector with VEC-440 Video Effects Controller

- Adjustable automatic freeze to exclude inferior signals
- Process amp controls (video level, chroma level, chroma phase, black level) easily accessible behind front panel
- Compact, lightweight unit
- Optional freeze remote control
- Multiple digital effects
- Programmable effects routines
- Built-in effects keyer with output key signal
- Full frame time base correction
- Frame memory provides field or frame freeze with adjustable strobe freeze
- Component processing
- Dropout compensator
- Compatible with a wide variety of 1/2" and 3/4" VTRs
- DOC

VEC-440 Video Effects Controller offers a selection of eye-catching special effects to make your video productions really stand out.

- Effects include negative; variable paint effect; variable mosaic; multiple images combining frozen and moving pictures; compression; invert; color background and a memory function that allows you to program up to 9 pages of 127 effects per page.

FA-440/VEC-440 **\$9,450.00**

FA-800 AUTOCOR™ Time Base Corrector/Frame Synchronizer

- Frame memory with automatic level control function which sets input video to the most suitable level
- V blanking line control to designate VITC time code, test, ID and teletext signals
- Automatic freeze function which freezes the last good video frame when the video input is interrupted
- Selectable video freeze or black signal output in automatic freeze mode
- Freeze is automatically released when video signal input starts again
- Selectable frame/field freeze in manual mode
- Top and bottom 4-bit data swap
- Automatic selection of color/black and white mode
- Built-in RS-170A standard sync signal generator with genlock capability
- Adjustable SCH of video output in the internal mode
- Full processing amp facility and optional remote control unit

FA-800 **\$7,450.00**

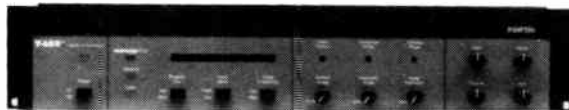
Note: All For-A products are available in PAL standard. Call for pricing.

FORTEL, INC.

*Time Base/Color Correctors/
Multi-Format Processor*

Y-688³² Total Error Corrector

- 32-line super-wide instantaneous window Phase Comp™ One and two line digital look ahead velocity compensator and phase error corrector
- Complete image processing including horizontal and vertical enhancement and horizontal detail improvement
- Luminance noise reduction through advanced compression and combing techniques to 10dB
- Chroma noise reduction to 10dB
- Chroma crispening
- Gyro-Trac™ automatic window re-centering for extraordinary errors without hue shift or horizontal movement
- Record 1™ pilot tone compatible for automatic setting of image processing controls
- Chroma Amplitude Correction through two line look ahead providing 4.2dB short term and 6dB long term correction
- Accepts shuttle speeds up to ten times normal
- Unitec™ construction features easy access to all components without board or unit removal from operating system
- Front panel image process bypasses control with internal programmable jumpers allowing anything from super transparent time base correction through extensive image reprocessing
- High efficiency, low power, low heat
- Accepts composite or component (Y-688³²) signals and outputs both types
- Adjustable H and V blanking
- Automatic chroma/luminance delay compensation
- Adjustable video position
- Drop-out compensation based upon previous line information
- Single cable genlock sync generator
- Programmable jumpers and mode switches allow tailoring to specific system objectives
- Automatic color or monochrome operation
- Full proc amp
- Chroma combing



Y-688³²

- Use Y-688³² for time base and image correction of U-Matic masters when dubbing to other U-Matics, VHS or Beta formats
- Edit, special effects, or A/B rolls through Y-688³² for third generation tapes that look like master tapes
- Use accessory adaptors or RGB switcher to do complete production in component format for final product approaching full bandwidth format
- Reprocess any color-under signal to reduce luminance noise by 10dB and chroma noise by up to 10dB
- Use in conjunction with Record 1 for completely automatic processing of clean, sharp pictures
- Remove transmission noise and distortions from satellite feeds
- Use with latest scan track U-Matics for broadcast stable pictures in slow motion
- Do field production in U-Matic format and all post production through broadcast or distribution copies for lower program costs
- Use with microprocessor controllers and U-Matics for high quality, economical, automatic program delay or remote broadcast

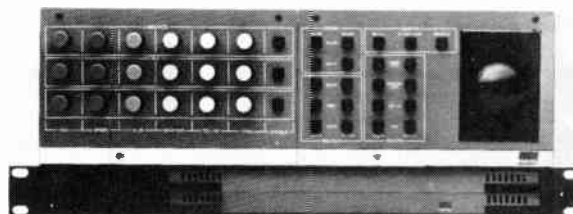
Total Error Corrector for 3/4" professional series VTRs, featuring: Y-688 (dub) component input and output, NTSC composite input and output, 32-line TBC with DYNA-TRAC™ dynamic tracking and high speed shuttle, image processing with noise reduction, and full proc amp controls.

Y-688³² \$12,695.00

CC-2 Color Corrector

- Provides broadcast quality control of video color in all common component formats
- Component operation is provided for RGB or Y, R-Y, B-Y and M-II formats
- Plug-in PC boards permit easy reconfiguration for either 525 or 625 standards
- Black, white and gray color balance adjustment
- Black and white gamma control
- Standard proc amp controls
- Independent hue, saturation and luma adjustments for each of the six color derivative vectors
- Trackball adjustment for color balance, gamma, and proc amp functions
- Store and recall functions allow the correction feature to be switched in and out for comparison with uncorrected material
- Shaft encoders and trackball can be automatically rezeroed by pushbutton, eliminating manual reset
- Frequency Response: 8MHz ± 0.2dB
- K Factor: 1%

CC-2 Multi Format \$12,490.00



CC-2

SuperPro 200 Multi-Format Video Processor

- For professional video post-production
- Compatible with most 3/4" and 1/2" recording systems
- A transcoder for inter-format editing between NTSC, U-Matic, VHS, S-VHS, and Betacam/MII formats
- Picture enhancement
- Infinite window time base correction
- Frame-store with frame and interpolated-field freeze
- Accepts inputs from U-Matic, VHS, and S-VHS dub sources as well as NTSC composite video
- Dual-channel architecture provides either true 8-bit dub (58dB S/N ratio, 5.5MHz bandwidth) or Heterodyne processing
- Output formats are independent of inputs and include Y/629 dub (VHS/S-VHS), Y/3.58 dub (S-VHS), Y/R-Y/B-Y (Betacam/MII) and NTSC composite video
- Dynamic tracking/shuttle processing
- Proc Amp



Super Pro 200

- Chroma Plus color processing for significant improvement in chroma noise and sharpness
- Bypass
- Adjustable Y/C delay
- Optional remote control
- Free running/genlock synchronization

Super Pro 200 \$8995.00

Refer to Green Section for Addresses and Telephone Numbers.

FORTEL, INC.**Time Base Correctors****DHP 525S Digital Time Base Corrector**

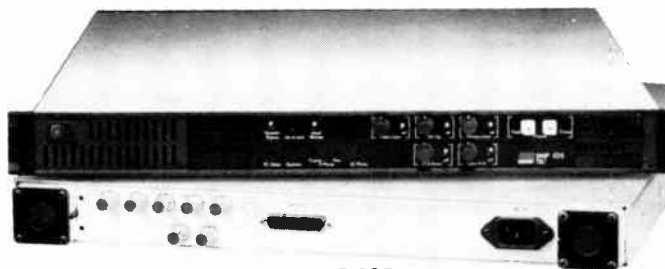
• Infinite window correction range • S-VHS compatible • Frame freeze • Field freeze (interpolated) • Drop-out compensation • High speed shuttle • Horizontal enhancement • Luma noise reduction • NTSC composite in/out • Remote control option • CCIR-601 sampling • Provides digital high performance processing of 1/2" and 3/4" NTSC composite video signals • Compatible with most of the 1/2" and 3/4" VCRs around • 1 3/4" chassis • Front panel accessible PC boards ease troubleshooting and minimize downtime • Power consumption of < 100W

Specifications**Signal Processing**

Sampling: Per CCIR-601, 13.5MHz sampling, 4:1:1
Bandwidth: 2.2MHz (-3dB) composite, 5.5MHz (-3dB) Y/C
Differential Gain: < 1%
Differential Phase: < 1°
K Factor: 5% or less
Horizontal Tilt: 1% or less
Vertical Tilt: 1% or less
S/N Ratio: 57dB
Residual Time Base Error: ± 15nsec luminance
 ± 2° chrominance

Inputs

Y/C: 3.58
Composite Video: 1.0V p-p, ± 3dB, 75 ohms
Composite Genlock Signal: 1.0V p-p, ± 3dB, externally terminated
VTR RF: BNC connector, 75 ohms

**DHP 625****Outputs**

Y/C: 3.58
Video Out 1: 1.0V p-p, 75 ohms, BNC connector
Video Out 2: 1.0V p-p, 75 ohms, BNC connector
Advanced Sync: 1V or 4V p-p, BNC connector, 75 ohms, ± 1.0dB

Dimensions: 1.75" H x 17.125" W x 20.75" D

Operating Voltage: 105 to 125VAC, 60Hz

DHP 525S\$6495.00

DHP 625 Digital Time Base Corrector

Same as DHP 525 except:

- Available in PAL
- EBU sampling rates
- For processing 1/2" and 3/4" PAL composite video signals

Specifications

Same as DHP 525 except:

Sampling: Y 13.5MHz, U 3.375MHz, V 3.375MHz
Bandwidth: 3.25MHz (-3dB)
K Factor: 4% or less
Advanced Sync: 1V or 2.2V p-p, BNC connector, 75 ohms, .3Y p-p

Operating Voltage: 200-260VAC, 50/60Hz

DHP-625\$5995.00

Turbo 2 Time Base Corrector

• Infinite window correction range • Automatic detection of SP, Hi or Lo band dub inputs • Field or frame freeze with interpolation • VTR interface for slow motion operation • Horizontal enhancement • Noise reduction • 5MHz resolution from dub inputs • 1 rack unit high (1 3/4") • Available in NTSC or PAL • EBU sampling rates • Component outputs • Remote control option • Full-featured TBC intended for high-quality processing of video signals in a 3/4" recording environment • Picture quality associated with Y-688 "Dub" processing • Compatible with all 3/4" videocassette recorders • Power consumption of < 100W • Front-panel removeable boards and built-in circuit diagnostic testing speed troubleshooting and minimize downtime

Specifications

Sampling: Y 13.5MHz, U 3.375MHz, V 3.375MHz
Bandwidth: 5.0MHz (-3dB) Dub mode
 3.25MHz (-3dB) Encoded mode

Differential Gain: < 1%
Differential Phase: < 1°
K Factor: 1% or less (Dub mode)
 4% or less (Encoded mode)

Horizontal Tilt: 1% or less

S/N Ratio: 57dB

Residual Time

Base Error: ± 15nsec luminance
 ± 2° chrominance

Inputs

Composite Video: 1.0V p-p ± 3dB, 75 ohms
Composite Genlock Signal: 1.0V p-p ± 3dB, externally terminated
Dub Input: 7-pin connector, automatic SP, Hi or Lo band sensing and switching

**Turbo 2**

VTR RF: BNC connector, 75 ohms
VTR Interface: Sony 18-pin VTR interface connector

Outputs

Video Out 1: 1.0V p-p, 75 ohms, BNC connector
Video Out 2: 1.0V p-p, 75 ohms, BNC connector
Advanced Sync: 1V or 2.2V p-p, BNC connector, 75 ohms, ± 1.0dB

Y Out: 1.0V p-p, 75 ohms, BNC connector, (Betacam compatible)

U Out: 0.7V p-p, 75 ohms, BNC connector

V Out: 0.7V p-p, 75 ohms, BNC connector

Dub Out: 7-pin connector, SP, Hi or Lo band switchable

Operating Voltage: 200-260VAC, 47-63Hz

Turbo 2 NTSC\$7495.00

TBC Control*750.00

Turbo 2 PAL

• Offers broadcast quality processing of 1/2" and 3/4" PAL format signals

Turbo 2 PAL\$8995.00

*The TBC Control can be used to remote front panel functions of the Turbo 2 or DHP 525 TBC.

FOSTEX CORP. OF AMERICA

*Multi-Track Master Recorders/
Accessories*

E-SERIES MULTI-TRACK/MASTER RECORDERS

E-16/E-8 Multitrack Recorders

- E-16 — 16-track/16-channel, E-8 — 8-track/8-channel
- Transports plus record/play logic are totally microprocessor controlled, so these machines can run computer-derived edit decision lists
- Gapless punch-out prevents a blank space from occurring immediately after the punch-out point
- A synchronizer part will interface with all SMPTE based systems
- When an E-Series recorder is used with the Fostex autolocator and MIDI to SMPTE synchronizer, Model 4050, you have automatic programmable punch-in/out, in addition to 100-point auto-locate, 10 programmable edits, SMPTE time code generator/reader (all four formats) — plus the ability to locate in the measure, bar, and beat
- For ease of use with 8 bus mixing consoles, the E-16 has the first 8 inputs normalled to inputs 9-16
- The first 4 inputs of the E-8 are normalled for ease of use with 4 bus output mixers. Unlike other 8-track recorders, you don't have to re-patch to record on tracks 5-8 when using a 4 bus board
- Dolby C™ noise reduction. If you stripe an edge track with SMPTE time code, you have all remaining seven tracks to work with — no need for a guard track. The E-8 uses the same transport as the E-16 and the same R/P cards
- 10 1/2" reel NAB hub

E-16	16-track with Dolby C, direct drive (Avail. 15 or 30 ips speed)	\$7,995.00
E-16M	E-16 with dedicated monitor package, playback amps and headphone mixer	9,995.00
E-8	8-track 1/4" recorder with Dolby C	4,495.00

E-22/E-2 Master Recorders

- Each has a third, center channel for SMPTE control
- E-22 1/2" 2-track has center track SMPTE with SMPTE control, you'll be able to run computer-derived edit decision lists, punch in/out automatically and auto-locate to the bar and beat
- E-2 uses 1/4" tape
- Compatible with professional formats
- Built-in 2-position autolocator can be used to set up a loop or repeat
- Real time counter with search-to-zero even from the negative domain
- Auto stop and auto play from rewind, as well as from fast forward
- Servo control of the reels in the Edit mode lets you find cues and spot erase with pin-point precision
- When the Pitch Control is engaged a flashing warning light is displayed along with the exact percentage of speed deviation
- Time readout changes to read percentage of tape speed when pitch control is touched

E-2	1/4" stereo recorder, 10 1/2" reel with center track SMPTE, 7.5 and 15 ips standard (15/30 ips extra cost).	\$3,750.00
E-22	1/2" stereo recorder, 10 1/2" reel with center track SMPTE, 15/30 ips	3,995.00
E-22/4	E-22 with 1/2" 4-track head. Stereo on TK 1 and 2, time code on TK-4. TK-3 is guard band	4,495.00

NOTE: All E-Series recorders have gapless/seamless punch in and out.

L-8	E-8 logging recorder — 24 hours	\$ 6,850.00
L-16	E-16 logging recorder — 24 hours	11,400.00
	Logging recorders have 3 heads, headphone monitor, tag outputs, end-of-tape warning signal, malfunction warning signal	
5030	-10 to +4 line adaptor (8-channel) XLR and phono . . . . .	.595.00



E-16



E-22

Accessories

	1/2" 8-track playback head with select switch	\$900.00
8316	Deluxe remote for all E-Series 80/20	350.00
9081	Console with casters (needs 9905B rackmounts)	375.00
8051	Punch in/out foot switch	16.00
9012B	1/2" metal reel with Fostex logo	20.00
9014B	1/4" metal reel with Fostex logo	20.00
MB-2	Meter bridge kit for E-2/22 (includes headphone amp and blank panel).	350.00
MB-16	Meter bridge kit for E-8/16	200.00
9905B	Rackmount adaptors (pair)	60.00
8540	4030 sync cable	100.00
8440	4050 cable for E-Series, 80 and 20	100.00
8700	Time code generator	200.00
8180	Professional head demagnetizer	29.95
9930	1/4" editing block	18.00
9931	1/2" editing block	25.00

Prices and Specifications Subject to Change Without Notice.

160 Multitracker

• Multiple input/output 4 x 2 x 2 mixer with a 4-track/stereo cassette recorder • 3³/₄ ips tape speed and Dolby C noise reduction • Two mike inputs and four line inputs can be used for simultaneous 4-track recordings • Stereo bus may be used to record four (or more) input signals mixed to mono or stereo • Overdubs and punch-in recordings are easily accomplished, with the monitoring logic • Auxiliary bus has a source/tape button for each track • Dedicated Sync input to track 4 is designed specifically for MIDI applications • Channel insert points allow you to connect signal processors such as limiters and reverbs across the input channels, bypassing the auxiliary summing amplifiers • Dedicated stereo bus with metering • Pitch control • Zero stop • Optional foot switch for remote punch-in/-out • Frequency response: Mixer section 20Hz ~ 20kHz; Recorder section 40Hz ~ 14kHz • S/N: Mixer section mike 75dB weighted, line 82dB Weighted; Recorder section 70dB weighted referenced to 3% THD level

160 Multitracker \$840.00

260 Multitracker

6-Input Mixer with 4-Track Recorder

• Bounce tracks freely with the independent stereo bus • Two additional line inputs • Group multiple inputs on the Stereo Master Bus, or assign a single input channel to a track directly, by-passing the summing amplifiers • Automatic monitor switching • Switchable LED bargraph meters for MONMIX, AUX SEND 1, AUX SEND 2, or the Stereo Master Bus • 3³/₄ ips — twice the normal cassette speed — and Dolby C noise reduction • 4-digit liquid crystal display with 2 position memory • Frequency response: Mixer section 20Hz ~ 20kHz; Recorder section 40Hz ~ 14kHz • S/N: Mixer section mike 65dB weighted, line 80dB weighted; Recorder section 70dB weighted referenced to 3% THD level

260 Multitracker \$1195.00

460 Recorder/Mixer

• 3-band input EQ • SMPTE/EBU sync capability • 8 input channels each with parametric EQ, phantom powering and solo • True 2-speed recorder with independent EQ circuitry for each speed • Dedicated stereo mixer for the 4-channel bus — individual gain and pan plus overall master level • Flexible and convenient interface/patching design • 2 position autolocator • Search to zero • Auto repeat • Monitor select for Aux 1, Aux 2, 2 CH In, stereo master of Tape/Bus 1 ~ 4 • Independent level controls for Monitor/Phones/Solo • Switchable LED bargraph meters with selector switch (Stereo/Tape/Bus) • 4-digit LED display counter with 2-position memory • Easy rolling punch-in recording • Frequency response: Mixer section 20Hz ~ 20kHz; Recorder section 40Hz ~ 18kHz • S/N: Mixer section mike 66dB weighted, line 82dB weighted; Recorder section 70dB weighted referenced to 3.0% THD level

460 Recorder/Mixer \$2495.00

250 AV Mixer

• Standard cassette tape speed (1⁷/₈ ips) • 1V monitor output to drive any programmer • Compatible with both commercial (half-track) and consumer (quarter-track) formats • Functions for both production and presentation modes.

250 AV \$1300.00



460

20 Recorder/Reproducer

• 2-Track/2 channel with center track/recorder/reproducer • 15 and 7¹/₂ ips ± 0.5% tape speed • Standard 7 inch reel—¹/₄" tape width • Transport microprocessor controlled • Center channel control track can be programmed with SMPTE or any sync pulse • Can be used as a master sync controller on stage • Utility recorder/controller

20 \$1550.00

80 Recorder/Reproducer

• 8-Track, 8 channel recorder/reproducer • 15 ips, 0.5% — tape speed • Standard 7 inch reel—¹/₄" tape width • Transport microprocessor controlled • Optional Auto-Locator and Synchronizer available • Records SMPTE time code, drum and other sync pulses • Records live performances on all eight tracks simultaneously • Layer a tape one track at a time, submix and overdub

80 \$2595.00

Peripheral Products

- 2050** 8 x 2 x 2 line mixer w/headphone amp **\$320.00**
- 3030** Dual 10 band graphic equalizer **250.00**
- 3180** Stereo reverb w/pre-delay **400.00**
- 5030** -10 to + 4dBm adaptor, 8 channels phono jacks to XLR and back, electronically balanced, rackmount **595.00**

Accessories

- 8316** Full-function remote for E-Series 20 & 80, B-16 w/rec. selects, counter display, and locate **\$370.00**
- Remote for 20 & 80 **70.00**
- 8031** Punch in/out footswitch for 80, 20, 260, 160 **17.00**
- 8051** 4050 cable for 20, 80, and E Series **100.00**
- 8440** Compressor/line mixer (5 x 1) **58.00**
- MN-50** Test tone oscillator **48.00**
- TT-15** FSK tape sync for drum mach/sequencer **53.00**
- TS-15** SMPTE time code generator **210.00**
- 8700** Flight case for 20/80, A-2/4/6 **165.00**
- 9050** Flight case for 260 **250.00**
- 9071** Top plate for clearance **17.00**
- 9901-2B** Rackmount for 3050, 3070 **17.00**
- 9902** Rackmount for 3030, 3180 **22.00**
- 9903** Rackmount for 2050, 3040 **22.00**
- 9904** 7" black metal take up reel **11.00**
- 9007B** Normalled patch bay **90.00**
- 3010** Professional head demagnetizer **31.50**
- HD-10** C-60 cassette, w/track chart **6.00**
- CT-5** Wood rack for recorders **195.00**
- WR-1** Wood rack for mixers and 260, 250AV **175.00**
- WR-3** ¹/₄" editing block **18.00**
- 9930** ¹/₂" editing block **25.00**
- 9931**

FOSTEX CORP. OF AMERICA

SMPTE Time Code Equipment

4000 Series SMPTE Time Code Equipment

- Truly contemporary hardware is software based. All 4000 series products are designed for easy upgrades with socketed EPROMs
- Serial data ports for computer interface

The 4000 Series of products allow you to control and synchronize tape recorders with each other, video with audio, synthesizers to tape recorders, video tape to synthesizers, SMPTE to MIDI or any combination of all the above.

4010 Time Code Generator/Reader

- Multi-format: Generates, reads and regenerates all formats of SMPTE/EBU code: 30fps, drop-frame, 29.97 non-drop, 25fps, and 24fps
- Synchronous code
- External Pulse In: accepts virtually any kind of pulse information to generate time code—pilotone, neopilot, synchrotone, 50Hz, 59.94Hz, blackburst (RS-170A), etc.
- Supplies video control track pulses for a video machine when used as a slave to an audio recorder
- Independent generator/reader
- High speed reader accurately reads code from 1/10 to 100 times play speed
- Frame + 1: displays either one frame ahead or the actual current frame
- Electronic event memories
- Generates user bits and hex
- Reads user bits and hex
- True regeneration
- Jam sync/force jam
- Synchronized to color frame
- Includes high speed reader adaptor cable for 4030 synchronizer
- Includes two DIN connectors so you can make up event control cables
- Software upgradable
- Serial data port

4010 \$1295.00

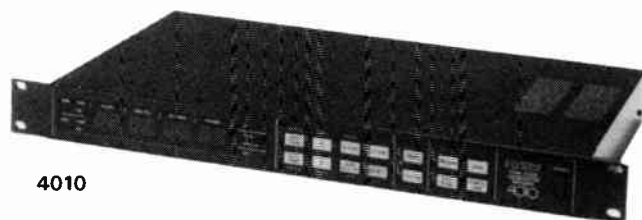
4011 Window Inserter/VITC Interface

- Three input modes for reader: VITC—the reader only reads vertical interval time code, LTC—the reader will only read longitudinal time code, Auto—the reader will automatically search for either code
- Format indicator
- Adjustable window—positions code display on screen for both horizontal and vertical display
- Full display
- Capable of displaying both time code and user bits simultaneously
- Rear panel flexibility

4011 \$1295.00

4030 Synchronizer

- Synchronizes up to 4 machines (one master and three slaves)
- Fast lock-up
- Interfaces to most brands of video and audio tape recorders
- Synchronizes to within 1/100 of a frame
- Easy to update using socketed EPROMs
- Works with 24, 25, 30fps and drop frame
- Immune to static electricity damage
- Serial interface port allows communication with personal computers to help you run edit decision lists (EDLs), or write your own software
- Slave as many transports as you wish, just by adding a 4030 for each slave



4010



4030/4035

- SMPTE programmable record in/out
 - Master waiting in chase mode
 - Slave waiting in chase mode
 - Calculation of offsets from the keypad
 - Store auto record with offset
- 4030 Does not include cables or interfaces \$1500.00

4035 Controller

- Sophisticated remote controller for the 4030
- 10-position autolocate
- Selectable pre-roll up to 99 sec.
- Zone limits, or end-of-tape tags so that you can't run off the reel
- Programmable, automatic punch in/out with rehearse function
- Individual transport control of up to one master and three slaves
- Drives video as master or slave with the appropriate interface
- Locks to film editors using bi-phase sync pulses with the addition of the 8720 interface
- 8710 interface contains software to designate each 4030 as slave 1, 2, or 3

4035 \$500.00

8710 Synchronizer interface unit (used when adding two or more slaves (4030) controlled by 4035). \$500.00

4050 MIDI Synchronizer/Autolocator

- Sync MIDI to SMPTE, the universal timing standard, with built-in SMPTE generator (all formats)
- Automatic punch-in/out with Rehearsal and Take modes
- Complete autolocate for Fostex models 20, 80 and E-Series
- Autolocate to a SMPTE number or to the Bar/Beat
- Up to ten cue points and tie sequences can be stored in the internal memory, which is backed up by battery
- Built-in tempo generator
- Optional serial communication bus allows interface with a personal computer

4050 Does not include cable (8440 for E-Series) \$1300.00



M11RP/S



M22RP/S



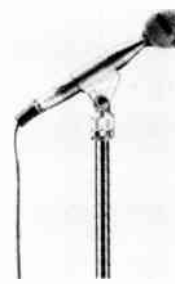
M55RP



M77RP



M80RP/S



M85RP



M88RP/S

PRINTED RIBBON MICROPHONES

M11RP/S

- Professional unidirectional type designed for announcing and speech
- Wide range of application in broadcasting, recording studios and auditoriums
- The soft and delicate sound quality is a characteristic of the printed ribbon-microphone
- The double suspension method prevents pickup of mechanical noise
- Sound quality switchable in 3 steps (0,1,2)
- Also suitable for percussion and oriental musical instruments

Specifications

Impedance: 600 ohms; Sensitivity: -51dB, 2.8mV/Pa (0dB=1V/Pa); Frequency Response: 40-18,000Hz; Dimensions: 7.1"H x 2.7"W x 2.5"D; Weight: 25.3 oz.

M11RP/S \$595.00

M22RP/S

- Dynamic type M-S system stereo microphone
- Most suitable for outdoor stereo sound pickup for television and radio as it needs no power supply
- Provided with a hand holding grip for outdoor sound pickup. Also has a wind screen
- The double suspension method prevents pickup of mechanical noise
- Most suitable for sports broadcasting, pickup of outdoor natural sounds and auditorium on-the-air monitoring

Specifications

Impedance: 600 ohms; Sensitivity: -51dB, 2.8mV/Pa (0dB=1V/Pa); Frequency Response: 40-13,000Hz; Dimensions: Ø2.8" x 9.8"; Weight: 24.5 oz. (Developed by assistance from NHK Technical Laboratory)

M22RP/S \$1095.00

M55RP

- Professional unidirectional type developed solely for vocal use
- Possesses both the sound quality resembling the ribbon type and the durability of a moving coil type
- Reliability is high and adaptable to announcing use
- Can be mounted on a goose neck

Specifications

Impedance: 250 ohms; Sensitivity: -57dB, 1.4mV/Pa (0dB=1V/Pa); Frequency Response: 70-18,000Hz; Dimensions: Ø2" x 6.7"; Weight: 8.7 oz.

M55RP \$449.00

M77RP

- Professional unidirectional type for pickup of bass and bass drums
- A straightforward sound attained by lowering resonance of the diaphragm and thus response extended to the lower region
- The proper equalizer matching the musical instrument can be selected by a 3 step switch
- Also suitable for strings such as a guitar

Specifications

Impedance: 250 ohms; Sensitivity: -56dB, 1.6mV/Pa (0dB=1V/Pa); Frequency Response: 40-18,000Hz; Switch: 3 step sound selecting; Dimensions: Ø45 x 172mm; Weight: 360g

M77RP \$460.00

M80RP/S

- Bidirectional professional broadcasting specification type for announcing and speech

- Soft and delicate sound having a characteristic of almost identical sound quality between 0° and 180°
- Can be mounted on a goose neck
- Suitable for announcing in school broadcasting and studios

Specifications

Impedance: 60 ohms; Sensitivity: -52dB, 2.5mV/Pa (0dB=1V/Pa); Frequency Response: 50-18,000Hz; Dimensions: 5.4"H x 2"W x 1.9"D; Weight: 9.5 oz.

M80RP/S \$495.00

M85RP

- A professional near field type designed for sound pickup in a strong noise environment and for decreasing cross polarization interference
- Most suitable distance from the sound source is 2-5cm
- Its application is wide such as announcing in a loud noise environment, pickup of back chorus in a large orchestra or very close to a musical instrument, etc.
- Must be careful not to move the sound source as it will change the sound quality
- Can be mounted on a goose neck

Specifications

Impedance: 600 ohms; Sensitivity: -56dB, 1.6mV/Pa (0dB=1V/Pa); Frequency Response: 50-12,000Hz; Dimensions: Ø2" x 6.5"; Weight: 9.8 oz.

M85RP \$395.00

M88RP/S

- A professional bidirectional type for announcing and speech
- A high degree of reliability proven through its widespread use in television and radio broadcasting
- A superior directional pattern with almost identical sound quality between 0° and 180° and very low pickup at 90°
- The delicate and soft sound is most suitable for announcing
- Sound can be selected by a 3 step switch to adjust for distance and voice quality of the announcer
- Also high performance pickup of percussion and oriental music

Specifications

Impedance: 600 ohms; Sensitivity: -52dB, 2.5mV/Pa (0dB=1V/Pa); Frequency Response: 40-18,000Hz; Switch: 3 step sound selecting; Dimensions: 5.4"H x 2"W x 1.9"D; Weight: 11.5 oz. (Developed by assistance from NHK Technical Laboratory)

M88RP/S \$650.00

M51RP

- Studio-quality cardioid vocal microphone rugged enough to take the rigors of the road
- Absolute clarity and lack of distortion
- Smoothness of the response, particularly in the important midrange frequencies, is startling in its transparency

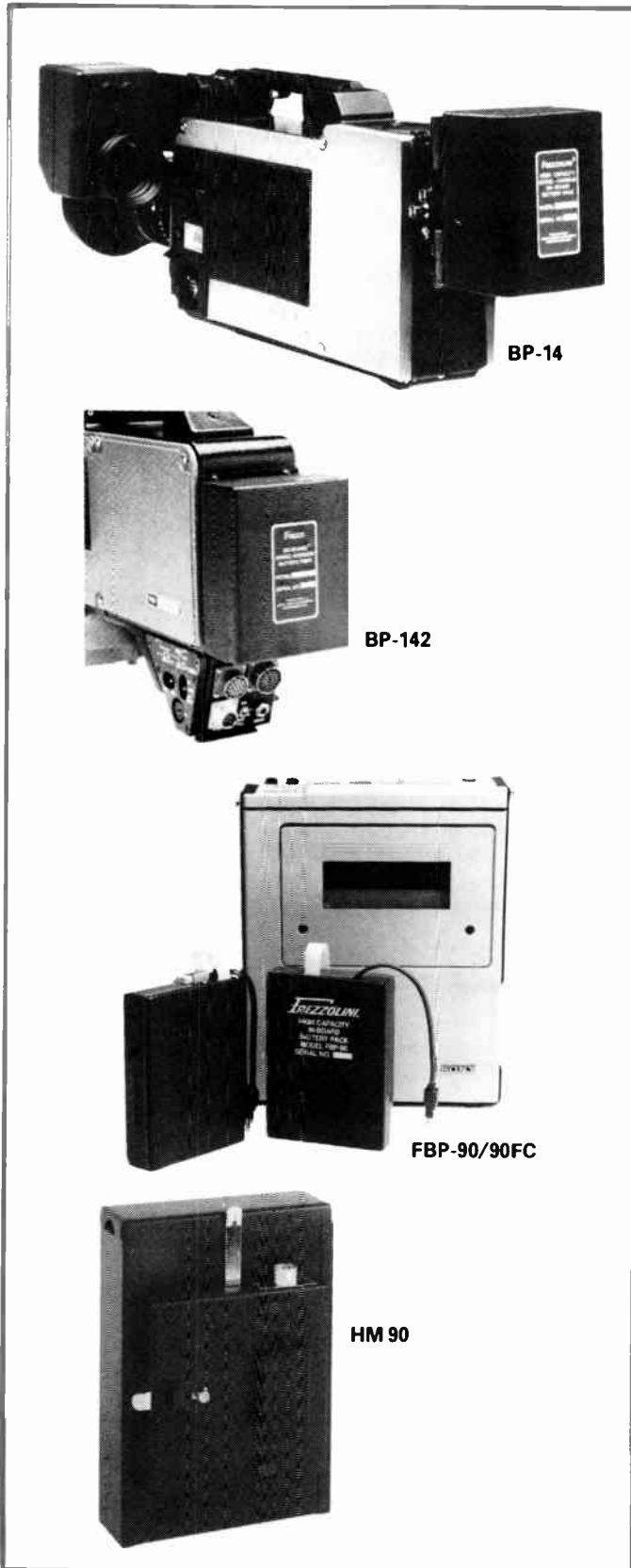
Specifications

Frequency Range: 80-20,000Hz; Output Impedance: 250 ohms; Sensitivity: Open circuit voltage (0dB=1V/Pa) -58dB output level, (0dBm=1mW/Pa) -58dBm; EIA Microphone Rating GM: -149dB; Dimensions: 2" Dia. x 8¾"L; Net Weight: 10.2 oz. (290g)

M51RP \$250.00

Accessories

- P303 ISO-Mount \$159.00
- P400 Matrix Transformer for M22RP \$299.00



Frezzi On-Board™ Battery Packs
"Superior To Camera-Manufacturer Supplied"
FEATURES: EXTENDED LIFE WITH NO MEMORY

- Battery mounts direct to camera-manufacturer-supplied Anton/Bauer bracket or optional Frezzolini® camera battery mounting bracket.
- No cables or modification required.
- Full 4AH capacity—only premium selected nickel-cadmium cells used.
- Custom-designed mounting brackets available.
- Rugged welded aluminum case.
- Lightweight 2AH models available.
- Internal fuse & thermal protection—internal spare fuse included for field replacement.
- Complete charge compatibility with camera-factory-supplied charge systems, or Frezzolini® fast, overnight or multiple battery chargers available.

Frezzi On-Board™ BP-12 4AH, 12 volt	\$455.00
Frezzi On-Board™ BP-13 4AH, 13.2 volt	475.00
Frezzi On-Board™ BP-14 4AH, 14.4 volt	495.00
Frezzi On-Board™ BP-122 2AH, 12 volt	275.00
Frezzi On-Board™ BP-132 2AH, 13.2 volt	285.00
Frezzi On-Board™ BP-142 2AH, 14.4 volt	295.00

All battery packs have fast charge (1 Hr.) capability.

Frezzi™ Premium-Grade Direct Replacement
for Sony BP-90 Battery Packs
Models: FBP-90 and Fast Charger Model FBP-90 FC

- Full 4AH capacity using premium-grade selected nickel-cadmium cells.
- Rugged & serviceable plastic case.
- Fuse & thermal protection
- Internal spare fuse for field replacement.
- High discharge capability to power 100W lightheads.
- Weight 3.5 lbs.
- Complete charge compatibility with:
 Sony BC-210 charger.
 Frezzi BC-124S overnight charger.
 Frezzi MBC-5 8-battery overnight charger
 Frezzi BC-77UB 1 hr. fast charger w/HV fast-charge adaptor cable.
 Plus other Frezzi fast/slow multi-battery charging stations.

Model FBP-90	\$275.00
Model FBP-90 FC	330.00

Battery Pack Mounting Brackets

HM 90	BP90 Adaptor for on-board mount	\$198.00
HM90B	Same as HM90 except for Betacam mount*	198.00
HM90BW	Same as HM90B except has mount for wireless receiver*	248.00

*Requires HMBVV1 Bracket

Betacam Battery Mounting Bracket (Not Shown)

Model: HMBVV1

Bracket mounts to the upper rear portion of the recorder, and accepts BP13/BP132 batteries or BP90 when used with HM90. Also accepts RPS-3 & RPS-40 on-board AC supply.

Model HMBVV1	\$105.00
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EC-30

Model VB12
"slow-charge"
battery pack

Model VB12V
"fast-charge"
battery pack

Model VB12V
"camera mounted"
battery pack

Model VB4X
"fast charge"
battery pack
with XLR4 connector

F-30 EC power belt powering Frezzi-Lite™ FL-250 with optional swing-away dichroic filter

30 Volt DC Operation With EC-30 High-Capacity Battery Packs

- 30VDC at 4AH
- Operates 30V 250W DYG lamp 30 minutes
- Fast charge capability (1 hr.)
- Built-in overnight charger (12 hrs.)
- Rugged steel case
- Weight: 10 lbs.
- Premium grade selected nickel-cadmium cells used

Model EC-30\$695.00
Optional: BC-30D One (1) Hour Fast Charger395.00

VB Series 12 Volt At 4AH "High-Tech" Battery Packs

- Premium-grade selected nickel-cadmium cells used
- Built-in belt clip
- Shoulder strap provided
- Includes VBCV 115V overnight charger

VB-12 4AH, 12V, 7.813" x 5.10" x 1.625", 4.0 lbs.\$165.00
VB-12V 4AH, 12V, 8.125" x 5.10" x 1.625", 4.0 lbs.225.00
VB4X 4AH, 12V, 7.813" x 5.10" x 1.625", 4.0 lbs.235.00
VBSO* 4AH, 12V, 8.125" x 5.10" x 1.938", 4.0 lbs.245.00
*With additional XLR4 connector255.00

Frezzi™ High Capacity 6AH Multi-Purpose Power Belts

Features

- High capacity — full 6AH (at 6A discharge rate)
- Batteries housed in rugged aluminum cassettes mounted on a genuine leather belt
- Built-in overnight (14 hrs.) charger
- Fast charge (1 hr.) capability with Model BC-77U charger
- Fuse and thermal protection
- Low belt profile—only 4" wide

Model F-12-EXFA

- 12.0V at 6AH
- Standard five (5)-pin XLR connector
- Weight: 8 lbs.

F-12-EXFA\$475.00

Model F-12-77

- ± 6.0V at 6AH
- HL-77 connector
- Weight: 8 lbs.

F-12-77\$475.00

Model F-14-EXFA

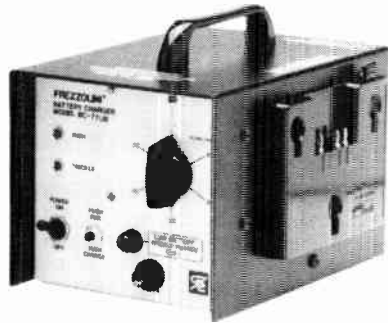
- 14.4V at 6AH
- Four (4)-pin XLR connector
- Weight: 8.5 lbs.

F-14-EXFA\$495.00

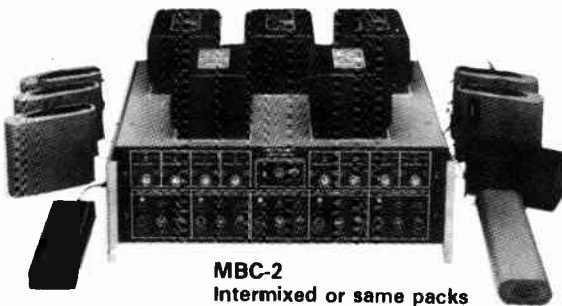
Frezzi™ Power Belts for 30 Volt Sun Gun 30 Volt DC Operation With Frezzi™ F-30-EC And F-30-EXFA High-Capacity Battery Belts

- Full 4AH capacity using selected nickel-cadmium cells
- Operates 30V 250W DYG lamp for 30 minutes
- Batteries housed in rugged aluminum cassettes which are mounted on a genuine leather belt
- Built-in overnight charger (14 hrs.)
- F-30-EXFA has fast-charge capability (1 hr.) with optional Frezzi™ BC-30D fast charger
- Fuse and circuit-breaker protection
- Weight: 10 lbs.

Model F-30 EC\$595.00
Model F-30-EXFA645.00
Model F-30/14EXFA Switchable 30V at 4AH, 14V at 8AH Power Belt795.00



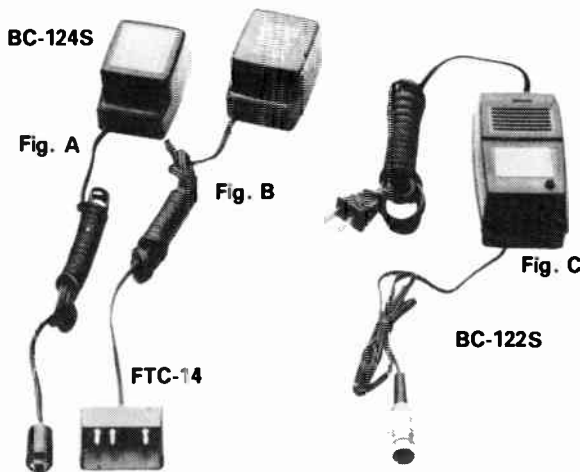
BC-77UB



MBC-2
Intermixed or same packs



MBC-5



BC-124S

Fig. A

Fig. B

Fig. C

FTC-14

BC-122S

**FREZZI™ SINGLE-BATTERY
UNIVERSAL FAST CHARGERS**

**Model BC-77U/Model BC-77UB
Single-Battery Universal Fast Chargers**

General:

The line of Frezzolini® Universal fast chargers was specifically designed to fast-charge (1 hr.) all models of Frezzolini 12V and 14.4V 2-6AH battery packs. The Frezzi chargers also have the capability to safely fast-charge Anton/Bauer 12V and 14.4V nickel-cadmium on-board battery packs. All chargers are transformer-type line-isolated and designed per European IEC-65 safety code specifications. The chargers are constructed of heavy-gauge aluminum in a compact size to withstand abuse in the field. The universal feature of this charger enables operation anywhere in the world.

Model BC-77U/BC-77UB \$395.00
Model BC-30D (for use with 30V batteries with fast charge capability) 395.00

**FREZZI MULTIPLE BATTERY CHARGING STATIONS
"We custom-design per your specific charging requirements"**

MBC-2 (All Feature Model)

Fast-charges five (5) Frezzolini or Anton/Bauer 12-14.4V nickel-cadmium battery packs in less than one (1) hour while simultaneously charging eight (8) additional Frezzolini, Sony, JVC or Panasonic VTR battery packs overnight. Universal AC inputs. Deluxe shipping case available. Weight: 45 lbs.

MBC-2 \$2400.00

MBC-4

Fast charges (1 hr.) five (5) Frezzolini or Anton/Bauer 12-14.4V nickel-cadmium battery packs while simultaneously charging eight additional Sony BP-90 type battery packs in 14 hours. Universal AC inputs. Deluxe shipping case available. Weight: 45 lbs.

MBC-4 \$2090.00

MBC-4A

Fast charges (5) Frezzolini or Anton/Bauer 12-14.4V battery packs. Weight: 43 lbs.

MBC-4A \$1595.00

**MBC-5, Charges Eight (8)
BP-90 Type Batteries Simultaneously**

- Universal AC inputs
- Compact size
- Line-isolated
- Current-sensing LEDs
- Other models available for all VTR or camera battery packs

Charge eight (8) BP-90-type battery packs simultaneously in 14 hours with MBC-5 Charging Station. Universal AC inputs. Weight: 8 lbs.

MBC-5 \$495.00

OVERNIGHT TRICKLE CHARGERS

- Fully charges battery packs in 14 hours
- Switchable 115-230VAC 50/60Hz input
- Miniature size
- Transformer-type line-isolated
- Current-sensing LED

Model FTC-12/13/14 (For BP-12/13/14) Fig. B \$ 80.00

Model FTC-122/132/142 (For BP-122/132/142) 90.00

Model BC-122S (For FBP-20/44/60) Fig. C 90.00

Model BC-124S (For BP-90/FBP-90) Fig. A 80.00

Model CR-1 (Current regulated for BP-90, BP-12/13/14) 125.00

Trickle charger for VB series batteries 115V input only.

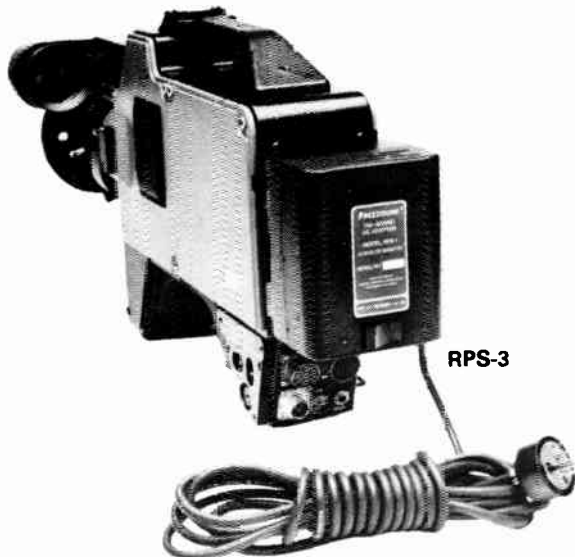
Model VBC (For VB-12) \$38.00

Model VBCV (For VB4X/VB-12V) 38.00

Model FTC-NP1 [For (1) NP1] 95.00



RPS-2



RPS-3



RPS-40

Frezzi™ Dual Channel AC Adaptor and Fast Charger

The RPS-2 Dual-Channel combination power supply/fast charger consists of two (2) totally independent power sources. Each power source has the capability of either functioning as a precise regulated power supply for ENG Camera/VTR Power or switching over to a nickel-cadmium battery fast charger. Either one or two battery packs are simultaneously fast charged with automatic high-charge termination when the battery packs reach full charge.

Specifications

AC Input: 115/230VAC ± 10% 50/60Hz
Regulated DC Output: 13.25VDC (3.0A max. each channel)
Line Regulation: ± .05% for 10% line charge
Load Regulation: ± .05% for 50% load change
Output Ripple: 5.0mV p-p maximum
Overload Protection: Automatic current limit/foldback
Fast Charge Time: 12.0V battery-75 minutes
 14.4V battery-180 minutes
Size: 8 1/2" x 5" x 5 1/2"
Weight: 8.5 lbs.

Model RPS-2\$895.00

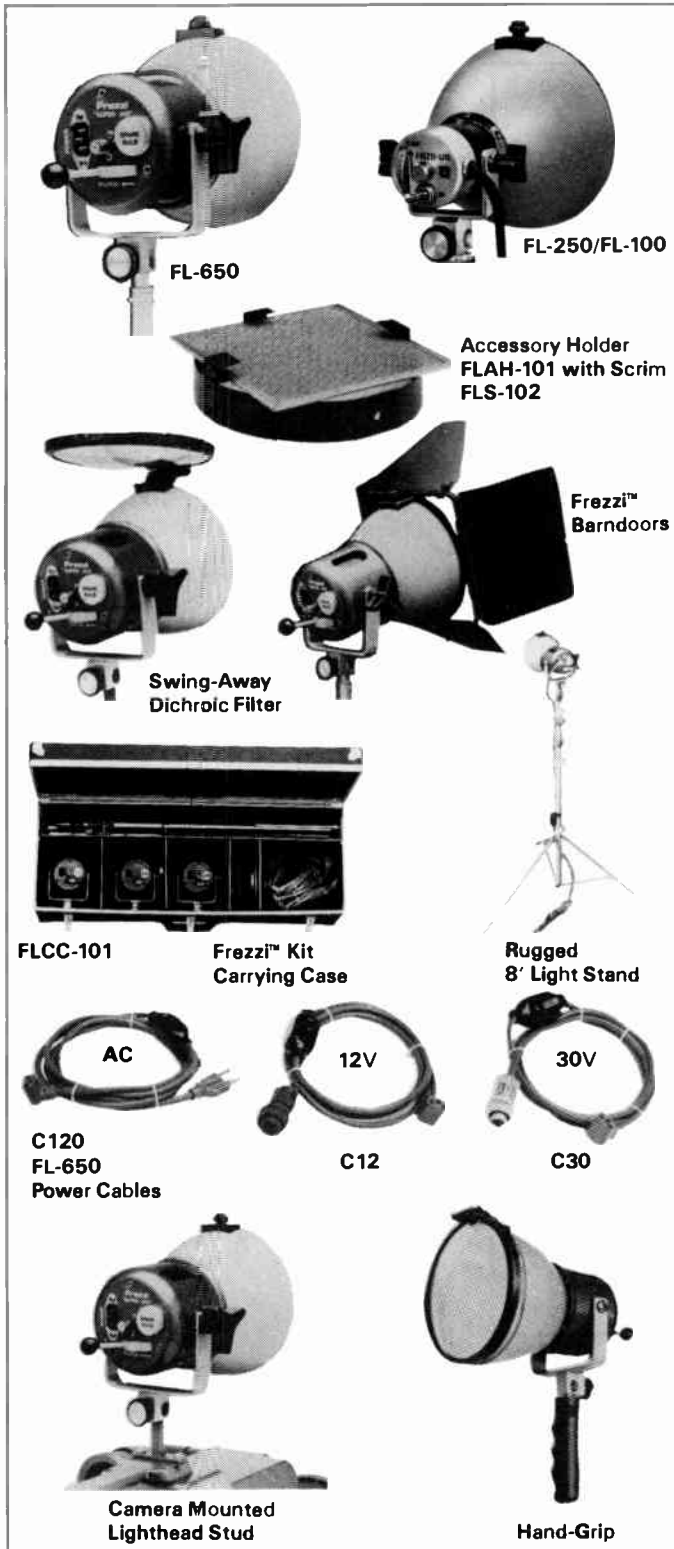
**Frezzi On-Board™ AC Power Supplies
 Models RPS-3 and RPS-40**

Ultra light weight, compact size, mounts directly to ENG/EPF professional TV cameras with on-board battery mounts. Replacing battery with either unit allows for "continuous" operation when 120 or 240VAC 50 to 60Hz is available. Easy voltage selection slide switch on unit. On-off lighted switch. Advanced switching design with full RFI/EMI suppression. Supplied as OEM and replacement equipment to major manufacturers.

Specifications

	RPS-3	RPS-40
Power:	50W	40W
Output Current:	4A max.	3A max.
Output Voltage:	13VDC Nominal	
Output Ripple:	10MV Typical	
Input Line Selection		
SW.:	120VAC/240VAC, 50/60Hz	
Line Regulation:	± 0.1% (For 10% line change)	
Load Regulation:	± 0.2% (For 50% load change)	
Current Limit:	Output protected and fully isolated	
Size:	5.0" x 4.0" x 3.4"	5.25" x 4.125" x 2.0"
Weight:	2.3 lbs.	1.8 lbs.

Model RPS-3\$595.00
 Model RPS-40\$45.00



- Computer designed high luminance reflector
- Easy access flood-spot control
- Mounts to stand, camera or handgrip

FL-650

- Ultra-lightweight — 1 lb.
- Built-in spare lamp holder
- AC/DC operation from 12V-30V-115V-220V-240V
- 650W capability

FL-650 (Lighthouse only) \$ 165.00

Lamp/Cable/Handle/Mount are additional

FL-250 or FL-100

- Ultra-lightweight — 1 lb.
- DC operation from 12V-30V
- Complete kits available
- Choice of power configurations

FL-250 \$ 195.00

FL-100 195.00

Includes: Lamp, Attached Cable, Hand Grip

Swing-Away Dichroic Filter

FLDF-101 \$ 105.00

Accessory Holder

FLAH-101 \$ 29.00

For scrim and Rotating Barndoors

FLS-102 28.00

Frezzi™ Barndoors — Rotate 360°

FLBD-102 \$ 40.00

Frezzi Kit Carrying Case FLCC-101

FLCC-101 (AC Kit) \$ 125.00

FLCC-103 (DC Kit) 175.00

FL-650 Lamps

EYL	100W 12V (50 hrs.)	\$ 17.00
DYG	250W 30V (15 hrs.)	28.00
EKB	420W 120V (75 hrs.)	36.00
DYS	600W 120V (75 hrs.)	26.00
EKD	650W 120V (25 hrs.)	32.00
DYR	650W 220V (50 hrs.)	43.00
DYR	650W 240V (50 hrs.)	43.00

FL-250 Lamps

FAV	100W 12V	\$ 40.00
FBT	150W 30V	44.00
FBV	250W 30V	48.00

FL-650 Power Cables

C12	(For 12VDC operation)	\$ 32.00
C30	(For 30VDC operation)	32.00
C120	(For 120VAC operation)	17.00

Rugged 8' Light Stand

FLLS-101 \$ 68.50

Camera Mounted Lighthouse Stud

Various sizes available see page 10

Handgrip

FLH-101 \$ 12.00



Kit Model SPK-1 Includes:

- (3) FL-650 Lighthead
 - (3) C120-120V Cables w/In-Line Switch
 - (3) EKD or DYS Lamps
 - (2) FLBD-102 Rotating Barn Doors
 - (1) FLS-102 Scrim
 - (2) FLAH-101 Accessory Holder
 - (3) FLLS-101 Light Stands (8 ft.)
 - (1) C120EX 3-Way Extension Cable (25 ft.)
 - (1) FLCC-101 Carrying Case
- SPK-1 \$975.00**

30 Volt Lighting Kits

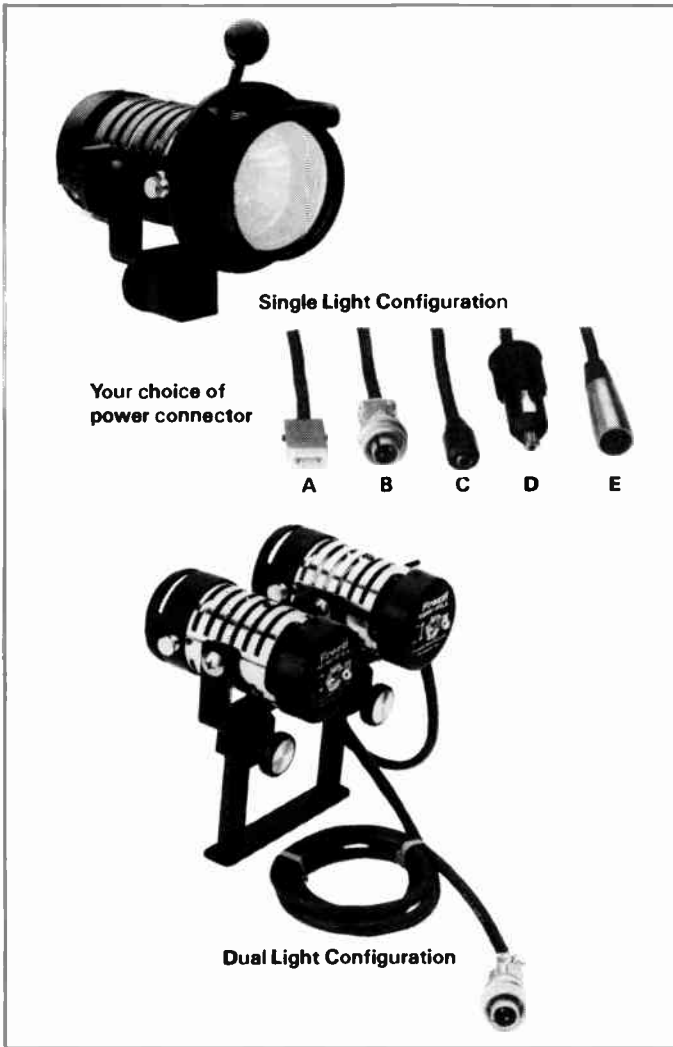
Kit Model SPK-2

30 Volt DC Kit Includes:

- (1) SP-650 Head Only
 - (1) C30-30V Cable, 6'
 - (1) DYG 250W Lamp
 - (1) F-30-EC Belt
 - (1) Carrying Case
- Total \$860.00**

Kit Model

- SPK-2A** Same as SPK-2 except includes "Fast-Charge" belt model F-30EXFA in place of F-30EC
Total \$910.00
- BC-30D** One (1) hour Fast Charger for F-30EXFA
Total \$395.00



Unique Mini-Fill Features:

- Extremely lightweight — only 12 oz.
- Compact size — 2" x 4 1/4"
- Operates from any 12-14.4 or 30V battery
- Utilizes the latest high efficiency multi-mirror lamps — (20-100W)
- Completely serviceable
- Field tested
- Field proven
- Mounts on camera, pistol grip or lightstand
- Dual-lighthouse configuration from one power source
- Rugged construction — Built by Frezzolini® — The world leader in portable lighting and power

Single Light Configuration

(Including 100W or 75W Bulb)

- MF12P** Mini-Fill w/cigarette lighter plug (Fig. D) \$149.95
- MF12C** Mini-Fill w/BP-90 type co-ax plug (Fig. C) 149.95
- MF12V** Mini-Fill w/Frezzi amp connector (Fig. A) 149.95
- MFSV** Mini-Fill w/short (18") cable and amp connector (Fig. A) 149.95
- MF4X** Mini-Fill w/XLR-4 connector (Fig. E) 149.95
- MF5X** Mini-Fill w/XLR-5 connector (Fig. E) 149.95
- MF30** Mini-Fill w/2-pin amphenol connector for 30V operation (includes 80W bulb) (Fig. B) 154.95

Dual Light Configuration

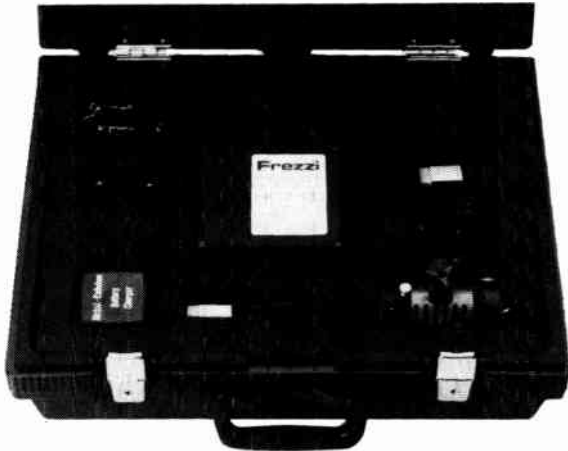
- DMF12** Twin Mini-Fill interconnected for power from one (1) source. Choice of power connectors: Sony BP-90 In-Line, Frezzi™-Amp, XLR-4 or cigarette lighter type \$295.00
- DMF30** Same as DMF12 except wired for 30V operation including 2-pin amphenol connector 298.00

Mini-Fill Lamp Guide

Lamp Code	Volts	Watts	Life (Hrs.)	Color Temp.	Typical Center Candlepower	Beam Spread
BAB	12	20	2000	2925°K	460	FLOOD
EKP	30	80	25	3350°K	1750	FLOOD
ESX	12	20	2000	2925°K	3300	NARROW SPOT
EXN	12	50	3000	3050°K	1500	FLOOD
EXT	12	50	3000	3050°K	9150	NARROW SPOT
EXV	12	100	50	3350°K	3300	FLOOD
EXZ	12	50	3000	3075°K	3000	NARROW FLOOD
EYC	12	75	3500	3050°K	2000	FLOOD
EYF	12	75	3500	3050°K	11500	NARROW SPOT

Spare Lamps:

- EKP** 80W at 30V (for 30V battery operation) \$30.00
- EXV** 100W at 12V (for 12V battery only) 33.00
- EYC** 75W at 12V (also for 13.2 and 14.4V operation) 25.00



MFK4



MFK9

MINI-FILL KITS

MFK1 Includes:

- (1) MF12P Mini-Fill
- (1) VB12 Battery
- (1) VBC Charger
- (1) EYC or EXV Bulb

MFK1 \$295.00

MFK2 Includes:

- (1) MF12P Mini-Fill
- (1) VB-12 Battery
- (1) VBC Charger
- (1) EYC or EXV Bulb
- (1) MFDF Dichroic Filter
- (1) FLCC Carrying Case

MFK2 \$455.00

MFK3 Includes:

- (1) MF12V Mini-Fill
- (1) VB12V Battery
- (1) VBCV Charger
- (1) EYC or EXV Bulb

MFK3 \$355.00

MFK4 Includes:

- (1) MF12V Mini-Fill
- (1) VB12V Battery
- (1) VBCV Charger
- (1) EYC or EXV Bulb
- (1) MFDF Dichroic Filter
- (1) MFCC Carrying Case

MFK4 \$515.00

MFK5 Includes:

- (1) MF4X Mini-Fill
- (1) VB4X Battery
- (1) VBCV Charger
- (1) EYC or EXV Bulb

MFK5 \$365.00

MFK6 Includes:

- (1) MF4X Mini-Fill
- (1) VB4X Battery
- (1) VBCV Charger
- (1) EYC or EXV Bulb
- (1) MFDF Dichroic Filter
- (1) MFCC Carrying Case

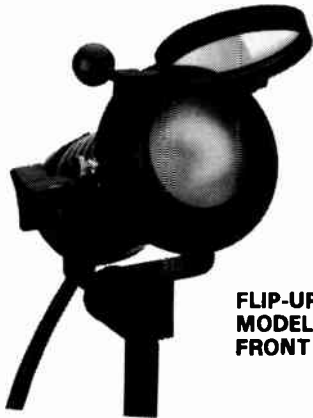
MFK6 \$525.00

MFK9 Includes:

- (3) MF4X (LC) Mini-Fill
- (3) MFDF Dichroic Filter
- (3) FLLS-102 Short Stand
- (1) LPS-400 Power Supply
- (3) LS1 Stud
- (3) EYC Bulb
- (1) FLCC-104 Case

MFK9 \$1250.00

Other Custom-Designed Kits Available Per Your Specific Requirements.



FLIP-UP DICHOIC FILTER
MODEL MFDF AND DIFFUSED
FRONT SURFACE



LPS-100

Camera Mounted Lighthead Studs



MFDF	Mini-Fill "Flip-Up" Dichroic Filter	88.00
MFCC	Mini-Fill Carrying Case	80.00
LP90	Leather Pouch w/Belt Loops for BP-90	38.00
LPS100	AC Adaptor/Power Supply, 100W w/Cigarette Lighter Type Mating Connector	195.00
LPS400	4-Channel AC Adaptor/Power Supply, 400W w/XLR4 Connector Output	295.00
FLLS-102	Mini-Fill Short Stand	36.00
CLPA	On-Camera Power Adaptor (XLP-4)	125.00

CAMERA MOUNTED LIGHTHEAD STUDS

Frezzi™ Stud Specification List

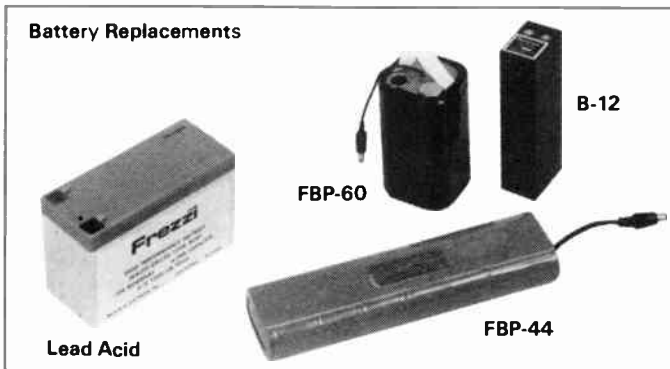
LS1	Lite-Stud, 3" x 1/2", 1/4-20	25.00
LS2	Lite-Stud, 3" x 1/2", 10-32	25.00
LS3	Lite-Stud, 3" x 1/2", 5mm	25.00
LS4	Lite-Stud, 3" x 1/2", 6mm	25.00
LS5	Lite-Stud, 3" x 1/2", 4mm	25.00
LS21	Lite-Stud for FP-21/22	29.00
LS79	Lite-Stud for HL-79A/D	29.00
LS83	Lite-Stud for HL-83	38.00
LS95	Lite-Stud, 1-1/2" x 1/2", 5mm	25.00
LSM21	Lite/Mic Holder for FP-21/22 (Shoe Type)	65.00
LSM79	Lite/Mic Holder for HL-79A/D	65.00
LSM83	Lite/Mic Holder for HL-83	65.00
LSM95	Lite/Mic Holder for HL-95	65.00

CAMERA-STUD REFERENCE CHART

CAMERA MODEL	DESCRIPTION	FREZZI P/N	PRICE
HITACHI FP-15/21/22 & Z-31	Lite Only	LS-21	29.00
	Lite & Microphone	LSM-21	65.00
KEGAMI HL-79	Lite Only	LS-79	29.00
	Lite & Microphone	LSM-79	65.00
HL-79E	Lite Only	LS-21	29.00
HL-79E	Lite & Microphone	LSM-21	65.00
HL-83	Lite Only	LS-83	38.00
HL-83	Lite & Microphone	LSM-83	65.00
HL-95	Lite Only	LS-95	25.00
HL-95	Lite & Microphone	LSM-95	65.00
ITC-730	Lite Only	LS-4	25.00
ITC-730	Lite & Microphone	LSM-4	65.00
JVC KY110/210/310 & KY320/950	Lite Only	LS-21	29.00
	Lite & Microphone	LSM-21	65.00
KY1900/2000/2700	Lite Only	LS-2	25.00
KY1900/2000/2700	Lite & Microphone	LSM-2	65.00
SHARP XC700/800/900	Lite Only	LS-1	25.00
	Lite & Microphone	LSM-1	65.00
SONY All Sony Cameras	Lite Only	LS-1	25.00
	Lite & Microphone	LSM-1	65.00

FREZZOLINI ELECTRONICS, INC.

Battery Replacements



Frezzi™ 2AH NiCad Replacements for Lead-Acid VTR Battery Packs

- Model FBP-20 Replacement for Sony BP-20A
- Model FBP-44 Replacement for JVC PBP-1
- Model FBP-44 Replacement for Panasonic LCR-3012 VBP
- Model FBP-60 Replacement for Sony BP60
- Model FNP-1 Replacement for Sony NP-1

Nickel Cadmium Batteries

Model B-12 (12V at 1AH)	\$ 125.00
Model FBP-20 (12V at 2AH) . . . . .	.225.00
Model FBP-44 (12V at 2AH) . . . . .	.225.00
Model FBP-60 (12V at 2AH) . . . . .	.225.00
Model FNP-1HC (12V at 1.8AH)85.00

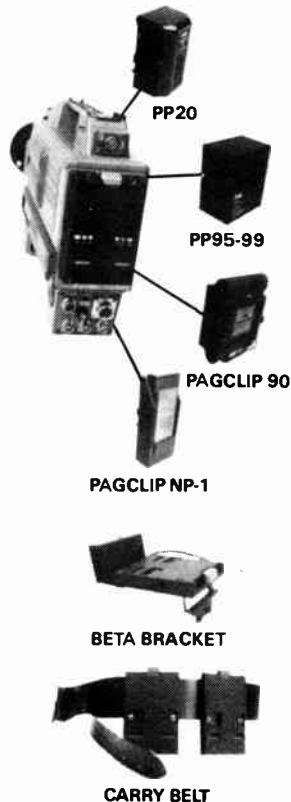
Sealed Lead Acid Battery

Model 12V 6.5AH-SGLA	\$37.50
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Model	Price
On-Board Battery Packs	
BP12	\$455.00
BP13475.00
BP14495.00
BP122275.00
BP132 . . . . .	.285.00
BP142 . . . . .	.295.00
On-Board AC Supply	
RPS 1	\$515.00
RPS 3 . . . . .	.595.00
RPS 40 . . . . .	.545.00
AC Supply/Charger	
RPS 2	\$895.00
VTR Replacement Batteries	
FBP20	\$225.00
FBP44 . . . . .	.225.00
FBP60 . . . . .	.225.00
FBP90 . . . . .	.275.00
FBP90FC . . . . .	.330.00
FNP1HC . . . . .	.85.00
On-Board/BP-90 Adaptors	
CLPA	\$125.00
HM90 . . . . .	.198.00
HM90B . . . . .	.198.00
HM90BW . . . . .	.248.00
HMBVV1 . . . . .	.105.00
HM76B/C . . . . .	.155.00
HM300 . . . . .	.105.00
12 Volt Battery Packs	
B12	\$125.00
VB4X . . . . .	.235.00
VB12 . . . . .	.165.00
VB12V . . . . .	.225.00
VBSO . . . . .	.245.00
6AH Belts	
F12-77	\$475.00
F12EXFA . . . . .	.475.00
F14EXFA . . . . .	.495.00
30 Volt Batteries/Belts	
EC30	\$695.00
F30EC . . . . .	.595.00
F30EXFA . . . . .	.645.00
F30/14EXFA . . . . .	.795.00
Uninterruptible Power Supply	
UPS-14P	\$595.00

Model	Price
Overnight Chargers	
BC122S	\$ 90.00
BC124S . . . . .	.80.00
CR1 . . . . .	.125.00
FTC 12/13/14 . . . . .	.80.00
FTC 122/132/142 . . . . .	.90.00
FTC-NP1 . . . . .	.95.00
VBC . . . . .	.38.00
VBCV . . . . .	.38.00
Fast Chargers	
BC30D	\$395.00
BC77U/UB . . . . .	.395.00
RPS2 . . . . .	.895.00
Multi-Chargers	
MBC2	\$2400.00
MBC4 . . . . .	.2090.00
MBC4A . . . . .	.1595.00
MBC5 . . . . .	.495.00
Fast Charge Adaptor Cables	
HC	\$30.00
HS . . . . .	.30.00
HV . . . . .	.30.00
Light/Microphone Brackets	
LS1	\$25.00
LSM1 . . . . .	.65.00
LS2 . . . . .	.25.00
LSM2 . . . . .	.65.00
LS3 . . . . .	.25.00
LS4 . . . . .	.25.00
LS5 . . . . .	.25.00
LSM4 . . . . .	.65.00
LS21 . . . . .	.29.00
LSM21 . . . . .	.65.00
LS79 . . . . .	.29.00
LSM79 . . . . .	.65.00
LS83 . . . . .	.38.00
LSM83 . . . . .	.65.00
LS95 . . . . .	.25.00
LSM95 . . . . .	.65.00
Spare Lamps	
DYG	\$28.00
DYR . . . . .	.43.00
DYS . . . . .	.26.00
EKB . . . . .	.36.00
EKD . . . . .	.32.00
EKP . . . . .	.30.00
EYC . . . . .	.25.00
EYL . . . . .	.17.00
EXV . . . . .	.33.00

Model	Price
FAV	\$40.00
FBT . . . . .	.44.00
FBV . . . . .	.48.00
Portable Lights	
DMF12	\$295.00
DMF30 . . . . .	.298.00
FL100 . . . . .	.195.00
FL250 . . . . .	.195.00
FL650 . . . . .	.165.00
MF12C . . . . .	.149.95
MF12P . . . . .	.149.95
MF4X . . . . .	.149.95
MF5X . . . . .	.149.95
MF30 . . . . .	.154.95
FL650 Kits	
SPK1	\$975.00
SPK2 . . . . .	.860.00
SPK2A . . . . .	.910.00
Mini-Fill Kits	
MFK1	\$ 295.00
MFK2 . . . . .	.455.00
MFK3 . . . . .	.355.00
MFK4 . . . . .	.515.00
MFK5 . . . . .	.365.00
MFK6 . . . . .	.525.00
MFK9 . . . . .	.1250.00
Lighting Accessories	
C12	\$ 32.00
C30 . . . . .	.32.00
C120 . . . . .	.17.00
C120EX . . . . .	.25.00
FLAH101 . . . . .	.29.00
FLBD102 . . . . .	.40.00
FLCC101 . . . . .	.125.00
FLCC103 . . . . .	.175.00
FLDF101 . . . . .	.105.00
FLH101 . . . . .	.12.00
FLLS101 . . . . .	.68.50
FLLS102 . . . . .	.36.00
FLS101 . . . . .	.44.00
FLS102 . . . . .	.28.00
LP90 . . . . .	.38.00
LPS100 . . . . .	.195.00
LPS400 . . . . .	.295.00
MFCC . . . . .	.80.00
MFDF . . . . .	.88.00



PAG-loc BATTERY SYSTEM

The PAG-loc mount is an improved mechanical and electrical camera-to-battery interface system. Once a PAG-loc camera bracket is installed onto a camera, a variety of PAG-loc batteries and battery holders can be attached. PAG MICRO-MASTER charger is outfitted with PAG-loc connector.

- | | | |
|-------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #9522 | CAMERA BRACKET | PAG-loc Camera Brackets are offered with an assortment of direct camera fittings. Specify camera manufacture and model. Accepts all PAG-loc batteries and clips. Has BP-90 socket to power light |
| #9515 | PAGCLIP 90 | PAG-loc PAGCLIP 90 holds any BP-90 type battery including PAG PP-90 or Master 90 batteries |
| #9516 | PAGCLIP NP-1 | PAG-loc PAGCLIP/NP-1 holds NP-1 battery |
| #9530 | BETA BRACKET | PAG-loc Camera Bracket with special mounting plate for BetaCam VTR/tube camera combination |
| #9531 | BETA/CCD BRACKET | PAG-loc Camera Bracket with special mounting plate for BetaCam/VTR/CCD camera combination |
| #9523 | CARRY BELT | Leather belt with 2 PAG-loc brackets for carrying spare PAG-loc batteries |
| #9320 | PP20 | BATTERIES (with exterior fuses)
13V, 2AH lightweight NiCad battery with PAG-loc mount
<i>Specify black or white</i> |
| #9395 | PP95 | 13V, 4AH NiCad battery with PAG-loc mount |
| #9396 | PP96 | 14V, 4AH NiCad battery with PAG-loc mount |
| #9398 | PP98 | 13V, 4AH SUPER CELL NiCad battery with PAG-loc mount |
| #9399 | PP99 | 14V, 4AH SUPER CELL NiCad battery with PAG-loc mount |

Parts available to convert Anton Bauer batteries and camera brackets to PAG-loc.



PAGPAC BATTERIES

PAGPAC and PAG-loc batteries of high quality NiCad are approved for use in virtually all video equipment. All PAG batteries may be fast charged with any PAG microprocessor charger. Slow charge with appropriate PAG SOLOCHARGER. Use MULTICHARGER with 4AH batteries.

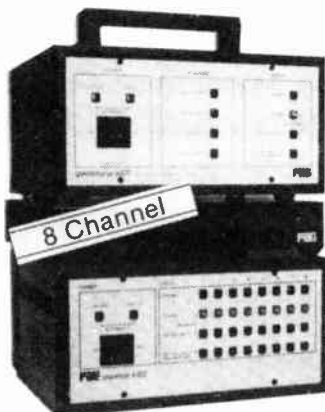
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|-------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #9390 | PP90 | 12V, 4AH approved NiCad replacement for Sony BP-90 battery. Powers VTRs and portable devices. Attach to ENG cameras with PAGCLIP 90 battery holders. Case comes apart for service. Exterior fuse and spare fuse |
| #9391 | MASTER 90 | All new 12V, 4AH BP-90 type NiCad battery. Same as PP90 above but has new high performance cells to extend running time |
| #9360 | PP60 | 12V, 2.5AH NiCad replacement for Sony BP-60 Lead Acid battery. (Can also be charged on Sony charger.) |
| #9387 | PP86A | 13V, 4AH NiCad battery for use on ENG cameras with Anton Bauer/Frezzolini mount |
| #9386 | PP86 | 14V, 4AH NiCad battery similar to PP86A described above. Can be used on same cameras for a longer running time |

MICROPROCESSOR CHARGERS

SPEEDCHARGE 6000

Model #9407

- MICROPROCESSOR CONTROLLED
- FAST AND SLOW CHARGES VARIETY OF NICAD BATTERIES/BELTS (10-15V; 2-12Ah)
- REVITALIZES POOR BATTERIES
- ACTS AS AC POWER SUPPLY
- CONNECTS TO SEQUENCER 6000



"The only battery charging system you need."

Built-in microprocessor selects correct charge for any NiCad battery or belt ranging from 10-15 Volts and 2-12Ah of **any manufacture**. Fast charges 4Ah in 1 hour. Slow charges and revitalizes. Balances batteries. Automatic 110/220V switching. Also is AC power supply (12-14V at 4 amps). Detects faulty batteries. Self diagnostics. XLR-4 pin cable. BP-90 adaptor supplied. Attach SEQUENCER 6000 to accommodate 8 batteries/belts. Variety of SPEEDCHARGES in other ranges available.

#9437 SPEEDCHARGE 6000 for batteries or belts of **12-30 volts** (2-12Ah). Fast charges 4Ah battery in 2 hours.

SEQUENCER 6000

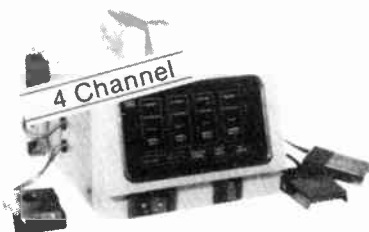
Model #9418

Connect to SPEEDCHARGE 6000 to sequentially fast/slow charge or revitalize any assortment of 8 NiCad batteries or belts (2-12Ah) of **any manufacture**. Status indicators for all eight channels. Eight BP-90 sockets.

MASTERCHARGER

Model #9420

- MICROPROCESSOR CONTROLLED
- ACCEPTS ASSORTMENT OF 4 NICAD BATTERIES/BELTS (12-14V; 1.5-12Ah)
- FAST CHARGES 4 SEQUENTIALLY
- SLOW CHARGES 4 SIMULTANEOUSLY
- ACTS AS AC POWER SUPPLY



Microprocessor controlled 4 channel universal charger. Sequentially fast or simultaneously slow charges any **ENG NiCad** 12-14V/1.5-12Ah, then balances and trickle charges. Also is AC power supply (12-14V at 4 amps). Automatic 110/220V switching with auto circuit breaker. Detects faulty batteries. Self diagnostics. Four BP-90 and four Anton Bauer/Frezzolini type sockets on board.

MICROMASTER

Microprocessor controlled single channel fast charger and balancer. Accepts NiCad ENG batteries of **any manufacture** in 12 to 14 volt range. Automatic 110/220V switching. PAG-Iok connector and BP-90 socket. Charging, ready, and faulty battery indicators. Under 2 lbs.

9526 **MICROMASTER** for 1.5-12Ah batteries (fast charge 4Ah in 1 hour).

9529 **MICROMASTER MOBILE DC** for 1.5-12Ah batteries. Same as #9526 but 12VDC.

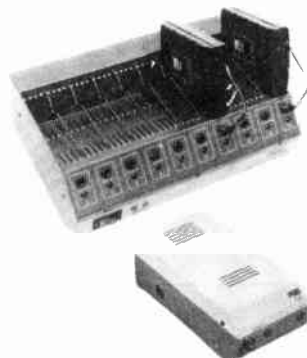


10/90 MULTICHARGER

Model #9408

Overnight charges and balances ten PAG PP90, Master 90 or Sony BP-90 equivalent NiCad batteries simultaneously. Ten BP-90 sockets.

Suitable for all 4Ah NiCad batteries or belts in 12-14 volt range.



SOLOCHARGER

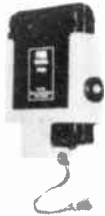
Model #9429

Lightweight low cost overnight battery charger **suitable for all 4Ah NiCad 12-14V batteries or belts of any manufacture**. Has BP-90 socket.

(4Ah, 7Ah, and 10Ah versions available in 12-14V or 24-30V models.)

Refer to Green Section for Addresses and Telephone Numbers.

PAGCLIPS

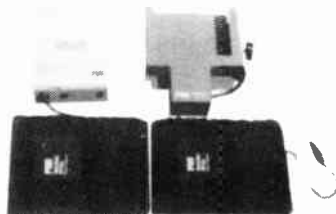


PAGCLIP battery holders easily attach to ENG cameras to hold BP-90 type battery such as PAG PP90 or Master 90. Each clip model outfitted with appropriate electrical camera mating.

- | | |
|---------------------------------------|-------------------------------|
| #9515 Fits Cameras with PAG-lok mount | #9505 Fits Sony M3A/DXC3000 |
| #9464 Fits Hitachi Z-31 or FP-15 | #9547 Fits Sony 330 |
| #9463 Fits Hitachi SK-97 or FP-22 | #9546 Fits Sony Betacam |
| #9459 Fits Sony M3 | #9456 Fits cameras with |
| #9467 Fits JVC cameras | Anton Bauer/Frezzolini mounts |

CAMERA BATTERY PACKAGES

Packages contain: 1 PAGCLIP. Holds BP-90 type battery like PAG PP90.
 2 PAG PP90 (12volt/4Ah) batteries.
 1 PAG SOLOCHARGER for 12-14V/4Ah batteries.



- | | |
|--------------------------------------|-------------------------------|
| #9510 Cameras with PAG-lok mounts | #9506 Sony M3A/DXC3000 camera |
| #9486 Hitachi Z-31 or FP-15 cameras | #9507 Sony 330 camera |
| #9497 Hitachi SK-97 or FP-22 cameras | #9509 Sony Betacam |
| #9498 Sony M3 camera | #9496 Cameras with Anton |
| #9508 JVC cameras | Bauer/Frezzolini mounts |

CHARGER ADAPTORS

- #9458 BP-90 plug to Anton Bauer/Frezzolini type connector (cable)
- #9455 BP-90 plug to XLR-4 male pin (cable)
- #9447 XLR-4 socket to BP-90 socket (box)
- #9468 XLR-4 socket to BP-60 socket (box)
- #9488 BP-90 plug to BP-60 socket (cable)
- #9577 BP-90 to JVC NB-P2U shoe (cable)
- #9576 BP-90 to NP-1 (shoe) cable adaptor

PAG-lok CHARGER ACCESSORIES

- #9514 PAG-lok to BP-90 plug (cable)
- #9518 PAG-lok to Anton Bauer convertor

ACCESSORIES

- #9469 Stacking bracket (stacks SPEEDCHARGE and SEQUENCER)
- #9472 Battery stand (holds four BP-90 type batteries for charging)
- #9500 Shipping case holds SPEEDCHARGE 6000 and SEQUENCER 6000
- #9501 Shipping case holds MASTERCHARGER
- #9502 Soft carrying case for MASTERCHARGER or SPEEDCHARGE or SEQUENCER

LIGHTING ACCESSORIES

For PAGLIGHTS

- #9801 Bulb for PAGLIGHT 100 (100 watts/12 volts)
- #9821 Bulb for PAGLIGHT 250 (250 watts/24 volts)
- #9841 Bulb for PAGLIGHT 250 (250 watts/30volts)
- #9804 Dichroic Filter (for PAGLIGHT 100 or 250)
- #9809 PAGLIGHT 100 or 250 Accessory Kit (4 leaf rotating barndoors, and clear safety glass)

For PAGLIGHT MINI

- #9831 Bulb for PAGLIGHT MINI (75 watts/12 volts)
- #9833 Bulb for PAGLIGHT MINI (100 watts/12 volts)
- #9837 Bulb for PAGLIGHT MINI (100 watts/14 volts)
Use with 13V or 14V batteries.
- #9834 Dichroic Reflector for PAGLIGHT MINI
- #9835 Narrow Beam Reflector for PAGLIGHT MINI

PAGBELTS

World's only ALL LEATHER deep molded belts encasing top quality NiCad cells. With or without 14-hour internal charger (IC). Has XLR-4 socket. Fast charge all 12, 13, and 14 volt PAGBELTS with any PAG microprocessor charger. Slow charge with appropriate PAG SOLOCHARGER.

Indicate 1) Waist Size: Standard 32"-42" or Large 38"-48".
2) Buckle Type: Conventional Buckle or Quick Release.



WITH (IC) Charger	WITHOUT Charger		Description
#9203	#9103	12V/4Ah	Belt (runs 12V/100W light 26 min/use for microwave)
#9253	#9153	12V/7Ah	Belt (runs 12V/100W light 45 min/use for microwave)
#9283	#9123	12V/10Ah	Belt (runs 12V/100W light 65 min/use for microwave)
#9204	#9104	13V/4Ah	Belt (runs 12V/100W light 32 min/use for microwave)
#9254	#9154	13V/7Ah	Belt (runs 12V/100W light 55 min/use for microwave)
#9208	#9108	24V/4Ah	Belt (runs 12V/250W light 23 min/use for microwave)

PAGBELTS also available in 14, 24, and 30V models (4, 7 & 10Ah).



PAGCLIP 90 BELT

Model #9457

Belt mounted PAGCLIP 90 holder with adjustable quick release nylon belt. Holds PAG PP90, Master 90, or any BP-90 type battery (12V/4Ah). XLR-4 socket output for powering lights, microwave, etc.



PAGLIGHTS and KITS

Lighting/Lighting kits

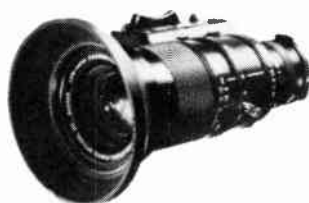
Developed to support the requirements for cool running portable efficient ENG lighting.

OPERATING TIME FORMULAS

$$\text{Battery Operating Time in Hours} = \frac{\text{Ah of battery/belt}}{\text{Amps consumed}}$$

If watts not amps are known:

$$\frac{\text{watts consumed}}{\text{volts required}} = \text{amps}$$
 Put into the first formula.



A3.5x6.5RM



A14x8ERM



A20x7ESM

2/3" Format Zoom Lenses for Studio and Field Productions

Model No.	Focal Length	Zoom Ratio	Extender	Maximum Aperture Ratio	M.O.D.	Object Dimensions At M.O.D.	Angular Field Of View	Macro	Size	Weight (w/Lens Hood)
A3.5x6.5RM	6.5 ~ 23mm	3.5x	—	1:1.7	0.3m	6.5mm 340 x 454 23mm 97.3 x 129.7	6.5mm 68°11' x 53°50' 23mm 21°39' x 16°19'	—	187mm	1.38kg
A7x7RM	7 ~ 50mm	7x	—	1:1.7	0.3m	7mm 334 x 445 50mm 47.6 x 63.5	7mm 64°18' x 50°29' 50mm 10°0.3' x 7°33'	—	199mm	1.6kg
A8.5x5.5RM	5.5 ~ 47mm	8.5x	—	1:1.7	0.3m	5.5mm 492 x 369 47mm 57.9 x 43.4	5.5mm 77°19' x 61°55' 47mm 10°41' x 8°02'	—	216.5mm	1.75kg
A8.5x5.5ERM	(1x) 5.5 ~ 47mm (1.7x) 9.4 ~ 80mm	8.5x	1.7x	1:1.7	0.3m	5.5mm 492x369mm 47mm 57.9x43.4mm	5.5mm 77°19'x61°55' 47mm 10°41'x8°02'	—	235mm	1.85kg
A16x9.5RM	9.5 ~ 152mm	16x	—	1:1.8	0.95m	9.5mm 617 x 823 152 38 x 51	9.5mm 49°42' x 38°19' 152mm 3°19' x 2°29'	with Macro	160mm	1.36kg
A12x9ERM	(1x) 9 ~ 108mm (2x) 18 ~ 216mm	12x	2x	1:1.7	0.95m	9mm 658 x 877 108mm 55 x 73	9mm 52°06' x 40°16' 108mm 4°40' x 3°30'	with Macro	174mm	1.45kg
A14x8ERM	(1x) 8 ~ 112mm (2x) 16 ~ 224mm	14x	2x	1:1.7	0.7m	8mm 664x885mm 112mm 47x63mm	8mm 57°37'x44°50' 112mm 4°30'x3°23'	with Macro	237mm	2.3kg
A14x9ERM	(1x) 9 ~ 126mm (2x) 18 ~ 252mm	14x	2x	1:1.7	0.8m	9mm 550 x 733 126mm 39 x 52	9mm 52°06' x 40°16' 126mm 4°00' x 3°00'	with Macro	184.5mm	1.48kg
A18x18.5ERM	(1) 8.5 ~ 153mm (2) 17 ~ 306mm	18x	2x	1:1.7	0.9m	8.5mm 879 x 659 153mm 49 x 37	5.5mm 54°44' x 42°26' 153mm 3°17' x 2°28'	with Macro	199mm	1.55kg
A22x12.5ERM	(1x) 12.5 ~ 275mm (2x) 25 ~ 550mm	22x	2x	1:2.0	1.8m	12.5mm 894 x 1192 275mm 41 x 54	12.5mm 38°47' x 29°35' 275mm 1°50' x 1°23'	with Macro	286.5mm	3.8kg

Model No.	Focal Length	Zoom Ratio	Extender	Maximum Aperture Ratio	M.O.D.	Object Dimensions At M.O.D.	Angular Field Of View	Pattern Proj.	Size (mm)	Weight (w/Lens Hood)
A15x8ESM	(1) 8 ~ 120mm (2) 16 ~ 240mm	15x	2x	1:1.5	0.7m	8mm 915x686 120mm 61x46	8mm 57°37'x44°50' 120mm 4°12'x3°09'	Avail.	228x228x453	13kg
A18x8ESM	(1) 8 ~ 144mm (2) 16 ~ 288mm	18x	2x	1:1.5	0.7m	8mm 915x686 144mm 51x38	8mm 57°37'x44°50' 144mm 3°30'x2°37'	Avail.	228x228x453	13kg
A20x7ESM	(1x) 7 ~ 140mm (2x) 14 ~ 280mm	20x	2x	1:1.4	0.75m	7mm 1166x874mm 140mm 58x44mm	7mm 64°18'x50°29' 140mm 3°36'x2°42'	Avail.	228x228x481	15kg
A34x10ESM	(1) 10 ~ 340mm (2)20 ~ 680mm	34x	2x	1:1.6	1.8m	10mm 1446x1085 340mm 43x32	10mm 47°30'x1°29' 340mm 24°49'x0°44'	Avail.	N.A.	13.6kg
A34x20.5ESM	(1) 20.5 ~ 700mm (2) 41 ~ 1400mm	34x	2x	1:2.4	3m	20.5mm 2000x1500 700mm 59x44	20.5mm 24°14'x0°43' 700mm 12°13'x0°22'	Avail.	N.A.	19kg
A44x9.5ESM	(1x) 9.5 ~ 420mm (2x) 19 ~ 840mm	44x	2x	1:1.4	2.2m	9.5mm 1396x1862 418mm 31.7x42.3	9.5mm 49°42'x38°10' 420mm 1°12'x0°54'	Avail.	218x218x492	14.5kg
A44x9.5ESM	(1x) 9.5 ~ 420mm (2x) 19 ~ 840mm	44x	2x	1:1.2	2.5m	9.5mm 1583x2111 418mm 37.3x49.7	9.5mm 49°42'x38°10' 420mm 1°12'x0°54'	Avail.	260x252x657	25kg

Refer to Green Section for Addresses and Telephone Numbers.



P17x16.5ESM



R20x10.5ESM



R44x13.5ESM

2/3-INCH AND 1/2-INCH FORMAT TELECONFERENCING ZOOM LENSES FOR STUDIO AND FIELD PRODUCTIONS

2/3" Format Teleconferencing Lenses

Model No.	Focal Length	Zoom Ratio	Maximum Aperture	M.O.D.*	Iris Range**	Iris Control	Field Angle -Horizontal -Vertical	Front Thread	Weight (w/o Lens Hood)
A10x10MD	10mm-100mm	10X	f/1.6	1m	f/1.6-16	Auto, Remote/	47°30'-5°03' 36°32'-3°47'	72mm/P=0.75	1.3kg
A12x9MD	9mm-108mm	12X	f/1.7	0.95m	f/1.7-16	Servo or	52°06'-4°40' 40°16'-3°30'	72mm/P=0.75	1.3kg
A16x9.5MD	9.5mm-152mm	16X	f/1.8	0.95m	f/1.8-16	Manual	49°42'-3°19' 38°19'-2°29'	77mm/P=0.75	1.5kg

1/2" Format Teleconferencing Lenses

Model No.	Focal Length	Zoom Ratio	Maximum Aperture	M.O.D.*	Iris Range**	Iris Control	Field Angle -Horizontal -Vertical	Front Thread	Weight (w/o Lens Hood)
S10x7.3MD	7.3mm-73mm	10X	f/1.4	1m	f/1.4-16	Auto,	47°20'-5°01' 36°24'-3°46'	72mm/P=0.75	1.3kg
S12x6.6MD	6.6mm-80mm	12X	f/1.4	0.95m	f/1.4-16	Remote/ Servo or	51°44'-4°35' 39°58'-3°36'	72mm/P=0.75	1.3kg
S16x7MD	7mm-112mm	16X	f/1.4	0.95m	f/1.4-16	Manual	49°30'-3°16' 36°32'-2°27'	77mm/P=0.75	1.5kg

*0.07m or less with macro operation

**Plus fully closed

1-INCH AND 1-1/4-INCH ZOOM LENSES FOR STUDIO AND FIELD PRODUCTIONS

1-Inch Format Zoom Lenses

Model No.	Focal Length	Zoom Ratio	Extender	Maximum Aperture Ratio	M.O.D.	Object Dimensions At M.O.D.	Angular Field Of View	Pattern Proj.	Size	Weight (w/Lens Hood)
R17x12.5ESM	12.5-215mm	17X	1.5X, 2X	1:1.6	0.75m	12.5mm 987x740 215mm 58 x 44	12.5mm 54°13'x42°01' 215mm 3°29'x2°33'	Avail.	244x232x547.5	19.5kg
R20x10.5ESM	10.5-210mm	20X	1.5X, 2X	1:1.6	0.75m	10.5mm 1168x876 210mm 58x44	10.5mm 62°44'x49°08' 210mm 3°29'x2°37'	Avail.	244x232x547.5	20.5kg
R34x29.5ESM	29.5-1000mm	34X	2X	1:3.5	5.7mm	29.5mm 2021x1516 1000mm 59x45	29.5mm 24°29'x0°44'	Avail.	N.A.	25.5kg
R44x13.5ESM	13.5-600mm	44X	2X	1:1.8	2.5m	13.5mm 2181x1636 600mm 50x37	13.5mm 50°44'x39°09' 600mm 1°13'x0°55'	Avail.	260x252x662	25kg

1-1/4-Inch Format Zoom Lenses

Model No.	Focal Length	Zoom Ratio	Extender	Maximum Aperture Ratio	M.O.D.	Object Dimensions At M.O.D.	Angular Field Of View	Pattern Proj.	Size	Weight (w/Lens Hood)
P17x16.5ESM	16.5-280mm	17X	1.5X, 2X	1:2.1	0.75m	16.5mm 1000x750 280mm 59x44	16.5mm 54°50'x42°31' 280mm 3°30'x2°38'	Avail.	244x232x559.5	19.5kg
P20x14ESM	14-280mm	20X	1.5X, 2X	1:2.1	0.75m	14mm 1171x898 280mm 58x44	14mm 62°x53'x49°16' 280mm 3°30'x2°38'	Avail.	244x232x559.5	20.5kg
P44x18ESM	18-800mm	44X	2X	1:2.4	2.5m	18mm 2181x1636 800mm 50x37	18mm 50°44'x39°09' 800mm 1°13'x0°55'	Avail.	260x252x677	25kg



H621E



H521E

H621E/H621EB 1" Video Tape

• C and B formats • An increase of +2dB in video and color S/N over previous 1" product (H621) • Minimal dropouts, even after repeated use • Signal deterioration is extremely limited even after repeated use or extended still playback and stand-by • Excellent tape transport, even during special types of playback, such as slow motion • Reduced incidences of print-through, even after long storage periods • Capable of over 2,000 passes • The density of BERIDOX magnetic particles has been significantly increased for a super high density magnetic layer • Smoother base has been developed • Improved backcoating technology • Binder has been improved and made stronger • Available in an optional tough flame-retardant case which protects it against dust, heat and shock during storage and shipping

H621E (C Format)

H621E-LC	1640' 1" Helical	\$ 53.50
H621E-LC	3170'	.81.65
H621E-LC	4620'	121.90
H621E-FRS	1640'	.59.50
H621E-FRS	3170'	.87.65
H621E-FRS	4620'	127.90
H621E-FRS	5070'	148.89
H621E-FRS	6070'	179.31
H621E-FRS	7540'	210.48
H621E-FRS	9100'	262.18

H621EB (B Format/BCN VTR)

H621E-LC	1640'	\$ 53.50
H621E-LC	3170'	.81.65
H621E-LC	4620'	121.90
H621E-FRS	1640'	.59.50
H621E-FRS	3170'	.87.65
H621E-FRS	4620'	127.90
H621E-FRS	6070'	179.31

H521E and H521EBR 3/4" U-Matic Videocassettes

• H521E has an increase of +1.5dB in video and color S/N, and +2.0dB audio S/N over previous 3/4" product (H521) • H521EBR offers a +2.0dB improvement in video, color and audio S/N • Superior backcoating and low electrical resistance of the H521E/EBR tape surface, ensures minimal dropouts even after repeated use • Low electrical resistance helps prevent static electricity buildup • Ideal for field use, the H521EBR features a special anti-static shell which helps reduce dropouts to a typical value of 4 • H521EBR is a broadcast version of the H521E • Improved "U" binder material significantly aids tape transport stability by maintaining the friction factor of the tape at an ideal level • Each H521E tape is packaged in a specially designed, rugged, shock resistant case equipped with a dust-proof seal

The H521E offers reduced print-through. Designed to withstand still playback of over 3 hours, with minimal decrease in RF signal output.

The Beridox particle size has been reduced from 0.35µm, which increases the *S-BET factor from 22m²/gm to 32m²/gm and creates a magnetic layer of much higher density.

Coercivity of the particles used in H521E tapes has also been raised from 620 to 640 Oersted.

H521E-KCA	60 minutes	\$40.96
H521E-KCA	30 minutes	31.22
H521E-KCA	20 minutes	30.15
H521E-KCA	15 minutes	28.11
H521E-KCA	10 minutes	25.01
H521E-KCS	20 minutes	30.15
H521E-KCS	10 minutes	25.01
H521E-BR KCA	60 minutes	46.20
H521E-BR KCA	30 minutes	35.33
H521E-BR KCS	20 minutes	34.18
H521E-BR KCS	10 minutes	28.30
H521E-KSA-Bulk	60 minutes	POR
H521E-KSA-Bulk	30 minutes	POR
H521E-KSA-Bulk	20 minutes	POR
H521E-KSA-Bulk	15 minutes	POR
H521E-KSA-Bulk	10 minutes	POR
H521E-KSA-Bulk	5 minutes	POR

Mini cassettes For ENG/EFP use are available in 10- and 20-minute lengths

*S-BET Factor: The value given to the specific surface area per unit of weight. The higher the value, the finer magnetic particles become.

FUJI PHOTO FILM U.S.A., INC.

Videocassettes

H421M/H321B Professional Super HG Videocassettes

- Special anti-static leader and trailer for reduced dropouts
- The H321B has a special anti-static treated shell in addition to "Duro-back" coating and anti-static leader to minimize dropouts
- Excellent video and color S/N performance
- Superb sound reproduction
- H321B has an impact-resistant cassette shell constructed of AB-resin

In response to the introduction of 1/2" ENG and EFP video systems, Fuji offers professional-use 1/2" videocassettes: Super HG H421M (for the M-format) and H321B (for the Betacam format)

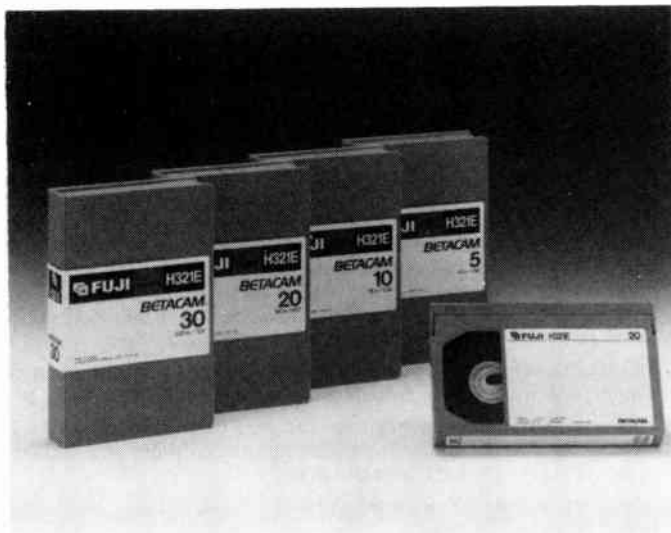
H421M	10 minutes	\$16.39
H421M	20 minutes	18.49
H321B	5 minutes	12.39
H321B	10 minutes	13.69
H321B	20 minutes	15.99
H321B	30 minutes	20.00



M401 MII Videocassettes

- Professional broadcast-quality 1/2" metal tape.
- Super Fine Metallix metal magnetic particles permit ultra high-density recording for superior image quality. The particles are densely and uniformly distributed on the tape using Fuji's exclusive coating process to achieve an intrinsic coercivity 1500 Oe, with maximum retentivity of 2600 gauss
- Strong and thin base — with an ultra-smooth surface
- Magnetic layer, undercoating layer, and special backcoating layer are all applied to the tape base using ultra-thin coating processes. The resulting four-layer tape is only 13.5 microns thick
- Initial dropouts are absolutely minimized. Even after repeated recording, playback, and dubbing, the anti-static backcoating and tough durable binder keep dropouts extremely low
- Cassette shells designed for maximum durability, are constructed of impact-resistant hard resin to help maintain optimum tape tension and transport stability

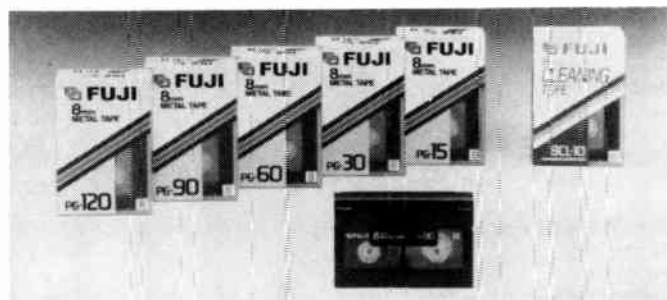
M401 MPL	10 minutes	\$29.10
M401 MPL	20 minutes	33.95
M401 MPL	30 minutes	38.80
M401 MPL	60 minutes	58.20
M401 MPL	90 minutes	87.30
M401 MPS	10 minutes	29.10
M401 MPS	20 minutes	33.95



H321E Professional 1/2" Videocassette

- Designed for Betacam analog component recording
- Specially designed for a low friction coefficient to ensure stable tape transport even after repeated playback
- High video and color S/N (signal-to-noise) ratio, minimal dropouts and exceptional durability
- Suited to all professional ENG and EFP applications
- Interchangeable with the H321B videocassette
- Combined effect of anti-static leader tape and durable binder material ensures a minimum of dropouts
- Shock-resistant ABS resin shell has been redesigned with identification holes to provide complete compatibility with Betacam SP VTRs
- 4-layer tape construction
- Super Fine Beridox magnetic particles
- Duroback coating helps eliminate dropouts by making the tape more durable and reducing the incidence of dust-attracting static electricity
- Available in 5-, 10-, 20-, and 30-minute lengths

H321ETBA



8mm Metal Videocassettes

- Excellent performance indoors and out
- Super fine Metallix particles provide a full four times the magnetic energy of standard tapes
- Static preventing backcoating and self-cleaning binder keep dropouts at a minimum even after repeated recording and playback

P6-120	2 hours	\$16.95
P6-90	1 1/2 hours	14.95
P6-60	1 hour	12.95
P6-30	30 minutes	10.95
P6-15	15 minutes	8.95
BCL-10	Cleaning tape	14.95

FUJI PHOTO FILM U.S.A., INC.

Videocassettes



HQ VHS/Beta Videocassettes

Renowned Fine Grain Beridox magnetic particles ensure vivid, lifelike color reproduction. HD (high density) binder technology allows for more uniform dispersion of these particles, resulting in enhanced standards for video and color signal-to-noise specifications. High-impact ABS housing.

VHS Format

T-160	.....	\$ 14.99
T-120	.....	9.99
T-90	.....	9.49
T-60	.....	9.09
T-30	.....	8.69
VCL-10 Head Cleaner	.....	13.99

Beta Format

L-750 1.5-4.5 hours	.....	\$ 9.99
L-500 1-3 hours	.....	8.59
L-370 0.75-2.5 hours	.....	7.99
L-250 0.5-1.5 hours	.....	7.49
L-125 0.25-0.75 hours	.....	6.99
BCL-10 Head Cleaner	.....	13.99

Super HG-VHS Video Tape

Long-playing Super HG tape with thinner tensilized polyester base film. Designed to provide sharp pictures with vivid colors at slowest speeds or when used with cameras. Tape base is back treated and undercoated for smoother running and maximum durability. Anti-static VE leader tape for fewer dropouts. Polypropylene storage case. Video signal-to-noise + 4.0dB; color signal-to-noise + 4.0dB; audio sensitivity + 2.0dB; video RF sensitivity + 2.0dB; chroma output + 2.0dB.

T-160 2.66-8 hours	.....	\$ 16.99
T-120 2-6 hours	.....	11.99
T-90 1.5-4.5 hours	.....	11.39
T-60 1-3 hours	.....	10.89
T-30 0.5-1.5 hours	.....	10.39

Super HG Beta Video Tape

Long playing L-830 incorporates thinner yet strong tensilized polyester base film. Features treated and undercoated tape base for smooth running and maximum durability. Anti-static VE leader tape for fewer dropouts. Polypropylene storage case. Video signal-to-noise + 4.0dB; color signal-to-noise + 4.0dB; audio sensitivity + 2.0dB; video RF sensitivity: + 2.0dB; chroma output: + 2.0dB.

L-830 1.66-5 hours	.....	\$ 16.59
L-750 1.5-4.5 hours	.....	11.99
L-500 1-3 hours	.....	10.59
L-370 0.75-2.25 hours	.....	9.89
L-250 0.5-1.5 hours	.....	9.19
L-125 0.25-0.75 hours	.....	8.59

VHS SHG Compact Videocassette

The Fuji Compact Videocassette Super HG is one-quarter the size of a standard VHS videocassette. Super HG is designed for an excellent video signal-to-noise ratio for a rich, clear picture and a color signal-to-noise ratio that gives bright, pure colors. A unique dust-guard VE leader tape is intended to minimize dropouts.

TC-20 0.33 hour	\$9.99
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Super HG Hi-Fi VHS/Beta Video Tape

Specifically designed for optimum performance with the VHS Hi-Fi VCRs. Super smooth magnetic layer with 20% greater packing density than former Super HG. Super Duroback backcoating offers reduced friction, guaranteeing stable tape transport and color reproduction even under extreme environmental conditions. Antistatic leader works with this backcoating to minimize dropouts for clear, crisp sound reproduction. "Blue Shell" cassette and precision mechanism. Video signal-to-noise + 4.0dB; color signal-to-noise + 4.0dB; audio frequency response 20-20,000Hz ± 1.0dB; audio sensitivity + 2.0dB; video RF sensitivity + 2.0dB; dynamic range + 80dB; chroma output + 2.0dB.

T-60 1-2-3 hours VHS	.....	\$12.29
T-120 2-4-6 hours VHS	.....	13.59
L-500 1-2-3 hours Beta	.....	11.69
L-750 1.5-3-4.5 hours Beta	.....	13.59

Super XG Pro-VHS/Beta Video Tape

Ultra-fine Beridox video tape. Magnetic layer 27 times higher in density than Super HG; Duroback coating. SR (Super Reliable) cassette mechanism provides superior resistance to thermal changes. Highly rigid tape pad and improved vertical precision tape guide provide more stable tape transport. Video signal-to-noise + 6dB; color signal-to-noise + 5dB; video RF sensitivity + 2dB; audio sensitivity + 2dB; chroma output + 2dB.

Super XG Pro T-120 VHS	.....	\$ 16.99
Super XG Pro T-60 VHS	.....	15.39
H351 L-500 Beta	.....	14.99
H351 L-250 Beta	.....	12.99



Pro-S, S-VHS Video Tape

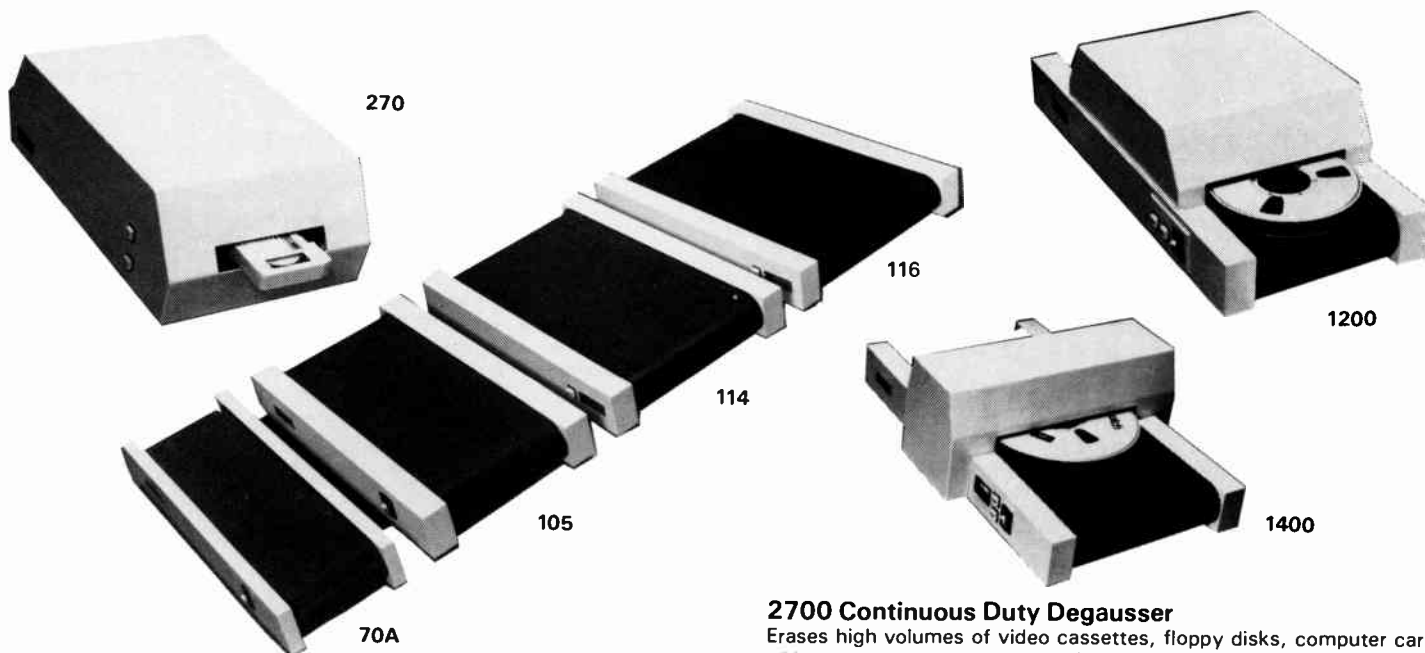
Beridox particles have been reduced to an ultra-fine grain size and given a coercivity characteristic optimally suited to S-VHS performance.

Using a binder system that excels in uniform dispersion characteristics, the magnetic layer has been formed and coated with an exceptionally high density. As a result the magnetic energy level is 80% higher than that of Super XG Pro and provides high-range output characteristics.

The magnetic layer surface has been thoroughly smoothed through the use of a super calendaring technique. Modulation noise is substantially reduced as a result, and, combined with the tape's high output characteristics, provides a dramatic improvement in the Carrier/Noise ratio.

ST-30 30 min.	.....	\$ 12.95
ST-60 60 min.	.....	14.95
ST-120 120 min.	.....	17.95
S-VHS-C Format 20 min.	.....	POR

Refer to Green Section for Addresses and Telephone Numbers.



Video and Computer Degaussers

Garner serves the video and computer industries with a full line of automated video tape erasers engineered for both the speed and effectiveness professionals demand.

- **Depth of Erasure:** Garner's erasure of a heavily saturated, high coercivity tape is the standard of the industry
- **Speed:** Erases high-energy tape completely in 5 to 15 seconds. Other erasers take many times that long
- **Ease of Operation:** Just touch the "on" switch and place the tape on the conveyor. There are no drawers, no spindles and no height adjustments

Specifications

	270 (for 1/2" to 1" ** cassettes)	1200 (for 1" reels/ cassettes to 10 1/2" diameter)	1400 (for 1" reels/ cassettes to 14" diameter)	1600 (for 1" reels/ cassettes to 16" diameter)
Overall Dimensions:				
Height:	9"	11"	11"	11"
Width:	16"	20 1/4"	23 3/4"	25"
Length:	28 1/2"	33 1/2"	33 1/2"	33 1/2"
Weight:	90 lbs.	140 lbs.	160 lbs.	180 lbs.
Max. Reel Dia.:	8 1/2"	10 1/2"	14"	16"
* Power:	* 120VAC	* 208/220VAC	* 208/220VAC	208/240VAC
Erasure Level:	-75dB	-90dB	-90dB	-90dB
Price:	\$2,990.00	\$4,890.00	\$5,790.00	\$6,590.00

2700 Continuous Duty Degausser

Erases high volumes of video cassettes, floppy disks, computer cartridges and other magnetic media continuously, 24 hours a day. The unique dual coil design provides unmatched erasure of high coercivity media.

Window opening: 5.9" x 1.6"

Specifications

Height:	18 1/2"
Width:	25"
Length:	42"
Weight:	485 lbs.
Power:	208/240VAC
Erasure Level:	-90dB
Price:	\$11,800.00

2400 Continuous Running Degausser

For large volumes of data cartridges, floppy disks, and other magnetic media with coercivity ratings of up to 800 oersteds. Window opening: 10.5" x 1.4" \$9,880.00

2400Z Continuous Running Degausser

For large volumes of data cartridges, floppy disks, and other magnetic media with coercivity ratings of up to 600 oersteds. Window opening: 10.5" x 2.75" \$10,880.00

Audio/Computer Degaussers

Audio tape degaussers can completely erase audio reels, cartridges and computer tapes. Just touch the power button and place any reel, cartridge, cassette or disk on the endless belt. In four seconds it delivers a clean erasure that will meet the most stringent standards, save valuable time and do a better job of erasing. All models available in 220/240VAC/50Hz.

Erasure Level (all models): -80dB nominal.

Method of Operation: Tapes are passed on continuous belt over high flux coils and deposited at the end of the machine.

Thermal Protection: Overheating is prevented by automatic cut-off switch, which reactivates after cool-down period.

Specifications

Overall Dimensions:	70A	105	114	116
Height:	5"	5"	5"	5"
Width:	10"	16"	19"	21"
Length:	27 1/2"	27 1/2"	27 1/2"	27 1/2"
Weight:	60 lbs.	80 lbs.	115 lbs.	127 lbs.
Max. Reel Dia.:	7"	10 1/2"	14"	16"
* Power:	* 117VAC 4A	* 117VAC 6A	* 117VAC 10A	* 117VAC 11A
Price:	\$990.00	\$1,590.00	\$2,190.00	\$2,390.00

* All models available in 220/240VAC/50Hz.
** Erases 1" x 7" magnetic data tape cassettes also.

GENERAL ELECTRIC CO./LIGHTING BUSINESS GROUP

Quartz Lamps

Quartz Lamps

A necessity in television and film studios, these tungsten-halogen lamps offer a brighter, whiter light and extended life for the theatrical user. Call us for information about the use and handling of quartz lamps.

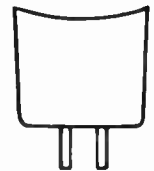
Lamp	Price	Watts	Base	Hours	Use
BHB	\$ 31.98	250	2-pin vent	25	16mm projection
BTL	44.47	500	Medium profocus	500	6" fresnel
BTN	44.23	750	Medium profocus	500	6" fresnel
BTP	49.10	750	Medium profocus	200	6" fresnel
BTR	55.20	1000	Medium profocus	200	6" fresnel
BVT	69.43	1000	Mogul profocus	500	8" fresnel
BVV	69.43	1000	Mogul profocus	200	8" fresnel
BVW	103.49	2000	Mogul profocus	250	8" fresnel
BWA	148.10	2000	Mogul bi-post	400	10" fresnel
BWM	93.70	750	Medium 2-pin	200	6" fresnel
CAL	19.89	300	4-pin	25	Slide projection
CAR	15.62	150	4-pin	15	Slide projection
CBA	48.09	500	4-pin	50	Slide projection
CDS/CDX	14.70	100	Single contact bayonet	50	Slide projection
CLX/CMB	16.72	300	Double contact bayonet	25	Slide projection
CXK	22.28	300	Double contact bayonet	25	8mm projection
CVV	96.67	1000	Mogul bi-post	200	8" fresnel
CYX	121.21	2000	Mogul bi-post	400	8" fresnel
CZX/DAB	23.70	500	Medium profocus	25	8mm projection
DAY/DAB	20.23	500	4-pin	30	Projector
DED	19.53	85	2-pin	1000	Microfilm projector
DEJ	31.92	750	Large index ring	25	8mm projection
DEK/DFW/DHN	22.77	500	4-pin	25	Slide projection
DKX/DSF	74.96	1500	Mogul screw	1000	16" scoop
DPW	57.62	1000	Mogul profocus	50	Projector/Followspot
DWT	89.04	1000	Recessed single contact	2000	Studio fixture
DXR/DXS	17.92	1000	Mogul screw	10	Photo flood
DXW	40.52	1000	Recessed single contact	150	Photo flood
DYG	27.73	250	2-pin profocus	15	Photo flood
DYH	29.21	600	Miniature 2-pin	75	Photo flood
DYS/DYY/BHC	24.36	600	2-pin profocus	75	Omni-light
DYY/EGH	36.70	500	4-pin	50	Slide projection
EBR	13.34	375	Medium	4	Movie light
ECA	3.04	250	Medium screw	20	Photo flood
EFN	32.92	75	2-pin	50	8mm projection
EGE	62.71	500	Medium profocus	2000	6" ellipsoidal
EGF	77.34	750	Medium profocus	250	6" ellipsoidal
EGG	64.20	750	Medium profocus	2000	6" ellipsoidal
EGJ	73.78	1000	Medium profocus	400	6" ellipsoidal
EGK	83.91	1000	Medium profocus	400	14" scoop
EGM	94.82	1000	Medium profocus	2000	6" ellipsoidal
EGT	76.39	1000	Medium bi-post	200	6" fresnel
EHC	62.37	500	Medium 2-pin	300	6" ellipsoidal
EHD	51.78	500	Medium 2-pin	2000	6" ellipsoidal
EHF	61.56	750	Medium 2-pin	300	6" ellipsoidal
EHG	58.19	750	Medium 2-pin	2000	6" ellipsoidal
EHJ	23.02	250	2-pin	2000	Projector
EHP	43.25	300	Recessed single contact	2500	3 1/2" ellipsoidal
EHR	38.16	400	Recessed single contact	2000	3 1/2" ellipsoidal
EJG	47.55	750	Recessed single contact	400	Broad
EKB	40.42	420	Miniature 2-pin	75	Photo flood
EKD	35.80	650	2-pin profocus	25	Photo flood
ELH	27.17	300	Oval 2-pin	35	Slide projection
EMD	50.35	750	Recessed single contact	400	Frost
ENG	34.68	300	RM2P	15	Slide projection
ENX	30.96	360	Oval 2-pin	75	Overhead projection
ESN	36.89	100	Mini can	1000	
ESR	36.89	100	Double contact bayonet	1000	3" fresnel
ESS	22.06	250	Double contact bayonet	2000	3" fresnel
ETC	22.06	150	Double contact bayonet	2000	3" fresnel
EXT	21.57	50	2-pin MR16/NSP	3000	Display
EZT	151.11	350	MARC-350/161	50	16mm projection
FAD	23.22	650	Recessed single contact	100	6" fresnel
FBD/FBG	34.40	500	2-pin/miniature	50	Slide projection
FBY	52.44	1000	Recessed single contact	150	Frosted DXW
FCL	12.83	500	Recessed single contact	2000	Broad
FCM	30.07	1000	Recessed single contact	400	Broad
FCR	11.56	100	2-pin	50	Microfiche projection
FCV	68.25	1000	Medium 2-pin	300	Frosted FEL
FDF	37.48	500	Recessed single contact	400	Broad
FDN	36.92	500	Recessed single contact	400	Broad
FEL	52.25	1000	Medium 2-pin	300	6" ellipsoidal
FER	68.43	1000	Recessed single contact	500	Scoop
FEV	31.16	200	Double contact bayonet	50	3" fresnel
FEY	114.99	2000	Recessed single contact	300	Studio
FFP	85.22	1000	Extended mogul end prong	800	PAR 64
FFR	85.22	1000	Extended mogul end prong	800	PAR 64
FFS	85.22	1000	Extended mogul end prong	800	PAR 64
FFT	66.57	1000	Recessed single contact	300	Cyc light
FHM	32.39	1000	Recessed single contact	300	Broad
Q250PAR38SP	29.26	250	Medium skirted	6000	
Q400CL/MC	40.07	400	Mini can	2000	
Q500CL/DC	40.07	500	Double contact bayonet	2000	
Q1000PAR 64/NSP	122.11	1000	Extended mogul end prong	4000	PAR 64
Q1000PAR 64/MFL	122.11	1000	Extended mogul end prong	4000	PAR 64
Q1000 PAR 64/WFL	122.11	1000	Extended mogul end prong	4000	PAR 64



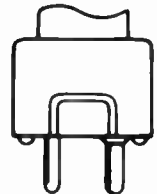
Recessed Single Contact



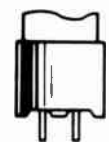
2-Pin Vented



Oval 2-Pin



2-Pin Profocus



Miniature 2-Pin



4-Pin



Double Contact Bayonet

GENERAL ELECTRIC CO. PROJECTION DISPLAY EQUIPMENT OPERATION

Video Projectors



Talaria

Input Standards ¹ Color Projectors	Model	Brightness in Lumens ²	Input Power Required		Price
			Watts	Voltage	
Video and PC Compatible Accepts NTSC or RGB Standard ³ 525 lines/60 fields per second 15.75kHz standard. Non-standard inputs from 15kHz to 32kHz can be accommodated.*	PJ4500	500	900	115 or 220	\$ 44,900.00
	PJ5050	1000	1100	115 or 220	68,850.00
	PJ5055	2000	1500	220	98,480.00
	PJ5055H8	2400	1750	220	99,760.00
Computer Compatible Accepts RGB video at line rate specified and composite sync 875 lines/60 fields per second 26.3kHz standard. Non-standard inputs from 23kHz to 28kHz can be accommodated.*	PJ5800	500	900	115 or 220	49,760.00
	PJ5850	1000	1100	115 or 220	73,850.00
	PJ5855	2000	1750	220	108,970.00
Computer Compatible Accepts RGB video at line rate specified and composite sync 1023 lines/60 fields per second 30.7kHz standard. Non-standard inputs from 28kHz to 38.5kHz can be accommodated.*	PJ5100	500	900	115 or 220	49,760.00
	PJ5150	1000	1100	115 or 220	73,850.00
	PJ5155	2000	1750	220	108,970.00

Monochrome Projectors					
Input Standards ¹ Color Projectors	Model	Brightness in Lumens ²	Input Power Required		Price
			Watts	Voltage	
Video and PC Compatible Accepts NTSC standard 525 lines/60 fields per second at 15.75kHz standard.	PJ7050	1500	900	115 or 220	32,860.00
	PJ7055	3000	1100	115 or 220	47,750.00
Computer Compatible 30.75kHz or 26.3 standard. ⁴ Non-standard inputs from 15.0kHz to 38.5kHz can be accommodated.*	PJ7150	1500	900	115 or 220	36,780.00
	PJ7155	3000	1100	115 or 220	52,780.00

Notes:
 1. Standard projectors are compatible with a single line rate. Other input options are available (including multiple line rates), contact General Electric Projection Display Products Operation or your nearest authorized sales agent
 2. Light output given in terms of open gate minimum lumens. Modulated light output is typically 65% of open gate level
 3. NTSC/PAL/SECAM switchable at line rate specified, available as option at additional cost
 4. Accepts wideband monochrome video at line rate specified

*Available at extra cost.

Talaria Multi-Standard Large Screen Video Projector

- All the features of the Talaria professional video projector plus the ability to switch automatically between three preset scan rates
- Uses both standard video inputs and non-standard line rate inputs
- You can use any two input sources between 15kHz and 34kHz in combination with standard NTSC video
- Projects a picture from 4' to 30' wide
- With its interchangeable lenses, you can vary the throw distance anywhere from 12' to over 280'

Model	Light Output	Max. Power	Voltage	Price
PJ5100MS	1000 lumens	900W	115/220	\$ 64,760.00
PJ5150MS	1700 lumens	1100W	115/220	88,850.00
PJ5155MS	2400 lumens	1750W	220	123,970.00

Talaria® Large Screen Video Projectors

- One lens "no convergence" system
- High brightness picture allows use in high ambient light
- Requires no special screen; use of flat matte screen allows viewing by those off the projection axis
- Optional lenses allow variable throw distances from 4' to 175'
- Accommodates diverse inputs: NTSC, PAL/SECAM, RGB and a wide variety of computer interfaces
- User friendly television style controls
- Glass lenses for a sharper image corner to corner
- Selection of front or rear projection at the flip of a switch
- Creates picture size from 4' wide to 24' wide and larger
- Built-in diagnostic and color bar/gray scale generator
- Continuous tilt adjustment of ± 15° pitch
- Compact, and transportable (it only weighs about 145 lbs.)
- Modular construction and smartly-engineered design
- Single optical path light valve
- Accepts a wide variety of input signals: 1/2", 3/4", or 1" video tape, live camera feed, satellite feed, video laser disc, and closed circuit television (CCTV)
- Accepts on-line computer generated graphics
- Aspect ratio (ratio of width to height) is 4 x 3

All projectors include as standard:

- Standard 3:1 (throw distance to picture width) lens
- Instruction manual
- 2 Day Operator and 4 Day Maintenance Training Courses held monthly in Syracuse, NY. Training will be held at customer location at extra cost
- Detachable operator control unit
- Mechanical tilting mechanism

Accessories

Screens, cases, projection stands, raster masks and dowsers available

Talaria Multiple Valve (MLV) Large Screen Video Projector

- Two light valves and two lamps in this one unique projector results in at least 80% more brightness and 50% more contrast than our single light valve projector
- Full color images up to 30' wide
- Two piece aluminum frame for ease of transportation and setup, or you can choose a one piece frame for fixed simulation or command control applications
- All Talaria Projector lenses may be used with the MLV, allowing front or rear screen throw distances of 1.5, 3.0, 4.2, 4.9 and 7 times the width of the screen
- Optional single output lens
- Accepts a number of different input signals, including videotape, live camera feed, satellite feed, video laser disk, closed circuit television (CCTV), and on-line computer-generated graphics
- 525/625 line standard video as well as computer compatible

Model	Input	Description	Price
MLV-5055-SC	525/625 line	Video projector with screen convergence	\$178,980.00
MLV-5155-SC	1023 line	Computer compatible projector with screen convergence	195,940.00
MLV-5155-CO		Computer compatible projector with combining optics	238,720.00
MLV-5155-HDTV-SC	1125 line	RGB High Definition Television Projector.	195,940.00

Prices and Specifications Subject to Change Without Notice.



SPH-3A



SPH-4

SPH-3A PHONE SYSTEM

- Remotable
- Connects directly to the phone line
- Null doesn't change from line to line
- Important adjustments are screwdriver only
- Built-in monitor amplifier

The SPH-3A provides an easy, inexpensive method of interfacing broadcast equipment with an existing telephone system. Unlike a Speaker-phone, the Gentner system permits continuous send and receive audio. In addition, the caller can be monitored with an in-studio speaker without feedback. This eliminates the need for talent or guests to wear headsets. The SPH-3A is easy to use and install.

Specifications

Frequency Response — (Reference 1,000Hz)

Send In to Mix Out — 20Hz to 30kHz within .1dB

Phone In to Caller Out — 330Hz to 3300Hz within 1dB

Send and Receive amplifiers incorporate band-pass filtering to improve nulling and transient suppression. The send filter can be by-passed.

Noise and Distortion — (Reference 0dBm)

Send In to Mix Out — -75dB typical .1% max. .05% typ.

Send In to Phone Line — -90dB typical .1% max. .05% typ.

Phone Line to Caller Out — -65dB typical .5% max. .10% typ.

Inputs and Outputs

Send In — Balanced -20dBm to +20dBm 600 ohms

Caller Out and Mix Out — Balanced 0dBm

(+18dBm max.) 600 ohms

Speaker — 8 ohms 2 watts

Auxiliary In and Out — 10K ohm -20dBm typical

Hybrid

Wheatstone Bridge Method

This method provides a flat, wide band null response that typically does not change from line to line. Null — 20dB typ.

Dimensions — 1-3/4" x 17" x 8"

Weight — 6 lbs. (10 lbs. shipping)

Power Consumption — 7 watts

SPH-3A \$559.00

SPH-4 BROADCAST TELEPHONE SYSTEM

- One-time, one-control null adjustment
- Monitor speaker amplifier
- Automatic speaker dimming
- Continuously programmable "caller control" extends dynamic hybrid performance
- Setup adjustments are screwdriver, front panel adjustments
- Caller beep tells the caller he's on the air
- Connects directly to the telephone line and sent through standard modular jacks
- Totally remotable
- Built-in test generator for simple null adjustments

The SPH-4 is a self-contained telephone interface device designed to provide clean, clear phone audio for a variety of uses. Computer designed equalization before and after the telephone mix assures best hybrid performance and telephone audio quality.

Audio connections are made through rear panel XLRs, while the phone connections use standard telephone modular jacks. The SPH-4 has a built in speaker amplifier so your operators and guests will not have to wear headsets to hear the caller. The unit is relatively load insensitive. Once initial adjustments are made, no further adjustment will be required. The unique "caller control" feature reduces the caller level in relation to the send audio. This reduction is front panel programmable and continuously adjustable. When the "on" switch is depressed, a tone is heard down line alerting the caller that he is on the air. At the same time, timing curcuits are muting all connection clicks and pops, providing the cleanest possible connection to the phone line. Instant muting of the caller can be accomplished for the desired duration.

Specifications

Send Level — -25dBm to +18dBm 20K bridging

Caller & Mix Outputs — 600 ohms balanced 0dBm (+18dBm max.)

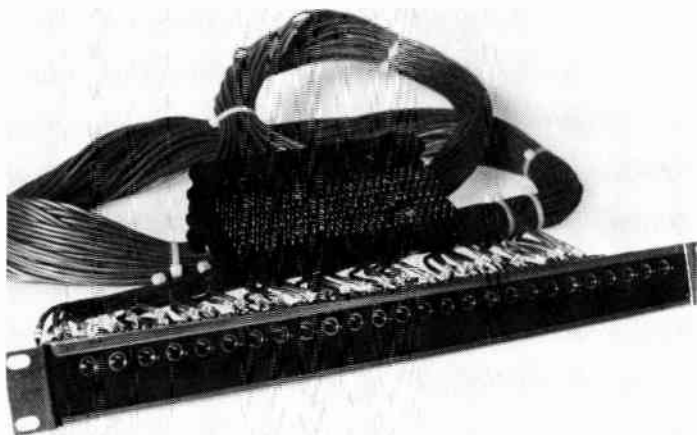
Distortion — .01% typical

Frequency Response — Send and receive channels are uniquely equalized. Send In to Mix Out: +/- .2dB 20-20kHz Noise — -70dBm typical

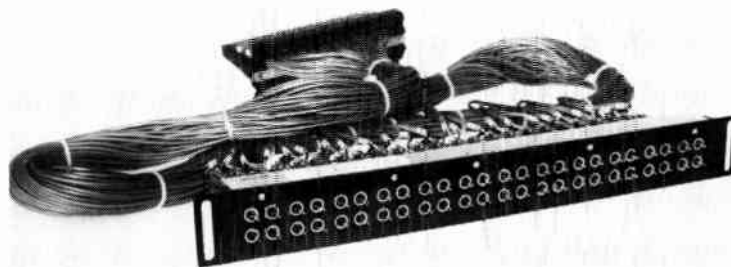
SPH-4 \$799.00

GENTNER ENGINEERING CO., INC.

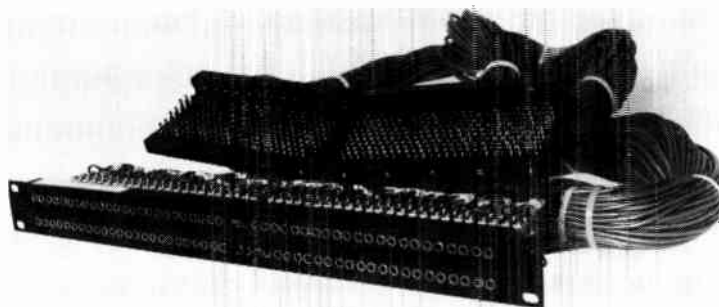
Pre-Wired Audio Patch Panels



26SR



48DR



96BA

Pre-Wired Audio Patch Panels

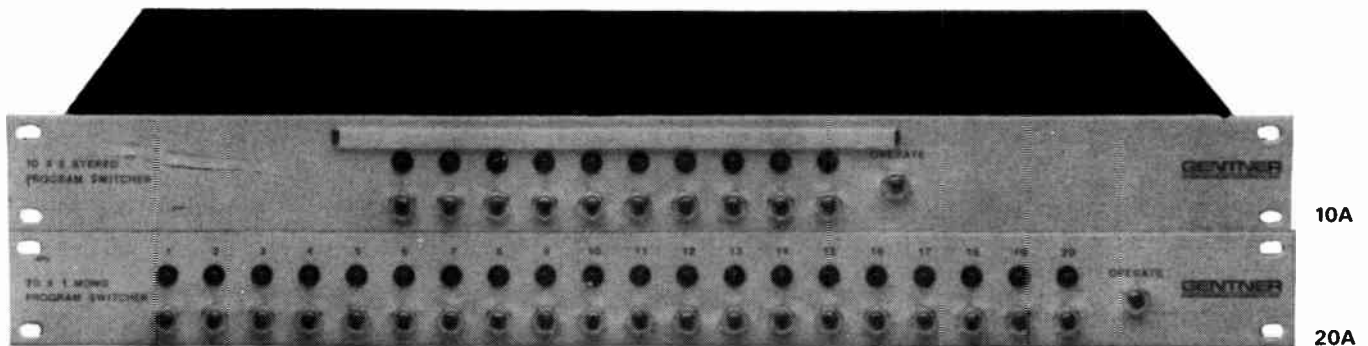
Gentner pre-wired patch panels are manually wired using the finest quality parts available. Each panel undergoes an intensive quality control program to ensure reliability and overall quality. All bays are wired with soldered connections using stranded wire which guarantees the bay will withstand many years of flex and vibration. Each cable is numbered and has a 1" section of clear heat shrink at the termination break. Cables are neatly bundled using cable ties and exit the bay on the left side as viewed from the rear. Other bundle sides are available at no extra cost but may result in a longer delivery time. Bundle lengths come standard at 5'; other bundle lengths up to 8' are available at no extra cost but may result in longer delivery time. Bundles in excess of 8' are also available at extra cost. A wide variety of terminations are available.

Model Numbers Are Broken Down As Follows:

- 48DR** = Panel Description — Two Rows of 24 Jacks
- 52DR** = Panel Description — Two Rows of 26 Jacks

- 24SR** = Panel Description — One Row of 24 Jacks
- 26SR** = Panel Description — One Row of 26 Jacks
- 96BA** = Panel Description — Bantam Panel — Two rows of 48 Miniature Jacks
- T-R-S** = Jack Description — TIP-RING-SLEEVE Type Jack
- T-R** = Jack Description — TIP-RING Type Jack (Sometimes Referred to as TIP-SLEEVE Jack)
- BO** = Wiring of Normals Brought Out To Termination
- AB** = Wiring of Normals — Normals Wired at the Bay Using a Short Jumper
- XT** = Christmas Tree Termination
- PU** = Punch Block Termination
- NT** = No Termination — Numbered Cables
- BB** = 24 Terminal Barrier Blocks
- CT** = Custom — Wired To Anything — Customer Supplies the Termination
- FB** = Terminated with Flexiblocks (Stranded Wire Punch Blocks)

Model No.	Price	No. Of Jacks	Wiring Of Normals	Termination
96BA-BO-XT	\$ 1159.00	96 1 3/4"	T-R-S Brought Out	Christmas Trees
96BA-BO-PU	1159.00	96 1 3/4"	T-R-S Brought Out	Punch Blocks
96BA-BO-NT	899.00	96 1 3/4"	T-R-S Brought Out	Numbered Cables
96BA-BO-BB	1479.00	96 1 3/4"	T-R-S Brought Out	24 Term Barrier Blocks
96BA-BO-CT	1159.00	96 1 3/4"	T-R-S Brought Out	Customer Supplied
96BA-BO-FB	1159.00	96 1 3/4"	T-R-S Brought Out	Flexiblocks
96BA-AB-XT	\$ 869.00	96 1 3/4"	T-R-S Wired At Bay	Christmas Trees
96BA-AB-PU	869.00	96 1 3/4"	T-R-S Wired At Bay	Punch Blocks
96BA-AB-NT	679.00	96 1 3/4"	T-R-S Wired At Bay	Numbered Cables
96BA-AB-BB	1049.00	96 1 3/4"	T-R-S Wired At Bay	24 Term Barrier Blocks
96BA-AB-CT	869.00	96 1 3/4"	T-R-S Wired At Bay	Customer Supplied
96BA-AB-FB	869.00	96 1 3/4"	T-R-S Wired At Bay	Flexiblocks



10A 10 x 2 Stereo 20A 20 x 1 Mono Program Switchers

- Passive switching ensures instantaneous noise-free selection of your sources
- Insensitive to power fluctuations
- Completely remotable
- Easy punch down connection to your equipment
- Illuminated LED within the switch uses positive report-back from the switching relays to indicate which source is currently routed to the output
- Type-on, peel-off designation strips provided with switcher
- "Control Enable" switch prevents accidental switching; it must be depressed with source switch to enable the switching process (May be bypassed if desired)
- Depression of a switch with the "Control Enable" switch deselects the source currently selected and routes the desired source to the output
- When "deselect" switch is depressed with the "Control Enable" switch, all sources will be deselected in the switcher
- Connector provides auxiliary control signals and audio outputs (selectable by internal jumpers)
- Signal connector provides source interconnection to the switcher. A 5' cable with mating connector and punch block (or Flexiblock) is available from Gentner Engineering
- Remote connector provides complete remote control and report back status of the switcher. A 5' cable with mating connector and punch block (or Flexiblock) is available as an accessory

Program switchers give you a simple, reliable way to switch sources such as on-air audio—tape machines—computer printers—telephone lines and more. Because these switchers are passive (using sealed, socket mounted magnetic latching

relays), you get instantaneous, noise-free selection of a source and it will stay selected even in voltage fluctuations or total power failure.

The 10 x 2 stereo switcher selects ten stereo channel sources to a stereo channel output; the 20 x 1 mono selects twenty mono channel sources to a mono channel output. Connection to your equipment is accomplished via a provided punch block cable (Flexiblock also available); remote control connections are made via a punch block cable, available as an accessory.

Specifications

Dimensions:	1 $\frac{3}{4}$ " H x 19" W x 9" D
Weight:	8.5 lbs. (12 lbs. shipping)
Power:	120/240VAC 10/5W nominal
Connection to Equipment:	66B350 or Flexiblock punch blocks with interconnecting cable and connector for signal connections (available as accessories)
Front Panel:	10A: 12 switches (momentary) 20A: 22 switches (momentary)
Rear Panel:	50D connectors (signal, male) (remote, female)
Switching Method:	Passive connection using sealed, magnetic latching DPDT relays (IC socket mounted)
Frequency:	DC to 30kHz (within .01dB), DC to 100kHz (within .5dB)
Noise/Separation:	> 90dB
Levels:	Recommended -20dBm to +20dBm
10A 10 x 2	\$939.00
20A 20 x 1 mono	\$959.00

PRE-WIRED AUDIO PATCH PANELS (cont'd)

**DOUBLE ROW PANELS WITH T-R JACKS
SINGLE ROW PANELS WITH T-R-S JACKS**

Model No.	Retail Price	No. Of Jacks	Panel Height	Jack Type	Wiring Of Normals	Termination
24SR-TRS-BO-XT	\$369.00	24	1 3/4"	T-R-S	Brought Out	X-Mas Tree
24SR-TRS-BO-PU	369.00	24	1 3/4"	T-R-S	Brought Out	Punch Blocks
24SR-TRS-BO-NT	309.00	24	1 3/4"	T-R-S	Brought Out	Numbered Cables
24SR-TRS-BO-BB	419.00	24	1 3/4"	T-R-S	Brought Out	24 Term Barrier Blocks
24SR-TRS-BO-CT	369.00	24	1 3/4"	T-R-S	Brought Out	Customer Supplied
24SR-TRS-BO-FB	369.00	24	1 3/4"	T-R-S	Brought Out	Flexiblock
26SR-TRS-BO-XT	\$389.00	26	1 3/4"	T-R-S	Brought Out	X-Mas Tree
26SR-TRS-BO-PU	389.00	26	1 3/4"	T-R-S	Brought Out	Punch Blocks
26SR-TRS-BO-NT	339.00	26	1 3/4"	T-R-S	Brought Out	Numbered Cables
26SR-TRS-BO-BB	479.00	26	1 3/4"	T-R-S	Brought Out	24 Term Barrier Blocks
26SR-TRS-BO-CT	389.00	26	1 3/4"	T-R-S	Brought Out	Customer Supplied
26SR-TRS-BO-FB	389.00	26	1 3/4"	T-R-S	Brought Out	Flexiblock

**DOUBLE ROW PANELS
WITH T-R-S JACKS**

Model No.	Retail Price	No. Of Jacks	Panel Height	Jack Type	Wiring Of Normals	Termination
48DR-TRS-BO-XT	\$629.00	48	2 1/8"	T-R-S	Brought Out	X-Mas Trees
48DR-TRS-BO-PU	629.00	48	2 1/8"	T-R-S	Brought Out	Punch Blocks
48DR-TRS-BO-NT	489.00	48	2 1/8"	T-R-S	Brought Out	Numbered Cables
48DR-TRS-BO-BB	799.00	48	2 1/8"	T-R-S	Brought Out	24 Term Barrier Blocks
48DR-TRS-BO-CT	629.00	48	2 1/8"	T-R-S	Brought Out	Customer Supplied
48DR-TRS-BO-FB	629.00	48	2 1/8"	T-R-S	Brought Out	Flexiblock
48DR-TRS-AB-XT	\$479.00	48	2 1/8"	T-R-S	Wired At Bay	X-Mas Trees
48DR-TRS-AB-PU	479.00	48	2 1/8"	T-R-S	Wired At Bay	Punch Blocks
48DR-TRS-AB-NT	429.00	48	2 1/8"	T-R-S	Wired At Bay	Numbered Cables
48DR-TRS-AB-BB	579.00	48	2 1/8"	T-R-S	Wired At Bay	24 Term Barrier Blocks
48DR-TRS-AB-CT	479.00	48	2 1/8"	T-R-S	Wired At Bay	Customer Supplied
48DR-TRS-AB-FB	479.00	48	2 1/8"	T-R-S	Wired At Bay	Flexiblock
52DR-TRS-BO-XT	\$639.00	52	1 3/4"	T-R-S	Brought Out	X-Mas Trees
52DR-TRS-BO-PU	639.00	52	1 3/4"	T-R-S	Brought Out	Punch Blocks
52DR-TRS-BO-NT	509.00	52	1 3/4"	T-R-S	Brought Out	Numbered Cables
52DR-TRS-BO-BB	799.00	52	1 3/4"	T-R-S	Brought Out	24 Term Barrier Blocks
52DR-TRS-BO-CT	639.00	52	1 3/4"	T-R-S	Brought Out	Customer Supplied
52DR-TRS-BO-FB	639.00	52	1 3/4"	T-R-S	Brought Out	Flexiblock
52DR-TRS-AB-XT	\$509.00	52	1 3/4"	T-R-S	Wired At Bay	X-Mas Tree
52DR-TRS-AB-PU	509.00	52	1 3/4"	T-R-S	Wired At Bay	Punch Blocks
52DR-TRS-AB-NT	439.00	52	1 3/4"	T-R-S	Wired At Bay	Numbered Cables
52DR-TRS-AB-BB	609.00	52	1 3/4"	T-R-S	Wired At Bay	24 Term Barrier Blocks
52DR-TRS-AB-CT	509.00	52	1 3/4"	T-R-S	Wired At Bay	Customer Supplied
52DR-TRS-AB-FB	509.00	52	1 3/4"	T-R-S	Wired At Bay	Flexiblock

Patch Panel Accessories

XT-ADC PJ660-6
6 x 26 solder terminals

Flexiblock FB-25
1 x 50 terminals
4 slots per terminal

Flexitool FB-714
Impact punch tool

Miniblock FB-5
1 x 10 terminals

BB - TRW Barrier Strip or equiv.
1 x 24 terminals

Split Flexiblock FB-60
2 x 50 terminals

D1714 Punch Tool
Impact tool for 66B punch blocks

66B3-50 Punch Block
2 x 50 terminals
uses D1714 punch tool

GENTNER ENGINEERING CO., INC.

Telephone Interface System

Microtel Portable Telephone Interface

- Portable, battery-operated telephone interface
- Replaces the handset of the telephone to provide high quality audio for feeding and receiving information
- Provides a high-quality line level output of the send amplifiers for feeding other audio sources such as a broadcast loop
- Input jack is used for mixing another audio source with the receive telephone audio
- Submini jack for an optional wall transformer
- Two 9V batteries and a jack for optional wall adapter
- Female XLR provides connection for your microphone
- Toggle switch turns the unit on
- Jack is provided for feeding another audio source down the phone line
- Connect to the input of your tape recorder to record information from the phone line
- Plug-in for headphones and speaker

Specifications

Connectors: All minijacks except:
 Microphone — XLR
 Handset — Standard handset modular
 External power — Submini jack

Inputs: Nominal levels + impedances

Microphone: -55dBm 150 ohms

Aux In: -10dBm 47K ohms

Aux RCV: -10dBm 47K ohms

Handset RCV: -25dBm 10K ohms balanced

Outputs: Nominal levels, impedances + frequency response



Microtel

Handset Xmit: -15dBm 600 ohms 300Hz -3kHz

Aux Out: -20dBm 600 ohms 20Hz-10kHz

Aux Send: + 4dBm 600 ohms 20Hz-5kHz

Headset: 300mW 20Hz-70kHz

Distortion: < .5%

Power: (1) 9V battery
 Connection provided for internal back-up battery
 Battery life 12 hours nominal (Alkaline)

AC Power: Wall transformer 12VDC submini jack (optional)

Nominal Current Consumption: 33mA at full output
 13mA at idle current

Microtel \$219.00



TC-100/B

TC-100/B Automatic Telephone Interface

- Auto-answer, auto-disconnect capability
- Latching or momentary tape starts
- Direct connection to telephone line
- A-lead control for 1A2 and digital phone systems
- Bi-color LED flashes red on rings and green on answer
- Easy installation and operation
- Manual or automatic operation
- Full duplex (hybrid) capability
- Table, undertable, wall and optional rackmount configurations
- Send and receive controls are front panel adjustable
- Optional Touch-Tone® decoder board with dial tone and busy detection (TC-100/BTT)
- Internal DC bias jumper provides simulated phone line voltage for private line intercom system

Specifications

Input: Barrier balanced 600 ohm .5% distortion, -20dBm to +10dBm adjustable 55dB SNR

Output: Barrier balanced 600 ohm, .5% distortion, 0dBm nominal (adjustable), 55dB SNR

Telephone: RJ-IIC (modular) with A-lead closure

Null: 18dB average

Power: 120VAC wall transformer (240VAC available)

Indicators: "Send" — Bi-Color LED (red-ring, green-answer)

Controls: "Send" receive level, null

Switches: Start (momentary), auto disconnect, ring count, null, coupler

Remote Control: Coupler (momentary or constant ground) Do not answer (constant ground)

Remote Outputs: (Open collectors 100mA) status ring

Remote Starts: Relay contacts (C, NO, NC) (Constant or momentary)

Answer: 60-105VAC 15-70Hz ring voltage nominal

Disconnect: Line reversal

Option Board: Open collectors (100mA) for all touch tones including A, B, C, D BCD Open Collectors for all TTs. Disconnect on Dial-tone and busy signal

Internal Options: DC Bias jumper for simulating a telephone line

TC-100/B \$399.00

TC-100/BTT \$29.00



VRC-1000

VRC-1000 Voice Remote Control

- **Dial-up telephone interconnection.** The VRC-1000 can be controlled from any location with a telephone—your home, a car, a pay phone, the studio, etc.
- **Absolute security.** Multiple-level security codes (user defined) prevent unauthorized command of the VRC-1000.
- **16 Metering Channels.** Each channel has 4-digit presentation, with four user-defined tolerance limits.
- **16 Status Channels**
- **32 Command Outputs.** Outputs can be momentary or electrically latching.
- **“Smart” operation.** The VRC-1000 has the ability to determine an alarm condition and then automatically correct the condition if possible. It can also initiate a telephone call to any of five different telephone numbers to report an alarm (and it will keep calling until it gets an answer from an authorized human). The VRC-1000 will automatically note the time and date of an alarm and report it to you along with the alarm condition (it will also log the alarm and time, if equipped with the internal modem option).
- **Automatic Transmission System (ATS) Capability.** All 32 command outputs can be set to automatically be activated from any of three sources. The four tolerance levels on each metering channel can be set to cause an automatic output such as power control. Changes in status channels can cause a command to be activated. Twenty time of day functions are also possible. In total there are 116 Automatic Command possibilities.
- **Synthesized voice reporting.** The VRC-1000 literally talks to you to report conditions. With nearly 800 “words” in memory, it can be set up (using a simple set-up procedure) to say what you need it to say in reporting conditions at your transmitter.
- **Audio monitoring of transmitter site.** With the VRC-1000’s built-in condenser microphone, you can listen to your transmitter site via your telephone.
- **Video terminal display/printer option.** When appropriately equipped, all status, metering and command functions are displayed on a video terminal or printer. The display keyboard will permit activation of all command functions.
- Can be used with any video display terminal or personal computer.

With the adoption of FCC Docket 84-110, remote control of broadcast transmitters has been freed from the previous cumbersome requirements. Transmitters may now be remotely controlled from any location, using standard dial-up telephone lines.

The VRC-1000 Voice Remote Control operates on the dial-up telephone system to allow you the freedom of remote control from anywhere. You communicate with the VRC-1000 by listening to its synthesized voice and commanding it with a Touch-Tone® (DTMF) key pad or portable automatic dialer.

Serial data output is available as an option.

Specifications

Status Capability:

16 channels, TTL-compatible (+ 5VDC switched by external contact). Each channel has two states (activated and deactivated). Each condition can be set up to be alarmed.

Command Capability:

32 outputs, configured in 16 channels of two commands each, open collector output, rated to 48VDC at 250mA, can be set up to function as internally latching.

Mute Capability:

Any status channel can be assigned to any metering channel to override (defeat) the limit checking and effect associated automatic command capability. A total of 40 such assignments are possible.

Interconnecting Circuit:

Standard toll-grade telephone circuit or dedicated two or four wire interconnection with toll-grade performance characteristics.

Modes of Operation:

Automatic call initiation upon alarm condition presence (status or metering alarm) of up to five telephone numbers (auto dial) and automatic answer of incoming call (auto answer). Optional-subcarrier, dedicated line, or two-way radio interconnect possible.

Audio Monitor:

Built-in microphone, manually initiated, permits audio monitoring of area near the VRC-1000.

Temperature Range:

0° to + 50°C, operational -20° to + 70°C

Power Requirements:

120/240VAC, 50-60Hz, 15W nominal

Input/Output Connectors:

Series D type, 37 pin, male. Mating, female, solder cup supplied.

Dimensions:

1.75”H x 17”W x 10”D, mounting brackets provided to permit mounting in standard 19” rack configurations.

VRC-1000 \$2,995.00

Options

Internal Modem Option for VRC-1000 includes printed circuit board modem and additional firmware stored in memory device for mounting within VRC-1000 chassis. Firmware provides ASCII data output for video display terminal presentation and recording on printing device \$ 995.00

Fail-Safe Unit Option for VRC1000. This 1.75” rackmounting unit provides absolute carrier control of associated transmitters by sensing the presence of program audio at transmitter input. Time-out to activation of this unit; front panel selectable, up to 99 seconds or 99 minutes. 495.00

Battery Pack Option for VRC-1000. This 3.5” rackmounting unit permits operation of VRC-1000 unit, only, for up to eight hours without AC power. Includes self contained AC power supply and a 4’ interconnecting cable 695.00

Video Display Terminal/Printer Option for VRC-1000. Functions with Internal modem option. Consists of one (1) Hewlett-Packard HP700/41 video display terminal and keyboard, one Epson LX-800 Dot Matrix Printer and one (1) Spring Modem 1200 standalone modem. 1100.00

Video Display Terminal-Only Option for VRC-1000. Functions with Internal modem option. Consists of one (1) Hewlett Packard HP700/41 video display terminal and keyboard and one (1) Spring Modem 1200 standalone modem. 825.00

Optional Accessories

Antenna Monitor Interface Option for VRC-1000. Provides for interface of common antenna monitors to VRC-1000. This 1.75” rackmounting unit includes AC power supply and cabling for connection to selected antenna monitor. Advise Antenna Monitor Manufacturer and Model when ordering \$995.00

DC Amplifier Accessory for VRC-1000. Provides DC isolation for metering input sample voltages. Includes AC power supply 350.00

Command Relay Assembly Accessory for VRC-1000. 3.5” rackmounting unit provides sixteen (16) relay outputs for one group of eight command channels. Relays rated to 9A up to 240VAC (non-inductive) or 100VA. Screw barrier strip output. Includes self contained AC power supply and 4’ interconnecting cable. (Longer lengths available on special order) 405.00

Screw Barrier Strip Panel Accessory For VRC-1000. Provides conversion of D connector to screw barrier strip for 16 metering or 10 status, or 8 command channels of VRC-1000. Interface provided with 4’ interconnecting cable. Panel is 3.5”H x 10”W standard rackmounting configuration. 149.00

Flexiblock Interface Accessory for VRC-1000. Provides conversion of D connector to Flexiblock interface (allowing use of stranded wire) for 16 metering, status, or 8 command channels of VRC-1000. Interface provided with 4’ cable (longer lengths available on special order). Panel is 3.5”H x 19”W standard rackmounting configuration. 149.00

Punch Tool, model D 1714, impact tool for Siemens punch block, above 54.95

Punch Block Interface Accessory for VRC-1000. Provides conversion of D connector to Siemens style punch block interface for 16 metering, 16 status or 8 command channels of VRC-1000. Interface provided with 4’ cable (longer lengths available on special order). Panel is 3.5”H x 19”W standard rackmounting configuration. 149.00

Temperature Sensor Probe/Supply Accessory for VRC-1000. Provides the sensing of air temperature. Includes power supply to support 4’ probes, and one probe. Probes to provide output in Celsius available on special order. 135.00

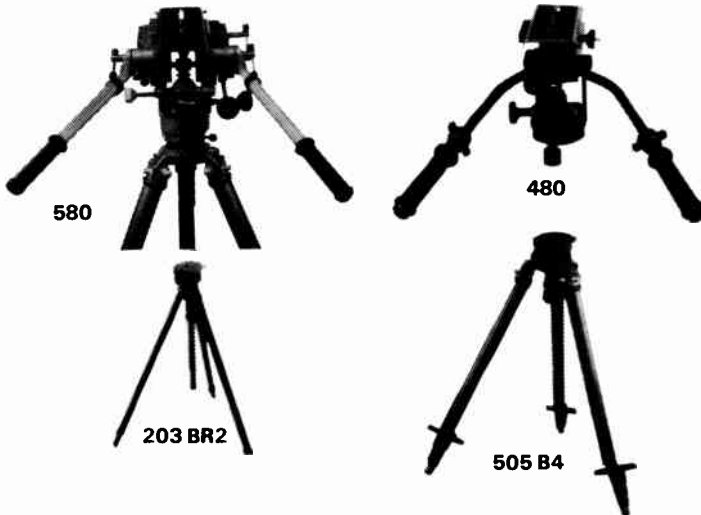
Additional Temperature Sensor Probe for use with above 35.00

Portable Automatic Dialer Buscom #213 Ponatouch, with interconnecting cable to external speaker 139.00

Automatic Telephone Dialer Panasonic model KX-11236. 159.95

GITZO

Heads/Leveling Balls/Tripods



GITZO VIDEO EQUIPMENT

100% Fluid Heads

380	Fluid Head 3 with 100% fluid panning and 100% fluid vertical tilt, quick release plate, 15" handle, supports 5-15 lbs.	\$ 799.95
	Same, with 2 15" handles	add 59.95
381	Additional quick release plate for 380	add 10.00
382	Additional quick release plate 2 x 2 1/2 for 380.	39.95
383	Additional quick release plate 2 x 5 for 380	49.95
480	Fluid Head 4 with 100% fluid pan, 100% fluid vertical tilt, quick release plate, 15" handle	1499.00
	Same w/14-18" handles	add 119.95
481	Fluid Head 5 with 100% panning, 100% fluid and counterbalanced vertical tilt, with 3 x 8" quick and shift release plate, extensible handle 14-22", supports 10-50 lbs.	2599.00
580	Same, with 100% fluid panning, counterbalanced vertical tilt, supports 10-50 lbs.	1999.00
680	Fluid Head 6: Same as 580 w/stronger counterbalance, supports 50-100 lbs.	2699.00
679	Fluid Head 6: Same as 579 w/stronger counterbalance, supports 50-100 lbs.	2099.00
586	580, 579, 680, 679, with second extensible handle 14-22"	add 179.95
	Additional quick release plate for 580, 680, 579, 679	add 99.95
EM 580	Metal trimmed carrying case for 580, 579, 680, 679	179.95

Leveling Balls With Locking Grip, Headlock, For Rapid Adjustment Of Fluid Heads, Without Or With Center Column For Height Adjustment

221 BR	Leveling Ball 2 w/Rapid column for Reporter	199.95
221 BC	Leveling Ball 2 w/Cremailiere gearlift column for Cremailiere 2.	199.95
321 BR	Leveling Ball 3 w/Rapid column for Studex	209.95
321 BC	Leveling Ball 3 w/Cremailiere gearlift column for Cremailiere 3.	209.95
421 B	Leveling Ball 4 for Super Pro Tele Studex, platform 3 1/4" diameter.	219.95
421 BR	Leveling Ball 4 w/Rapid column for Super Pro Tele Studex	299.95
421 BC	Leveling Ball 4 w/Cremailiere gearlift column for Super Pro Tele Studex	449.95
621 B	Leveling Ball 6 for Super Pro Tele Studex, platform 4 1/4" diameter	359.95
621 BC	Leveling Ball 6 w/Cremailiere gearlift column 18" for Super Pro Tele Studex	699.95
621 BCL	Leveling Ball 6 w/Long Cremailiere gearlift column 32" for Super Pro Tele Studex	799.95
622 BF	Leveling Ball 6 F w/flat base 4 1/4" diameter, 3/8" socket	459.95

Tripods With Leveling Balls Without Or With Center Column For Height Adjustment

Sport With Ball 1:		
Leg Diameter 7/8"		
103 BR1	Sport Eco Ball 1/Rapid	\$279.95
Reporter, Cremailiere 2:		
Leg Diameter 1", For Cameras To 10 Lbs.		
203 BR2	Reporter Eco Ball 2/Rapid w/2 leg sections	\$319.95
204 BR2	Reporter Industry Ball 2/Rapid w/3 leg sections	349.95
220 BR2	Reporter Performance Ball 2/Rapid w/3 leg sections, leg spreading	399.95
224 BR2	Reporter Industry Performance Ball 2/Rapid w/3 leg sections, leg spreading	409.95
210 BC2	Cremailiere 2 Industry Ball 2/Cremailiere gearlift w/3 leg sections	429.95
212 BC2	Cremailiere 2 Industry Performance Ball 2/Gearlift	479.95

Studex, Cremailiere 3: Leg Diameter 1 1/4", For Cameras To 15 Lbs.

303 BR3	Studex Eco Ball 3/Rapid w/2 leg sections	\$359.95
301 BR3	Studex Ball 3/Rapid w/3 leg sections	419.95
323 BR3	Studex Compact Performance Ball 3/Rapid w/3 leg sections, leg spreading.	479.95
320 BR3	Studex Performance Ball 3/Rapid w/3 leg sections, leg spreading	479.95
310 BC3	Cremailiere 3 Ball 3/Cremailiere gearlift w/3 leg sections	519.95
312 BC3	Cremailiere 3 Performance Ball 3/Cremailiere gearlift w/3 leg sections, leg spreading	579.95

Super Studex Standard: Leg Diameter 1 3/8", For Cameras To 50 Lbs.

405 B4	Super Studex Compact Ball 4 w/4 leg sections	\$499.95
405 BR4	Super Studex Compact Ball 4/Rapid w/4 leg sections	579.95
405 BC4	Super Studex Compact Ball 4/Cremailiere gearlift w/4 leg sections	729.95
400 B4	Super Studex Giant Ball 4 w/3 leg sections.	499.95
400 BR4	Super Studex Giant Ball 4/Rapid w/3 leg sections	579.95
400 BC4	Super Studex Giant Ball 4/Cremailiere gearlift w/3 leg sections	729.95
400/2 B4	Super Studex Giant Eco Ball 4 w/2 leg sections	449.95
400/2 BR4	Super Studex Giant Eco Ball 4/Rapid w/2 leg sections	529.95
400/2 BC4	Super Studex Giant Eco Ball 4/Cremailiere gearlift w/2 leg sections	679.95
408	Super Studex Compact Luxe w/5 leg sections	add 100.00
403	Super Studex Giant Luxe w/4 leg sections	add 100.00

Pro Studex Performance: Leg Diameter 1 3/8" w/Leg Spreading, For Cameras To 50 Lbs.

415 B4	Pro Studex Compact Ball 4 w/4 leg sections	\$649.95
415 BR4	Pro Studex Compact Ball 4/Rapid w/4 leg sections	649.95
415 BC4	Pro Studex Compact Ball 4/Cremailiere gearlift w/4 leg sections	799.95
410 B4	Pro Studex Giant Ball 4 w/3 leg sections	569.95
410 BR4	Pro Studex Giant Ball 4/Rapid w/3 leg sections	649.95
410 BC4	Pro Studex Giant Ball 4/Cremailiere gearlift w/3 leg sections	799.95
410/2 B4	Pro Studex Giant Eco Ball 4 w/2 leg sections	519.95
410/2 BR4	Pro Studex Giant Eco Ball 4/Rapid w/2 leg sections	599.95
410/2 BC4	Pro Studex Giant Eco Ball 4/Cremailiere gearlift w/2 leg sections	749.95
418	Pro Studex Compact Luxe w/5 leg sections	add 100.00
413	Pro Studex Giant Luxe w/4 leg sections	add 100.00

Tele Studex Performance: Leg Diameter 1 1/2" w/Leg Spreading, For Cameras To 50 Lbs.

510 B4	Mini Tele Studex Ball 4 w/4 leg sections	\$649.95
510 BR4	Mini Tele Studex Ball 4 w/Rapid w/4 leg sections	729.95
510 BC4	Mini Tele Studex Ball 4 w/Cremailiere gearlift w/4 leg sections	879.95
505 B4	Tele Studex Compact Ball 4 w/4 leg sections	649.95
505 BR4	Tele Studex Compact Ball 4/Rapid w/4 leg sections	729.95
505 BC4	Tele Studex Compact Ball 4/Cremailiere gearlift w/4 leg sections	879.95
500 B4	Tele Studex Giant Ball 4 w/3 leg sections	649.95
500 BR4	Tele Studex Giant Ball 4/Rapid w/3 leg sections	729.95
500 BC4	Tele Studex Giant Ball 4/Cremailiere gearlift w/3 leg sections	879.95
500/1/2 B4	Tele Studex Giant Eco Ball 4 w/2 leg sections	599.95
500/2 BR4	Tele Studex Giant Eco Ball 4/Rapid w/2 leg sections	679.95
500/2 BC4	Tele Studex Giant Eco Ball 4/Cremailiere gearlift w/2 leg sections	829.95

Tele Studex Performance: Leg Diameter 1 1/2" w/Leg Spreading, For Cameras To 100 Lbs.

510 B6	Mini Tele Studex Ball 6 w/4 leg sections	\$ 789.95
510 BC6	Mini Tele Studex Ball 6 Cremailiere gearlift w/4 leg sections.	1129.95
505 B6	Tele Studex Compact Ball 6 w/4 leg sections	789.95
505 BC6	Tele Studex Compact Ball 6/Cremailiere gearlift w/4 leg sections.	1129.95
500 B6	Tele Studex Giant Ball 6 w/3 leg sections	789.95
500 BC6	Tele Studex Giant Ball 6/Cremailiere gearlift w/3 leg sections.	1129.95
500 BCL6	Tele Studex Giant Ball 6/Long Cremailiere gearlift w/3 leg sections	1229.95
500/2 B6	Tele Studex Giant Eco Ball 6 w/2 leg sections	739.95
500/2 BC6	Tele Studex Giant Eco Ball 6/Cremailiere gearlift w/2 leg sections	1079.95
500/2 BCL6	Tele Studex Giant Eco Ball 6/Long Cremailiere gearlift w/2 leg sections	1179.95
513	Mini Tele Studex Luxe	100.00
508	Tele Studex Compact Luxe w/5 leg sections	add 100.00
504	Tele Studex Giant Luxe w/5 leg sections	add 150.00

Tripods With Counter Balanced Video-Cine Head/Column, Access. Supports

517/8	Wire hooks for Tele Studex, set of 3: 2 long, 1 short	\$44.95
608	Chain between legs for Tele Studex	119.95

Extra Solid Video Tripods: Leg Diameter 1 1/2"

w/2 Leg Sections For Cameras To 100 Lbs. And 250 Lbs.		
600 B6	Video 6T/Ball 6F w/chain, leg spreading, supports 100 lbs.	\$ 999.95
800 B6F	Video 6T/Ball 6F w/4" diam. center column for extra support, 5" wheel dolly, supports 250 lbs.	3599.00



GITZO VIDEO EQUIPMENT

Tripod Combinations with Leveling Balls and 100% Fluid Heads, Collapsible Dollies

203 BR2-180	Reporter Eco Ball 2/Rapid with 180 Fluid Head 1	...	\$ 499.00
	Same w/390 1 1/2" Wheel Dolly	...	699.00
303 BR3-380	Studex Eco Ball 3/Rapid w/380 100% Fluid Head 3	...	1049.00
	Same w/391 3" Wheel Dolly, Adjustable Metal Shoes	...	1319.00
400 B4-380	Super Studex Giant Ball 4 w/380 100% Fluid Head 3	...	1179.00
	Same, w/392 5" Wheel Dolly, Adjustable Metal Shoes	...	1449.00
410 B4-480	Pro Studex Giant Ball 4 w/480 100% Fluid Head 4	...	1869.00
	Same w/392 5" Wheel Dolly, Adjustable Metal Shoes	...	2229.00
505 B4-480	Tele Studex Compact Ball 4 w/480 100% Fluid Head 4	...	1939.00
	Same, w/392 5" Wheel Dolly, Adjustable Metal Shoes	...	2299.00
505 B6-580	Tele Studex Compact Ball 6 w/580 100% Fluid Head 5	...	3049.00
	Same w/492 5" Wheel Dolly, Metal Shoes, Stirrups	...	3499.00
500 B6-580	Tele Studex Compact Ball 6 w/580 100% Fluid Head 5	...	2799.00
	Same w/492 5" Wheel Dolly, Metal Shoes, Stirrups	...	3199.00
600 B6-680	Video 6T/Ball 6 w/680 100% Fluid Head 6	...	3320.00
	Same w/594 5" Wheel Dolly, Metal Shoes, Stirrups, Traveling Fixings	...	4139.00
800 B6F-680	Video 8T/Ball 6F w/680 100% Fluid Head 6, w/4" dia. Column for Extra Support, 5" Wheel Dolly, Traveling Fixings	...	5669.00

Fluid Action Head, Base

180	Fluid Action Head 1 w/Rapid Adaptor, supports 2-7 lbs.	...	\$229.95
285	Fluid Action Base for 360° Panning of Non-Fluid Heads, supports 2-20 lbs.	...	189.95

Video-Cine Heads, Spring Balanced

155	Video-Cine 1S for Weekend, Total/Sport, Cremaillere 0/1, supports 2-7 lbs.	...	\$ 99.95
252	Video-Cine 2S for Total/Sport, Reporter, Cremaillere 1/2, supports 5-10 lbs.	...	189.95

Video Head, Not Counterbalanced with Quick Release

251	Video 2 for Total/Sport, Reporter, Cremaillere 1/2, supports 5-10 lbs.	...	\$129.95
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Simple Video-Cine Heads, Not Counterbalanced

050	Video-Cine 0 for Loisir, Weekend, Cremaillere 0, supports 2-5 lbs.	...	\$ 79.95
150	Video-Cine 1 for Total/Sport, Cremaillere 1, supports 2-7 lbs.	...	89.95
250	Video-Cine for Reporter, Cremaillere 2, supports 2-10 lbs.	...	99.95
350	Video-Cine 3 for Studex, Cremaillere 3, supports 5-15 lbs.	...	119.95
450	Video-Cine 4 for Super Pro Tele Studex, supports 10-20 lbs.	...	139.95
450L	Video-Cine 4L with longer handle 15', supports 10-20 lbs.	...	159.95
450LL	Same with 2 longer handles 15'	...	169.95
585	Side tilt attachment for more than 90°, also suited for Monopods.	...	79.95

Quick and Shift Releases for Cameras to 20 lbs.

385	With 2" x 3" Plate, 1/4" Screw (3/8" on request)	...	\$79.95
386	With 2" x 6" Plate (2) 1/4" Screws (3/8" on request)	...	89.95
387	2" x 3" Plate only with (2) 1/4" Screws (3/8" on request)	...	29.95
388	2" x 6" Plate only with (2) 1/4" Screws (3/8" on request)	...	39.95

Video Combi Tripods with 2 Leg Sections, Fluid Action, or Counterbalanced Video Head

03-180	Weekend Eco/Fluid Action Head 1, supports 2-5 lbs.	...	\$339.95
103-180	Sport Eco/Fluid Action Head 1, supports 2-7 lbs.	...	359.95
203-180	Reporter Eco/Fluid Action Head 1, supports 2-7 lbs.	...	379.95
03-155	Weekend Eco Video Combi w/155 Video 1S, supports 2-5 lbs.	...	199.95
103-155	Sport Eco Video Combi w/155 Video 1S, supports 2-7 lbs.	...	219.95
103-252	Sport Eco Video Combi w/252 Video 2S, supports 2-7 lbs.	...	319.95
203-252	Reporter Eco Video Combi w/252 video 2S, supports 5-10 lbs.	...	339.95

Video Combi Tripods with 2 Leg Sections, Non-Counterbalanced Video or Simple Video-Cine Heads

103-251	Sport Eco Video Combi w/251 Video 2, supports 2-7 lbs.	...	\$259.95
203-251	Reporter Eco Video Combi w/251 Video 2, supports 5-10 lbs.	...	279.95
03-150	Weekend Eco Video Combi w/050 Video-Cine 0, supports 2-5 lbs.	...	189.95
103-150	Sport Eco Video Combi w/150 Video-Cine 1, supports 2-7 lbs.	...	219.95
203-250	Reporter Eco Video Combi w/250 Video-Cine 2, supports 5-10 lbs.	...	249.95
303-350	Studex Eco Video Combi w/350 Video-Cine 3, supports 10-15 lbs.	...	299.95
400/2-450	Super Studex Giant Eco Video Combi w/450 Video-Cine 4, supports 10-20 lbs.	...	449.95
410/2-450	Pro Studex Giant Eco Video Combi w/450 Video-Cine 4, supports 10-20 lbs.	...	519.95
500/2-450L	Tele Studex Giant Eco Video Combi w/450L Video-Cine 4L, supports 10-20 lbs.	...	599.95
500/2-450LL	Same w/2 handles	...	579.95

Video-Cine Tripods with 2 Leg Sections

03	Weekend Eco, leg dia. 3/4", supports 0-3 lbs.	...	\$129.95
103	Sport Eco, leg dia. 7/8", supports 2-5 lbs.	...	149.95
203	Reporter Eco, leg dia. 1", supports 5-10 lbs.	...	169.95
303	Studex Eco, leg dia. 1 1/4", supports 10-15 lbs.	...	199.95
400/2R	Super Studex Giant Eco, leg dia. 1 3/8", supports 20-50 lbs.	...	329.95
410/2R	Pro Studex Giant Eco w/Leg Spreading, leg dia. 1 3/8", supports 20-50 lbs.	...	399.95
500/2R	Tele Studex Giant Eco w/Leg Spreading, leg dia. 1 1/2", supports 25-65 lbs.	...	479.95

Standard and Performance Tripods with Rapid Column, For Lightweight and Medium Weight Cameras

Total/Sport: Leg Dia. 7/8", For Cameras to 5 lbs.			
106	Total Luxe w/4 Leg Sections, 2 Section Column	...	\$169.95
101	Sport w/3 Leg Sections	...	159.95
104	Sport Luxe: 101 w/4 Leg Sections	...	199.95
126	Total Luxe Performance: 106 w/Leg Spreading, 2 Section Column.	...	229.95
120	Sport Performance: 101 w/Leg Spreading, 2 Section Column	...	219.95
124	Sport Luxe Performance: 120 w/4 Leg Sections	...	259.95

Reporter: Leg Dia. 1", For Cameras to 10 lbs.

206	Reporter Mode w/4 Leg Sections	...	\$199.95
201	Reporter w/3 Leg Sections	...	189.95
205	Reporter Luxe w/4 Leg Sections	...	239.95
204	Reporter Industry w/3 Leg Sections.	...	199.95
226	Reporter Mode Performance: 206 w/Leg Spreading, 2 Section Column	...	269.95
220	Reporter Performance: 201 w/Leg Spreading, 2 Section Column.	...	259.95
225	Reporter Luxe Performance: 220 w/4 Leg Sections	...	309.95
224	Reporter Industry Performance: 204 w/Leg Spreading, 2 Section Column	...	269.95

Studex: Leg Dia. 1 1/4", For Cameras to 15 lbs.

302	Mini Studex w/6 Leg Sections, 2 Section Column	...	\$299.95
304	Studex Compact w/3 Leg Sections	...	259.95
306	Studex Compact Luxe: 304 w/4 Leg Sections	...	319.95
301	Studex w/3 Leg Sections	...	259.95
325	Mini Studex Performance: 302 w/Leg Spreading, 2 Section Column	...	359.95
323	Studex Compact Performance: 304 w/Leg Spreading, 2 Section Column	...	329.95
326	Studex Compact Luxe Performance: 323 w/4 Leg Sections	...	389.95
320	Studex Performance: 301 w/Leg Spreading, 2 Section Column	...	329.95



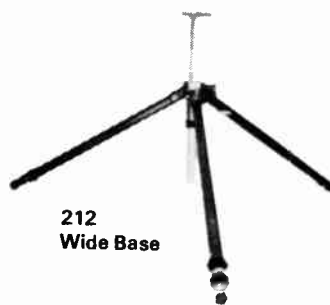
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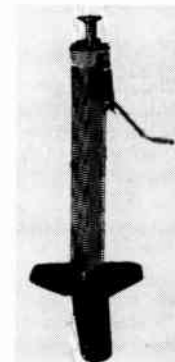
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610



212
Wide Base



615

GITZO VIDEO EQUIPMENT

Mono-Tripods with Detachable Monopod in 1 Leg, Charcoal Finish

- 122 Sport Luxe, Performance—mono: 124 with monopod \$299.95
- 222 Reporter Luxe Performance—mono: 221 with monopod 349.95
- 322 Studex Compact Luxe Performance—mono: 326 with monopod 429.95

Standard and Performance Tripods with Cremaillere Gearlift Column for Light Weight and Medium Weight Cameras

Cremaillere 1: Leg Diameter 7/8", for Cameras To 5 Lbs.

- 110 Cremaillere 1 w/3 leg sections (Sport Type) \$229.95
- 114 Cremaillere 1 Luxe: 110, w/4 leg sections (Sport Luxe Type) 269.95
- 112 Cremaillere 1 Performance: 110 w/leg spreading 279.95
- 116 Cremaillere 1 Luxe Performance: 112 w/4 leg sections 319.95

Cremaillere 2: Leg Diameter 1", for Cameras to 10 Lbs.

- 207 Cremaillere 2 Compact w/4 leg sections (Reporter Mode Type) \$279.95
- 211 Cremaillere 2 269.95
- 208 Cremaillere 2 Luxe w/4 leg sections (Reporter Luxe Type) 319.95
- 210 Cremaillere 2 Industry w/3 leg sections (Reporter Industry Type) 279.95
- 227 Cremaillere 2 Compact Performance: 207 w/leg spread, 5" short column 339.95
- 228 Cremaillere 2 Luxe Performance: 208 w/leg spreading 379.95
- 212 Cremaillere 2 Industry Performance: 210 w/leg spreading 339.95

Cremaillere 3: Leg Diameter 1 1/4", for Cameras to 15 Lbs.

- 305 Cremaillere 3 Compact w/3 leg sections (Studex Compact Type) \$359.95
- 307 Cremaillere 3 Compact Luxe: 305 w/4 leg sections (Studex Compact Luxe Type) 419.95
- 310 Cremaillere 3 w/3 leg sections (Studex Type) 359.95
- 324 Cremaillere 3 Compact Performance: 305 w/leg spreading 419.95
- 328 Cremaillere 3 Compact Luxe Performance: 324 w/4 leg sections 479.95
- 312 Cremaillere 3 Performance: 310 w/leg spreading 419.95

Video-Cine Heads with Adjustable Counterbalance, Column for Height Adjustment

- 550 5T head/rapid column, 1 handle extensible 16-22", supports 10-65 lbs. \$499.95
- 551 5T head/Cremaillere gearlift column, same handle, supports 10-65 lbs. 699.95
- 5TDL 5T head with 2 handles add 99.95

Video-Cine Heads with Adjustable Counterbalance, Column for Height Adjustment

- 330 Studex Compact Performance 5T/rapid w/3 leg sections, leg spreading, 2 section column \$679.95
- 331 Cremaillere 3 Compact Performance 5T/Cremaillere gearlift w/3 leg sections, leg spreading 769.95
- 400/2-551 Super Studex Giant Eco 5T/Cremaillere gearlift w/2 leg sections 869.95
- 410/2-551 Pro Studex Giant Eco 5T/Cremaillere gearlift w/2 leg sections 929.95
- 505-551 Tele Studex Compact 5T/Cremaillere gearlift w/4 leg sections 1019.95
- 500/2-551 Tele Studex Giant Eco 5T/Cremaillere gearlift w/2 leg sections 989.95
- 552 Intermediate plate for use w/large lenses 59.95
- 5TDL 5T head w/2 handles 99.95

Extra Solid Tripods with Counterbalanced Video—Cine Head/Column for Height Adjustment

- 61 Video 6T/Cremaillere gearlift w/chain, leg spreading, supports 65 lbs. \$1999.00
- 810 Video 8T/Cremaillere gearlift w/4" diam. center column, for extra solid support, 5" wheel dolly, supports 250 lbs. 3999.00
- 4720 10 RT/Gearhead braces, level feet 3999.00
- 605/6 Quickchange dovetail attachment for 6T, 8T heads, 10RT: Base and Plate 599.95
- 6TDL 6T or 8T Head with 2 handles add 199.95

Ladderpods and Ladder Attachments, for Cameras, and Persons to 300 Lbs.

- 598 84 Gitzechel Ball 4 \$1599.00
- 598 8R4 Gitzechel Ball 4/rapid 1679.00
- 598 8C4 Gitzechel Ball/Cremaillere gearlift 1779.00
- 598 86 Gitzechel Ball 6 1699.00
- 598 8C6 Gitzechel Ball 6/Cremaillere gearlift 1949.00
- 597 Transport wheels for Gitzechel (when collapsed) pr./ 99.95
- 599 84 Gitfix Ball 4 attachment 399.95
- 599 8R4 Gitfix Ball 4/rapid attachment 479.95
- 599 8C4 Gitfix Ball 4/Cremaillere gearlift attachment 579.95
- 599 86 Gitfix Ball 6 attachments 499.95
- 599 8C6 Gitfix Ball 6/Cremaillere gearlift attachment 749.95

Monocolumns with Accessory Tray:

- Diameter 4", for Cameras to 100 Lbs., Charcoal Finish**
- 615 Monocolumn w/Cremaillere gearlift, diameter 1 1/2", 35"-54" \$1499.00
- 615 8F Monocolumn Ball 6F 1839.00
- 615 8F-680 Same w/680 fluid head 4229.00

Attachments for Cameras

- 568 Car and all purpose attachment \$179.95
- 520 Wall support 15", turnable 129.95
- 521 Same, extensible 24"-40", not turnable 229.95
- 522 Same as 520, but stronger 19", not turnable 99.95
- 5228 Same as 522, adjustable 139.95
- 523 PM Simple tilt head, 2 small platforms 39.95
- 523 MM Simple tilt head, 1 small-1 large platform 49.95
- 523 GM Simple tilt head, 2 large platforms 49.95
- F88 Accessory triangle bag, attaches to all tripods 69.95
- 582 Accessory tray, for Super Pro Tele Studex, monocolumn 79.95

Twin Heads, Bracket

- 584 Twin heads, for 2 cameras of up to 5 lbs. \$59.95
- 539A Twin (triple) bracket, for 2 (or 3) heavier cameras of up to 25 lbs. 79.95
- 5398 Same, center mounted 99.95

Dollies, Collapsible with 3/8" Screw-in Center (Specify Tripod)

- 390 W/1 1/2" wheels, adjustable leather shoes, rubber foot \$219.95
- 391 W/3" wheels, adjustable metal shoes 299.95
- 392 W/5" wheels, adjustable metal shoes 399.95
- 491 W/3" wheels, metal shoes, stirrups (specify tripod for adaptors) 399.95
- 492 W/5" wheels, metal shoes, stirrups (specify tripod for adaptors) 499.95
- 590 Same, heavier duty, not collapsible (specify tripod for adaptors) 699.95
- 591 Same, with traveling fixings (specify tripod for adaptors) 899.95
- 593 Same, collapsible (specify tripod for adaptors) 799.95
- 594 Same, with traveling fixings (specify tripod for adaptors) 999.95
- 498 Tripod adaptors for dollies with metal shoes, stirrups (specify tripod) set of 3 29.95

GKC RESEARCH & DEVELOPMENT

Mixers/Amplifiers

UMC-4 Universal Micro Mixer

(Compatible with all ENG recorders)

- All integrated circuits, wide flat frequency response
- 4 low impedance balanced microphone inputs female XLR-3 connectors
- Line input (RCA phone jack)
- Output: Switchable male XLR-3 connector, balanced line level or mike level
- Clipper limiter circuitry (defeatable)
- Built-in tone oscillator
- Monitor headphone 1/4" jack
- Standard 3/4" VU meter
- Derives power from enclosed standard 9V alkaline battery
- External power input jack for battery or well filtered DC supply up to 12V
- All connectors are American standard
- Diecast aluminum body with black-texture finish
- Dimensions: 4 3/4" H x 5 1/4" W x 2 3/8" D
- Weight: 1 3/4 lbs.

UMC-4 \$550.00



UMC-4

M-3 2-Channel Mini Mike Mixer

- Integrated circuit construction
- 2 low impedance female XLR-3 mike inputs
- 1 mike level output
- Powered by enclosed 9V alkaline battery
- Diecast aluminum body with black-texture finish
- Dimensions: 4 1/4" H x 2 1/4" W x 1 1/4" D

A microphone mixer booster designed for the one man operation, compatible with all Mini-Cam recorders.

M-3 \$250.00



M-3



DA-5

DA-5 Distribution Amplifier

- One 2K ohms balanced line input female XLR-3 connector
- Input level control
- Five 600 ohms balanced line outputs male XLR-3 connectors
- Derives power from enclosed standard 9V alkaline battery
- External power input jack for DC supply up to 12V
- Diecast aluminum body with black-texture finish
- Dimensions: 5 1/4" H x 3 1/4" W x 1 1/2" D

All integrated circuit, compact, lightweight, and versatile. It is used for audio distribution or as a headphone monitor amplifier.

DA-5 \$250.00

100 Mike-Line Amplifier

- Low impedance mike input female XLR
- 600 ohms balanced line output male XLR
- Line level output "adjustable" 0dB to +8dB
- Power requirement: 9V battery
- Dimensions: 4 1/4" H x 2 1/4" W x 1 1/4" D

All integrated circuits, low noise, wide flat frequency response. It is widely used in the broadcast industry. An internal helipot is provided to adjust amplifier level output. It comes with belt clip and battery.

100 \$125.00



100

150 Mike-Line Amplifier

- Low impedance mike input female XLR
- 600 ohms balanced line output male XLR
- Line level output adjustable 0dB to +8dB
- 600 ohms headphone monitor output (Tini jack)
- Clipper limiter (defeatable)
- Power requirement: 9V battery
- Dimensions: 4 1/4" H x 2 1/4" W x 1 1/4" D

This amplifier is designed for the broadcast engineer who desires quality, versatility and reliability. Ideal for use with long cables from mike to mixer, from mike to telephone line or from mike to microwave system. It features a built-in clipper limiter circuitry, also a headphone monitor output. Comes with belt clip and battery.

150 \$175.00



150

GKC RESEARCH & DEVELOPMENT

Amplifiers/Speakers

300 Microphone Booster Amplifier

- Low impedance mike input female XLR-3 connector
- 600 ohms balanced line output (binding posts)
- Power requirement: 9V battery
- Dimensions: 4 1/4" H x 1 1/2" W x 1 1/4" D

Extremely compact, integrated circuit construction, primarily designed for telephone program feeding. It also has many other uses in the broadcast industry. It comes with belt clip and battery.

300 \$89.50

400 Dual Impedance Monitor Amplifier

- Balanced input 2K ohms female XLR-3 connector
- Switchable output 8 ohms or 600 ohms, two phone jacks 1/4" and Tini
- Powered by 9V battery
- Dimensions: 4 1/4" H x 2 1/4" W x 1 1/4" D

All integrated circuit amplifier, designed for the broadcast industry, features the dual impedance switchable output. It comes with belt clip and battery.

400 \$125.00

500 Monitor Amplifier

- Input 1K ohms
- Output 8 ohms
- Powered by 9V battery
- Dimensions: 4 1/4" H x 2 1/4" W x 1 1/4" D

A high quality all integrated circuit amplifier, widely used by broadcast engineers on remotes and motion picture sound men on location. It features two output phone jacks and a belt clip for the convenience of the operator. Battery included.

500 \$89.95

600 Monitor Amplifier

- Balanced input 2K ohms female XLR-3 connector
- Output 8 ohms, two phone jacks 1/4" and Tini
- Power output switchable from 250mW to 500mW
- Powered by 9V battery
- Dimensions: 4 1/4" H x 2 1/4" W x 1 1/4" D

High fidelity all integrated circuitry, widely used by broadcast engineers as IFB amplifier and by sound men in the ENG and motion picture fields. It features the switchable dual power output, and comes with belt clip and battery.

600 \$125.00

700 Monitor Amplifier Speaker

- Input 1K ohms
- Output impedance 8 ohms
- Dimensions: 4 1/4" H x 2 1/4" W x 1 1/4" D

All integrated circuit amplifier, primarily designed for ENG applications and it has many other uses in the industry. It can be used as a speaker amplifier, speaker headphone amplifier, as a headphone monitor amplifier. It comes with a belt clip and 9V battery.

700 \$125.00

800 Monitor Amplifier Speaker

- Balanced input 2K ohms female XLR-3 connector
- Power output switchable from 250mW to 1/2W
- Output impedance 8 ohms
- Dimensions: 5 1/2" H x 7 1/2" W x 2 1/4" D

High fidelity all integrated circuit amplifier, designed for the demanding engineer who requires quality, ruggedness and portability. It features a 4" speaker, powered by 9V battery or external power supply up to 12VDC.

800 \$200.00

900 Monitor Amplifier Speaker

- Balanced input 2K ohms female XLR-3 connector
- Power output switchable from 250mW to 1/2W
- Output impedance 8 ohms, two phone jacks 1/4" and Tini
- Dimensions: 5 1/4" H x 3 1/4" W x 1 1/2" D

A quality, compact amplifier features 3" speaker, powered by 9V battery or external power supply up to 12VDC. It can be used as a speaker amplifier, speaker headphone amplifier or as a headphone monitor amplifier.

900 \$150.00



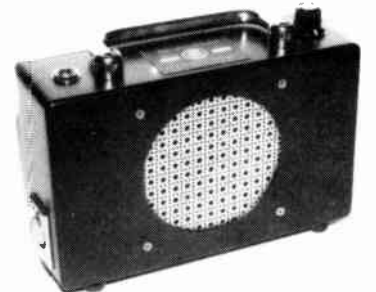
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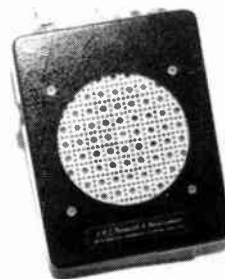
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700

800



900

GKC RESEARCH & DEVELOPMENT

Microphones/Amplifiers

200 Phantom Powered Pre Amp

The entire amplifier is constructed inside the Switchcraft connector. By inserting it into any professional microphone whether of the dynamic or the condenser type having a 200 ohms impedance and a sensitivity of 100µV, and connecting the other side of cable with the alligator clips to the telephone transmitter contacts, it directly replaces the carbon microphone.

200\$89.50



200

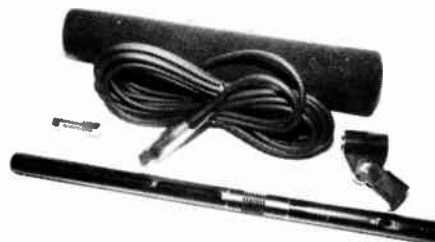
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250 Phantom Powered Pre Amp

• Dimensions: 2 1/4" H x 1 3/8" W x 1 1/8" D

This compact, versatile, all integrated circuit unit is designed for the radio and television news reporter who requires feeding a combination of live reporting and a cassette recording through telephone lines.

250\$89.50



M-15

M-15 Electret Condenser Shotgun Microphone

- Frequency Response: 50Hz-15,000Hz
- Output: Balanced, XLR-3 type connector
- Maximum Sound Pressure Level: 115dB
- Power Supply: 1.5V AA battery
- Sensitivity: -45dB
- Output Impedance: 250 ohms
- Directivity: Super-Directional
- Battery Life: 3000 hours
- Dimensions: 15" L and 3/4" dia.

It comes in a case with battery, mike holder, wind screen and 20' 2 conductor shielded rubber cable with XLR-3 type connector.

M-15\$179.50



AC-60

AC-60 Universal Digital Crystal Sync

• Dimensions: 4 1/2" H x 2 1/4" W x 1 1/4" D. Weighs 8 ozs.

It provides 1V 60 cycle sync signal. Compatible with all Nagras, Stelavox, Tandberg, and Uher recorders, also can be used with Multi Channel recorders. Derives power from enclosed 9V battery, barely consumes 5mA including the LED indicator. Comes with battery.

AC-60\$175.00

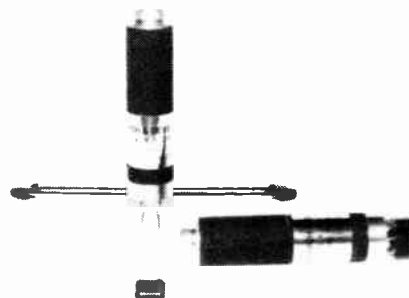


F-5

F-5 Mini Mike Fishpole

This fishpole is specially designed for newswork. Constructed for durability and toughness, it is also lightweight and versatile, making it easy to handle and carry. The three heavy-duty aluminum tubes are telescopic and collapsible, 4' in length when extended and 20" when collapsed. It comes with a miniature two conductor shielded flex rubber cable.

F-5\$79.50



2

2 Collapsible Microphone Stand

A unique design for a mike stand, it is lightweight and sturdy, quickly and easily set up. It is a 4" long cylinder 7/8" in diameter. To use simply pull and spread the hinged legs stored inside the cylinder. It accepts standard mike-holders with 5/8" x 27" threads.

2\$19.50

Mike/Light Brackets for the ENG Mini-Cameras

(Fig. T, U, W, X, Y, Z)

Heavy-duty, lightweight aluminum construction. All brackets feature a shock mount microphone stud assembly and 1/2" diameter light post. Accommodates the Mini-Pro and other portable lights. Can be installed in a matter of seconds and easily removed for storing camera in fitted case.

UNV-50 Light Bracket

(Fig. S)

A 1/2" diameter lightpost with 1/4" x 20" threads screw and a pin type ratchet in the center for easy installation.

S-50	Mike/light Bracket for Sony BVP-3 camera	Fig. 1	\$69.50
S-50	Mike/light Bracket for Sony DXC-M3 camera	Fig. 1	69.50
R-5	Mike/light Bracket for RCA TK-76 camera	Fig. T	69.50
R-10	Mike/light Bracket for RCA TK-76B or C camera	Fig. U	69.50
R-15	Mike/light Bracket for RCA TK-86 camera	Not shown	69.50
IK-1	Mike/light Bracket for Ikegami HL-77 camera	Fig. Y	69.50
IK-2	Mike/light Bracket for Ikegami HL-79 camera	Fig. W	69.50
IK-2	Mike/light Bracket for Ikegami HL-79D camera	Fig. W	69.50
IK-3	Mike/light Bracket for Ikegami 350 camera	Fig. X	69.50
IK-4	Mike/light Bracket for Ikegami 83 camera	Fig. X	69.50
IK-5	Mike/light Bracket for Ikegami ITC-730 camera	Fig. X	69.50
IK-6	Mike/light Bracket for Ikegami EC-35 camera	Fig. X	69.50
IK-7	Mike/light Bracket for Ikegami HL-78A camera	Fig. Y	69.50
IK-8	Mike/light Bracket for Ikegami HL-79E camera	Fig. X	69.50
JV-1	Mike/light Bracket for JVC KY-2000 camera	Fig. Y	69.50
JV-2	Mike/light Bracket for JVC KY-2020 camera	Fig. Y	69.50
JV-3	Mike/light Bracket for JVC KY-2700 camera	Fig. X	69.50
SP-7	Mike/light Bracket for Sharp XC-700 camera	Fig. W	69.50
A-1	Mike/light Bracket for Asaca ACC-2000 camera	Fig. T	69.50
H-2	Mike/light Bracket for Hitachi SK-80 camera	Fig. T	69.50
H-4	Mike/light Bracket for Hitachi SK-90 camera	Fig. T	69.50
H-5	Mike/light Bracket for Hitachi SK-91 camera	Fig. Z	69.50
H-8	Mike/light Bracket for Hitachi FP-40 camera	Fig. X	69.50
H-10	Mike/light Bracket for Hitachi FP-22 camera	Fig. X	69.50
H-12	Mike/light Bracket for Hitachi FP-21 camera	Fig. X	69.50
T-10	Mike/light Bracket for Toshiba PK-60 camera	Fig. X	69.50
UNV-50	Light Bracket for the following cameras:	Fig. S	25.00

Sony Betacam BVP-1, BVP-3, DXC-M3, BVP-110, BVP-200, BVP-250, BVP-300, BVP-330. Thompson MC-301, MC-501, MC-601A, CSF. Fujinon 14X. JVC KY-1900 CH. RCA HC-1. Panasonic AK-100.

If you require a bracket for a camera not listed, please call or write.



1



S



T



U



W



X



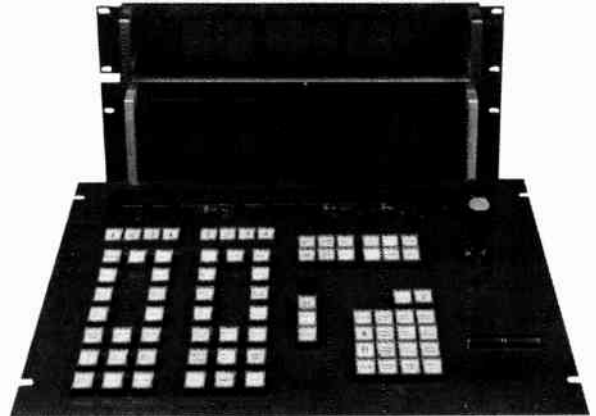
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Z

X-Calibre Digital Video System

• Dual channel, multiple input DVE that, in a complete package, combines two full time base correcting frame store synchronizers with comb line NTSC decoders, full digital signal processing and a sophisticated mixer • Includes a brilliant zoom and trajectory capability, with further zoom variations combining slide, flip, tumble and spin • Other effects include vertical inversion, variable axis compression, segmented reveals and conceals between channels, variable borders and full re-entrant capability • State-of-the-art technology • Designed for compatibility with future hardware developments • Consists of three sections: Digital Effects Controller, Mainframe Unit and Zoom Processor • Digital Effects Controller is designed for desk-mounting and can be used alongside an edit controller or as a complete effects vision-mixer • Digital Effects Controller and Mainframe Unit are connected by a single cable RS-422 interface and can be located up to 1000 meters from each other • Mainframe contains one Frame Store Synchronizer, the interface logic to the Zoom Processor and houses the Digital Control Electronics, the Central Microprocessor and the Sync Pulse Generator • Zoom Processor Unit houses the second frame store, digital adaptive spatial filter and microprocessor control system • 3-axis joystick • A/B transitions may be performed automatically at a pre-programmed rate from 1 to 99 frames. Alternatively, the effect may be controlled manually with the 'T'-bar quadrant fader, which offers the unique feature of user-programmable damping • Full Edit Memory enables any combination of button push effects and joystick T-bar picture movements to be stored



X-Calibre

Proteus Digital Effects Controller

• Dual channel multiple input, digital effects unit incorporating full time base correction, plus two full frame stores • State-of-the-art software and hardware • Designed to work with standard NTSC video inputs or any heterodyne VTR—both studio machines and portables • Comprises two sections: the Digital Effects Controller and the Mainframe Unit • Digital Effects Controller is a 7-unit panel designed to be desk-mounted either alongside an edit controller or as a comprehensive stand-alone effects vision mixer. It is connected to the Mainframe via a single cable RS-422 interface, enabling the units to be separated by a distance of up to 3000' • Full Edit Memory stores any combination of button push effects and joystick/'T'-bar picture movements • Mainframe Unit contains two full Frame Store Synchronizers each with a universal Time Base Corrector front end, and houses the Digital Control Electronics together with the Central Microprocessor and is responsible for actioning all commands received from the Effects Controller • Mainframe Unit also houses the Sync Pulse Generator which conforms to RS-170A and SMPTE four field specification for subcarrier to H phase timing with a field one ident pulse

X-Calibre Mainframe, Zoom Unit, Effects Controller, inter-connection and power cables, instruction manual **\$32,500.00**
 Proteus Mainframe, Effects Controller, inter-connection and power cables, instruction manual **22,900.00**

Options and Accessories

Component output in place of dual output **NC**
 3 1/2" floppy disc storage system for X-Calibre **\$1,125.00**
 Sony BVU® 18-pin connector to 5-pin connector Dynamic Tracking® interface cable **125.00**
 Beta Component input cable: 12-pin connector to 6-pin DIN connector **125.00**
 Beta Component output cable: three BNC connectors to one 12-pin connector **250.00**
 Service Manual, Proteus or X-Calibre **150.00**

System-DVP Digital Video Processor

• TBC and frame store synchronizer system • Expandable, each stage having a progressively larger repertoire • Starts with a single channel TBC which is capable of a number of digital effects including solarize, posterize, fully variable borders, false colors and one channel picture moves. This can be upgraded to a dual channel system providing reveals, conceals, push-offs, fades and a range of wipe transitions, all to frame accuracy • Dual TBC system can later be extended to a dual frame store unit which increases the effects range even further to include vertical transition, mosaics, freeze and strobe • Same mainframe housing is common to all four units and upgrading is easily and speedily effected • Mainframe incorporates a GPI for edit controller interface and is packaged in a 3U rackmountable chassis • Removable filter panel at the front of the system gives access to the processing amps controls • Operated from a compact control panel with illuminated switches and LED display connected to the main signal processing unit via a 6'6" cable

System-DVP

Basic Configurations

Single Channel TBC with controller **\$7,800.00**
 Single Channel TBC/Framestore with controller **8,730.00**
 Dual Channel TBCs with controller **9,600.00**
 Dual Channel TBC/Framestores with controller **11,575.00**

Upgrades

TBC to 2 Channel TBC **\$2,300.00**
 TBC/Framestore to 2 Channel TBC/Framestores **3,450.00**
 TBC to TBC/Framestore—with the return of an undamaged TBC board **1,300.00**

ALAN GORDON ENTERPRISES, INC.

*Director's Viewfinder/
Mic Booms*

Director's Viewfinder

The Mark IV 10:1 Zoom Director's Viewfinder is a precision optical instrument that has been designed specifically for the purpose of aiding filmmakers in the composition of 16mm or 35mm motion pictures. Although not an image recording device, like the prime or zoom lens for a camera, the Mark IV Director's Viewfinder has been constructed with great care to provide the ultimate in quality operation. Computer design, optical quality glass, precision machined parts and SMPTE-format aspect ratios provide the user of the Mark IV with the most advanced viewfinder available to the professional motion picture-maker. It is an indispensable tool for directors, directors of photography, camera operators and anyone involved in the creative composition of a scene for motion picture filmmaking. It can be used when scouting locations, for staging or camera blocking or during actual filming.

Director's Viewfinder \$550.00

Sonic 312 Mic Boom

Lightweight, black anodized aluminum in three sections with durable high-grade locking collars. Silent twist-lock collars allow quick and easy extension or retraction of the boom.

Universal microphone mounting stud: reversible 5/16" or 3/8" with 5/8" adaptor and leather security washer with lockdown nuts. All American and European microphone mounts are easily attached and the non-slip design safeguards your microphone investment.

Reinforced nylon cable grommet at the boom base. The open grommet construction permits ease of microphone cable feeding when extending or retracting the pole.

Foam comfort, noise dampening hand grips and protective rear end cap provide the finishing touch to this fine piece of sound equipment.

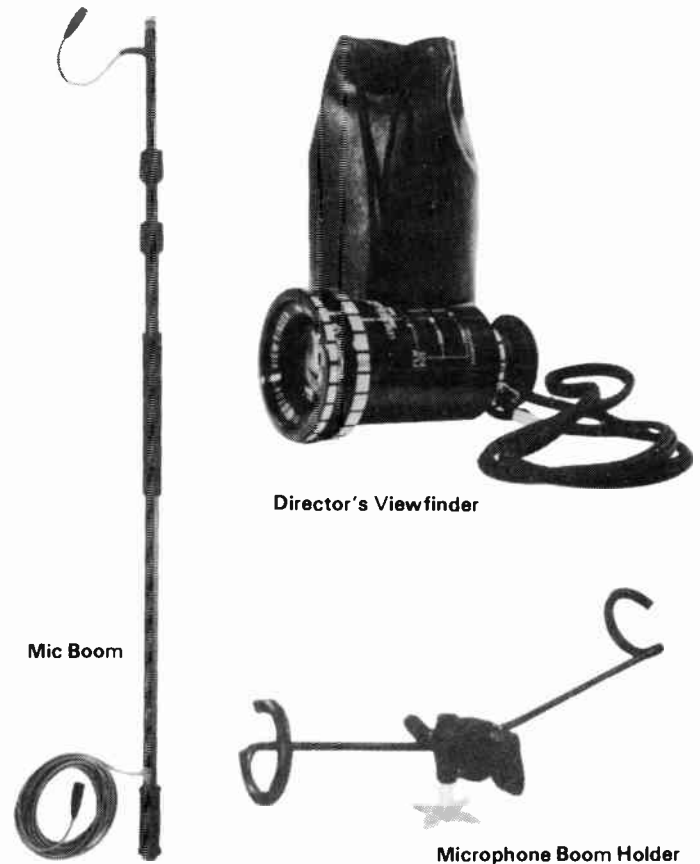
Sonic 312 \$185.00

Accessories:

A hard shell shipping tube, manufactured of high impact plastic, is available as an optional accessory . . . **\$75.00**

Gordon Fishpole Microphone Boom Holder

Converts a medium or heavy-duty lightstand into a mic boom stand by securing the supplied knuckle joint to the top of the stand. Works with the Sonic 312 Microphone Boom or any standard mic boom. **\$85.00**



Director's Viewfinder

Mic Boom

Microphone Boom Holder

Sonic 312 Field Repair Kit

- 2 Neutrik audio connectors (1 male, 1 female)
- 2 noise dampening hand grips
- 1 universal mounting stud with accessories
- 1 cable strain relief
- 1 lockdown assembly
- Repair instructions

312 Repair Kit \$30.00

Sonic 307 7' Mic Boom

- Lightweight, black anodized aluminum
- Universal microphone mounting stud and cable strain relief
- Foam wrapped core surrounds Canare "Star Quad" cable
- Neutrik black chrome XLR connectors with gold plated contacts
- Silent twist lock collars

307 \$185.00

ALAN GORDON ENTERPRISES, INC.

Scene Slates

Scene Slates

V0400 Large Velcro Scene Slate: Forget cleaning or constantly writing numbers and letters on tape. Use the handy velcro numbers and letters for marking. Numbers sets store on back. White on black; 12" x 11"; velcro covered masonite; pine clapper. Also has provision for holding color control or gray scale chart. \$90.00

V0402 A.G.E. Economy Slate: More than just economical, this popular slate features a "T" bar holder on the back for ease in handling, 12 1/4" x 9 3/4". Blackboard finish masonite with pine clapper. You use chalk for marking . . . \$35.00

V0403 The Combo Slate: "Black on white" acrylic slate, 12" x 9 1/2" x 3/16" thick white acrylic. Pine clapper for that unmistakable "Wooden Resonance." Mark with a china pencil or water soluble marker \$40.00

V0404 Thrifty Slate: White or yellow on black background, this sturdy masonite 11" x 9 1/4" pine clapper slate can take heavy use. Chalk is preferred for marking.

V0404 W (White on black) \$30.00
V0404 Y (Yellow on black) 30.00

V0405 Hollywood Slate: The perfect small professional slate for those tight shots in tight spots (even the "talent" can handle this one): cars, closets, corners, cribs, anywhere space is at a premium. 8" x 7 1/4" white on black masonite with pine clapper. Use chalk for easy erase \$20.00

V0406 Insert Slate: The baby of the family, this little (5" x 4") white acrylic slate conveniently fits in your back pocket. Without clapper. China pencil wipes away clean in a flash \$7.00

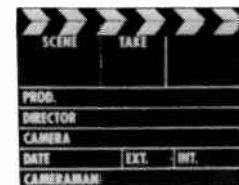
V4013 "Lite-Wate" Slate Kit: Expo dry marker wipes easily from the 11" x 9 1/4" white Marlite surface with black lettering and pine clapper. One black Expo marker included \$35.00

V0412 Oak Clapper Slate: Our designer series, natural finish solid oak clapper and your choice of: white on black epoxy laminate or black on white acrylic. 11" x 8 3/4", and you use chalk on black background, china pencil or water soluble marker on white acrylic. It's a natural.

V0412 W (White on black) \$45.00
V0412 B (Black on white) 45.00



V0400



V0402



V0409



V0410

V0408 Think Big Slate: Especially for the "Big Shot" in your company. Almost twice the regular size, this one is guaranteed to attract attention. 22" x 15" and made tough, just like the Economy Slate (less "T" bar handle). Fully functional pine clapper and white on black washable background. The big fella takes chalk to mark. \$85.00

V0407 Invitation Slate: This mini-slate is only 5" x 4 1/2" but looks like the real thing. Functioning wood clapper with sturdy white on black showcard. Use chalk to write your own get well card, place setting, gift card or invitation \$5.00

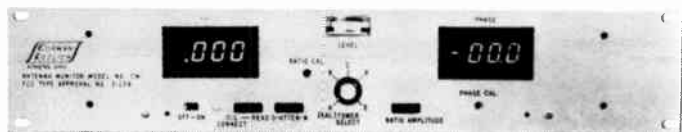
V0410 Slate Clock: A novelty professional scene slate. Hour, minute and second hand tells the exact time, a real unusual showpiece for office or home. Battery powered clock is positioned in center of slate. 11 3/4" x 10 1/4" \$40.00

V0411 Mirror Slate Clock: A very unique gift item. A must for every film executive's office or home. The accurate battery powered clock has hour, minute and second hands and runs 6 months or more on one AA battery. White silk screening on mirror surface, 11 3/4" x 10 1/4" with pine clapper. \$45.00

V0409 Mirror Slate: A real novelty. Great as a gift to your friends in the industry. White silk screening on mirror surface; 11 3/4" x 10 1/4"; with pine clapper; use china pencil for marking. Ready for wall mounting \$30.00

GORMAN-REDLICH MFG. CO.

Broadcast Equipment



CM

CM Antenna Monitor

- True Ratio readout. Non-reference and reference amplitudes are separately measured and divided electronically to give a digital readout that will not change with transmitter power and is exceptionally stable under conditions of unsymmetric modulation. Stability of readout makes readings easy to take and accurate
- Exceptionally stable phase indication with automatic display of phase sign
- Either true ratio or relative amplitude may be selected for measurement with a front panel switch
- Designed for reliability and maintainability. MIL spec. PC boards with through hole plating. Gold plated switch and relay contacts. Tower Select switch contacts of coined silver. All ICs and relays socketed. Minimum one week burn-in to expose early IC failure. Relays tested 10⁷ operations without failing
- Dual surge protection. A gas discharge tube across each sample line termination protects against lightning surges. In addition, a disconnect sample lines from the electronics when readings are not required
- Level meter simplifies installation
- Accurate. Typically exceeds FCC Specs by substantial margins

CM \$1590.00

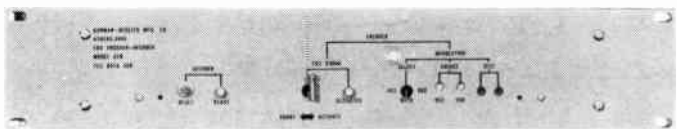


CRW

CRW Weather Radio

- .28μV sensitivity for clear, reliable reception
- Crystal and ceramic IF filters, dual gate MOSFET front end for excellent interference rejection
- Rackmounting, removable. Attractive black anodized panel
- Relay closure by 1050Hz "alert" tone for automated recording of emergency messages
- Relay closure by 1650Hz, tone signal for automated recording of updated forecasts
- 1050Hz "alert" tone demutes receiver, gates audio to rear terminals, and energizes a flashing LED for local and/or remote alarm
- Built-in whip antenna, plus jack for 50 ohm outdoor antenna and terminals for 300 ohm antenna
- False alarms and missed alerts eliminated by high Q, individually tuned active filters, and a circuit that requires at least four seconds of continuous tone signal to trigger
- Mil Spec P.C. Board, socketed ICs, conservative component ratings for long maintenance-free performance

CRW \$475.00



CEB

EBS Equipment

The CE or the encoder portion of the CEB generate the 853 and 960Hz tones that make up the attention signal of the EBS system. A "loop through" relay substitutes the attention signal tones for program audio when the encoder is activated. Activation is for a period of 20 to 25 seconds, and can be initiated either by a front panel switch or remotely.

The CD or the decoder section of the CEB works in conjunction with a radio receiver tuned to the station being monitored. Any stable receiver will work satisfactorily, and connection of the CEB or CD is very simple. When an EBS attention signal is received, the receiver will be demuted and will remain demuted until a reset button is pushed. Auxiliary alarm terminals are provided.

- CEB Encoder-Decoder \$475.00
 - CEB Encoder only \$330.00
 - CE Encoder with Stereo Option. \$360.00
 - CD Decoder (required for LPTV) \$280.00
 - Encoder FCC Type Accepted
 - Decoder FCC Certified
 - Exceeds FCC Specifications
 - Receiver can be supplied to drive Decoder \$100.00
- All interconnections to the EBS equipment are made through a barrier terminal block. No special connectors are necessary.

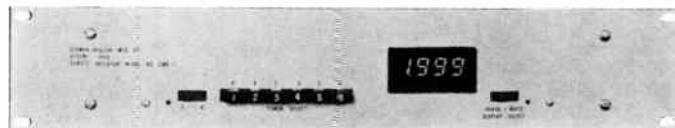


CMR

CMR Antenna Monitor

- True ratio reading. Non-Reference and Reference amplitudes are separately measured and divided electronically to give an accurate digital reading (and an equally accurate DC voltage for remote readings) that will not vary with carrier level, and is exceptionally stable under conditions of deep, unsymmetric modulation
- Stable, accurate phase reading with automatic phase sign
- Amplitude or true ratio may be selected for measurement with a front panel switch. Optional common point terminal for measuring common point amplitude
- Designed for reliability and maintainability. MIL Spec. PC boards with plated through holes. Gold plated switch and relay contacts. Relays have been tested to 10⁷ operations without failing. All ICs and relays are socketed. Each unit is burned in at least one week to expose early IC failure
- Dual Surge Protection. Gas discharge tubes across the sample line terminations, plus a relay that drops out when the monitor is not being interrogated and disconnects the sample lines from the electronics, protect against lightning induced sample line surges
- Level meter simplifies installation
- Accurate. Typically exceeds FCC specs by substantial margins
- Narrow phase-sign ambiguity (typically, ±0.2°) gives accurate phase readings near zero or 180°

CMR \$2150.00



CMR-1

CMR-1 Remote Indicator

The CMR-1 may be used for hardwire remote control and remote reading of the CMR Antenna Monitor. The two units are connected by a multiconductor cable up to 1500' long. Because the readings of the CMR-1 will exactly duplicate those of the CMR, weekly remote metering calibration is not necessary. A Local-Remote switch on the CMR front panel transfers control to the CMR-1 when it is set to Remote; when it is set to Local, control reverts to the CMR.

CMR-1 \$430.00

THE GRASS VALLEY GROUP, INC.

Production Switchers

Model 100 Production Switcher

Unique Three Bus Multi-Level Mix/Effects System

- Eight looping video inputs, plus black and color background
- DSK Preview, overrides look-ahead preview system
- Cut or mix key transitions with independent frame rate auto transition

Master Fade-to-Black and Pulse Processor

- Independent frame rate auto transition for Fade-to-Black
- Preview system that shows program output when Fade-to-Black is engaged
- Pulse Processor re-inserts blanking from black burst on program output for stable output and recordings
- Standard contact closure editor interface (GPI) to each of the three auto transitions or a fourth "select" line which allows selection of any one
- Program and Preset buses for background transitions
- Video key bus for luminance keying, chroma keying, and pattern inserts, over the background transition
- Look-Ahead Preview System that shows the next effect; Wipe transition preview
- Auto transition, adjustable 0-999 frame, lever arm transition or cut button
- Ten wipe patterns, with modifiers: Hard or soft edges, Hard or soft bordered edges, Pattern reverse, Pattern aspect, Rate controlled positioner, Preset pattern size
- Independent Matte Generator for key fill and pattern borders

Video Keyer

- Video or Matte fill
- External key input
- Optional RGB chroma keyer
- Key invert
- Key mask using pattern generator
- Preset Pattern insert filled from key bus

Standard Downstream Keyer

- Key input from the video key bus or an external key input
- Key fill from an external video source or the independent DSK matte generator
- BORDERLINE® Generator option for black or white title borders, drop shadows, or matte filled outline
- Key invert
- Key mask using pattern generator
- Optional serial interface (RS 232/422) for external computer control
- Optional pulse regenerator for system timing

Mechanical Specifications

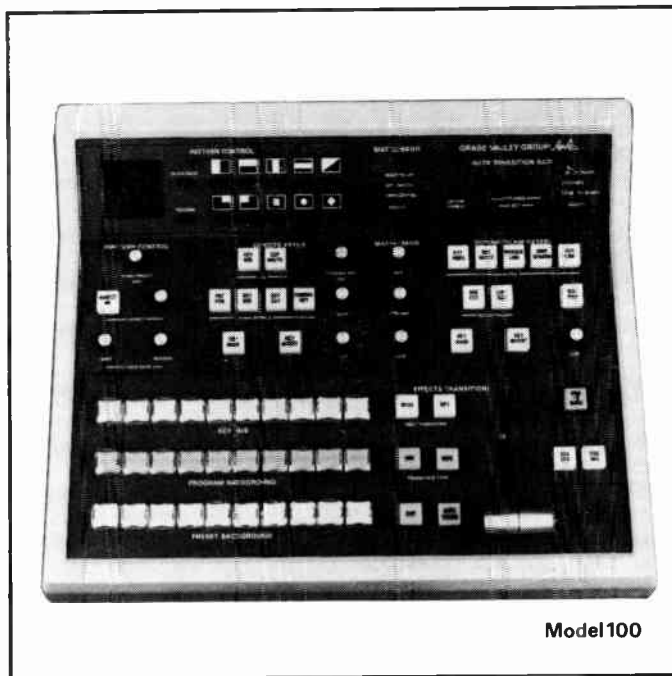
- Control panel can sit on desktop (17"W x 14"D), or with rackmount adaptor, can be placed in modular rack enclosures (requires eight rack units)
 - Electronics frame requires three rack units and 20" depth
 - Single 15 conductor control cable
 - Full tally system
 - Selectable power ranges from 100 to 240V, 50 or 60Hz
- 100N NTSC Production Switcher. \$10,495.00

Options

- 100-30S 30M Control Cable \$ 300.00
- 100-33 RGB Chroma Keyer 850.00
- 100-34 Chroma Key By-Pass Board 54.00
- 100-40 NTSC Digital BORDERLINE Generator 1,500.00
- 100-41 NTSC Pulse Regenerator 1,000.00
- 100-50 Serial Interface Adaptor 1,500.00

100CV Component Video Production Switcher

The 100CV is a compact, flexible, economical component switching system with the traditional family characteristics of its older brother; quality, performance, economy and a comfortable drive. Designed for professional component video production, the 100CV has all the qualities expected by the most sophisticated user.



Model 100

The 100CV features non-looping video inputs, 8 in all, and 3 sets of BNC connectors for every input. Utilizing the same control panel as the 100 Production Switchers, the 100CV Component Video Production Switcher has updated electronics that incorporates as standard equipment many of the features offered as options on the 100.

The electronics frame of the 100CV requires 6 rack units and 20" depth.

- 100CV-525B 100CV Basic System for 525 Line System — Beta Format. \$18,950.00
- 100CV-525M 100CV Basic System for 525 Line System — "M" Format 18,950.00
- 100CV-3-525B 525/Beta Format — Frame and Maintenance Manual Only 15,950.00
- 100CV-3-525M 525/"M" Format - Frame and Maintenance Only 15,950.00

Options

- 100CV-40 525 System - Digital BORDERLINE Generator \$1,500.00
- 100-51 Key MEM Effects Memory System 3,195.00
- AMX-100M Audio Mixer System (Mono) 5,495.00
- AMX-100S Audio Mixer System (Stereo) 6,695.00
- 50CV Component Video Dissolver 5,000.00
- CV-21 Y, R-Y, B-Y to RGB Translator (for use in CV-20T Tray) 995.00
- CV-22 RGB to Y, R-Y, B-Y Translator (for use in CV-20T Tray) 995.00
- CV-23 Color Bar Generator (for use in CV-20T Tray) 1,195.00
- CV-24N NTSC Decoder (for use in CV-20T Tray). 1,500.00
- CV-25N NTSC Encoder (for use in CV-20T Tray) 1,500.00
- CV-20T CV-20 Series 2 RU Tray with Power Supply 895.00
- CV-20PS Backup Power Supply for CV-20T 245.00
- CV-20EXT Module Extender. 110.00

THE GRASS VALLEY GROUP, INC.*Production Switcher***Model 200 Production Switcher**

- Linear keying
- Optional Linear Borderline® Key Edger provides a variety of modes including multiple-line drop shadow, border, outline, and transparent shadows
- Pre-set wipe
- Optional multi-format chroma keyer for up to eight sources. You can use an RGB signal from a camera or color difference signal from a Beta or MII component tape source
- Luminance key
- "Over" Function Switch-layer keyer priority in each mix effect
- Auto select mode
- Accumulative latch for fill and key signals
- Six assignable external key source inputs/mix effect
- Four external key fills/mix effect
- Standard Key Masking. You can create realistic key effects with the dedicated shutter (box) mask, external key mask or either ME wipe output in any keyer—including the downstream keyer. To optimize key appearance, the mask system also features invert and forced foreground modes
- Key Memory. Key selection recalls clip, hue and gain
- Horizontal and Vertical Multipliers. Multiply a basic pattern from one to four times on the horizontal or vertical axis
- Border, soft and border symmetry modes
- Rate controlled positioner
- Normal, reverse, and flip-flop wipe direction modes
- Four Learn User Wipe Registers. Saves wipe pattern and all modifiers, so you can recreate the setup at the push of a button

Matrix Wipe Patterns

- 32 Programmed Wipe Patterns. Six patterns are available through dedicated buttons, and 26 through user personality assignment
- 64 x 48 Pattern. You can fill the screen with over 3,000 tiles
- Pattern Mix Mode. Modulates any analog wipe pattern with the selected matrix pattern for an endless variety of effects

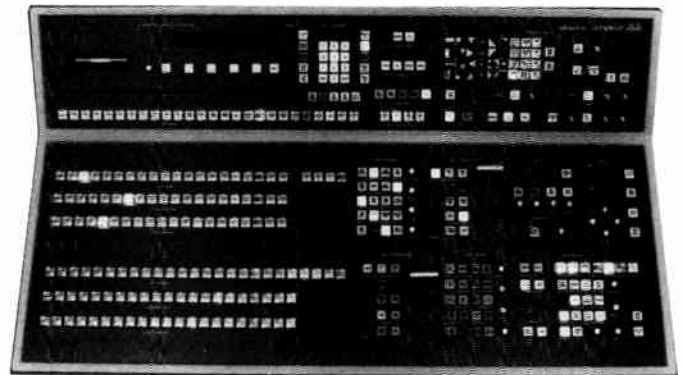
With 20 primary inputs and two mix effects, the 200 gives you more keying power than has ever been offered in a mid-sized production switcher.

For starters, the 200 gives you the creative freedom of five powerful keyers, two in each ME and one downstream. You can use either ME as a background for the downstream keyer, which also includes a fade-to-black and an output blanking processor.

The 200 gives you one matte generator for each keyer, one for each wipe system, and two background generators—for a total of nine—in addition to the color-black generator.

And for even more creative versatility, the background generators provide background wash.

The 200 standard effects memory system gives you the freedom to program effects with standard registers and quickly recall them on any switcher level.

**Model 200**

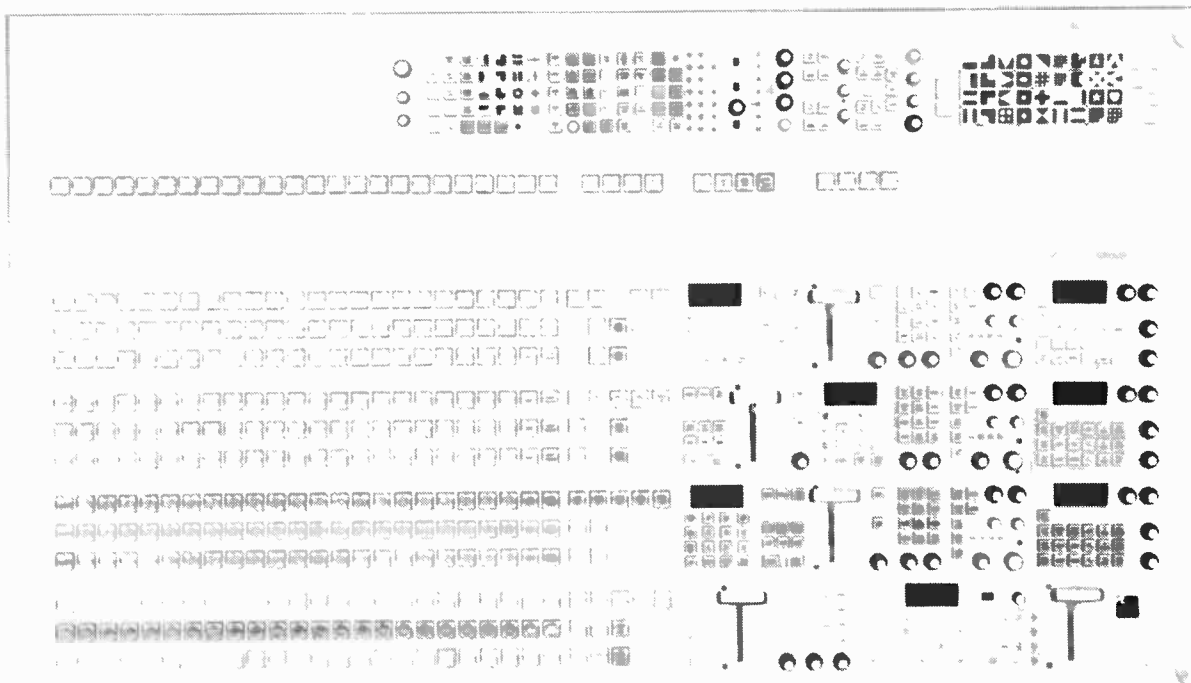
When you need to move fast, you'll appreciate the 200's easy-to-use features, including look-ahead preview, preset black mix and auto delegation. Plus display windows for mounting Horizon multi-destination routing displays.

Model 200 Production Switching

System—NTSC \$42,995.00

Options

200-401	System control cable connector kit	\$ 200.00
200-402	Bulk system control cable/per meter . . . . .	.4.00
200-410	System control cable—10m . . . . .	.200.00
200-425	System control cable—25m . . . . .	.300.00
200-450	System control cable—50m . . . . .	.400.00
200-499	System control cable—100m . . . . .	.600.00
200-501	Linear Borderline key edge generator	2,495.00
200-502	Linear Borderline key edge generator package (5)	9,995.00
200-505	Quad component chroma key	2,995.00
200-510	Enhanced analog wipe generator	4,995.00
200-515	Matrix wipe generator	3,995.00
200-520	Dual serial adaptor (DSA)	1,995.00
200-530	Safe title generator . . . . .	.495.00
200-540	Streamline effects controller and disk storage system	4,995.00
200-550	Auxiliary bus output module	2,595.00
200-551	Local auxiliary bus control panel	1,295.00
200-552	Satellite auxiliary bus control panel . . . . .	.995.00
200-553	Satellite tally module . . . . .	.395.00
200-554	Satellite auxiliary bus panel kit . . . . .	.595.00
200-601	Satellite auxiliary bus control cable connector kit . . . . .	.200.00
200-602	Bulk Satellite auxiliary bus control cable/per meter	3.50
200-610	Satellite auxiliary bus control cable 10m . . . . .	.200.00
200-625	Satellite auxiliary bus control cable 25m . . . . .	.300.00
200-650	Satellite auxiliary bus control cable 50m . . . . .	.400.00
200-699	Satellite auxiliary bus control cable 100m . . . . .	.600.00
200-700	Redundant power supply option (panel and frame)	3,995.00
200-705	Control panel power supply fan (one assembly) . . . . .	.250.00
200-710	Second diagnostic pod . . . . .	.395.00
200-720	Recommended spare component kit	2,595.00
200-725	Recommended spare modules	15,995.00
200-750	Spare operators handbook . . . . .	.50.00
200-754	Spare maintenance manual set . . . . .	.295.00
200-758	Spare diagnostic pod manual . . . . .	.25.00



300-3AN

300 Series Production Switching System

- Unlimited re-entry of effects
- E-MEM® effects memory system on each Mix/Effects (M/E) with Effects Dissolve and sequencing
- Four input buses per M/E
- Independent title mix/cut per M/E
- Lever and title auto transitions
- Multi-source title keys
- Automatic key follow
- Chroma key memory per input
- Quad split from each M/E
- Personality Programming
- Omni-Key™ system—Linear Key Mode/Key Memory/Key Invert/External Key*

The 300 Series Production Switching System has been developed to meet the demanding requirements of both live broadcast production, and complex program and commercial production in the studio or edit suite. It is the first production system designed specifically to integrate Digital Video Effects and E-MEM effects memory control. Careful attention to the human engineering of panel controls and computer assisted operation provide unmatched production power and ease of operation.

The fully integrated E-MEM system, standard in each mix/effects system, can learn up to 20 different M/E configurations (all switches and controls). Each E-MEM effects system is independent allowing for selective recalls during live programming. E-MEM's unique "Effects Dissolve" capability allows any combination of analog controls to be treated as a transitional device for unique transitions and effects previously impossible under manual control. Sequencing allows a series of changes in control set up and effects dissolves to be linked together for animated effects and complex productions. The E-MEM effects systems can be linked with control of the other switcher functions (Flip-Flop mix, DSK, Background, Quad Split) and the KALEIDOSCOPE digital effects system by the Master E-MEM effects memory option. This distributed E-MEM system allows frame accurate control of individual elements of very complex effects frequently used in post-production.

* Available as standard on all 300 series switcher systems beginning May, 1985. Omni-Kit available to upgrade 300 series systems to include Omni-Key™ enhancements.

Four input buses per M/E handle most common effects sequences without re-entry. Transitions from one background to another, the addition of a video key (chroma key, DVE key, self key or matte key), a title key or any combination of the above, can be accomplished with one lever movement on a single M/E. Title hierarchy is selectable over or under the video key for full flexibility. Four input buses also permit a quad split output from each M/E. Thus dissolves or wipes are now possible between quad split from different M/Es.

An automatic preview function displays the exact results of the next lever movement (including all re-entries) in the Preview monitor.

Lever and title auto transitions with independent rate programming, are provided on each M/E. Titles can be added or deleted in combination with background or video key transitions or independently from title mix (auto transition) or title cut buttons.

The preset black function permits a transition to black (mix or wipe) between the on air effect and the previewed effect. The first lever movement is a transition to black (the crosspoint is automatically selected), and the second lever movement is a transition to the previewed effect.

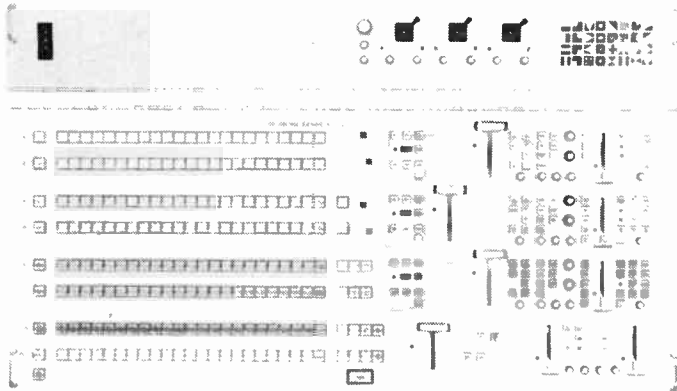
High performance chroma keyers ignore luminance highlights in non-key areas, due to an exclusive Luminance Annihilator circuit. Encoded chroma key with shadow can be added to each M/E. For each primary input the appropriate chroma keyer (RGB or Encoded) and last key set up is memorized for automatic recall if selected.

A program/preset mixer with downstream keyer feeds the Program output of the switcher. It operates just like an M/E, with the exception of wipes, non-additive mixes, and video keys. Downstream keyer functions are accomplished in the same manner as title keys in an M/E with the same sources available.

300-2AN 24 input 2 M/E switcher, NTSC	\$113,540.00
300-2BN 16 input 2 M/E switcher, NTSC	109,840.00
300-3AN 24 input 3 M/E switcher, NTSC	161,235.00
300-3BN 16 input 3 M/E switcher, NTSC	153,215.00
300-530 E-Disk™ II + Effects storage system with dual 3.5" floppy disk drives	5,500.00

THE GRASS VALLEY GROUP, INC.

Production Switchers



1680 SERIES PRODUCTION SWITCHERS

With the 1680 there is another level of possibilities available to operators worldwide. With the same familiar drive of the 1600, there is more power, more control than ever before. Whether live broadcast or post production, the 1680 provides double the production power from each mix/effects system. Plus the 1680 has the ability to interface with peripheral devices integral to modern production. So your potential to create brilliant special effects explodes.

The evolution from the 1600 has brought other standard features to the 1680—expanding your ability to create visual messages. Non-Additive Mix greatly improves how supers look on the screen. Soft Bordered Wipes allow control of border width and degree of softness. And the Downstream Keyer is standard in every 1680. The Standard Title Keyers, Non-Additive Mix, Soft Bordered Wipes, and Downstream Keyer all add up to the production power needed to meet today's heavy demands.

E-MEM® System

Although standard on the 1680-10X, the E-MEM System is an option on all other 1680 switcher models. The system provides effects memory for all switcher functions, plus the sequences created with the Post Production System. The system allows individual elements of complex effects to be adjusted and previewed separately, giving you precise control and effect repeatability.

Serial Interface Adaptor

The serial interface adaptor expands the switcher/editor interface beyond the edit decision list to total switcher control. It is the central hub that allows the switcher to connect all peripheral devices, such as the E-DISK™ Effects Storage System, post production audio, your computer editing system, and many other external production tools.

Post Production Audio

This integrates the control of audio sources with your system by placing your audio sources under computer editor control.

E-DISK Effects Storage System

With the E-Disk floppy disk system, favorite effects can be stored permanently for future use. This allows effects to be created off-line then used in live programs with perfect repetition. The E-Disk System is particularly useful in fast-paced formatted programs, where visually exciting effects are consistently repeated.

Peripheral Interface

The Peripheral Interface expands production capabilities by allowing your computer editor to control other intelligent devices, such as Digital Video Effects or character generators.

Preliminary Specifications

INPUT CHARACTERISTICS

Video Input Level:	1V p-p composite or .714V noncomposite.
Pulse Input Level:	4V p-p ±6dB.
Subcarrier:	2V p-p ±6dB.
Input Hum Attenuation:	≥26dB (reference; 1V p-p hum).
Maximum Input Hum Level:	1.5V p-p.

OUTPUT CHARACTERISTICS

Level:	1V p-p composite (nominal).
Available:	Three; 75Ω ±1%, source terminated.
DC on Output:	±50 mV blanking to ground.

MIX/EFFECTS CHARACTERISTICS (each M/E)

Mix Tracking:	≤1% gain error. ≤10mV p-p DC error.
Chrominance Linearity	
During Mix:	≤1.5% amplitude error. ≤2° p-p phase error.

VIDEO SYSTEM CHARACTERISTICS

Short Time	
Waveform Distortion:	≤1% unweighted.
Line Time	
Waveform Distortion:	≤0.5%.
Field Time	
Waveform Distortion:	≤0.5%.
Frequency Response	
(reference; 1 MHz):	300kHz to 5MHz: ±0.2dB. 5MHz to 8MHz: +0.2dB to -0.7dB. 8MHz to 20MHz: 0dB maximum.
Differential Phase:	≤1.5° (10-90% APL).
Differential Gain	≤1.5% (10-90% APL).
K Factor:	0.5% (2 T Pulse).
Chrominance/Luminance	
Inequalities:	≤ 10ns delay. ≤0.2dB gain.
Crosstalk:	≥52dB at 3.58MHz; 50dB at 4.43MHz.
Signal-to-Noise Ratio:	≥65dB p-p signal/RMS noise to 5MHz.
Path Length Deviation:	≤1.5°.
Gain Stability:	≤1%.
Gain Uniformity:	≥0.1dB.
DC Stability:	≤30mV.

POWER

Input Power:	95-125 or 190-125 VAC, 48-62Hz.
Power Consumption:	450VA approx. (1680-24K/16K). 275VA approx. (1680-10X). 225VA approx. (1680-16F/24F). 200VA approx. (1680-10V).

1680-10VN	1680-10VN Production Switching System	\$26,970.00
1680-10XN	1680-10XN Production Switching System	43,265.00
1680-16FN	1680-16FN Production Switching System	59,385.00
1680-16KN	1680-16KN Production Switching System	85,350.00
1680-24FN	1680-24FN Production Switching System	65,505.00
1680-24KN	1680-24KN Production Switching System	91,770.00

Options

1680-013	Control panel power cable 10V/10X (50m)	\$ 440.00
1680-019	Control panel power cable 16/24F and 16/24K (50m)	910.00
1680-096	Remote panel for E-Disk	225.00
1680-401	RGB Chroma Keyer for 10V/10X	1,700.00
1680-402	RGB chroma keyer for 16F/24F—16K/24K	1,790.00
1680-405	Chroma key switcher for 10V/10X	830.00
1680-407	Encoded chroma keyer for 16F/24F—16K/24K	3,070.00
1680-408	Encoded chroma keyer for 10V/10X	2,650.00
1680-492	E-MEM panel tub for 16K/24K	1,265.00
1680-493	E-MEM panel tub for 16F/24F	1,265.00
1680-494	E-MEM III Serial I/F for 10X	1,440.00
1680-495	E-MEM III Serial I/F for 10V/16F/24F	1,440.00
1680-496	E-MEM III Serial I/F for 16K/24K	1,440.00
1680-497	E-Disk	7,190.00
1680-510	Analog Borderline for M/E 1	4,785.00
1680-511	Analog Borderline for M/E 2	4,785.00
1680-512	Analog Borderline for M/E 3	4,785.00
1680-513	Analog Borderline for DSK	4,785.00
1680-515	Parallel Edit I/F (video and audio) for 10V	7,635.00
1680-516	Parallel Edit I/F (video and audio) for 10X	7,635.00
1680-517	Parallel edit I/F (video and audio) for F and K's	7,635.00
1680-518	Quad split for 16F/24F—16K/24K	1,970.00
1680-520	Dual Power Supply for 10V/10X	2,620.00
1680-527	Aux Bus for 16F	2,455.00
1680-528	Aux Bus for 24F	3,055.00

THE GRASS VALLEY GROUP, INC.

Digital Picture Processor

DPP-1 Kadenza™ Digital Picture Processor

- The first multi-level, real time digital compositing system designed for post production
- Uncompromised picture quality
- Allows simultaneous control of 5 digital effects or switcher channels
- Kaleidoscope™ digital effects system channel utilizes full variety of effects
- Switcher channel features standard external and internal keyers, background "wash," and Borderline® edge generator
- Mask Bus switcher channel architecture enhances production power
- Accepts inputs in digital component, analog component, and analog composite formats
- Modular design concept permits versatile system configurations

The DPP-1 provides multi-level compositing in real time, with superb image quality and powerful technical innovations which give you the freedom to create true virtuosity in post production.

DPP-1 video processing is performed by any combination of Kaleidoscope channels and switcher channels, each representing one "layer" of the final composite. Any combination of five switcher and Kaleidoscope channels may be controlled at any one time. These resources may be shared between Kadenza systems and normal Kaleidoscope control positions in digital or analog edit suites and studios.

The control panel provides full functionality in a compact and easy to use format. The controller provides the intelligence and memory for the system, along with source selection control and editor interface.

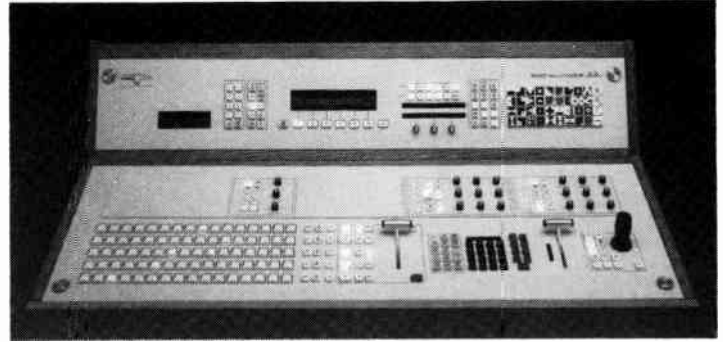
Kaleidoscope and switcher channels each feature a full bandwidth key channel which is processed along with the video and provides image outline and transparency information to the combiner system.

The combiner system assembles the composite image using the key, depth, and priority information from each layer.

The combiner system also assembles a composite key signal which can be used to matte the video composite into a background with an external keyer, typically found in a disk system. In addition, both video and key composites can be recorded and used in a subsequent layering pass.

The DPP-1 accepts a variety of inputs from sources including RGB camera outputs, C-format tapes, and 1/2" analog components tapes. Maximum possible image quality can be achieved from digital component, analog component, and analog composite formats. The system provides outputs in all three formats.

The DPP-1 is a specialized post production processor. There is no true "program" bus. And because all available processing power can be used in any composite, there is no look-ahead preview facility.



Each DPP-1 channel is a separate "layer" of the composite picture. Any one layer may obscure images "behind" it or be obscured by images "in front" of it. Any full screen image will therefore cover all lower layers. An image with soft edges or transparency will only partially obscure layers behind it.

Transitions such as mix and wipe are performed on a channel-by-channel basis. A layer is mixed off or on by making it more or less transparent. Similarly, the wipe signal is used to reveal more or less of a given video layer. The menu structure of the control panel permits full access to the capabilities of the Kaleidoscope and switcher channels.

Independent source selection rows with 16 buttons per row are provided for each layer. Each row features a shift key for access to another 16 selections. Flexible crosspoint mapping allows the user to group commonly used inputs at the unshifted control level.

A transition panel provides access to mix and wipe functions for any layer or layers. Independent selections can be made for different layers and transitions can be performed simultaneously.

Specifications**Video Inputs:**

Number of inputs is determined by video source selectors fitted 32

**Maximum No. of Inputs:
Input Formats Supported:**

NTSC or PAL; RGB (requires sync on Green); YUV SMPTE levels; YUV BETACAM® levels; CCIR 601/656 digital

Key Inputs:

Number of inputs is determined by video source selectors fitted 32

**Maximum No. of Inputs:
Input Formats Supported:**

Analog, with or without NTSC setup; CCIR 601/656 digital (UV information ignored)

Reference Input:

NTSC, PAL color black (or composite video), sync

Video Outputs:

NTSC or PAL; analog component RGB or YUV; CCIR 601/656 digital

Key Outputs:

Analog 0.7/0.714V, non-composite CCIR 601/656 digital (No UV information)

Key Output Timing:

Analog $\pm 1 \mu\text{sec.}$ wrt video output (user adjustable); Digital: synchronous with output video

DPP-1N NTSC \$185,000.00
DPP-1P PAL 175,000.00

THE GRASS VALLEY GROUP, INC.**Video Tape Editing Systems****Systems 31/41m/51Em Video Tape Editing Systems****Modular**

Each editing system, while uniquely designed for specific applications, permits "personal tailoring" to satisfy individual editing needs.

Expandable

As your demands increase for additional editing features and equipment, GVG editing systems expand to accommodate your growth by adding hardware or software modules.

Flexible

GVG Editing systems have the industry's most flexible interfacing capabilities. Examples include RS-422 and RS-232 VTR Control as well as the ability to control a wide variety of switchers and other equipment.

Help File

Sometimes an editor needs a quick solution to a complex editing request. Help File with sub-categories insures easy access to definitive help — help you will remember and repeatedly use.

System 31

- DEC 11/23 CPU • 64K bytes of memory • Dual 0.5M byte floppy disk drives • Distributed processing control • 8 control ports for VTRs and switchers • 4 accessory ports • Sync interface • 132 column printer • DEC RT/11 operating system • Exclusive super edit • Assignable VTRs, video, audio • Video, dual audio editing • Edit list display, input-output • Multiple edit list disk files • Auto-track dissolve setup, anywhere in edit list • Match any edit, both sides of dissolves • Unique-timed action modes — XGPI, expanded switcher control, log in edit list • Full preview, edit functions • Sequential, checkerboard, and cue-ahead auto-assembly • Real-time edit mode • Replay any edits, with auto-scroll • Six-character alphanumeric reel ID • Multiple-record, synchronous replay • Help file • Event numbers to 999 • Notes in the edit list, with individual add, delete • User-bit time reference • Powerful edit list management, with/without ripple insert, delete groups, recall, replace, move groups, shift groups

The System 31 is an editing system of unusual functional dimension. With eight I/O ports, and exceptional features such as Super-Slave and Cue Ahead, the System 31 provides exceptional performance at an outstanding performance/cost ratio.

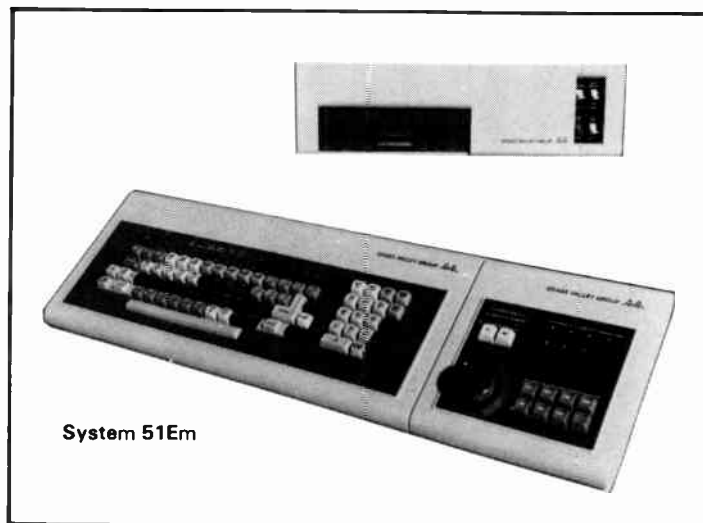
System 41m

- Faster DEC 11/23 CPU • 64K bytes of memory • Dual 0.5M byte floppy disk drives • Distributed processing control • 8 control ports for VTRs and switchers • 4 accessory ports • Color-lock sync interface • 132 column printer • Jogger motion control • DEC RT/11 operating system • Exclusive super edit • Assignable VTRs, video, audio • Video, dual audio editing • Edit list display, input-output • 10 macro functions, with nesting • Multiple edit list disk files • Powerful edit list management, with/without ripple insert, delete groups, recall, replace, move groups, shift groups • Single-Keystroke dissolve • Auto-track dissolve setup, anywhere in edit list • Three freeze modes • Help file • Match any edit, both sides of dissolves • Auto-clean removes overlaps • Full preview, edit functions • Match to freeze, variable-speed • Replay any edits, with auto-scroll • Six-character alphanumeric reel ID • VTR speedometer • Event numbers to 999 • Notes in the edit list, with individual add, delete • Unique timed-action modes — XGPI, expanded switcher control, log in edit list • Fill mode computes VTR speed • User-bit time reference • Real-time edit mode • Multiple-record, synchronous replay • Super-slave — Slave 1 to 6 VTRs, easy slave setup, positive offset lock, easy offset change, slaves in edit list • Precise programmed motion control • Sequential, checkerboard, and cue-ahead auto-assembly

The System 41m has a faster CPU than System 31. It also has features which make variable-speed VTR control and editing precise and easy. System 41m software and hardware features permit full exploration of the professional's creativity.

System 51Em

- V3.0 Super Edit™ Software • 32 contact XGPI • 409™ list clean-up software • Trace™ software for film style rough cuts mode • Comprehensive diagnostics package

**System 51Em****System Capabilities**

- "Effects-Jog" ability to move KALEIDOSCOPE™ Effects through key-frame sequences by utilizing the "Jogger" motion controller • Preview preselect, using the TEN-XL®, true record re-assign (audio and video paths follow the control path) and preview is possible • Start up menu is easy to use, yet provides rapid access to editing programs, EDLs, diagnostic programs, and utility files • Enhanced diagnostics package provides for ease in installation and self-check trouble shooting • Effects Memories are written to EDL Disk and restored to 300 and 100 Switchers • Film mode capability in 24 and 30 film frames/SEC and NTSC and PAL tape frames • Over 200 software improvements including: auto-match, assemble edit, "slaves" stored and recalled • 4 level highlighted display format, improves clarity and operational ease • High speed list display and scroll capability

Interfaces

- KALEIDOSCOPE DPM-1 Digital Effects • AMX-100 • Dubner "Page" control for Texta and CBG • Abekas A-62 • Panasonic AU-600 MII format • Time line "Lynx" Synchronizers • Graham Patten 616 Audio Console • Harrison Pro-7 Audio Console • Improved Lexicon Dynamic Pitch Audio Pitch control

Manuals and Installation Guides

- Super Edit Manual • Installation Guide • Video tape on installation and operations

The System 51Em gives you extraordinary control over the most complex editing tasks. Its performance, ease of operation, and unequalled complement of software functions allow full expression of your creativity. A DEC 11/23 CPU and large memory capacity make your work fast and flexible. System 51EM interfaces with virtually all of the industry's leading equipment, and its 16 ports permit unrestricted control.

Pricing

51Em-8	System 51Em - one 8" Disk Drive/ 10M Byte Fixed Drive	\$46,900.00
41m-8	System 41m - two 8" Disk Drive	\$35,900.00
31-8	System 31 - two 8" Disk Drive	\$29,900.00
3141-8	Conversion Kit for System 31 to 41m (1A)	7,000.00
3151-8	Conversion Kit for System 31 to 51Em (1, 1A)	19,000.00
4151-8	Conversion Kit for System 41 to 51Em (1, 1A)	13,000.00

Note 1. Includes installation on site by field engineering, excludes XGPI. Includes one year software subscription.

Note 1A. GVG systems only, call for quote on ISC manufactured systems. Software subscription must be current to purchase kit.

THE GRASS VALLEY GROUP, INC.

Editing/Production Systems

VPE-141 Editing System

• Computer electronics including drive controllers, memory, processor, I/O ports, and XGPI on a single PC board layout • DEC LSI 11/73 high speed processor • 512K bytes of RAM memory • Ability to boot the operating program from battery backed up CMOS memory • Edit decision list information is automatically saved in the event of power failure • Control of GVG switchers, audio mixers, and the ability to store E-MEM (effects memory) information on the edit decision list disk is also standard with the 141 • Control of up to 7 SMPTE RS-422 VTRs is included in the price of the system. VTR transport control is enabled through a touch sensitive "Jog-Pad"™ which allows the user to invoke VTR transport functions by sliding a finger along the surface area of the pad • The user may select from two types of menu displays, TTL color or RS-170 monochrome

Base Models	
VPE-141*	NTSC \$25,000.00
VPE-141P*	PAL 25,000.00
Machine Control Protocols	
Machine control protocols selection of 16 per machine	. . . . . \$500.00
Keyboard Options (Choose 1)	
141-JOGPAD	Keyboard with "Jog-Pad" motion controller (std.) NC
141-JOGKNOB	Keyboard with rotary style knob (option) \$300.00
Options to Super Edit	
EDL-XT	Includes 409, Trace, XEDL \$5,000.00
EDL-XTP	(PAL) Includes 409, Trace, XEDL 5,000.00
Hardware Options	
141-BDISK	8" Drive Kit \$950.00
141-Rackmnt	Rackmount hardware 200.00
*Includes 5 machine protocols	



VPE-141

GVG Video Switcher Protocols: - order 1	
SS300-VPE	300 Serial Control NC
SS200-VPE	200 Serial Control NC
SS100-VPE	100 Serial Control NC
SS100CV-VPE	100CV Serial Control NC
S10XL-VPE	Ten-XL Serial Control NC
Audio Mixer Protocols: - maximum of 1	
SSAMX100-VPE	AMX-100 Serial Control NC
SSA300-VPE	Model 300 Audio Control NC
SSAMX170-VPE	AMX-1705 Serial control NC
SSA-GP600	Graham Pattern 608/612/616 \$950.00
Dubner Character Generator Protocols	
SW-006B	CBG/TEXTA serial control NC
SW-006C	10K/20K Serial control NC
SW-006D	Graphics factory NC



IPS-100

IPS-100 Integrated Production System

• Full capability post production system • Single chassis design • Will control most RS-422 machines including 3/4", Beta and M-II 1/2" formats, and type "C"

The unit includes a 100 video switcher, Editor and edit keyboard with Jog-Pad, a sophisticated audio mixer called the AMX-170, a powerful edit controller with full list management capabilities, sync and pulse distribution with test signals, and an optional character generator. Also optional are shock mounted transport cases.

The compact unit can handle the post production needs of a small facility or efficiently add an economical suite to a larger production facility. Because of its single chassis construction it is also ideal for mobile applications.

IPS-100*/1IPS-100P* (PAL)	. . . . . \$58,900.00
IPS-100B*/IPS-100BP*	As above - excludes AMX-170 and 100 Control Panel. System is capable of video and audio cuts, transitions, and limited video wipes \$49,900.00
IPS-100VC	IPS-100 Video Control Panel 3,000.00
IPS-170AC	Audio Control Panel 7,000.00
PTR-80	Printer, serial I/F, buffer tractor feed (not available for 220V) 400.00
IPS-CC1	Chassis carrying case 1,900.00
IPS-AC1	Accessory carrying case 1,900.00
IPS-DOC	IPS-100 manual set 200.00
IPS-CG	Character Generator Kit Includes CG card, 3.5" disk drive, interconnect cables and installation guide 8,500.00
IPS-QC8	Quick connect cable set 8 meter Includes fan out panel for 4 VTRs, 4 interconnect cables, 4 "pig-tails" for the VTRs (video, reference, and audio interconnects included) 1,500.00
DM-12	TTL type color display monitor 12" (120V only) 850.00
DM-9	TTL type color display monitor 9" (120V only) 850.00
100-33	RGB Chroma keyer for 100 850.00
100-34	Chroma key by-pass 54.00
100-40	Digital border line 1,500.00
*Includes 5 machine protocols	

THE GRASS VALLEY GROUP, INC.**Audio Mixer****AMX-170S Automated Audio Mixer**

The AMX-170S is a powerful automated audio mixer with features typical of larger, higher priced mixing consoles.

Computerized Editing Integration

The mixer provides unparalleled performance in the video production environment by integrating fully with your computerized editor. Crosspoint selection, including input sources and output routing, as well as transition sequences may be controlled from the edit system. Equalization, trims, and fader level may be assigned to any of the input sources and are recalled when the input is selected from the edit controller.

The ability to recall complex effects from the edit list through E-MEM™ registers speeds up post production by minimizing the need to manually re-set the mixer for each edit pass.

Input Routing

Up to eight VCA (voltage controlled amplifier) inputs may be simultaneously routed to any four program channels, permitting full utilization of new generation tape machines with four-channel audio record and playback.

Equalization and Trim

Features four-band equalization and level trim for each of the eight mixing inputs. Control of equalization, trim and filters may be delegated to any of the mixing inputs.

A trim control adjusts incoming levels within a gain range of -6dB to 30dB. Greater flexibility is available by pre-setting the input amplifiers to accommodate other levels.

Tone Generator

The mixer includes a 1kHz/400Hz tone generator for system alignment or for adding tone to tape leaders.

Audio Effects Memory E-MEM

The mixer's E-MEM register capability makes the AMX-170S a truly automated post production audio mixer, with the ability to store and recall control panel settings. Each E-MEM register stores a particular panel set-up including input levels, equalization and trim values. Any of 20 E-MEM registers may be recalled either manually or through the edit controller during an edit event.

Transition Control

Crossfades between mixer set-ups may be easily accomplished manually, or they can be triggered by an edit computer. Complex effects can be further simplified by setting up automatic transitions between the mixer's E-MEM registers.

Monitoring Capabilities

An amplified headphone output and monitor outputs are available.

Monitoring selections are available for Program or R-VTR, allowing independent selection of sources for headsets or monitors. Level and balance controls are provided, and a 20dB attenuator may be toggled in or out for instant reduction of monitor level. A convenient mono/stereo button is provided to identify phase differences and stereo image.

Specifications

Audio Inputs:	8 primary, 8 alternate
Record Device Inputs:	4
VCA Faders:	8PGM A, 8PGM B
Filters:	High/low cut (10kHz and 75Hz)
Equalization:	4 band \pm 12dB; low shelving (100Hz); low-mid peak dip (500Hz); high-med peak dip (2.5k); high shelving (8k); bargraph display indicators
Outputs:	2 stereo, (A) L/R, (B) L/R
Monitor Controls:	Levels, balance, dim, 5W/ch headphone amplifier
Sources Monitored:	PGM A, PGM B, Record VTR A and B
Video Editor Control:	RS-422/38.4k baud (9-Pin D); GVG serial communications protocol

THE GRASS VALLEY GROUP, INC.

Synchronization Generators

9500 SERIES

NTSC REFERENCE SYNCHRONIZING GENERATORS

The 9500 Series Synchronizing Generators represent moderately priced sync generator systems. The SPG Gate Array IC, designed exclusively for the 9500 Series, has made accuracy, stability and reliability available in an affordable system.

With over 2,100 logic gates in a 44-pin package, the SPG Gate Array contains all critical circuitry for exact SC/H phase, regardless of external conditions.

Hybrid integrated circuits allow improved performance, manufacturability and reliability. Servicing can be kept to a minimum, since troubleshooting is done at the functional block level.

9505 Source Synchronizing Generator

The 9505 is a single module system available for either encoded subcarrier or color black reference. SC/H Phase is always correct. No adjustment is necessary.

Input Power: 100-125VAC or 200-250VAC, 50/60Hz

Power Consumption: 15W maximum

9505-ES	NTSC Source Synchronizing Generator . . .	\$1,800.00
	Encoded Subcarrier Reference	
9505-ESX	9505-ES with TCXO	2,000.00
9505-CB	NTSC Source Synchronizing Generator . . .	2,000.00
	Color Black Reference	
9505-CBX	9505-CB with TCXO	2,200.00
9505-TCXO	Temperature Compensated Crystal Oscillator (TCXO)	350.00
9505-TSG	Test Signal Generator Module	800.00
9505-SID	Source Identification Submodule for TSG . . .	300.00

9510A Reference Synchronizing Generator

The 9510A is designed for use when space requirements allow only a single rack unit, or a deluxe source sync generator is required, providing genlock to video or encoded subcarrier. Two color black and encoded subcarrier reference outputs are standard.

Power Consumption: 20W maximum

9510A	NTSC Reference Synchronizing Generator	\$2,650.00
9510-TSG	Test Signal Generator Module	800.00
9510-SID	Source Identification Submodule for TSG . . .	300.00
9510-PPC	Phase Preset Control Module	350.00
Dual 9510A	Dual 9510A NTSC Sync Generator System	6,950.00

9520A Master Reference Synchronizing Generator

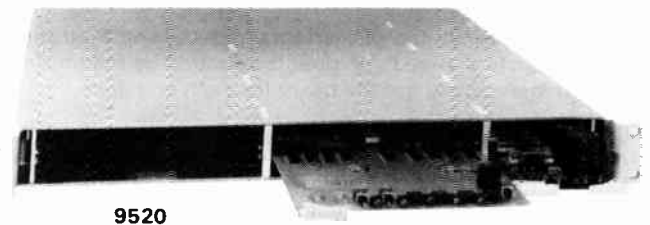
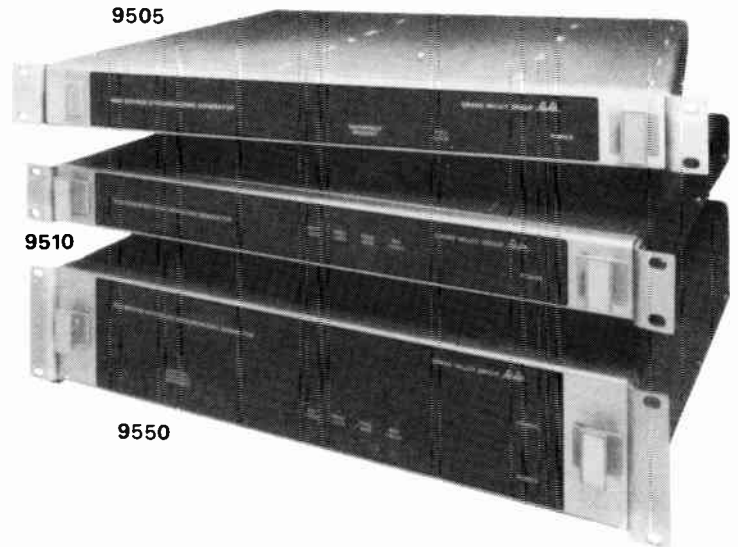
The heart of the 9500A Series, this two rack unit master provides two outputs each of pulse and subcarrier. Two color black and two encoded reference outputs are standard. The 9520A will genlock to video or encoded subcarrier signals.

The input power for the 9510A and 9520A are the same.

Input Power: 105-125VAC or 210-250VAC, 50/60Hz

Power Consumption: 30W maximum

9520A	NTSC Master Reference Synchronizing Generator	\$3,155.00
9520A-HS	9520 with Ovenized Crystal Oscillator . . .	3,650.00
9520-TSG	Test Signal Generator Module	800.00
9520-SID	Source Identification Submodule for TSG . . .	300.00
9520-OXO	Ovenized Crystal Oscillator for 9520	550.00
9520-EFR	External Frequency Reference Module	500.00
Dual 9520A	Dual 9520A NTSC Sync Generator System	7,990.00
Dual 9520A-HS	Dual 9520A-HS NTSC Sync Generator System	9,120.00



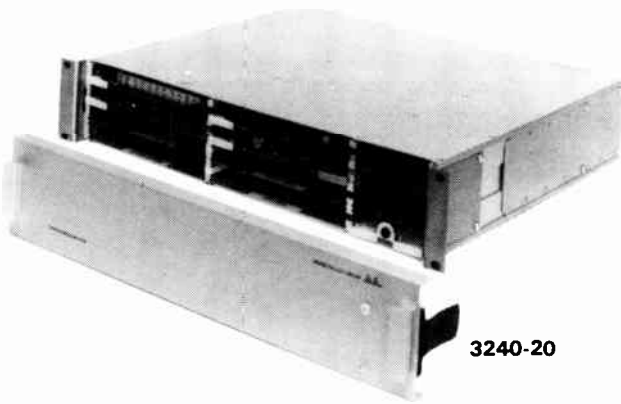
9550A Sync Pulse Generator Changeover Switch

The 9550 will monitor both the on-line and backup generators with visual and audible alarms in the case of failure, and has an LED status display to assist in identifying the faulty signal. The 9550A is mounted in a one rack unit tray with removable modules for easy servicing. It has automatic and manual switching, ten signal channel capability, and crosstalk suppression greater than 65dB.

9550A	NTSC/PAL Automatic Changeover Switch	\$1,890.00
9550-RCK	9550A Remote Connector Kit	35.00
9500-EXT	9500 Module Extender	125.00
9500-PSM	9500 Power Supply Module	306.00
9500-RCK	Remote Connector Kit	35.00
STM-85N	NTSC Source Timing Module (fits in 8500 VDA Tray).	850.00
SCB-100N	NTSC Sync/Color Bar Generator	1,250.00
3258	NTSC SC/H Phase Meter	2,995.00

THE GRASS VALLEY GROUP, INC.

Video Processing/Timing Systems



3240-20

3240 Video Processing Amplifier

- SC/H phasing • Full regeneration of sync and burst • Adjustable blanking width • Soft and hard clippers • Cable equalization option • Selectable line deletions: 10-21 • Sin² pulse edges • Color black output option • Optional accessories

The 3240 Video Processing Amplifier is a high performance sync and blanking regenerative amplifier designed for signal processing in studio, master control, remote, and transmitter locations.

The basic 3240-10 system is a fully functional processing amplifier, available in one rack unit (RU = 1.75") height. Controls are available on the card edge or at a remote control point.

The compact and rugged construction, coupled with low power consumption and wide supply voltage range, make it ideal for remote van applications. All active components are accessible from the front of the rack.

Conservative ratings, and a sealed air design that keeps contamination out, will assure years of trouble-free service.

The expandable 3240-20 system in the two-RU frame contains four additional cells for accessories. The accessories are plug-in modules that complement the basic processor. The frame has been prewired to accept the accessories, and power is supplied from the 3200A Power Supply.

3240-10	NTSC Video Processing Amplifier	\$4795.00
3240-20	NTSC Video Processing Amplifier . . . . .	.4995.00
3240-101	Fade-to-Black Control Panel (Console Mtg.) . . . . .	.465.00
3240-102	Remote Control Panel (Console Mtg.) . . . . .	.525.00
3240-103	Remote Control Panel (Rack Mtg.) . . . . .	.525.00
3240-104	Local/Delegate Control Panel (Rack Mtg.) . . . . .	.695.00
3240-105	Remote Panel Parts Kit . . . . .	.275.00
3240-001	Extra Fade-to-Black Control Cable/Meter . . . . .	.3.00
3240-002	Extra Remote Control Cable/Meter . . . . .	.6.00
3240-203	Video A.G.C. Module . . . . .	.895.00
3240-204	NTSC VIR A.G.C. Module . . . . .	.995.00
3240-205	NTSC Linearity Corrector Module . . . . .	.995.00
3240-206	Relay Bypass Module . . . . .	.295.00
3240-207	NTSC External Reference Module . . . . .	.995.00
3240-208	NTSC Pulse DA-3 Module . . . . .	.725.00
3200-PS1	Backup Power Supply Module for 3240-20 . . . . .	.245.00

3258 SC/H Phase Meter

The 3258 SC/H Phase Meter is a measurement instrument specifically designed to aid in establishing and maintaining an SC/H phased video system. It has two video inputs plus a color frame pulse (VI) input, which are used to measure absolute SC/H phase of either video input, the difference between the two video inputs, and absolute SC/H phase of either video input with respect to an externally applied house reference color frame pulse (VI).

The 3258 SC/H Phase Meter comes with a power supply, module extender and two instruction manuals.

3258 **\$2995.00**



3274A

3274A Borderline Generator

- External matte • Complete downstream keyer • Matted inserts • Three modes of caption enhancement • Insert fade-in and fade-out operation • Optional matte colorizer • Optional non-sync detector

The 3274A Borderline Generator is a caption inserting device normally installed at the output of studio production switching systems.

3274A-10 NTSC Borderline Generator in 1-RU tray, power supply, AC line cord, module extender, two instruction manuals, and a 1.75"H x 19"W (4.45 x 48.3cm) control panel with 8m (26') of control cable. (Rackmounting panel)

3274A-10 **\$3995.00**

3274A-11 NTSC Borderline Generator in 1-RU tray, power supply, AC line cord, module extender, two instruction manuals, and a 2.25"H x 6.95"W (5.72 x 17.6cm) control panel with 8m (26') of control cable. (Console mounting panel)

3274A-11 **\$3995.00**

3274A-20 PAL borderline generator system (rackmounting panel) **.3995.00**

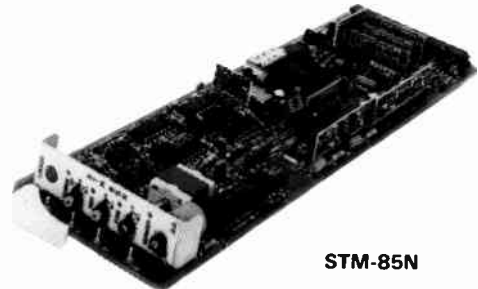
3274A-21 PAL borderline generator system (console mounting panel) **.3995.00**

3274A-101 Nonsynchronous Detector Submodule **.255.00**

3274A-102 NTSC Matte Insert Colorizer Module **.925.00**

3274A-202 PAL matte fill colorizer **.1175.00**

3274A-001 Extra Cable/Meter for 3274A **.6.00**



STM-85N

STM-85N NTSC Source Timing Module

- Decodes the encoded subcarrier signal output of SPG generators, producing discrete sync, blanking and subcarrier, V1 and color black • Output phase relative to that of the driving SPG is adjustable over the range of +27/-35µs, using front mounted controls • Further adjustment of 2H advance and 1H delay is possible with internal dipswitch settings • When phase is adjusted, subcarrier and H sync move together, ensuring accurate SC/H phase at all settings

STM-85N **\$850.00**



SCB-100N

SCB-100N NTSC Sync/SMPTE Color Bar/Audio Tone Generator

- One rack unit • Fully SC/H phased • Sync generator provides four color black outputs, two outputs each of sync, blanking and subcarrier, and one each of V1 and encoded subcarrier, two outputs of SMPTE color bars and one balanced Lo-Z output for audio tone

SCB-100N **\$1250.00**

Prices and Specifications Subject to Change Without Notice.

THE GRASS VALLEY GROUP, INC.

*Digital Distribution Amplifier/
Translators*



DDA-1

DDA-101 Digital Distribution Amplifier

- Fully RP125 and EBU 3246-E compatible digital amplifier
- Available in a 2 rack unit frame
- Modular design allows up to 4 DAs per 2 rack unit frame
- Standard features include 1 input by 4 output, full 10-bit data path, and automatic cable equalization for up to 500' (150m)
- LED indicator for video input signal
- Independent driver per output for maximum reliability and ease of maintenance
- High efficiency power supply for cool operation
- Data reclocking for greater noise immunity

DDA-101 digital distribution amplifier features 1 input by 4 outputs with 8 or 10 bit data paths and automatic cable equalization for up to 500'. The digital DA comes with data reclocking, an independent driver for each output and a high efficiency power supply. The DDA-101 is available in a 2 rack unit frame that can hold up to 4 DAs with an optional back-up power supply.

DDA-101	Digital DA	\$ 725.00
DDAT2-115	2RU tray with 115VAC power supply	1000.00
DDAT2-230	2RU tray with 230VAC power supply	1000.00
DDA-PSM	Backup power supply (115/230VAC)	300.00
DDA-EXT	Digital DA Extender	125.00

DAC-110 Digital to Component Analog Video Translator

- RP-125/EBU 3246-E component digital to CAV translating
- 8/10-bit resolution per channel switch selectable
- Automatic selection of 625/525 50/60 line/field rate
- Digital video presence indicator LED
- Input cable EQ for up to 500' (150m)
- 1RU frame
- 3 sets of CAV outputs, one output is Y, B-Y, R-Y, the other outputs may be either RGB or Y, B-Y, R-Y (switch selectable)
- Sync add/delete on all outputs
- 1 composite sync output in time with CAV outputs
- One terminating digital video input
- Internal 100% full-field color bars generator

DAC-110 digital to CAV translator handles CCIR 601 digital video to component analog video. Selectable 8 or 10 bit conversion, automatic selection of line/field rate (525/625), input cable equalization, adjustable horizontal blanking and internal test signals are some of the significant features available with the DAC-110. The system is available in a 1 rack unit frame with selectable 115/230VAC power supply with one digital input and three component outputs. The outputs can be selected for RGB, Beta or MII by a front panel switch.

DAC-110 Component digital to component analog translator **\$5000.00**

ADC-120 Component Analog to Digital Translator

- Two sets of CAV inputs
- Inputs may independently be either RGB or color-difference
- External reference—Color black/composite sync timing reference adjustment: $\pm 2\mu\text{sec}$
- Local and remote selection and indication of inputs
- Two RP-125/EBU 3246-E digital video outputs
- Color-difference monitor output of selected channel
- Automatic 525/60 or 625/50 line/field rate selection
- Force black mode
- Chroma off mode
- Compact 1RU mode
- 115/230VAC selectable

ADC-120 analog to digital translator accepts two analog component signals of any format and produces CCIR 601 digital output. The input may be selected locally or remotely and LEDs will indicate which input is active. Timing may be taken from sync on the Y or green channel or an external reference may be utilized. Line/field rates of 525/60 or 625/60 will be automatically detected and selected. An output of the component input is available for monitoring purposes. The ADC-120 comes in a one rack-unit frame.

ADC-120 Component analog to component digital translator **\$6500.00**

THE GRASS VALLEY GROUP, INC.**Component Video Terminal Equipment****CV-20 Series Component Video Terminal Equipment**

The CV-20 Series is a growing family of products providing component video system designers with signal generation and format conversion capability.

Whether the need is conversion between various component formats or conversion between the composite and component world, the CV-20 Series is an economical solution.

CV-11/85 Translator

The CV-11/85 Translator is a simplified version of the CV-21. It may be used in any application where "straight through" conversion from Y, R-Y, B-Y to RGB is required, such as displaying the component output of a Betacam* system on an RGB monitor. The CV-11/85 is designed to mount in a standard 8500 Series video DA tray, and may be used in conjunction with 8500 Series amplifiers to provide multiple RGB feeds.

Specifications

Inputs: Y, R-Y, B-Y (75 ohms terminating)
Y = 1V p-p including sync; R-Y, B-Y = $\pm 350\text{mV}$ (75% saturation)

Outputs: RGB (one each)

Frequency Response: $\pm 0.2\text{dB}$ to 6MHz

Gain Adjust: Unity $\pm 1\text{dB}$

CV-11/85 Y, R-Y, B-Y to RGB translator (mounts in 8500 Series DA tray) \$385.00

CV-21 Translator

The CV-21 converts Betacam or SMPTE standard Y, R-Y, B-Y signals to RGB. The CV-21 features full blanking processing which enables the user to delete sync on the RGB outputs, if desired, and to compensate for setup on the Y input signal.

Specifications

Inputs: Y, R-Y, B-Y (75 ohms terminating)
Y = 1V p-p including sync; R-Y, B-Y = $\pm 350\text{mV}$ (75% saturation)

Outputs: RGB (two each); Y

Frequency Response: $\pm 0.2\text{dB}$ to 6MHz

Gain Adjust: Unity $\pm 1\text{dB}$

Setup Adjust: ± 15 IRE

CV-21 Y, R-Y, B-Y to RGB translator (mounts in CV-20T tray) \$995.00

CV-22 Translator

The CV-22 converts RGB signals to Betacam or SMPTE standard Y, R-Y, B-Y. Full blanking processing and sync add/delete capability is provided to accommodate the large degree of variability which exists in RGB environments.

Specifications

Inputs: RGB (75 ohms terminating) 700mV video with or without sync.
Sync/color black (looping) required if input video is non-composite

Outputs: Y (three); R-Y, B-Y (two each); Y = 1V p-p including sync; R-Y, B-Y = $\pm 350\text{mV}$ (75% saturation)

Frequency Response: $\pm 0.2\text{dB}$ to 6MHz

Gain Adjust: Unity $\pm 2.5\text{dB}$

Setup Adjust: 0 to +10 IRE

CV-22 RGB to Y, R-Y, B-Y translator (mounts in CV-201 tray) \$995.00

CV-23 Color Bar Generator

The CV-23 is a component color bar generator which generates full-field color bars in both RGB and Y, R-Y, B-Y formats. It requires comp sync or color black as a timing reference and is capable of operating in either 525/60 or 625/50 systems.

Specifications

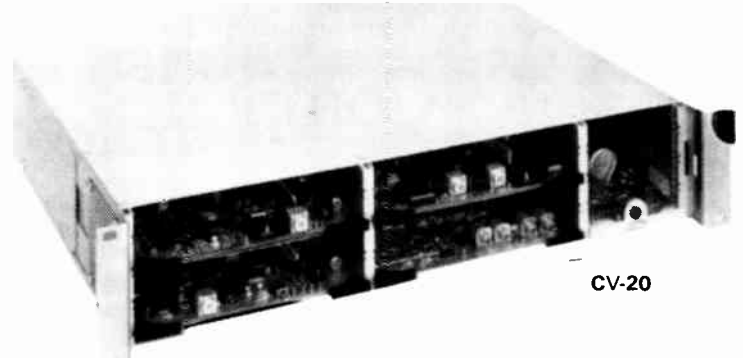
Output Signal: Full field color bars switch selectable to 75% or 100% saturation

Outputs: One set each RGB and Y, R-Y, B-Y

Reference Input: Composite sync or color black

Timing Adjust: Output timing may be adjusted to $\pm 2\mu\text{s}$ with respect to the input timing reference

CV-23 Component color bar generator (mounts in CV-20T tray) . . . \$1195.00



CV-20

CV-24N NTSC Decoder

The CV-24N is a variable-Q notch filter design. Front panel controls are provided for input level, setup adjust, chroma phase and chroma gain. The output matrix may be strapped to provide RGB, Betacam, SMPTE, or YIQ outputs.

Specifications

Input: NTSC video (75 ohms terminating), 1V p-p nominal, adjustable $\pm 3\text{dB}$

Outputs: Two sets, strappable to any one of the following: RGB (700mV video/300mV sync); SMPTE-standard Y, R-Y, B-Y; Betacam; or YIQ

Luminance Bandwidth: DC to 6MHz $\pm 0.2\text{dB}$ with 3.58MHz notched out to approximately -30dB

S/N Ratio: $> 60\text{dB}$ (6MHz bandwidth)

Propagation Delay: Approximately 850ns

CV-24N NTSC Decoder (mounts in CV-20T tray) \$1500.00

CV-25N NTSC Encoder

The CV-25N produces high quality NTSC video (2 outputs) from composite or non-composite RGB. The CV-25N has a unique, onboard pulse regenerator which derives blanking from input sync, eliminating the need for separate blanking input, sync timing on the output may also be adjusted. An alignment test generator is also included.

Specifications

Inputs: Number and Type: One each R, G, B video (internally terminated), sync, subcarrier (looping)
Levels: 700mV RGB video with or without sync, with $\pm 1\text{dB}$ gain trim; 4V p-p sync $\pm 6\text{dB}$; 2V p-p SC, $\pm 6\text{dB}$; 2V p-p SC, $\pm 6\text{dB}$
CMRR (RGB inputs): $> 40\text{dB}$ at 60Hz
(75 ohm source terminated) Number and Type: Two each NTSC composite video; Level: 1V p-p nominal (714mV video, 286mV sync and burst)

Outputs: **Frequency Response:** $\pm 0.2\text{dB}$ to 5MHz (luminance)
Black/White Balance: < 0.5 IRE residual subcarrier
I/Q Quadrature: $> 0.5^\circ$ of subcarrier
Electrical Length: 810ns $\pm 40\text{ns}$ (RGB in NTSC out)
Adjustments: (Card Edge) H Phase, Fine Chroma Phase, Test Mode Enable, Green Tie Enable, I Black Balance, Q Black Balance, Setup

Mounting: Fits in CV-20T tray

Power: Provided by CV-20PS power supply

CV-25N NTSC Encoder (mounts in CV-20T tray) \$1500.00

CV-20 Tray

The CV-20T tray is a 2RU tray which will accept up to four CV-20 Series modules in any mix. It comes with one power supply; a second (backup) supply and module extender are available as options.

CV-20T 2RU tray with power supply (holds up to 4 CV-20 series modules) \$895.00

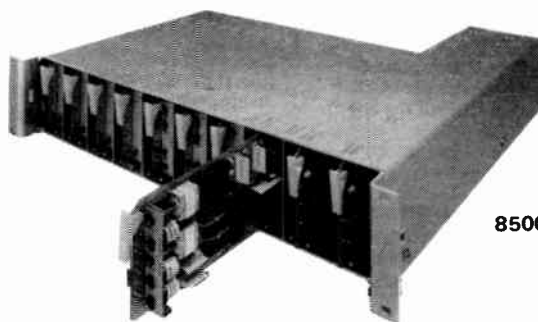
CV-20PS Backup power supply for CV-20 tray \$245.00

CV-20EXT Module extender for CV-20T series modules. \$110.00

*Betacam is a trademark of Sony Corporation.

THE GRASS VALLEY GROUP, INC.

Distribution Amplifiers



8500 Series

8500 Series Audio/Video Distribution Amplifiers

The 8500 Series is a range of video and audio distribution amplifiers. The DA's feature both high performance and low cost as a result of innovative engineering coupled with advanced manufacturing techniques.

All 8500 Series models feature differential inputs with six outputs. Circuit building blocks such as input amplifiers, output amplifiers, and voltage regulators have been reduced to individual hybrid integrated circuits which provide improved performance, better unit-to-unit consistency, and ease of maintenance over conventional discrete designs.

Video DA's include the 8501, a basic non-equalizing DA; the 8502, an equalizing DA with dual range (0-500' and 500'-1000') variable equalizer; the 8503, an equalizing DA with precision stepped equalization (0, 100', 200',...1000') plus vernier trim (0-125'); the 8504, a delay DA capable of up to 300ns delay (up to 1.1µsec. with optional plug-ins); and the 8505, a field DA which combines long cable eq (up to 3000' of 8281) and a two speed clamp. The line also includes the 8520, a pulse DA.

The 8551 is a high performance voltage-mode audio DA. It has an active, balanced Hi-Z input (input Z > 40K ohms) and six active, balanced Lo-Z outputs (output Z > 50 ohms). The 8551 will accommodate signal levels to +24dBu; SNR is > 110dB.

The 8560 Stereo Audio Distribution System is a series of audio distribution amplifiers. Each amplifier handles two channels of audio, manipulated by a single gain control and a balance trim.

A two-rack unit frame of the 8560 Series houses up to four DAs, a meter board and power supplies. The meter board, with PPM and VU ballistics, allows monitoring of all DA inputs and outputs.

8500 Series

Model	Description	Price
8501	Video DA	\$160.00
8502	VDA with variable cable EQ (for 8281-type cables)	260.00
8502-598	VDA with variable cable EQ (for "RG-59B/U" cable)	260.00
8502-59	VDA with variable cable EQ (for "RG-59/U" cable)	260.00
8502-SPL	VDA with variable cable EQ (for special cable types: 8500-EQ network required)	260.00
8500-EQ	Custom equalizer network for special cable types (cable technical data required; call for further information)	
	Setup charge	125.00
	Unit price	75.00
8503	VDA with step/vernier EQ (for 8281-type cables)	375.00
8503-598	VDA with step/vernier EQ (for "RG-59B/U" cable)	375.00
8503-59	VDA with step/vernier EQ (for "RG-59/U" cable)	375.00
8504	Delay DA (with cable EQ for 8281-type cables)	475.00
8504-598	Delay DA (with cable EQ for "RG-59B/U" cable)	475.00
8504-59	Delay DA (with cable EQ for "RG-59/U" cable)	475.00
8504-D300	300ns Delay submodule	200.00
8504-D500	500ns Delay submodule	250.00
8504-D800	800ns Delay submodule	275.00
8505	Field VDA (with cable EQ for 8281-type cables)	495.00
8505-59	Field VDA (with cable EQ for "RG-59/U" cable)	495.00
8505-11	Field VDA (with cable EQ for "RG-11/U" cable)	495.00
8506	Clamp VDA (with cable EQ for 8281-type cables)	395.00
8506-598	Clamp VDA (with cable EQ for "RG-59B/U" cable)	395.00
8506-59	Clamp VDA (for cable EQ for "RG-59/U" cable)	395.00
8506-SPL	Clamp VDA (for special cable types: 8500 EQ network req.)	395.00
8510R	Remotely-controlled VDA (with cable EQ for 8281-type cable)	525.00
8510R-598	Remotely-controlled VDA (with cable EQ for "RG-59B/U" cable)	525.00
8510R-59	Remotely-controlled VDA (with cable EQ for "RG-59/U" cable)	525.00

Model	Description	Price
8511	Wideband (100MHz) Video DA	\$425.00
8520	Pulse DA	250.00
8520-8281	Pulse DA with 8281 EQ	375.00
8520-598	Pulse DA with "RG-59B/U" EQ	375.00
8520-R	Pulse DA with regenerator	350.00
8520-EQ1	8281 EQ submodule only	125.00
8520-EQ2	"RG-59B/U" EQ submodule only	125.00
8520-RGEN	Pulse regen. submodule only	100.00

NOTE:

Loss characteristics vary considerably among cables with "RG-xx" designations. EQ networks on 8500 Series VDA's are optimized for the following specific cables:

- "RG-59B/U": Belden 8263
- "RG-59U": Belden 9259
- "RG-11/U": Belden 8238

Exact loss curves are available upon request.

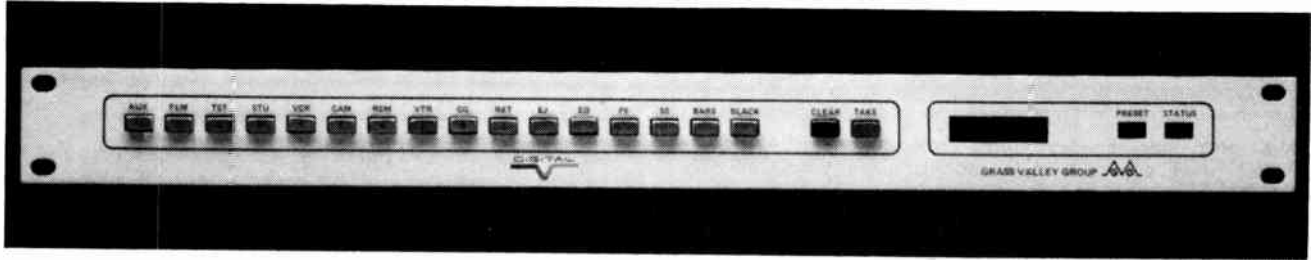
8500T1-120	1 RU video tray with 120V PS (holds 4 DA's)	650.00
8500T1-240	1 RJ video tray with 240V PS (holds 4 DA's)	650.00
8500T2-120	2 RU video tray with 120V PS (holds 8 DA's)	795.00
8500T2-240	2 RJ video tray with 240V PS (holds 8 DA's)	795.00
8500T2R-120	2 RU video tray with 120V PS (holds 8 standard or remotely-controlled DA's)	895.00
8500T2R-240	2 RU video tray with 240V PS (holds 8 standard or remotely-controlled DA's)	895.00
8500PS-120	Backup PS for 8500T2-120 or 8500T2R-120	250.00
8500PS-240	Backup PS for 8500T2-240 or 8500T2R-240	250.00
8500T2-DC24	2RU Video Tray with 24VDC PS	1300.00
8500T2-DC48	2RU Video Tray with 48VDC PS	1300.00
8500T2R-DC24	2RU Video Tray with 24VDC PS	1400.00
8500T2R-DC48	2RU Video Tray with 48VDC PS	1400.00
8500PS-DC24	Backup 24VDC power supply	750.00
8500PS-DC48	Backup 48VDC power supply	750.00
8500EX	Extender card	75.00

AUDIO DISTRIBUTION EQUIPMENT

8551	Audio DA	\$250.00
8552R	Remotely-controlled Audio DA	375.00
8553	Audio tone generator	250.00
8550T1-120	1 RU audio tray with 120V PS (holds 4 DA's)	725.00
8550T1-240	1 RU audio tray with 240V PS (holds 4 DA's)	725.00
8550T2-120	2 RU audio tray with 120V PS (holds 8 DA's)	895.00
8550T2-240	2 RU audio tray with 240V PS (holds 8 DA's)	895.00
8550T2T-120	2 RU audio tray with taper pin connectors and 120V PS (holds 8 DA's)	1475.00
8550T2T-240	2 RU audio tray with taper pin connectors and 240V PS (holds 8 DA's)	1475.00
8550PS-120	Backup PS for 8550T2-120 or 8550T2T-120	365.00
8550PS-240	Backup PS for 8550T2-240 or 8550T2T-240	365.00

STEREO AUDIO DISTRIBUTION EQUIPMENT

8561	Stereo audio distribution amp	\$495.00
8561-CS	Stereo ADA with channel switching	620.00
8561-PCS	Stereo ADA with phase adjustable channel switch	695.00
8561-RG	Stereo ADA with remote gain control	695.00
8561SM-CS	Channel switching submodule	125.00
8561SM-PCS	Phase adjustable, channel switch submodule	200.00
8561SM-RG	Remote gain control submodule	200.00
8562	Stereo audio metering module	785.00
8560T2-120	2 RU (4 cell) tray with 120V PS	995.00
8560T2-240	2 RU (4 cell) tray with 240V PS	995.00
8560EX	Module extender	125.00



DHX-532 Digital Routing System

- Digital parallel routing system with data reclocking, conforms to standards: CCIR 601 (MOD F), RP 125, and EBU 3246-E
- Available in 8 input by 8 output building blocks, expandable up to 32 inputs by 32 outputs per DHX-532 frame, ultimately expandable to 128 inputs by 128 outputs
- 10-bit data path protects signal integrity
- Employs the same control system and can be one level of the HORIZON™ analog routing system family
- Compact design: matrices of up to 32 inputs by 32 outputs in just 15 rack units, including power supplies
- Control via 75 ohm coaxial cable for easy installation
- PC boards removable from the front for fast access, as well as PROTECT™ to guard destinations against unauthorized intervention
- Optional redundant power supply
- Backup interpreter module
- Complete stand alone capability

The DHX-532 is a parallel digital routing system supporting CCIR, SMPTE, and EBU standards. The system features a 10-bit data path and data reclocking.

To simplify the transition from analog to digital video technology, the system may function as one level of a GVG Horizon routing system, allowing digital video, analog video, and audio matrices to share a common control system.

Specifications

Electrical:

32 input by 32 output maximum, expandable from 8 inputs by 8 outputs in 8 x 8 building blocks. 10-bit parallel digital video. Two isolated outputs per destination. Conforms to: SMPTE RP125, EBU 3246-E, CCIR 601 (Mod. F). Switching in the vertical interval (line 10) synchronized to reference video

Power Requirements:

90-120VAC or 180-260VAC 50/60Hz

Power Consumption:

400W for fully equipped 32 x 32 system

Mechanical:

Input/Output Connectors:

25 Pin D

Height:

26.25" / 66.5cm (15 rack units)

Width:

19" / 48cm rackmount

Depth:

18" / 45.6cm

Weight:

150 lbs./65.2kg

Model	Inputs	Outputs
DHX-88	8 x 8	\$22,750.00
DHX-168	16 x 8	25,250.00
DHX-248	24 x 8	30,600.00
DHX-328	32 x 8	33,100.00
DHX-816	8 x 16	28,100.00
DHX-1616	16 x 16	30,600.00
DHX-2416	24 x 16	38,800.00
DHX-3216	32 x 16	41,300.00
DHX-824	8 x 24	33,450.00
DHX-1624	16 x 24	35,950.00
DHX-2424	24 x 24	47,000.00
DHX-3224	32 x 24	49,500.00
DHX-832	8 x 32	38,800.00
DHX-1632	16 x 32	41,300.00
DHX-2432	24 x 32	55,200.00
DHX-3232	32 x 32	57,700.00

Each system is supplied with one technical manual, one signal module extender and one interpreter extender.

Options

DHX-PS	Backup power supply; specify line voltage/frequency at time of order	\$2,500.00
DHX-INT	Backup interpreter module	1,500.00
DHX-EXS	Extender, signal modules only	500.00
DHX-EXI	Extender, interpreter module only	250.00
DHX-MAN	Manual, operations/maintenance.	180.00
DHX-CPM	Crosspoint module	2,850.00
DHX-IBU	Input buffer module.	2,500.00
DHX-OAM	Output amplifier module	2,500.00
DHX-CKC	Cable end kit; crimp (connectors only, does not include cable).	110.00
DHX-CKS	Cable end kit; solder (connectors only, does not include cable).	110.00

THE GRASS VALLEY GROUP, INC.

Routing Switchers

TEN-XL 10 x 1 Routing Switcher

- Breakaway stereo audio comes with every unit
- Both local and remote control panels are available
- Binary control system
- Differential inputs for both video and audio
- Video inputs are DC restored and switching is done in the vertical interval line (line 10)
- Built-in expansion capability lets the TEN-XL be a 19 x 1, 28 x 1 or more
- 12-hour minimum crosspoint memory in case of power failure

The TEN-XL encompasses video, stereo audio, optional RS422/232 serial interface module, relay module, and dual power supply, all in a one rack unit frame.

TEN-XT Monitoring Station

- Combines the capabilities of the TEN-XL with the Tektronix 1740 or 1750, as well as the 528 and 1420 waveform/vector monitors.

TEN-XTM Routing Switcher

- Designed to reside in a half-rack frame next to waveform and vector displays
- Incorporates all the features of the TEN-XT plus providing audio VU/Peak metering along with a built-in audio monitor/speaker combination
- Stereo audio monitoring is available via a front panel headphone jack
- Audio metering can be set to provide VU, Peak power, or both

All TEN-XL options can be used including serial interface, tally relay matrix, dual power supplies and the widest variety of useful remote control panels.

TEN-XL and TEN-XT Routing Switchers Complete Units

TEN-XL	10 x 1 video/stereo audio switcher with local control panel	\$1495.00
TEN-XLV	10 x 1 video only switcher with local control panel	1195.00
TEN-XLVA1	10 x 1 video/single audio switcher with local control panel	1345.00
TEN-XLRC	10 x 1 video/stereo audio switcher for remote control use (does not include remote control panel)	1460.00
TEN-XLRCV	10 x 1 video only switcher for remote control use (does not include remote control panel).	1160.00
TEN-XLRCVA1	10 x 1 video/single audio switcher for remote control use (does not include remote control panel)	1310.00
TEN-XLA	10 x 1 stereo audio switcher with local control panel	1270.00
TEN-XLA1	10 x 1 single audio switcher with local control panel	1120.00
TEN-XLARC	10 x 1 stereo audio switcher for remote control use (does not include remote control panel)	1235.00
TEN-XLA1RC	10 x 1 single audio switcher for remote control use (does not include remote control panel).	1085.00
TEN-XLVCV	10 x 1 component video/stereo audio switcher with local control panel	3950.00
TEN-XLVCV-V	10 x 1 component video only switcher with local control panel	3650.00
TEN-XLVCVA1	10 x 1 component video/single audio switcher with local control panel	3800.00
TEN-XTM	10 x 1 video/stereo audio switcher for half rackmount with VU/peak meters and audio monitor	2100.00

(For 220/240V operation add -2 to model number)



TEN-XL



TEN-XT



TEN-XTM

Connector Kits/Cables

TNX-RCC	Remote control cable with connectors	\$ 35.00
		+ 3.00/M*
TNX-CON	Remote control connector kit	25.00
TNX-ICC	Interconnect cable to Model 100	35.00
		+ 3.00/M*
TNX-ICS	Interconnect cable to Model 300	35.00
		+ 3.00/M*
TNX-IRS	RS-232 computer/terminal interface cable	35.00
		+ 3.00/M*
TNX-IEC	19 x 1 expansion cable	35.00
		+ 3.00/M*
TNX-CCB	RGB interconnect cable(19.5" long)	135.00
TNX-RYC	Remote control "Y" cable(8" long)	135.00
TNX-MIC	RS-232 modem I/F cable to TEN-XL	35.00
		+ 3.00/M*
TNX-CPS	Serial control panel interface cable (specify number of TEN-XL's and length).	POR
TNX-CTM	RS-232 computer to modem cable	35.00
		+ 3.00/M*
TNX-AAD	Audio connector adaptor	80.00
TNX-AIC	Audio interconnect cable (For TNX-AAD) (1m long)	60.00

Options

TNX-RXP	Tally relay module	\$ 125.00
TNX-SIO	RS-422/RS-232 serial interface module	400.00
TNX-EXTV	Module extender, video	350.00
TNX-EXTA	Module extender, audio	165.00
TNX-IES Input expansion hardware (Includes cables and circuit board)		
TNX-IES28	28 x 1 requires 3 TEN-XL's	385.00
TNX-IES37	37 x 1 requires 4 TEN-XL's	485.00
TNX-IES46	46 x 1 requires 5 TEN-XL's	650.00
TNX-IES55	55 x 1 requires 6 TEN-XL's	750.00
TNX-IES64	64 x 1 requires 7 TEN-XL's	850.00
TNX-IES73	73 x 1 requires 8 TEN-XL's	950.00
TNX-IES82	82 x 1 requires 9 TEN-XL's	1050.00
TNX-IES91	91 x 1 requires 10 TEN-XL's	1150.00
TNX-IES100	100 x 1 requires 11 TEN-XL's	1250.00
TNX-RPS	Backup power supply, 120V	185.00
TNX-RPS2	Backup power supply, 240V	185.00

Spares/Replacements

TNX-VXP	Video crosspoint module	\$575.00
TNX-AXP	Audio crosspoint module	250.00
TNX-CTL	Control module (audio only)	250.00
TNX-PSM	Power supply module	185.00
TNX-BFC	Blank front cover for TEN-XL	95.00
TNX-SPK	Spare parts kit	150.00

TEN-X is a registered trademark of Grass Valley Group, Inc.

*Specify length.

THE GRASS VALLEY GROUP, INC.

Routing Switchers

TEN-20™/20-TEN™ Compact Routing Switcher Systems

- TEN-20 switcher ten input-by-twenty output
- 20-TEN switcher twenty input-by-ten output
- 4-level control, with numerous matrices per level
- Control via twisted shielded pair cables, for simple and cost-effective installation
- PC boards remove from the front for easy access
- "PROTECT" and locked panel features, standard on all control panels, guard your destinations against unauthorized intervention
- All systems available in component as well as composite versions
- Battery protected RAM saves your data for as long as 30 days

Choose from these versatile panel configurations:

- 20 input button per source—controls any combination of four levels
- 10 input button per source—controls any combination of four levels
- 4-level X-Y—controls all inputs and destinations

Each switcher is contained in a single rack unit frame, with both video and audio matrices available. Either may be configured video only, audio only or video plus multiple audio. A component video version is also available.

TEN-20 and 20-TEN video and audio routers feature high density, multi-layer boards with excellent bandwidth and signal-to-noise ratio.

These single crosspoint modules give you increased reliability and full functionality.

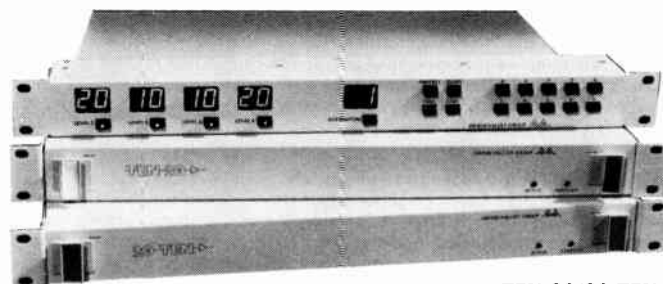
Options include the flexibility of an RS232/RS422 serial interface and the extra reliability of dual power supplies.

Video Performance Specifications

Differential Gain:	0.1% at 1V p-p output, 10-90% APL
Differential Phase:	0.1° at 1V p-p output, 10-90% APL
Frequency Response:	± 0.1dB, 100kHz-5.5MHz ± 0.5dB, 5.5MHz-10MHz
Slew Rate:	30V/μsec
Total Delay (Typical):	20ns
Crosstalk (worst case; all inputs and outputs driven):	-60dB at 5.0MHz -50dB at 10.0MHz
Signal-to-Noise Ratio:	75dB, 5.0MHz low pass

Audio Performance Specifications

Crosstalk (rel to + 24dBu) (Worst case, all inputs and outputs hostile and synchronous):	20Hz-2kHz: 90dB 20Hz-20kHz: 80dB
Frequency Response:	± 0.1dB: 20Hz-20kHz
Total Harmonic Distortion:	0.05% at + 24dBu, 20Hz-20kHz
Signal-to-Noise Ratio (ref. + 24dBu):	120dB: 20Hz-20kHz 110dB: 20Hz-80kHz



TEN-20/20-TEN

TEN-20-V	10X20 Video Switching System	\$ 5,500.00
TEN-20-A	10X20 Audio Switching System	4,300.00
TEN-20-SA	10X20 Stereo Audio Switching System	8,500.00
TEN-20-CV	10X20 Component Video Switching System	16,350.00
Ten-20-CVS	10X20 Component Video and Sync Switching System	21,700.00
20-TEN-V	20X10 Video Switching System	5,500.00
20-TEN-A	20X10 Audio Switching System	4,300.00
20-TEN-SA	20X10 Stereo Audio Switching System	8,500.00
20-TEN-CV	20X10 Component Video Switching System	16,350.00
20-TEN-CVS	20X10 Component Video and Sync Switching System	21,700.00
20-TEN-R	20X10 Relay Matrix Switcher	4,300.00

Control Panels and Options

JSL	Joystick Override Control logic, 120V . . . . .	.550.00
JSL	Joystick Override Control logic, 240V . . . . .	.550.00
XYCP	X-Y Control Panel, 120V . . . . .	.650.00
XYCP-2	X-Y Control Panel, 240V . . . . .	.650.00
10BPS	10 Button Per Source Control Panel . . . . .	.615.00
10BPS-2	10 Button Per Source Control Panel, 240V . . . . .	.615.00
20BPS	20 Button Per Source Control Panel, 120V . . . . .	.650.00
20BPS-2	20 Button Per Source Control Panel, 240V . . . . .	.650.00
SERIM	Serial Interface Module and Frame . . . . .	.795.00
SERIM-2	Serial Interface Module and Frame, 240V . . . . .	.795.00
RPSF	Redundant Power Supply Frame . . . . .	.595.00
VPS	Video Power Supply for RPSF . . . . .	.550.00
APS	Audio Power Supply for RPSF . . . . .	.550.00
OPEXP	Video Output Expansion Kit	1,000.00

Spares/Replacement Modules

TEN-20VXP	10X20 Video Crosspoint Module	\$4,500.00
20-TENVXP	20X10 Video Crosspoint Module	4,500.00
TEN-20AXP	20X10 Audio Crosspoint Module	3,300.00
20-TENAXP	20X10 Audio Crosspoint Module	3,300.00
VPSCT	Video Power Supply and Controller . . . . .	.695.00
APSCT	Audio Power Supply and Controller . . . . .	.695.00
RPSCT	Relay Power Supply and Controller . . . . .	.695.00
EXT	Video/Audio and Controller Module Extender . . . . .	.550.00
EMM	Extra Maintenance Manual (One supplied with each system purchased) . . . . .	.50.00

THE GRASS VALLEY GROUP, INC.

Routing Switchers/Data Matrices

HORIZON™ Routing Systems

HORIZON is designed as a high-performance audio/video distribution routing switcher suitable for a wide variety of applications including composite and component video, HDTV, stereo or even multiple audio, plus time code.

HORIZON is offered in a variety of frame sizes and configurations from 128 x 128 multi-level systems through 16 x 16 frames and all are intermixable. 64 x 64, 48 x 32, and 32 x 16 sizes provide intermediate steps; each size available with the number of modules to meet your needs. Plug-in modules transfer from frame to frame without causing downtime or system interruption.

HX-16/HX-32

- Most compact routing systems in the HORIZON family.
- Flexibility in control level selection makes them the ideal solution to component routing and stereo audio applications.
- Their frames may be used as part of larger HORIZON systems, so you can configure exactly the system you need.
- Available in video and audio mixtures to suit your needs.

HX-48

- 48 Input by 32 output video and audio capability are available in 18 rack units—including power supplies.
- Space for optional dual power supplies and system controllers is part of this package.
- For multiple audio or component video applications, simple interlevel cable allows the HX-48 to drive one or more smaller systems.
- The same cable also allows you to use the HX-48 as part of a larger system.
- Start with as few as 16 inputs by 16 outputs and build to frame capacity in 8 input/16 output steps.
- Available in video/video, video/audio and audio/audio frame capability.

HX-64

- Each HX-64 matrix may be structured up to 64 inputs by 64 outputs—without unlimited matrices in as many as four control levels.
- Each matrix is self-contained in an 18 rack-unit frame, including power supply, with space for an optional dual power supply and optional back-up controller.
- Size of each matrix is fully independent from the rest of the system.
- Composite video matrices may be full size, for example, while audio and time code or component matrices are smaller.

HX-128

- Largest member of the HORIZON family.
- Building block frames allow one-time system structuring for all your needs so you can grow at your own pace without retiming or rewiring.
- Each matrix frame, video or audio, occupies just 12 rack units.
- Power for up to two matrix frames of the same type is supplied by a single 6 rack unit frame.
- As many as 128 inputs x 32 outputs are housed in 18 rack units.
- Extra-compact, 128 x 64 format is also available in 30 rack units, without adding extra frames for dual controllers or video/audio monitoring.
- Matrix frames may be stacked in 128 x 32, 128 x 64, 128 x 96 or 128 x 128 systems.
- Smaller matrices may be structured within each configuration.
- Expand system and plug-in modules without system interruption.

Options

- 35 standard control panels
- Dual power options
- Dual controller option without adding frames
- On-line programmability and real time system diagnostics
- Unlimited RS-232/422 control capability with HX-GPI
- Interface option, including output exclusion
- E-MEM™ Interface, with full 4-level breakaway capability for GVG production switchers
- Full-time, real time video status display
- Source tally for production/master control
- Status displays for in-panel readout of HORIZON sources selected to GVG production or master control systems
- Integrated machine control
- RS-422 matrix

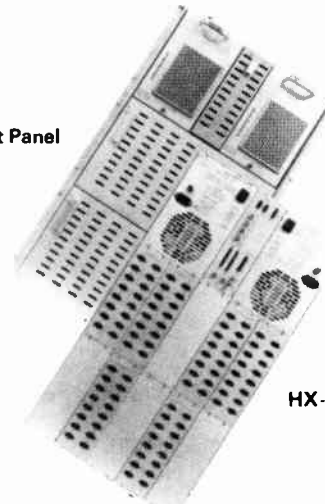
Specifications

VIDEO

Off. Gain:	< 0.1% at 1V p-p out, 10%-90% APL
Off. Phase:	< 0.1° at 1V p-p out, 10%-90% APL
Frequency Response:	± 0.15dB, 100kHz to 5.0MHz, +0.15, -0.5dB to 8MHz
2T Pulse/Bar Response:	Pulse 0.25%; 8ar 0.25%, Pulse/Bar 0.25%
Tilt:	< 0.5%
X-Talk:	-60dB at 5MHz (all inputs hostile and synchronous)
SNR:	> 75dB
Output OC (DC Rest. System):	Blanking at 0V, ± 50mV
Timing Scatter:	± 1° (NTSC or PAL) max., input to input on any one bus
Electrical Length:	(HX-16, 32, 48, 64), typical: Outputs 0-15: 43.6ns; Outputs 16-31: 44.4ns; Outputs 32-47: 45.0ns; Outputs 48-63: 45.8ns
Electrical Length:	(HX-128), typical: Outputs 0-15 and 64-79: 48.1ns; Outputs 16-31 and 80-95: 49.7ns; Outputs 32-47 and 96-111: 51.4ns; Outputs 48-63 and 112-127: 53.0ns
Input Char.:	All inputs 75 ohms internal term., return loss > 40dB to 5MHz
Output Char.:	Two 75 ohm term. outputs per bus; ret. loss 40dB to 5MHz; output/output isolation 38dB to 5MHz
Signal Level:	1V p-p nom., 2V p-p max.
Gain:	Unity adj. ± 1.0dB

B-606

HX-RS Front Panel



HX-RS Rear Panel

AUDIO

Frequency Response:	± 0.1dB, 20Hz to 20kHz
Harmonic Distortion:	< 0.5% at +24dBu, 20Hz to 20kHz
SNR:	> 100dB, ref. +24dBu, 20Hz to 20kHz
X-Talk:	> -80dB, 20Hz to 20kHz, all inputs hostile
Input Char.:	Bal. Z = > 12.5K ohms; CMRR > 65dB
Output Char.:	One bal. output per bus, Z < 30 ohms
Recommended Load:	600 ohms or greater; 150 ohm available
System Level:	± 24dBu (12.28VRMS) max.
Stereo Phase Acc.:	< 0.72 = L to R diff. at 20kHz
Gain:	Unity, adj. ± 1.0dB

HORIZON Data Matrices

HX-RS Data Matrices eliminate the complexity of data patching encountered when using sophisticated editing systems, graphics devices and VTRs.

Systems may be configured in sizes from 16 inputs x 16 outputs up to 64 x 64 and from 2-wire to 8-wire capability. The 64 x 32 4-wire size takes just 18 rack units of space and has the capacity to double in size with the addition of a simple 12 rack unit frame.

Reliable, low current relays switch bi-directional paths. Additional software allows the system to function traditionally or as an "exclusive" system, which allows any source to be taken to only one destination at a time.

HX-RS matrices may be used as stand-alone systems, or as one level in a larger HORIZON system. More than one HX-RS may also be used to simplify complicated intercom systems.

Specifications

4 pole bi-directional switching	
9-pin "D" connectors for data paths, pin #9s at chassis ground	
Max. End-to-End Resistance:	2 ohms
Max. Voltage Signal to Chassis:	100V
Max. Contact Current:	1A
Operate Time:	< 20µs
Release Time:	< 10µs

HORIZON Production Interfaces

Start with any model 300 with optional serial interface adaptor or with a model 200 with optional dual serial adaptor and the streamline option. Add a HORIZON production interface to your HORIZON Routing System. 300 Series systems may store as many as seven preset source selections per internal E-MEM register. Model 200 systems will direct the HX-GP200 to store source information in its resident memory.

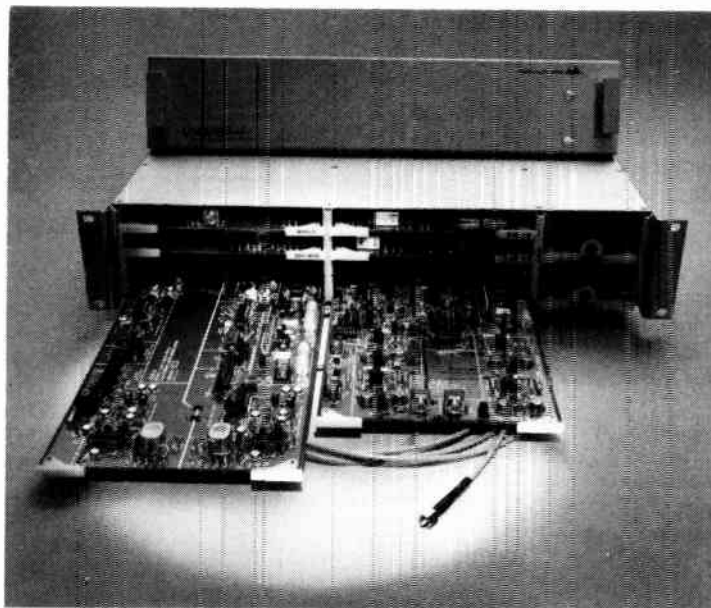
A single HX-GPEM interface serves up to 16 model 300 inputs or up to 8 inputs of each of two 300's. One HX-GP200 interface is fully equipped to work with up to 20 model 200 inputs.

HORIZON production interfaces are simple, C-Bus options. Where several 300's or model 200's are in operation, multiple units may be used to take full advantage of HORIZON routing power.

For instant feedback to camera locations, the programmable HX-ST source tally option module plugs directly into HORIZON production interface frames. An economical 16 relay/16 optoisolator configuration, it performs the tasks of larger source tally systems at a fraction of the cost and space normally required. Source tally growth beyond 16 x 16 capability is simple and economical with expansion frames and additional HX-ST modules.

HX-GP200	\$3000.00
HX-GPEM For use with model 300 only	3000.00

Refer to Green Section for Addresses and Telephone Numbers.



**3291 COMPLETE UNIT WITH
DUAL CHANNEL AUDIO OPTION**

3290/3291 Wavelink®

Fiber Optic Communications System

The 3290 is the broadband transmission component of the Wavelink system. It provides a full wideband 10MHz channel to accommodate any signal requiring such a bandwidth, for instance high-quality video. Incoming coaxial cable can be equalized by the 3290 with the addition of an optional submodule. The 3290 consists of an LED or laser-based transmitter, a receiver employing an APD detector, and compact mounting tray built to accommodate transmit and receive modules with their power supplies. The mounting trays are available in one rack-unit (RU, 1.75 inches) or two rack-unit heights. One RU tray package houses up to three transmitter or receiver modules or one laser transmitting system. Two RU tray packages will house up to six transmitter or receiver modules, or two laser transmitting systems, plus two power supplies for back-up redundancy.

3291

The 3291 is the multichannel transmission component of the Wavelink system. Like the 3290, the 3291 consists of an LED or laser-based transmitter and an APD-based receiver. In addition to a 5.8MHz video channel, the 3291 includes the multiplexing capability for two optional subchannels of audio and/or data. The 3291 also provides adjustable equalization of incoming and outgoing coaxial signal cables as an option. All 3291 receiving systems and LED-based transmitting systems are housed in two rack-unit mounting trays. Each of the two rack-unit trays will accommodate three transmit or receive systems. Laser-based transmitting systems are housed in either one or two rack-unit trays, one laser transmitting system being accommodated by each rack-unit of height.

3291 Audio, Data, and Alarm Options

Each option consists of plug-in modulator and demodulator modules which are fully interchangeable with the other option modules. The modulator module plugs into the frame of the transmitting system, while the demodulator module is housed in the standard two rack-unit frame used in the receiving system. Audio options use a unique

FM-on-FM modulation scheme to enhance the signal-to-noise performance. The baseband audio signals are individually preemphasized and modulated at 100kHz; one channel is then frequency modulated on a 9.8MHz carrier, and the other (dual audio systems) on an 8MHz carrier.

For the data option, serial asynchronous data (up to 20kbits/second) is accepted at the data modulator via an RS232 interface. The data is bandlimited to 500kHz to limit the spectral width of the modulator output, and then FM modulated on a 9.8MHz carrier. The audio/data option combines the features of the single audio and data options. Audio specifications are the same as for the dual audio option, and the data specifications remain unchanged. The GV43 audio option supports transmission of two channels of audio on carriers of 5.8MHz and 6.4MHz for common carrier applications; and 6.2MHz and 6.8MHz for satellite link applications.

Before transmission, each option channel is summed with the video channel on the exciter or LED transmitter module, and the resulting waveform is frequency modulated on a carrier of 24MHz. At the receiver the FM signal is demodulated and separated into its video, audio, and/or data components. The demodulator modules perform further FM demodulation and baseband filtering to restore the original audio or data signals. For the dual audio and the audio/data options, the audio output amplifier may be configured for a 600 ohm (20 dBm) or low impedance (50 ohm) balanced output. For the single audio option a choice of 600 ohm, 150 ohm, or a low impedance (50 ohm) balanced output is provided. The data output is available via an RS232-compatible interface. An optional alarm provides relay closures if a video input at the transmitter becomes disconnected, an optical carrier is absent at the receiver, or a redundant power supply fails.

Repeaters

Laser-based 3290/91 repeaters allow transmission distances to be greatly extended.

THE GRASS VALLEY GROUP, INC.

Wavelink Price List

**3290/3291 WAVELINK®
FIBER OPTIC COMMUNICATIONS SYSTEM (Cont'd)**

3290 Transmitters, Repeaters and Receivers

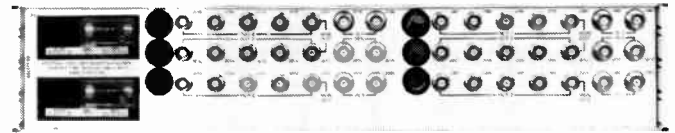
3290-201*	830 NM LED Transmitter Module	\$ 1,100.00
3290-10L**	830 NM Laser Transmitter	4,750.00
3290-301*	1300 NM LED Transmitter Module	2,200.00
3290-1SP**	1300 NM Single-Mode Laser Transmitter	7,800.00
3290-1ST**	1550 NM Laser Transmitter, Single Mode, 1RU	12,000.00
3290-15SP**	1300 NM Laser Transmitter, Single Mode, 2RU, includes Redundant Power Supply	8,300.00
3290-2SP**	1300 NM Dual Laser Transmitter, Single Mode, 2RU	13,390.00
3290-1RLK**	830 NM Laser Repeater with Monitor Out	4,750.00
3290-1RSPK**	1300 NM Single-Mode Laser Repeater with Monitor	7,800.00
3290-1RSTK**	1550 NM Laser Repeater with Monitor Out, Single Mode	12,000.00
3290-2RSPK**	1300 NM Dual Laser Repeater with Monitor Out, Single Mode	13,390.00
3290-202*	830 NM APD Receiver Module	1,100.00
3290-302*	1300 NM APD Receiver Module	2,000.00

3290 Options

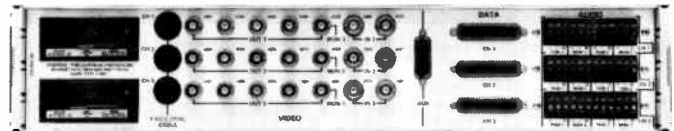
3290-10**	1 RU LED Tray, 1 AC Power Supply	\$825.00
3290-20**	2 RU LED Tray, 1 AC Power Supply	995.00
3290-DCPS-12	12VDC Power Supply	730.00
3290-DCPS-24	24VDC Power Supply	730.00
3290-DCPS-48	48VDC Power Supply	730.00
3290-230	Alarm Card	450.00
3290-EX3	3290 Extender Card	100.00

3291 Transmitters, Repeaters and Receivers

3291-201*	830 NM LED Transmitter Module	\$ 1,300.00
3291-10L**	830 NM Laser Transmitter	4,950.00
3291-301*	1300 NM LED Transmitter Module	2,400.00
3291-1SP**	1300 NM Single-Mode Laser Transmitter	8,000.00
3291-1ST**	1550 NM Laser Transmitter, Single Mode, 1RU	12,300.00
3291-15SP**	1300 NM Laser Transmitter, Single Mode, 2RU, includes Redundant Power Supply	8,500.00
3291-20L**	830 NM Dual Laser Transmitter, Multimode, 2RU	9,690.00
3291-2SP**	1300 NM Dual Laser Transmitter, Single Mode, 2RU, includes Redundant Power Supply	13,790.00
3291-1RLK**	830 NM Laser Repeater with Monitor Out	4,950.00
3291-1RSPK**	1300 NM Single-Mode Laser Repeater with Monitor	8,000.00
3291-202*	830 NM APD Receiver Module	1,300.00
3291-302*	1300 NM APD Receiver Module	2,200.00
3291-402*	1550 NM APD Receiver	2,200.00



3290 2 RU Tray Rear



3291 2 RU Tray Rear

3291 Options

3291-20**	2 RU LED Tray, 1 AC Power Supply	\$ 995.00
3291-21**	2 RU LED Tray, 2 AC Power Supplies	1,240.00
3200-PS1	AC Power Supply	245.00
3291-DCPS-12	12VDC Power Supply	730.00
3291-DCPS-24	24VDC Power Supply	730.00
3291-DCPS-48	48VDC Power Supply	730.00
3291-230	Alarm Card	450.00
3291-EX3	3291 Extender Card	100.00
3291-203	Single Audio Modulator	450.00
3291-204	Single Audio Demodulator	450.00
3291-205	Dual FM Audio Modulator	695.00
3291-206	Dual FM Audio Demodulator	695.00
3291-207	RS-232-C Data Modulator	400.00
3291-208	RS-232-C Data Demodulator	400.00
3291-209	Audio/Data Modulator	895.00
3291-210	Audio/Data Demodulator	895.00
3291-215	GV43 Dual Channel Audio Modulator	1,200.00
3291-216	GV43 Dual Channel Audio Demodulator	1,500.00
3291-115	Filter for GV43 Dual Audio Modulator	250.00
3291-116	Filter for GV43 Dual Audio Demodulator	250.00

* Append to the model number to specify connector type

- A AMP connector
- S SMA connector
- W WECO connector
- ST ST connector

** Append to the model number when a balanced tray or DC is required: e.g. 3291-20/T-DC 2RU tray balanced trompeter wired for DC

/A (for Balanced Amphenol)

/T (for Balanced Trompeter)

-DC (for a tray wired for DC power)

THE GRASS VALLEY GROUP, INC.

Fiber Optic Transmission Equipment



Series 87

Video Fiber Optic Transmission Equipment

- Fiber optic transmission
- NTSC or PAL baseband video
- 10MHz frequency response
- 60dB signal-to-noise ratio
- 830nm multimode LED
- Frequency modulation

Series 87 wideband equipment provides long distance analog transmission of high frequency signals on optical fiber. Typical applications include transmission of RGB signals for HDTV (High Definition Television), and transmission of RGB signals to remote computer graphics video terminals.

Analog electrical baseband signals are input to Series 87 transmitter modules, one baseband signal per transmitter module. Analog transmission occurs on a single optical fiber. A frequency modulated square-wave carrier eliminates video distortion that is due to optical system nonlinearities.

A maximum of eight transmitter and/or receiver modules may be housed in a Series 87 tray.

Fiber optic cable type should be 50/125 or 62.5/125 multimode. SMA-906 optical connectors are standard.

Specifications

Video Input

Level: 1V p-p nominal, gain adjustable from +2dB to -5dB

Impedance/

Connectors: One unbalanced 75 ohm BNC

Video Output

Level: 1V p-p nominal, gain adjustable from +3dB to -3dB

Impedance/

Connectors: Two unbalanced 75 ohm BNC

Differential Distortion

Phase: < 5°
Gain: < 5%

Frequency Response:

1Hz to 8MHz ± 1dB
8MHz to 10MHz + 1, -5dB

2T Pulse to Bar: ± 3%

Field Tilt: < 2%

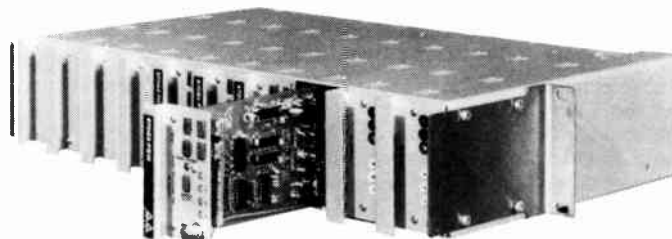
Line Tilt: < 2%

Relative Chrominance to Luminance

Delay Distortion: < 15ns

Typical Signal-to-

Noise Ratio: (Through 3 meter cable attenuated to -25dBm receive power; CCIR weighted, 10kHz to 5MHz) > -60dB



Series 87

87EXT	Series 87 Extender	\$ 95.00
87BP	Series 87 Tray Front/Rear Blank Panel . . . . .	.30.00
87V-830-TX-(*)	Video, 830 NM Multimode Transmitter . . . . .	.515.00
87V-830-RX-(*)	Video, 830 NM Multimode Receiver . . . . .	.515.00
87W-830-TX-(*)	Wideband, 830 NM Multimode Transmitter . . . . .	.POR
87W-830-RX-(*)	Wideband, 830 NM Multimode Receiver . . . . .	.POR

(*) Appended to order number for transmitter or receiver denotes the connector type: S is SMA, A is AMP, ST is ST; e.g., 87V-830-TX-S Video, 830 NM Multimode Transmitter, SMA

Series 87 EZ-Link Audio Options

87A1-MV	Audio, 1 Channel, Modulator with Rear Video I/O Panel	\$385.00
87A1-DV	Audio, 1 Channel, Demodulator with Rear Video I/O Panel . . . . .	.385.00

Series 87 Options

87TR8-AC	Tray, 2 Rack Unit, 8 Module, AC Interface	\$650.00
87TR2-WAC	Tray, Wall Mount, 2 Module, AC Interface . . . . .	.350.00
87TR8-DC	Tray, 2 Rack Unit, 8 Module, DC Interface . . . . .	.700.00
87AC	120/240VAC Transformer, Rectifier . . . . .	.275.00
87AC-W	120VAC to DC, Transformer, Rectifier Wall Mount . . . . .	.210.00
87DC-48	48V Power Supply (For use with DC Trays) . . . . .	.300.00

GRAY ENGINEERING LABORATORIES, INC.

SMPTE Edit Code Products

DR-107B SMPTE Data Receiver and Character Generator

The DR-107B offers an unusual number of capabilities in a minimum space at an economy price. All controls are on the front panel. In addition, there are internal selectors for drop frame status on the monitor, choice of monitor up-date change, and free running of time in the absence of code.

Reads and displays SMPTE, EBU or 24 frame time code or user bits on video monitors. Has restored output for dubbing.

Character heights may be varied from 8 to 64 lines in four increments, and the widths may be adjusted to the preferred aspect ratio. The characters may be plain or boxed. Characters may be inserted in the vertical interval, offering greater versatility to recording or transferring of tapes. Lines 12 through 19 are used in the vertical interval mode so no interference will occur. Size: 1 $\frac{3}{4}$ " high; standard 19" relay panel x 9 $\frac{1}{2}$ " deep excluding plugs.

DR-107B \$2795.00

DT-113 SMPTE Time Code Transmitter

SMPTE edit code is generated from a master clock which may be selected for drop frame count by a front panel switch. Transmits code at 30, 25, or 24 frame counts, color frame sync mode. User bits may be inserted from a parallel 32 line input. Time or user bits can be displayed on an 8-digit hexadecimal readout. The master clock may be reset or loaded to a time on an 8-digit thumbwheel switch. The clock can be stopped by a hold button. The clock and transmitted code can be synchronized to the 60Hz line or to video/sync frames. Code start is within the ANSI spec. (1 H-line in the vertical interval). The clock can be synchronized to the color burst phase for odd or even frame count when the sub-carrier is in phase. Size: 1 $\frac{3}{4}$ " high; standard 19" relay panel x 9 $\frac{1}{2}$ " deep excluding plugs.

DT-113 \$2995.00

Code Readers and Video Character Generators

DR-103A Data Receiver and Character Generator. Reads and displays edit code and equivalent film-frames on video monitor and has three switchable code inputs . . . \$4550.00

DR-115 Data Receiver and 4 Channel Character Generator. Provides four separate video character displays from one edit code input for Iso-Camera productions. \$4250.00

DR-120 Data Receiver, Character Generator, Identifier, and Demultiplexer. Reads and displays time code, multiplexed user bits, and video source identification on video monitors. \$3150.00

DR-122 Data Receiver and Dual Character Generator. Allows simultaneous video displays of both time code and user bits with video source identification capability and complete independent adjustment of character positioning \$4450.00

Code Readers and Local Displays

DR-109B Data Receiver, Display and Demultiplexer. Reads and displays time code or multiplexed user bits on an 8-digit hex readout. Has dub output. \$2795.00

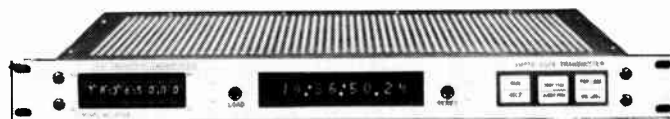
DR-109P EBU version of DR-109B \$2795.00

TBC-117 Edit Code Time-Base Corrector. Converts wide-band erratic code input to a truly regenerated "ANSI" spec code output. Used for dubbing and distribution \$3900.00

TCR-119 Time Character Reader. Reads the video characters generated by a Gray DR-107, DR-115, DR-120, or DR-122 from freeze to play speed and converts to longitudinal time code output for automatic computer editing . . . \$3950.00

Special Equipment

ACO-238 Automatic Change-Over. With inputs from two independent SMPTE time code generators, this unit will automatically sense failure of one generator unit and switch to the other to allow resumption of code output . . . \$5750.00



DT-113



DR-107B

Code Comparator

CC-114 Code Comparator. Compares a preset time with an incoming time code to produce an editing signal on coincidence. Must be used with a Gray time code reader. \$2330.00

CC-114A Reader Code Comparator. Same as CC-114 except unit incorporates a wideband reader. \$2750.00

Code Generators

DT-104F Data Transmitter. Transmits code at 30, 25, or 24 frames/sec., has advanced slave decoding, color frame sync, a variable code simulator/generator, NTSC/PAL compatibility, field or frame rate time code selection plus many more functions \$5950.00

DT-213 Data Transmitter and Character Generator. Transmits code at 30, 25, or 24 frames/sec., color frame sync mode in either frame or field rate time code. Sets and displays time code, and user bits in hex format. Slaves to incoming code and has a built-in character generator for both time code and user bits \$3495.00

DTG-236 Dual Time Code Generator. Transmits two separate SMPTE format codes: 24 frames/sec. and 30 frames/sec. The two codes have a synchronous start every five frames on the 30 frame code. \$5750.00

User Bit Equipment

MC-110 User Bit Modifier and Combiner. Combines time codes serially from two independent sources using user bits for the second time code. \$2595.00

MD-111 User Bit Modifier, Display and Demultiplexer. Modifies multiplexed user bits on incoming edit code from a 32 line parallel input \$3295.00

UBE-118A User Bit Encoder. A 10 channel multiplexer that encodes user bits from parallel inputs. Encoder for VID-225, DT-104F, DT-113, DT-113P, or MD-111. A real time clock is provided for insertion into one channel of user bits. \$2550.00

Safe Area Generators

VR-116 Video Reticle Generator. Allows precise positioning of titles and graphics from dead center to the edge of the vertical and horizontal blanking \$2595.00

VR-216P PAL version of VR-116. \$2995.00

VR-121 Video Reticle Generator. Similar to VR-116 with the addition of monitor linearity check, variable reticle size and position with memory and recall and a keying switch to set the reticle areas from white to black \$3950.00

Code Phase Measurement Equipment

CPI-123 Code Phase Indicator. Measures and displays the phase difference between an actual code frame start on VTR versus ANSI spec to determine computer compatibility. \$2100.00

TCA-143 Time Code Analyzer. Measures, displays, and corrects the phase difference between the cue-track frame code and the video to allow computer acceptance. It also displays the code level and indicates phase error, bit count, sync word, and count error faults with memory. \$2595.00

GRAY ENGINEERING LABORATORIES, INC.

SMPTE Edit Code Products

CPC-700 Series Code Phase Corrector

The CPC-700 Series equipment measures the difference between the actual SMPTE code start and the ANSI specification, displays this difference, re-phases and re-transmits the corrected code to specification and computer acceptance. This equipment will also correct drifting or unlocked time code caused when the video is recorded to a different sync source than the longitudinal code.

The basic 700 series rack comes equipped with the power supply module pair 701-1/701-2 and the frame pulse generator module pair 702-1/702-2. Space in the rack is provided for one or more code phase corrector module pairs 703-1/703-2. One of these pairs is required for each playback VTR machine in the edit bay.

- CPC-700** \$1395.00
- 703-1** Code phase corrector module pair/995.00
- 703-2** Code input-output rear module pair/995.00

VID-225 Vertical Interval Decoder

The VID-225 is a microprocessor based instrument which performs a dual function by decoding both an incoming Longitudinal Time Code (LTC) on a cue track and a Vertical Interval Time Code (VITC) present on a composite video signal.

A SMPTE longitudinal code is outputted at a rate proportional to either input. This allows the VITC input to be used from freeze frame to full wind speed and be automatically interfaced to most existing edit controllers, code readers/character generators, and other equipment that requires proportional LTC into their inputs.

The longitudinal decoder incorporates "The McFadin Window"® with wide range digital decoding from 1/100 to 100 times the VTR play speed. (Machine dependent).

Selection of the two codes can be automatic or manual, allowing the maximum advantage of both codes in various editing situations. At tape speeds below 1/4 play speed, the unit outputs longitudinal data at a 1/4 rate when VITC is present, and will squelch if an absence of time code is required by the edit controller when the tape is stopped.

Demultiplexing circuitry is provided to decode the display user bits that have been encoded using a time code generator in conjunction with the UBE-118A, FCM-227A or similar multiplexing devices.

The eleven position thumbwheel is used to instruct the demultiplexing circuitry which one of the ten frames of data to display, or to display all frames. This multiplexing scheme allows 10 times the normal 32 bits to be encoded.

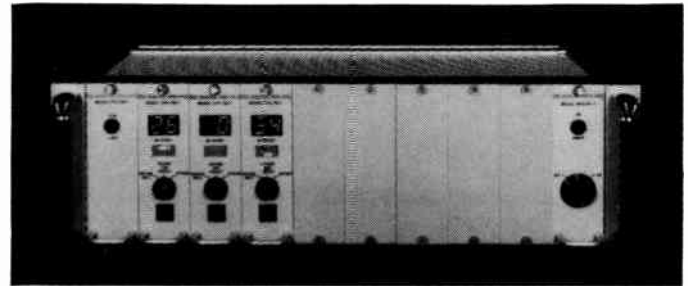
The VITC data is extracted from the incoming video, and made available for use in re-encoding with other video equipment such as the DSI-126, in an editing room environment.

- VID-225** \$3950.00

UBE-118A User Bit Encoder. A 10 channel multiplexer that encodes user bits from parallel inputs. A real time clock is provided for insertion into one channel of user bits . . . \$2550.00

DSI-126A Data Selector and Inserter. Accepts up to eight channels of serial VITC data from VID-225's and selects one of these channels by tally information from a video switcher, to modulate the composite video with VITC information \$2595.00

FCM-227A Film Counter, Multiplexer, and Character Generator. With tach and 3/2 inputs from a telecine system, an ASCII RS-232 terminal that provides scene, take, and reel information and a DT-104F SMPTE edit code generator that provides field rate time code, this unit will output vertical interval time code containing this data for inserting on one or more video lines. It will also output encoded parallel user bits to the SMPTE edit code generator. A character generator is included, which displays time code, user bits, and the multiplexed scene, take, and reel information \$4950.00



CPC-700



VID-225



VIE-224

DET-129 Data Entry Terminal. Provides data entry of edge numbers/starting footage count, scene, take, and reel numbers into the FCM-227A film counter/multiplexer \$5450.00

FC-142 Film Counter and Character Generator. Counts film feet and frames from a film projector or Telecine to precisely identify all film frames in a 3/2 scan transfer by inserting information in a window dub for viewing with complete video field accuracy. The information displayed can be feet and frames or edge numbers and frames for 16mm or 35mm \$2995.00

VIE-224 Vertical Interval Encoder

The VIE-224 modulates a composite video signal with VITC from an external incoming SMPTE LTC. A front panel display presents the time code or user bits by selection from a panel switch.

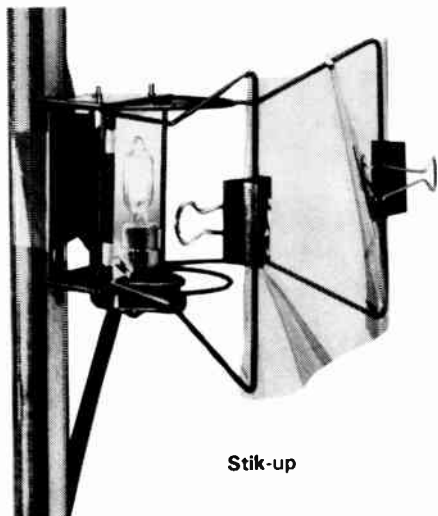
This unit is particularly useful when a facility that has a SMPTE LTC generator needs to encode video tapes with VITC. It is also useful when converting tapes with LTC to VITC for editing precision or freeing an audio track for stereo.

The incoming time code is updated before modulating the video to maintain real time. The user bits may be updated by a front panel switch whenever a secondary time code is transmitted in the user bits.

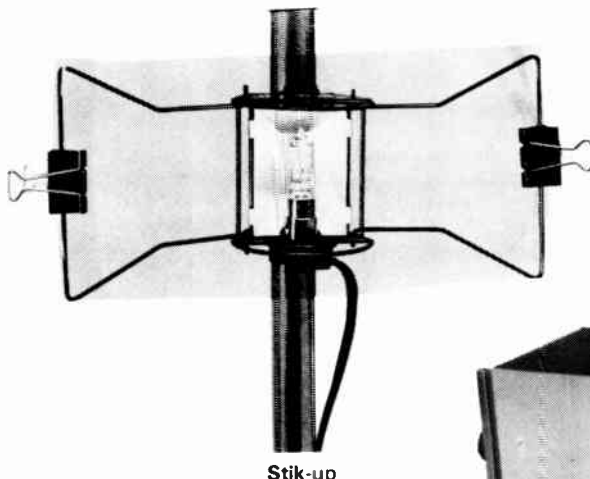
The incoming SMPTE longitudinal code is demodulated by a wide band decoder incorporating The McFadin Window and processed through microprocessor-based circuitry to provide time base correction. This assures that the same data is encoded on both fields of each TV frame, regardless of incoming edit code speed or phase.

VITC transmission can be programmed to modulate on any combination of vertical interval lines from 10 through 20 on either or both fields. Any signal that is on a selected line is erased before the VITC is encoded.

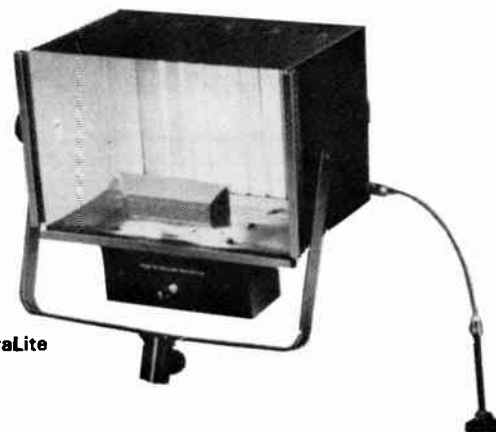
- VIE-224** \$3450.00



Stik-up



Stik-up



CamraLite

Stik-up

- Compact single source luminaire
- Small, lightweight
- 100W, 150W, 200W and 12V, 125W
- Mounts in any position

Stik-up is a small, durable incandescent luminaire. It weighs only 9 oz. with its 9' cord. Ultra light wire frame construction allows you to mount it where you need it—in any position by almost any means. Tape it to a stand, camera dolly, scenery, furniture. Hang it by picture wire. Stick it up with gaffer tape, masking tape, an alligator clip, even a clothespin. Convenient snap-on extension arms and clips allow you to use color filters, correction filters or diffusion material. And you can take it anywhere, tucked into your briefcase or utility bag.

Stik-up is ideal for television, film and still photography. Its 100W, 3000 Kelvin light source makes it an ideal miniature fill light. It creates the subtle reflection of dash lights in a car, the glow of a table lamp or candle, the ambience of a distant skyline. When you're in a tight spot, Stik-up can solve your problem. It's the ultimate trick for your bag of tricks, for better lighting made easier.

Stik-up Kit

The ready-to-go Stik-up Kit contains three heads, three sets of extension arms, six clips and three lamps. It is available in either a reusable carton or an Excalibur custom case.

Technical Data

- Dimensions: 3" x 3" x 4" H
- Weight: 9 oz. with power cord
- Housing: Wire frame and steel
- Reflector: Diffused aluminum
- Lamp: Q 100 CL/120VDC
- Power Cord: 9' flat BB/B, molded plastic U-ground plug

Ordering Stik-up

2600	Stik-up Kit: Three heads and accessories	\$289.00
2602	Stik-up Kit: In Excalibur custom case	399.00
2610	Stik-up head (includes clips and extension arms)	69.00
2620	Extension arms (set of two)	4.75
2622	Clips (set of two)	.60
2623	Black clothespins (set of 2)	.60
2624	Mounting block	.795
2020	Lamp	29.50
2150	Case for three heads and accessories	145.00

CamraLite

- Unique variable area reflector
- Keeps constant color temperature
- Mounts on any film or video camera

CamraLite is designed to mount on any film or video camera, in close proximity to the lens. It also accepts a 5/8" stud for use on a stand. Soft, yet efficient, it serves to lighten or erase the harsh effect of facial shadows in close-up work. Its reflection adds sparkle and life to the subject's eyes.

CamraLite is lightweight and easy to use. It will not overheat or jam if left on during long rehearsals.

How It Works

The rear wall of the CamraLite contains a unique variable area reflector, allowing the intensity of the light to be modulated without any fluctuation in the color temperature. As the distance between the subject and camera changes, a constant 3200K can be maintained by adjusting the reflector. No variation in exposure is required. The reflector is controlled by a convenient shaft on the side of the fixture.

Technical Data

- Dimensions: 8 1/2" H x 11 1/2" W x 6 1/2" D
- Length including yoke: 10 3/4"
- Weight: 2 1/2 lbs.
- Control shaft: 14" long. May be attached to either side of fixture
- Cable and connector: 6" high temperature lead, U-grounded male plug
- Control: Separate toggle switches for each lamp
- Lamps: 120V/600W BHC/DYS/DYV
120V/420W EKB
30V/250W DYG
220V/650W DYR

Ordering CamraLite

2320	Complete CamraLite kit	\$1295.00
2325	CamraLite head	860.00
2330	Four-way barndoor	69.00
2331	Scrim frame	19.50
2332	Gel frame	19.50
2010	Lamp	29.00
2130	Case	285.00
2335	Mounting bracket: Arriflex	89.00
2336	Mounting bracket: Panaflex	129.00

THE GREAT AMERICAN MARKET

Patterns

GREAT AMERICAN PATTERN

The Great American Pattern is a custom designed template for use in ellipsoidal spotlights. Made of high quality, durable stainless steel, it is tough enough to stand up under intense heat. Cut it with scissors to fit any pattern holder.

Standard Pattern

The Standard Pattern is photo etched in a 4" x 4 1/2" matte. The pattern area does not exceed 3" in diameter. An Adaptor (catalog #400) is available to secure standard patterns in spotlights with larger pattern holders.

Continental Pattern

The Continental Pattern is etched in a circular format to fit European "B" size pattern holders and some domestic fixtures. The outside diameter is 3 5/16" (85mm) and the design diameter is 2 3/8" (60mm).

Great American Patterns are available in three additional sizes: Mini Pattern, TV Pattern and 4 x 5 Pattern.

Mini Pattern

The Mini Pattern is a stainless steel template designed for use in popular 3 1/2" ellipsoidal spotlights. The pattern area is 2" in diameter and each design is turned upside down in the matte for quick and easy insertion in the pattern holder. Cut the edge with scissors if you wish to tip the pattern to compensate for a keystone.

The Mini Pattern is manufactured to the same exacting specifications as the standard Great American Pattern. The 2" diameter design is photo etched in a 4" x 2 5/16" matte.

The Mini Pattern Collection is tailored for the designer working in a small space. However, a number of standard Great American Patterns can be conveniently cut to fit the 3 1/2" spotlight. In some cases, only a portion of the design will be used.

4 x 5 Pattern

The 4 x 5 Great American Pattern is made to project in any Scene Machine. It may be used alone or combined with a painted glass slide. In the Mini Scene Machine, a 4 x 5 Pattern may be used with a Mini Disc to enhance a moving effect.

The large rectangular format of the 4 x 5 Pattern accommodates many new design concepts and increases the versatility of pattern projection.

The 4 x 5 Pattern is photo etched in a 4" x 5" matte. The pattern area does not exceed 3" x 4".

100-	Mini Patterns	\$ 8.95
200-	300-	
500-	Standard Patterns	8.95
400-	TV Patterns	18.00
8100-	4 x 5 Patterns	18.00
B-, N-	Continental Patterns	8.95
T-	Standard Halftone Patterns	16.00
BT-	Continental Halftone Patterns	16.00
1000	Pattern Holder	5.95
1010	Donut: 7 1/2" Square	4.95

Standard Patterns



387 Concept 1



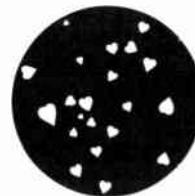
363 Row of Trees



210 City Alley



310 Small Snowflakes

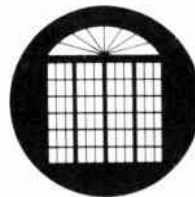


*293 Hearts

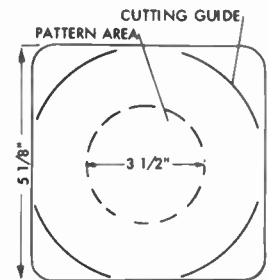


549 Boats

Mini Pattern

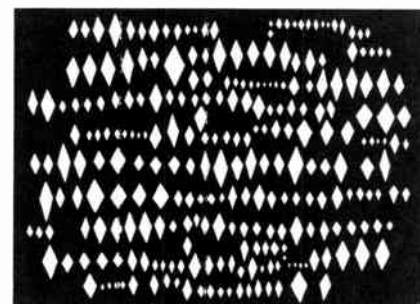


101 French Doors 2



TV Pattern

4 x 5 Pattern



8114 Diamond Field

* Available in Continental size

All designs are copyrighted by "The Great American Market"

Refer to Green Section for Addresses and Telephone Numbers.

THE GREAT AMERICAN MARKET

Modular Projection System/ Stage Equipment

Scene Machine Modular Projection System

- Project all effects with one basic unit • Hang in any position, throw 10' to 200'
- Install permanently or take it anywhere

The Scene Machine is a modular projection system, designed for professional use, but simple enough for a high school stage. With interchangeable parts, you can project all still and moving effects from one basic unit.

Basic Scene Machine Systems

Head + Slide Carrier + Lens: Use this economic system as a conventional pattern projector. Holds two slides for background projections.

Head + Spiral Machine + Lens: Use spirals to create subtle shimmer or bold, gyrating projections. Also, for moving reflections, such as water or firelight. Speed and direction of spirals greatly affect the look, as does lens focus.

Head + Disc Machine + Lens: Use large discs for rain, snow, or fire, removing the heat filter for extra brightness. Use Slide Turret with remote control to project five different background looks.

Head + Film Machine + Lens: Use film loops for cloud crawls, waves, water ripple, fire. Excellent for subtle, realistic movement, atmosphere, dream sequences.

Scene Machine SystemPOA

Blackwrap™ Flexible Matte

Black Aluminum, Coated Two Sides

Blackwrap is form holding, heat resistant and tough. It is a natural for use in theatre, television, motion picture, lab or electric shop. Use Blackwrap to mask light leaks, shape beams, create barndoors, snoot or flag, hide cable and hardware, make rain covers, make a black snowball. Blackwrap is .002" thick. It is available in 12" x 50' rolls. Other sizes may be special ordered.

- 2700 Blackwrap 12" x 50' x .002" \$22.95
- 2710 Blackwrap 24" x 25' x .002" \$22.95
- 2715 Blackwrap 36" x 25' x .002" \$39.00

Star Strobe 2™ Random Flash Curtain Strobe

Use Star Strobe to create depth and excitement for your concert, club or TV special. It can hang from its cord or be permanently affixed to hard scenery.

Star Strobe 2 is a self-contained unit, complete with lamp. It is 7^{5/8}" L and 2^{1/4}" W. It weighs 7 oz. with cord. The lamp is rated at one million flashes. Star Strobe 2 is supplied with an 8' 18/2 black power cord with molded plug. The insulated plastic housing precludes the need for a ground.

- 3102 Star Strobe 2 \$69.00
- 3103 Star Strobe 3 Super Bright \$79.00

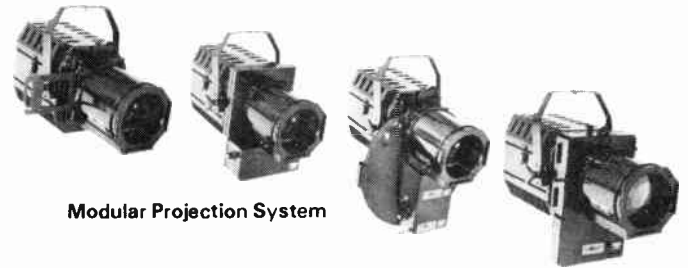
Instaset™ Vacuum Formed Scenery

Instaset vacuum formed scenery is quick and easy to assemble, yet looks finished and professional. The three dimensional surfaces can stand the closest scrutiny of a camera.

Instaset is lightweight and tough. You can trim it with shears or a utility knife. Apply it to scenery or framework with tape, glue, or staples. Paint it with scene paint, spray paint, any acrylic or vinyl wall paint.

Instaset is available in a variety of flameproof vinyl and ABS materials. Vinyls include translucent, clear, metalized and white in 4' x 10' sheet size. Thickness ranges from .015" to .030". ABS, either black or white, is available in 44" x 92" sheet size, either .030" or .060" thick. All carry a 94 V-O (self-extinguishing) flammability classification and are approved for public assemblage. Special orders welcome.

InstasetPOA



Modular Projection System



SPE-3

LightWiz™ Remote Control Electric Yoke

- Holds many popular fixtures • Pans 400°, tilts 100° • Uses 0-10VDC control signal from any board—no special controller needed
- Unique mounting cradle allows optimum balance of any light
- Strong, smooth, reliable • Affordable

LightWiz automatically adjusts itself for variations in weight and size of the mounted load. The tilt function will compensate for out-of-balance situations. In addition, when an external obstacle prohibits a move, LightWiz will shut down rather than burn out a motor.

LightWiz is able to pan and tilt in very small increments, at speeds barely perceptible. These slow moves give LightWiz flexibility and grace not usually associated with mechanical moving lights.

You may mount a ColorWiz color changer on the light you place in the LightWiz yoke. A convenient receptacle for the ColorWiz control cable is located on the LightWiz connector panel.

LightWiz \$1895.00

SPE-3 Flicker Generator

- Variable random flash rate • Flicker up to 1800W • Battery operated solid-state control • Full on position for focus • Realistic fire effects

The SPE-3 random variable flicker rate does not repeat for 20 minutes. 1800W capacity allows you to control the fire light as well as the essential key light focused on the performers. The key light flickers with the same timing as the fire light. Two threshold level settings are provided; use 0-100 for large loads and 30-100 for smaller lamps. As well as fire effects, use the SPE-3 to create the light of an old time movie screen, TV tube flicker, candle light, gas light, and many more special effects.

SPE-3 Fire Flicker Generator: 120V or 230V. \$269.00

SPE-3A AC Adaptor. \$18.95

Fog Power Produces dense white fog in most fog/smoke generators. Non-toxic, non-flammable and non-explosive. Water soluble.

Gallon	Quart	Gallon	Quart		
1110	1130	Plain	\$49.00	\$12.95	
1111	1131	Vanilla	49.00	12.95	
1112	1132	Gardenia	49.00	12.95	
1113	1133	Peppermint	49.00	12.95	
1114	1134	Rose	49.00	12.95	
1115	1135	Orange	49.00	12.95	
1116	1136	Lime	49.00	12.95	
1117	1137	Lemon	49.00	12.95	
1118	1138	Strawberry	49.00	12.95	
1119	1139	Pinewood	49.00	12.95	
1120	1140	Coconut	49.00	12.95	
1121	1141	Sea Mist	49.00	12.95	
1129	1149	Fog Light	49.00	12.95	

THE GREAT AMERICAN MARKET

Lighting Equipment

COLORMAX® SYSTEM

- Twelve colors—your choice • Quick change, 2.5 seconds maximum
- Random access, remote control with preset • Slave up to 100 to one control channel • Lightweight, compact, durable • Functional, trouble-free design suits ColorMax to the rigorous demands of the opera house, rep company, road show and television studio • Completely enclosed with no exposed moving parts • No tools are required for access to the gel • Fan extends gel life • Ball bearing roller assemblies insure smooth operation • Modular electronics • Reliable microprocessor design

ColorMax is a self-contained rolling color changer which slides easily into the gel frame holder of your fixture.

ColorMax is available in three sizes: 6 x 7 1/2 for fixtures with 6" lens and 7 1/2" gel frame, 8 x 10 for fixtures with 8" lens and 10" gel frame, and Far Cyc, designed to fit the Far Cyc fixture.

ColorMax Far Cyc

- Made to fit one window of a single, two-, three-, or four-light Far Cyc unit • More than one can be mounted on a three- or four-light model • Precision fit with no light blocked from the covered or adjacent windows • May be adapted for use on 5K fresnels and other large fixtures • Enables you to change up to twelve colors of your choice

Controller

- 4 channel memory system • Channel number relates to the setting on the rotary dial on the ColorMax units • Each channel can command up to 100 units. If more than 250 units are to be addressed by one controller, a buffer is needed • Gel positions are designated Frame "A" thru Frame "L". You can preset a frame position on each channel, then address each individually or all together by means of a master "go" button • Can be used in either two- or three-scene preset mode • ColorScan enables you to make a continuous sweep back and forth between any two colors in your colorstring. The function will reverse and repeat until turned off or another signal given

ColorMax Memory System

- Designed to address 96 channels and record two or three hundred cues, depending on the number of channels used • Will also interface with existing lighting control systems • Will execute ColorMax cues when triggered by a signal from one assigned channel of the primary lighting console

ColorMax ColorQ™ Computer Control

- Efficient, flexible computer controller for ColorMax color changers • ColorQ memory will hold 100 simple cues (single moves), plus 100 "string" cues (sequences of moves). Each "string" may have up to 25 steps • Complete manual control • Each color and channel can be accessed individually without disturbing a cue in progress • Digital displays and LEDs show constant status • Extends the use of the ColorMax with a memory/manual combination, and the option to address from an external board

4060	ColorMax 6 x 7 1/2	\$1395.00
4080	ColorMax 8 x 10	1395.00
4090	ColorMax Far Cyc	1495.00
4004	Controller: 4 Channel	1295.00
4024	Controller: 24 Channel ColorQ with Memory	3995.00
4048	Controller: 48 Channel ColorQ with Memory	4995.00
4102	Interface for existing Memory System: 15 Channels	4995.00
4010	Cutting Template: 6 x 7 1/2	9.00
4011	Cutting Template: 8 x 10	9.00
4012	Cutting Template: Far Cyc	12.00
4025	Gel Tape: 1" x 72 yds	18.95
4028	Foil Tabs, Pack of 16	\$ 3.75
4029	Single Foil Tab	.24
4030	Foil End Tabs: Set/2: Price Per Set	1.10
4065	Gel Leaders: 6 x 7 1/2	4.00
4085	Gel Leaders: 8 x 10	4.00
4095	Gel Leaders: Far Cyc	7.00



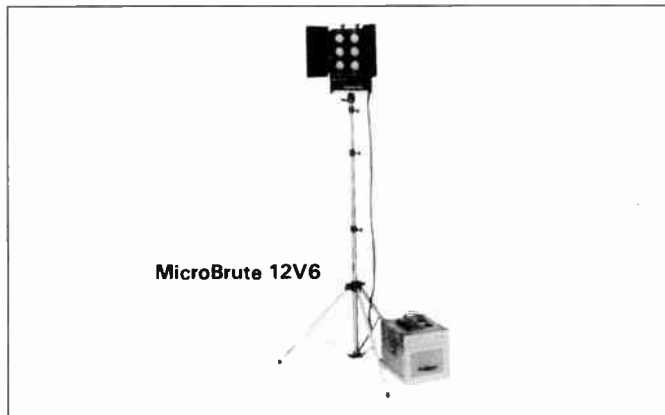
4020	Brackets: Set/3 Inside: Price Per Set	.35.00
4021	Brackets: Set/3 Outside: Price Per Set	.35.00
4022	Bullet Latch Mounting Bracket: 2 pcs.	.35.00
4000-10	Three Wire Control Cable: 10'	.27.00
4000-20	Three Wire Control Cable: 20'	.33.00
4000-30	Three Wire Control Cable: 30'	.38.00
4000-50	Three Wire Control Cable: 50'	.54.00
4000-1010	Three Wire Control Cable: 100'	.86.00
2110	Case: 8 Compartments + Tray	.695.00

ColorWiz™

- One universal size • Changes eleven colors or more • Runs on any 0-10VDC control voltage—no special controller needed • Mounting plate allows the unit to be placed with the gelstring rolling either horizontally or vertically • Light weight permits mounting without additional fixture support • Particularly suited for use on ellipsoidal spotlights with pattern projections • Black aluminum housing • 11 3/4" H x 11 3/4" W x 2 1/2" D • 5 lbs. with power cord

ColorWiz is a self-contained rolling color changer which slides easily into the gel frame holder of most fixtures. It holds a gelstring (sections of gel taped together) which moves on rollers inside the unit. The prescribed gelstring length can be divided into any desired configuration: eleven color sections is maximum for 6" and 8" fixtures, up to 22 sections for smaller units. The gelstring may also contain irregular sections within it.

4150	ColorWiz 110-120V, 60Hz	\$695.00
4152	ColorWiz 110-120V for Microbutte LV9	695.00
4155	ColorWiz 220-240V, 50Hz	695.00
4157	ColorWiz 220-240V for Microbutte LV9	695.00
4158	ColorWiz 100V, 50Hz	695.00
4160	Optional 10" x 10" mounting plate	12.95
4165	Optional mounting back for Microbutte LV9	59.00
4166	Mounting brackets for Microbutte LV9 (set of 2)	12.00
4168	Optional front cover	24.00
4170	Cutting template	9.00



MicroBrute LV9

High Performance/Cool Beam Micro 9-Light

- Cool beam with MR-16 12V lamps
- 3150°K temperature
- Rated lamp life of 1225 hours
- High intensity, smooth field with 65W or 75W lamps
- Three swivel stick lamp housings for maximum flexibility and precise focus
- Lamps protected by bora silicate safety glass
- Expanded metal lamp housings for full convection cooling
- Positive locking yoke
- Mounting block accepts any stud from 1/2" -3/4", and fixture mounts vertical or horizontal (on X or Y axis)
- Easy to pack and set up
- Always dependable
- Steel, painted black housing
- Aluminum, painted black barn door set
- 6' 16/3 cable with 15A parallel U-ground plug
- 3150° color temperature 1225 hrs. rated lamp life
- Accessory barndoors and clips to hold gel or diffusion in place

MicroBrute LV9 accepts nine MR-16 lamps, 75W maximum, wired in series. Neon indicators in the rear of the lamp housings identify failed lamps.

MicroBrute LV9 is available in a convenient Double Header Kit. The kit consists of two heads, two sets of barndoors, and gel clips and lamps in a durable, smart looking Excalibur case.

MicroBrute 12V6

Cool Beam Battery Powered Micro 6-Light

- Cool beam with MR-16 12V lamps
- Each lamp separately switched
- 3050°K temperature
- Rated lamp life of 3500 hours
- High intensity, smooth field with 65W or 75W lamps
- Two swivel stick lamp housings for maximum flexibility and precise focus
- Lamps protected by bora silicate safety glass
- Expanded metal lamp housings for full convection cooling
- Positive locking yoke
- Mounting block accepts any stud from 1/2" -3/4", and fixture mounts vertical or horizontal (on X or Y axis)
- Exceptionally small and bright—Can be powered by any 12V source
- Steel, painted black housing
- Aluminum, painted black barn door set
- 10' cable 10 gauge high temp wire with spade lug termination
- 3050° color temperature; 3500 hrs. rated lamp life
- Accessory barndoors and clips to hold gel or diffusion in place

2800	MicroBrute LV9	\$ 369.00
2805	MicroBrute 12V6	369.00
2820	Barndoor set with clips (LV9 or 12V6)	59.00
2030	65W Lamp: FPB	24.00
2031	75W Lamp: EYC	16.60
7150	Lightweight Stand	89.00
2850	Double Header Kit for LV9: 2 Heads, Lamps, 2 Barndoor Sets	1429.00
2170	Case: 3 Compartments	275.00



TEL 171 Digital Telemetry

The TEL 171 converts your Moseley TRC-15AW or TRC-15AR to digital metering transmission, a method that eliminates the offset and gain drift in the analog metering. A local display in the transmitter control unit duplicates the readings displayed by the studio control unit. This permits one-man weekly meter calibration.

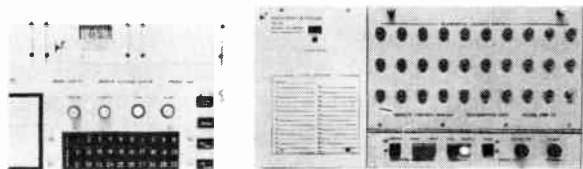
The system consists of printed circuit boards which substitute directly for the audible metering generator, the audible metering demodulator, and the meter. The local display for the transmitter control unit includes a replacement front panel and a liquid crystal display printed circuit board.

Installation is quick and simple since the same PC mounting hardware is used, and the same wiring harness connects to the new boards.

3-1/2 digit (-1999 to +1999) displays are used. These easily read displays are updated twice a second. Should the metering carrier be lost, or a framing or parity error occur, the display at the studio will blank and a front panel LED will indicate the problem.

Through the use of digital transmission and displays, we eliminate the error inherent in analog transmission, and simplify the task of remote meter calibration and meter reading.

TEL 171 Digital Telemetry Adaptor for Moseley TRC-15A **\$800.00**



TEL 172 Digital Telemetry

The TEL 172 converts your Moseley PBR-30AW or PBR-30AR to digital metering transmission, a method that eliminates the offset and gain drift in the analog metering.

A local display mounted in the transmitter control unit duplicates the readings displayed by the studio control unit. This permits one-man weekly remote meter calibrations. The system consists of five printed circuit boards that substitute directly for the metering oscillator, audible metering processor, SCU metering processor, metering demodulator, and the analog meter.

Installation is quick and simple since the same motherboards connect to the new boards.

3-1/2 digit (-1999 to +1999) displays are used. These easily read displays are updated twice a second. Should the metering carrier be lost, or a framing or parity error occur, the display at the studio will indicate the presence of an error, and the Read lamp on the PBR-30 will extinguish.

Through the use of digital transmission and display, we eliminate the error inherent in analog transmission, and simplify the task of remote meter calibration and meter reading.

TEL 172 Digital Telemetry Adaptor for Moseley PBR-30 **\$920.00**

TEL 171 SPECIFICATIONS

H & F 1211TT Telemetry Transmitter

Substitutes for Moseley 51 A5416 Audible Metering Generator.

A/D Conversion

Resolution: 3-1/2 digits (-1999 to +1999)

Conversion Rate: 2 conversions/second

Accuracy: Limited by temperature stability of reference (LM399 H)

.05% of reading +/- 1 count, 0 degrees C to 50 degrees C

Full Scale Sensitivity: 2 Volts for +1999 indication.

Data Transmission

Bit Rate: 300 Baud

Character Rate: 4 characters per conversion

Word Rate: One word per conversion (2/s), each conversion transmitted once with idle time between conversions.

Character Format: Start bit, six data bits, even parity bit, two stop bits. First four data bits carry digit code in BCD (except on half digit where three bits carry +/-, 0 or 1, and out of range indications). Last two data bits identify digit (00 half digit, 11 is last digit).

Word Format: Digits transmitted in order (0, 1, 2, 3). Data channel idle between conversions.

Encoding: FSK, 1270 Hz Mark, 1070 Hz Space.

Output Level: +1 dBm into 600 ohms, adjustable (line), and 5 V p-p open circuit, Z = 2.2 K (subcarrier).

Display

3-1/2 digit LCD local display.

Power Requirements

Floating +15: 35 mA

Floating -15: 30 mA

+5: 0.2 mA

+15: 30 mA

H & F 1221TR Telemetry Receiver

Substitutes for Moseley 51 A5420 Audible Metering Demodulator.

Minimum Receive Level: -40 dBm (7.7 mV)

Data Output: Character parallel, negative 250 uS strobe, carrier, parity, and framing alarms. All TTL levels.

Power Requirements: 5V, 100 mA

H & F 1231TD Telemetry Display

Substitutes for Moseley meter.

3-1/2 digit LED display with PROM programmed decimal points. All metering and control data presented on front panel connector for logging or ATS.

Power Requirements: +5 V, 400 mA

TEL 172 SPECIFICATIONS

A/D Conversion

Resolution: 3-1/2 digits (-1999 to +1999)

Conversion Rate: 2 conversions/second

Accuracy: Limited by temperature stability of reference and reference voltage divider to +/- 10 ppm/Celcius degree +/- 1 count.

Full Scale Sensitivity: 1.999 volts for indication of 1999.

Data Transmission

Bit Rate: 150 Baud

Character Rate: 4 characters per conversion

Word Rate: One word per conversion (2/s), each conversion transmitted once with idle time between conversions.

Character Format: Start bit, six data bits, even parity bit, two stop bits. First four data bits carry digit code in BCD (except on half digit, where three bits carry polarity, 0 or 1, and out of range indications). Last two bits identify digit (00 is half digit, 11 is least significant digit).

Word Format: Digits transmitted in order (0, 1, 2, 3). Data channel idle between conversions.

Encoding: FSK, 1258 Hz Mark, 1168 Hz Space.

Output Level: 0 dBm, adjustable.

Data Display

Local Display: 3-1/2 digit "calculator type" LED display without decimal points.

Studio Display: 3-1/2 digit LCD display with decimal points (PROM programmed) and error indication.

HALLIKAINEN & FRIENDS, INC.

Remote Control/Television Audio System

DRC 190 Digital Remote Control

- A/D Converter
- Keyboard entered calibration scaling and curve
- Sample $\pm 2VDC$ max., $\pm 100V$ max. common mode
- Analog Multiplexer reed relays
- Control Out Open Collector transistors
- Failsafe output at each site with A/D board
- Control lockout
- Channels 10, expandable to 100 in groups of 10
- 1200 bits/second, half duplex, voice grade link
- Applications program language
- Serial I/O RS232/C at programmable baud rate
- Optional parallel I/O IEEE488 instrumentation bus

The DRC 190 Digital Remote Control can be operated manually, or, with the addition of standard computer peripherals, will monitor, display, and print all relevant readings including phase, relative amplitude, calculated ratios and deviations. Upon finding a parameter out of limits, the DRC 190 can be programmed to print the reading, make appropriate adjustments, then print the corrected reading along with a notation of the adjustment. With the addition of a modulation controller the DRC 190 can be programmed to meet FCC requirements for full ATS and, with distortion analysis equipment, test and log Proof of Performance data, automatically.

The system is based on the Motorola 6802 microprocessor. The use of a microprocessor vastly simplifies the hardware design, thereby reducing system costs. The DRC 190 uses standard peripheral chips and bus architecture so design updates may be easily implemented by merely changing EPROMs. This insures the user that he will not be stuck with an obsolete system as integrated circuit design advances.

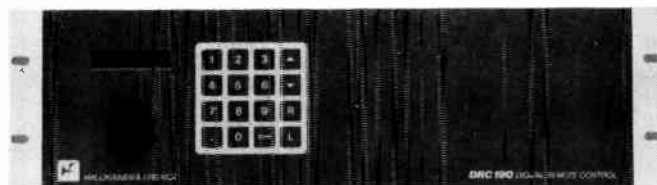
Unlike other systems that employ different hardware at the studio and transmitter sites, the DRC 190 studio and transmitter units are interchangeable, further reducing design and manufacturing expenses.

DRC 190 \$3800.00

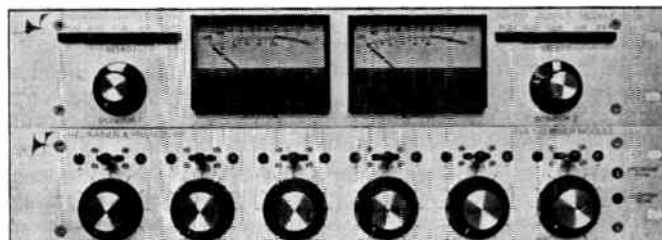
TVA Series Television Audio Systems

- High quality audio
- Rackmount construction
- Audio-follow-video plus manual control
- Noiseless audio switching
- Mic & line mixing
- Monitor speaker outputs
- Expandable to 36 inputs
- Comprehensive monitoring and metering facilities
- Three output DAs on program and audition channels

The TVA Series combines audio-follow-video and manual control in a flexible audio system consisting of rack-mountable components which can provide for your present and future audio mixing requirements. The sys-



DRC 190



TVA 142

tem is expandable to 36 balanced inputs in groups of six. It offers balanced audition, program, and cue outputs plus two monitor channels.

The TVA 142 is the mixing stage of our television audio system. Each TVA 142 Mixer Module has six balanced mic or line inputs with individual gain controls. Audio routing to the program and audition channels is controlled either manually or with the audio-follow-video feature. In the AFV mode, the video switcher, through ground switching, activates a noiseless control circuit sending audio to either the program or audition channels or both. Front panel LED indicators show how each input has been assigned. Manual operation is easily accomplished with a premium grade lever switch above each input gain control. Audio levels are monitored with peak flashers. The TVA 142 provides three outputs, program and audition to feed a line and a cue output for local use. The TVA 142 will serve as a stand alone mixer for many applications.

The TVA 132 Output Module provides three line level distribution amplifier outputs for multiple program and audition feeds. It offers accurate VU meters on both program and audition channels. One TVA 132 module can, when used with one to six TVA 142 Mixer modules, provide two separate audio mixes with metering. This can be very useful when one program is "on-air" and a second one is to be simultaneously recorded. The TVA 132 meters, feeds, and monitors while the TVA 142 affords individual level control and tally indicators.

Television Audio System

TVA 132	Output Module with Power Amplifiers	\$1495.00
TVA 132-1	Output Module with 600 ohm Monitors	1300.00
TVA 142	Mic-Line Mixer Module	1590.00
TVA 142-1	Mic-Line Mixer (Manual Overrides AFV)	1670.00

Bill Daniels 1988/89 Illustrated Trade References

**The Most
Comprehensive Library of
Equipment Trade References
Ever Published!**



Each Illustrated Trade Reference is in an 8 1/2 x 11 format and provides the following categories:

Product Section

Complete with manufacturers' equipment descriptions, specifications, illustrations and pricing when available.

Telephone Directory

Contains full name, address and phone number of those companies who provide a product or service to their respective industries.

Product Index/Yellow Pages

Lists products and services alphabetically, with cross-reference to manufacturer name and page number where product appears in Product Section.

1988 AUDIO

1860 pages covering the complete product lines of 434 manufacturers who serve the Professional Audio and Commercial & Industrial Sound Industries. Featuring studio and remote audio equipment plus sound reinforcement, background music, paging, intercommunications and telecommunications systems and equipment. ISSN# 0882-5432

\$195.00 (2 Volume Set)

1988 VIDEO

1196 pages covering the complete product lines of 336 manufacturers who serve the Professional and Industrial Video Industry. Contains information on video production and communications equipment. The difference between the Video Book and our Broadcast Trade Reference is the quality level of equipment. For example, Sony, Panasonic and JVC Broadcast products are included in the Broadcast Trade Reference while their Industrial products are included in the Video Trade Reference. ISSN# 0747-6183

\$95.00 (1 Volume)

1988/89 AUDIO-VISUAL

1148 pages covering the entire product lines of 397 manufacturers who serve the Instruction and Presentation Industries. This reference features equipment and devices used in presentations from classrooms to boardrooms, from film cameras to electronic blackboards. If your interest is in expanding and improving communication methods through effective use of audio-visual, multi-image and photographic media, this reference contains the products you need. ISSN# 0747-6167

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1988/89 BROADCAST

1320 pages covering the entire product lines of 312 manufacturers who serve the Broadcast and Recording Industries. Provides information on television, radio, recording and production equipment for studio, ENG/EFP, location and remote facilities. ISSN# 0882-5688

\$135.00 (Includes Technical Data & Applications Information Manual)

1988/89 TECHNICAL DATA & APPLICATION INFORMATION

Approximately 400 pages of comprehensive reference information including engineering data, equipment interface diagrams, drawings, systems, glossaries, terms, charts/tables, basic how-to information, explanations of new technology and more. Whether you're a seasoned engineer, a systems technician or a creative director, this manual contains all the answers to your questions and the information you need for your day to day operations. An \$80.00 value FREE with the purchase of the 1988/89 Broadcast Trade Reference.

1989 SECURITY & LOSS PREVENTION

Over 2000 pages covering the entire product lines of over 350 manufacturers who serve the Security Industry. Includes information on access control, intrusion detection, perimeter protection, fire protection and detection, monitoring, information security, communications, office security products, safes and locks, and guard and investigation equipment. ISSN# 0747-6205

\$195.00 (2 Volume Set)

1989 CCTV/MATV/CATV

Over 700 pages covering the complete product lines of over 150 manufacturers who serve the Closed Circuit Television/Video, Master Antenna and Community Antenna Systems Industries. Provides the product information necessary to design, specify and purchase video surveillance and signal distribution equipment from single camera/monitor to multi-camera sequential switching systems. ISSN# 0885-5463

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Bill Daniels Company

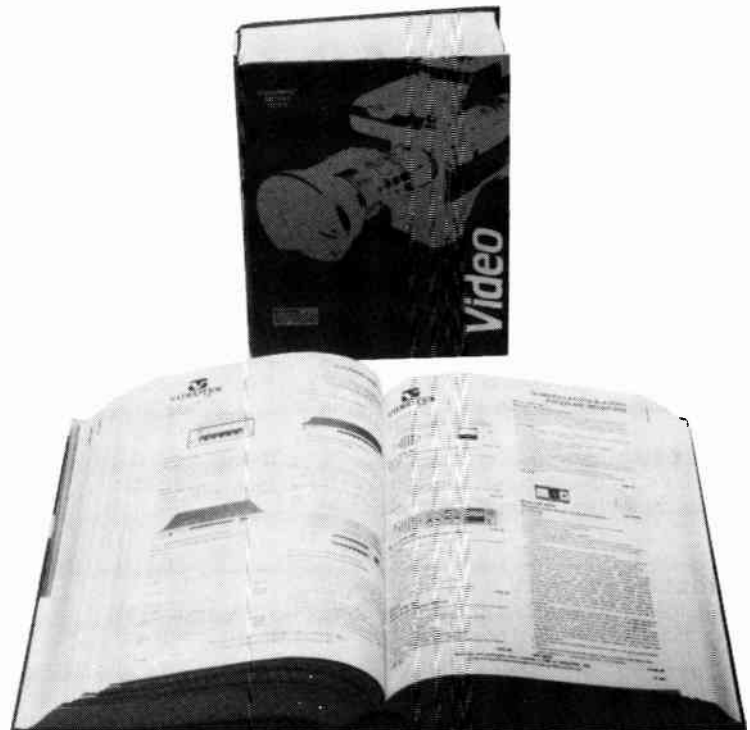
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DON'T WAIT, ORDER TODAY

Bill Daniels 1988 Video Illustrated Trade Reference



The Industrial & Professional Video Equipment Buyers Guide

- Convenient, easy-to-use
- Compare product features, specifications and pricing to make the most cost-effective decision and meet your specific needs
- Directory sections give you access to those companies who provide a product or service to the video industry
- 8 1/2" x 11" page format
- Hardbound, 1 volume

1196 pages covering the complete product lines of 336 manufacturers who serve the Professional and Industrial Video Industry. Contains information on video production and communications equipment, such as:

- Portable & Studio Color Cameras
- Recorders/VCR's
- Production Switchers
- Monitors
- Editing Systems
- Graphics & Paint Systems
- Terminal Equipment
- Lighting
- Test & Measurement
- Video Equipment Enclosures & Furniture

The difference between the Video Book and our Broadcast Trade Reference is the quality level of equipment. For example, Sony, Panasonic and JVC Broadcast products are included in the Broadcast Trade Reference while their Industrial and Professional products are included in the Video Trade Reference. ISSN#0747-6183

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DON'T WAIT, ORDER TODAY

HARRIS CORP.

Frame Synchronizers



634

HVS 634 Component RGB Frame Synchronizer

- Component RGB mode • Digital noise reduction • 3-cable or 4-cable RGB inputs • Freeze field or frame • Heterodyne time base corrector

The most recent synchronizer to join the Harris family — based on the reliable and proven HVS 632 synchronizer.

The 634 will synchronize and time base correct both Component RGB and Composite NTSC video sources, making it a versatile tool in most broadcast and production environments.

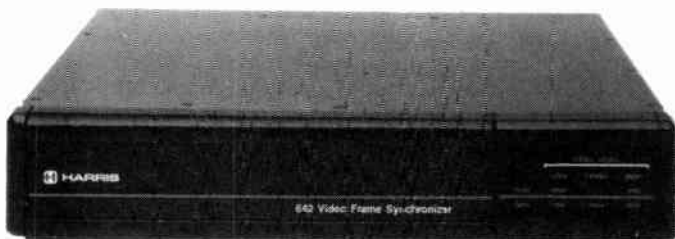
RGB component input capability, combined with DNR (Digital Noise Reducer) design makes the HVS 634 ideal for film to tape transfer applications.

Chrominance and luminance noise reduction is independently variable up to 10dB—without motion artifacts. RGB 3-cable (sync on Green) or 4-cable (separate black burst) operation is switch-selectable.

Full-bandwidth picture freeze increases production versatility by providing front panel selectable field or frame freeze. The 634 locks non-synchronous video sources—satellite, camera, studio feed, or heterodyne VTR—to station sync with precise accuracy. Hysteresis compensation is standard.

The component-coded architecture of the 634 results in a TBC that is inherently immune to color phasing problems and vertical or horizontal picture shift. The four-field NTSC color sequence is always correctly maintained.

HVS 634 \$28,000.00



642

HVS 642 Digital Frame Synchronizer

- High performance time base corrector • Exceptional noise immunity • Automatic noise reduction • High quality freeze field or frame • Audio synchronizer control • Separate, clean-switching TBC/synchronizer inputs • Full plug-in boards and power supply • Built-in diagnostic and troubleshooting aids • Optional full function remote

A proprietary input sync detection circuit maintains signal lock-up to 20dB in both synchronizer and TBC modes (patent pending). This feature enables the 642 to lock on noisy feeds, then reduce noise.

Smart Noise Reduction (SNR) provides true, automatic, frame recursive noise reduction up to 12dB. Depending on the amount of noise in the picture, noise reduction may be automatically switched off or reduced, to avoid the common motion artifacts from 3-dimensional filtering. (Patent pending).

The built-in Time Base Corrector (TBC) operates with any non-segmented, heterodyne 3/4" or 1/2" VTR that employs subcarrier feedback and advanced sync inputs. The TBC features picture-in-shuttle, slow motion for dynamic tracking VTR's, and dropout compensation (DOC) from RF or TTL signal.

The HVS 642 synchronizes a multitude of today's remote feeds, including networks, satellites, microwave and cable systems. The 642 is equally at home timing and synchronizing internal video signals in your production and post-production studios.

HVS 642 Basic \$7,900.00

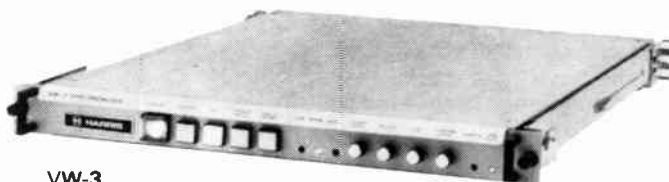
HVS 642 With Freeze and SNR 9,495.00

Options and Accessories

Add-on Freeze and SNR \$2,000.00

Remote panel 975.00

BVU cable 250.00



VW-3

VW-3 TBC/Frame Synchronizer

- Exceptional degree of transparency in either TBC or synchronizer mode • Multiple source hot switching without video roll or breakup • Full frame "infinite window" TBC for direct or heterodyne signals. Superior time base corrector for 1", 3/4" and 1/2" format video tape machines • Electronic frame or field freeze for production applications • DOC: TTL or RF inputs • Velocity compensation in both direct and heterodyne TBC mode • Selectable freeze on loss of video—last good field or system black • High performance in a small package (only 1 3/4" high) • Remote control of all function switches, plus proc amp controls with presets • Match frame edit option

The VW-3 provides simultaneous time base correction and synchronization, making it possible to take random feeds from tape machines, microwave links, or satellites and "hot" switch them synchronously with program materials.

The VW-3 is a refinement in time base corrector/frame synchronizer technology. It is designed to provide the highest performance for a wide variety of time base correction and synchronization applications.

Basic VW-3 \$11,700.00

VW-3 With Match Frame Edit option 12,700.00

Options

Remote control \$1,500.00

HARRIS CORP.

Time Base Corrector/Digital Still Store

HVS 550VT Digital Time Base Corrector

- Wideband subcarrier feedback mode
- Heterodyne process mode
- 8-bit, 4Xfsc architecture provides virtually transparent signal performance
- 16-line correction window
- Automatic vertical advance
- Built-in proc amp
- RS-170A sync output circuitry
- Complete operator control of video signals and genlock of external equipment
- Dropout compensation, RF or TTL
- Full remote panel option (only 1/2 rack width)

The Variable Tracking (VT) feature allows the 550VT to be used with slow-motion heterodyne VTRs such as the Sony BVU 820 with its Dynamic Tracking mode. The 550VT will dynamically track from 1X reverse play speed to 3X forward play speed, and will hold color lock to $\pm 5X$ shuttle speed. In addition, the 550VT will enable the VTR to present a stable picture in "Pause" as well as present a viewable picture in forward and reverse modes ($\pm 40X$ normal speed).

HVS 550VT **\$5,595.00**
Remote Control Option **.975.00**
Sony BVU Interface Cable **.250.00**



HVS 550VT

ESP II Digital Still Store

- Easy to learn, simple to operate
- Single independent user
- Single channel output, expandable to dual channel
- Digital effects transitions on separate output
- 1/2 second recall of stills
- On-line capacity up to 1700 stills (frames)
- Excellent for mobile and studio environments

The ESP II provides quality and versatility on a budget, combining still store features with digital effects.

With the ESP II, graphic artists can use multilayer art techniques as successive generations of stills. Up to 15 generations may be produced without degradation in picture quality.

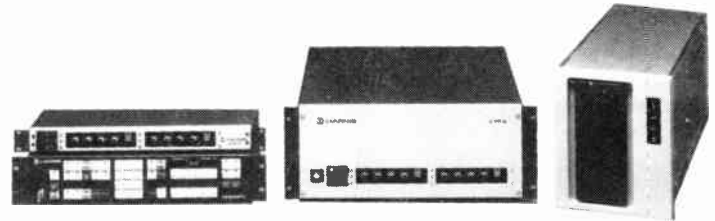
Multilayer graphics can be built in a single memory channel. For future use, stills can be stored to disk at random or in a sequence. A five-digit identification/address number identifies both the still and the disk on which the still is stored.

ESP II can function as two independent freeze frame synchronizers, with a separate third channel for digital effects transitions: horizontal and vertical wipes, fades and dissolves, pushes and pulls. Transitions may be selected at four preset rates: 16, 24, 32, or 48 frames.

With a single channel ESP II, you can transfer slides, still photos, artcards, titles and other graphics to digital frames for video production or special display. The freeze frame feature allows you to "grab" stills from live camera or tape productions. The single channel model is easily upgraded for dual channel operation.

The ESP II dual channel still store has sophisticated microprocessor control of sequence and stored image display, and a variety of digital effects transitions for on-air production or graphics generation.

With two independent channels, switching may be made between two still stores, two live pictures, or one of each. Dedicated pushbuttons for all key commands are incorporated for operational simplicity and accuracy.



ESP II

The modular architecture consists of two freeze frame synchronizer boards and a system genlock, control and transition effects board. These are housed in a mainframe that requires only seven inches of rack space.

Proc amp controls and mainframe and system timing adjustments are on the mainframe front panel or on an optional engineering remote panel. The engineering remote panel is only one rack unit high and is powered by the mainframe. Operation control of the system is afforded by a separate control panel measuring only 3 1/2" x 19".

ESP II Single channel with 80M byte RSD **\$26,333.00**
ESP II Single channel with 340M byte FSD **32,666.00**
ESP II Dual channel with 80M byte RSD **30,995.00**
ESP II Dual channel with 340M byte FSD **35,995.00**

Options and Accessories

Single channel remote panel **\$ 3,200.00**
 Dual channel remote panel **3,500.00**
 ACR-20 engineering remote panel **1,200.00**
 80M byte CDC/RSD cartridge drive **8,000.00**
 80M byte data cartridge **575.00**
 340M byte CDC/FSD fixed drive **13,000.00**
 Single rackmount kit for RSD/FSD **500.00**
 Dual rackmount kit for RSD/FSD **775.00**

HARRIS CORP.

Digital Still Store Systems

DIGITAL STILL STORES

IRIS II

- Up to 6 simultaneous users
- Up to 6 input channels
- Up to 12 output channels (6 with transitions)
- Digital graphics composition with up to 6 simultaneous user stations (ICS)
- Aurora interface (up to 5 Aurora systems on one IRIS)
- Over 40,000 picture storage
- 4:1:1 Architecture
- On-line library
- Heterodyne TBC/synchronizer inputs
- NTSC, PAL, RGB
- 654 Framestore Synchronizer: Available as a 2- or 4-output unit (field expandable). The 654's Transitions option provides dissolves and left/right, up/down wipes with programmable transition frame rates between pairs. Transitions can be programmed into sequence lists.
- IRIS Composition System (ICS): With this option an artist can compose complex multilayer graphics quickly and easily, using the familiar joystick control and dedicated pushbuttons. This digital graphics option provides a wide range of effects:

Variable compression	Cut and paste
Variable expansion	Digital key
Variable aspect ratio	Field/frame interpolation
Continuously variable border width/color	Removable on-line memory of effects
Variable border/matte generator with softness	Transparency

Built with component-coded framestores and designed to evolve as the needs of the industry change, IRIS II accommodates up to 6 simultaneous users and can provide on-line access for 260 to 21,440 stills stored on 1 to 8 drives respectively.

Each user has capabilities for preview/program output, library management, production graphics, transition effects, and field-to-frame interpolation.

The modularity of the system gives maximum flexibility and easy expandability.

IRIS II Plus

- Up to 2 simultaneous users
- Up to 2 input channels
- Up to 4 output channels (2 with transitions)
- 4:2:2 Architecture meets CCIR rec. 601
- Model 422 framestore
- Aurora interface
- Over 30,000 picture storage
- On-line library
- 422 framestore is synchronizer only, no TBC
- NTSC, PAL, RGB

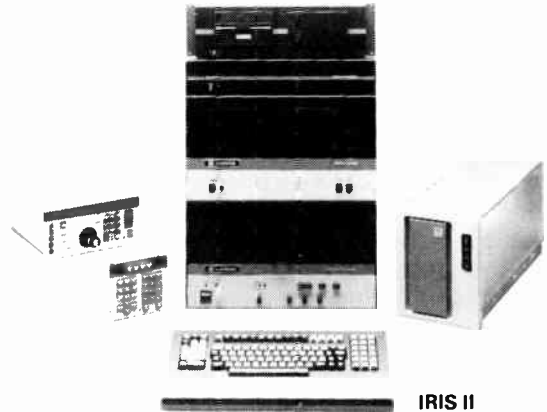
The 422 frame buffer/synchronizer provides all-digital video connections to other systems such as paint and digital video effects.

The 422 has 4:2:2 sampling and four frames of memory. Input ports include single RGB and NTSC (PAL) composite plus dual CCIR-601/RP-125 digital. Output ports are dual RGB, NTSC (PAL) and CCIR-601/RP-125.

Existing IRIS II still stores can be easily upgraded to IRIS II PLUS by replacing the frame buffer with the 422. This can be done by the user. Existing libraries of stills can be converted to the new standard.

Common Features

- **User Stations**
Keyboards provide dedicated keys for easy operation. Minicontrollers have an interactive user menu. May be freestanding or slaved to a keyboard or other minicontrollers.
- **Storage Media Flexibility**
IRIS is compatible with media storage drives from Control Data Corporation. Drives currently available are 80M byte RSD, 340M byte FSD, and 800M byte XMD



- **On-Line Library System**
Stills are cataloged by a 6-character numeric or alphanumeric ID and a description (IRIS II only) of up to 20 characters. Up to 66 stills can be linked together in a sequence list, and more than 75 sequence lists may be linked. Sequence lists may be run manually or automatically
- **Interface Capability**
Computer Port: (RS-232) For switcher or computerized station automation; Aurora Videographics Interface: Links the graphics creation capability of the Aurora AU75 or AU220 directly with the Harris IRIS system; Printer Port: For hardcopy capability. Centronix and TI-compatible parallel interface
- **Multiple Drive Access Capability**
IMAC™ (IRIS Multiple Access Controller) allows two or more IRIS still store systems to share DCU's and drives. Up to six IRIS systems (IRIS II and IRIS C in any combination) may be interconnected with an IMAC
- **Troubleshooting and Diagnostics**
Diagnostic Error Log
Diagnostics Option

IRIS II

Basic system with single user, 80M byte RSD, and one 654 (1 input/2 output) \$68,800.00
 Basic system plus ICS 78,800.00

IRIS II Plus

Basic system with single user, 80M byte RSD, and one 422 \$73,800.00

IMAC™ (IRIS Multiple Access Controller)

- Up to six IRIS systems
- Up to a total of thirty-six users
- Up to thirty-two disk drives
- Compatible with IRIS PLUS or IRIS II/IRIS C
- High performance operation, transparent to IRIS users
- Over 60,000 picture storage (80,000 with IRIS II)
- Self-monitoring diagnostics included
- Easy to service with front-loading boards
- Redundant power supplies

IMAC connects up to six IRIS still store systems for sharing Disk Control Units (DCUs) and disk drives. IMAC controls DCU functions and drive access, and pools all stills into a common data base of over 80,000 images on up to 32 disk drives accessible by up to 36 simultaneous users.

This feature doubles the storage capacity of the IRIS system while keeping the IMAC operation transparent to the users. No new commands are needed to access the IMAC data base.

IMAC **POR**

HARRIS CORP.**Video Workstation System****HarrisVws™ 5000 Video Workstation System**

- Flexible workstation configuration
- User friendly
- Powerful Motorola 68020 based controller with math co-processor
- Open architecture, software based product for virtually open-ended growth potential
- Flexible, cost-effective storage, both magnetic and state-of-the-art optical disk drives available
- Convenient and flexible software, dedicated keys, and mouse or trackball control for executing commands, including creating, editing, and managing sequence lists
- Powerful 20 field database structure, catalog in excess of 1,000,000 stills
- EBU/SMPTE 4:2:2 Architecture meets CCIR Rec. 601
- Composite, RGB, and RP-125 digital inputs and outputs
- Heterodyne TBC/synchronizer inputs
- NTSC or PAL
- 2nd simultaneous user
- 32-bit processing power

The basic rackmounted system includes the system controller with embedded Apple Macintosh II microcomputer, an internal 90M byte or 300M byte disk drive, 13/14" frame buffer, a freestanding or rackmounted color monitor, keyboard, mouse or trackball and operating software, including high-capacity library software.

The keyboard has eight dedicated function keys and seven that may be user-programmed. It may be located at a distance of up to 1,000' via an optional keyboard extender.

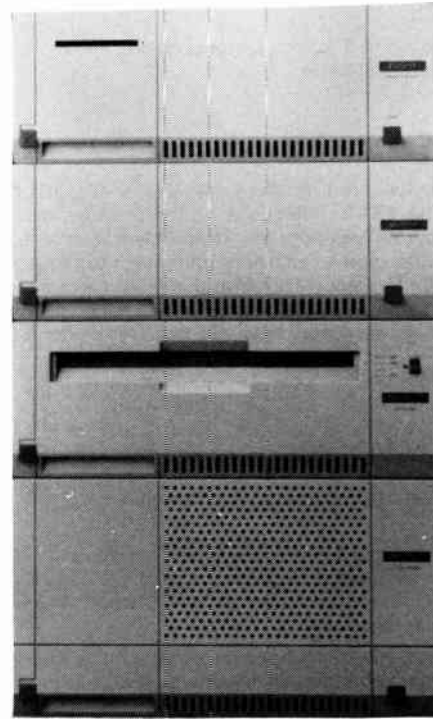
Any standard NTSC studio monitor may be used for line and preview outputs from the frame buffer.

Additional disk drives, both magnetic and optical, may be added to the system to increase its storage capacity.

The storage capacity, without optional external drives, is 100 or 400 two-field frames of video (double for single fields), depending on which of the two available internal drives is chosen. Magnetic and optical drives may be intermixed up to a maximum of five individual drives. A cluster of four optical drives or an optical disk changer is treated as a single drive up to a maximum of four such clusters.

2,400M byte (3,000 frame) capacity each, may be added to a basic system. An optional disk changer permits having up to 141 optical disks (450,000 frames) available in a semi on-line state for rapid recall.

A 15/16" ultrahigh-resolution color monitor (rack-mounted or freestanding), is available. This option is required for MultiViews, which presents 12 miniatures of frames conveniently on the control screen rather than on the line and preview monitors.



HarrisVws 5000

The frame buffer (Model 656V or 422V) has memory for four frames of video. It is provided with RGB and NTSC composite inputs plus optional digital input (in Model 422V) that meets the CCIR-601/RP-125 (4:2:2) standard; plus outputs for preview and line, each of which meet CCIR-601/RP-125, composite, and RGB standards. A second optional set of outputs permits simultaneous use by a second operator.

A transition option provides dissolves and up/down right/left wipes with programmable transition frame rates between pairs.

The system is provided initially with the Model 656V frame buffer; it may be upgraded to the Model 422V if digital I/O is required.

A HarrisVws 5000 system with one magnetic disk drive shelf and one optical disk drive, but exclusive of the control monitor, occupies 31 1/2" of vertical space in a standard rack.

HarrisVws 5000 90M byte single user system with control monitor \$39,990.00

HARRISON SYSTEMS, INC.*Television Audio Console***TV-3 STEREO TELEVISION CONSOLE**

TV-3 is a television audio console that provides production facilities and signal-performance specifications which match your high standards of video production. It incorporates virtually every function and feature requested by a wide range of surveyed teleproduction clients. Eight stereo groups, a versatile multitrack-interface section, VCA input grouping, and automation-ready features make TV-3 the perfect console for all audio production, post-production, and master control applications.

The versatility of TV-3 is based on console facilities which are adaptable to a wide range of tasks, Mono microphone/line input modules and stereo-line input modules are routed by way of defeatable pan and balance controls to any combination of the eight stereo groups. Each main output can be utilized as a main program, selective mix-minus, or floor feed. Each main output has an overall level control, monitor feed, and metering feed. As the method of employing a multitrack recorder varies with the application and task, the multitrack routing and multitrack monitoring sections are adaptable to any potential TV-3 application.

All TV-3 input modules have presence-of-signal and peak indicators, as well as individual, stepped input-level controls for both microphone- and line-level inputs. All input modules also have 48-V phantom microphone powering and electronic phase reversal of input signals. A three-band equalizer with additional independent, sweepable high-pass and low-pass filters is provided on microphone/line inputs; and the stereo-line inputs have special, switched stereo EQ designed to preserve phase coherence of signals. Microphone/line input modules are also optionally available with fully parametric EQ. Balanced patching is provided for all input and audio-group modules and is switchable to pre- or post-fader positions.

The fader section of each input module has VCA subgrouping and is automation-ready for your choice of several available automation systems. All input and audio-group modules contain pre-fader listen and full stereo after-fader listen, as well as a special automatic pre-fader listen function for greatly simplified cueing. Four mono auxiliary sends are fed from each channel for effects capability and foldback.

Four audio-group master modules provide control of the eight stereo groups. These groups can be sent to any combination of four stereo program feeds and four mono program feeds, whose outputs can be individually controlled via program modules.

Monitoring functions are performed through a highly flexible monitor-module system. Signals for audio monitoring and meter monitoring may be derived from a wide variety of sources. A sweepable oscillator with pink-noise generator is standard on the monitor module.

All inputs and outputs of the Harrison TV-3 are balanced and operate at full line level (+4dB or +8dB). This includes all patch inserts, send points, and return points. The extensive use of LEDs, in deference to incandescent lamps, provides a reliable indication of all critical console operations. The highest quality components are used throughout TV-3. This includes fully socketed ICs, high-reliability front-panel components, and solder-masked, double-sided, plated-through printed circuit boards.

Harrison Systems prides itself on the high quality of construction used throughout all of its products. Proprietary Harrison design techniques and multiple independent ground systems within the TV-3 assure the maximum in signal-to-noise ratio, with minimum crosstalk.

TV-3 can be configured in many different ways. Each configuration is optimized for a specific application, while still accommodating the wide variety of teleproduction tasks for which TV-3 is designed. The standard TV-3 configuration consists of a combination of microphone/line input modules and stereo-line input modules, four audio-group master modules, and a minimum of one program master module and one monitor module. Up to four program master modules and four monitor modules may be accommodated in special configurations.

One special configuration precisely matches the needs of many of Harrison's continuing group of U.K. and European broadcast clients. This configuration utilizes stereo-group master modules, which are derived from stereo-line input modules, as submaster modules for



TV-3's eight stereo audio groups (G1-G8). This enhancement provides for stereo group equalization, direct multitrack routing, and auxiliary sends directly from the groups, without sacrificing any other TV-3 system features. Four additional mainframe module positions and one additional program module are required for this higher-cost option.

For some applications, the VCA input grouping and automation interface, equalization, and separate multitrack-interface sections may not be necessary. These sections may be deleted from the appropriate input modules, with a moderate reduction in cost.

Three distinct mainframe profiles exist for TV-3 console systems. For fixed installations, mainframes are available in sizes which accommodate complements of 32 to 60 modules. An optimized, space-conserving OB mainframe design is available for remote/OB installations in 38- or 48-module sizes. Smaller TV-3 configurations may also be constructed in portable profile mainframes, which have 12, 20, or 28 module positions.

Meter overbridge housings are available for each mainframe profile, or "clean-top" versions may be used with Harrison's DS-1 color-video-graphics metering system.

A wide range of specific options are available for TV-3 in regard to metering, patchbays, and automation systems. These options allow TV-3 to be tailored to the needs and requirements in different world markets.

Metering options include Harrison's DS-1 color-video-graphics metering system, Harrison's 36-segment LED bar-column meters, NTP or RTW plasma-type meters, DIN or BBC moving-coil PPM meters, and standard ASA VU meters.

Patchbay configurations differ greatly, and TV-3 is generally designed to be used with user-supplied patchbay systems. Due to the wide variety of system integration methods, all of TV-3's possible patch-access points are available on 30-pole DIN-standard multipin connectors.

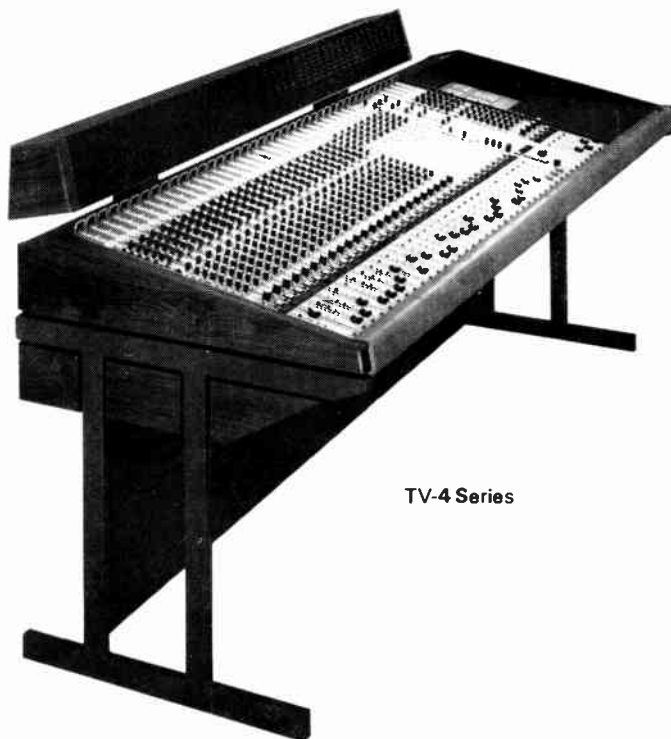
Standard TV-3 automation interface is compatible with the Harrison AUTO-SET, the Melkuist GT800, and the Valley People (Allison) 65K.

TV-4 Series Teleproduction Audio Consoles

TV-4, Harrison's latest teleproduction console offers the best in high-performance audio for television images. Designed to fill the varied needs of the medium-sized video production house, TV-4 is unmatched in versatility by all other consoles. The main application areas of TV-4 are: on-air production, remote production, studio production, sweetening, and postproduction. TV-4 is available in a variety of configurations of up to 52 mono mike/line or stereo line inputs.

Despite its versatility, TV-4's simplicity of operation is inherent by design. Simplified facilities for multitrack production (via the stereo audio submasters) in no way complicate the basic operations that do not require the use of multitrack recorders. Through the latest available technology and manufacturing techniques, Harrison offers a truly "No Compromise" high-performance audio console—at a price well within reach of the medium-to-small video production facility. TV-4 uses thick-film, laser-trimmed resistive network technology throughout, providing exceptional long-term stability with no user adjustments necessary. The latest high-speed, low-noise, low-distortion amplifiers assure the best possible electronic performance. The extensive use of multipin input/output connectors means rapid installation and system troubleshooting.

- 4 main stereo-output assigns the 4 individually derived main mono-output assigns for versatile mix-minus or "clean feed" matrix
- Up to 8 stereo analog audio submasters
- 3-band state-variable EQ with continuously variable frequency select and boost/cut on each mono mike/line input
- Peaking/shelving EQ curves selectable in both high and low bands
- 4 selectable bandwidth (Q) curves available for mid-band EQ
- Continuously variable high-pass filter, at 12dB per octave (range: 26Hz to 2.6kHz), on each input
- 4 mono auxiliary sends and 1 stereo cue send from each input, each with individual pre/post and on/off switching
- 4 mono auxiliary (summed feed) sends from each stereo submaster, each with individual pre/post and on/off switching
- Left/right panning via the stereo submasters (On consoles not fitted with submasters, stereo panning is via the PGM-1 and PGM-2 main stereo output pairs) Each panning control has individual "pan enable" switching
- Module insert patch-point selectable on/off by insertion/removal pushbutton (pre/post-fader, pre/post-EQ, or pre-EQ/post-fader)
- Simplified multitrack send and receive facilities via the stereo submasters (when so equipped)
- Video switcher/editor interface (VSI) available for true audio-follow-video operation. All audio cross-fade operations may now be performed "in console" with no need for console direct outputs or external switcher crossfade modules
- Pre-fader listen (PFL) function, standard
- "Automatic" pre-fader listen (APFL) function allows listening to what has been muted, standard
- Optional non-program-interrupt after-pan listen (APL) function
- Optional direct output from each input channel
- 4 effects returns available (on dual program-master-module motherboards only) as extra-cost option
- Patchbay assembly may be ordered fitted to either right- or left-hand side of console
- Complete ARMS, Harrison VSI, or Mastermix automation fader packages standard on multipin header on each input strip. No fader change necessary when changing or upgrading to automation
- Center detents on all pan and EQ boost/cut controls, internally trimmed for true "zero" at detent
- Phantom power enable/defeat switching on each mike/line input module
- 12-segment LED bargraph VU meters supplied standard
- Moving-coil pointer-type VU meters, 36-segment LED bargraph VU/PPM meters, NTP or RTW plasma-type PPM meters, or Harrison DS-1 computer videographics metering subsystem available at extra cost
- True "minimum signal path" design
- Module insert patch-points are always driven. May be used as extra cue, IFB, direct out, etc.
- Remote control of individual channel on/off may be fitted at moderate extra cost.



TV-4 Series

- Proprietary summing-bus architecture results in the lowest cross-talk and noise floor yet available in any console
- Latest high-speed, low-noise, low-distortion amplifiers; all amplifiers in audio path are 5532, 5534, or LF353 integrated-circuit packages
- All insert patch-points (feeds and returns) are balanced and floating at nominal line level (without sacrifice in module internal headroom)
- VCA fader assemblies, standard
- Penny & Giles 3000 Series conductive-plastic fader assemblies, standard
- All logical switching functions under electronic (solid-state) control; console contains no relays
- Discrete-transistor microphone-preamplifier input stage
- Fully balanced, differential, transformerless solid-state inputs and outputs
- Dual microphone inputs for each mike/line input module
- Dual internal bipolar power rails
- 4 LEDs indicate channel status: On/Off, PFL, VCA, and APL.

- All input/output connectors supplied with console system (except optional microphone XLRs)
- Module-to-frame interconnections are via DIN-standard 64-way hard-gold Eurocard connectors, not printed-circuit-board edge connectors
- All high-level console input/output connections via DIN-standard 30-pole Tuchel-type connectors. (Microphone inputs optionally available on DIN-standard 30-pole or XLR connectors)
- Internal frame wiring via shielded ribbon cable and multipin ribbon-cable headers; hand-wiring is virtually eliminated
- Complete frame and patchbay assembly constructed entirely of heavy-gauge aluminum. Legs are welded carbon steel
- Entire console is designed for rapid and effective field service with minimal use of soldering iron. Active components are mounted in sockets, and all potentiometers are fitted with 3-pin AMP "quick connect" connectors.



SeriesTen

SeriesTen Audio Control Console

The SeriesTen is the first totally automated audio control console system ever produced. The SeriesTen is a virtual console, embodying sophisticated internal signal routing circuitry on each console module. Under the control of the SeriesTen's central facilities, the form and function of any desired console system can be dynamically created in the SeriesTen. All of the wide range of Harrison Systems' console architectures can be created in SeriesTen, used for a specific purpose, and saved by the automation system for later use. It can be reset to any configuration in less than one video frame, including all signal flow parameters as well as all values and settings for all system facilities. Specifically, it can be instantly configured to any of the following console architectures:

1. Dual path inline multitrack recording and production. Similar to the MR-2, MR-3, and MR-4.
2. Stereo television and broadcast production and post-production with independent multitrack facilities. Similar to the TV-3 and TV-4 systems.
3. Complex film post-production re-recording (dubbing) in mono, 2 channel stereo, left-center-right 3 channel stereo and 4, 6, and 8 channel Dolby cinema formats. Similar to the PP-1 system.
4. Fixed or touring live performance and venue systems for house sound reinforcement and stage monitoring use. Similar to the HM-5 and SM-5 systems.

In all architectures, the system configuration, status, features, and facilities are totally dynamically automated with hard disk, multi-processor, multi-tasking automation computer system. All automation functions are frame accurate.

Module

In the design of the SeriesTen system, the signal flow architecture of all of the required console module configurations were rationalized into a single module design. This module may be programmed dynamically to fulfill the signal flow functions required at any level of any SeriesTen console configuration.

The module can be programmed to any of the four following functions (other programming possibilities exist):

1. Dual signal path mono input module. Dual path, inline (input/output/monitor) module for multitrack recording, mixing, and production use. All facilities are provided for a mono microphone or line input, a multitrack feed, a multitrack return, and a multitrack monitoring position. Each module has two complete, totally independent and automated signal paths, yielding double inputs on each module for complex remix and post production operations.
2. Stereo line input module. Stereo input module for stereo sources including, but not limited to: stereo tape recorders, stereo tape cartridges, turntables, CD players. Also serves as a full features stereo return module for signal processing and effects returns.
3. Stereo audio group module. Stereo audio group module which provides an intermediate control level in traditional (broadcast/venue) console architectures. Also serves as a dialogue, effects, and music submasters in film architecture. Up to 8 SeriesTen modules may be designated to function as stereo audio group modules in a multitrack system. Up to 16 may be designated in a purely post-production system.
4. Stereo program master. Stereo or mono program master output module. Up to 8 SeriesTen modules may be fitted for this function, for motion picture or other complex post-production applications.

AIR-790™/PRO-790™ Audio Consoles**Common Features**

- Modular construction
- Program assign switches allow the module signal to be freely assigned to two stereo programs and two mono programs
- Program feeds may be used for any purpose
- Main fader used on the input modules is a high quality conductive-plastic unit made by Penny and Giles of England
- Fader does not directly carry audio, but instead carries a DC voltage which is used to control VCAs (voltage controlled amplifiers)
- Use of VCAs gives a great degree of protection against dirty faders and their attendant noises
- Use of VCAs also guarantees more precise tracking between the two sides of a stereo signal being controlled by a single fader, and silent, click-free muting

AIR-790 Broadcast Console

The AIR-790 is an on-the-air radio broadcast console. There are three types of input modules for the three types of inputs normally utilized in radio broadcasting:

- **Stereo Line Input.** For line level stereo sources that require logic interface (CD players, cart machines, turntables, etc.).
- **Mono Microphone Input.** For microphone level mono sources that require logic interface for the talent (cough buttons, talk buttons, On and Off tallies, etc.).
- **Remote Line Input.** For line level stereo sources that do not require logic interfaces (satellite links, phone hybrids, remote lines, etc.).

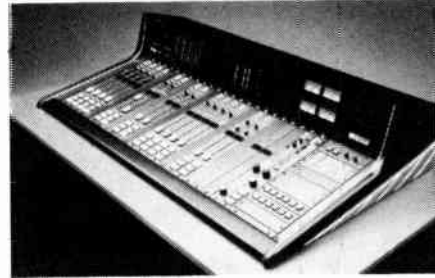
All of the input modules share certain features. The three-switch (Off-On-Audition) electrically-interlocked logic control system is the heart of the operation of all the AIR-790 input modules. This logic control system makes it impossible for the console operator to accidentally have an input on the air and at the same time on audition. It also allows for the direct transfer of an input from the on-air buses to the audition bus, or vice-versa. There are only three possible states of the logic control system:

- **Off.** The module signal is not routed to either the audition bus or the program assign switches.
- **On.** The module signal is routed to the program assign switches, but not the audition bus.
- **Audition.** The module signal is routed to the audition bus but not the program assign switches.

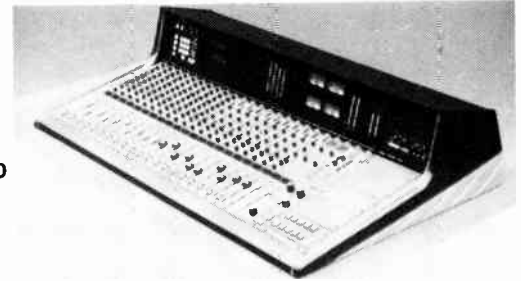
All of the input modules have an identical array of four program assign switches. The assign switches themselves do not carry audio. Instead, they carry a logic signal which controls solid-state assignment switching.

When the fader is pressed below the bottom off position, the module input signal is sent to an "in-console" cue speaker and optionally to the control-room headphone and/or loudspeaker monitors.

Each of the input modules has an internal jumper array which allows the module to control the muting in the control room or either of the studios. Additionally, any of the input modules may be set to control the timer. The Mono Microphone Module has two sets of jumpers, one for each of the two inputs, only one of which is active at a time.



AIR-790



PRO-790

PRO-790 Production Console

The PRO-790 is a general purpose production console. There are two types of input modules, one for monophonic microphone and line level inputs, and the other for stereo line level inputs:

- **Mono Microphone/Line Input.** For microphone and line level mono sources that require fader start logic (CD players, cart machines, turntables, etc.) with equalization and other processing.
- **Stereo Line Input.** For line level stereo sources that require fader start logic (CD players, cart machines, turntables, etc.) with phase coherent stereo equalization and other processing.

In addition, any of the three types of input modules from the AIR-790 may be fitted in PRO-790 systems when equalization is not required.

The input modules share certain features. The fader/logic control system is the heart of the operation of the PRO-790 input modules. This logic/control system makes it possible for the console levels and mutes to be controlled by the fader and associated switches, by VCA fader grouping, or by Harrison's proprietary video switcher/editor interface (VSI).

The VSI allows for direct control of levels and mutes from video editors or switchers. Both parallel and serial control ports are provided. Crossfades become part of the Edit Decision List. Audio can follow video in production, without a separate external control device.

Monophonic input (PFL) and stereo after pan listen (APL) solos are fitted as standard. Harrison's unique Automatic Pre-fader Listen (APFL) logic provides hands free cueing while editing.

Both types of input modules have an identical array of four program assign switches. The assign switches themselves do not carry audio. Instead, they carry a logic signal which controls solid-state assignment switching.

Each of the input modules has an internal jumper array which allows the module to control the muting in the control room and/or either of two studios. Additionally, any of the input modules may be set to trigger the timer.

HARRISON SYSTEMS, INC.*Recording Consoles***MR-4 Series Music Recording Consoles**

The MR-4 music recording console is designed for the most demanding original-multitrack music recording user. The versatility of the MR-4 is unmatched by other consoles, and its ease of operation is equally unprecedented. System signal-flow switching allows the mixing engineer to precisely define, on a module-by-module basis, the exact console configuration for each session's needs.

- Full and complete 24-track output assignment matrix
- Direct output from each input/output channel
- Odd/even multitrack panning capability
- Complete 24-track multitrack monitor with individual panning and level controls
- Unique monitor-to-multitrack bus assign for ease of "ping-ponging" (multitrack combine)
- Dual independent stereo-mix output buses for easy mix-minus operation
- Pushbutton insertion/removal of module insert patch-point
- Pre/post source select for module insert patch-point
- Movable jumper selection of module insert patch-point (pre/post-fader, pre/post-EQ, or pre-EQ/post-fader)
- 3-band state-variable equalizer with continuously variable frequency select and boost/cut on each input
- Continuously variable high-pass filter, at 12dB per octave (range: 26Hz to 2.6kHz), on each input
- Peaking or shelving EQ curves selectable in both high and low EQ bands
- 4 selectable bandwidth (Q) curves available for midband EQ
- Each EQ band has individual in/out switching
- Each EQ band may be routed to either the main or monitor channel
- High-pass filter may be routed to either the main or monitor channel
- 4 mono auxiliary sends and 1 stereo cue send from each input, each with individual pre/post switching
- Feeds for stereo cue and all auxiliary sends may be individually derived from main or monitor outputs
- Four effects returns and ARMS/Mastermix automation master controls, standard
- Pre-fader listen (PFL) function, standard
- "Automatic" pre-fader listen (APFL) function allows listening to what has previously been muted, standard
- Optional after-pan listen (APL) function, non-program-interrupting
- 4 LEDs indicate channel status: On/Off, PFL, VCA, and APL
- Complete Harrison, ARMS, or Mastermix automation fader package provided on multipin header on each input/output strip. No fader change necessary when adding automation

Technical Highlights

- Proprietary summing-bus architecture results in the lowest crosstalk and noise floor yet available in any console; assures constant low noise, regardless of number of inputs present
- Latest high-speed, low-noise, low-distortion amplifiers: all amplifiers in audio path are 5532, 5534, or LF353 integrated-circuit packages
- All insert patch-points (feeds and returns) are balanced and floating at full line level (without sacrifice in module internal headroom)
- Extensive use of laser-trimmed, thick-film resistor networks assures long-term circuit stability with no user adjustments necessary
- VCA fader assem-



MR-4

- Penny & Giles 3000 Series conductive-plastic fader assemblies, standard
- All logical switching functions under electronic (solid-state) control; console contains no relays
- Discrete-transistor microphone-preamplifier input stage
- Fully balanced, differential, transformerless solid-state inputs and outputs

Installation and Service Highlights

- Module-to-frame interconnections are via DIN-standard 64-way hard-gold Eurocard connectors, not-printed-circuit-board edge connectors
- All high-level console input/output connections via DIN-standard 30-pole Tuchel-type connectors. (Microphone inputs optionally available on DIN-standard 30-pole or XLR connectors)
- All input/output connectors supplied with console system (except optional microphone XLRs)
- Internal frame wiring via shielded ribbon cable and multipin ribbon-cable headers; hand-wiring is kept to a minimum
- Complete frame and patchbay assembly constructed entirely of heavy-gauge aluminum. Legs are welded carbon steel
- Entire console is designed for rapid and effective field service with minimal use of soldering iron. Active components are mounted in sockets, and all potentiometers are fitted with 3-pin AMP "quick connect" connectors

Moving-coil pointer-type VU meters, 40-segment LED bargraph VU/PPM meters, NTP or RTW plasma-type PPM meters.

PP-1 Post-Production Consoles

A major development is the concept of "Distributed Control Intelligence" (DCI). This involves placing an individual microcomputer in each input module of the console. This "DCI" concept offers the end-user many advantages over the older "hardware logic controlled" analog consoles. Included in these advantages are tremendously expanded automation opportunities, improved ergonomics (human engineering), better reliability, easier maintenance, and many side benefits such as noiseless switching.

PP-1 Post-Production Consoles

**Input Module — Automated Features**

- Input pad (-20, -10, 0, or +10dB)
- "B" line input select
- Phase reversal
- 2 A/B insert patch points
- In/Out switching for each of the 4 parametric EQ sections
- In/Out switching for the parametric hi & low pass filters
- Channel mute
- Fader level
- VCA group select with 7 segment LED readout display

Other Input Module Features

- State-Variable 4 band parametric equalizer. Each band is fitted with continuously variable boost/cut, frequency select, and bandwidth controls
- Selectable 2 or 3 channel panning with true divergence control
- 4 echo sends
- Solo-in-Place, with echo
- Unique "cuing" feature: electronic "prefader listen" function under software control. This feature allows monitoring of an input when the fader is either pulled all the way down, or when the channel is muted. The input signal is then superimposed over the mix on the monitors, but is not sent to the main buses, therefore not destroying the mix. This yields a very powerful function for tight punch-ins and punch-outs
- Built-in self-diagnostic routines. Each input's 7 segment VCA group select LED readout doubles as an indicator for diagnostics, troubleshooting and calibration.
- Automation control switching which enables any input to function in any automation state
- Separate solo and mute functions

Output Capabilities

- Individual left, center, and right, each operating position
- Individual 8 bus re-assign, each operating position
- Individual 4 echo sends, each operating position
- Composite left, center, and right, combining all positions
- Unique recorder input composite matrix
- 8 wide external meter select and pad

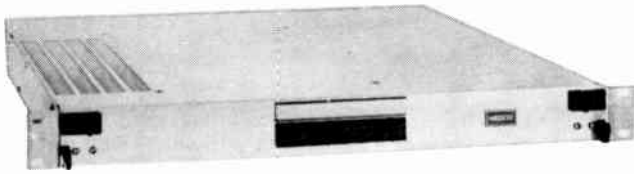
Other Console Features

- Two separate intercom systems
- Individual and master recorder controls
- Instrument quality test oscillator with pink noise generator
- Isolated oscillator of fixed frequency and level to facilitate recorder alignment
- Oscillator may be remotely activated

Frame Configurations:

- Primary and Secondary frames are available to accommodate from 9 to 27 inputs in multiples of 3
- A Secondary Section, in effect, is a pre-mix section. Each secondary section is supplied with 8 main output buses, left, center, and right panning buses, and 8 re-assign buses
- A Primary Section takes the main output feeds and the left, center, and right panning feeds from all sections, including itself, and sums these signals for composite matrix output assignments.

Prices By Factory Quote Only

HEDCO**Routing Switchers****SRB 8/1 Video Switcher**

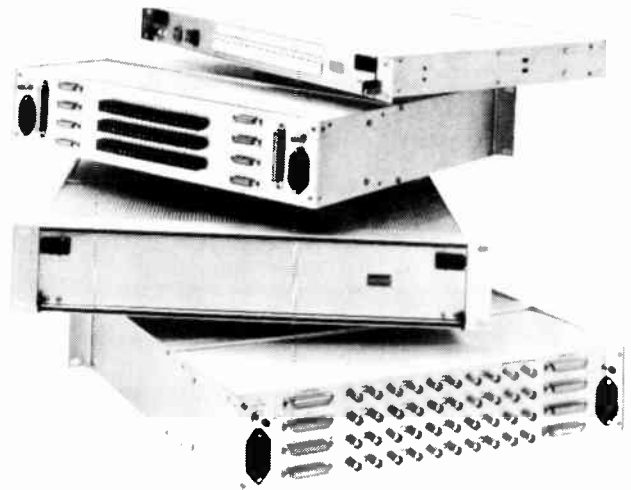
- 8 Video Inputs
- Broadcast Quality
- LED Indicators
- Single RU Frame
- Remote Option
- Meets AVR-1 Specs

SRB-8/1 Video Only Routing Switcher is our plain vanilla unit. Frame houses one VSM-9 and one VPS-153 module with front panel access for maintenance. Local front panel displays video status on LEDs. Compact rackmounting with excellent performance.



Rear Panel shows loopthrough BNC video inputs which exhibit $> 50\text{dB}$ return loss. Dual video outputs have $> 0.1^\circ$ diff. ϕ . 0.1% diff G and 0.1dB response. Equipped with captive AC cord and remote plug for parallel control.

RCP-100 Remote Panel has 8 LED switches mounted in 19" single RU panel. Single wire per crosspoint control.

**Ordering Information**

SRB 8/1 8 input, video only

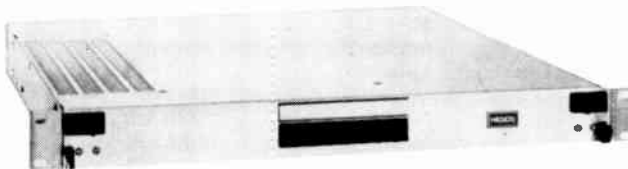
Options

RCP-100 Remote 8/1 Panel

CAB-1 Cable for RCP-100

SRX-162 Extender Module

LCP-100 Local Control Panel

SRB-182 AFV Switcher

- 8 Video Inputs
- 8 Audio Inputs
- AFV Operation Only
- One RU Frame
- Remote Option
- Meets AVR-1 Specs

The **SRB-182 AFV Switcher** frame construction is identical to the SRB 8/1 above except for the rear panel. Audio Follow Video operation is standard and controlled locally by LED switches mounted on the front panel. Audio response of 0.1dB from two outputs with $< 0.1\%$ THD at levels up to $+24\text{dBm}$ over the range of 20Hz to 20kHz .

Rear Panel of the SRB-182 AFV Switcher shows loopthrough BNC video inputs and dual video outputs. Audio inputs and outputs are through an RDI terminal block for ease of wiring. Equipped with captive AC cord and remote plug for parallel AFV control.

Ordering Information

SRB-182 AFV Complete 8 Input AFV

Options

RCP-100 Remote 8/1 Panel

CAB-1 Cable for RCP-100

SRX-162 Extender Module

LCP-100 Local Control Panel

SRB-481 Dual Video Switcher

- Dual Video
- 8 Input Groups
- Separate Control
- Vertical Interval
- Two Remote Panels
- Meets AVR-1 Specs

SRB-481 Dual Video Switcher provides two independent 8 input, dual output video switchers in a single RU frame. Frame houses one VPS-151 power supply and two VSM-9 video modules with fold down front panel access. Independent vertical interval switching on last video.

Rear Panel of the SRB-481 show an independent set of BNC looping inputs and dual outputs for each video group. Contact closure to ground on a single wire per crosspoint through the individual rear mounted connectors provides parallel remote control. Equipped with a captive AC cord and fuse protection.

Ordering Information

SRB-481 Dual Video, 8 + 8 Inputs

SRB-381 Equipped as one channel

Options

RCP-102 or Remote Dual 8 + 8 Panel

RCP-100 (2 ea.) Remote 8/1 Panel

CAB-1 (2 ea.) Cable for above

SRX-162 Extender Module

LCP-100 Local Control Panel

LCP-102 Local Control Panel



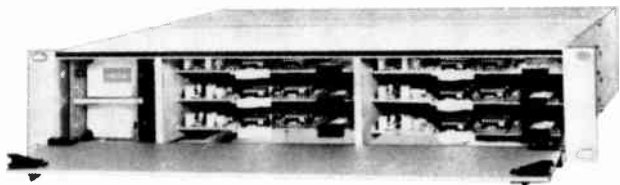
Prices and Specifications Subject to Change Without Notice.

HEDCO

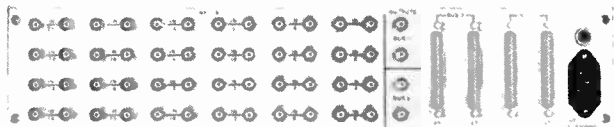
Routing Switchers

SRU-YRGB Video Switcher

- YRGB or RGB Switching
- Single Control Panel
- Dual Outputs per Bus
- Two RU Frame
- Complements UltiMatte®
- Meets AVR-1 Specs



SRU-YRGB Video Switcher consists of four individual 8 input, one bus VSM-900 switchers in a two RU frame. Outputs are simultaneously controlled by one RCP-100 panel to provide Y, R, G, B switching. Dual outputs on each bus allow monitoring and direct feeds. Unit may be used for 3 channel RGB switching by removal of one VSM-900 module.



Back Panel Shows four groups of 8 loopthrough BNC inputs for Luminance (Y), Red (R), Green (G), and Blue (B). Each channel has dual outputs. Equipped with a standard AC connector and a 1A Circuit Breaker/Switch.



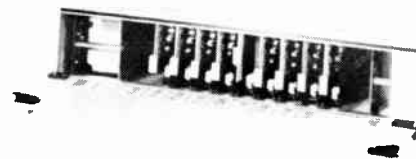
RCP-100 Control Panel provides 8 LED switches for singular control of all channels. Panel is single RU high and mounts in a standard 19" rack.

Ordering Information

- SRU-YRGB 4 Channel YRGB Video Switcher
- SRU-RGB 3 Channel RGB Video Switcher
- RCP-100 Control Panel for 8 Inputs
- CAB-1 Cable for RCP-100

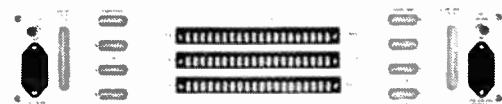
Option
SRX-162 Extender Module

MRA/MRB-8/8 Audio and Video Switchers



- 8 Inputs • Up to 8 Output Buses • Up to 4 Channels • Audio, Video, AFV • Dual Power Supplies • Vertical Interval Switch • Differential Audio In/Out • Meets AVR-1 Specs

MRA/MRB 8/8 Audio and Video Routing Switchers provide 8 buses which can select from 8 buffered inputs. Each bus including control logic, transparent switches and output amplifier is contained on one module. A separate buffer module feeds signals through a motherboard to each crosspoint module. Frame has space for redundant power supply and all modules are removable from the front.



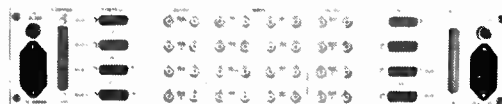
MRA Rear Panel shows the eight looping inputs and dual outputs on each bus. Frame space for two redundant VPS-154 power supplies, one VBM8 buffer module and eight VCM8 crosspoint modules. Individual connectors for looping and bus control. Separate AC inputs.



RCP-104 Control Panel controls up to eight buses using individual rotary pushbuttons plus take pushbuttons for selections. Panel is standard 19" width and requires only one RU of space. LED indicators.

Ordering Information

Size	Video	Audio
8 Inputs/1 Out	MRA 8/1	MRB 8/1
8 Inputs/2 Out	MRA 8/2	MRB 8/2
8 Inputs/3 Out	MRA 8/3	MRB 8/3
8 Inputs/4 Out	MRA 8/4	MRB 8/4
8 Inputs/5 Out	MRA 8/5	MRB 8/5
8 Inputs/6 Out	MRA 8/6	MRB 8/6
8 Inputs/7 Out	MRA 8/7	MRB 8/7
8 Inputs/8 Out	MRA 8/8	MRB 8/8



MRB Rear Panel shows the RDI terminal blocks for audio differential inputs and outputs. Frame contains space for two APS-155 power supplies, one ABM8 buffer and eight ACM8 crosspoint modules. Individual connectors for bus control plus looping connectors. Separate AC inputs.



RCP-100 Control Panel is equipped with LED switches for control of 8 inputs on one bus. Up to eight panels may be used at separate locations for video, audio or AFV operations. Single wire per crosspoint.

Control Panels

- RCP-100 Panel, 8 Inputs, 1 Bus
- RCP-102 Panel, Dual 8 In for 2 Buses
- RCP-104 Panel, TW/Take for 8 Buses
- CAB-1 Cable for RCP-100, RCP-102
- CAB-3 Cable for RCP-104 (2 RQD)

Options

- REX-161 Extender Module
- VPS-154 Redundant Video P.S.
- APS-155 Redundant Audio P.S.

**IRS 48 x 48 AUDIO/VIDEO
INTERMEDIATE SIZE ROUTING SWITCHER**
**IRS 24 x 24 VIDEO AND 3 CHANNEL AUDIO
INTERMEDIATE ROUTING SWITCHER**

- No fans or blowers are required. Thermal design provides for efficient heat removal. All integrated circuits are state-of-the-art, require very little power and are mounted in high quality I.C. sockets. All components are off-shelf and most dual sourced, available from an electronic parts house near your location.
- All modules are identified by matrix card slot for the computer software, not by individual module. Permits total type interchange.
- Back-plane inputs and outputs (signal I/O) modules are direct plug-in, with no intervening cables or wires to cause signal degradation or timing changes which complicate future maintenance problems.
- Each module has close tolerance on-board voltage regulators for maximum isolation characteristics. The input to each regulator is fused and its output is protected by automatic thermal shutdown and current limit.
- The video buffer has Differential Inputs to assure a high degree of common mode or hum rejection.
- The video channels use vertical interval switching featuring back porch clamping to assure bounce-free switching between signals with widely different APLs. No SC traps are used. The circuit is designed to clamp only when there is a difference in DC levels, thus helping to maintain excellent system transparency.
- Audio input is balanced differential for either balanced or unbalanced sources, has input impedance greater than 50K ohms and operates at levels up to +24dBm.
- Dunker circuit gives "pop free" on-line audio switching.

IRS 48 x 48

System can start as small as 12 x 12, single channel, and expand to 48 inputs by 96 outputs with up to four channels of Audio, Video and Time Code in any combination.

The IRS is available as individual Video, Audio 1, Audio 2, and/or Time Code Matrices with a maximum capacity of 48 inputs by 48 outputs in just 17 rack units, (29.75").

IRS 24 x 24

Can start as small as 12 x 12, single channel, and expand to 24 inputs by 24 outputs with up to three channels of Audio.

IRS CONTROL PANELS

This series of control panels can be used on all HEDCO microprocessor based routing switchers. Control is via shielded twisted pair (balanced) using RS 422 protocol, MPU 6803 based.

RCP-301: Basic single bus control panel. Keypad entry, Audio follow Video.

RCP-302: Single bus control panel. Keypad entry, separate Audio and Video selection.

RCP-303: X-Y control panel. Keypad entry for control of all buses. Audio follow Video.

RCP-304: Single bus control panel. Keypad entry, separate Video and two channel Audio selection.

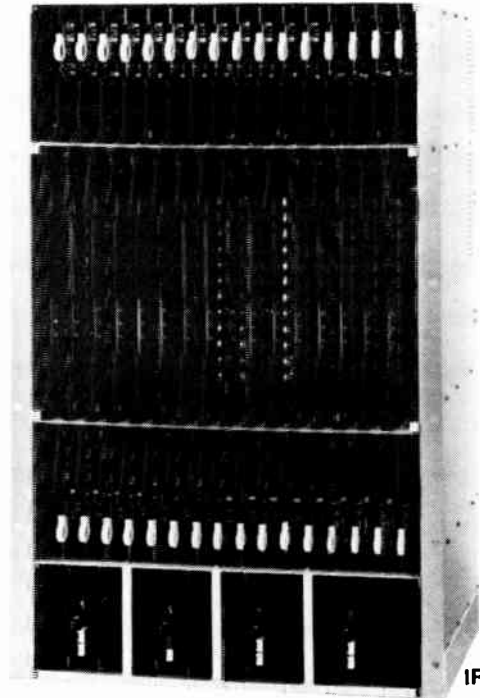
RCP-311: 1 R.U., 16 pushbutton "shot box" panel. Buttons can be easily programmed to access any 16 inputs of 24, all levels.

RCP-306: X-Y control panel. Keypad entry for control of all buses. Separate Video and two channel Audio selection.

RCP-307: Single bus control panel. Keypad entry, separate Video and three channels of Audio.

RCP-310: 2 R.U. 48 pushbuttons. (IRS 48 x 48 only)

RCP-305: 1 R.U. 24 pushbuttons. (IRS 24 x 24 only)



IRS 24 x 24

IRS FRAMES

Both Models' Switchers are contained in 17 rack units 29.75".

IRS MODULES

IVI-611 Video Input Buffer

- Back porch clamp
- Differential inputs
- Equalization for 200' of 8281 or equivalent cable
- On board power supply regulation
- 6 buffers per module

IXP-144 Audio or Video Crosspoint

- 12 x 12 array
- Crosspoints are transistor arrays in IC sockets
- Vertical interval switching (refer to house sync)
- On board power supply regulation

IYO-612 Video Output Amplifier

- On board power regulation
- 6 output amplifiers per module
- Two separate full level outputs per amplifier
- Output gain unity, ± 3 dB adjustable

IAI-601 Audio Input Buffer

- Accepts balanced or unbalanced audio lines
- Differential inputs
- S/N ratio > 90dB
- On board power regulation
- 6 buffers per module

IAO-602 Audio Output Amplifier

- 600 ohms or 150 ohms outputs
- 6 output amplifiers per module
- Two separate full level outputs per amplifier
- +24dBm max. at 600 ohms; +27dBm max. at 150 ohms

ICL-412 Computer

- One required for each 12 buses
- On board diagnostics
- Non-volatile E² RAM for unlimited memory retention
- MPU 6803 based at 76.8 Kbaud

ICI-401 Bus Interface

- One required for each 12 buses
- Uses RS-422 bi-directional controls
- Change module for RS-232-C

HEDCO

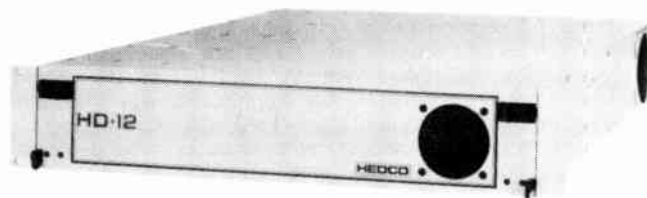
Routing Switchers/Distribution Amplifiers

HD-12 Routing System

- 12 X 12 Audio and video in one 2RU frame
- 12 x 12 Stereo audio in one 2RU frame
- Serial control card included in each frame, RS232 and RS422 ports
- High definition performance
- Multi level control-breakaway or AFV

The HD-12, 12-input, 12-output audio and video switcher series is designed to fill the requirements for routing switchers between the HEDCO's SR and MR series small switchers and the IRS, intermediate size switchers.

The HD-12V Video Switcher is housed in a two rack-unit frame, complete with power supply and RS232/RS422/RS485 serial control card. The HD-12A audio frame will house either single 12 X 12 audio or stereo 12 X 12 audio. A 12 X 12 video with stereo audio switcher is available in four rack units including power supplies and serial control. Also, a 12 X 12 Video and 12 x 12 Audio Switcher is available in one 2 rack unit frame. Since each switcher frame, either audio or video, has its own serial control card, the frames may be remotely controlled, together or separately, on the same common party line. Front panel local control is available as an option.



HD Series Distribution Amplifiers

Any mixture up to twelve HDA modules or power supplies can be included in the HD series frame.

AUDIO

- HDA-201** Audio line amplifier, 8 outputs, gain adjustment per output. (Available in configurations of 1 X 4 stereo, 1 X 8 stereo unbalanced, 1 X 16 unbalanced) \$350.00
- HDA-202** Audio DA, 8 output balanced. 250.00
- Option:**
- HDR-200** Remote gain cell (two cells maximum per HDA-201) 135.00

VIDEO

- HDA-101** Video distribution amplifier, 8 output \$295.00
- HDA-102** Equalizing DA, 8 outputs (equalizes 1000 ft. of 8281 type cable. 355.00
- HDA-103** Equalizing DA, 8 outputs (equalizes 2000 ft. of 8281 type cable. 355.00
- HDX-100** Extender 125.00

Frames and Power Supplies

- HDF-100** Distribution frame complete with single power supply, 3RU \$615.00
- HPS-100** Redundant power supply (120V or 240V). 335.00

600 Series Distribution Amplifiers

VIDEO

- VDA-601** Video distribution amplifier, 6 outputs \$175.00
- VDA-602** Equalizing DA, 6 outputs 215.00
- VDA-605** NTSC subcarrier DA, 6 outputs 205.00
- VDA-606** PAL subcarrier DA, 6 outputs. 205.00
- VDA-608** Video linear DA, 6 outputs. 125.00
- VDA-608WB** 60MHz wide band DA, 6 outputs 190.00
- VDA-609** Regenerative pulse DA, 6 outputs 185.00

AUDIO

- ADA-600** Audio line distribution amplifier, 6 outputs \$185.00
- ADA-601** Ultra low noise line amplifier, 12 unbalanced outputs 130.00
- RAD-600** Remote gain line DA, 6 outputs 245.00

Frames and Power Supplies

Frames are complete with a single power supply; redundant power supplies can be added to any of the 6000 series frames.

- ADF-6000** 10-DA Audio frame with one power supply, 2RU \$675.00
- ADF-6400** 4-DA Audio frame with one power supply, 2RU 540.00
- VDF-6000** 10-DA Video frame with one power supply, 2RU 675.00
- VDF-6400** 4-DA Video frame with one power supply, 1RU 540.00
- AVF-6000** Combined 5 audio, 5 video DA frame with one power supply, 2RU 675.00
- AVF-6400** Combined 2 audio, 2 video DA frame with one power supply, 1RU 540.00
- VPS-180** Redundant power supply (120V or 240V). 265.00
- DEX-160** Extender 80.00

HEDCO

Distribution Amplifiers/ Routing Switchers

SAA-320 Hedline 8-Output Audio Distribution Amplifier
SAA-330 Hedline 8-Output Audio Remote Gain Amplifier

- Balanced, differential inputs providing exceptional common mode rejection
- Outputs are balanced
- Mini-phono monitoring jack is located on the front panel
- Wide dynamic range
- Low THD
- Flat frequency response
- Self-contained including on-board power supply
- SAA-330 can be controlled via a 2-wire single potentiometer
- Standard gain range of either ± 9 dB or $+8$ to -60 dB is factory set. Other ranges are available to special order
- Available as stand-alone units or rackmounted with 3 or 10 to a frame with any of the Hedline products

Specifications

Input Impedance: > 10K, differential, balanced or unbalanced
Level: + 18dBm max.
Common Mode Rejection: > 60dB at 60 Hz
Output Impedance: 600 ohm or 150 ohm, source terminated
Output Level: + 21dBm at 600 ohms
 + 24dBm at 150 ohms
 + 27dBm voltage mode
Response: ± 0.1 dB 20Hz to 20kHz
Distortion: < 0.1% 20Hz to 20kHz at + 18dBm
Signal-To-Noise Ratio: > 95dB
Power: 115 or 230VAC
 50/60Hz
 10W max.
Weight: 2.4 lbs.
Size: 1.66" H x 5.23" W x 11" D

SAA-320 Audio DA, 8 Outputs \$375.00
SAA-330 Audio Remote Gain DA, 8 Outputs \$435.00

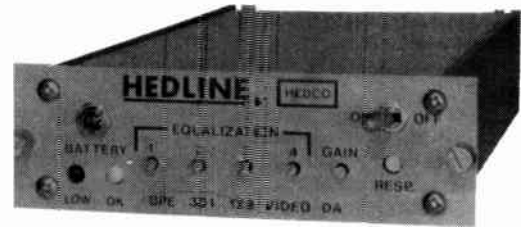
BPE-301 Battery Powered, 8 Output Equalizing Distribution Amplifier

- Cable equalization
- 8 output distribution for applications where AC power is not available
- Self-contained with a rechargeable 1.9AH gel cell battery
- Battery will drive all 8 outputs for more than 8 hours maintaining broadcast quality operation
- Can be charged by any 12V automotive charging system
- Equalize 1000' of 8281 type cable to 30MHz with common mode hum and noise rejection
- 4-pole cable equalizer allows four individual peaking circuits to compensate for various lengths of cable
- Equalization controls are located on the front panel along with gain and response controls
- Differential input is via looping BNC connectors

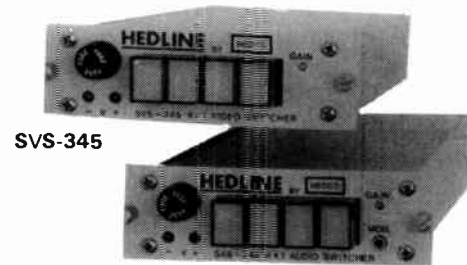
Specifications

Input Impedance: High impedance, 75 ohm bridging
Input Return Loss: > 45dB to 5MHz
Gain: ± 5 dB at 1V p-p nominal
Output Impedance: 75 ohm ± 0.1 %, source terminated
Output Return Loss: > 40dB to 5MHz
Differential Gain: < 0.25%, 10 to 90 APL at 3.58MHz
Differential Phase: < 0.25°, 10 to 90 APL at 3.58MHz
H or V Tilt: < 1%
Equalization: Up to 1000' of 8281 type cable
Weight: 4 lbs.
Size: 1.66" H x 5.23" W x 11" D

BPE-301 \$435.00



BPE-301



SVS-345

SAS-345

SVS-345/SAS-345 Hedline 4 x 1 Switchers

- Self-contained including on-board power supply
- SVS-345 is a vertical interval switcher with full broadcast specifications, 30MHz bandwidth, two balanced outputs plus a monitoring phone jack on the front panel
- Available as stand-alone units or can be rackmounted with 3 or 10 to a frame
- Both feature looping inputs for output expansion up to 4 x 4
- Local and remote control panels have illuminated, relegendable momentary pushbuttons
- Front panel features a gain adjustment control, LED indication ± 12 V and the fuse

Specifications (SVS-345)

Impedance: High impedance, 75 ohm bridging
Input Return Loss: > 45dB to 5MHz
Output Impedance: 75 ohm ± 0.1 %, source terminated
Output Return Loss: > 35dB to 5MHz
Differential Gain: < 0.1% 10 to 90 APL at 3.58MHz
Differential Phase: < 0.1° 10 to 90 APL at 3.58MHz
H or V Tilt: < 0.5%
Crosstalk: > 60dB to 5MHz
Input/Output Connector: BNC

Specifications (SAS-345)

Impedance: > 10K differential, balanced or unbalanced
Level: + 18dBm max.
Common Mode Rejection: > 60dBm at 60Hz
Output Impedance: 600 ohm source terminated
Output Level: + 18dBm at 600 ohms
 + 24dBm voltage mode
Distortion: < 0.1% at 20Hz to 20kHz at + 18dBm
Crosstalk: > 80dB at 20kHz
Signal-To-Noise Ratio: > 100dB
Input/Output Connector: Barrier strips

SVS-345 4 x 1 Video Routing Switcher with Local Panel . . . \$540.00
SAS-345 4 x 1 Audio Routing Switcher with Local Panel . . . \$540.00

AVM 16 x 1 Video and Stereo Audio AFV Distribution Amplifier

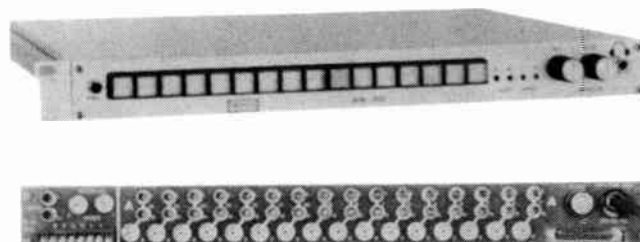
- Provide stereo or audio line switching and stereo audio monitoring as well as video switching in the same self-powered unit
- Solid-state switching
- Switching is referenced to the vertical interval of the last video present
- Dual outputs are provided to isolate monitoring and line switching
- Video section has buffered inputs, "T" style isolation crosspoints and an output amplifier with gain and response adjustments accessible through the front panel
- Video outputs are on standard BNC connectors
- Inputs may be selected by either the local control panel or by the optional remote panel
- Both panels are illuminated and relegendable
- Audio section consists of stereo switching with line outputs and stereo monitoring
- Audio line outputs, left and right, are on a standard barrier strip
- Provide differential balanced around ground signals with maximum + 19dBm levels
- Audio input stages are differential, balanced and bridging, providing high DC and common mode rejections
- Audio line gain controls are also accessible through the front panel holes
- Allows ± 3dB adjustment
- Gain and balance for the audio monitor are front panel mounted

AVM 16 x 1 Video Only or Stereo Audio Only Distribution Amplifier

- Crosspoint control system is designed to turn the selected input cross points on and concurrently turn the previously selected cross-points off
- Initial power-up circuit selects input one
- Power supply is self-contained within the frame
- Each monitor amplifier is built around a single-ended, integrated circuit power amplifier
- Both AC coupled monitor amps have gain and balance controls on the front panel
- Provide 2W into an 8 ohm load
- Output of the complementary line amplifiers feeds an operational amplifier in a differential mode which in turn drives the gain and balance portions of the power amplifier's circuitry
- Output of each power amplifier is wired through the front-panel mounted stereo jack to the rear-panel speaker jacks, allowing the use of either headphones or speakers
- Remote connector may also be used as a tally connector
- Control lines go to ground for the selected input
- Can sink up to 250mA
- Expanding inputs and outputs
- Up to 4 AVM switchers can be connected in series with their outputs terminated in a 4 x 1 switcher
- Separate pushbutton panel controls all switchers
- Can also be combined to expand outputs by using any of the AVM-200 looping input switchers

Video Specifications

Input Level:	1V p-p nominal ± 6dB
Input Impedance:	AVM-100, AVM-101: 75 ohm, 0.1% terminating AVM-200, -201, -202, -203: high impedance bridging
Input Return Loss:	> 40dB to 4MHz
Outputs:	Two 75 ohm 0.1% source terminated
Output Gain:	Unity, ± 3dB adj.
Output Isolation:	> 40dB to 5MHz
Output Return Loss:	> 40dB to 5MHz
Output DC:	> 50mVDC



AVM-100 Video and Stereo Audio AFV

Frequency Response:	± 0.1dB, 100kHz to 5MHz + 0.1dB to -0.2dB, 5-8MHz 0dB to -0.5dB, 8-10MHz
Differential Phase (< 0.1°):	at 1V p-p, 10-90% APL
Differential Gain (< 0.1%):	at 1V p-p, 10-90% APL
Crosstalk:	> 60dB below 1V p-p 3.58MHz
Signal-To-Noise Ratio:	> 60dB (V p-p signal to rms noise to 5MHz)

Audio Specifications

Input Level:	+ 19dBm at 600 ohm max.
Input Impedance:	> 25K ohms, bridging
Input CMRR:	> 60dB at 60Hz
Input DC Level, Max.:	± 15VDC
Outputs:	Stereo pair for line and monitor
Output Signal Level	
Line:	+ 18dBm into 600 ohms
Monitor:	2W into 4 ohms at 0dB input
Output Gain	
Monitor:	0 to 2W at 0dB input, front adj.
Headphone Output:	Standard twin ring jack to interrupt monitor out
Output Isolation:	> 60dB at 1kHz
Signal-To-Noise Ratio:	79.5dB ref + 18dBm
Frequency Response	
Line:	± 0.1dB, any level up to + 19dBm, 20Hz to 20kHz
Monitor:	± 3dB, any level up to 2W, 40-15kHz
THD	
Line:	< 0.1% up to 18dBm, 20Hz to 20kHz
Monitor:	< 0.5% up to 2W, 40Hz to 15kHz

AVM-100	16 x 1 video and stereo audio with RCA phono jack connectors and terminating video inputs, 1RU . . . \$1925.00
AVM-101	16 x 1 video and stereo audio with 5-pin min. XLR connectors and terminating video inputs, 1RU . . . 2040.00
AVM-200	16 x 1 video and stereo audio with RCA phono jack connectors and looping video inputs, 2RU . . . 2095.00
AVM-201	16 x 1 video and stereo audio with 3-pin min. XLR connectors and looping video inputs, 2RU . . . 2210.00
AVM-202	16 x 1 video and stereo audio with barrier strips and looping video inputs, 2RU . . .

Control Panels

RCP-131	Optional remote control Requires CAB-2 or C \$355.00
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HEDCO

Switchers/Pulse Generator

TWS Series Vertical Interval Switchers 12 x 1 Switching Video-Stereo Audio

- Broadcast quality specifications
- 4 outputs
- Front control panel can be extended for remote control applications
- Looped together units can be controlled in parallel for stereo AFV operation
- Front (local control) panel plugs into the main circuit board
- Can be extended up to 300' for use as a remote panel

Specifications

TWS-100 12 x 1 Video Switcher

Impedance: High impedance, bridging 75 ohm
Level: 1V p-p nominal, 2V p-p max.
Return Loss: > 40dB at 5MHz
Impedance: 75 ohm, ± 1%
Return Loss: > 35dB at 5MHz
Gain: Unity ± 3dB
Response: ± 0.1dB to 10MHz
 ± 0.5dB to 20MHz
 -3dB at 27MHz
Differential Gain: < .1% 10-90 APL at 3.58MHz
Differential Phase: < 1° 10-90 APL at 3.58MHz
Crosstalk: > -60dB at 5MHz, all inputs hostile
Path Length Differential: < 1° at 3.58MHz
Switching: Line 4
Remote Connector: 25-pin "D"
Power: 115/230V, 50/60Hz, 24W max.
Height: 1RU

TWS-200 12 x 1 Stereo Audio Switcher

Input Level: + 24dBm at 600 ohms max.
Input Impedance: > 20K ohms, bridging
Input CMRR: > 60dB at 60Hz
Input DC Level, Max.: ± 15VDC
Output Signal Level: + 24dBm into 600 ohms
Output Gain: Unity, ± 6dB adj.
Output Isolation: > 60dB at 1kHz
Signal-To-Noise Ratio: > 90dB ref + 24dBm
Frequency Response: ± 0.1dB, any level up to + 24dBm, 20Hz to 20kHz
THD: < .01% up to + 24dBm, 20Hz to 20kHz

TWS-100 12 x 1 video switcher with local panel, 1RU . . . \$595.00
TWS-110 12 x 1 video switcher to be remotely controlled . . .495.00
TWS-200 12 x 1 audio switcher with local panel, 1RU595.00
TWS-210 12 x 1 audio switcher to be remotely controlled . . .495.00

Control Panels

RCP-125 Remote panel, 12 x 1, 1RU. Uses CAB-2 or CNK-2. \$ 150.00
TBP-100 Blank front panel for TWS-110, TWS-210, 1RU35.00

HSG-100 NTSC Source Synchronizing Pulse Generator

- TCXO temperature compensated crystal oscillator
- Low power consumption (20VA)
- No warm up required
- Genlock/free run, consistent SC/H
- RS-170A specifications
- Master operation
- Master oscillator is a temperature compensated crystal oscillator with negligible warm-up time
- Generator is stable and usable immediately after switching
- When genlocked, it is phase locked to the processed burst derived from the incoming video signal
- Correct sync/subcarrier phase relationship (SCH) in its internal mode
- Front panel SCH indication in the genlock mode of operation
- H phase resolution is within 10ns
- Low power consumption at 20VA
- Low heat generation



TWS Series



HSG-100

Specifications

Pulse Outputs

Number of Outputs: 2 each of sync and blanking, 1 each of H drive, V drive and burst flag

Output Isolation: > 40dB
Level: 4V p-p, adjustable
Impedance: 75 ohms
Spurious Signals: > 34dB down
Output DC: Baseline < ± 200mV

Subcarrier Output

Number of Outputs: 2
Level: 2V p-p, adjustable
Impedance: 75 ohms
Spurious Signals: > 40dB down
Output DC: NIL
Distortion: < 1%

Color Black Output

Number of Outputs: 2
Level: 40 IRE units sync/burst
Impedance: 75 ohms
Output Isolation: > 40dB to 4MHz
Spurious Signals: > 34dB down
Output DC: < ± 100mV

Sync Lock

H Phase Advance: > 12µs
H Phase Delay: > 4µs
Fine Phasing: 4.4ns increments typical
V Phasing: 1 line advance
Lock Jitter
Color Lock: < 5ns
Mono Lock: < 25ns

Performance

Pulses
Rise Time: 140ns nominal ± 50ns
Widths: Analog adjustable
Vertical Blanking: Adjustable from 17 to 21 lines

Subcarrier

Frequency: 3.58MHz
Adjustment Range: ± 25Hz
Frequency Stability with
Aging: < 1Hz/month
Temperature: < 2Hz/10°C
Line Voltage: < 1Hz/10% line voltage variation
Dimensions: 1.75" H x 19" W x 18.12" D

HSG-100 \$ 1795.00

HENRY ENGINEERING

Interfaces/Turntable Controller

The Matchbox Interface Amplifier

- Gain is adjustable to +20dB
- +26dBm maximum output level
- .008% distortion, 90dB S/N
- All active direct coupled circuitry
- Does not load or ground studio lines
- Self contained regulated power supply
- Provides extra AC outlet for convenience

The Matchbox is the ideal way to correctly interconnect "Hi-Fi" or Semi-Pro (IHF standard) equipment with professional studio gear. The Matchbox is a bidirectional unit, with four independent amplifiers providing full stereo input and output interface. Two amplifiers convert a stereo IHF Hi-Z unbalanced source to Lo-Z balanced outputs at studio level. A second pair of amplifiers converts a stereo balanced studio line source to unbalanced IHF outputs to feed the inputs of an IHF device. All circuitry is active and direct-coupled for absolute sonic transparency. The Matchbox is compact and lightweight, allowing it to be permanently mounted to most cassette recorders, tuners, portable mixers, etc.



Matchbox

Specifications

- Power Input:** 115VAC, 4W
Fuse: .1A, internal
Dimensions: 6.25" x 3.75" x 2.25"
Weight: 2 lbs.
Adjustments: Studio output level adjustable via front panel access holes

	IHF Input to Studio Output	Studio Input to IHF Output
Electrical Input Level:	-10dBV to 0dBV, nominal	0dBm to +8dBm, nominal
Input Impedance:	25K ohms, unbalanced	10K ohms, balanced
Gain/Loss:	+6dB to +20dB, adjustable	-14dB, fixed
Output Level:	0 to +8dBm nominal, +26dBm max.	-10dBV nominal, +20dBV max.
Output Load:	600 ohms or greater, balanced	2K ohms or greater, unbalanced
Freq. Response:	DC-20kHz, ±0.25dB	DC-20kHz, ±0.25dB
Distortion:	.008% at any level	.008% at any level
Noise Level:	85dB below +4dBm output	75dB below -10dBV output
Number of Channels:	2, "Left" and "Right"	2, "Left" and "Right"
The Matchbox	\$195.00	

Superrelay Utility Control Interface

- Six double-pole relays for low voltage and audio switching
- Solid-state synchronous relay controls 300W of on-the-air lights without buzz, pops, or arcing. (1000W version available)
- Built-in flasher, can be defeated for constant-on mode
- Can be controlled by switch, relay, CMOS and TTL compatible
- Can be connected to telco line for ring control switching
- Built-in power supply, 24VDC available for utility use



Superrelay

Superrelay is a multipurpose control interface for use in broadcast station control rooms, A/V systems, or any installation requiring multiple circuit control. Superrelay is ideal for controlling the various equipment functions that need to be switched when, for example, a control room mike is turned on, e.g., EBS receiver mute, intercom speaker defeat, telephone bell disconnect, skimmer recorder start, "On The Air" warning lights on, etc. Superrelay can be controlled by virtually any console's muting output, or by any external switch, either momentary or maintained. It provides two types of outputs: relay and switched AC. Six relays can be used for low voltage and audio switching; a switched AC output will directly power up to 300W of "warning lights" and make them flash. Superrelay can also be connected to any dial-up telephone line for control of equipment when the line rings.

Superrelay **\$195.00**

Universal Turntable Controller

- Works with most console remote control facilities, or use "outboard" switches
- Tally lamp outputs accommodate illuminated pushbuttons
- No contact bounce or false operation
- CMOS circuitry is RF immune...no relays
- Self contained regulated power supply
- One UTC controls two turntables

The Universal Turntable Controller is a control interface unit for use in conjunction with Technics (SP10, SP15, SP25, SL1200 MKII) and Russco direct drive professional turntables.

The "UTC" adds remote control facilities to these turntables. It converts the turntable's "single button" control logic so that separate start/stop switches can be used to operate the turntable. The UTC also provides outputs to drive 24VDC tally lamps for run and stop mode indication. The turntable's start/stop switch can still be used for cueing records, and the Universal Turntable Controller will always remain "in sync". It easily connects to the turntable with just three wires, and may be controlled by either momentary switches or CMOS circuitry. One UTC will control two turntables.

Universal Turntable Controller **\$195.00**

HENRY ENGINEERING

Radio Control Room Equipment

SynchroStart Turntable-Recorder Synchronizer

- Start-muting for two turntables, individual delay adjustments
- Compatible with any cartridge or reel-to-reel recorder
- Either or both turntables can auto-start recorder
- Recorder will auto-start only if in record mode
- Audio inputs/outputs are electronically balanced, direct coupled
- Timer output will start external timer when recorder starts

SynchroStart is a turntable-recorder synchronizer with automatic turntable start-muting. It has two primary functions when used with a turntable and cartridge recorder: (A) It eliminates "cue burn," record surface noise, and accidental turntable "wow-in" and (B) takes the guesswork out of dubbing records to tape cartridge. SynchroStart mutes turntable audio during disc start-up, so that all noise preceding the start of audio is squelched. The audio is "ramped up" smoothly; a disc may be cued within audio permitting efficient "real time editing" of musical content. SynchroStart also provides a synchronized output to start a cartridge recorder at the exact moment the beginning of disc audio is beneath the playback stylus. Carts are consistently "tight" with one-button ease. The unit is fully automatic, needing no user adjustment once installed.

SynchroStart\$395.00

Telecart Audio Message Telecontroller

- All cart machine connections are opto and relay isolated
- Audio circuit is transformer-coupled for line isolation
- Digital call counter registers up to 999 calls received
- Failsafe design permits unattended automatic operation
- Can be used with phone systems requiring A-lead control
- Built-in power supply; does not draw power from phone line

Telecart is an automatic answering unit that permits a standard NAB-type cartridge machine to answer a telephone line and play a recorded message to the caller. Telecart will work with virtually any cart machine; no auxiliary control tones or relays are needed. The unit is fully automatic for unattended operation. Its "failsafe" design prevents the line from being answered unless the message cart is cued and ready to play. If a caller hangs up before the message has finished playing, Telecart will hold the line "busy" until the cart has re-cued. The line is then released and a new call may be received. A digital call counter registers the number of calls answered up to 999.

Telecart\$195.00

LogiConverter Studio Equipment Control Interface

- All inputs are opto-isolated
- All outputs are relay-isolated
- User-programmable logic translation
- Compatible with TTL/CMOS/Open-collector logic
- Inputs/outputs can be momentary or maintained
- Start-only or start-stop from single input signal

LogiConverter is an interface unit that facilitates remote control of broadcast studio equipment. It eliminates the incompatibility often encountered when a broadcast console is used to provide remote start-stop control of peripheral equipment. LogiConverter converts TTL/CMOS or "open-collector" console outputs to relay closures for remote interface that is compatible, reliable and isolated. It (A) isolates the control circuitry and (B) translates the logic to best suit the device being controlled. All LogiConverter inputs are opto-isolated; outputs are SPDT (Form C) relay contacts. The unit can be user programmed via internal "dip switches" to generate either momentary or maintained outputs from various inputs, with 24 input/output combinations possible. LogiConverter will control up to 4 circuits, and can provide start-only or start-stop outputs from a single input signal.

LogiConverter\$195.00



SynchroStart



MixMinus Plus

MixMinus Plus Differential Summing Amplifier

- Null adjustment provides 40dB of hybrid signal rejection
- Program input accepts nominal +4 to +8dBm level
- Receive input accepts -28 to -10dBm level from fader
- Output will drive up to +26dBm into 600 ohm load
- Inputs and outputs can be balanced or unbalanced
- Internal regulated bipolar power supply

MixMinus Plus is a differential summing amplifier designed to add a "Mix-Minus" output to a broadcast audio console. This output is typically used to feed the Send input of a telephone hybrid device. MixMinus Plus has two inputs and one output. One input is fed with the Program output of the console. The second input is fed with the hybrid Receive audio, tapped just after the "phone" channel fader on the console. MixMinus Plus subtracts the hybrid Receive signal from the Program output, thus creating a Program mix minus the Receive audio. The null adjustment will provide 40dB rejection of the Receive audio signal (30Hz-3kHz). MixMinus Plus is easily connected to most consoles and needs no adjustment once installed. The overall gain is unity.

MixMinus Plus\$195.00

HITACHI DENSHI, LTD.

Video Tape Recorder/Player

HR-230

High Performance 1" Production VTR

- High quality recording/reproduction
- Interchangeability with all Type C tapes
- 2-hour/3-hour reel operation selectable
- -1 to +3 times variable play speed (option)
- Built-in 4H p-p TBC (option)
- Auto set-up of optimum record current
- Video confidence (simultaneous playback)
- DG/DP compensation circuit
- Deviation marker for modulation setting
- Auto chroma function
- Built-in cable compensator
- Auto set-up of optimum bias current
- Audio confidence (simultaneous playback)
- Linked left-right volume control possible
- Peak level display by LED
- Audio spot erase function
- Built-in monitor speaker
- Digital servo system
- Quick start of tape travel
- Hand advance of tape under servo control
- Automatic color framing
- Any size of reel usable without servo switching
- Protective Reverse Oxide (PRO) tape path
- Non-contact head drum in standby and FWD/REW modes
- Retracting entrance and exit guides
- Escape tension mechanism
- Retracting master erase head
- Automatic audio head cover opening and closing
- Built-in monitor select buttons
- Controls with unity setting and center click
- Various displays for ease of operation
- Assemble/insert editing with 1-frame accuracy
- Split edit and forced edit possible
- Cue shift and variable preroll
- Preview and review operation
- Change and display of edit data
- Edit point setting by 10-key entry

The HR-230 is a 1" helical-scan VTR in accordance with the SMPTE Type C standard.

The HR-230 inherits the same features as the former HR-200 Series models such as the tape transport designed by CAD to assure stable tape travel, the PRO tape path to protect oxide surface of a tape, the air support system to reduce resistance to tape travel, and the retracting entrance guide for ease of tape loading. In addition to these features, air tension arm posts are adopted to further reduce resistance to tape travel and an escape tension mechanism and retracting exit guide, to make tape loading more simple and accurate in combination with the retracting entrance guide.

Only by changing the mounting position of reel motors, both of the 3-hour and 2-hour reel operations are possible; the former for desktop and console configurations, and the latter for rack-mount configuration. Other performances improved, and functions added, are two microprocessors which independently control the operation system and servo system, -1 to +3 times



HR-230

variable play speed and its memory function (option), auto set-up function of the optimum video record and audio bias currents, variable play time function which can increase or decrease program time, master/slave control function, reduction of tape accelerating time and lock-in time, incorporation of 4H p-p TBC (option), various alarms and error messages for ease of fault diagnosis and maintenance, etc.

The HR-230 can be used in any configuration of desktop, console and rackmounting and is most suitable for broadcast station, production house and other high end industrial and educational applications.

HR-230-1

Package Includes:

- HR-230—Recorder/player • TC-030—Plug-in digital TBC
 - Take up reel • Set of extender boards • Service manual
- HR-230-1**\$60,862.00

HR-230-2

Package Includes:

- HR-230—Recorder/player • TC-230—Digital TBC • SL-30—Slow motion (head scan tracking) • Take up reel • Set of extender boards • Service manual
- HR-230-2**\$69,087.00

HITACHI DENSHI, LTD.

Color Camera



SK-97 FULL AUTO SET-UP CAMERA

- High performance pickup tubes—2/3", 3-tube • High resolution over entire screen—600 TV lines at center • High signal-to-noise ratio—58dB (NTSC) 55dB (PAL) • Improved prism optics • ABO (Automatic beam optimizer) • Encoder with dynamic contrast (Variable gamma) • High-precision static and dynamic registration
- Linear matrix masking • Auto iris • Two filter disks • High-brightness, high-resolution viewfinder • Viewfinder character display
- Power supply options • Preheat/operate switch • +9/ +18dB high-gain switch • Centralized control panel • Chroma keying outputs • Selectable YIQ/RGB outputs • SMPTE/EBU color bar output • Hi-fi microphone amplifier • Two-wire/four-wire intercom system

Versatile Auto Set-Up System

- Zero method control • Auto set-up mode selection • Data files
- Fault diagnosis • RCU (Remote control unit) • Auto/manual set-up by camera itself

The SK-97 is an epoch-making, 2/3", 3-tube, portable color camera with full auto set-up functions. The camera satisfies all the requirements necessary for a portable camera in EFP and studio applications; i.e., excellent picture quality, great ease of operation and extremely high reliability.

The SK-97 employs the same auto set-up system as that of the sister camera SK-970 for studio portable use, and can be used in combination with the SK-970. The SK-97 can also be controlled by the SK-110 full auto set-up studio camera system.

The SK-97 weighs approximately 13.2 lbs. (6kg) excluding a lens even with the improvement in performance and addition of the auto set-up functions.

Digital Command System Available

When an optional digital command system consisting of the MU-97A multi adaptor and the DU-97A DCU is used, all the camera operations can be remotely controlled from the RCU or the SK-110's SCU through a single coaxial cable. The MU-97A is attached to the camera side cover and the DU-97A of half-rack size is located near the BSU.

In addition, when a TX-97 triaxial adaptor is used together with the above units, power transmission up to 1.4 miles (2.3km) as well as camera control is possible through a single triaxial cable if using a Fetten 2.5 LS/11.5 cable.

Superior Serviceability

The pickup tubes are rear-loaded for ease of replacement. In particular, the R and B channel tubes can be simply replaced by removing the top and the bottom cover of the camera respectively.

All of the electronic circuitries are divided by functions into printed circuit boards with silk printing on both sides, and major circuit boards are inserted into a PCB harness with mother board connection.

DIMENSIONS AND WEIGHT

	Width		Height		Depth		Weight approx	
	in	mm	in	mm	in	mm	lb	kg
Camera	3.9	100	11.0	280	14.0	355	13.2	6
BSU	8.3	210	7.1	180	13.8	350	28.6	13
RCU	3.0	76	14.2	360	6.3	160	8.4	3.8
DU-97	8.3	210	5.2	133	13.8	350	18.7	8.5
MU-97	1.2	30	6.1	155	13.6	345	3.5	1.6
TX-97	4.3	110	6.7	170	1.7	43	2.0	0.9

SK-97.3A Full Auto Set-Up

EFP/Studio Camera for Broadcast Use with LOC D.G. Plumbicon (XQ3427RGB), Less Lens

Package Includes:

- SK-97 Camera Head, built-in auto set-up • XQ-3427RGB LOC D.G. Plumbicons • VF-154 1.5" High Resolution VF w/Diagnosis Display
- AP-40U AC Adaptor • TA-97 Tripod Adaptor • CL-97 Carrying Case
- SVM-SK-97 Service Manual • Standard Accessories

SK-97.3A \$47,230.00

Accessories

DU-97A/TX-97A Triaxial Digital Command System \$17,000.00

CB-97 Battery Bracket 110.00

DP-40 Battery (2 Hour) 505.00

BC-40 Battery Charger for DP-40 85.00

C-201VB 6' (2m) VTR Cable 10-pin 240.00

C-201VD 6' (2m) Cable 14-pin 340.00

C-201VC 6' (2m) VTR Cable for HR-100 340.00

MH-97 Microphone Holder 190.00

C-400M Microphone Cable 90.00

RC-97 Rain Proof Cover 280.00

LFSC Quick-Charger for DP-40 595.00

BU-97 Base Station Unit 7,250.00

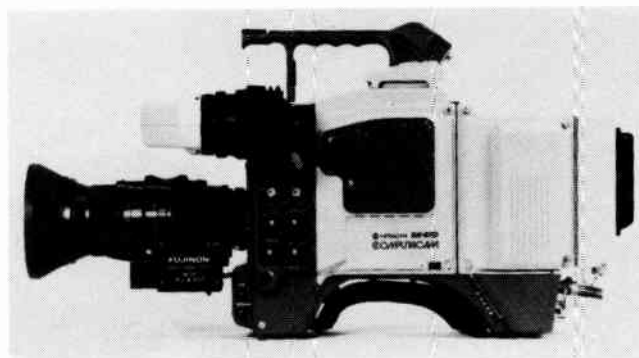
RU-97 Remote Control Unit 3,670.00

VF-502 5" Viewfinder 2,940.00

SK-97D Full Auto Setup Camera

- $\frac{2}{3}$ " MS tubes offer a high quality picture with superb center and corner resolution
- Improved prism optics—high speed (f/1.4) prism optics with a quartz filter guarantee high sensitivity and excellent color rendition
- Built-in ABO circuit eliminates comet tails, extends the dynamic range of the camera and thereby makes highlight shooting very easy
- Dynamic white suppression/knee aperture correction
- High signal-to-noise ratio of 59dB (NTSC) (56dB with PAL-B) is obtained at 2,000 lux (200 fc), f/4.5 with a newly developed low-noise preamplifier and a new low-noise FET
- High-precision registration by the World First Real-time Lens Error Correction (RLC)
- 3DTL system is employed for horizontal contour correction. It performs the optimum corrections for RGB channels and ensures the most effective edge correction for any kind of color tone. (The out-of-green system is employed for vertical contour correction)
- Remote control of DTL
- Built-in linear matrix masking amplifier ensures high-fidelity color rendition and easy tone-matching among the cameras. Remote control from the setup control unit is also available and the control data can be stored in a selected file
- Auto iris
- Two filter disks
- High-brightness, high-resolution viewfinder
- Viewfinder character display
- Power supply options: Can be powered by a battery belt, a battery pack, a car battery, an AC power adaptor or from the battery in the VTR connected to the camera
- +9/+18dB high-gain switch
- Control panel
- Chroma keying outputs
- Component signal output
- SMPTE/EBU color bar output
- Built-in high-fidelity microphone amplifier accepts a mike with an output level of -45 to -60dBm
- Two-wire/four-wire intercom system
- Automatic cable compensation
- Zero method of control is capable of setting up the R,G and B channels automatically, thus eliminating manual adjustment of the G channel required for the G-reference method. In addition, several SK-97D's (maximum 42 cameras) can be set up simultaneously in only 2 minutes by using a setup control unit, the SU-97D
- Auto setup mode selection
- Check function of auto setup conditions with an external chart
- Data files
- Full fault diagnosis
- Remote Control Unit (RCU)
- Base Station Unit (BSU)
- Auto/manual setup by the camera head itself

The SK-97D employs $\frac{2}{3}$ " MS pickup tubes, ideal for portable use. However, with adaptors and accessories, the performance capability is equal to those of a studio camera. Additionally the SK-97D can be used in a camera-recorder combination.



SK-97D

The camera head weighs only 11.4 lbs. (5.2kg) (with cable adaptor) and the SK-97D weighs 15 lbs. (6.8kg) in a triax operation mode. Though the SK-97D is a compact and lightweight camera, it employs the zero method of control (RGB control) and it is a full auto setup camera. It can control 37 auto functions and 103 control items. These microprocessor-controlled functions are incorporated in the camera head and available in the self-contained operation mode.

Real-time lens error correction (RLC) compensates for changes in prism temperature and the library functions (SCU operation) using a 3.5" floppy disk are provided. The maximum triax cable length is 2400m (Belden 9232). The SK-97D can be used in a system with the SK-110D (1 $\frac{1}{4}$ " tube) studio camera in addition to the SK-970D studio/field camera systems.

SK-97D Full Auto Setup ENG/EFP Camera Less Lens**Package Includes:**

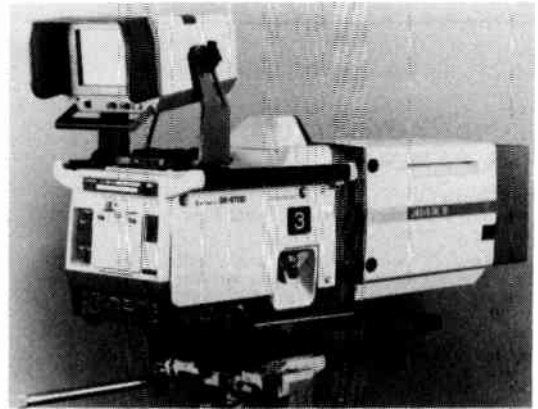
- SK-97D camera head with built-in auto setup • XQ-3457RGB MS LOC DG plumbicons • VF-155 1.5" high resolution viewfinder • TA-97D tripod adaptor • CL-97D carrying case • SVM-97D Service manual • Standard accessories \$61,220.00 (Requires CA-97D and AP-40R2 or battery).

Optional Accessories

CA-97D	Cable adaptor	\$4,360.00
EA-97D	Exchange plate for AP-40R2 . . . . .	.89.00
AP-40R2	Power adaptor . . . . .	.430.00
CB-97D	Battery bracket—to use with CA-97D . . . . .	.110.00
CB-97E	Battery bracket—to use with MU-97D. . . . .	.110.00
DP-40	Battery . . . . .	.505.00
BC-40	Battery charger for DP-40 . . . . .	.85.00
LFSC	Quick charger for DP-40 . . . . .	.595.00
MH-97D	Microphone holder . . . . .	.190.00
C-400M	Microphone extension cable . . . . .	.90.00
TA-97D	Spare tripod adaptor . . . . .	.520.00
CL-97D	Spare carrying case . . . . .	.850.00
VF-155	Spare 1.5" viewfinder . . . . .	.2,620.00

SK-970D Full Auto Setup Studio/Field Camera

- $2/3$ " LOC DG Plumbicons offer superb picture quality
- Improved prism optics high speed (f/1.2) prism optics, brightest for $2/3$ " pickup tube guarantee high sensitivity and excellent color rendition
- Built-in ABO circuit eliminates comet tails, extends the dynamic range of the camera and thereby makes highlight shooting very easy
- High signal-to-noise ratio of 60dB (NTSC) (57dB with PAL-B) is obtained at 2,000 lux (200 fc), f/4.5 owing to a low-noise preamplifier and low-noise FET
- High voltage operation of the pickup tube, together with a wideband preamplifier, fully utilizes the tube resolution. In addition, a dynamic focus circuit greatly improves the resolution at 4 corners
- High-precision registration by world-first real-time lens error correction (RLC)
- Fifteen kinds of exclusive lenses (13X to 45X) incorporating a chart for auto setup are available
- Built-in dynamic contrast circuit controls highlight compression and black stretch of the luminance and chrominance signals to provide pictures having a wide contrast range
- 3DTL system is employed for the horizontal correction. It performs the optimum corrections for RGB channels and ensures the most effective edge correction for any kind of color tone
- Remote control of DTL and dynamic contrast
- Built-in linear matrix masking amplifier ensures high-fidelity color rendition and easy tone-matching among the cameras. Two modes of operation; 2 stages of FIX (Hitachi standard) and manual; and on/off control are provided
- High speed rotary shutter is available as an optional accessory
- Compact and lightweight system
- Microprocessor-controlled auto iris
- Two filter disks
- 7" viewfinder with various functions
- Viewfinder character display
- High-gain switch of up to +18dB provides a broadcastable picture even under low lighting conditions, in combination with the low noise preamplifier
- All the controls necessary for camera operation are on the rear control panel of the camera
- SMPTE/EBU color bar output
- Built-in chroma keying circuit provides a chroma keying signal output plus R, G and B video signal outputs at the BSU
- Hi-Fi microphone amplifier
- Two-wire/four-wire intercom system
- Automatic cable compensation
- Auto setup system utilizing a built-in microcomputer greatly reduces routine setup time and provides the highest picture quality at all times
- Zero method of control is capable of setting up the R, G and B channels automatically, thus eliminating troublesome manual adjustment of the G channel required for the G-reference method
- Auto setup mode selection
- Check function of auto-setup conditions with an external chart
- Data files
- Fault diagnosis

**SK-970D**

- Remote control unit
- Base station unit
- Auto/manual setup by camera itself
- Setup control unit, SU-97D

The SK-970D is the up-graded version of the SK-970 which are widely used in television stations throughout the world.

It is a camera featuring unique functions, ease of operation and maintainability as a studio/field camera, permitting versatile system applications.

Hitachi's computer technology, full auto-setup functions using the zero method of control (RGB control), library functions using a 3.5" floppy disk, real-time lens error correction (RLC), prism temperature correction, microprocessor-controlled auto iris, etc. are attained.

With an optional high speed rotary shutter, a picture of superb dynamic registration is ensured and super slow freeze picture having no blur is obtained without need of a special VTR.

In the triaxial cable operation, the maximum cable length is 2400m.

All the control including the commands for auto-setups are made from the remote control unit and the setup control unit via the base station unit.

The self-contained functions permit the auto-setups of the camera unit.

The SK-970D is a breakthrough camera which can be used with the SK-120 (1" tube) and the SK-110D (1 1/4") as well as the SK-97D Handy camera.

SK-970D Auto-Setup Studio/Field Camera, Less Lens**Package Includes:**

- SK-970D camera head with built-in auto-setup • XO-3427RGB LOC diode gun Pbo tubes • VF-710 7" high resolution viewfinder • SVM-970D service manual

Standard Accessories \$63,330.00

BU-97D	Base station unit for remote control. (Requires RU-97 remote control unit)	\$9,350.00
RM-97D	Rackmount adaptor for BU-97-D	1,180.00
RU-97B	Remote control unit (Requires BU-97D).	4,080.00
RU-97D	Full function remote control unit with digital display. (Requires BU-97D and SU-97D for full operation)	6,110.00
AP-10B	AC adaptor for self-contained operation	680.00

HITACHI DENSHI, LTD.

Color Camera

SK-110D FULL AUTO-SETUP COLOR TV CAMERA

SCU (Setup Control Unit)

This unit provides centralized camera control functions for multiple cameras.

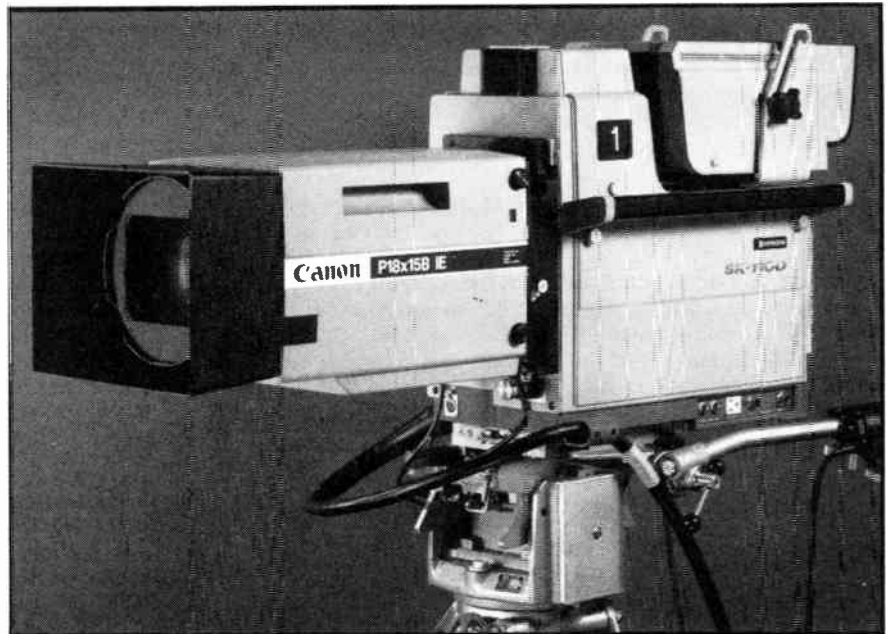
A power supply on/off, auto-setup, quick check, fault diagnosis, manual control, timeout, picture monitor character display, digital display of lens f-number, monitor picture selection, floppy-disk memory for manual adjustment data, and RCU function are provided for each camera. The picture monitor character display includes controlled parameters and percentage of controlled quantities. The DSU function for six cameras is built into the SCU to simplify the system. However, when controlling more than six cameras, use external DSUs.

DSU (Delegation Switch Unit)

This unit serves as a switching unit for data lines and video signals when several cameras are controlled by an SCU. It is possible to assign up to 6 CCUs to one DSU which can be located anywhere between the SCU and the CCU.

TSU (Transfer Switch Unit)

This unit provides switching for data lines and video signals when several camera groups are controlled by two SCUs. The group is selected in a block of a DSU and each camera is controlled through the DSU.



CAMERA HEAD

Pickup Tubes

1-1/4" LOC-DG Plumbicon*¹ pickup tube; 750 TV lines; signal-to-noise ratio of 56dB or more.

Highly Efficient Prism Optics

f/1.8 prism optics.

High-Accuracy Static Registration

Auto setup control for camera registration including that for bow and skew distortions in both the horizontal and vertical directions guarantees high accuracy static registration of 0.05% over the entire screen, in combination with Digital Registration Compensation (DRC) and corner registration compensation which controls four corners independently.

High Precision Dynamic Registration

By using RLC (Real-time Lens Correction), the auto setup system controls on-line, real-time compensation for registration errors caused by variations of lens zooming and focusing.

Scrambling Use of Multiple Cameras

Computerized Tube Hour Meter

Controlled by the built-in microcomputer instead of a conventional electromechanical hour meter, providing a character display of operating hours on the viewfinder screen.

Dynamic Focusing Circuit

ABO (Automatic Beam Optimizer)

High Performance 7" VF with Numerous Functions

Built-in Microphone Amplifier/Limiter

Test Signals for Amplifier Calibration

A 100% and a 200% level sawtooth test signal are provided to facilitate calibration and setup of each video amplifier. By applying these signals in sequence to the input of the process amplifier-2, process amplifier-1 and preamplifier first stage, it is possible to calibrate the level of each amplifier as well as to verify the gamma, knee point, slope, clipping point, etc.

Easy Servicing

The PC boards in the camera head and CCU are simple to remove and are marked on both sides, making parts easy-to-find for quick servicing or inspection. Another serviceability feature is a coil assembly that can be removed while the camera is mounted on the dolly.

*1 © N.V. Philips

CCU

Compact Design

The CCU is designed as a dedicated camera control unit for a computer controlled camera. Both the video processing section and the computer section have been housed in one compact package. The width of the power supply unit is reduced to just a half of 19" rack for compact system configuration.

Linear Matrix Masking

High-Performance Contour Corrector

Compensation signals derived from the R and G channels provide clear, crisp images even for red subjects. The contour correction signals are automatically processed to match the type of subject, maintain optimum compensation and ensure natural images.

Standby Mode Operation

Three operating modes are provided to save power consumption and extend the life of the pickup tubes and CRT.

1. **CCU Power:** Main power supply is switched on; the CCU is operating.
2. **Power:** The camera head is on and the heaters of the pickup tubes and CRT are supplied with 50% of the normal voltage.
3. **Beam:** Beam current of the pickup tube is turned on and the camera operates.

Genlock

The SK-110D is genlocked to a black burst signal or a composite video signal. Horizontal and subcarrier phases can be adjusted manually.

High Reliability LSI Process Amplifier

Output picture quality is greatly affected by the stability of process amplifiers. LSI process amplifiers used in this camera provide stable operation against temperature variations and provide no deviation between channels.

Special Effects

1. The horizontal and vertical deflection currents can be independently reversed, a feature useful in picking up mirror images.
2. The video polarity of the R, G, and B signals can be independently inverted.
3. Swinging of horizontal deflection is provided by means of an externally applied audio frequency signal.

Encoder with Variable Gamma (Contrast)

Gamma control of luminance and chrominance signals is linked and can be adjusted by remote control, making adjustment of the picture contrast very easy, even under such difficult conditions as those encountered outdoors.

Built-In SMPTE/VIT Color Bar Generator

A color bar generator conforming to the latest SMPTE standards has been built in for convenient adjustment of monitors. Also built in is a VIT color bar generator, allowing monitoring of the characteristics of the encoder and the transmission line while on the air.

Computer-Controlled Auto Iris

Lens iris is automatically controlled by detecting the average and peak value of the object illumination and calculating the control output data for optimizing lens servo response by a built-in microprocessor.

AUTOMATIC SETUP

Zero Method Control

The zero method of control is capable of controlling the R, G, and B channels, thus eliminating the troublesome manual adjustment of the G channel required in the G channel reference method.

Expandable System Hierarchy

A microprocessor is built in each unit from the SCU to the camera head, so that the system can flexibly be configured from 1-camera chain to a large scale system. By using a DSU for every group of six cameras, up to 24 cameras can be controlled with just one SCU. By adding a TSU control capabilities can be expanded to up to 42 cameras using two SCUs, providing all the flexibility you will ever need.

Automatic Setup Modes

Eleven automatic setup modes are provided: AUTO SETUP (full), COLOR BALANCE, REGISTRATION, DRC AUTO, G REFERENCE, EXTERNAL chart full AUTO, EXTERNAL chart regi AUTO, EXTERNAL chart color balance AUTO, CHECK, AUTO WHITE, and AUTO BLACK.

Fault Diagnosis

Fault diagnosis of the video system, pulse system and power supply in the camera head and the CCU of the selected camera is performed by depressing the DIAG switch. Diagnosed results are displayed on the picture monitor and the viewfinder, and can be printed out on an optional teletypewriter, too.

Auto Setup of 38 Parameters

Total of 38 parameters of auto setup for color balance and registration including digital registration compensation are available for system setup.

Remote Control

The SCU, TSU, DSU, and CCU may be connected with just three twisted-pair cables and be separated from one another by up to 1,000m (3,000 ft.) The CCU and RCU may be connected using three twisted-pair cables and separated up to 100m (300 ft.)

SK-110D (excluding lens and tubes) . . . \$98,000.00

HITACHI DENSHI, LTD.

Portable Color Cameras

Z-31A 3-Tube Portable Color Camera

The Z-31A can be used in full studio configuration with remote operation panel, in mobile units with triax, and ENG configuration for field shooting of all types including news and commercial production.

In addition to a wide choice of lenses, the Z-31A is offered with composite output and with modules for component output for use with any type small format VTR. The Z-31A features twist field type LOC MS Saticon tubes. These tubes offer 800 lines resolution and 60dB signal-to-noise.

This high resolution, auto setup camera features updated circuitry for improved registration, accuracy, and superior performance.

Even slight registration errors due to prism temperature changes are now corrected by a real-time correction circuit using a microcomputer to provide a stable picture at all times.

The 2H contour corrector with comb filter assures picture sharpness with minimal noise.

The horizontal contour signal is composed of both green and red signals.

With the built-in pre-set masking circuit even subtle color tones can be adjusted without affecting white balance.

The built-in automatic beam optimizer suppresses the comet-tails and expands the dynamic range to facilitate the highlight shooting.

The built-in shading correction circuit ensures a complete flat picture regardless of the pickup tubes and bias light shading.

The frame shading at the corners of the screen is corrected to offer a flat picture.

Other functions include:

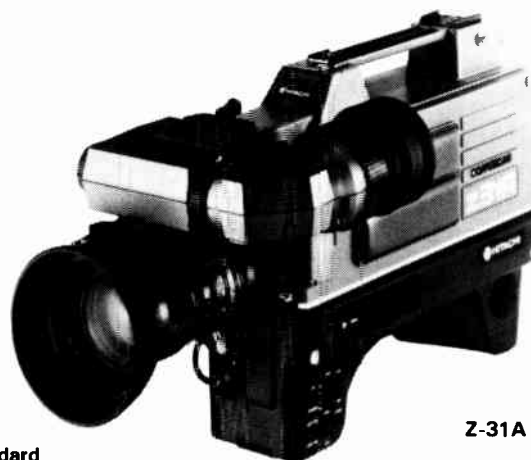
- Character display function
- Built-in color bars
- Microphone circuit
- Test pulse

The basic camera can be purchased and accessory kits such as studio panel, triax/coax digital adaptors, 4.5" viewfinder, and component module, can be added at any time.

Specifications

Color System: NTSC, PAL-B
Camera Tubes: Three 2/3" Twist Field type M-S Saticon tubes
Optical System: f/1.4 prism (with bias light)
Encoding System: IQ (NTSC), UV (PAL-B)
Sync System: Internal sync or genlock (operation with composite video signal or black burst signal)

Horizontal Resolution: 800 lines (G-ch at center)
Sensitivity: 2,000 lux (200fc), f/4 (89.9% reflection factor)
Min. Illumination: 40 lux (f/1.6 + 18dB)
Signal-to-Noise Ratio: 60dB (NTSC), 57dB (PAL-B) (typical)
Gamma Correction: 0.35 to 1.0
Optical Filter: 3200°K, 5600°K + 1/8ND, 5600°K, cap
Lens Mount: Bayonet
Auto Functions: Auto white balance, Auto black balance, Auto iris, Automatic beam optimizer (ABO), Auto centering, Auto setup, Auto black set, Auto registration correction, Automatic fault diagnosis, Auto black level



Z-31A

Standard Configuration: Z31A — Camera
 J15X9.5B4KRS (by Canon) — 15X power zoom lens
 GM-6 — 1.5" viewfinder
 AP-40 — AC adaptor
 TA-Z31 — One touch tripod adaptor
 CL-Z31 — Carrying case

Z-31AUE With ASU and lens \$10,210.00
 Z-31AUB Without lens 8,930.00
 Z-31AUF With Fujinon 16:1 lens 10,880.00

Z-31P ENG/EFP Camera

This camera offers all the outstanding features of the basic Z-31A, but incorporates three 2/3" MS type low capacitance Diode Gun Plumbicon tubes.

Specifications

Horizontal Resolution: 660 lines at center (G. ch)
Signal-to-Noise Ratio: 57dB (NTSC)
Pickup Tube: 2/3" LOC DG PbO tube
Optical System: f/1.4 prism (with bias light)
Scan Standards: NTSC 525/60 field/s or IQ (NTSC)
Encoding System: IQ (NTSC)
Minimum Illumination: 30 lux, f/1.6 + 18dB on
Sync System: Internal sync or genlock
Gamma Correction: Variable 0.35 to 1.0
Optical Filters: 3200°K, 5600°K, + 1/8ND, 5600°K, cap
Lens Mount: Bayonet
Auto Functions: Auto white balance, Auto black balance, Auto iris, Automatic beam optimizer (ABO), Auto centering, Auto setup, Auto black set, Auto registration correction, Automatic fault diagnosis, Auto black level

Standard Configuration: Z-31P Camera body, 15X power zoom lens, 1.5" viewfinder, tripod adaptor, AC adaptor, carrying case

Z-31PC With lens \$15,950.00
 Z-31PE Without lens 13,680.00

HITACHI DENSHI, LTD.**3-Chip CCD Color Cameras****FP-C1/FP-C2
3-Chip CCD Color Cameras****Features Common To Both Models**

- Since the high sensitivity and low lag $2/3$ " CCD 3-chip is used, the sensitivity is one stop higher than that of a 3-plumbicon camera, making the FP-C1/FP-C2 ideally suited to use in low light conditions
- Auto knee and flare correction functions
- Subtle color differences among cameras can be controlled by the preset masking circuit
- Computer-controlled auto functions and self-diagnostics improve operational flexibility
- High resistance to shock and vibration
- Immune to magnetic field interference
- Adoption of the image sensor and highly stable design provides high reliability
- Bayonet mount
- Auto white balance
- Auto black balance
- Auto iris
- Auto knee
- Auto black set
- Auto black level
- Self-diagnosis display

FP-C1

- Over 280,000 picture elements offers a superb picture quality of 580 lines horizontal resolution
- Sensitivity: 2000 lux, f/6.7 (89.9% reflection factor)
- Auto white balance (2 memories) — Two kinds of memories for two different white balance data are available for the first time in a camera of this class
- Computer-controlled auto iris — The computer-controlled auto iris function offers a clear and natural picture. The auto iris operating point is adjustable for about $\pm 1f$ /stop
- Masking (with preset on/off switch)
- Test pulses
- Warning indicator
- Status display
- Character display function
- Min. Illumination: 20 lux, f/1.7 (+ 18dB)
- Signal-to-Noise Ratio: 56dB (NTSC), 53dB (PAL)
- Sync System: Internal (conforming to RS-170A) or genlock

The FP-C1 is a 3-chip CCD color camera employing the high density and high sensitivity image sensor with over 280,000 picture elements packed onto a chip.

The adoption of the latest image sensor leads to a superb picture quality of high resolution, a high sensitivity and a high signal-to-noise ratio. The operational flexibilities are greatly improved by the various automatic functions and the self-diagnostic functions controlled by the microprocessors.

Since various accessories are available, the FP-C1 is usable as an EFP/studio camera in conjunction with a remote operation panel.

FP-C1UC with 12 to 1 lens \$7316.00
FP-C1UD with 15 to 1 lens 7685.00



FP-C1



FP-C2

FP-C2 (Preliminary)

- Professional ENG camera is dockable to a Betacam VTR
- 620 line horizontal resolution
- High sensitivity 2000 lux with f/5.6
- Since there is no need for registration adjustment, the FP-C2 is ideal for ENG camera use
- Besides the ENG combo application, the FP-C2 can be used as a self-contained EFP studio camera with an optional camera adaptor
- Minimum illumination 16 lux with f/1.4 (+ 18dB)
- Signal-to-Noise Ratio: NTSC—57dB typ.; PAL 54dB typ.
- Sync system: Internal (conforming to RS-170A) or genlock (operation with composite video signal or black burst signal)

The FP-C2 is a 3-sensor CCD ENG dockable camera using a high density and high sensitivity image sensor for which precision special offset technology is utilized. Operational flexibility is greatly enhanced by superb picture quality with high resolution, high sensitivity and high signal-to-noise ratio, coupled with computer-controlled auto functions and self-diagnostic. Various accessories are available, making the FP-C2 usable as an EFP/studio camera in conjunction with an operational panel.

FPC2UD With 15:1 lens \$10,950.00
FPC2UC With 12:1 lens 10,600.00

HITACHI DENSHI, LTD.

Test Equipment

V-069 Vectorscope (NTSC System)

- Guaranteed vector phase accuracy of $\pm 1^\circ$. This high measurement accuracy is unsurpassed in its class
- Two loop-thru inputs and a loop-thru external sync input are provided. The chrominance signal and sync signal may be independently selected and vector measurement of the input. A sub-carrier signal is also possible
- Input sensitivity can be calibrated to the 1V full scale, 75% saturation or 100% saturation and may be variable controlled over the range 0.5 to 5 times. The UNCAL lamp lights when variable controlled has been made
- The chrominance signal applied to an input may be used to display a non-synced circle to enable a self-check of gain balance and quadrature phase
- Differential gain and differential phase can be measured
- Differential gain is a change in color subcarrier amplitude as a function of luminance level. Differential phase is a phase modulation of the chrominance signal caused by change in the luminance level

V-069 \$1950.00

V-079 Waveform Monitor (NTSC System)

- A line selector function is provided to enable selection of any displayed line of lines 9 thru 22 or either field 1 or 2. This enables observation of VIR and VITS signals, as well as Teletext signals
- Guaranteed flat response ($\pm 1\%$ over the range 25Hz to 3.6MHz and $+1\% -2\%$ over the range 3.6MHz to 6MHz). This wide bandwidth ensures high-accuracy waveform observation and measurement
- Frequency response may be selected as FLAT, IRE, CHROMA, DIFF GAIN. The horizontal-axis sweep may also be selected as 2V, 2V MAG (X20 magnified), 2H or $1\mu\text{s}/\text{div}$, enabling measurements on a wide variety of video signals
- By applying signals to a 9-pin connector on the rear panel, it is possible to display RGB. Optionally, YRGB display is also possible
- DC restore ensures a stable display even in the presence in the amplitude, APL and burst variations
- Two loop-thru inputs are provided
- Horizontal-axis position may be fine adjusted using a 10-turn potentiometer
- Two units may be mounted side-by-side in a 19-inch rack (the V-069 Vector Scope is the same size)

V-079 \$1750.00

RM-079 Rackmount for Dual V-069/079 225.00

V-089 (Type NTSC) Vectorscope

- Chrominance Processing = Chrominance Bandwidth: Subcarrier Frequency (Fsc)/3.57945MHz Pull in Range: Within 100Hz of Fsc, Pull in Time: Within 1 second with subcarrier frequency within 100Hz of Fsc, Phase Shift with Subcarrier Frequency change: $\geq 1^\circ$ from Fsc to Fsc + 50Hz or from Fsc to Fsc - 50Hz, Change: $\geq 1^\circ$ from unity to 2 times unity or from unity to one-half unity
- Amplifier = Maximum input voltage: $\pm 5\text{V}$, VARGAIN Control Range: X0.5 ~ X5.0, Input Return Loss: $\leq 40\text{dB}$ down, 5MHz
- External Sync = Input signal requirement 1.6 to 4.5V composite sync. input impedance 15K ohm $\pm 10\%$
- Dimensions = 3.5"H x 5.8"W x 15.6"D (88 x 145 x 395mm)
- Weight = 8.9 lbs./4kg

V-089 \$1684.00

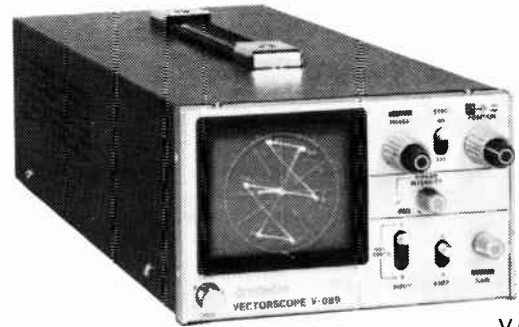
AD-099 Battery Pack for V-089/099 310.00

V-099 (Type NTSC) Television Waveform Monitor

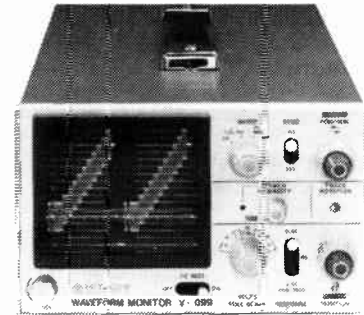
- CRT = 3.5" square with 2kV acceleration potential
- Vertical Deflection = Frequency Response at 1V Full Scale or 4V Full Scale: Flat...Response from 25Hz to 5MHz with $\pm 5\%$ of response at 50kHz, IRE...Response per 1958 IRE STD 23S-1 $\pm 10\%$, 3.58 Band Pass...Response at 3.58MHz does not vary between flat and 3.58 Band Pass by more than 1%
- Horizontal Deflection = 2V Sweep: = Frame Rate at applied Video or External Sync. 2V Mag Sweep: X20 within $\pm 10\%$, 2H Sweep: = half line rate of applied Video or External Sync, $1\mu\text{s}/\text{div}$ Sweep: $\pm 3\%$ (Accuracy)
- DC Restoration = Clamp time: Back Porch
- Dimensions = 3.5"H x 5.8"W x 15.6"D (88 x 145 x 395mm)
- Weight = 8.9 lbs./4kg

V-099 \$1250.00

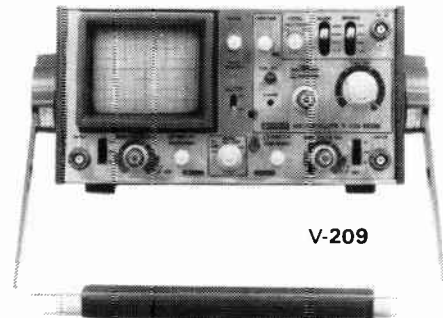
AD-099 Battery Pack for V-089/099 310.00



V-089



V-099



V-209

V-209 Dual Trace Portable Oscilloscope

- CRT = 3.5" square with 1.5kV acceleration potential
- Vertical Deflection = Sensitivity: 5mV/div to 5V/div $\pm 3\%$, Max. Sensitivity: 1mV/div $\pm 3\%$ at X5 Magnifier extends, Bandwidth: DC to 20MHz (-3dB), DC to 5MHz (-3dB) at X5 Magnifier extends, Modes: CH1, CH2, ALT, CHOP, ADD (DIFF)
- Horizontal Deflection = Time Base: 0.5 $\mu\text{s}/\text{div}$ to 0.2s/div $\pm 3\%$, Max. Sweep Rate: 50ns/div at X10 Magnifier extends
- X-Y Operation (CH1: X, CH2: Y) = Phase Error: 3° from DC to 100kHz
- Dimensions = 4.3"H x 8.5"W x 13.8"D (110 x 215 x 350mm)
- Weight = 9.9 lbs./4.5kg

V-209 \$1050.00

AD-209 Battery Pack for V-209 92.00

V-509 Dual Trace Delayed Sweep Portable Oscilloscope

- CRT = 3.5" square with 12kV acceleration potential
- Vertical Deflection = Sensitivity: 5mV/div to 5V/div $\pm 3\%$, Max. Sensitivity: 1mV/div $\pm 3\%$ at X5 Magnifier extends, Bandwidth: DC to 50MHz (-3dB), DC to 10MHz (-3dB) at X5 Magnifier extends, Modes: CH1, CH2, ALT, CHOP, ADD (DIFF)
- Horizontal Deflection = A Time Base: 0.1 $\mu\text{s}/\text{div}$ to 0.2s/div $\pm 3\%$, B Time Base: 0.1 $\mu\text{s}/\text{div}$ to 2ms/div $\pm 3\%$, Max. Sweep Rate: 10ns/div at X10 Magnifier extends, Display Modes: A, A inten, B
- X-Y Operation (CH1: X, CH2: Y) = Phase Error: 3° from DC to 100kHz
- Dimensions = 4.3"H x 8.5"W x 13.8"D (110 x 215 x 350mm)
- Weight = 11 lbs./5kg

V-509 \$1445.00

AD-509 Battery Pack for V-509 352.00

HM ELECTRONICS, INC.

Wireless Microphone/Intercom Systems

System 50 Body-Pac Wireless Microphone System

- VHF Hi-band RF link with switching diversity receiver • NRX-II™ Noise Reduction System designed for wireless mikes, > 115dB dynamic range
- Dual frequency selection • < 5 oz.

The TX550 body-pac transmitter operates on two switch-selectable frequencies in either the 160-174MHz (TX550) or 174-216MHz (TX550TV) frequency band. The input is compatible with dynamic or condenser microphones, via a 4-pin locking mini "Q-G" type connector. There is 6VDC power available at the connector for electret elements. There's a mute switch and a low battery indicator.

The TX550 delivers the maximum allowable 50mW RF output power with a maximum deviation of 15kHz. Its frequency multiplication and additional RF filtering minimize spurious and harmonic transmissions, enhancing its use in multiple system operations.

System 55 Handheld Wireless Microphone System

- VHF-Hi band RF link with switching diversity receiver • NRX-II noise reduction system, > 115dB dynamic range • Choice of 4 mike elements: HME HM58, Shure SM58, SM85, or SM87 • Ideal for multiple system operation — up to six in simultaneous operation

The TX555 handheld transmitter is available with a choice of four microphone heads: the standard HME HM58 dynamic, optional Shure SM58 dynamic, or Shure SM85/87 condenser cartridges. An auto lock on the power switch makes certain that power won't accidentally be turned off. There's a mute switch and a low battery indicator.

The TX555 delivers the maximum allowable 50mW RF output power with a maximum deviation of 15kHz. Its frequency multiplication and additional RF filtering minimize spurious and harmonic transmission, enhancing its use in multiple system operations.

- C10220** System 50 Wireless Body Pac System (Includes TX550, RX520, TA4F connector, AC adaptor, belt clip and antennas) \$1095.00
- C10215** System 55 Wireless Handheld System includes TX555 with HME HM58 mike element, RX520, AC adaptor, MC15 mike clamp and antennas 1110.00
- System 55 with Optional Microphone Elements
- C10217** With Shure SM58 mike element 1165.00
- C10218** With Shure SM85 mike element 1365.00
- C10219** With Shure SM87 mike element 1365.00
- C10221** RX520 Switching Diversity Receiver Dual Frequency includes AC adaptor and antennas 615.00



System 55

- C10222** TX550 Body Pac Transmitter, Dual Frequency includes TA4F connector, belt clip and antenna \$480.00
- TX555 Handheld Transmitters includes MC15 mike clamp and vinyl bag
- C10223** With HME HM58 mike element 495.00
- C10225** With Shure SM58 mike element 550.00
- C10226** With Shure SM85 mike element 750.00
- C10227** With Shure SM87 mike element 750.00

RX522 Wireless Microphone Receiver

This low cost rackmountable receiver was designed for either portable or fixed installations where size and weight are major concerns. It is ideal for live entertainment, churches and conferences where cost and high quality sound reproduction are essential. This receiver can be used with both the TX550 Body Pac Transmitter and the TX555 Handheld Transmitter.

- C10289** RX522 Wireless Microphone Receiver includes whip antenna, AC wall adaptor with locking clip \$290.00
- C10314** System 515 Body Pac Wireless Microphone includes RX522 receiver, TX550 body pac transmitter, reversible belt clip, antennas, mike connector (TA4F) 770.00
- C10316** System 525 Handheld Wireless Microphone includes RX522 receiver, TX555 handheld transmitter with HM58 capsule, AC adaptor with locking clip, antennas, mike clamp, vinyl bag 785.00

IC-150 Series Wireless Intercom System

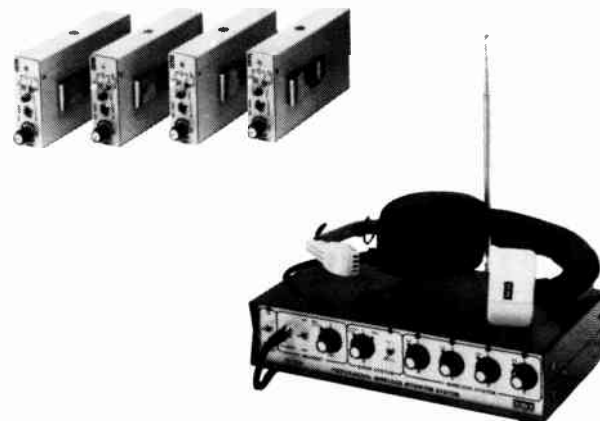
- Full-Duplex Operation — Provides continuous hands-free intercommunication between the base station and as many as four remotes • Push-to-talk operation • Hard-wired system interface • Full inter-system level control
- Ultra compact remote transceivers—single unit, metal enclosed, belt transceivers are only 5 1/2" x 3 1/4" x 1 1/8" and 10 oz. • Only 1 VHF high band channel required • HME dynamic expansion — assures clean, noise-free operation with a dynamic range of at least 80dB • Loop-around side-tone

The IC-150 base station transmits to each MT-1000 remote unit on a single VHF Hi-band frequency. It also receives the VHF mid-band transmission from the remote units. The received signal(s) is simultaneously fed to the base operator's headset, to the wired system interface and to the transmitter section for rebroadcast to each remote unit.

The MT-1000 remote transceivers receive the base operator's message on the VHF Hi-band channel, and transmit messages to base (and subsequently to any other MT-1000) on a VHF Mid-band frequency. In full duplex operation, each MT-1000 uses its own transmit frequency (the IC-150 will receive up to 4 different frequencies). In push-to-talk operation, all MT-1000s may use the same transmit frequency. Operator side-tone is provided through rebroadcast of the receive signal by the IC-150, automatically confirming receipt of communication.

IC-150 Series Wireless Intercom

- IC-150** Base Station includes: (1) KRM150 receiver module, AC-10C, diplexer and antenna \$2055.00
- C10193** IC-150A (export) 2055.00
- C10194** IC-150B (gen. purpose) 2055.00
- C10195** IC-150C (Broadcast) 2055.00



- C10113** RP150 Rackmount Kit for IC-150 \$ 75.00
- MT-1000** Remote Transceiver 1140.00
- C10196** MT-1000A (export) 1140.00
- C10197** MT-1000B (gen. purpose) 1140.00
- C10198** MT-1000C (Broadcast) 1140.00
- Each additional KRM-150 receiver module installed 345.00

HM ELECTRONICS, INC.

Microphone/Antenna Systems/ Cabled Microphones

VHF Hi-Band Microphone Systems

System 420

Concealable Body-Pac transmitter with soft compressor/limiter performance from almost any dynamic or electret lavalier microphone you wish to use. Versatile, easy to use WM 300A receiver with transformer balanced mike level output.

(150-174MHz) 420-TV (174-216MHz). AC or Ext. DC Commercial Receiver.

- C10118** System 420 includes WM 300A Receiver and TX 425 or TX 425TV Transmitter **\$895.00**
- C10105** TX 425 or TX 425TV Transmitter **425.00**
- C10106** WM 300A Receiver **470.00**

*Includes Mike Mute Switch and Belt Clip
 **Mike not included; suggest EM43-4

MA-6

4' mike cable, standard 3-pin XLR to 4-pin miniature Switchcraft. Allows use of standard handheld or self-powered lavalier with TX425 or TX425TV Transmitter.

- C10079** MA-6. **\$45.00**

Ordering Information VHF Hi-Band Systems

Systems and models operating in the 150-174MHz band are type accepted under Part 90 of the FCC Rules.

Systems and models operating in the 174-216MHz band (TV Channel 7-13) are identified by the suffix "-TV", and are type accepted under Part 74 of the FCC Rules.

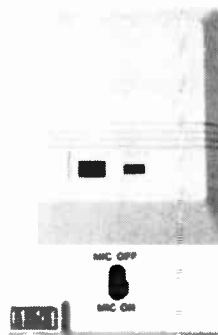
DN100 Antenna Distribution System

The DN100 Antenna Distribution System allows you to operate up to four NRX II™ RX520 Switching Diversity Receivers in a rackmount configuration with only two antennas. The antennas are provided with the RX520 Receiver. This system speeds up setup time of multicompatible systems dramatically.

The DN100 has the same rugged design and stylish front panel cosmetics as the RX520 Switching Diversity Receiver. By using the RP520 rackmounting kit, the DN100 can be conveniently mounted side by side with the RX520 receiver and takes only one 19" rack space. In applications where the antennas must be mounted outside of the rack, the MB1 antenna mounting kit is available. The kit comes with two mounting brackets and cables. If you are not using four receivers, the DN100's unused ports do not need termination.

A specially designed circuit guarantees there will be no signal loss due to antenna splitting.

- C10297** DN100 antenna distribution system Includes antenna distribution unit, AC adaptor with locking clip, 8 each BNC to BNC cables (4' long) **\$550.00**



TX 425

HM58 Unidirectional Dynamic Handheld Microphone With Mike Mute Switch

Designed expressly for high quality professional applications, the HM58 comes standard with 3-pin XLR cable, mike clamp, vinyl bag, and a gift box. It has a non-glare finish, a mike-mute switch, and is perfectly balanced for use.

Specifications

Type: Dynamic; **Frequency Response:** 80-14,000Hz; **Polar Pattern:** Cardioid; **Impedance:** Low; **Sensitivity:** -75dB ± 3dB; **Connector:** Male, 3-pin XLR; **Cable:** 6mm x 5m with 3-pin XLR connectors; **Dimensions:** 52 x 167mm; **Switch:** Mike mute

- C10018** HM58 **\$164.00**

RM77 Unidirectional Reverb Electret Microphone

The first affordably priced professional microphone offering built-in reverb. An adjustable control permits you to vary the amount of reverb, and a conveniently located 3-position switch provides the ability to "mute" the mike or add the "echo". Now you can get those "special effects" that previously could only be obtained with costly external units or tape delay machines that jam, and need frequent cleaning. The RM77 also comes standard with a 3-pin XLR cable, mike clamp, vinyl bag and a gift box. A built-in "pop" filter minimizes external interference commonly heard in condenser microphones.

Specifications

Type: Electret condenser reverberation; **Frequency Response:** 150-15,000Hz; **Polar Pattern:** Cardioid; **Impedance:** Low; **Sensitivity:** -72dB ± 3dB; **Connector:** Male, 3-pin XLR; **Cable:** 6mm x 5m with 3-pin connector; **Dimensions:** 53 x 190mm; **Battery Type:** "AA" cell 1.5V; **Battery Life:** Approx. 25 hrs. in Echo mode; Approx. 1000 hrs. in Mike mode; **Reverb Time:** 0-.2 sec. (variable); **Switches:** Off-Mike-Echo; **Controls:** Echo rate

- C10017** RM77 **\$144.00**



HM-58

RM-77

EM43-4 Omnidirectional Lavalier Microphone

The EM43 omnidirectional, electret lavalier microphone is small in size, but big in sound. With sensitivity and frequency response only obtainable in far more costly "name brands," the EM43 is easily one of the best lavalier values available today. Mike clip, windscreens and case are included. The EM43 is designed to work in Radio Frequency (RF) environments.

Specifications

Type: Electret; **Frequency Response:** 20-20,000Hz; **Polar Pattern:** Omnidirectional; **Impedance:** 2.2K ohms; **Sensitivity:** -63dB ± 4dB; **Connector:** 4-pin Tiny QG; **Cable:** 2mm x 3m; **Dimensions:** 7.5 x 20mm

- C10111** EM43-4 **\$70.00**

HM ELECTRONICS, INC.

Professional Cabled Intercom Equipment

Series 700 Cabled and Wireless Intercom Systems

- Compatible with popular existing systems • Battery or AC operation
- Internal foldback protection • Rugged construction

A communications system that lives up to the HME reputation of high technology manufacturing and design. The HME 700 Series provides features professionals require: battery operation, compatibility with current systems, high power, mike cable connections, rugged construction, and good value.

BH720

The BH720 is a single channel intercom belt pac, compatible with the 700 series and other similar 3-wire intercom systems. Advanced electronics provide superior audio quality in a compact, lightweight package. The BH720 supercedes the BH710, weighs less and offers more features.

C10058 BH720\$160.00

BH721

The BH721 provides all the functions of the BH720 while also offering 2 channel capability (using 4 conductor cable). A top panel toggle switch allows the user to communicate in full-duplex on either channel. Two 4-pin XLR connectors provide loopthrough capability for adding additional belt pacs.

C10064 BH721\$180.00

PS730 Power Supply

The PS730 is a single circuit power supply offering 30 station capability, DC status lights (green for normal and red for shorted), four output connectors, high or low level signal control, current foldback, and a very small package size.

C10065 PS730\$235.00

WL742 Two-Way Loudspeaker Station

The WL742 is a 2 channel (over a three wire shielded cable), wall-mounted, loudspeaker intercom station. The WL742 is designed to fulfill the majority of the requirements for wall-mounted intercom stations. The WL742 is capable of 2-way communication in three ways:

1. Simultaneous talk/listen via external headset or handset.
2. Simultaneous talk/listen via internal loudspeaker and gooseneck-mounted microphone.
3. Talk/listen via internal loudspeaker and external push-to-talk mike.

The WL742 is compatible with existing HME 700 series products, as well as other popular 3-wire intercoms. The WL742 has a switch which selects either Channel A or Channel B.

Additionally, a mike on/off switch, an illuminated call-light switch, and a user adjustable volume control are provided. The WL742 features an automatic loudspeaker mute capability, which automatically mutes the loudspeaker when headphones are connected.

The WL742 will fit a standard 4 gang (with plaster ring) electrical outlet box. This feature allows ease of installation and maintenance.

Speaker Station. Flush mounts in standard 4 gang electrical box with plaster ring. Allows 2-way communication through use of loudspeaker and external mike, or via standard headset. 2-channel.

C10122 WL742\$255.00

WH710

Flushmount Headset Station. 2-channel. Same electronics as WL742, without speaker. Mounts in standard electrical box.

C10015 WH710\$165.00

RP733 2-Channel Power Station

The RP733 is a rackmountable master station control center providing power for up to 32 belt pac headset stations. It is compatible with all existing HME 700 Series products, as well as other 3-wire intercom systems. The styling is consistent with that of the BH720 and is designed to be rugged and easy to use.

The RP733 has two independent channels with two headset stations having communications access to one or both channels. Two auxiliary inputs allow microphone and line levels to be fed to one or both channels. Headsets may use electret or dynamic mikes.

RP733 can power up to 32 belt pacs with call light functions in any combination between Channel A and Channel B, as long as the total number of belt



Series 700

pacs does not exceed 32. Up to 100 belt pacs can be powered if the call light feature is not needed.

C10299 RP733 2-channel power station configured for rackmounting\$690.00

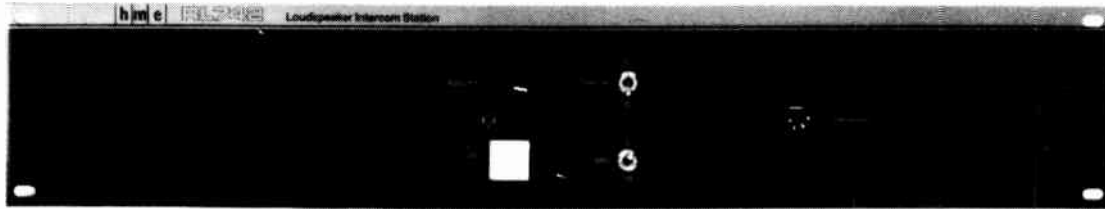
RH710 Rackmount Headset Station

Same features as WH710 in a standard 19" rack configuration.

C10124 RH710\$180.00

Accessories

- C10134 700-2 rackmount kit for PS731\$ 40.00
- C10135 700-3 rackmount kit for PS730 40.00
- C10136 700-4 rackmount kit for two PS730 45.00
- C10138 700-10 push-to-talk mike. Dynamic element. Comes with coiled cable and XLR connector. Mutes in normal mode 45.00
- C10151 700-11 25' cable with connectors 35.00
- C10139 700-12 50' cable with connectors 50.00
- C10140 700-13 100' cable with connectors 80.00
- C10141 700-14 wallplate outlet with 2-channel switch. 3-pin XLR connector for interfacing with belt pacs 35.00
- C10142 700-15 headset "Y" cable 50.00
- C10143 700-16 telephone handset with push-to-talk button and 4-pin XLR connector. Replaces headset in system 80.00
- C10144 700-17 channel isolator/adaptor allows multichannel operation with single circuit power supply 35.00
- C10145 700-19 tabletop enclosure for WL742 40.00
- C10147 700-21 Y-cable, adapts 2, 3-pin XLRs to 1, 4-pin XLR. For use with an RP732 to a BH721 69.00
- C10148 700-22 50' 4-pin XLR cable 100.00
- C10149 700-23 100' 4-pin XLR cable 123.00
- C10091 HS-100-2 lightweight headset, single muff, with electret microphone, 4-pin XLR connector 70.00
- C10083 HS210-2 lightweight headset, single muff with dynamic mike 70.00
- C10085 HS300-2 Setcom 5-1103XP single muff headset 130.00
- C10086 HS310-2 Setcom 5-1203XP dual muff headset 170.00
- C10081 HS400-2 Beyer DT-108 single muff headset 262.00
- C10088 HS410-2 Beyer DT-109 dual muff headset 374.00



RL742

RL742 Rackmount Loudspeaker Intercom Station

- Switchable for use with dynamic or electret headsets
- Two channels
- Automatic speaker mute

The RL742 is a two channel (over three wire shielded cable), rackmounted, loudspeaker intercom station. It is designed to provide a variety of communications functions in a rackmount configuration.

The RL742 is capable of two-way communication in three ways: 1. Simultaneous talk/listen via an external headset or handset. 2. Simultaneous talk/listen via internal loudspeaker or gooseneck microphone. 3. Talk/listen via internal loudspeaker and external push-to-talk mike.

The RL742 is compatible with all 700 Series products, as well as other popular 3-wire intercom systems.

The RL742 features an automatic loudspeaker mute function, which automatically mutes the speaker when headphones are connected. This mute function is also used to eliminate potential feedback when the button is depressed on a push-to-talk microphone.

The RL742, in addition to standard loudspeaker station applications, can be rackmounted with an RP732 to provide loudspeaker capability with a full-function main station. The RL742 takes up 2 rack spaces in a standard 19" rack.

Specifications

ELECTRICAL

Audio Line Level:	-30dBV at 1kHz nominal
Audio Line Bridging Impedance:	40K ohms, 20Hz to 10kHz
Audio Frequency Response:	100Hz to 12kHz (± 3dB) with a presence peak at 5kHz for improved intelligibility (Speaker: 200Hz to 5kHz ± 3dB)
Limiter:	Soft compression, to eliminate distortion for mike levels above -40dBV
Distortion:	Less than 1%
Mike Impedance:	30 -1K ohms, 200 ohms optimum
Headphone Impedance:	25 -1K ohms, 200 ohms optimum
Headphone Output Level:	80mW nominal, adj. with volume control 110dB SPL with 200 ohm headset

Speaker Output Level:	> 98dB SPL (A wtd.) at 1m
Side Tone Null Range:	> 40dB
Power:	12-32VDC (20-32VDC for optimum performance)
DC Current Draw:	25 to 200mA, typical
Operating Temp.:	0°C-50°C
Front Panel Controls	
Mike On/Off:	Toggle Switch
A/B Channel Selector:	Toggle switch
Call Light Switch:	Momentary, push on, with lamp
Volume Level:	Controls headset and speaker level
Side Tone Adjust.:	Adjusts operator's voice level in headset and loudspeaker
Internal Controls	
Mike Bias:	On/off, provides 12VDC bias for electret mikes to pins 2 (+) and 1 (-) of headset connector
DC Supply Input:	Regulated and unregulated positions
Connectors	
Input/Output:	One each, terminal block Pin 1 - GND 2 - VDC 3 - Audio Channel A 4 - Audio Channel B
Headset:	One each, 4-pin male XLR Pin 1 - Mike low 2 - Mike high and bias 3 - Headphone low 4 - Headphone high
Mechanical	
Dimensions:	3 1/2" H x 19" W
Loudspeaker	
Size:	3" square
Impedance:	8 ohms
Rated Power:	5W
Frequency Response:	± 3dB, 200Hz to 5kHz

Note: All measurements, unless specified, taken with -60dBV at 1kHz to mike input.

C10125 RL742 \$260.00



FR200 Field Pac Receiver Case

- Holds up to four RX752 receivers
- Full diversity reception capability
- Battery or AC operation
- Minimal set up time

The FR200A is a rugged, field pac receiver case for use with HME wireless microphones with flatpac receivers. Up to four RX752 receivers can be installed in the case, providing a compact, convenient package for field production.

The FR200A has a built-in, broad-band antenna diversity system which couples up to four receivers into one or two antennas.

An internal battery compartment allows continuous operation for in excess of 12 hours. An AC-10B AC adaptor is also provided to allow operation from 115VAC.

Internal space and compartments are provided for storage of transmitters, antennas and accessories.

Specifications

Frequency of Operation:	150MHz to 240MHz
Power:	Internal battery compartment takes 12 alkaline "D" cells. External 115VAC
Operating Voltage:	12 to 20VDC
Current Drain:	35mA max. (minus receivers)
System Gain	
Antenna to Receiver:	≥ 0dB
Controls:	Power On/Off Switch
Connectors:	2 UHF Antenna Ports, 50 ohms impedance, four 3-pin XLR audio connectors, 1 external DC connector
Dimensions:	12 ³ / ₄ " H x 13 ¹ / ₄ " W x 9 ³ / ₄ " D (including feet and handle)
Weight:	11 lbs. (minus receivers)
Accessories:	AC-10B AC adaptor 2 each velcro pouches attached to the lid 1 each whip antenna 2 each AN10 dipole antennas with 50' cables

C10294 FR200 Field Pac Receiver Case

With battery compartment, external DC input, and selectable monitor output. (Antennas and cables not incl.) \$1077.00

HNAT HINDES, INC.**Audio Processors****Tri-Maze Audio Processor****Input Section:**

- Selectable pre-emphasis
- 35dB gain reduction capability
- Integrated release time; completely transparent
- Broadband output control for precise density control
- 30dB expansion control range
- Triggered Absolute Level Expansion (TALE) automatically determines mode of expansion for voice and music
- 10 segment input meter display
- Expansion status indicators

Triband Section

- Time domain contoured integrated release, specifically treats time intervals associated with frequencies in the three bands of processing
- 20dB gain reduction range, 35dB capability
- Expansion control on all three bands of processing
- Front panel compression and mix controls
- Separate mix down peak metering, permits active on line set up with program
- Crossover frequencies: 275Hz and 4100Hz, 12dB/oct

Output Section

- Separate pre-clipper output
- 10kHz or 15kHz low pass filters, meets all NRSC 75 μ s requirements for AM
- Low pass filtering dip switch selectable
- Designed to feed ORBAN 8000 and 8100 "Test" input affording complete control over "On Air" sound.

The Tri-Maze is a complete stand alone processor designed to interface directly to the multiplex input of all stereo generators.

The Tri-Maze employs the same release time concept as the A-Maze and the Mic-Maze, as well as post filter zero hysteresis clipping, which results in an overall 2dB increase in loudness. This makes active composite clipping unnecessary.

Tri-Maze Single Channel \$1825.00
Tri-Maze Stereo Package \$3400.00

A-Maze Audio Processor

- Extreme high end clarity
- Absolute transparency
- Triggered expansion separation enhancement
- Integrated release time

The A-Maze employs a self neutralizing integrated release time which automatically provides an infinite number of release time combinations that totally track program density and peak-to-average ratio. The A-Maze literally integrates the program peaks into the average level.

In the absence of audio (pauses) the A-Maze provides a partial instantaneous release depending upon program consistency, which results in preservation of instantaneous dynamic range so your audio always sounds "open" and "unrestricted."

The A-Maze features an expansion and gating concept called Triggered Absolute Level Expansion (TALE). This circuitry allows gating to occur (anywhere) along the expansion slope so there is no "wash-up" in gain associated with other expanders.

Specifications

Frequency Response: \pm 3dB, 2Hz to 90kHz
 \pm 0.25dB, 30 to 20kHz

Distortion (THD) at 6dB GR, + 10dBm: < 0.5%, 50Hz to 20kHz
< 0.3%, 100Hz to 20kHz

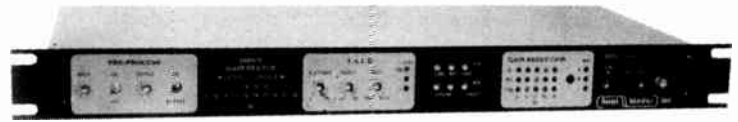
THD at 20dB GR, + 18dBm: < 0.2%, 1kHz

Intermodulation Distortion (IM): < 0.5%, 80Hz/4kHz, 4:1 6dB GR
< 0.1% AGC off, + 18dBm out

Signal-to-Noise: -76dB ref to 12dB GR/12dB NR, at + 10dBm

System Slew Rate: 8V/ μ s AGC "off"
5V/ μ s AGC "on"

Stereo Tracking: \pm 0.5dB (worst case)

**Tri-Maze****A-Maze****Mic-Maze****Stereo Spread**

(inverse control): \pm 4dB/Channel at 6dB GR

Attack Time: Fixed, < 2ms

Release Time: Parabolic, derived from release time integration process. Release time varies with duration of input

Minimum Input Level: -10dBm

Maximum Input Level: + 20dBm

Output Clip Level: + 24dBv

Expansion Attack: > 3dB/ms

Expansion Release

Time: Parabolic (mirror of gain reduction release)

TALE Slew Rate: > 10dB/ms

Trigger Sensitivity: 10dB above expansion (min)

16dB above expansion (max)

19" x 1 $\frac{3}{4}$ " x 7"

Weight: Approx. 6 lbs.

A-Maze \$1595.00

Mic-Maze Audio Processor

- Comprehensive support processor
- Highly transparent
- Multiple outputs; 2 lines (diff. and transformer) 1 mike (-55dBm)
- Triggered expansion
- Pause delay
- Adjustable expansion platform
- Muting
- Sync capability for ducker operation or stereo
- Line in
- Dipswitch selectable pre-emphasis
- De-emphasis clippers
- Assymetry control
- Ideal for STL, SCA, AM, FM, TV

Mic-Maze \$730.00

HNAT HINDES, INC.

Audio DA/Telephone Hybrid/Loudness Control

DA2-12 Audio Distribution Amplifier

- Programmable output attenuation permits easy standardization of audio levels even down to -60dBm while preserving signal-to-noise integrity and meter calibration • 3 position input gain selection 0dB, +10dB, +20dB • Input overload indicators to monitor overdrive conditions (on at +18dBm bus level) • 12 discrete balanced differential outputs may be used as 24 unbalanced outputs • Constant voltage output • Internal resistive isolation to facilitate easy output level attenuation while maintaining signal-to-noise ratio and meter calibration • Balanced bridging differential inputs • Single turn log taper controls • Discrete peak LED metering on all channels programmed to come on at +8dBm (open circuit) • Color coded front panel controls eliminate confusion • Full RFI protection on all inputs and outputs • Cool running regulated power supplies • Low profile construction (1³/₄" rack space)

Circuit Specifications

Frequency Response: DC to 75kHz
Maximum Output Level: +24dB (+18dBm loaded, 600 ohms)
Maximum Gain: 40dB
Signal-to-Noise: -75dBm reference to 0dBm out
THD at +18dBm: <.05% DC to 20kHz
Output Impedance: 600 ohm (300 ohm resistive each leg for easy attenuation)
Input Impedance: 22K ohm differential bridging
Slew Rate: 13V/μs
Crosstalk: -90dBm minimum
Output Channel Isolation: Infinite
Noise Floor: 250μV typical
Maximum Output Attenuation: -60dBm typical
Power Consumption: 6W approximate
Peak Meter Calibration: +8dB unterminated
 +6dBm terminated (nominal)
Input Overload Calibration: +18dBm (allows 6dB headroom)
Dimensions: 1³/₄" x 19" x 7¹/₄"

DA2-12 \$525.00



DA2-12



ZH-1



SX-87

ZH-1 Precise Loudness Control

- Unique second harmonic cancelling circuitry • Stereo circuitry • 2dB loudness improvement • Precise metering • No overshoot • SCA protection • Precision controls • High slew rate, wide band width • Zero hysteresis clipper represents the latest in AM and FM peak control • Intended to follow the low pass filters in all stereo generators, thereby providing precise left and right discrete clipping of an absolute magnitude • May be used to provide precise AM peak control with full asymmetry adjustment capability on both mono and stereo facilities • When installed ahead of discrete STL transmitters, overhead problems become nonexistent • Circuit operation is based on amplifying the normal slippage (hysteresis) which occurs with conventional clipping and using this amplified error to control the magnitude of clipping • Direct coupled outputs with low pass filtering for harmonic suppression and maximum baseline control • High slew rate circuitry and precision components provide extended reliability

Specifications

Maximum Input: +24dBu
Maximum Output, Unclipped: +20dBu
Frequency Response (Low-Z source, 1K): ±3dB DC to 80kHz
Frequency Response: -3dB at 19kHz
LPF Output: -22dB at 67kHz
Separation: >85dB
% THD, 3dB
 Below Clipping: <0.1%
% IMD, SMPTE, 10:1 Mix: <0.1%
Second Harmonic Distortion: <0.1%
 At 6dB Clipping: 0.5% typ.
S/N at +10dBu Out: <-74dB
Slew Rate: 13V/μs
Power Requirements: 110VAC, 60Hz, 3.5W
Dimensions: 1 rack space, 5.125" D
Weight, Shipping: 4 lbs.
ZH-1 \$460.00

SX-87 Telephone Hybrid

- Balanced bi-directional trans-hybrid amplification effectively reduces hybrid return loss to zero. This results in a device which is approximately 25dB more tolerant to null upset as a result of line variations • Full band pass filtering on both the transmit and receive sections • Multiple outputs • Zero loss conferencing • Switch hook detection with both continuous and momentary drive capability for control functions such as tape machines, warning lights, etc. • Caller tone signalling • ID tone signalling selectable, 17 or 34 sec. • Receive path muting during answer function • On board test oscillator • Logic functions dip-switch selectable • "On chassis" mix down amp specifically for "off air" contests

The SX-87 Phone Hybrid is specifically designed as an inexpensive, highly sophisticated interconnect device for elaborate ENG applications where multiple interfacing is the norm.

The SX-87 provides the best rejection of feed audio as compared to phone return audio with consistent null floors between -12dB and -19dB. All others are typically 7dB.

Specifications

Transmit Section: Part 68, FCC rules compatible third order band pass with notch filter at 2400Hz to prevent interference with automatic switching equipment
Peak Indicator: Illuminates prior to maximum allowance feed level of -9dBm. (This indicator is to provide the user with a visual illegal condition indication and under normal usage is never on.)
Input Level: -10dB to 0dB balanced
 -10 to +20dBm unbalanced
Trans Hybrid Loss: -55dB at -15dBm feed level, 1kHz, 600 ohms (worst case) -65dB typical
 Six pole band pass filter
Receive Section: Usable Input Range at Telco: -35dBm to 0dB
Nominal Output Level: +6dBm, 600 ohms for -25dB input at Telco
SX-87 \$465.00

HOTRONIC, INC.

Time Base Correctors/Frame Synchronizers

AE61 and AE61B

Time Base Correctors

- Time base correction for heterodyne VTRs
- Constant H phase for matched frame edit
- 4 times subcarrier sampling, 8 bit resolution
- VTR 3.58MHz subcarrier feedback
- Adjustable horizontal and vertical blanking
- Handle high speed search
- Full processing amplifier control

The AE61 and AE61B are broadcast quality digital Time Base Correctors. They operate with 525 line/60Hz monochrome, and accepts heterodyne VTR video signals.

The AE61 and AE61B are small size TBCs with complete features, light weight, low power consumption, and high performance at low cost.

Specifications

Video Signal

Accepts non-segmented heterodyne and monochrome 525 line/60Hz video signals

Recorder Interface

Any non-segmented VTR

Correction Range

16 lines

Signal-to-Noise Ratio

58dB (p-p signal to RMS noise) (see note 1)

Residual Time Base Error

Differential phase better than 2°

Differential gain better than 2%

Monochrome ± 20 ns

Bandwidth

Direct color ± .5dB to 4.2MHz

Heterodyne with 3.58 feedback ± .5 to 4.2 MHz

Monochrome ± .5dB to 4.2 MHz

AE61B Bandwidth

2.5MHz Luminance

1.2MHz Chrominance

Genlock Range

Adjustable, more than ± 2μs

K Factor (2T)

Direct mode 1%

Heterodyne mode with 3.58 feedback 1%

Monochrome 1%

Input Signals

Video

1V composite video signal (76 ohms, terminated)

Genlock

Blackburst or standard NTSC composite video signal

Dropout Compensator (Optional)

RF from VTR (75 ohms, terminated) or TTL

Output Signals

Video

1V p-p at 75 ohms, terminated composite

VTR 3.58

1V p-p at 75 ohms, terminated

Sync Drives

Adv. Sync 1V p-p at 75 ohms

Options

Noise reducer

Digital Color Bar Generator

Digital Drop Out Compensator

Station Identification

AE61 \$3000.00

AE61B ea./2500.00

Y/C option 500.00

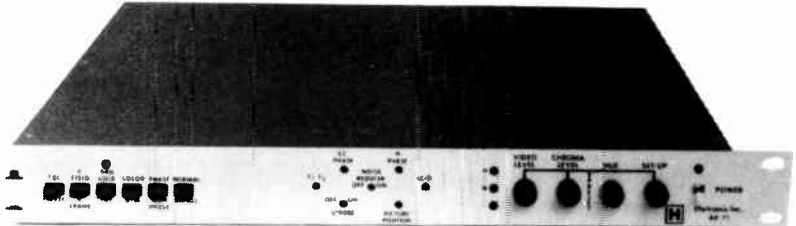
Options

SMPTE Digital Color Bar

and Blackburst \$300.00



AE61/AE61B



AF71

Digital Color Pixel by

Pixel Dropout Compensator

(RF input PR TTL Input) 500.00

AE61 Service Manual 25.00

AF71 TBC/Frame Synchronizer

- Time base correction for heterodyne VTRs
- Frame synchronization with more than two frame memories
- Constant H phase for matched frame edit
- 4 times subcarrier sampling, 8 bit resolution
- VTR 3.58MHz subcarrier feedback
- Adjustable horizontal and vertical blanking
- Handle high speed search
- No interruption presettable/variable processing amplifier
- Highly stable pause mode capability
- Adaptive comb filter
- 3dB chroma noise reduction
- Full bandwidth freeze field/freeze frame (Field 1 or Field 2 selectable)
- Accept noise satellite feed
- 1 3/4" height; less than 15 lbs.
- Precise automatic microprocessor control freeze frame (optional)
- 16 bit automatic matched digital audio delay (optional for frame synchronization mode)

The AF71 TBC/Frame Synchronizer is the resultant climax of 5 years of ceaseless engineering innovation and refinement.

The powerful features of the AF71 earn their way to the production.

Specifications

Video Signal

Accepts non-segmented heterodyne and monochrome 525 line/60Hz Video Signals, and stable NTSC signal

Recorder Interface

Any non-segmented VTR

Correction Range

Memory size two frame

Signal-to-Noise Ratio

58dB (p-p signal to RMS noise) (see note 1)

Residual Time Base Error

Differential phase better than 1.5°

Differential gain better than 1.5%

Monochrome ± 20 ns

Bandwidth

Direct color ± .5dB to 4.2MHz

Heterodyne with 3.58 feedback ± .5 to 4.2MHz

Monochrome ± .5dB to 4.2 MHz

Monochrome ± .5dB to 4.2 MHz

Genlock Range

Adjustable, more than ± 2μs

K Factor (2T)

Direct mode 1%

Heterodyne mode with 3.58 feedback 1%

Monochrome 1%

Input Signals

Video

1V composite video signal (75 ohms, terminated)

Genlock

Blackburst or standard NTSC composite video signal

Dropout Compensator (Optional)

RF from VTR (75 ohms, terminated) or TTL

Audio Input or SMPTE Input

50mV min. 2.5K ohms

Output Signals

Video

Composite video output 1V p-p at 75 ohms, terminated

VTR 3.58

1V p-p at 75 ohms, terminated

Sync Drives

Adv. Sync 1V p-p at 75 ohms/4V p-p at 75 ohms

AF71 \$4500.00

AF71B Without 3.58MHz subcarrier

feedback. 4000.00

Option

Pixel by Pixel Digital

Dropout Compensator \$500.00

Notes

1. Signal-to-Noise Ratio is measured with a Rhode and Schwarz noise meter, using 100 IRE flat field.
2. Differential Phase and Gain are measured with a green ramp.

AF-72 Frame Synchronizer

4x sub-carrier sampling, 8 bit resolution; two frame memories; freeze two frames for perfect image; accept noisy satellite feed \$6,500.00

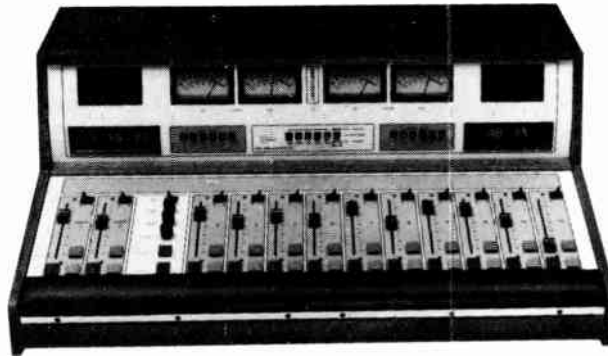
Optional adaptive comb filter; full bandwidth interpolated freeze field/freeze frame \$1,000.00

Optional 16 bit automatic matching digital stereo or monaural audio delay . . \$2,000.00

Prices and Specifications Subject to Change Without Notice.

HOWE TECHNOLOGIES CORP.

Audio Console

**7512A Audio Console**

- Sheer operating pleasure
- Unmatched sound quality
- Digital logic control
- Top of the line specifications
- Exceptional ease of installation
- Professional-grade linear slide faders
- LED status lights

The 7512A console has a simple design, coupled with high quality slide faders and totally digital remote start and stop controls. The console is designed using VCA technology, a simple, virtually RFI immune audio section, and easy-to-use Molex connectors. The 7512A console has 12 stereo channels, 22 total inputs, one mono and 2 stereo outputs.

The 7512A console includes all the materials needed to install and understand the unit. Modular electronics make service simple and quick. The instruction manual has been praised by users as being the most detailed, simple-to-understand documentation they have seen. Molex connectors are used to make installation quick and easy and a complete kit is included. The 7512A console also comes with a spare parts kit, and the components can be easily plugged in should repairs be necessary.

Broadcasters have come to know the quality of our consoles, and the 7512A is no exception. The professional linear slide faders are built to last for years, and are offset in the console, reducing the chance of spillage into the fader. The full digital logic control of the on-off-cue functions means easy operation, and the LED status lights on each button assist operator control.

The 7512A console is a streamlined package, using durable Lexan® over metal with solid oak top and side panels. This type of construction assures you years of service with minimum upkeep.

The 7512A is packed with the most advanced features, yet is designed to be simple to operate and maintain. The interior of the console is readily accessible. There are no catches or latches; it just unfolds. Once inside, you'll find high technology circuitry, plug-in modules with interchangeability, and a logical, straightforward layout.

Specifications**Intermodulation**

Distortion: All outputs: >0.04% using standard 60 and 7000Hz tones in 4-to-1 amplitude ratio

Overall Signal-to-Noise Ratio:

All secondary circuits: Noise <-80dB below normal maximum output. A-WTD, RMS (ASA)

PROG/AUD Output Noise In a 20-20,000Hz Unweighted Passband (Output Terminated in 600 ohms):

-90dBm or better with one channel on, fader at normal operating position, input terminated. -124dBm equivalent input noise (microphone channels) -68dBm or better with all channels on, and all faders maximum

Attenuator Tracking:

± .25dB, left-vs-right, audition or program, any channel. ± .25dB audition-vs-program, left or right, any channel. Fader at mid-position to full on.

Channel Separation:

> 66dB, 20Hz to 20,000Hz

Power:

117/230VAC, 50/60Hz, 75W, single-phase with safety ground

Finish:

Earth-tone Lexan finish. Solid hardwood trim with oil- and urethane-sealed finish

Size:

10 1/2" H x 33" W x 23" D

Weight:

80 lbs.

Operating Mode:

Stereophonic

Mixing Channels:

12 total

Primary**Input Circuits:**

22 total: 10 inputs accept -60dBm to +20dBm nominal levels, each input adjustable, active balanced; 12 pushbutton inputs (routed to 2 mixing channels) accept -20dBm to +20dBm nominal levels, each input adjustable, active-balanced. All line inputs are 10,000 ohms or greater, bridging

Secondary**Input Circuits:**

One on-air input, two auxiliary inputs, 0dBm nominal level, adjustable, unbalanced

Primary**Output Circuits:**

Program outputs (L & R) active-balanced, factory set at +4dBm, peak at +24dBm. Output adjustable from 0dBm to +10dBm for 0-level meter deflection. Audition outputs (L & R) active-balanced, factory set at +4dBm peak at +24dBm. Output adjustable from 0dBm to +10dBm for 0-level meter deflection

Secondary**Output Circuits:**

Monitor outputs (L & R) at 0dBV nominal, unbalanced (30W/channel into 8 ohm speakers with optional power amplifier module). Head-phone outputs (L & R). 1/4" stereo front panel jack. 5WRMS nominal into 8 ohms. Cue speaker outputs (L & R) 10W nominal into internal 8 ohm speakers

Frequency**Response:**

All outputs: ± 0.1dB, 20Hz to 20,000Hz at normal maximum output

Total Harmonic Distortion:

All outputs 0.03% nominal or lower, 20Hz to 20,000Hz at normal output, fader at normal operation position

7512A\$8900.00

HOWE TECHNOLOGIES CORP.

Audio Consoles

8000/9000 Series Modular Audio Consoles

8000 Series:

- Precision rotary faders
- Dry contact function switches for remote start and stop (optional)
- Key-type microphone switches
- Digital clock and timer available

9000 Series:

- Laser trimmed conductive plastic linear faders
- Environmentally sealed ultra long life switches with LED indicators
- Digital clocks and timers
- Solid-state control logic circuitry
- Adjustable delayed audio following channel start to prevent "wow"
- Cue select is independent of fader position

Specifications

Operating Mode: Stereophonic; two independent stereo program outputs; separate mix-minus output; monaural (L + R) program output
22 maximum

Mixing Channels: Primary

Input Circuits: Three per channel; all inputs accept -60dBm to +20dBm nominal levels, each channel input adjustable, active balanced. All line inputs are 10,000 ohms or greater, bridging

Secondary

Input Circuits: One on-air, two auxiliary inputs, 0dBm nominal level, adjustable, active balanced

Primary

Output Circuits: Program 1 outputs (L & R) active balanced, factory set at +4dBm, peak at +26dBm. Output adjustable from 0dBm to +10dBm for 0-level meter deflection.
Program 2 outputs (L & R) active balanced, factory set at +4dBm, peak at +26dBm, peak at +26dBm. Output adjustable from 0dBm to +10dBm for 0-level meter deflection.

Secondary

Output Circuits: Monitor outputs (L & R) at 0dBV nominal, unbalanced (30W/channel into 8 ohm speakers with optional power amplifier module).
Headphone outputs (L & R), 1/4" stereo front panel jack, 5WRMS nominal into 8 ohms.
Cue speaker outputs, 10W nominal into internal 8 ohm speakers

Frequency Response: All outputs: ±0.1dB, 20Hz to 20,000Hz at normal maximum output

Total Harmonic

Distortion: All outputs: 0.03% nominal or lower, 20Hz to 20,000Hz at normal output, fader at normal operating position

Intermodulation

Distortion: All outputs: >0.04% using standard 60 and 7000Hz tones in a 4-to-1 amplitude ratio +26dBm

Clip Point:

Overall Signal-to-Noise Ratio:

All circuits: Noise lower than -85dB below normal maximum output, A-WTD, RMS (ASA) ≥ -90dBm with one channel on, fader at normal operating position, input terminated -124dBm equivalent input noise (microphone channels) ≥ -76dBm on and all faders nominally set

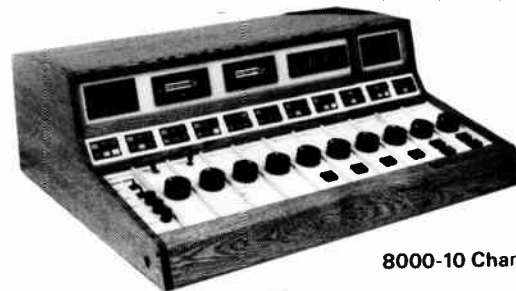
PROG1/PROG 2

Output Noise in a 20-2000Hz Unweighted Passband (Output Terminated in 600 Ohms):

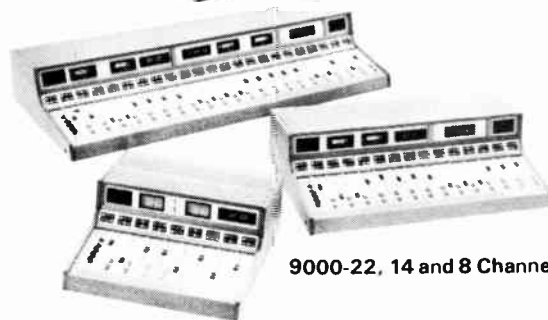
Attenuator

Tracking: ± 0.25dB, left-vs-right program 1 or program 2, any channel. ± 0.25dB program 1-vs-program 2, left or right, any channel. Fader at mid-position to full on

Channel Separation: > 70dB



8000-10 Channel



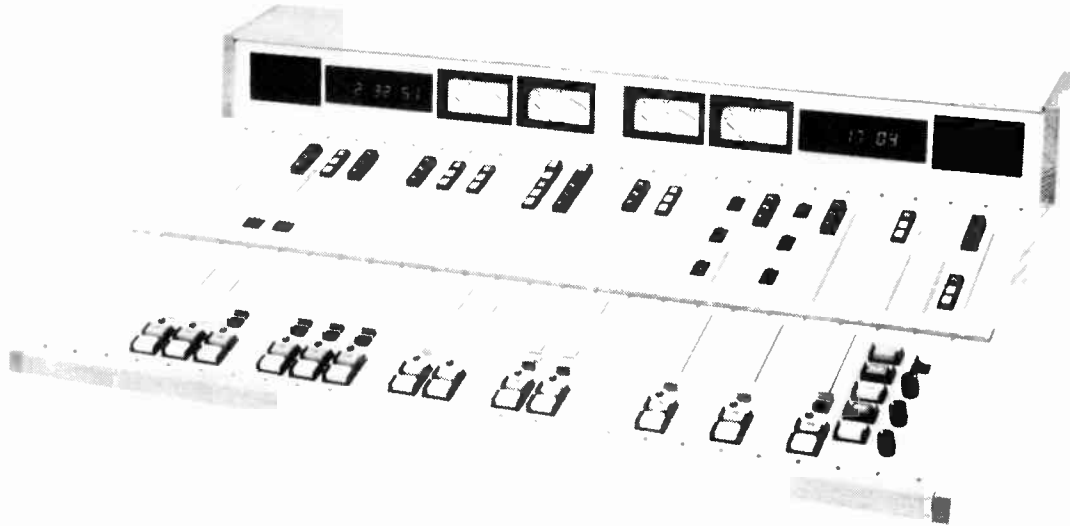
9000-22, 14 and 8 Channels

Power: 117/230VAC, 50/60Hz, single-phase with safety ground, power requirement depends on number of channels
Finish: Earth-tone Lexan® finish. Solid hardwood trim with oil- and urethane-sealed finish
Size: Dependent on number of channels
Weight: Dependent on number of channels

8000 Series* 8 Channel	Includes monitor control section, clock or timer position, mono cue speaker, 24 inputs \$ 5,995.00
10 Channel	Includes stereo cue speakers, 30 inputs . . . 7,195.00
12 Channel	Includes mono cue speaker, both clock and timer positions, 36 inputs 9,195.00
14 Channel	Includes stereo cue, 42 inputs 10,995.00
16 Channel	Includes clock and timer positions, auxiliary meter for mix-minus and mono outputs, meters for Program 1 and 2, 48 inputs. 12,300.00
18 Channel	Includes auxiliary meter, stereo cue speakers, dedicated meters for Program 1 and 2, 54 inputs 13,600.00
20 Channel	Includes full metering, 3 clock or timer positions, 60 inputs 14,900.00
22 Channel	Includes full metering, 3 clock or timer positions, stereo cue speakers, 66 inputs. 16,200.00

9000 Series 8 Channel	Includes monitor control section, choice of clock or timer, mono cue speaker, 24 inputs \$ 8,995.00
10 Channel	Includes 2 cue speakers, 30 inputs 10,995.00
12 Channel	Includes mono cue speaker and both clock and timer, 36 inputs 12,995.00
14 Channel	Includes clock, timer, stereo cue, 42 inputs. 14,950.00
16 Channel	Includes clock, timer, auxiliary meter for mix-minus and mono outputs, dedicated meters for Program 1 and Program 2, 48 inputs 15,780.00
18 Channel	Includes clock, timer, auxiliary meter, stereo cue speakers, dedicated meters for Program 1 and Program 2, 54 inputs 17,355.00
20 Channel	Includes full metering, 3 clock or timer positions, 60 inputs 20,119.00
22 Channel	Includes full metering, 3 clock or timer positions, stereo cue, 66 inputs 21,825.00

* Clocks and timers are standard in the 9000 Series and are a \$295.00 option on the 8000 Series console.



10,000 Series Audio Console

The 10,000 Series Audio Console breaks ground in modular audio console design. Numerous novel design innovations have been incorporated which provide the optimum combination of technological sophistication and user convenience.

The 10,000 is a low profile audio console designed for both on-air and production use. The three-tier modular design allows for expansion of size and features at any time in the field. Mainframes start at 14 channels and can be expanded up to 32 input channels; full Program output sub-mix capability, including mix-minus, is provided. Various accessory features and interchangeable modules are available, including pan, solo, 10 position remote input selects, tape remote control units, reference tone oscillators, multiband equalization, etc.

The first tier contains the faders, mute and solo function switches; the second tier contains all the analog modules (E.Q., etc.) and routing switches. The third (optional) tier, oriented at an intermediate angle between the second tier and the meter bridge, is available for additional switching and display functions. The meter bridge is customized for each 10,000 Series Console, allowing the user to determine the best configuration of displays for the facility. Meter bridge accessories include standard VU or Vacuum Fluorescent metering, clocks, timer, temperature indicators, remote control status indicator, etc.

Input Channel:

Each channel is provided with active balanced stereo inputs, with standard Molex input connectors. The input gain can be adjusted to accommodate mike or line level signals. Dual tracking voltage controlled amplifiers (VCA) provide accurate gain matching for each stereo signal pair. Three status controls are standard on each fader module: Channel On, Channel Off and Cue. Internal programming jumpers allow the user to determine the precise configuration of the CMOS control logic routing, which provides flexible console control, external device control and channel sequencing.

Bus Configuration:

Five monaural buses are provided. The first four are normally used as two stereo pairs, that is Program 1 left and right, and Program 2 left and right. Depressing a Program Bus Select switch routes the left and right signals from a channel to the corresponding left and right Program Buses. The fifth bus is used for the mix-minus function and has the following characteristics. When either Program Select switch is activated, the mono sum of the left and right signals of that channel are routed to the mono mix-minus bus; that is, when no mix-minus

switches are depressed, the mix-minus bus will contain the mono sum of all signals present on both of the program buses. When a channel mix-minus switch is activated, the signals originating from that channel are deleted from the mix-minus bus.

Monitor Control:

Full monitor control is located in the first tier. The Monitor Control Module provides independent level controls for control room monitor speakers, front panel cue speakers, and headphones. In addition, two programmable muting functions are available. If a channel is to be used for a studio microphone, feedback between the live mike and the nearby speakers could occur. To avoid this problem, both the monitor speakers and the front panel cue speakers can be programmed to dim (or mute) as the mike channel fader level is increased. If the fader is up, switching the channel to the "Off" mode will instantly restore program material to the speaker systems.

Output Section:

Each of the four monaural program buses have an independent VCA level control; this allows the console to be used as a four sub-mix out production console. The mix-minus signal is a monaural output. Two additional mono outputs are provided; these are the mono sums of the Program 1, left and right, and Program 2, left and right, respectively. Balanced output amplifiers are standard throughout (maximum level +24dBm).

The 10,000 Series Consoles are designed to be ergonomically correct. The console is built in such a way to allow for comfort of operation without operator fatigue. Adequate leg room, engineering access, and wiring ports have been designed in. All welded chassis construction and solid oak trim guarantee durability. The 10,000 Series also comes with an installation kit and a spare parts kit.

The photo shows a typical broadcast configuration; the first contains thirteen input modules, grouped by input type (i.e., tape carts, remote lines, etc.), a tape transport remote control and a monitor control (right-most module). The second tier contains primarily input select and output bus routing switches. A console designed for recording and post-production would typically include more complex processing and routing modules. In this unit, the optional third tier has been omitted.

Since each console configuration is custom designed for the user, it is impossible to show all possible variations. Call for more detailed applications and design information on the 10,000 Series Audio Consoles.

10,000 \$12,000.00-25,000.00
Prices Vary With Configuration

HOWE TECHNOLOGIES CORP.

Audio Timebase Corrector



2300A

2300A Phase Chaser

- Channel fill-in enable switch
- System bypass/online switch
- Polarity reversal enable switch
- Remote control jack (for remote bypass and/or reset)
- "Fill" on/off LED indicator
- "On-Line" indicator
- "Flip" on/off LED
- 21-segment analog time delay error indicator
- Remote status jack (remote sensing of flip, fill, on/off line, clip)
- Total harmonic distortion: 0.02% maximum, any level up to +28dBm
- Intermodulation distortion: 0.02%, any level up to +28dBm
- Overall signal-to-noise: -90dBm
- Dimensions: 19" x 1³/₄" x 13" standard EIA rack
- Balanced inputs and outputs (XLR connectors)
- Inputs accept levels from -40dBm to +20dBm (nominal)
- Outputs (left, right, and L+R) are nominal 20dBm, peaking at +28dBm
- Frequency response is essentially flat: DC to 20kHz, ± 1 dB
- Time delay error correction is available out to $\pm 150\mu\text{sec.}$, and is functional over the entire dynamic range of >90dB

Applications

Anywhere discrete stereo audio information exists which is subject to inter-channel time delay and polarity errors:

- Television broadcasting (especially MTS systems)
- Radio and television pre-production
- Film/video production/post-production
- Film-to-tape and tape-to-tape video transfer/duplication
- Audio duplication

- Theater sound (especially Dolby™ Surround systems: the 2300A corrects phase errors in Surround encoded material, eliminating spitting and assuring accurate decoding and spatial image reproduction)

The Model 2300A provides automatic detection and correction of all interchannel time delays in stereo audio program material delays that normally result in loss of mono compatibility (characterized by noticeable attenuation of high frequencies) and poor stereo imaging. A unique feature of this device is its ability to discriminate between systematic time delay (e.g., tape head misalignment) and intentional phase fluctuations in the program material. Installation of the Phase Chaser in the audio chain downstream of all source machines assures dynamic, real-time phase error elimination, missing channel fill-in, and polarity reversal correction.

Time-delay related high frequency degradation is eliminated; mono compatibility and the intended stereo image are restored.

Single missing channels are "filled-in" (with cross-fade switching) after a user-programmable decision time; polarity reversals are detected and "flipped" with a psychoacoustically optimum crossfade.

The Phase Chaser's proprietary "window of zero correction" circuit accurately discriminates between normal phase fluctuations and constant systematic time delays: the stereo information is left intact. This ability to ignore regular program material phase changes allows the correction of time delay errors in phase-encoded matrix audio, such as Dolby™ Surround Sound. The Model 2300A guarantees accurate multichannel decoding in the theater, as well as mono compatibility and proper stereo imaging in the duplication or transmission of Surround Sound programming.

2300A \$3495.00

IKEGAMI ELECTRONICS (U.S.A.), INC.

Microwave Links

PP-70-7 (7GHz)/PP-70-13 (13GHz)

Portable Mini Microwave Links

- Compact and lightweight transmitter. Miniaturization technology provides a very compact and lightweight design which is superior for portable microwave link applications
- Low power consumption. 3 to 4 hours of operation are possible with a conventional 4AH battery
- An AC power supply unit is also provided for operation with an AC power source
- Versatile applications. The transmitter and receiver can be used as separate components or they may be joined as one single operating unit. This design concept provides a wide range of applications
- Audio input level can be switched to 0dBm/600 ohm or -50dBs/High impedance by a selector switch. When it is set at -50dBs input, an additional AGC function permits direct connection of a microphone
- Surface acoustic wave (SAW) filter is used for IF band to minimize interference by disturbing waves from adjacent channels
- Built-in "LED Bar" and sonalert accurately adjusts for the best receiving direction. The LED indication and pitch change of the sonalert "Beep" provides indication of the receiver input level for accurate positioning even in darkness
- Double superheterodyne system minimizes adjacent-channel interference
- Built-in video and audio test signal generators are provided to simplify field operations

The PP-70 is a high performance, portable microwave link system. It was developed to complement Ikegami's compact microwave link series. This compact and lightweight microwave link is designed for convenient cable-free transmission of television and audio signals, especially as a window link for Electronic News Gathering and Electronic Field Production.

Applications

One-Piece

The one-piece application is most suitable for use in ENG, for a window link, etc.

Two-Piece

The two-piece application is most suitable for use by mounting on an OB van. The RF unit and control unit are connected by a coaxial cable which can be extended to the maximum length of 100 meters (5D-2W). Multicore option will provide complete remote control of all functions at the control unit.

Long Distance Transmission

Long distance transmission is possible by the use of a large diameter (0.6mφ or 0.9mφ) parabolic antenna. The parabolic antenna and tripod of Ikegami's PF701 portable microwave link can be used without modification for this purpose.

IF Through-Relay System

The PP-70 system can be used as a link for "IF through-relay" by connecting the receiver RF unit and transmitter RF unit with a coaxial cable.

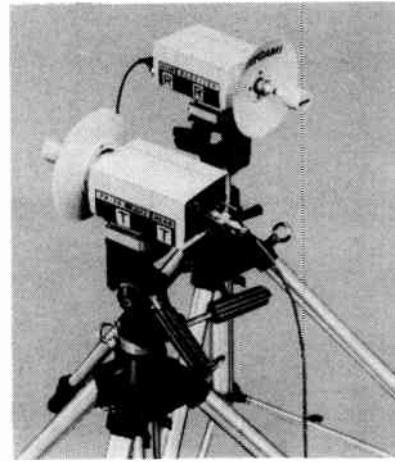
The IF frequency of 70MHz enables combined use with the PF701 system and various other microwave links.

Cable Multiplex Transmission

Cable multiplex transmission with one video circuit and two sound circuits is possible by connecting the transmitter control unit and the receiver control unit with a coaxial cable. The connecting cable can be extended to the maximum length of 300 meters (5D-2W coaxial cable).

Two-Way Transmission

The PP-70 system can be used for two-way transmission when it is necessary to send a return video signal, command signal, intercom signal, etc. to the field pick-up site. The antenna system can be used in common in the same frequency band when a branching filter and a two-way adaptor are provided. (A wide band antenna or independent transmission and receiving antennas will be required when different frequency bands are to be used for the two-way transmission.)



PP-70-7/PP-70-13

Specifications

PP-70-7

Frequency (MHz)	Transmission Output	Noise Index	Channel
LB 6425 ~ 6550	1.2W	4dB	4 Basic Channels 12 With Offset
HB 6875 ~ 7125	1.2W	4dB	10 Basic Channels 30 With Offset

PP-70-13

Frequency (MHz)	Transmission Output	Noise Index	Channel
LB 12700 ~ 12950	120mW	5dB	10 Basic Channels 30 With Offset
HB 12950 ~ 13250	120mW	5dB	12 Basic Channels 36 With Offset

Transmission Distance

Transmission distance for various antenna combination is as follows:

PP-70-7

TX DISH ANTENNA DIAMETER (m)	RX DISH ANTENNA DIAMETER (m)	ANTENNA GAIN			
		0.15mφ	0.3mφ	0.6mφ	0.9mφ
0.15mφ	17dB (7GHz)	5 Km	10 Km	20 Km	30 Km
0.3mφ	23dB (7GHz)	10 Km	20 Km	40 Km	60 Km
0.6mφ	29dB (7GHz)	20 Km	40 Km	85 Km	*90 Km
0.9mφ	32dB (7GHz)	30 Km	60 Km	*90 Km	*90 Km

PP-70-13

TX DISH ANTENNA DIAMETER (m)	RX DISH ANTENNA DIAMETER (m)	ANTENNA GAIN			
		0.15mφ	0.3mφ	0.6mφ	0.9mφ
0.15mφ	22dB (13GHz)	3 Km	6 Km	10 Km	15 Km
0.3mφ	28dB (13GHz)	6 Km	10 Km	20 Km	30 Km
0.6mφ	34dB (13GHz)	10 Km	20 Km	45 Km	65 Km
0.9mφ	37dB (13GHz)	15 Km	30 Km	65 Km	*90 Km

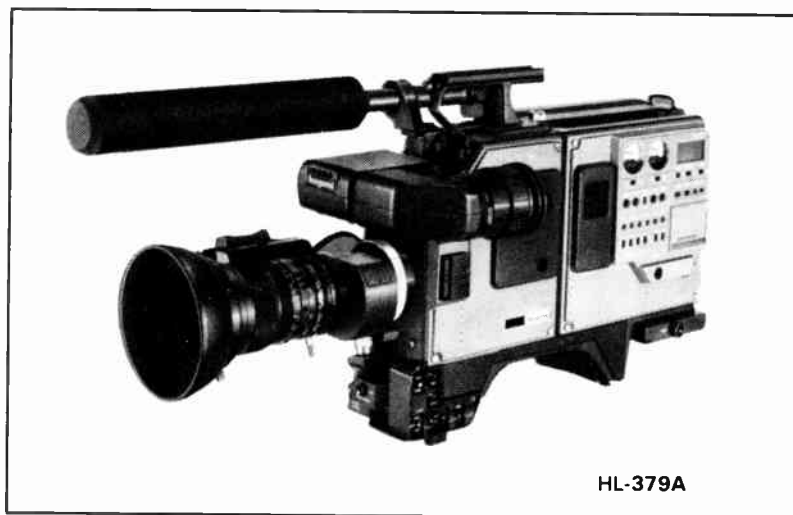
(* mark: Antenna should be 500m above the ground)

Condition:

1. Transmitter SHF output: 7GHz 1.2W (30.8dBm)
13GHz 120mW (20.8dBm)
2. Receiver SHF input: 60dBm approx. (S/N 40dB or better)
3. Fine weather condition, line of sight distance, no fading

PP-70-7/PP-70-13 \$26,339.00

Note: Available in high-band or low-band configuration. Add suffix HB or LB to indicate preference.



HL-379A

**HL-379A
CCD Color Television Camera System**

- 1.5" viewfinder
- Test extender card
- Dynamic detail incorporated for correction of lens corner resolution
- White shading correction circuitry in lens extender use incorporated
- Auto highlight compression
- Knee aperture correction
- SMPTE color bars incorporated
- Genlock circuitry incorporated
- High grade picture quality obtained by horizontal three DTL
- Auto iris permits easy shooting of backlighted scenes
- External remote control using digital commands. The following functions can be remotely controlled:
R/B Gain, R/B/M Ped, Iris, DTL Level, Iris Auto/Manual, VTR Start/Stop, Call, Auto White
- A built-in sound monitor speaker
- Compact, lightweight, 3.1kg with VF
- Low power consumption, 13W
- Adjustment tool
- Parts case
- Spare fuse
- Extractor tool
- Tripod mounting plate
- Shoulder pad
- Instruction manual
- Carrying case

The HL-379A is a broadcasting quality CCD camera which has high-performance and high-stability despite its compactness and light weight. Besides its usefulness with various types of VCRs, it can be used as a multi-purpose camera with the host of various accessories.

Specifications

Mechanical

Dimensions:	9.8" H x 3.7" W x 6.5" D (250 x 95 x 165mm)												
Weight:	3.1kg (with 1.5" VF)												
Lens Mount:	Bayonet (interchangeable with HL-95B/79EAL)												
Optical Filter:	<table border="0" style="display: inline-table;"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>3000°K</td> <td>5600°K</td> <td>5600°K</td> <td>OPTION</td> </tr> <tr> <td></td> <td></td> <td></td> <td>+ 1/4ND</td> </tr> </table>	1	2	3	4	3000°K	5600°K	5600°K	OPTION				+ 1/4ND
1	2	3	4										
3000°K	5600°K	5600°K	OPTION										
			+ 1/4ND										

Electrical

DC Input Signal:	12V (11 - 16V)
Power Consumption:	13W
External Sync Input Signal for Genlock:	VBS 1V p-p or BBS 0.45V p-p
Return Video Signal:	VBS or VS 1V p-p
MIKE Input:	-20dBm, 600 ohm, balanced (with CA-95C)
Tally Input:	Power/Contact (with CA-95C)
Intercom:	2-wire/4-wire/RTS (with CA-95C)
Sensitivity:	f/5.6
Gain Up:	<ul style="list-style-type: none"> •0, + 12, + 24dB •0, + 6, + 12dB •0, + 12, + 18dB (STD) •0, + 6, + 18dB *Selectable by internal switches
Signal-to-Noise Ratio:	> 58dB
Resolution:	H: 650 TVL V: 380 TVL
Video Output Signal:	VBS 1V p-p, 75 ohms, 1 output Component output 1 CH RGB output 1 CH
VF Video:	R + G + B (normal) or monitor output signal selected by the monitor switch
Monitor Output Signal:	R, G, B, R-G, B-G, Y, ENC
HL-379A-1	For use with on-board Beta recorder only (Beta adaptor not required). Camera head 50-pin connector type (less lens) \$24,842.00
HL-379A-2	Basic camera configuration. Compatible with HL-95B accessories. Camera head 79-pin connector type (less lens and system adaptor) 24,842.00
HL-379A-ENG	ENG configuration. Same as basic camera configuration with camera adaptor, module test extender card, rain cover, battery bracket with protection plate. 28,020.00

CCD-770**Compact 3-Chip ENG Color Camera****Preliminary**

- Vertical smear problem is greatly reduced
- Free of panning distortion
- Moire, ringing and return distortion are greatly reduced
- Electronic shutter captures bodies in motion in a fraction of a second
- Highlight compression circuit and wide dynamic range CCD accommodate scenes with wide contrast range (600%)
- Free of sticking
- Free of microphone noise
- Not influenced by earth magnetics
- After image is greatly reduced
- Registration accuracy of within 0.05% (whole picture area)
- Small size, lightweight, well balanced on the shoulder for ease of operation
- Low power consumption; operates at least 2 hours using a 2.5AH battery
- CCD has long life span, regular CCD replacement is not required
- Registration adjustment not required

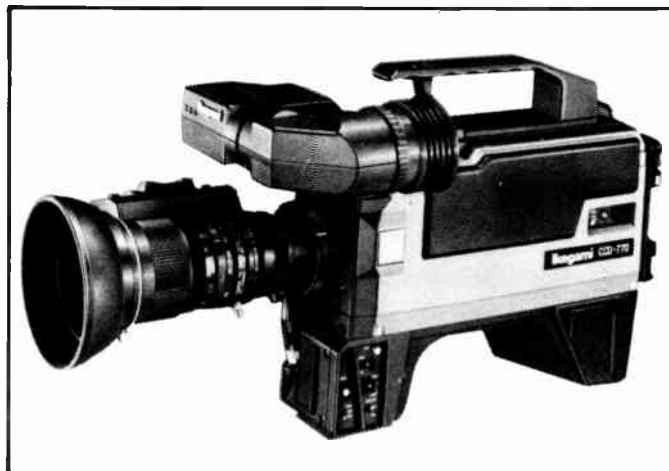
The CCD-770 is a high performance, lightweight, compact 3-chip CCD camera incorporating the latest advances in charge-coupled device (CCD) technology.

While turning to best advantage the salient features of CCD, such as freedom from sticking, light weight, miniature size, and long life, the CCD-770 incorporates significant improvements over conventional CCD cameras relative to vertical smear, panning distortion, moire, and other problems.

Also featuring incredibly enhanced operation, the CCD-770 lends itself especially to ENG applications.

Specifications

Optical System:	f/1.4, RGB prism beamsplitter
Lens Mount:	Bayonet type (same as ITC-730A)
Color Temperature Filter:	3200°K/5600°K/5600°K + ND (12.5%)/BLIND
Transducer:	TSL system MID
Effective Picture Elements:	649(H) x 491(V)
Scanning System:	2:1 interlace, 525 lines, 60 field/sec., 30 frame/sec.
Sync System:	Internal sync: sync signal generator built in External sync: Genlock system (Automatically switched to internal sync mode when external sync signal is not supplied.)
Encoder System:	I/Q
Aspect Ratio:	4:3
Horizontal Resolution (G ch):	480 TVL or better (whole picture area)
Signal-to-Noise Ratio:	≥ 53dB (p-p/rms, Isig 0.2μA, encoder output, with gamma and detail off)
Illumination:	a) Minimum 40 lux, f/1.6/3200°K (89.9% reflectance, + 18dB gain) b) Standard 2000 lux, f/4.0/3200°K (89.9% reflectance)



Gain Switch Position:	0dB/ + 9dB/ + 18dB
Shading Correction:	Black and white shading correction for both H and V
Video Matrix:	Built-in (with on/off switch)
Flare Compensation:	Built-in
Highlight Compression:	600%
Detail Correction:	H: balance (with comb filtering) V: balance (2H system)
Color Bars:	Split Field type (RS-189A)
Registration:	Within 0.05% (whole picture area)
Automatic Function:	Auto white balance Auto white balance memory Auto black balance and level Auto iris Auto knee (highlight compression)
Shutter Function:	1/100, 1/125, 1/250, 1/500 sec.
Microphone Input:	-60dBm, 600 ohms
Audio Output:	Balanced (-60dBm, 600 ohms) or Balanced (-20dBm, 600 ohms, with AGC) switchable
Intercom:	Mike on/off switch provided switchable between Carbon/Dynamic
Video Output:	VBS 1.0V p-p/75 ohms
Monitor Output:	VBS 1.0V p-p/75 ohms or VS 1.0V p-p/75 ohms R/G/B/R-G/B-G/ENC switchable)
Power Requirement:	DC + 12V nominal
Stability:	Stable when the DC input voltage fluctuates 11V ~ 32V
Power Consumption:	9W approx.
Ambient Temperature:	+ 14°F ~ + 104°F (-10°C ~ + 40°C)
Dimensions:	10.59" H x 3.74" W x 12.32" D (269 x 95 x 313mm)
Weight:	8.6 lbs. (3.9kg) approx.
CCD-770-1	Camera head only. Includes mike amp, DBS unit, genlock unit, 2H DTL, shoulder pad, operation manual, battery bracket w/protection plate. \$ 6,328.00
CCD-770-2	Sames as CCD-770-1 plus 1.5" viewfinder, carrying case for head and tripod mounting plate 7,138.00
CCD-770-3	Same as CCD-770-2 plus A13X Fujinon zoom lens. 8,483.00
CCD-770-4	Same as CCD-770-3 except: Studio-4, EFP version, CCU, 5" viewfinder, 15 meter camera cable, remote module. 12,992.00

IKEGAMI ELECTRONICS (U.S.A.), INC.

Color Camera



HL-95B

HL-95B Unicam™

- High sensitivity: Max. 24dB
- Small size: 250H x 95W x 165D mm
- Weight: 3.0kg (Camera + 1.5" VF)
- Full shading correction: Black and white
- Dynamic focus correction
- Flare correction
- Geometry correction
- Color video matrix
- Knee aperture correction
- 1.5" high resolution electronic viewfinder:
 - White balance indication
 - Battery warning indication
 - Tally (Red) indication
 - Gain up indication
 - Stand-by indication
 - Audio level indication (CH1, CH2)
 - Tape remaining time indication
 - Filter position indication
- Color bars: Split field, in accordance with RS-189
- Sync generator: RS-170A, adjustable H. V Blanking
- Automatics:
 - Auto iris
 - Auto iris close
 - Auto iris waiting
 - Auto white balance—A/B/Off (preset)
 - Auto beam, control
 - Auto highlight compression
- Module extender card 1 and 2
- Tool kit
- Shoulder pad
- Quick release tripod adaptor plate
- User's manual
- Carrying case

The HL-95B Unicam provides handheld color camera flexibility, versatility, as well as higher performance, lower weight and power consumption than obtained with previous cameras based on three 2/3" Plumbicon® pick-up tube configurations.

Utilizing a unique building-block concept, the HL-95B is available as a standalone camera, as well as in many other configurations, accommodating on-board professional 1/2" and 1/4" cassette format VCRs, as well as separate 3/4" and 1" VTRs, and remote triax or multicore cable control units.

A 2/3" SM diode gun Plumbicon (electrostatic focus/magnetic deflection) is incorporated into the HL-95B. This tube's photoconductor size, combined with a diode gun electron tube, results in a high sensitivity and high resolution for the camera.

By taking advantage of the low input capacity of the tube, circuit components and advanced circuit technology, a S/N ratio of -60dB is obtained. This allows video gain of up to +24dB for a maximum sensitivity of under 15 lux (using an f/1.6 lens).

Specifications

- (Rating)**
- Input Signal**
- Return Signal:** VBS 1.0V p-p (positive), 75 ohms
- External Sync (G/L):** Optional BBS 0.45V p-p (negative), 75 ohms (using the optional adaptor)
- Power:** 12VDC
- Output Signal**
- Composite Signal:** VBS 1.0V, positive polarity, 75 ohms
- Monitor Signal:** RGB, R-G, B-G, ENC
- Pick-up Tubes:** 2/3" SM Diode Gun Plumbicon
- Filter:** 3000°K, 5600°K, 5600°K + 25% ND, CAP
- Lens Mount:** Bayonet, interchangeable with HL-79A/D/E
- (Performance)**
- Sensitivity:** At 2000 lux — f/4.5 or greater lens opening
- S/N Ratio:** -60dB
- Resolution:** 650TVL center (horizontal)
- Registration:** Zone 1 <0.05% of picture height
- (Deviations of R, B with respect to G)** Zone 2 <0.1% of picture height
- Zone 3 <0.2% of picture height
- Geometric Distortion:** < 1.5%
- Power Consumption:** 17W

System

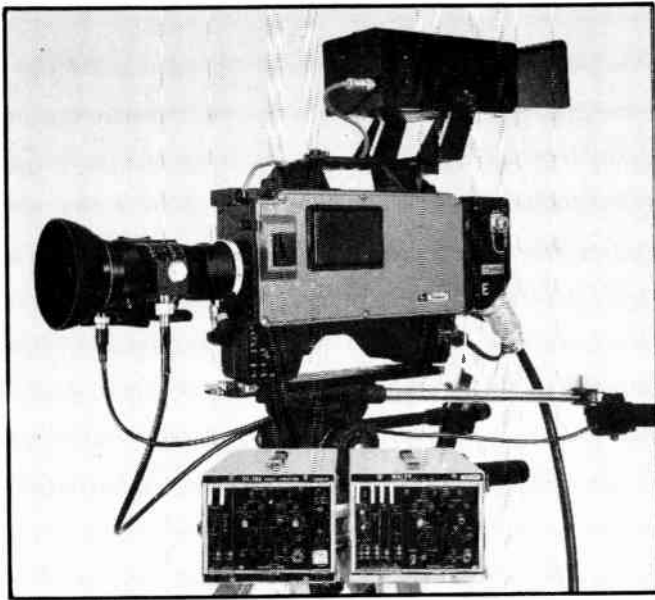
- (Weight)**
- Camera (includes VF and Shoulder Pad)3.5kg
- VTR Adaptor0.6kg
- Lens1.5kg
- VTR (Bosch 1/4")2.9kg
- Battery1.0kg
- Total9.5kg

- HL-95B** Basic Camera Configuration**\$30,287.00**
- HL-95ENG** Stand-alone ENG System. Same as HL-95B with CA-95C camera adaptor and rain cover**33,464.00**
- HL-95MA** Studio/EFP w/Multicore RC System. Same as HL-95B with MA-95CA camera adaptor and rain cover, MA79/95 base station with outer case, AC power cable, spare fuse and connectors**41,161.00**
- HL-95TA** Studio/EFP w/Triax RC System. Same as HL-95MA except with TA-95CA camera adaptor and TA-79E/95 base station with outer case**52,444.00**

Prices do not include lens and genlock.
Plumbicon is a Registered Trademark of N.V. Philips.

IKEGAMI ELECTRONICS (U.S.A.), INC.

Color Camera



HL-79EAL

HL-79EAL Self-Contained Color Television Camera

Although it is smaller and lighter than its HL-79 Series predecessors, the HL-79EAL uses the same proven 2/3" low capacity Plum-bicon pick-up tubes, while achieving important performance improvements in the areas of sensitivity, signal-to-noise ratio, registration accuracy, resolution and RFI immunity. Picture quality is further enhanced by employing chroma aperture correction, dynamic detail correction, automatic highlight compression, which improves picture quality in highlight areas (particularly effective in exterior operations involving high dynamic light areas), and knee aperture correction.

The HL-79EAL is designed for ease of maintenance with a micro computer to carry out self diagnostic functions. The micro computer assesses the camera's operating condition and makes any necessary corrections in a short time.

The ADC-79E incorporated in the system prints out a statement of the camera's condition via an RS232C port, thus control of the camera can easily be made for the long term.

Performance Parameters

- Standard sensitivity is 2000 lux at f/5.0. Maximum sensitivity at +18dB video gain is 20 lux at f/1.4 (using 89.9% reflectance chart).
- Signal-to-noise ratio of -59dB is achieved with low input capacitance tubes using conventional measuring techniques (0dB video gain).
- Registration deviation of Red and Blue with respect to Green is within 0.05% in Zone 1, 0.1% in Zone 2, and 0.3% outside of Zone 2 as a result of the Quadrant Geometry Correction Circuit used.
- By operating the pick-up tube in a high voltage mode, center resolution of 650TVL limiting and corner resolution of 500TVL limiting is achieved (using Diode Gun pick-up tubes, measured at 2000 lux illumination on a standard RETMA resolution chart).
- 1.5" high resolution electronic viewfinder, crisp, high contrast pictures are assured by the use of an improved cathode-ray tube.
- Output signal characteristics in accordance with EIA Standard RS-170A, blanking pulse widths and SC-H phase relationship adjustable.

Performance Features

- RFI Immunity up to 10V per meter (140dB) from 100kHz to 600MHz for the entire camera surface (not including lens port).
- Horizontal aperture correction

B-664

- Generates chroma aperture correction signal when Green information is absent from the signal, results in improved sharpness of picture in Red and Blue content areas.
- Dynamic focus: parabolic modulation of electrostatic focus voltage improves corner resolution.
- Dynamic 2H vertical and balanced horizontal detail correction: parabolic modulation of detail correction signal improves corner picture sharpness.
- Knee aperture correction: expands horizontal video frequency response in highlight areas of picture to compensate for aperture correction fall-off due to gamma compression of correction signal.

Operational Conveniences

- Selectable white balance corrections
- Dual concentric filter wheels
- Selectable video gain
- SC/H phase adjustment
- Adjustable blanking widths
- Viewfinder indicators
- Numerous readouts available to assist the camera operator: white balance mode (A, B, Preset), tally, battery warning, auto white balance, auto black balance, video level (Zebra), gain mode, standby mode, lens extender on
- RGB outputs
- Color bar signals
- Genlock input
- Camera head with EIA RS-170A genlock sync generator
- RGB dynamic beam stabilization
- Bias light
- Full white and black shading correction
- Quadrant geometric corrector
- Quick release tripod adaptor plate
- Module extender cords (2 pcs.)
- Module extractor tool
- Rain cover
- Tool kit with spare fuse and lamp
- Detachable shoulder pad
- Battery bracket with protection plate
- VTR cable (10')
- User's manual
- Carrying case

Automatic Features

- Auto iris control
 - Auto white balance (2 modes)
 - Auto black balance
 - Auto iris closure
 - Auto iris waiting
 - Auto highlight compression
 - Auto beam control
- HL-79EAL (Lens not included) \$53,337.00**

Accessories

- RDC-79E** Digital remote control (100m) \$ 5,633.00
- ADC-79E** Auto setup box (30m) 2,753.00
- MA-79** Multicore remote control system 9,150.00
- TA-79E** Triax remote control system 22,871.00
- VF45-3** 4 1/2" Studio viewfinder 2,768.00
- Remote paint box without cable 592.00**

Lenses

- Canon J13x9BIE Type 2 w/2X f/1.6 \$ 6,610.00
- Canon J18x8.5BIE w/2X f/1.6 10,700.00
- Canon J8x6B f/1.6 8,800.00
- Fujinon A12x9FERM f/1.7 2,750.00
- Fujinon A14x9FERM f/1.7 5,800.00
- Fujinon A18x8.5FERM f/1.7 9,300.00

Prices and Specifications Subject to Change Without Notice.



HL-791

HL-791

High Performance EFP Camera

- Auto set-up function including self-diagnostics
- Gain positions: -3dB, 0dB, +6dB, +12dB (or +24dB)
- Self-contained operation with VTR and remote control connectors
- SMPTE color bar generator
- Genlock circuit
- High S/N ratio of -61dB
- System flexibility. The camera head accepts an on-board professional VCR, without a VCR adaptor or can be used as a standalone camera. Multicore remote control system, triax remote control system and a remote control panel are available
- Time code lock is available
- Viewfinders can be selected for various operational purposes: 1.5" black and white, 3" black and white, 4.5" black and white, 6" black and white, 7" color
- Box marker or cross marker is indicated on the viewfinder, position of these markers can be adjusted
- Viewfinder indications include: filter position, audio level, AWB/ABB/ auto setup, VTR warning, battery warning, tape remaining time, gain up, extender
- Aperture distortion compensation circuit provided for R, G and B channels
- Soft DTL
- DTL signal is specially mixed with selected VF video signal to increase viewfinder resolution
- Filter disk specially designed for effects can be attached to camera. Cross, Sunny Cross, Soft, and Through-filter disks are available as options
- Chroma aperture correction
- Dynamic DTL improves corner resolution
- Full white shading
- Three-mode AWB. Two auto white memories, A and B, are provided along with the pre-set white balance at color temperature of 3000°K
- Highlight compression and knee aperture correction
- Iris waiting/lens closing. When power is on, iris is closed until the beam flows. When power is off, iris is automatically closed to protect the camera tube against burn

The HL-791 is a high-performance professional EFP color camera, offering superb capability for both studio and field production. It is suited for on-board VCR operation, standalone camera operation, and multiple camera operation. The HL-791 is a self-contained camera, incorporating self-diagnostic functions with a host of adaptors for various applications. The HL-791 is compatible with all HL-79E accessories.

Specifications

Resolution:	Horizontal: center 650 TV lines or better. Corners 500 TV lines or better Vertical: center 350 TV lines or better 2/3"
Image Tube:	
Sensitivity:	Approx. f/4.5 Gain 0dB, 2000 lux reflection 89.9% Knee Off
Signal-to-Noise Ratio:	Typical -61dB
DTL Correction:	2H type with a comb filter
Video Output Signal:	Composite out 75 ohms, 3 outputs VBS or VB sync on/off available
Monitor Output Signal:	Composite or any one of R, G, B, R-G, B-G, R+G+B, RET
VF Video Signal:	NAM video or any one of R, G, B, R-G, B-G, R+G+B, RET
R, G, B Video Output Signal:	75 ohm 0.7V p-p, 1 output each (remote connector)
Video Dynamic Range:	Highlight compression: 600% or more
Auto Iris Detecting Signal:	NAM video
Registration:	Zone 1: within 0.05% Zone 2: within 0.1% Zone 3: within 0.3%
Deflection Distortion:	Within the entire area ± 1.0%
DC Input Voltage:	Normal: + 12V Tolerance: +11V ~ 16V Single phase 100V or 117V ± 5% 50/60Hz
External Sync for Genlock Input Signal:	VBS 1V p-p, + 3dB BBS 0.45V p-p, -6dB
Return Video Input Signal:	VBS or VS 1V p-p
Audio Output Signal:	-20dBm, 600 ohms, balanced
Tally Control:	R/G Tally, Rec Tally
Intercom:	RTS System (USA) 2-wire or 4-wire type (JPN or EUR)
Optical Filter:	ND 100% 25% 5% CAP color 3000°K 4200°K 5600°K 6500°K
Lens Mount:	Bayonet
Power Consumption:	Approx. 22W
Ambient Temperature:	-20°C ~ +50°C
Dimensions:	9.4"H x 5.1"W x 7.0"D (240H x 130W x 178Dmm)
Weight:	11 lbs. (5.3kg) with 1.5" VF
HL-791	\$45,172.00

IKEGAMI ELECTRONICS (U.S.A.), INC.**Color Camera****ITC-735 ENG/EFP Color Camera**

- High-speed f/1.4 prism optical system produces quality color reproduction, high sensitivity, excellent resolution and low shading
- Three Saticon® IV tubes with high voltage operation, and low-noise preamplifiers offer excellent picture quality with 750 TV lines resolution and 58dB S/N ratio
- 2:1 interlaced 525 lines, 60 fields/30 frames/sec. (NTSC)
2:1 interlaced 625 lines, 50 fields/25 frames/sec. (PAL)
- Dramatically sharp pictures are achieved with a 2H detail corrector (standard) and a built-in comb filter, with crisp and level dependent circuits which maintain optimum setting for best picture quality
- A built-in switchable highlight compression circuit automatically enables reproduction of scenes, and contains up to 600% video level
- Operates under lighting conditions as low as 40 lux, using the high gain position (+ 18dB)
- Black shading circuit corrects for frame shading as well as sawtooth and parabola effects, so that the black level will be optimal throughout, even with + 18dB gain
- Sawtooth and parabola white shading correction is provided for each channel
- Employs a video matrix circuit for accurate color reproduction
- Dynamic focus compensates for R, G, and B tubes independently for sharper pictures in the corners
- Individual flair correction circuits correct flare generated in lens optical system, pick-up tubes, etc., thereby ensures satisfactory black levels
- Saticon IV tubes further improves LAG and high-light sticking characteristics
- Compact and lightweight camera head (4.7kg) is balanced to reduce operator fatigue during extended operation
- Furnished with advanced micro-computerized automatic functions required in an ENG camera
- Full range of character display functions, visible on the VF screen, contain overall condition of the camera, to minimize the risk of operational errors. Character displays can be switched off
- In the Auto Iris mode, a unique system allows shooting scenes with high luminance, such as the sky background, where peaked average values can be selected
- Automatic iris close protects tubes from damage wherever the power is off
- Tubes are also protected by a delay circuit, which opens the iris after the beam has stabilized
- Filter settings are:
Indoors—3200°K, outdoors (cloudy weather), 5600°K, outdoors (sunny weather) 5600°K + 1/8ND, CAP (when not in use) BLIND
- For optimum matching of video levels, an easy-to-read zebra pattern indicator is displayed in the VF
- Power consumption can be reduced by using Standby mode (during Standby: approx. 2W)
- Memory of auto white, auto black and auto centering is retained with a 10-year lithium battery
- External switches and controls are functionally positioned to minimize operational errors
- Built-in stable genlock circuit makes external sync operation possible. Switching between external and internal sync operation is automatic
- Horizontal and vertical blanking widths are adjustable. For vertical blanking width, a 3-position switch is provided (18H/19H/20H)

**ITC-735**

- VTRs supplied with component signals can be connected by adding an optional module in the camera for the appropriate format
- The CCU can be operated from the camera head to a distance of up to 100 meters
- Optional remote unit connects directly to camera using a single coaxial cable for control
- The TCU-735 (option) is especially designed for teleconferencing applications. Four cameras can be controlled and powered simultaneously via coaxial and DC power cables
- Plug in modules
- Electronic rotation adjustment makes back focus much easier
- A monitoring switch is provided on the outside of the camera for convenience
- Bayonet mount
- Minimum 40 lux illumination at f/1.6/3200°K (+ 18dB gain)
Standard 2000 lux at f/4.0/3200°K, 89.9% reflectance
- Automatic camera tube protection is provided in case of sweep failure of either horizontal or vertical scanning

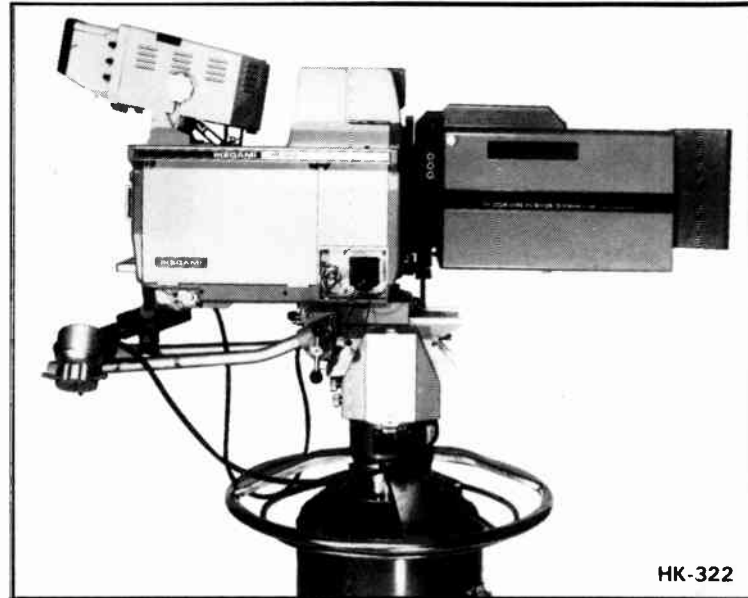
Accessories

- CCU-735 Camera Control Unit
- TCU-735 Tele-Conference Unit
- VFM-152 1.5" Viewfinder
- VFM-572 5" Viewfinder
- ACP-735 AC Power Pack
- RCU-735 Remote Control Unit

CCU-735 Camera Control Unit

- Add the CCU-735 and a variety of remote control functions are possible
- Cable length: 300m maximum
- 2-wire/4-wire/RTS intercom system available, common/private selectable

- ITC-735** ENG version (less lens). Includes: Camera head, 2/3" Saticon tubes H4299, mic amp, DBS unit, genlock, 2H DTL, shoulder pad, battery bracket, 1.5" viewfinder, rain cover, module extender, cord for head, tripod mounting adaptor, carrying case for head, AC power pack with AC/DC cord, operation manual. . . . \$ **8,973.00**
- ITC-735** EFP studio version (less lens). Same as ITC-735 ENG except with remote/component unit, 5" viewfinder with bracket, CCU-735 camera control unit (300m), 15m camera cable and without rain cover **12,381.00**



HK-322 Broadcast Color Camera

- Horizontal resolution—60% performance response at 400 TV lines, center
- S/N ratio of 56dB
- Precise geometry of <math><0.1\%</math> distortion
- Superior registration accomplished digitally resulting in minimal errors, maintained with 0.05% throughout the entire picture area
- Independently adjustable bias lights for R, G and B channels
- 8 pre-programmable zoom lens and diascope error correction modes
- ND and color correction filter wheels quickly removable "cassette fashion" for easy maintenance or special effects filter insertion
- Zoom lens heater power is available when the head power is turned off
- Video and power is provided for a video prompter system
- Dual tally system
- 2-channel return video
- Dual mike amplifiers

The HK-322 is a fully automatic television camera system. The Master Control Panel contains a computer to perform all of the setup functions automatically.

One Master Control Panel can control up to 24 cameras directly by using a Camera Switching Unit (CSU). By the addition of a Studio Selector Unit and other CSUs, up to 10 camera groups or a total of 100 cameras may be controlled by a single MCP. For backup purposes, a second MCP may be connected in parallel.

Several other TV cameras have computerized automatic setup controls—but it takes a lot more than just a computer to produce top quality color.

Ikegami has that extra something: color technology. So, when you get an HK-322, you're not just getting a fully automatic camera—you're getting excellent picture quality, superior craftsmanship, and many non-computerized, automatic correction functions.

Camera Head

- 7" high resolution viewfinder with tilt, elevate and rotate capabilities
- Reversal file (H/V, H and V deflection)
- Dream effect
- Mic amp
- Lens files (8)

Camera setup functions are performed by the digital control system contained within the MCP. This information is stored in a camera memory system. The camera becomes a "black box", requiring essentially no internal adjustments.

Camera Control Unit

- BBS/VBS/SYNC-SC genlock
- Totally automatic cable compensation for up to 600m of small diameter multicore cable

- Plug in FM Triax system with an operational range of 1500m
- Digitally controlled automatic shading correction
- R/G/B Detail corrector employs a novel design. Picture detail is no longer lost in red or blue picture content as is common with the "contour out of green" principle
- Chromakey (option)
- Negative video (option)
- Color corrector (option)
- Jumpers for negative and H aperture modules
- 6 blank panels for CCU option unit
- Color matrix
- SMPTE color bar
- Scene file
- Operation control panel (less cable)

Similarly to the camera head, the CCU's memory system retains the setup control data from the MCP. The "black box" concept permits the mounting of the CCUs out of the control area.

Automatics

Basic automatics, other than CPU setup, include:

- Auto white balance/black balance
- Auto iris control
- Auto cable compensation
- Auto pedestal control
- Auto detail level control/selection control
- Auto optical cap
- Auto highlight compression

Special Effects

- H and V deflection reversal, with stored linearity correction
- Negative video permits RGB video polarity reversal
- Horizontal deflection modulation for "dream scenes"
- Scene compression and expansion for improving high contrast and/or hazy scenes
- Various effects may be stored in a data file. Up to 8 presets may be retrieved on command

The Operation Control Panel controls the camera during normal "on air" operation.

After initial setup, each camera may be operated by its individual OCP, independently of the MCP.

In addition, to provide up to 10 studio parallel Automatic Setup capability, additional CPUs may be added for each of the studios.

Standard Accessories

AC and DC power cables, VF extension cable, CCU WFM remote cable, camera head dust cover, VF hood (studio type) head and CCU test extender card, spare fuses and lamps, user's manual

HK-322 Camera Head (less lens and tubes) \$87,000.00

IKEGAMI ELECTRONICS (U.S.A.), INC.

Color Camera

HK-323 Fully Automatic Color Camera

Suitable for outdoor and indoor applications, the HK-323 is a small, light-weight, high quality and flexible color camera. The camera head itself can be used for self-contained applications. For systems flexibility, the base station is provided.

HK-323 Control System

- Maintenance Control Panel (MCP) and Operation Control Panel (OCP) can be included in the HK-323 system
- Up to 40 cameras can be controlled by one MCP using Camera Selection Units (CSU)
- The camera head and the base station can be connected via triax cable, multicore cable, or fiber cable
- The HK-323P portable camera is available, which may be connected to the HK-323 base station
- Using RS-232C interface the camera conditions can be printed out so that records can be maintained
- Various correction files available for ease of operation

HK-323 Color Camera

- 1" Diode Gun Plumbicons® are utilized. Upon request 2/3" Diode Gun Plumbicon tubes are also available
- Full auto-setup function for easy operation
- By changing modules, triax cable, multi-core cable, and fiber cable can be used

Type of camera and extension:

Triax cable Belden 9267 (9.14mm dia.)	750m
Belden 9232 (13.2mm dia.)	1500m
Fujikura (8.5mm dia.)	900m
Fujikura (14.5mm dia.)	1800m
Fiberglass cable Fujikura G2 80/125	3000m
Multicable TV24/TV39/TV36	600m

- Size and weight are minimized for operability. The camera head is 410H x 230W x 390Dmm. 1" type camera head weighs 26kg. 2/3" type weighs 25kg
- High performance prism optics are used. Quartz filter is employed to improve polarization characteristics
- Broad contrast range provided by Highlight Compression circuitry
- Video Matrix is built-in for color correction and matching
- Comet tail is eliminated by Auto Beam Control (ABC)
- Chroma Aperture Function provides sharp pictures of the object regardless of scene color content or special color lighting
- The camera person's name can be indicated on the monitor at the base station
- Viewfinder indications include: Box Cursor, Crossover Cursor, Safe Title Area, Center Cross (HK-323 only), Auto-Setup, Filter Position, R and G Tally, Lens Extender, Gain Up, Video Level (Zebra)
- In the event of camera head or base station trouble the self-diagnosis system alerts the operator, prompting him to take corrective action
- Head test extender
- Blind plate for head lens mount
- Tool kit
- AC power cable
- Spare fuse and lamp
- Manual

HK-323P Handheld Camera

- 2/3" low capacitance diode gun Plumbicon tubes
- Motorized filter wheel
- Full automatics including geometry and shading

Standard Accessories

1.5" viewfinder, test extender 1, 2 and 3, shoulder pad, tripod mounting adaptor, tool kit, rain cover, spare lamp and fuse, manual, carrying case.

Specifications

Construction

HK-323 Camera Head

Pick-up Tubes: 1" diode gun or equivalent (2/3" diode gun or equivalent)

Viewfinder Tube: 7" standard, 6" and color VF available as option
Optical Prism: 1" f/1.2, 2/3" f/1.2

Optical Filter:	1	2	3	4	5
ND:	CAP	100%	25%	6.2%	1.6%
	A	B	C	D	E
CC:	EFF	3200°K	4300°K	6300°K	8000°K



HK-323 Camera Head

HK-323P Camera Head

Pick-up Tubes:	2/3" diode gun or equivalent			
Viewfinder Tube:	1.5" standard, 4.5" VF available as option			
Optical Prism:	f/1.4			
Optical Filter:	1	2	3	4
ND:	CAP	100%	25%	6.2%
	A	B	C	D
CC:	EFF	3200°K	4300°K	6300°K

Overall Performance

Frequency Response:	NTSC	
	Below 60Hz	Falling
	60Hz ~ 4.5MHz	Within ± 0.5dB
	4.5MHz ~ 6MHz	Within ± 1dB
	Over 6MHz	Falling

With reference to 100kHz

Signal-to-Noise Ratio: 1" 59dB (NTSC) 2/3" 60dB (NTSC) (with Gamma, Aperture, DTL, Matrix all off. Band-width: 4.2MHz NTSC, 5.0MHz PAL)

Sensitivity: 1" f/5.6, 2/3" f/4.5
 Under the following conditions:
 Color temperature 3200°K
 Illumination 2000 lux
 Reflectance 89.9%
 Gain control 0dB

Gamma: Step change over 1.0, 0.35, 0.4, 0.45
 Fine adjustment ± 0.05 Continuously

Pedestal Variable

Range: RGB > ± 5%
 Master > ± 10% (with Gamma off)
Gain Control: Master -3dB, 0dB, +3dB, +6dB, +12dB

Resolution at Center: 1" 700 line, 2/3" 650 line

Registration

Zone 1: ≤ 0.05%
Zone 2: ≤ 0.1%
Zone 3: ≤ 0.2%

Deflection Distortion: All areas within 1%

RFI: 140dB (at Head self contained)

HK-323P (less lens and camera adaptor) \$54,000.00

HK-323S-1B Self-contained camera system with 2/3" (18mm) low capacitance diode gun Plumbicon tubes XQ-3427

RGB 63,934.00

HK-323BM-1B Multicore version (with head multicore adaptor) 66,552.00

HK-323BT-1B Triax version (with head triax adaptor) 66,552.00

HK-323BF-1B Fiber version (with head fiber adaptor) 81,196.00

HK-323S-25 Self-contained camera system with 1" (25mm) low capacitance diode gun Plumbicon tubes XQ-3070 G/B

XQ-3075R 58,750.00

HK-323BM-25 Multicore version (with head multicore adaptor) 74,214.00

HK-323BT-25 Triax version (with head triax adaptor) 74,214.00

HK-323BF-25 Fiber version with head fiber adaptor 84,815.00

IKEGAMI ELECTRONICS (U.S.A.), INC.

Studio Color Camera

**SC-500/SC-500P Studio Camera**

- Three $\frac{2}{3}$ " Saticon II or Plumbicon pickup tubes available
- 7" viewfinder with studio hood, tilt and remote type
- Dynamic focus to ensure superior corner resolution
- Deflection distortion corrector for extremely low registration error
- Camera control unit
- Lens hood for ENG type lens
- 2H detail corrector for crisp, sharp images
- Black and white full shading correction
- Video matrix to provide accurate color matching between cameras
- Servo-controlled filter disc
- +6/+12dB video gain switch
- Dynamic beam stretch
- Return video
- Level suppression to accommodate high-contrast scenes
- Horizontal resolution (at G channel)—700TVL at center, 600TVL at corners
- S/N ratio—57dB/NTSC, with Gamma, DTL off
- Automatic centering control
- Automatic iris with weighting system
- Auto cap for tube protection
- Auto white and black balance
- Auto black level

- A non-volatile memory retains all the automatic correction data for several years, even when power is removed
- Character generator
- Genlock

The SC-500 is an economical professional studio color TV.

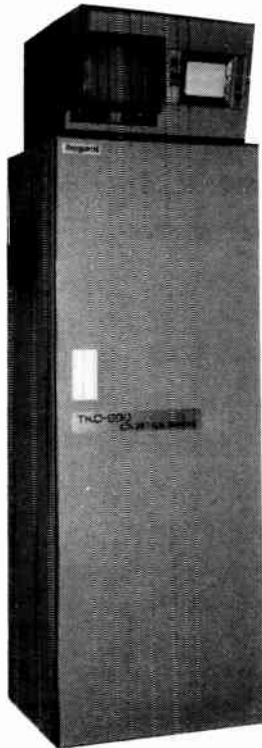
The SC-500/SC-500P viewfinder camera employs three $\frac{2}{3}$ " pickup tubes and a prism-optics system to produce pictures of superb clarity and color fidelity. The sturdily built, easy-to-service camera can be relied on to keep performing under the most demanding studio conditions. A zebra-pattern video signal indicator in the 7" viewfinder ensures optimum matching of video signals, and a built-in split-field color-bar generator is provided. A character display in the viewfinder permits easy monitoring of camera status while the camera is being used.

Fully modular construction is employed to simplify service and maintenance. Plug-in printed-circuit boards, divided according to circuit function, are utilized. All major controls are located in front of each unit to facilitate adjustments.

SC-500 Saticon II Tubes (less lens and cable)	\$30,766.00
SC-500P Plumbicon Tubes (less lens and cable)	36,921.00

IKEGAMI ELECTRONICS (U.S.A.), INC.

Color Telecine Camera



TKC-990

TKC-990 The High-Performance Telecine Camera With Computer Control

The TKC-990 is a multipurpose broadcast telecine camera suitable for "on-line" applications such as local viewing or direct on-air broadcast and "off-line" applications, such as teleproduction and video tape recording. For on-line applications, film characteristics can be uncorrected, manually corrected or automatically corrected.

For off-line applications, detailed operator scene-by-scene corrections can be established and stored for retrieval during subsequent playback of the film and transfer to video tape.

Outstanding performance and stability characteristics have been incorporated into the TKC-990. Set-up, operation and maintenance controls for the camera, as well as color corrections for film types and corrections to normalize projector characteristics, are microcomputer controlled and stored.

A 6-vector adjustable color matrix permits colorimetry setting to user preferences and match between cameras. The camera's built-in test pattern projector assures standardized setting of geometry and level parameters; simple centralized control of multiple cameras is made feasible by digitally addressing the memories built into each camera's body.

A sequential manual set-up mode, fully automatic set-up mode, as well as a rapid preoperational auto check of user selected set-up parameters is available.

Optical System

- A built-in pattern projector permits computer control
- Large image field lens built into camera body assures long-term stability of optical alignment
- Built-in neutral density wheel with fast attack rate for automatic light control (ALC)
- Color separation is accomplished by a prism beam-splitter with high transmission efficiency, minimum color shading, minimum ghosting and color errors
- Bias lighting to reduce pickup tube lag at low light levels is introduced via the prism. RGB bias lights, individually adjusted, automatically or manually, are utilized
- Yoke is mounted directly on the optical block to minimize registration errors
- An IR filter is provided to assure correct colorimetry

Pickup Tubes

- Vidicon or Saticon® tubes, operated in the high voltage mode, are usable to provide high resolution (700 TVL at center)
- An improved coil assembly, together with dynamic beam focus (DBF) to reduce beam landing errors, results in improved corner focus and resolution (typically 600 TVL in corners)
- Digital deflection and shading circuitry optimizes overall registration geometric distortion and shading performance and also assures ease of tube replacement. The registration is within 0.05% and is stored in digital memory
- Low noise FET preamplifier to establish a video signal with a minimum of -58dB signal-to-noise ratio

The TKC-990 is capable of automatically correcting the video signal generated to reduce or correct problems due to various film errors. Without prior programming, electronic analysis and adjustment of the R/G/B video signals developed by the camera accomplish auto color balance by correcting white, gamma and black. The Automatic White Balance (AWB), Automatic Gamma Balance (AGB) and Automatic Black Balance (ABB) functions coordinated with auto level compensation functions which are Auto Light Control (ALC), Auto White Level (AWL) and Auto Black Level (ABL).

To simplify manual camera checkout, the TKC-990 is provided with the following:

- For monitoring purposes, the camera provides 2 sets of picture monitor (PXM) signals, 2 sets of waveform monitor (WFM) signals and the necessary keying signals for type 528 (or equivalent) waveform monitor
- For precision pickup tube adjustment, a synchronized focus wobble circuit is employed for the beam alignment procedure
- For accurate raster positioning, deflection overscan is available
- A SMPTE color bar is built-in

Specifications

Camera Tube:	1" Vidicon tube or 1" Saticon tube
Optical System:	Dichroic prism system (Bias light for RGB built in) (Pattern projector built in) Image size: 86 x 115mm
Input Signal	
BBS:	0.45V p-p, 75 ohm or high impedance
Sync:	4V p-p (negative), 75 ohm or high impedance
SC:	2V p-p (sinewave), 75 ohm or high impedance
Output Signal	
Line Output:	4 channels (VB or VBS), 75 ohm
Video Monitor:	2 channels, 75 ohm
Waveform Monitor:	2 channels, 75 ohm
Power Requirements:	100, 117, 200, 220, 240VAC; 50/60Hz
Power Consumption:	600VA approx. (including picture monitor and waveform monitor)
Tally Input:	24VDC or contact closure
Ambient Temperature:	-0°C to +40°C
Weight:	220kg approx. (including picture monitor and waveform monitor)
Dimensions:	1500mmH x 550mmW x 430mmD

TKC-990 Package

Consisting of camera head with: • 3VFK8 Optical System • Vidicon Tubes 8507 • Camera Set Panel (OSP) Control Unit includes: • Yoke and assembly • Preamp • Video unit • H-DEF and V-DEF • Geometry unit • Multiboard • PROC-1 and PROC-2 • DTL 1 and 2 • ENG 1 and 2 • Monitor SW • DAC • T-pulse • Sync B • Level unit • ACB • T-CONT • T-I/O • T-Refresh • ALC assembly • Power supply • CSP I/F • Operation Control Panel (OCP-A) • Monitor turntable • Module extender card • Test slide • Adjusting tools • Fuses and lamps • Manual • Monitor housing for picture monitor and WFM • On-air tally • ADC • Interface unit

TKC-990 \$91,000.00



TKC-970

TKC-970 Color Telecine Camera

- Top-quality picture, faithful color reproduction
- By adopting a pre-preamplifier system employing high S/N FETs, the S/N ratio has been greatly upgraded to 56dB
- Registration has also been further enhanced by employing yoke assemblies and a registration corrector
- Thanks to adopting dynamic focus, resolution at the corners has been improved. (700 lines at center; 600 lines at corners)
- The TKC-970 is provided with a black shading correction circuit
- White shading correction is available in three modes
- A bias light incorporated in the TKC-970 reduces lag in dark picture areas
- A crisp, high-quality picture is attained by employing an optical black and a flare compensation circuit
- A horizontal/vertical detail corrector with an auto-edge circuit constantly provides appropriate corrected pictures

Various Automatic Systems

Added to the conventional automatic systems (ALC, AWL, ABL, optical black, etc.) are these additional automatic systems.

- The edge circuit in the detail corrector circuit is provided with auto level control for assuring constant, most rational correction
- Auto Light Control (ALC) is incorporated in the TKC-970's optical system
- Auto Color Balance functions—Auto White Balance (AWB), Auto Gamma Balance (AGB), and Auto Black Balance (ABB)—are provided. These balance controls maintain the best color-balance pictures during On-Air

Highly Reliable Control System

- Since all controls from the exterior are stored in the camera, an abrupt power failure does not require readjustment
- A digital semiconductor in the control system, including a monitor circuit, greatly enhances reliability
- Multiplexer control is possible from the camera thanks to the multiplexer select switch on the control panel

Easy-To-Operate Monitor System

Selection is made from the following items through piano-key-touch operation.

- PM Select: R, G, B, R-G, B-G, -G and ENC
- WFM Select: Pre Sup, Pre Seq, Proce Sup, Proce Seq, Proce RG, Proce BG, ENC
- When the camera power supply is turned Off and then turned On again, PM Select is automatically set to 'ENC', while 'Proce Seq' is automatically selected on the WFM Select
- The SEQ indication employs a horizontal system
- Preamp as well as proc amp waveforms can be monitored

Combinable With Other Equipment

Two types of field lenses are available, and the projection direction (right and left) for the TKC-970 can be selected, enabling a combination with various projectors. For 16mm film projectors, an aplanatic TV film lens (67mm, f/2.5) is available.

Easy Operation and Maintenance

- A test chart, test pulse, and color bar are incorporated respectively in the optical system, amplifier system, and encoder
- Preamp and process-amp are composed of separate R, G, B amplifiers of the same structure, greatly facilitating replacement and maintenance
- Since all dual-in-line IC's are socket types, replacement and maintenance of semiconductors are facilitated
- The target voltmeter employs digital display
- The ND filter position is indicated by LED
- Various check meters for power supply voltage are provided
- Two timers (camera operation time display and tube operation time display) are provided
- The registration corrector circuit is incorporated for easy registration control
- Beam discharge at 150% can be easily set with the Beam Set switch

Various Protective Circuits

- Camera Tube Protection: Automatic camera tube protection is provided in case of sweep failure either horizontal and vertical scanning
- Camera tube heater voltage is lowered during Beam-Off
- Should short-circuiting occur, the power supply is restricted by internal protection, preventing hazards

The TKC-970 employs a prism splitting system with 86 x 115mm image size. Thanks to the adoption of space focusing on an object, any dust adhering to the lens seldom appears as such on the picture. When a telecine camera with the same image size is replaced by the TKC-970, related equipment previously used can be employed without modification. By selecting a field lens, the TKC-970 can be freely combined with various projectors. Further, equipment layout planning can be effected with due regard to operability.

TKC-970 Package

Consisting of—Camera head with: • 3VFK-7 optical system • Vidicon tubes 8507

Camera control includes: • Yoke and assembly • Pre amp unit • Shading unit • Proc. unit • Masking unit • V. detail unit • H. detail unit • Auto black level on auto B unit • Auto white on auto B unit • Pulse unit • Sync. generator with SC/Sync genlock • Monitor unit • Deflection unit (hand V) • Geometric distortion corrector • Multi board • Encoder 1 • Encoder 2 • ALC assembly • Power supply • Interface • Control Panel • Monitor select panel • Set up panel • Turntable for picture monitor • Blank panel for nega. video unit • Optical level control • Acute color balancer

TKC-970 \$73,400.00

Accessories

- Module extender card • Test slide • Lamps • Tool kit • Service manual
- Red tally lamp

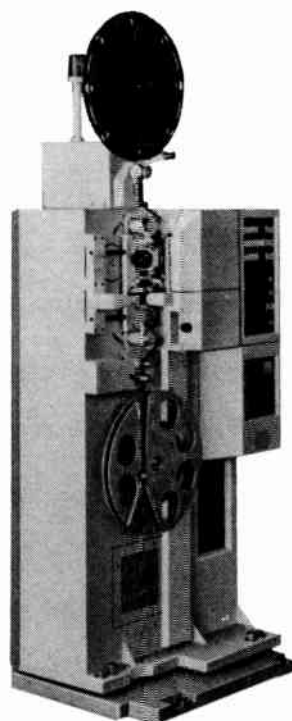
**FPH-16 Self-Threading 16mm
Telecine Film Projector**

The FPH-16 is a 16mm telecine projector for use with either the TKC-970, TKC-990 or similar professional telecine cameras. It is designed to meet the requirements of direct on-air broadcast and off-line teleproduction. Provided are quick start and quick stop of picture and sound, still projection, fast forward run and fast reverse run, as well as the functions that a regular telecine projector provides. Film loading is accomplished quickly and accurately through use of the FPH-16's self-threading system. A common mechanism driven by a single motor operates both the shutter and the pull down claw, resulting in a simple, reliable mechanical system with a minimum number of parts.

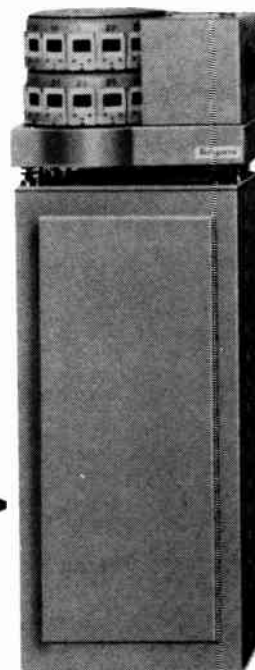
Options

- Analyzing projection at the speed of 3 frames/sec
- Frame counter
- Frame pulse generator
- Frame search
- Air jet to remove dust on the film
- Automatic film rewinder
- On air tally
- Take-up reel positioning
- Inching knob

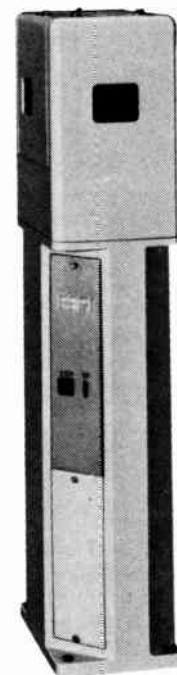
FPH-16 \$84,488.00



FPH-16



SPR-35



MPK-3V (R/L)

**SPR-35 35mm Slide Projector
For Professional Applications**

- Dual drum operation — 32 slides per load, 16 slides per drum
- All slides illuminated for easy re-check
A complete check on every slide in the drum can be accomplished quickly by pushing the Skip switch
- Easy maintainability
Two covers at the top are easily removed for easy access to all the optical components. Two doors at both left and right sides may be opened providing easy access to all electrical components
- Remote control
The lamp on/off, slide skip, slide change functions may be controlled remotely
- Built-in spare projection lamp with automatic replacement system
- Shade free illumination
- Slide cooling system
Temperature rise at the slide surface is limited to 10° C above ambient

The SPR-35 35mm Slide Projector is for use in combination with the TKC-970 or TKC-990 and similar professional telecine cameras. The SPR-35 is a dual drum type accommodating a total of 32 slides. Optical lap dissolve between slides is accomplished within 0.6 second.

SPR-35 \$26,144.00

MPK-3V (R/L) Multiplexer

The MPK-3V (R/L) is a sturdily constructed professional quality 3 input 1 output optical multiplexer for photoconductive telecine camera systems. The front-surface mirrors have negligible light loss and are motor driven in a vertical plane; a switching cycle is accomplished in approximately 0.1 sec. Mirror motion is timed to avoid spurious light input to the camera from the center projector during mirror motion.

Contactless controls for motors and brakes eliminate glitch interference in the video signal.

Switching identification is provided from the multiplexer to the telecine cameras so that camera adjustments appropriate to the projector "on air" are facilitated. The multiplexer can be controlled remotely or locally from illuminated switches on the top of the unit.

Standard mirror orientation is for 16mm projectors that load from the left side (R Type) looking in the direction of projectors; an alternate version for projectors that load from the right side can be obtained as an option (L Type).

MPK-3V \$23,318.00



EC-1125

EC-1125**High Definition Television Camera**

- Three times the sensitivity of current HDTV cameras. Ikegami has developed an optical system and lenses as well as a 1 1/4" MS Plumbicon® tube
- Output capacity of the pickup tube has been minimized and, at the same time, a pre-amplifier FET has been developed. As a result, the S/N ratio of the camera system has been improved significantly
- High resolution that is basic to the HDTV camera has been achieved with a pickup tube, optical system, various fixed focal and zoom lenses developed for specific purposes, and correction circuit
- Compact, lightweight, and excellent maneuverability. Its head and CCU have been reduced in size and weight to the greatest extent possible. They are sturdily built and offer enhanced operation
- Electrocinematographic Camera Technology. Operations typical of a cinecamera for movie production that are based on the superposition of cuts has been incorporated in the design of the camera head and its accessories.

This uniquely designed camera head is characterized by: follow focus mechanism, electronic viewfinder offering varied functions, image formation position marking, major hook, and mat box, all reflecting consideration of the cameraman's requirements

- Plumbicon tube has reduced image lag
- Gamma correction is performed by: conventional master gamma variation and dark-area gamma variation. Through combined use of these functions and highlight compression, special gradation effects including high- and low-keyed tones are obtained. A picture with refined artistic effects is thus reproduced
- The 3" electronic viewfinder offers enhanced operation, high maneuverability and has the following characteristics: Deflection expansion that facilitates focusing of details, peaking function for reproducing a clear picture, deflection reversing function for camera work, diopter correction ring for diopter adjustment. The viewfinder also has various focus and tally indications. 7" high-intensity high-resolution viewfinder is available as an option
- Labor Saving. Full advantage is taken of computer control, thus reducing the adjustment time through Auto Setup and momentary retrieval of data stored in memory
- Real-Time Automatic Functions: Auto Beam, Auto Knee, Real-time lens correction, Auto Iris, Auto Cable Compensation
- Automatic Functions through One-touch Operation: Auto White, Auto Black, Auto Centering
- Auto Setup Functions: Level Correction, Registration Correction, Black and White Shading Correction
- Registration is an important factor for picture quality. To achieve such quality, the basic performance of lenses, optical system, and deflection systems has been improved. In addition, the camera is designed to eliminate automatically the following remaining unregistered components: Correction by sawtooth wave, parabolic wave, and their multiples; Point correction by a geometric corrector; Correction of components affected by ambient temperature fluctuations; Correction of components affected by terrestrial magnetism fluctuations; Correction of components affected by lens replacement; Correction of components affected by lens focusing, iris, zooming and other operations
- Auto Beam and Auto Knee circuits are employed to ensure a wide dynamic range compatible with film latitude. As a result, the problem caused by an insufficient beam current has been overcome and the "film image" look can be reproduced

One of the basic components of the HDTV camera is a 1 1/4" MS pickup tube, the heart of the system. Besides featuring high sensitivity, resolution, and S/N ratio, this camera is compact and lightweight. It offers enhanced operation and versatility as well as improved function and performance.

Specifications**Frequency**

Response: (referred to 100kHz throughout the entire cable length) 60Hz ~ 27MHz: ± 0.5 dB, Under 60Hz and over 27MHz: Drooping characteristic

Signal-to-Noise

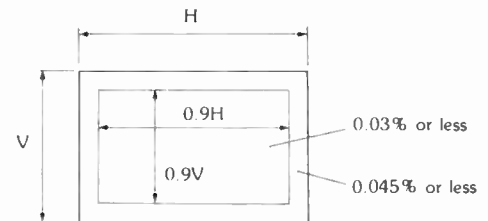
Ratio: Irregular noise (Y signal): 47dB p-p/rms or more, Synchronous noise (in the picture): 60dB p-p/p-p or more

The measurement is made with the signal band width of 27MHz, aperture correction amount of 0, matrix correction Off, and gamma 1 against standard G-channel signal current value of 350nA. This image pickup state is considered standard for all information that follows.

Resolution:

(as measured by the ITE high-definition AR chart) Luminance signal amplitude modulation relative to 800 TV lines.

Beam setting: Twice as high as normal level; Screen central area: 40% typical (M-S tube)

Registration and Geometric Distortion:**Sensitivity:**

(as measured by the ITE gray scale chart II) The sensitivity is that obtained with $f/5.6$ or more that produces the standard image pickup state when an object with a reflectance of 89.9% is shot at an illumination level of 2000 lux.

Gamma Correction

Characteristic: Correction range: $Y = 1$, $Y = 0.45 \pm 0.05$ or more, $Y = 0.35 \pm 0.05\%$ or more

The gamma correction for less than 20% of the input signal is little short of ideal and can be made independently of total gamma correction.

Input Signal Scanning System**Scanning**

Lines: 1,125
Interlacing: 2:1 (aspect ratio, 9:16)

Horizontal

Scanning Frequency (fH): 33.750kHz

Vertical

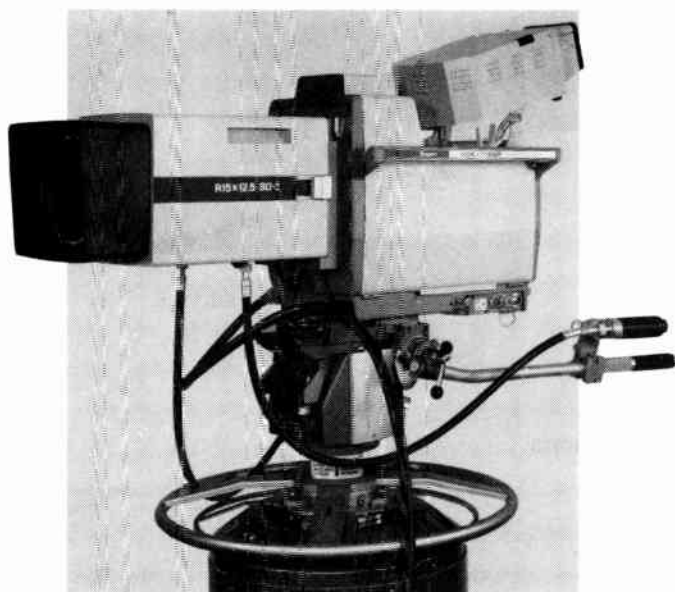
Scanning Frequency (fV): 60Hz

Y, Cn and Cw

Signals: $Y = 0.30R + 0.59G + 0.11B$
 $Cn = -0.03R - 0.38G + 0.41B$
 $Cw = 0.63R - 0.47G - 0.16B$

EC-1125 \$324,200.00

*Plumbicon® Registered trademark of N. V. Philips



HDK-1125P High Definition TV Camera

- Top priority is given to picture quality; 1" high resolution tubes are used and a S/N ratio of 44dB (Y signal) is achieved
- Compact and lightweight. Size and weight are minimized without sacrificing a variety of functions typical of the new generation cameras; the size is smaller than that of the 1 1/4" color camera and the weight is about 43kg
- Due consideration is given to operational ease; a host of automatics are incorporated and the F-7 28-core camera cable with a maximum length of 200m is employed to increase camera mobility
- Automatic setup functions are provided to greatly reduce the setup time required for daily operation. To achieve labor saving purposes and enhance ease of operation, the camera has various computer control functions, such as filing functions, using preset memories for instant data retrieval
- High-resolution pick up tubes of 1" MS type are used providing 35% response with 800+ TVL at center
- An automatic geometric corrector circuit is incorporated to improve registration which constitutes a very important factor in camera performance. Further, zoom lens aberration correction (real-time dynamic lens distortion correction) and registration adjustment through zoom lens replacement are made to upgrade performance in the area of registration
- The viewfinder employs a 7", high brightness, high-resolution CRT. The image in the viewfinder may be over-scanned enlarging the entire picture so the lens can be focused sharply. Further, this viewfinder allows complete black level clamping by the feedback method
- CCU consists of the following components:
 - 1) CCU rack
 - 2) 19" B/W picture monitor (DM-516H)
 - 3) Waveform monitor (1480HD)
 - 4) Control panel
 - 5) BAY-1
(Main video and pulse system modules are accommodated.)
 - 6) ENC (option)
 - 7) Optical fiber cable adaptor (option)
 - 8) Power supply



- Automatic functions
 - 1) Automatic setup
 - a. Level
 - b. Registration
 - c. B/W shading
 - 2) Auto beam control
 - 3) Auto white balance
 - 4) Auto black balance
 - 5) Auto iris
 - 6) Auto centering
 - 7) Real time dynamic lens distortion correction
 - 8) Auto geometric correction

HDK-1125P Camera Head (less lens) \$738,500.00

TM-751H 30" Color Monitor

- Designed to monitor the HDTV video program
- 30" high-resolution delta gun, black matrix type CRT produces sharp color image. An aspect ratio of 5:3 is most ideal for High Definition TV
- The majority of control circuits are of the DC control type
- The luminance is adjusted through the addition of the blanking gate luminance pulse. For this reason, the linearity of the circuit is not adversely affected
- The DC component in the video output is restored by the feedback gate clamping circuit. The black level is thus clamped, leading to a high-fidelity reproduction of the input signal
- The pulse cross operation consists of 3 functions, i.e., V Delay, H Delay, and V.H. Delay. Observation of the sync signal is thus facilitated
- Pincushion distortion is inconspicuous even on a laterally long screen with an aspect ratio of 5:3 because the pincushion distortion corrector is of the quadrant geometric type
- The 9-point geometric system convergence control circuit is incorporated. Unlike the conventional models, the TM-751H permits the adjustment of the left and right halves of the screen independently of each other
- An RGB signal and the encoded signal input may be applied to the TM-751H when a decoder unit is incorporated
- Two sets of the RGB signals may be applied to the TM-751H in the absence of the decoder unit

TM-751H Monitor \$80,500.00

IKEGAMI ELECTRONICS (U.S.A.), INC.**HDTV Telecine Camera System****TKC-1125****High Definition TV Telecine Camera**

- Automatic functions performed by the built-in microprocessor reduce the number of routine operating steps. For instance, instant data retrieval of previously stored memory information serves to optimize the picture when switching between different multiplexer inputs
- Many automatic adjustment functions are provided to make real-time corrections to films under various conditions. These functions are the Auto Light Level (ALC), Auto White Level (AWL), Auto Black Level (ABL), Auto White Balance (AWB), Auto Gamma Balance (AGB), and Auto Black Balance (ABB)
- An automatic geometric circuit is incorporated to refine the registration capability which is an important factor in high definition camera performance. Fully automatic setup functions are provided for level, registration, black and white shading, and other parameters

The TKC-1125 is an unprecedented HDTV telecine camera system.

It is a highly versatile and low-cost system which converts motion-picture film to HDTV signals without sacrificing the original image produced by the film. Therefore, this system promises to cover a variety of applications including HDTV broadcasting and video theaters.

The system is divided into two separate sections, the camera and film projector units. The camera has complete automatic setup, utilizing built-in diascope chart. The camera employs 1" high resolution MS Saticon* pickup tubes and a specially designed high-definition optical system.

The film projector employs an intermittent transport system which assures picture stability because it momentarily fixes each film frame referenced to the registration pins.

Specifications**Frequency Response**

(100kHz reference): 60Hz to 30MHz: within ± 0.5 dB
> 30MHz: Falling

Pick-up Tube:

1" MS high resolution

Modulation Depth

(G-channel): 35% or more 800 TVL center
25% or more 800 TVL corners

Signal-to-Noise

Ratio: 44dB p-p/rms or better Y signal

Registration and Geometry

Distortion: 0.05% (0.9H, 0.9V) Other areas 0.1%

Signal Rating and System Performance**Number of**

Scanning Lines: 1125

Aspect Ratio:

5:3 (option 16:9)

Interface Ratio:

2:1

Horizontal Scanning

Frequency (fH): 33.716284kHz (option 33.75kHz)

Vertical Scanning

Frequency (fV): 59.940Hz (option 60Hz)

Y, Cw, Cn

Signal: $Y = 0.30R + 0.59G + 0.11B$
 $Cw = 0.63R - 0.47G - 0.16B$
 $Cn = 0.03R - 0.38G + 0.41B$

Input Signal**Phase Reference**

Signal: BBS 0.45V p-p, negative, 75 ohms

Output Signal

RGB Signal: P/PBS 0.7V/1.0V p-p positive, 75 ohms, 2 outputs

Y, Cw, Cn

Signal: Y P/PBS 0.7V/1.0V p-p positive, 75 ohms, 2 outputs
Cw, Cn PB 0.7V p-p positive, 75 ohms, 2 outputs

Power

Requirement: 100/117/220/240VAC $\pm 10\%$, 50/60Hz

Power

Consumption: Approx. 400VA
(Excl. PM and WFM)

Image

Dimensions: 123.0mm x 73.8mm (5:3)
125.0mm x 70.3mm (16:9)

**TKC-1125****Dimensions:**

Camera: 1500H x 550W x 430Dmm
Monitor rack: 1440H x 500W x 500Dmm

Composition**Camera Unit:**

Camera
Camera modules (1 set)
Power supply

Monitor Rack Unit:

Control panel
Picture monitor (19" DM-516H)
Waveform monitor (1480HD)
Encoder (option)

Accessories:

(1 set)

TKC-1125 \$617,200.00

FPS-35 35mm Film Projector

- During film projection each film frame is momentarily fixed with reference to registration pins to prevent film frame movement and improve stability
- Pull-down system is based on a high-speed intermittent electronic drive. Adequate light intensity is provided
- Projection speed is continuously variable from still-frame to 40 frames per second

Specifications**Film Transport****Method:**

Intermittent, eccentric cam, fast pull-down claw method with registration pins, varistroke type (KS-perforation), pull-down time 10ms

Film**Speed:**

TV Synchronized Drive: 2-3 pull-down (24 FPS and 30 FPS)
Non-Synchronized Drive: Forward: 0 to 40 FPS
Reverse: 0 to 24 FPS

Power**Source:**

100/117/220/240VAC $\pm 10\%$, 50/60Hz, single phase, 2 kVA

Dimensions:

1845H x 1165W x 585Dmm

FPS-35 \$254,600.00

*Saticon® Registered Trademark of Hitachi Ltd.



TPP-1000

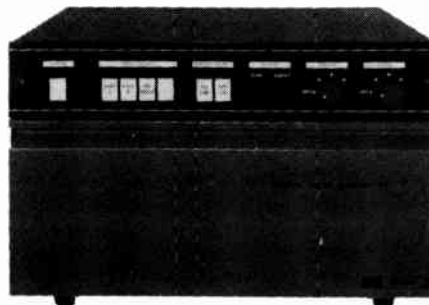
TPP-1000 HDTV Video Projector

The TPP-1000 video projector projects a high definition HDTV video on the big screen, offering realism with a feeling of presence.

In spite of its high brightness, the projector offers natural and distortion-free pictures.

Specifications

Configurations:	Front/rear/scan reversal
CRTs:	9" liquid cooled
Inputs:	RGB
Resolution	
Horizontal:	1000 TV lines
Vertical:	850 TV lines
Corner:	950 TV lines
Contrast Ratio:	50:1
Sync Capability:	29kHz-65kHz H 40Hz-100Hz V
Convergence:	Digital point zone/ analog 4 quadrants
Source Selector:	Available
NTSC-RGB	
Decoder:	External (scan converter)
Electrical:	105-130VAC 50/60Hz
Color	
Convergence:	< 0.1%
RGB Compatibility:	Analog
Aspect Ratio:	Adjustable
Deflection	
Linearity:	< 1% of screen height
Bandwidth:	≤ 100MHz
Test Patterns:	Color bar, cross hatch, gray scale
Power Consumption:	1100VA or less
Screen Size:	70"/100"/120" diagonal
Light Output	
(White Peak):	≤ 530 lumens
Remote Control:	Available (as option)
Projector Weight:	287 lbs.
Controller Weight:	33 lbs.
TPP-1000	..... \$128,500.00



DSC-1050

Options

DSC-1050 Digital Scan Converter

Incorporating the latest digital technology, the DSC-1050 performs digital processing and scanning line conversion for NTSC standard video signals to produce fine and beautiful visual images.

This converter doubles the number of NTSC color video signal scanning lines to provide RGB signals of 1050 TV-line, 30Hz frame frequency, interlace or 525 TV-line, 60Hz frame frequency, non-interlace.

This converter produces high-brightness, fine pictures with little line flickering. When used in conjunction with the TPP-1000 and the TSW-502 this converter enables such images as TV camera and VTR pictures to be reproduced on a wide screen.

Two types of Y/C separation are employed to prevent picture fineness from degrading due to dot crawling or cross colors frequent in conventional Y/C separation. For motionless input signal, frame-to-frame Y/C separation is made that makes use of the frame correlation. For motion input, the Y/C separation is made by a 2H comb filter that takes advantage of line correlation. Besides the two NTSC encoded inputs, RGB input is optionally available.

Input Signal:	NTSC VBS 1.0V p-p, positive, 75 ohm, 2 inputs bridge connection possible
Output Signal:	RGB 0.7V p-p, positive, 75 ohm, 1 output (G-ch, sync on/off switchable) Switchable between 525 TVL, 60Hz frame frequency, non-interlace or 1050 TVL, 30Hz frame frequency, interlace
Sync Output Signal:	H: 4V p-p negative 75 ohm V: 4V p-p negative 75 ohm Composite: 4V p-p negative 75 ohm Chroma level 0 ~ +12dB (3 step) H, V 0 ~ ± 6dB (3 step)
Adjustable Range:	
Detail Enhancer:	
Power Requirements:	117VAC, ± 10%, 50/60Hz
Power Consumption:	450VA approx.
Dimensions:	249H x 420W x 382Dmm
Weight:	27kg approx.
DSC-1050	..... \$46,500.00

TSW-702 Source Selector

The TSW-702 Source Selector switches the TPP-1000 projector input signals among 2 analog signals and 2 TTL signals.

Input Signal:	TTL 2 inputs, 1K ohm or more, Hi 2.4-5V, Lo 0-0.4V Analog 2 inputs, 75 ohm terminated, 0-1V p-p
Output Impedance:	75 ohm
Power:	Supplied from TPP-1000 control unit
TSW-702	..... \$7,300.00

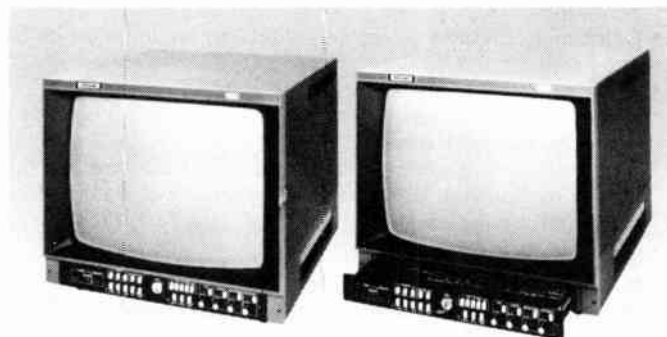
9-Series Color Monitors — In Line Gun CRT Type

- In Line Electron Gun: The CRT has an in-line electron gun; thus eliminating the need for convergence adjustments
- High-Resolution CRT: The display produces crisp, precise images because the monitors use a fine-pitch, dot-mask CRT. A black matrix effect is provided on the CRT screen, enabling pictures to be displayed with a high contrast ratio even under bright lights — more than 600 TV lines at center
- Pulse Cross Circuit: For observing sync signals, a pulse cross circuit with three functions has been included V. Delay, H. Delay, and V.H. Delay
- Protective Circuits: The power supply and high voltage circuits are equipped with excess-current and excess-load protection, to prevent the CRT from being damaged. Sweep failure detection circuits are also utilized for CRT protection
- Signal Generator: Internal cross-hatch signal generator facilitates a convenient means of checking deflection linearity
- Video Input System: A 3 video input system is used with a selector switch located on the front panel
- Signal Demodulation: The IQ standard is used for color signal demodulation; remarkably faithful color signals are reproduced
- Automatic Frequency Phase Control: Extremely accurate color locking is possible with AFPC system
- Keyed Back-Porch Clamp System: A keyed back-porch clamp system is used, to prevent black level fluctuation
- Comb Filter: The monitors have a comb filter for maintaining high-resolution in color images. Color trap/comb filter selection is possible
- Degauss Circuit: Internal degaussing circuit is provided. In addition, the CRT is equipped with a magnetic shield to prevent interference from external magnetic fields
- Residual Subcarrier Test: A switch is provided for checking if residual subcarrier is present on the incoming signal
- Matrix Switching: A matrix switching circuit is provided to reproduce color similar to a TV receiver or NTSC standard
- Selectable Time Constants: Three types of horizontal-AFC time constants are selectable
- Optional Functions: RGB operation, Switching between RGB and NTSC operation

Now, broadcasters have a second line of high-resolution color monitors to choose from; Ikegami's 9-Series Color Monitors. Like the RH-Series, these monitors were built to serve the professional. The 9-Series offer you in-line gun CRT's that do away with the bother of always having to adjust the convergence. You'll find the 9-Series easier to maintain with convenient pull-out panels on the front of the monitors. And to put you in step with the 80's, the 9-Series have a streamlined look coupled with the merit of low power consumption. The 9-Series monitors include AC cable, remote connector and service manual.



TM14-9RH



TM20-9RH

14" and 20" Series 9RH Monitors — In Line Tube

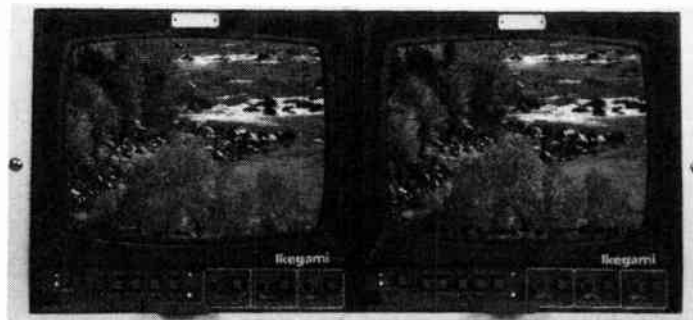
TM14-9RH/N 14" NTSC Rackmount (less case and chassis tracks)	\$5531.00
TM14-9RH/N/RGB 14" NTSC/RGB Rackmount (less case and chassis tracks) . . . . .	.6489.00
TM20-9RH/N 20" NTSC Rackmount (less case and chassis tracks) . . . . .	.6292.00
TM20-9RH/N/RGB 20" NTSC/RGB Rackmount (less case and chassis tracks) . . . . .	.7242.00

10" Series RH Monitors

The TM10-9RH portable professional color monitor complements Ikegami's broad range of 14" (13V), 20" (19V) and 25" (23V) broadcast color monitors. Using a 10" (8.5V) high resolution shadow mask cathode ray tube with a self-converging in-line gun, the TM10-9RH can be operated from AC or DC Power and is available in cabinet or rackmountable versions. The rackmountable versions are 8³/₄" high and are furnished in single, dual, single with adjacent WFM space or single with adjacent Vectorscope space configurations.

American standard matched phosphors are utilized in NTSC versions of the TM10-9RH. Features including pulse cross, keyed back porch clamp, pre-set contrast/hue/saturation/brightness controls, on-demand degaussing, aperture correction, dual video inputs, sync mode selection, color/monochrome selection, individual electron gun cut-off switches, remote control capability, etc. are standard.

TM10-9RH \$4004.00



TM10-9RH

10-Series**High Resolution Delta Gun Color Monitors****Functions include:**

- 3 video inputs each with bridging BNC connectors
- External sync input with a bridging BNC connector
- Pulse cross for examination of horizontal and vertical blanking interval
- Underscan/overscan selection switch
- Switchable AFC time constants for 2msec, 0.5msec, and 7msec
- Pushbutton control for degaussing CRT Shadow Mask
- Blue phase verification—The Blue Gun On/Off switch facilitates chroma level and hue adjustments
- Preset controls for contrast, brightness, chroma level, and hue
- Residual sub-carrier verification, for evaluation of input signal condition
- Color/monochrome selection switch, to facilitate white balance adjustment
- Trap/Comb selection switch
- Corrective Matrix permits rotation of color decoding vectors towards NTSC aim points
- Multi-turn potentiometers are used for RGB Background controls, GB Gain control, Preset controls, and Height/Width controls for easy operation
- A tally lamp is provided

TM14-10RH/TM20-10RH

The 10-Series of high resolution color monitors were developed specifically for higher image quality in TV production and are available in 13V and 19V versions. The high resolution delta-gun CRT has realized high resolution, high brightness, and the convergence circuit greatly facilitates convergence adjustment and operation. The 10-Series monitors include AC cable, remote connector and service manual.

TM20-10RH 20" NTSC, less case	\$8701.00
TM20-10RH/N/RGB 20" NTSC/RGB switchable . . .	9530.00
TM14-10RH 14" NTSC rackmount, less case and chassis tracks.	8186.00
TM14-10RH/N/RGB 14" NTSC/RGB switchable rackmount, less case and chassis tracks.	8956.00

19" Rackmountable

TM14-10RH's are available in cabinet or rack configurations occupying 10¹/₂" height. The TM20-10RH configurations are available in cabinet or rack configuration occupying 15³/₄" height.

Remote Controls

Video A/B/C
Sync INT/EXT
Color/Monochrome
Tally On/Off
V-VS Control

Controls found in pull-out drawer**TM14-10RH**

- Operate-Setup Select
- Tally Int/Ext Power Select
- Height/Width (Wide and U-Scan)
- H/V Centering
- G/B Gain
- R/G/B Background
- Convergence



TM14-10RH



TM20-10RH

TM20-10RH

- Height/Width (Wide and U-Scan)
- Delay Bright
- Aperture
- H/V Centering
- Convergence
- R/G/B Background
- G/B Gain
- Video Front Selector Cross Hatch
- Video Local or Remote Select
- AFC Select 2ms or VAR (0.5ms or 7ms)
- Residual Subcarrier Verification on/off
- Trap-Comb Select
- Operate-Setup Select
- Matrix In-Out Select
- Tally INT/EXT Power Select
- Hue/Chroma/Brightness/Contrast Preset

IKEGAMI ELECTRONICS (U.S.A.), INC.

Color Monitors

15-Series Color Monitors

• Fine Dot Pitch Shadow Mask results in high resolution • In-Line Self Converging Electron Gun assures convergence stability • Controlled Phosphors (to American Broadcast Standards) provide consistent colorimetry • Black Matrix surrounding Phosphor Dots assures high contrast under bright ambient lighting • To simplify monitor set-up, the 15-Series uses a Digital Control System (DCS) • Preset level modifications • Two operator memories • To insure long-term black level stability, the 15-Series monitor incorporates Beam Feedback System (BFS) which detects CRT current deviation and eliminates brightness changes due to changes in CRT emission

By providing an optional Auto Set-up Probe, the 15-Series is menu driven, user friendly, with all instructions shown on the screen. An optional Remocon Box provides for remote control operation.

The 15-Series high resolution color monitors are available in 13V and 19V configurations.

TM14-15RH units are available in cabinet or rack configurations, occupying 10 1/2" height. The TM20-15RH configurations are available in cabinet or rack configuration occupying 15 3/4" height.

TM14-15RH	14" Auto Set-Up Color Monitor	\$8140.00
TM20-15RH	20" Auto Set-Up Color Monitor	8766.00
ASP-15	Auto Set-Up Probe	1998.00
C-TM14-15	Case for TM14-15RH	284.00
C-TM20-15	Case for TM20-15RH	361.00
RCT-15N	Wireless Remote Control Box	154.00



TM14-15RH



TM20-15RH Monitor with an Optional ASP-15 Auto Set-up Probe



ASP-15 Auto Set-up Probe

TM20-16R/TM14-16R (Preliminary)

• 16-Series High Performance In-Line Gun Color Monitors

Cathode Ray Tube:

• 500 Lines resolution • In-line self converging electron gun assures convergence stability • Black matrix surrounding CRT face assures high contrast under bright ambient illumination

Circuitry:

• Comb filter provides wide band luminance, switchable to notch filter at front panel • Varying APL • Pre-set operating controls (hue, chroma, brightness, contrast) • Sweep failure protection circuits prevent phosphor burns

System Conveniences:

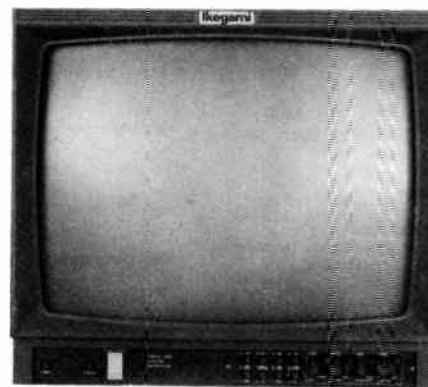
• 3 Video inputs (A/B/RGB), with front panel switchable • 13V can be rackmounted in 10.5" height • 19V can be rack-mounted in 15.25" height • Horizontal Time Constant can be selected either 0.5msec or 2msec

Test Facilities provided:

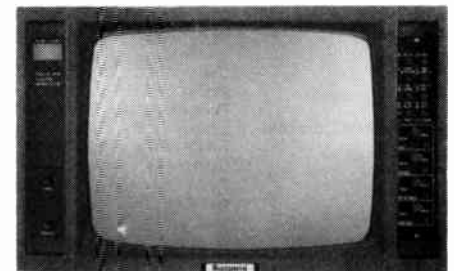
• Underscan Switch to permit observation of picture corners • Pulsecross Switch for sync signal verification

16 Series are high performance, low cost monitors. The units are specifically designed for production or broadcast applications and produce high-fidelity video reproduction with easy operation by utilizing In-Line Gun CRT technology. Comb Filter and A/B/RGB video inputs.

TM20-16R	20" NTSC with case	\$2859.00
TM14-16R	14" NTSC with case	2455.00



TM20-16R



TM14-16R

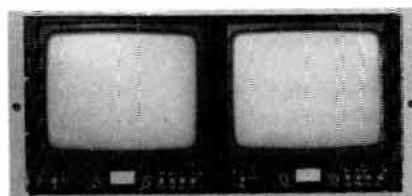
IKEGAMI ELECTRONICS (U.S.A.), INC.

Monochrome Monitors

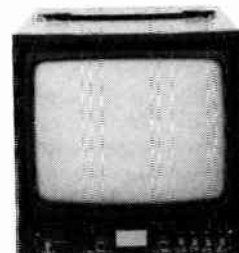
3HD-Series Monochrome Monitors

- Keyed back porch clamp, switchable to DC restorer
- Dual (A/B) inputs, front panel selectable
- Internal/external sync, front panel selectable
- Notch filter on/off, front panel selectable on 14"
- Tally light
- Remote control (Video Select, Sync Select, Tally On/Off)
- Cross-Pulse

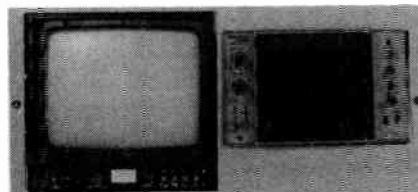
The 3HD-Series range of professional monochrome monitors provide the features and high performance necessary for sophisticated broadcast studio applications. 9" configurations are available as A) Bare chassis, B) Cabinet with handle and C) for 19" rackmounting in an 8³/₄" height for single, single with WFM space, single with Vector-scope space, and dual unit uses. 14" configurations are for cabinet use or for 19" rackmounting in a 10¹/₂" height, slides are optional for the rackmount version.



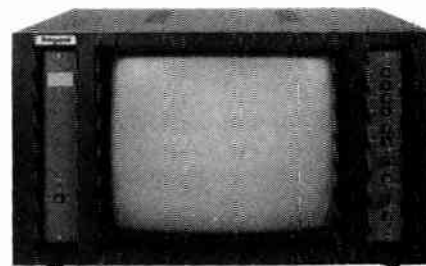
PM9-3HDP 19" Dual Rackmount



PM9-3HDP Cabinet Type



PM9-3HDP Single with WFM



PM14-3HDP Cabinet Type

An illuminant-D phosphor, as well as pre-set controls for brightness and contrast are also standard on the 14" unit. Pulse delay is optional on the 14" monitors; pulse delay and/or an illuminant-D phosphor are available on special order with the 9" monitors.

Series-3HD monochrome monitors provide high resolution at high brightness, low geometric and differential gain distortion and excellent stability over a wide temperature, input voltage and APL range.

- PM9-3HDP \$1587.00
- PM14-3HDP 2229.00

SPECIFICATIONS

GENERAL

Power: AC 100, 120, 220, 240V
10% 50/60Hz, 55VA approximately

Ambient Temperature: -15°C ~ +50°C (Rack type)
-15°C ~ +40°C (Cabinet type)
90% or less relative humidity (non-condensing)

External Dimension: PM9-3H: 222W x 213H x 308Dmm
PM14-3H: 483W x 265H x 386Dmm

Weight: PM9-3H: approximately 6 kg (without case); approximately 7 kg (with case)
PM14-3H: approximately 13.5 kg (without case); approximately 15 kg (with case)

Connector: Video input: BNC type (2 systems)
Sync input: BNC type (1 system)
Remote input; Tally input
Video A/B; Sync INT/EXT; Size NOR/WIDE; Contrast; Brightness; Power ON/OFF; Notch filter ON/OFF for 14-inch unit

Front Panel Controls: H and V delay switches (single switch for PM9-3H)

Standard Accessories: Remote connector, power cord and manual are provided

Optional Accessories: Rackmounting slide bracket for 14" type

Input Level: 1 Sync input
Video signal: VS 1.0V p-p or V 0.7V p-p positive
Sync signal: 1 4V p-p

Input Impedance: Video input: High impedance, bridge connection [Return loss: 46dB (100Hz ~ 4.2MHz)]
Sync input: High impedance, bridge connection [Return loss: 40dB (5MHz)]

Output Level: 30Vp-p (at CRT drive voltage)

CRT: PM9-3H: M22JEA5WW
PM14-3H: 340CEB4

Phosphor Colorimetry: P4 phosphor, 9300°K (Option: 6500°K)

Brightness: 60 Ft-L (at rated output level)

Operation: Continuous

Video Display Screen: NOR/UNDER switching system, pulse cross circuit provided

PERFORMANCE

Mechanical Vibration: No disturbance picture by shock, i.e. microphonic, etc., when dropped spontaneously from 50mm height

Resolution at Brightness of 30 Ft-L: Center: 800 Lines or more
Corner: 500 Lines or more

Power Voltage Fluctuation: Should the power voltage fluctuate in the range of ± 10% against the rated input voltage, monitor is operated stable and picture quality does not deteriorate

VIDEO CIRCUIT

Maximum Gain: Maximum contrast: 38dB or more

Frequency Response: 100kHz reference, 50Hz

Waveform: 10MHz ±1/3dB (at 30V p-p of output level)
(When square wave of rise time 0.05 sec is supplied at video input connector)
Rise time: 250kHz, 0.1 μsec or less
Over shoot: 250kHz, 8% or less
Sag: 60Hz, 5% or less
Less than 5% DG (at rated output 30V p-p)

Linearity: Coherent noise: -46dB
Hum noise: -55dB
Others: -55dB (except blanking period)
Above measured at output terminal in condition of terminating video input 75 ohm and contrast VR max.

Noise:

DEFLECTION CIRCUIT

Sync Stability: The stability of operation shall be met for the following conditions:
Internal sync: Video input level changed against rated value: -10dB; For video amplitude changes of 0 to 120% and sync levels greater than -6dB (0.15 to 0.3V sync)
External sync: Sync signal input level: 1-4V p-p, negative

Horizontal AFC Time Constant: Approximately 2 msec

Deflection Distortion: Less than 2% of picture height

HIGH VOLTAGE CIRCUIT

High Voltage: 16kV

High Voltage Fluctuation: ± 2% in range of 0 ~ 200μA as 100μA reference

IKEGAMI ELECTRONICS (U.S.A.), INC.

Monochrome Monitors

PM-580

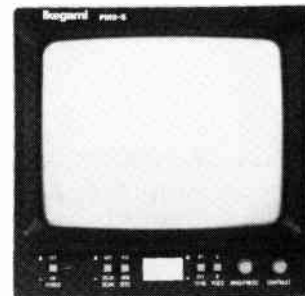
• Triple rackmountable • X-ray protection circuit • Various performance options are available • Horizontal resolution > 600 lines at center • S/N ratio is $\leq -60\text{dB}$ —hum and noise $\leq -40\text{dB}$ —sync noise • Power consumption approximately 18W • 6.59" H x 5.78" W x 8.70" D • 7.72 lbs.

This 5" black and white video monitor provides stable performance despite fluctuations in power or temperature. Solid-state electronics means years of reliable operation.

PM-580\$ 428.00
PM-580/R3 (Triple rackmount version)1451.00



PM-580



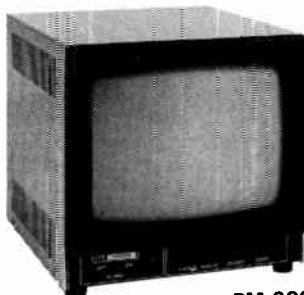
PM9-5

PM9-5

• 9" Broadcast Monochrome Monitor • 800 lines • D6500°K phosphor • Keyed back porch clamp, switchable to DC restore • Dual (A/B) inputs, front panel selectable • Internal/external sync, front panel selectable • Normal/wide scan, front panel selectable • Scan delay/normal • Tally light • Remote control (video select, sync select, tally on/off)

The PM9-5 provides the features necessary for professional broadcast studio applications, and combines high reliability, ease of maintenance, and superior picture quality, low power consumption. 9" configurations are available as cabinet and 19" rackmounting in an 8 $\frac{3}{4}$ " height, single with WFM space, single with Vectorscope space, and dual units.

PM9-5\$350.00



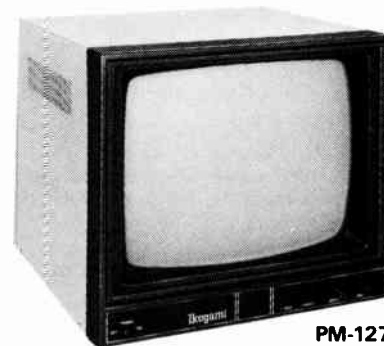
PM-930

PM-930

• Horizontal resolution ≥ 600 lines at center • S/N ratio is 55dB (Except sync noise) • Power consumption < 25W • 8.64" H x 8.61" W x 9.45" D • 10.78 lbs.

A surveillance video series 9" black and white monitor built with the latest solid-state electronics. The unit offers front access to main operating controls, implosion-protected picture tube, VTR playback image stability and exceptionally low maintenance requirements.

PM-930\$308.00
PM-930/R2 (Dual rackmount version)757.00



PM-127

PM-127

• Horizontal resolution ≥ 650 lines at center • S/N ratio matches that of the PM-580 • Power consumption is approximately 25W • 11.2" H x 12.6" W x 12.00" D • 16.98 lbs.

A low cost 12" black and white video monitor featuring X-ray protection circuit, VTR playback image stability, rackmountability and solid-state electronics.

PM-127\$439.00
PM-127/R563.00



PM-175A

PM-175A

• Resolution of > 800 lines • Video frequency of 15MHz • Linearity of 2%

The PM-175A is a monochrome monitor of excellent picture quality. Regular-use controls are conveniently arranged and located on the front panel below the escutcheon. The tube employed is a first-quality, integrally implosion protected 17" CRT, and the video chassis is a printed-board module.

PM-175A\$768.00
PM-175A/R (Rackmounted)939.00

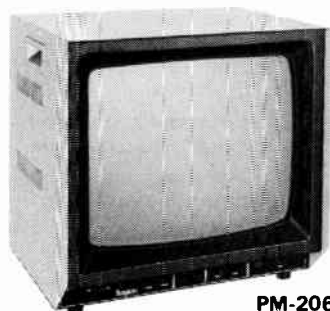


PM-205A

PM-205A

• Same as the PM-175A offering higher resolution and a 20" black and white monitor • 1,000 lines resolution • Low noise • Sharp picture quality

PM-205A\$879.00



PM-206

PM-206

• 1,200 lines horizontal resolution • Composite sync, underscan and overscan by switch selection

The PM-206 is a high resolution 20" black and white video monitor. It can be used as a high resolution precision TV monitor or as a high definition character display for computer terminals.

PM-206\$1719.00

4100 MACHINE ASSIGNMENT SYSTEM

- Handles up to 160 Machines
- Up to 24 Control Panels
- Up to 25 Machines per Panel
- Up to 35 levels of switching
- Master start of preset functions
- Tally of Remote/Local control
- Communication via coaxial cable
- Plug-in modules for flexibility and easy maintenance
- Status generator and printer facility

System Controller

The organization is built around the System Controller which is made up of two sections; the Assignment Controller, and the Machine Controller. Each section contains a microprocessor and they communicate with each other via a multi-conductor cable in parallel format.

The Assignment panels all contain a microprocessor and communicate with the Assignment Controller via coaxial cable. The Assignment Controller handles the assignment of control panels and machine interfaces.

The control panels also all have a microprocessor and communicate with the Machine Controller via coaxial cable. The Machine Controller handles communications between the control panels and the machine interfaces.

Machine Assignment Panel

The machine assignment panel permits the assignment of any control panel to control any machine (VTR, Telecine) through the machine interface unit. It effectively interconnects the various control panels and the machine interfaces.

Assignment is made by simply entering the machine number and then the control panel number. Pressing ASSIGN completes the assignment. A machine cannot be assigned to more than one control panel. The communications link between a machine and a control panel is broken by entering the machine number and pressing CANCEL.

The machine and control panel numbers are three characters and do not have to be in any specific order.

Machine Interface

The machine interface is a two rack unit assembly capable of remotely controlling the functions of a machine. It consists of five Relay Tally Boards, a DIP Switch Board, a Line Driver Tally Board, and a Microprocessor Board.

Each Relay Tally Board is capable of seven levels of relays and seven return tallies. Pushbutton functions, e.g. Fastforward, are associated with each relay.

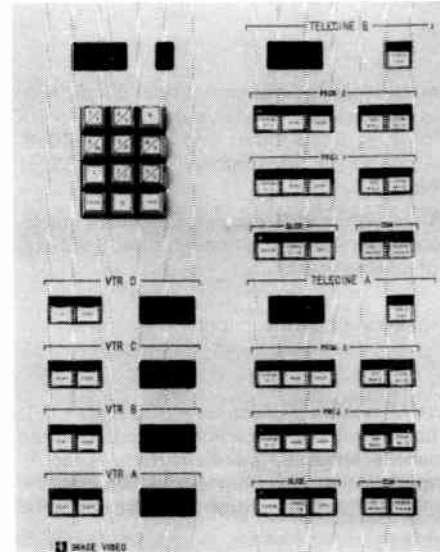
The Microprocessor Board communicates with the outside world and operates the relays etc.

The DIP Switch Board has DIP Switches for machine number assignment, relay close time, and baud rate etc.

The Line Driver Tally Board controls the remote tallies and confirms the presence of the power supplies.

Five 38-pin connectors at the rear of the frame interface between the relay boards and the actual machines being controlled.

VTR interfaces normally consist of 7 levels of control and Telecines normally have 21 levels. However, up to 35 levels may be controlled. The control is buffered via floating (form C type) relay contacts and the tally from the machine with an optical isolator.



Control Panel



Machine Assignment Panel

Control Panel

This desk mount panel provides control of the machines assigned to it. The number of machines to be controlled varies depending on specific customer requirements. The standard configuration is 3 VTRs with 7 levels of control and 2 Telecines with 21 levels of control each. Special control panels with up to 25 machines and 35 functions per machine may be specially ordered.

A three character alphanumeric display shows which machine is assigned to the bus. The machine numbers do not have to follow any specific order and there can be a total of 160 machines in a system. The numbers assigned to the machines should be specified at the time of ordering. A blank machine number indicates that no machine is assigned.

Operations may be preset on all of the busses of the control panel and with one button, the MASTER START, all the selected functions will be taken. Functions are preset by holding down the PRESET button and depressing the desired functions. Preset functions can be cleared by holding down the PRESET button and depressing the function button again. Presets can also be cleared when they are initiated by the MASTER START button.

A coaxial cable is used to interconnect the control panel and the System Controller. Clare Pendar or Shadow type pushbuttons are available.

IMAGE VIDEO, LTD.**Audio/Video Routing Switchers****9520/9521 DUAL AUDIO/VIDEO ROUTING SWITCHERS****Common features:**

- No external power supplies required
- Front panel control with numeric or alphanumeric keypad and displays (optional)
- Can be remotely controlled from up to twenty image video custom or standard control panels
- Serial RS232/RS422 interface
- Parallel BCD interface (optional)
- Crosspoint retention during power failure (optional)
- Self test mode
- Hinged front panel for easy access

9520 Video Routing Switcher**Shares common features plus:**

- A 20 x 10 video routing switcher in 1 rack unit
- A 20 x 10 video and dual audio routing switcher in 2 rack units when used in conjunction with 9521 dual audio switcher
- Vertical interval switching

Using advanced integrated circuitry, 9520 video switcher sets a standard for high density switcher packaging. The 9520 is ideal for mobiles (OB vans), editing suites, post-production and tele-production facilities—any application where space is at a premium.

The wide variety of control capabilities offered by the 9520 allows you to choose the control method most suited to your individual needs. The 9520 can be remotely controlled by up to twenty remote control panels.

An optional front mounted multi-bus control panel is available. By incorporating the keypad and displays onto the front of the unit, the need for any additional rack space is totally eliminated.

Specifications**Inputs**

Number:	20
Type:	BNC—single ended
Impedance:	Internally terminated 75 ohms
Return Loss:	> 35dB
Signal Level:	1V p-p (nominal)

Outputs

Number:	10 (1 per bus)
Impedance:	75 ohms
Return Loss:	> 35dB
Signal Level:	1V p-p (nominal)
Frequency Response:	< .1dB to 5MHz +0dB, -1dB to 20MHz +.05dB, -2.5dB to 30MHz

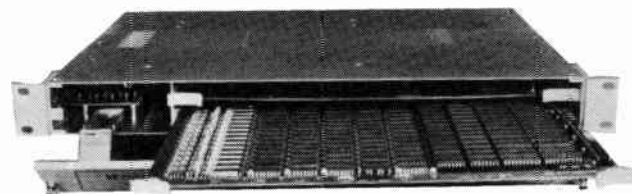
Level Difference:	< .5%
Hum and Noise:	< 70dB
Line Tilt:	< .25%
Field Tilt:	< .5%
Differential Gain:	< .15%
Differential Phase:	< .15%
Path Length Differential:	< $\pm 1^\circ$

9521 Dual Audio Routing Switcher**Shares common features plus:**

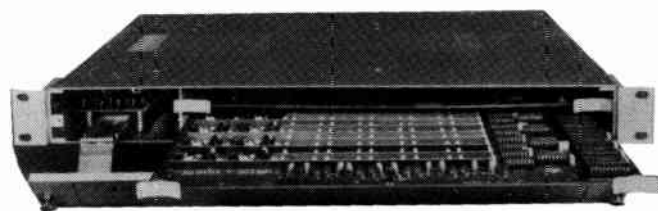
- A 20 x 10 dual audio routing switcher in 1 rack unit
- A 20 x 10 video and dual audio routing switcher in 2 rack units when used in conjunction with 9520 video switcher



9520



9521



The 9521 brings a level of sophistication to high density switching systems. An alternative for radio and television facilities where equipment space consumption is a major concern, the 9521 is simply the most compact 20 x 10 dual audio switcher available.

Choose the control method most suited to your individual needs. The 9521 can be controlled by up to twenty remote control panels. With the standard RS232/RS422 interface, the 9521 can also be controlled by an external computer. The optional front mounted multi-bus control panel incorporates the keypad and displays onto the front of the unit to completely eliminate the need for additional rack space.

Specifications**Inputs**

Number:	20 per channel
Type:	balanced
Impedance:	> 30K ohms internally terminated 600 ohms (jumper selectable)
Signal Level:	+ 24dBm maximum

Common Mode

Rejection (60Hz):	> 75dB
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Outputs

Number:	10 per channel, 1 per bus
Type:	balanced
Impedance:	60 ohms externally terminated 600 ohms
Signal Level:	+ 24dBm maximum
Frequency Response:	+0, -.25dB 20Hz to 20kHz +0, -1dB 20Hz to 100kHz

Total Harmonic

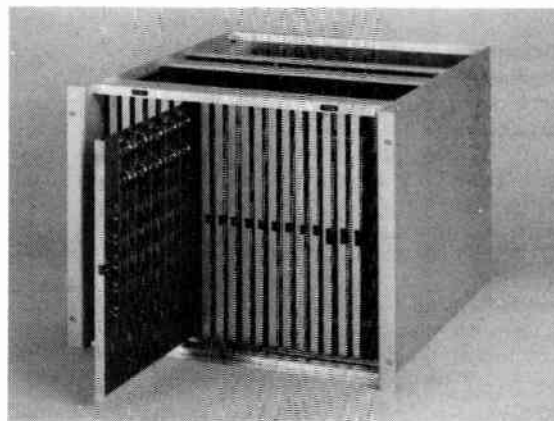
Distortion:	< .02% 20Hz to 20kHz (+ 18dBm) < .2% 20Hz to 20kHz (+ 24dBm)
Signal to Noise:	> 96dB
Crosstalk:	< 75dB (20kHz)

IMAGE VIDEO, LTD.**Routing Switchers****9600 High Density Routing Switcher**

- Accurate indication of crosspoint status (true tally)
- Comprehensive diagnostics package
- Infinite number of levels
- Full breakaway capability

The 9600 is compatible with both MAC and high definition television standards. Compact design enables 40 x 40 video and 2 audio channels in just 16 rack units of space, or 80 x 80 video and 2 channels of audio in 48 rack units. The versatility of the system will allow both field expansion up to 320 x 320 and modification without disruption of normal operation.

External distribution amplifiers are not required for matrices. The 9600 is completely compatible with all existing Image Video control panels and operates in conjunction with the Image Video 10K Control System.

**9600****Specifications****VIDEO****Input**

Input Signal Level	1 VP-P
Input Impedance	75 ohms 1%
Equalization	200 ft @ 5MHz Belden

Output

Output Level	1 VP-P
Number of Outputs per Bus	2
— 1 equalized	
— 1 non-equalized	
Impedance	75 ohms
Level Difference	< ± .5%, typical ± .05%
Frequency Response	< .1dB to 5MHz
	0, -1dB to 20 MHz
Hum and Noise (RMS)	70dB below 1 VP-P, typical 75dB
Gain Range	± 1dB
Line Tilt	< .25%, typical .2%
Field Tilt	< .25%, typical .2%
Differential Gain (10-90% APL)	< .1%, typical .04%
Differential Phase (10-90% APL)	< .1°, typical .02°
Crosstalk	At 5MHz > 65dB, typical 70dB
Path Length Differential	± 1 degree, typical ± .4 degrees

AUDIO**Input**

Input Signal Level	+24dBm MAX.
Input Impedance	> 30K - balanced
CMRR @ 60Hz	> 75dB, typical 85dB

Output

Number of Outputs per Bus	2
Impedance	-high 600 ohms ± 2% balanced
	-low 30 ohms ± 2% balanced
Frequency Response	0, -.25dB 20Hz-20KHz
	0, -1dB 20Hz-100KHz
THD	< .02% 20Hz-20KHz, +18dBm
	< .2% 20Hz-20KHz, +24dBm
Max. Signal to Noise Ratio	> 96dB, typical 105dB
Output Gain Range	± 3dB
Crosstalk @ 20KHz	> 75dB, typical 82dB

ELECTRICAL

Power	120/240 VAC, 50/60Hz
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MECHANICAL

40x40 Video Only	8 rack units
40x40 Dual Audio	8 rack units

9400 RGB (Y) Routing Switcher

The 9400 RGB (Y) is a fully self-contained switcher featuring built-in power supply and all necessary control circuitry.

The 9400 RGB (Y) is a DC-in, DC-out, full transparent unit with 3 x 20 inputs (4 x 20 optional) into 3 x 20 outputs (4 x 20 optional). Inputs are standard loopthrough, with no clamping or DC restore circuitry (all input signals should be on the same DC circuitry).

Specifications**Input**

Level:	1V p-p nom., 2V p-p max.
Impedance:	> 10K ohm loopthrough ext. term.
Ret. Loss (5MHz):	> 46dB loopthrough

Output

Level:	1V p-p nom., 2V p-p max.
Impedance:	1 x 75 ohm/bus
Frequency Response:	DC - 10MHz + 0, -0.2dB
	10 - 20MHz + 0, -1dB

Hor. and Vert. Tilt:

< 0.25%

Signal-to-Noise:

> 75dB RMS

Crosstalk:

< 65dB (5MHz)

Diff. Gain:

< .1°

Diff. Phase:

< .1%

Diff. Path Length:

45.7ns (59° ± 1°)

(NTSC)**Electrical Power:**

120/240VAC, 50/60Hz

Mechanical:

9 rack units

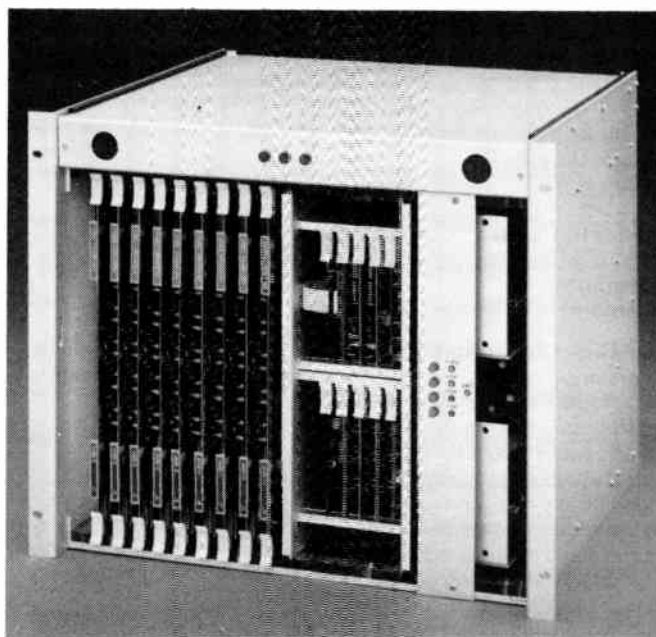
**9400**

IMAGE VIDEO, LTD.

Routing Switchers

6000 Broadcast Routing Switcher

- Solid state vertical interval switching
- Compact expandable modular construction used throughout
- Excellent video and audio specifications for full color broadcast use
- Video only, audio only, audio follow married or unmarried control available
- Crosspoint retention during power interruption optional
- Tally LED on each video crosspoint indicates exact switcher status at all times
- Conservatively rated, overload protected power supplies for trouble free operation
- One pushbutton per crosspoint or thumbwheel control panels available

The 6000 Series Switchers are specifically designed for small and medium audio/video routing systems. These versatile switchers are ideally suited as high quality electronic patch panels, delegate switchers or in any application where remote controlled switching is needed.

Compact 5 x 1 or 10 x 1 crosspoint modules plug directly into the mother board assembly which also accommodates the input and output amplifier modules. This flexible configuration allows up to 24 outputs per 19" rack.

Specifications**Electrical**

Power: 120/240V RMS = 10% 50/60Hz

Video Input

Input Signal Level: 1V p-p
Input Impedance: Bridging 75 ohms
Return Loss: > 46dB to 5MHz
Number of Inputs: As required

Video Output

Level: 1V p-p
Number of Outputs per Bus: 2
Impedance: 75 ohms
Isolation: > 40dB to 5MHz
Level Difference: < 1%
DC on Output: < 0.5V
Frequency Response: ± 0.1dB to 5MHz
 + .1 -.5dB to 10MHz

Audio Input

Input Signal Level: -8dBm nominal
Input Impedance: Bridging 600 ohms balanced

Audio Output

Number of Outputs per Bus: 2
Impedance: 600 ohms balanced
Frequency Response: < 0.5dB
 30Hz-20kHz

Total Harmonic

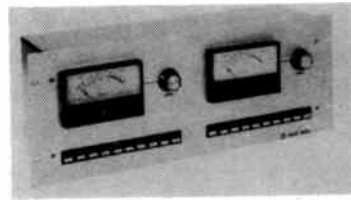
Distortion: < .5% 30 Hz-20kHz at + 18dBm

6010 10 x 1 Routing Switcher

- Relegendable pushbuttons with gold contacts and LED indicators
- Two outputs per bus, video and audio
- Loophrough video inputs (BNC connectors)
- Bridging audio inputs (D sub-miniature)
- Vertical interval switching
- Hinged front panel for easy access to plug-in modules
- Low power consumption
- Second audio channel may be retrofitted
- All electronic switching
- Crosspoint retention during power failure (optional)
- Basic switcher is 10 x 1, video only, mono or stereo audio only or AFV with mono or stereo audio in one rack unit
- One or both audio channels may be replaced with time code or control bus

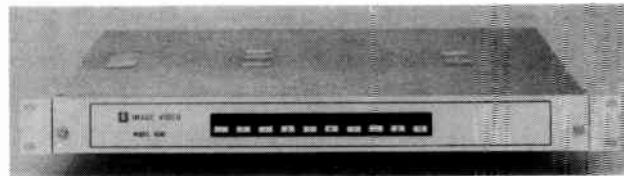
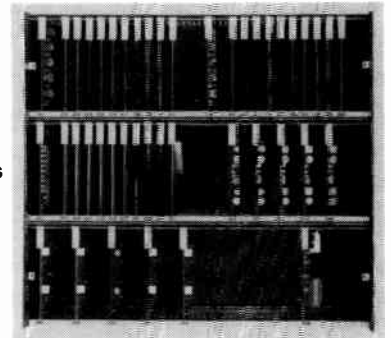
B-6B6

Refer to Green Section for Addresses and Telephone Numbers.



6000
Custom Control Panel

6000 Switcher Matrices



6010

- Tally is optionally available (D sub-miniature)
- Parallel BCD control optionally available for automation interface
- Remote (2-3 pin DIN connectors) and local controls may be paralleled

The 6010 self-contained switcher is a high quality 10 x 1 suitable for use throughout the television or radio plant, from production to monitoring applications. The flexible configuration and control system frees the engineer from handbuilt or customized equipment procurement.

Specifications**Electrical**

Power: 120/240VAC + 10%, 50/60Hz, 12VA

Video Input

Input Signal Level: 1V p-p
Input Impedance: Bridging 75 ohms, loophrough
Return Loss: > 46dB to 4.2MHz
Number of Inputs: 10 + extension

Video Output

Level: 1V p-p
Number of Outputs: 2
Impedance: 75 ohms
Isolation: > 36dB to 4.2MHz
Level Difference: < 1%
Frequency Response: < 0.1dB to 5MHz
 -0.5dB to 10MHz

Audio Input

Input Signal Level: + 8dBm nominal + 24dBm Max
Common Mode Rejection: > 60dB at 60Hz
Input Impedance: > 20k balance
Number of Inputs: 10 + extension

Audio Output

Number of Outputs: 2
Impedance: 500 ohms balanced
Frequency Response: + 0 -3 dB 20Hz-20kHz
Total Harmonic Distortion: < .2% 20Hz-20kHz at + 24dBm
Maximum Output Level: + 24dBm
Dimensions: 1 3/4" H x 19" W x 15" D

INNOVATIVE TELEVISION EQUIPMENT

Tripods

ITE-T1A Wood Tripod with Spreader

Camera/Head
 Load Capacity: 20 lbs. (6kg)
 Max. Height: 59" (147.5cm)
 Leg Angle: Up to 85°
 Folded Length: 35" (87.5cm)
 Folded Width: 5" (12.5cm)
 Weight: 8 lbs. (3.6kg)
 Ball Leveling
 Bowl: 75mm
 Finish: Natural wood and black wrinkle

ITE-T1A **\$270.00**

Optional

Accessories: ITE-CB1 Claw Ball; ITE-RFP rubber foot pads; ITE-SP1A spreader

ITE-T3A ENG Tripod with Spider

Camera/Head
 Load Capacity: 25 lbs. (11.4kg)
 Min. Height: 15" (37.5cm)
 Max. Height: 62" (155cm)
 Min. Folded Length: 28" (70cm)
 Min. Folded Width: 6" (15cm)
 Max. Leg Angle: 80°
 Weight: 7 lbs. (2.25kg)
 Ball leveling
 Bowl: 100mm
 Finish: Black wrinkle
 Includes rubber foot pads; adjustable spreader; spike set

Optional

Accessory: ITE-CB3 Claw Ball

ITE-T3A **\$495.00**

ITE-T4A Wood Tripod with Spreader

Camera/Head
 Load Capacity: 50 lbs. (22.5kg)
 Max. Height: 65" (162.5cm)
 Leg Angle: up to 80°
 Folded Length: 40" (100cm)
 Folded Width: 6 1/2" (16.25cm)
 Weight: 12 lbs. (5.4kg)
 Ball Leveling
 Bowl: 100mm
 Finish: Black wrinkle

Optional

Accessories: ITE-SP4A spreader; ITE-CB3A claw ball; ITE-RFP rubber foot pads

ITE-T4A **\$525.00**

ITE-T6 Elevation Tripod

Camera/Head
 Load Capacity: 50 lbs. (22.5kg)
 Min. Height: 29" (72.5cm)
 Max. Height: 65" (162.5cm)
 Elevation
 Adjustment: 18" (45cm)
 Min. Folded Length: 33" (82.5cm)
 Min. Folded Width: 8 1/2" (21.25cm)
 Max. Leg Angle: 33 1/2°
 Weight: 18 lbs. (8.1kg)
 Finish: Anodized aluminum and black wrinkle

ITE-T6 **\$875.00**



ITE-T3A



ITE-T4A



ITE-T6

ITE-T9 Tripod—Mini with Spider

Camera/Head
 Load Capacity: 50 lbs. (22.5kg)
 Min. Height: 13 1/2" (33.75cm)
 Max. Height: 29" (72.5cm)
 Min. Folded Length: 21" (52.5cm)
 Min. Folded Width: 7" (17.5cm)
 Leg Angle: Up to 80°
 Weight: 10 lbs. (4.5kg)
 Ball Leveling
 Bowl: 100mm
 Finish: Anodized aluminum and black wrinkle

Optional

Accessory: ITE-CB3 Claw Ball

ITE-T9 **\$795.00**

Includes removable adjustable spreader (tyrod) assembly, rubber foot pads and spikes



ITE-T9



ITE-T10

ITE-T10 Elevation Tripod

Camera/Head
 Load Capacity: 140 lbs. (63kg)
 Min. Height: 28" (70cm)
 Max. Height: 59" (147.5cm)
 Elevation
 Adjustment: 18" (45cm)
 Min. Folded Length: 35" (87.5cm)
 Min. Folded Width: 9" (22.5cm)
 Max. Leg Angle: 33 1/2°
 Weight: 26 lbs. (11.7kg)
 Finish: Anodized aluminum and black wrinkle

Optional

Accessories: ITE-H25T Mitchell Adaptor

ITE-T10 **\$1425.00**

ITE-T12 ENG/EP Tripod with Spreader

Camera/Head
 Load Capacity: 50 lbs. (22.5kg)
 Min. Height: 24" (60cm)
 Max. Height: 65" (162.5cm)
 Min. Folded Length: 36" (90cm)
 Min. Folded Width: 7" (17.5cm)
 Leg Angle: Up to 80°
 Weight: 12 lbs. (5.4kg)
 Ball Leveling
 Bowl: 100mm
 Finish: Anodized aluminum and black wrinkle

Optional

Accessories: ITE-CB3 Claw Ball

ITE-T12 **\$795.00**

Includes removable, adjustable spreader (tyrod) assembly, rubber foot pads and spikes.

ITE-T17 Tripod For H-17 with Spider

Load Capacity: 25 lbs. (11.4kg)
 Min. Height: 24" (61cm)
 Max. Height: 58" (147.3cm)
 Min. Folded Length: 29" (73.7cm)
 Min. Folded Width: 7" (17.8cm)
 Leg Angle
 Including Spreader: Up to 80°
 Weight: 5 lbs. (2.3kg)
 Ball Leveling
 Bowl: 75mm
 Finish: Black wrinkle

ITE-T17 **\$550.00**

Includes adjustable spreader, rubber foot pads and spikes

ITE-T20A Elevation Tripod/Head Counterbalanced

Camera/Head
 Load Capacity: 8 lbs. (4kg)
 Min. Height: 31" (78.7cm)
 Max. Height: 68" (170cm)
 Elevation
 Adjustment: 12" (30cm)
 Min. Folded Length: 34" (85cm)
 Min. Folded Width: 5" (12.5cm)
 Max. Leg Angle: 15°
 Tilt Angle: 60°
 Pan Rotation: 360°
 Weight: 6 lbs. (2.7kg)
 Finish: Anodized aluminum and black wrinkle

ITE-T20A **\$145.00**

INNOVATIVE TELEVISION EQUIPMENT

Tripods

ITE-T30 Tripod Elevation Column

Features 3-section legs with radial locks for extension and contraction. An adjustable, lockable spyder provides structural stability. The ITE-T30 is equipped with a spirit level and combination rubber leg tips and metal spikes.

Camera/Head	
Load Capacity:	15 lbs. (6.8kg)
Min. Height:	24" (60cm)
Max. Height at 40°	
Included Angle:	69° (175.5cm)
Leg Angle (adjustable):	40° included (max.)
Elevator Column	
Adjustment:	14" (35cm)
Min. Folded Length:	27" (67.5cm)
Min. Folded Width:	4 1/2" (11.25cm)
Weight:	6.5 lbs. (2.92kg)
Finish:	Anodized aluminum and black wrinkle

ITE-T30 \$225.00

ITE-T40 Tripod "A" Frame

Lightweight, heavy-duty system that features 2-section, positive cam locked legs that are indexed for easy length adjustment.

An adjustable, lockable spyder for structural stability, the elevator column adjusts to 16". Spirit level and rubber-tipped legs are provided.

Camera/Head Load	
Capacity:	40 lbs. (18kg)
Min. Height:	20 1/2" (51.25cm)
Max. Height at 40°	
Included Angle:	66° (165cm)
Leg Angle (adjustable):	100° included (max.)
Min. Folded Length:	32" (80cm)
Min. Folded Width:	7" (17.5cm)
Weight:	10 lbs. (4.5kg)
Finish:	Anodized aluminum/black wrinkle

ITE-T40 \$435.00

ITE-T45 Pneumatic Tripod "A" Frame

Camera/Head	
Load Capacity:	28 lbs. (12.7kg)
Min. Height:	24 1/2" (62.25cm)
Max. Height at 40°	
Included Angle:	78" (198cm)
Leg Angle (adjustable):	90° included (max.)
Elevator Column	
Adjustment:	12" (30.5cm)
Min. Folded Length:	32" (81.3cm)
Min. Folded Width:	7" (5.22cm)
Weight:	11 1/2 lbs. (5.22kg)
Finish:	Black wrinkle

ITE-T45 \$595.00

ITE-T50 Tripod ENG with Spyder

The T50 Tripod is a rugged lightweight all metal unit which provides outstanding rigidity and stability.

Load Capacity:	40 lbs. (18kg)
Min. Height:	
(at max. leg spread):	17" (43cm)
Max. Height:	56" (142cm)
Min. Folded Height:	35" (84cm)
Min. Folded Width:	7 1/4" (19cm)
Weight:	7 1/2" lbs. (3.4kg)
Ball Leveling Bowl:	100mm
Finish:	Black anodize

ITE-T50 \$795.00

Includes: Removable, adjustable spreader assembly

ITE-T553 Tripod

Load Capacity:	45 lbs. (20.5kg)
Min. Height:	6 1/2" (16.5cm)
Max. Height:	64" (162.5cm)
Min. Folded	
Length:	30" (76cm)
Width:	7 1/2" (19cm)
Weight:	8 lbs. (3.6kg)
Leg Sections:	3
Bowl:	110mm
Finish:	Anodized aluminum and black wrinkle

Optional	
Accessories:	Reducer Bushings 110mm to 100mm; 100mm to 75mm

ITE-T553 \$725.00

Includes rubber foot pads and spikes

ITE-T553C Tripod 3-Section Leg with 110mm Bowl

Equipped with combination leg spike/rubber foot pads. Legs are lockable at 3°, 28° and 40° angles. Constructed of lightweight alloy material, with black, hard anodized leg tubes.

ITE-T553C \$695.00

ITE-T554 Tripod

Load Capacity:	60 lbs. (29.5kg)
Min. Height:	6 1/2" (16.5cm)
Max. Height:	61" (155.5cm)
Min. Folded	
Length:	23 1/2" (60cm)
Width:	7 1/2" (19cm)
Weight:	8.5 lbs. (3.8kg)
Leg Sections:	4
Bowl:	110mm, adjustable to 75 and 100mm
Finish:	Anodized aluminum and black wrinkle

ITE-T554 \$775.00

Includes rubber foot pads and spikes

ITE-T554C Tripod Four Section Leg with 110mm Bowl

Equipped with combination leg spike/rubber foot pads. Legs are lockable at 3°, 28° and 40° angles. Constructed of lightweight alloy material, with black, hard anodized leg tubes.

ITE-T554C \$725.00

ITE-T60 Tripod-ENG-Leveling Bowl

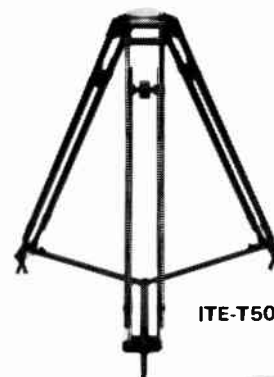
Load Capacity:	55 lbs. (25kg)
Min. Height:	16" (40.6cm) (without spreader), 24" (61cm) (with spreader)
Max. Height:	58" (147.3cm)
Min. Folded Length:	33" (83.8cm)
Min. Folded Width:	7" (17.8cm)
Leg Angle:	
(without spreader)	
Locked:	Up to 80°
Weight	
(including spreader):	13 lbs. (5.9kg)
Ball Leveling	
Bowl:	110mm
Finish:	Black wrinkle

ITE-T60 \$885.00

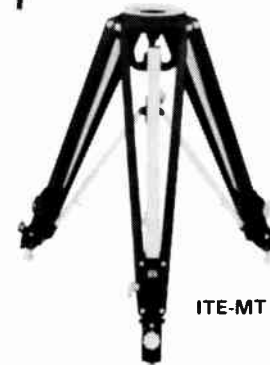
ITE-T605 Baby tripod—ENG with ball leveling \$885.00

Same as ITE-T60 except:

Min. Height	
(without spreader):	20" (55cm)
Max. Height:	37 1/2" (95cm)
Min. Folded Length:	27 1/2" (70cm)
Weight	
(Including spreader):	12 lbs. (5.4kg)
Optional	
Accessories:	SP60 Tripod spreader, RFP1 rubber foot pads



ITE-T50



ITE-MT1

ITE-T70 Tripod-ENG-Leveling Bowl

Load Capacity:	85 lbs. (38.6kg)
Min. Height	
(with spreader):	28.5" (72.4cm)
Max. Height:	60" (152.4cm)
Min. Folded Length:	37" (94cm)
Min. Folded Width:	9" (22.8cm)
Leg Angle	
(without spreader)	
Locked:	Up to 80°
Weight	
(including spreader):	17 lbs. (7.7kg)
Ball Leveling	
Bowl:	150mm
Finish:	Black wrinkle

ITE-T70 \$1350.00

ITE-T705 Baby tripod—ENG with ball leveling \$1350.00

Same as the ITE-T70 except:

Min. Height	
(with spreader):	21 3/4" (55cm)
Max. Height:	39 1/2" (100cm)
Min. Folded Length:	8" (20cm)
Weight	
(including spreader):	16 lbs. (7.3kg)
Optional	
Accessories:	SP70 Spreader, TFPI rubber foot pads, DG70 dolly

ITE-MT1 Tripod For Camera and Microwave Applications

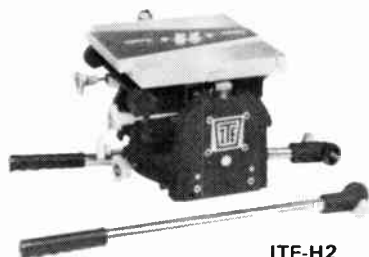
Camera/Head	
Load Capacity:	250 lbs. (112.5kg)
Min. Height:	25" (62.5cm)
Max. Height:	43" (107.5cm)
Min. Folded Length:	34" (85cm)
Min. Folded Width:	9 1/2" (23.75cm)
Max. Leg Angle:	38°
Weight:	33 lbs. (14.85kg)
Finish:	Aluminum and black wrinkle

ITE-MT1 \$1400.00

Includes spreader; foot pad/spike/spherical ball set; Mitchell base

INNOVATIVE TELEVISION EQUIPMENT

Heads



ITE-H2

ITE-H2 Cam Head

Camera Load Capacity: 120 lbs. (54kg)
 Tilt Angle: Up to ± 50°
 Pan Rotation: 360°
 Height: 7 1/2" (18.75cm)
 Width: 9" (22.5cm)
 Length: 10" (25cm)
 Weight: 25 lbs. (11.25kg)
 Base: Mitchell Type

ITE-H2 \$1650.00
 Includes dual handles; wedge adaptor and wedge plate.

ITE-H6 Hydrocam Head

Camera Load Capacity: 130 lbs. (58.5kg)
 Tilt Angle: Up to 50°
 Pan Rotation: 360°
 Height: 8" (20cm)
 Width: 9" (22.5cm)
 Length: 9 1/2" (23.75cm)
 Weight: 23 lbs. (10.35kg)
 Base: Mitchell type

ITE-H6 \$3100.00
 Includes dual handles and wedge adaptor and wedge plate

ITE-H8 Microwave Pan/Tilt Head

Camera Load Capacity: 250 lbs. (112.5kg)
 Tilt Angle: ± 45°
 Pan Rotation: 360°
 Height: 7" (17.5cm)
 Width: 8" (20cm)
 Length: 9" (22.5cm)
 Weight: 19 lbs. (8.55kg)
 Base: Mitchell type

Optional Accessory: Control handle
ITE-H8 \$1275.00
 Mounting plate designed for standard L-bracket attachment

ITE-H10 Hydro Head—Adjustable Counterbalance

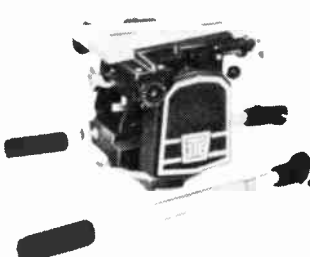
Camera Load Capacity: 40 lbs. (18kg)
 Tilt Angle: ± 60°
 Pan Rotation: 360°
 Height: 6 1/2" (16.25cm)
 Width: 6 3/4" (16.9cm)
 Length: 6 3/4" (16.9cm)
 Weight: 9 lbs. (4.05kg)
 Base: 1 3/4" (4.4cm) clamp or claw ball

Camera mounting plate/quick release: 4" L x 2" W (10cm x 5cm) with 3/8" (.94cm) slot for mounting cameras with 1/4" (.625cm) or 3/8" (.94cm) screws
 Optional Accessories: Dual handles
ITE-H10 \$1995.00

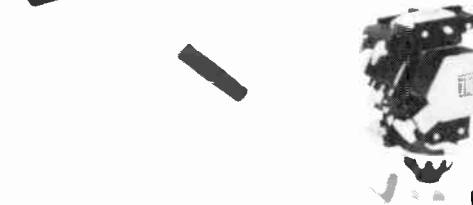
ITE-H11A Fluid Head

Camera Load Capacity: 10 lbs. (4.5kg)
 Tilt Angle: ± 80°
 Pan Rotation: 360°
 Height: 5" (12.5cm)
 Width: 3 1/2" (8.75cm)
 Length: 4" (10cm)
 Weight: 2 lbs. (.9kg)
 Base: Flat

ITE-H11A \$285.00



ITE-H8



ITE-H10



ITE-H17

ITE-H12A Fluid Head

Camera Load Capacity: 20 lbs. (9kg)
 Tilt Angle: ± 80°
 Pan Rotation: 360°
 Height: 5" (12.5cm)
 Width: 4" (10cm)
 Length: 4 1/2" (11.25cm)
 Weight: 5 lbs. (2.25kg)
 Base: Flat

Optional Accessories: Claw ball leveling; dual handles; quick-release assembly
ITE-H12A \$695.00

ITE-H14A Fluid Head

Camera Load Capacity: 30 lbs. (13.5kg)
 Tilt Angle: ± 80°
 Pan Rotation: 360°
 Height: 5 1/2" (13.75cm)
 Width: 6 1/2" (16.25cm)
 Length: 5 1/2" (13.75cm)
 Weight: 8 lbs. (3.6kg)
 Base: Flat

Quick Release Plate: 1/4-20 and 3/8-16 camera screws
 Optional Accessories: Pro claw ball leveling; dual handles
ITE-H14A \$895.00

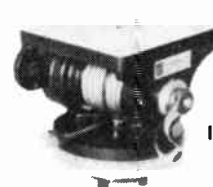
ITE-H17 Fluid Head—Adjustable Counterbalance

This system utilizes four step drag adjustable (dial-in-type) with free wheeling in both pan and tilt modes, for smooth, effortless and trouble free control.

The H17 directly interfaces with the T17 ENG/EFP tripod and other ITE claw ball base tripods.

Camera Load Capacity: 15 lbs. (6.8kg)
 Tilt Angle: ± 90°
 Pan Rotation: 360°
 Height: 6" (153mm)
 Width: 4" (100mm)
 Length: 5" (127mm)
 Weight: 5 lbs. (2.3g)
 Base: 75mm claw bowl
 Camera Attachment: 1/4-20 and 3/8-16 camera screws

Finish: Black wrinkle
 Optional Accessories: Includes: control handle, H17CA flat base adaptor; dual handles
ITE-H17 \$1125.00



ITE-H6

ITE-H30 Fluid Head—Counterbalanced

Capacity: 10 lbs. (4.5kg); counterbalanced for 2" Vertical C.G.
 Tilt Angle: + 90°, -75°
 Pan Rotation: 360°
 Pan and Tilt Drag: High viscosity system
 Pan and Tilt Lock: Independent of drag system; positive lock design

Height: 4" (10cm)
 Width: 5" (12.5cm)
 Length: 4" (10cm)
 Weight: 2 lbs. (.90kg)
 Base: Flat
 Camera Mounting Plate/Quick Release: 2" x 2" (5cm x 5cm) with positive lock 1/4-20 screw and anti-rotational pin

Handle: One with adjustable angle
 Level: Spirit
 Finish: Black wrinkle
 Optional Accessory: Extra handle
ITE-H30 \$205.00
ITE-RH30 Right hand zoom handle \$45.00

ITE-H40 Fluid Head—Counterbalanced

Capacity: 30 lbs. (13.5kg)
 Tilt Angle: ± 80°
 Pan Rotation: 360°
 Pan and Tilt Drag: High viscosity system
 Pan and Tilt Lock: Independent drag system; positive lock design

Height: 6 1/2" (16.25cm)
 Width: 7 1/2" (18.75cm)
 Length: 6 1/2" (16.25cm)
 Weight: 7 lbs. (3.15kg) (without handle)
 Base: Flat
 Camera Mounting/Quick Release Platform: 3 3/4" W x 5 3/4" L (9.36cm x 14.37cm) with positive lock and sliding

Handle: One with adjustable angle
 Level: Spirit
 Finish: Black wrinkle
 Optional Accessory: Claw ball leveling, extra control handle
ITE-H40 \$495.00
ITE-RH40 Right hand zoom handle \$50.00

Refer to Green Section for Addresses and Telephone Numbers.

INNOVATIVE TELEVISION EQUIPMENT

Heads

ITE-H50 Fluid Head—**Adjustable Counterbalance**

Camera Load Capacity:	30 lbs. (13.5kg)
Tilt Angle:	Up to $\pm 90^\circ$
Pan Rotation:	360°
Height:	7 1/2" (20cm)
Width:	6 1/4" (16cm)
Length:	5 3/4" (14.5cm)
Weight:	6.5 lbs. (3.0kg)
Level:	Spirit
Handle:	Telescopic
Base:	100mm claw ball
Finish:	Black wrinkle
Optional	
Accessory:	Extra telescopic control handle, as shown, ITE-H50CA flat base adaptor

ITE-H50 \$1050.00

ITE-H50E Fluid Head—**Adjustable Counterbalance**

Camera Load Capacity:	40 lbs. (18kg)
Tilt Angle:	90°
Pan Rotation:	360°
Height:	6 3/4" (17.1cm)
Width:	6 1/4" (15.9cm)
Length:	5 1/4" (13.3cm)
Weight:	6.5 lbs. (3.0kg)
Level:	Spirit
Handle:	Telescopic
Base:	100mm claw ball
Camera	
Mounting Plate	
Quick Release:	2 1/2" x 3 1/2" with 3/8" slot
Finish:	Black wrinkle
Optional	
Accessories:	ITE RH50E, extra telescopic control handle; ITE-H50CA, flat base adaptor

ITE-H50E \$1125.00

ITE-H60 Fluid Head—**Adjustable Counterbalance**

Uses adjustable, toggle lever controlled helical springs and sliding quick release camera plate. Drag control (in both pan and tilt) can be dialed in for eight different levels of personal feel—from freewheeling to maximum drag. The H60 directly interfaces with the T60 ENG/EFP tripod and other ITE claw ball base tripods.

Camera Load Capacity:	30 lbs. (13.6kg)
Tilt Angle:	$\pm 90^\circ$
Pan Rotation:	360°
Height	
(incl. ball base):	8" (20.3cm)
Width	
(incl. handle brackets):	6 1/2" (16.5cm)
Length	
(incl. handle brackets):	6 3/4" (17.2cm)
Weight:	9.2 lbs. (4.2kg)
Base:	110mm claw ball
Camera Attachment:	1/4-20 and 3/8-16 camera screws
Finish:	Black wrinkle
Optional	
Accessories:	Second control handle step ball (100mm/110mm)

ITE-H60 \$3395.00

ITE-RH60T Telescopic handle 155.00

**ITE-H70/H90 Fluid Heads—****Adjustable Counterbalance**

Designed for remote and studio applications. These heads provide unsurpassed smoothness of pan and tilt action for heavy camera loads. Perfect counterbalance is obtained by simply preloading three groups of reactive spring elements and fine tuning by adjusting the sliding camera platform. This complete setup procedure can be accomplished with the camera mounted (on quick release plate) and ready to shoot.

Drag control is simple and precise. By dialing in one of 8 selections in pan and 7 selections in tilt, the camera person can obtain desired level of drag, from freewheeling (pan only) to maximum, with unmatched smoothness and precision.

ITE-H70	
Camera Load Capacity:	65 lbs. (28kg)
Tilt Angle:	$\pm 90^\circ$
Pan Rotation:	360°
Height	
(incl. ball base):	9" (22.9cm)
Width	
(incl. handle brackets):	8 1/2" (21.6cm)
Length	
(incl. handle brackets):	7 3/4" (19.7cm)
Weight:	19 lbs. (8.63kg)
Base:	150mm claw ball
Camera Attachment:	1/4-20 and 3/8-16 camera screws
Finish:	Black wrinkle
Includes Dual control handles	
ITE-H70	..... \$4995.00
ITE-H70A Mitchell base adaptor	..... 285.00
ITE-RH70T Telescopic handle	..... 155.00

ITE-H90	
Camera Load Capacity:	150 lbs. (68.1kg) at 7" C.B.
Tilt Angle:	$\pm 80^\circ$
Pan Rotation:	360°
Height	
(incl. ball base):	11 1/2" (29.2cm)
Width	
(incl. handle brackets):	10 1/2" (26.7cm)
Length	
(incl. handle brackets):	9 1/2" (24.1cm)
Weight:	41 lbs. (18.6kg)
Base:	Mitchell base
Camera Attachment:	Wedge plate
Finish:	Black wrinkle
Includes Dual control handles	
ITE-H90	..... \$8500.00

**ITE-H100 Fluid Drag Head**

Camera Load Capacity:	250 lbs. (112.5kg)
Tilt Angle:	$\pm 53^\circ$
Pan Rotation:	360°
Height:	8 1/2" (21.25cm)
Width	
(less handles):	12" (30cm)
Length	
(less handles):	14" (35cm)
Weight:	31 lbs. (13.95kg)
Base:	Mitchell type
Optional	
Accessory:	Right hand telescopic handle
Includes: telescopic control handle; zoom stub handle; quick-release, lever-action wedge adaptor and wedge plate	
ITE-H100	..... \$3600.00

INNOVATIVE TELEVISION EQUIPMENT

Pedestals/Dollies

ITE-P2 ("Low Boy") Pneumatic Studio Pedestal

Camera/Head
 Load Capacity: 290 lbs. (130.5kg)
 Min. Height: 24 1/2" (62.25cm)
 Max. Height: 45 1/2" (113.75cm)
 Min. Doorway Clearance: 30" (75cm)
 Wheelbase: 28 1/2" (71.25cm)
 Dual Wheel
 Diameter: 8" (20cm) (cast aluminum; polyurethane tires)
 Steering Wheel
 Diameter: 30" (75cm) (vinyl coated)
 Steering Mode: Crab and Tricycle
 Cable Guard: Adjustable from 1/8" (.31cm) to 1" (2.5cm) above floor
 Air Pressure: Pressure relief valve opens at 200 PSI representing equivalent overload condition of 300 lbs. (135kg)
 Construction: Cast aluminum structure with steel tank and outer column to ASME Pressure Vessel Safety Code; aluminum center column
 Pressure Differential
 Trim: Nine 1 lb. (4.5kg) wafers
 Weight: 180 lbs. (81kg)
 Mount: Modified Mitchell type
 Finish: Black wrinkle
 Optional
 Accessory: Air supply charging system

ITE-P2 \$11,800.00

Note: Head not included. Min./Max. heights to cam head mounting surface.

ITE-P3 Elevation Pedestal with Cable Guards

Camera/Head
 Load Capacity: 60 lbs. (27kg)
 Min. Height: 31" (77.5cm)
 Max. Height: 49" (122.5cm)
 Elevation Adjustment: 18" (45cm)
 Caster Radius: 19" (47.5cm)
 Wheel Diameter: 4 1/2" (11.25cm)
 Weight: 36 lbs. (16.2kg)
 Finish: Black wrinkle
 Optional
 Accessories: FHT flat base H25T Mitchell base

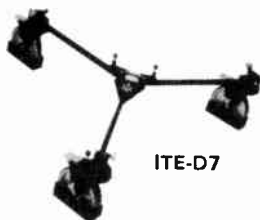
ITE-P3 \$2,100.00

ITE-P5 Studio Pedestal—Counterbalance

Camera/Head
 Load Capacity: 265 lbs. (119.25kg) first 174 lbs. (78.3kg) spring counterbalanced
 Min. Height: 34" (85cm)
 Max. Height: 52" (130cm)
 Min. Doorway Clearance: 32" (80cm)
 Dual Wheel
 Diameter: 7" (17.5cm) (polyurethane tires)
 Steering Wheel
 Diameter: 25" (62.5cm)
 Steering Mode: Crab
 Base Construction: Cast aluminum
 Weight (less camera balance weights): 180 lbs. (81kg)
 Mount: Mitchell type
 Finish: Black wrinkle
 Optional
 Accessories: Additional capacity to 310 lbs. (139.5kg)

ITE-P5 \$7,400.00

Note: Head not included.



ITE-D7

ITE-P6 Studio Pedestal—Counterbalance

Camera/Head
 Load Capacity: 145 lbs.
 Min. Height: 32" (81cm)
 Max. Height: 52" (132cm)
 Min. Doorway Clearance: 28" (71cm)
 Dual Wheel
 Diameter: 7" (17.5cm) (polyurethane tires)
 Steering Wheel
 Diameter: 20" (50cm)
 Steering Mode: Crab
 Base Construction: Cast aluminum and fiberglass
 Weight: 125 lbs. (56.25kg)
 Mount: Mitchell type
 Finish: Black wrinkle
 ITE-P6 \$6,100.00
 ITE-P6L Studio pedestal—Counterbalance—"Lowboy" \$6,300.00

ITE-P7 Elevation Pedestal with Cable Guards

Camera/Head
 Load Capacity: 75 lbs. (33.75kg)
 Min. Height: 32" (80cm)
 Max. Height: 49" (122.5cm)
 Elevation Adjustment: 18" (45cm)
 Caster Radius: 19" (47.5cm)
 Wheel Diameter: 8" (20.32cm)
 Weight: 45 lbs. (20.25kg)
 Finish: Black wrinkle
 Optional
 Accessory: Mitchell mount adaptor
 ITE-P7 \$2,750.00

ITE-D3 Dolly

Load Capacity: 90 lbs. (40.5kg)
 Folded Length: 26" (65cm)
 Folded Width: 12" (30cm)
 Height: 7" (17.5cm)
 Diameter: 42" (105cm)
 Wheel Diameter: 5" (12.5cm)
 Weight: 17 lbs. (7.65kg)
 Finish: Black wrinkle
 ITE-D3 for T4A, T6, T10 and T12 \$775.00

ITE-D3G Dolly

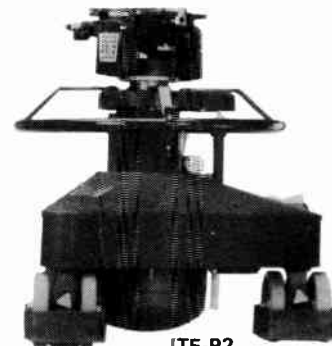
Load Capacity: 90 lbs. (40.5kg)
 Folded Length: 26" (65cm)
 Folded Width: 12" (30cm)
 Height: 7" (17.5cm)
 Diameter: 42" (105cm)
 Wheel Diameter: 5" (12.5cm)
 Weight: 17 lbs. (7.65kg)
 Finish: Black wrinkle
 Includes cable guards
 ITE-D3G \$825.00

ITE-D5 Dolly

Load Capacity: 60 lbs. (27kg)
 Folded Length: 23" (57.5cm)
 Folded Width: 6" (15cm)
 Height: 6" (15cm)
 Diameter: 42" (105cm)
 Wheel Diameter: 5" (12.5cm)
 Weight: 7 lbs. (7.65kg)
 Finish: Black wrinkle
 ITE-D5 For T1A, T4A, T9 and T12 \$450.00
 ITE-D5G Dolly with cable guards \$500.00



ITE-P5



ITE-P2

ITE-D7 Dolly

Load Capacity: 325 lbs. (147.5kg)
 Folded Length: 29" (72.5cm)
 Folded Width: 15" (37.5cm)
 Height: 9" (22.5cm)
 Diameter: 45" (112.5cm)
 Wheel Diameter: 8" (20cm)
 Weight: 25 lbs. (11.25kg)
 Finish: Black wrinkle
 Includes adjustable cable guards
 ITE-D7 For T10, T60, T70 and MT1 \$1,495.00

ITE-D20A Dolly

Load Capacity: 15 lbs. (6.8kg)
 Folded Length: 17" (43cm)
 Folded Width: 6" (15cm)
 Height: 5" (12.5cm)
 Diameter: 32" (81.25cm)
 Wheel Diameter: 2.5" (6.3cm)
 Weight: 3 lbs. (1.36kg)
 Finish: Anodized aluminum
 ITE-D20A For T20A \$75.00

ITE-D30 Dolly

Load Capacity: 20 lbs. (9.1kg)
 Folded Length: 19 3/4" (49.37cm)
 Folded Width: 6 1/2" (16.25cm)
 Height: 6" (15cm)
 Diameter: 38" (95cm)
 Wheel Diameter: 4" (10cm)
 Weight: 8 lbs. (3.6kg)
 Finish: Anodized aluminum and black wrinkle
 ITE-D30 Dolly For T30 \$195.00

ITE-D40 Dolly

Load Capacity: 50 lbs. (22.7kg)
 Folded Length: 22" (55cm)
 Folded Width: 8" (20cm)
 Height: 6" (15cm)
 Diameter: 40" (100cm)
 Wheel Diameter: 4" (10cm)
 Weight: 9 lbs. (4.05kg)
 Finish: Anodized aluminum and black wrinkle
 ITE-D40 For T40 and T45 tripods \$225.00

ITE-D50 Dolly

Load Capacity: 55 lbs. (25kg)
 Folded Length: 24" (61cm)
 Folded Width: 8" (20cm)
 Height: 6 1/2" (16.5cm)
 Diameter: 42" (106.7cm)
 Wheel Diameter: 4 1/2" (11.4cm)
 Weight: 9 1/2 lbs. (4.3kg)
 Finish: Anodized Aluminum and black wrinkle
 ITE-D50 For T50 \$455.00

ITE-D670 Dolly

Load Capacity: 100 lbs. (45.4kg)
 Folded Length: 24" (61cm)
 Folded Width: 6 1/2" (16.25cm)
 Height: 8 1/2" (21.6cm)
 Diameter: 44" (111.7cm)
 Wheel Diameter: 4" (10cm)
 Weight: 13 1/2 lbs. (6.13kg)
 Finish: Anodized aluminum and black wrinkle
 ITE-D670 For T60 and T70 \$875.00

INNOVATIVE TELEVISION EQUIPMENT

Tripod Spreaders/Carts/Accessories

ITE-SP670 Tripod Spreader

Load Capacity: 100 lbs. (45.4kg)
 Folded Length: 32" (81.3cm)
 Min. Spread (diameter): 33" (83.8cm)
 Max. Spread (diameter): 53" (134.6cm)
 Folded Width: 2³/₄" (7cm)
 Height: 2¹/₂" (6.3cm)
 Weight: 3¹/₂ lbs. (1.6kg)
 Construction and Finish: Aluminum/black anodize

Method of Tripod

Attachment: Rubber clamps
ITE-SP670 Tripod spreader for T60 and T70 (aluminum) \$350.00
ITE-SP1A Tripod spreader for T1A (nylon) 60.00
ITE-SP4A Tripod spreader for T4A (nylon) 60.00

EFP-2 TV Camera Support Cart

Capacity—Cart: 250 lbs. (112.5kg)
 Capacity—Camera: 30 lbs. (13.5kg)
 Height: For transport, with handle and quadpod/leveling bowl removed — 30" (76.2cm)
 Height: In use—Min. 43" (107.5cm); max. 51" (127.5cm)
 Width: 18.75" (47.6cm)
 Length: 22.25" (55.6cm)
 Weight: 38.5 lbs. (17.5kg)
 Construction: Heavy Gauge Aluminum Tubing
 Finish: Blue anodize

ITE-EFP2 Cart with Quadpod and leveling bowl \$1900.00
ITE-EFP1 Cart (less Quadpod and 100mm leveling bowl) 1700.00

Quick Release Assemblies

The ITE quick release assembly provides for rapid attachment and removal of cameras from pan/tilt heads. Positive attachment of plate to adaptor is accomplished by rotating a spring-loaded lever. Inadvertent disengagement is impossible.

Assemblies are used in conjunction with all models of torsion, fluid and hydro heads.

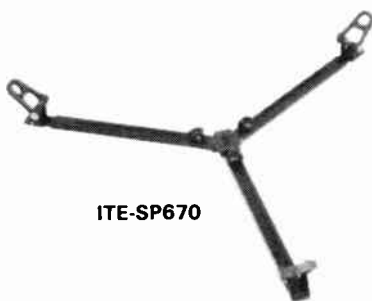
Wedge Adaptor Assemblies

The ITE Wedge plate and adaptor combination provide for rapid attachment and removal of cameras from pan/tilt heads. Positive attachment of wedge plate to adaptor is accomplished by rotation of a locking screw which makes inadvertent disengagement impossible.

Assemblies are used in conjunction with ITE-H2 Cam Head.

Tripod Accessories

Rubber foot pads. Ball feet and leg spikes are available for various ITE tripods.



ITE-SP670



EFP-2 Cart shown with ITE-H40 Fluid Head



ITE-C Cases

Wedge Adaptors, Plates and Quick Releases

ITE-WP Wedge Plate—For H2, H6 and H100 \$155.00
ITE-QR Quick release adaptor assembly with QRP 155.00
ITR-QRP Quick release adaptor plate 55.00

Claw Ball Levels and Adaptors

ITE-CB1A Claw ball assembly for T1A \$ 65.00
ITE-CB3 Claw ball assembly for H40 (or heads from other manufacturers) to T3A, T4A, T12 and T50 95.00
ITE-CB3A Claw ball assembly for H12A/H14A to T3A, T4A, T12 and T50 95.00
ITE-CBC Column to claw ball adaptor 250.00
ITE-FHT Adaptor for flat base heads to T6 and T10 85.00
ITE-H10P Stub adaptor for H10 to P6 190.00
ITE-H25T Mitchell base adaptor for H2 and H6 to T6, T10, P3 and P7 130.00
ITE-H50CA Column adaptor for H50 to T6, T10, P3 and P7 110.00
ITE-H60A Adaptor—For H60 Mitchell mount 285.00
ITE-H70A Adaptor—For H70 Mitchell mount 285.00
ITE-H75/100A Leveling Bowl adaptor—75mm to 100mm 45.00
ITE-H100/110A Leveling Bowl adaptor—100mm to 110mm 75.00
ITE-H110/150A Leveling bowl adaptor—110mm to 150mm 75.00
ITE-OSA Offset adaptor with wedge plate for H6 and H100 for use in mounting Ikegami and BTS studio cameras 375.00

Handles

ITE-RH8 Handle—for H8 \$100.00
ITE-RH10 Handle—for H10 120.00
ITE-RH17 Handle—for H17 50.00
ITE-RH26T Handle—telescopic—for H2 and H6 180.00
ITE-RH30 Handle—for H30 45.00
ITE-RH40 Handle—for H40 50.00
ITE-RH50T Handle—telescopic—for H40 and H50 85.00
ITE-RH50E Handle—telescopic—for H50E 95.00
ITE-RH60T Handle—telescopic—for H60 155.00
ITE-RH70T Handle—telescopic—for H70 155.00
ITE-RH100T Handle—telescopic—for H100 185.00
ITE-RHA Handle—for H12A and H14A 45.00

Shipping Cases

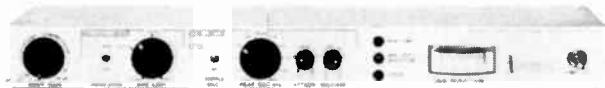
ITE-CD Shipping case—for D3 and D7 \$385.00
ITE-CH Shipping case—for H2, H6, H70, H90 and H100 375.00
ITE-CTH Shipping case—for D6/T6/H2 and T10/H6 445.00
ITE-MPC Shipping case—molded poly—standard case for T60/H60, T12/H12 and T50/H50 275.00
ITE-MPCC Shipping Case—molded poly—compact case for T17.H17 T553/H60/T40/H40, T45/H40, T45/H50 and T70 295.00
ITE-MPCD Shipping case—molded poly—dolly case for D5, D30, D40, D50 and D670 310.00
ITE-MPCL Shipping case—molded poly—for MT1 with H8 375.00

Other Accessories

ITE-APT Air pressure tank assembly for P2 \$895.00
ITE-BF Set-ball feet to mount T1A and T4A on D3, D5 and D7 65.00
ITE-CBF Set-ball feet to mount T60 and T70 on D3, D5 and D7 70.00
ITE-CW Counterweight set (40 lbs.) for P5 225.00
ITE-HHM High hat 6" — with Mitchell mount 180.00
ITE-HHC-100 High hat 6" — with 100mm bowl 155.00
ITE-HHC-110 High hat 6" — with 110mm bowl 155.00
ITE-RFP Rubber foot pad set—for T1A and T4A 45.00
ITE-SPS Spike set for T6 and T10 45.00

INOVONICS, INC.

Audio Processing/ Magnetic Recording Equipment



201

201 Average and Peak Responding Limiter

- Variable dynamic range compression
- Exclusive open-loop gain reduction
- Ripple-canceling circuitry
- Visual indication of gain reduction

The 201 is an unusually smooth dual-function audio limiter designed for studio recording, mastering, and broadcast production work. Serving as both a fast peak limiter and independent average-responding limiter, the 201 restricts program peaks to a preset ceiling value while maintaining the average program level within desired limits.

Specifications

- Frequency Response:** ± 0.5dB, 20Hz-20kHz
Signal-to-Noise Ratio: > 75dB, 20Hz-20kHz referred to + 4dBm
Limiter Timing
Peak Limiter Attack: Continuously variable between 1µs/dB limiting and 1ms/dB limiting.
Release: Continuously variable between 5ms/dB limiting and 50ms/dB limiting.
Average Level Limiter
AVG Response: 10ms/dB limiting
“VU” Response: 30ms/dB limiting
Input
Sensitivity: Adjusts to accommodate input levels between -15 and + 5VU with calibrated “unity gain” position.
Impedance: 100K, unbalanced (transformer optional).
Output: Transformer-isolated line output feeds 600 ohm line or bridging inputs at + 4 or + 8dBm. Clipping level + 24dBm.
201-00 Average and Peak Responding Limiter \$680.00
201-01 Line Input Transformer option (balanced input). 60.00

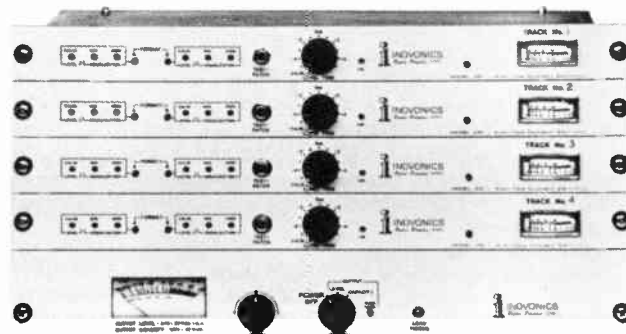
315 Channel Amplifier/925 Bias Generator For High Speed Audio Duplicating

- Equally suited to either cassette or quarter-inch format systems
- Interfaces with virtually any combination of master reproduce and slave record heads
- Equalization is easily tailored for specific formats and tape oxide formulations
- Uses: Upgrade, replacement or new system application in any bus-type high speed audio duplicator

The 315 Channel Amplifiers and 925 Bias Generator comprise a complete electronics package for high speed audio tape duplicating systems. Capable of operating at duplication ratios from 4:1 to 64:1, the 315s and 925 are ideal for upgrading older bus-type systems or for new installations.

These electronics feature wide range, low noise and superior signal headroom. Unusual design flexibility enables their easy integration into a wide variety of installation situations.

315's



925

Specifications

315 Channel Amplifiers

- Duplication Ratio:** 4:1 to 64:1 with appropriate equalizers
Equalization: Two sets of switch-selectable MID and HIGH Equalization and LEVEL CAL adjustments. May be supplied for any combination of format, ratio and oxide formulation. Combined REPRO/RECORD EQ network gives superior overall phase response.
Frequency Response: ± 0.5dB, 200Hz-1MHz with equalizers defeated
Noise: > 75dB below + 17dBmV nominal output bus level
Distortion: 0.5% THD, 200Hz-1MHz at + 17dBmV nominal output bus level
Input Characteristic: Repro preamp operates in current-sensing mode; appears as short-circuit to master playback head. This eliminates primary L/C head resonance factor. Head inductance range: 500µH to 10mH; 750/850µH optimum.
Output: Voltage-source output bus, < 30 ohms source impedance. Nominal “Zero Level” bus level + 17dBmV; clipping level + 37dBmV. Output power sufficient for 10 slave system.
Controls: LEVEL CAL, MID and HIGH EQ presets for each of two, remotely-selected Format positions. LEVEL TRIM control with CALIB. detent affords ± 6dB variation from calibrated value.
Linearizer: Variable non-linear network may be introduced into the Record Amplifier feedback circuit to predistort the output signal in a manner complementary to tape saturation distortion. This reduces tape-generated IMD and THD.

Test/Patch Jack: Closed-circuit jack breaks signal path for testing, calibration or for patching two channels or systems together

925 Bias Generator

- Bias Frequency:** 5MHz standard; 1MHz or 2MHz optionally available
Power Output: 40W; 25VRMS nominal output bus level, A.G.C.-stabilized. Output is short-circuit protected
Additional Outputs: + 180VDC unregulated and + 30VDC regulated for up to four 315 Repro/Record Amplifiers
Controls: BIAS TRIM controls affords ± 3dB variation in output bus level from nominal. METERING switch selects Output Bus Level or percentage of Generator Capacity.
315-00 Repro/Record channel amplifier (one channel) \$ 710.00
925-00 1/2/5MHz, 40W Bias Supply (and power supply for 315's) 1005.00

Refer to Green Section for Addresses and Telephone Numbers.



222

222 AM "NRSC" Audio Processor

- Built-in peak limiter (defeatable) can either enhance or replace existing peak controllers to maintain asymmetrical AM modulation advantage
- Adaptive preemphasis—a separate preemphasis-protection limiter independently controls high frequency program energy for best utilization of the NRSC (or other) curve, consistent with optimum modulation
- Feedforward pulse width modulation (PWM) techniques are used in limiter and adaptive-preemphasis circuits for colorless, quasi-digital control of the program signal
- Active multipole lowpass filtering exceeds requirements for adjacent-channel protection, even under adverse conditions. A proprietary filter overshoot compensator eliminates any need for splatter-generating clippers to assure full modulation

The 222 is an audio processor specifically intended for AM broadcasting. It incorporates an adaptive preemphasis characteristic to enhance signal intelligibility and "presence," and a sharp-cutoff lowpass function to eliminate interference with adjacent channels.

The frequency and phase response of the 222 is rigidly maintained from unit-to-unit to ensure optimum stereo performance from paired processors.

Specifications

Frequency Response

(Preemphasis Defeated):

"Proof" Mode: ± 0.5 dB, 10Hz-15kHz

"NRSC" Version: ± 1 dB, 10Hz-9.7kHz

Distortion:

$< 0.2\%$ THD, 10Hz cutoff with peak limiter off; $*1\%$ THD, 200Hz cutoff with peak limiter on

Noise:

> 75 dB below 100% modulation

Preemphasis Characteristic:

"Truncated" 75 μ s curve

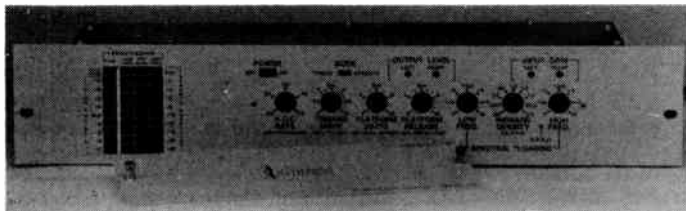
Input:

Active-balanced, 10K bridging; accepts nominal line levels between -15 and +15dBmV

Output:

Active-balanced, 600 ohm resistive source; delivers 0 to +15dBm into 600 ohm loads

222 \$520.00



255

255 Triband/PWM Stereo Broadcast Processor

- Gated AGC has peak-weighted response and variable correction rate
- Gated 3-band compressor/limiter includes a variable "platform" release characteristic and a unique program-adaptive clipping function
- Split-spectrum peak control may be set for 75 μ s or 50 μ s transmission preemphasis protection
- Feedforward PWM gain reduction
- User controls are calibrated for convenient set-up and easy return to previous presets

The 255 is a stereo audio processor with principal utility in the "contemporary music" FM broadcasting format.

The 255 is a multifunction device, incorporating a slow, "gain-riding" AGC with a 3-band compressor/limiter of unusual flexibility. Gain control utilizes a unique implementation of pulse width modulation in a feedforward, "soft-knee" circuit configuration.

Specifications

Frequency Response:

± 0.5 dB, 10Hz-20kHz

Noise:

> 80 dB below 100% modulation, 10Hz-20kHz

Distortion (With Full AGC

Correction and "Subjective"

Adjustments Centered):

$< 0.25\%$ THD, 1kHz-20kHz; $< 0.5\%$ THD, 250Hz-1kHz; $< 1\%$ THD, 20Hz-250Hz

Crosstalk:

> -65 dB, 10Hz-20kHz

Inputs (Left and Right):

Active-balanced, bridging; accept nominal line levels between -20 and +10dBmV

Outputs (Left and Right):

Active-balanced, 600 ohm source impedance; deliver 0 to +15dBm to 600 ohm loads

Gating Threshold:

Fixed at -25dB relative to corrected program level

Threshold Weighting:

-3dB at 150Hz and 5kHz

Correction Range:

± 12 dB

Response to Program

Dynamics:

Quasi-peak; 10ms UK/EBU "PPM" integration

Correction Rate:

Variable between 0.25 and 1.0dB/sec.

Spectrum Division:

Low/Mid turnover, 200Hz (795 μ s); Mid/High turnover is user-selectable, 2120Hz (75 μ s) or 3180Hz (50 μ s)

Program Adaptive Clipping:

A high frequency "activity detector" (HFAD) monitors dynamics at the upper program frequencies to determine an optimum limiting/clipping ratio. A higher incidence of clipped peaks is permitted when sufficient high frequency activity is present to mask other audible effects. Function is internally defeatable

Ceiling Clipper:

Active only on limiter overshoots which would otherwise exceed 100% modulation. Conforms to the selected preemphasis characteristic

255 \$1850.00



260

260 Stereo Broadcast Audio Processor

- Gated, slow, gain-riding AGC
- Split-spectrum average level compressor/peak controller conforms to the 75 μ s curve
- Remote function selection permits use of the 260 as either a gated AGC, a peak limiter, or as a complete processing chain
- Level alarm alerts the operator of a "dead-air" or an "out of limits" situation

The 260 is a stereo processor for FM and TV broadcasting. The 260 and its ease of set-up and operation suggests application in LPTV and educational FM installations.

Specifications

Frequency Response:

± 0.5 dB, 10Hz-15kHz

Distortion:

$< 0.5\%$, 20Hz-15kHz; $< 0.2\%$, 50Hz-10kHz

Noise:

> 75 dB below 100% modulation

Crosstalk:

> 60 dB below 100% modulation

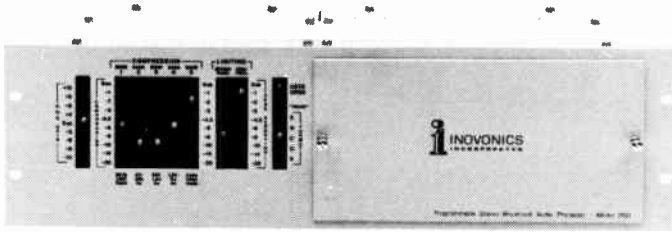
Inputs:

Balanced-bridging, -20 to +10dBm

Outputs:

Balanced, 0 to +15dBm

260-00 \$990.00



250 Programmable Stereo Broadcast Processor

The 250 is a remotely-programmable, stereo audio processor for present and future FM, AM and TV broadcasting applications. Digital programmability of the 250 allows the user to adapt processing parameters to best suit changing station formats and listener profiles over the course of the broadcast day.

The 250 is the only signal conditioner required ahead of the transmitter. It performs the multiple task of a slow, gain-riding AGC, multiband compressor, program equalizer and final peak controller.

Specifications

Frequency Response (Below Compressor and Limiter Thresholds):

Noise*: ± 0.5dB, 10Hz-15kHz
> 70dB below 100% modulation, 10Hz-20kHz

Crosstalk*: > 60dB below 100% modulation, 10Hz-20kHz

Distortion: < 0.5%, 20Hz-15kHz; < 0.2%, 50Hz-10kHz

Inputs: Left and Right; balanced-bridging, -20 to + 10dBmV

Outputs: Left, Right and Mono; balanced, 0 to + 15dBm

Power: 105-130VAC (230V available), 20W; 50/60Hz

Dimensions: 5 1/4" x 19" x 8"

Weight: 11 lbs.

*Data taken with Processor gain adjusted for 10dB Compression and 10dB Limiting of typical program material.

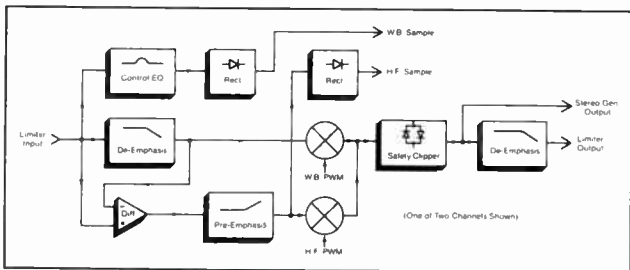
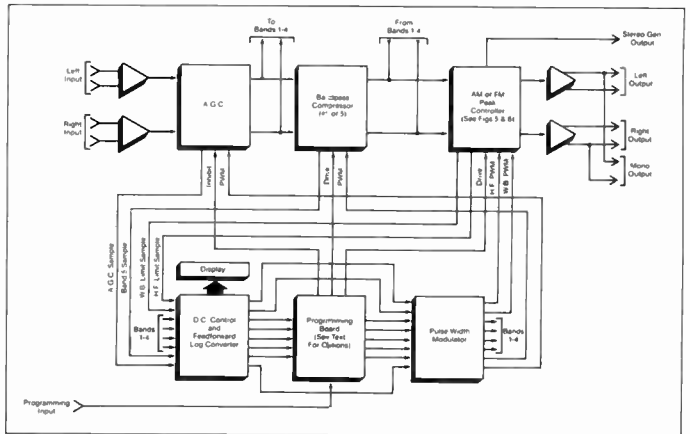
Programming Options

Either of two, interchangeable programming boards may be used with the 250 to furnish either a static or dynamic means of external control.

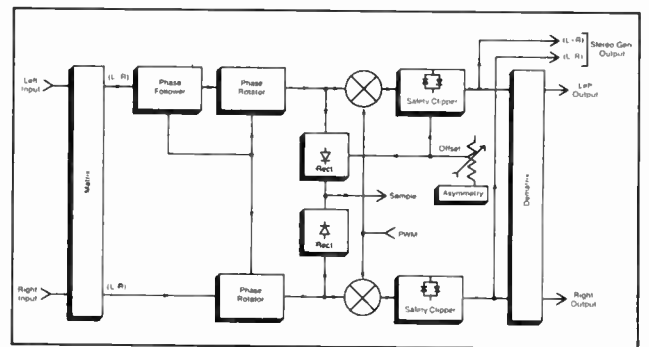
The static programming board, which is supplied as standard with the 250, incorporates a simple series of four on-board manual pre-sets for the adjustable processing parameters, plus a "flat" position and a "proof" mode. These different setups may be accessed remotely to change processing parameters by a series of control line contact closures to ground.

The dynamic programming board places all variable parameters under external computer control. An RS-232C serial interface bus accepts a series of 8-bit digital words to alter processing on an ongoing basis; continuously, if desired. User-designed software options can be used to implement creative control of the 250, and computer programs may be based on such external data as input signal spectral dynamics, station automation equipment command, time of day, etc.

- 250-00 Programmable stereo broadcast processor (for FM stereo) \$2980.00
- 250-01 Programmable stereo broadcast processor (for AM stereo) 2980.00
- 169200 RS-232C computer data interface card (form 250) 410.00



**Figure 5
FM Peak Limiter**



**Figure 6
AM Peak Limiter**

370 Tape Recorder Electronics

- All controls are "up front" for easy set-up; calibration adjustments are stable, multi-turn pots
- Entire electronics assembly unplugs from the front for ease in servicing; all components are standard, "off-the-shelf" available parts
- Two units plug together for stereo operation

The 370 is a replacement electronics package for updating older professional recorders. It is a basic, two-speed, "no frills" unit with excellent performance, high reliability and of rugged construction to meet the demands of continuous use in broadcast, studio and educational applications.

The 370 accommodates virtually any combination of original and replacement heads of either high or low impedance. It is pin-compatible with Ampex 300-, 350- and 440-series machines and easily adapted to most other professional recorders.

Specifications

Overall Frequency

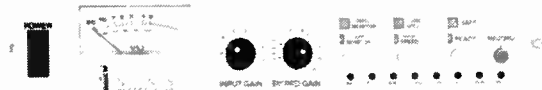
Response (Hz): 15 ips \pm 2dB, 25-25k
 7 1/2 ips \pm 2dB, 20-15k
 3 3/4 ips \pm 2dB, 20-8k

Line Input: "Electronically-balanced," bridging; accepts nominal line levels between -10 and +10dBm.

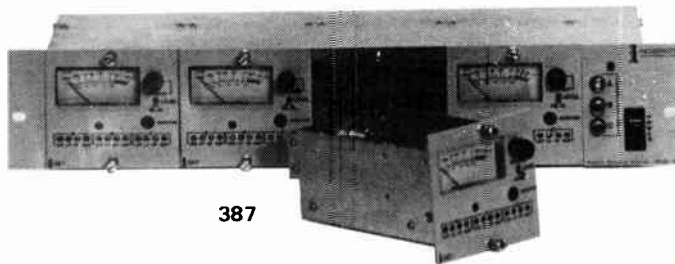
Line Output: Balanced, transformer-isolated; may be adjusted for nominal line levels between +4 and +10dBm. Clipping Level, +24dBm into 600 ohm load.

Power Requirements: 105-130VAC (230V available), 50/60Hz; 0.3A (plus transport).

370-00 **\$675.00**



370



387

380 Magnetic Recording Electronics

- Equalization, level and bias adjustments for routine, two-speed operation, and a third, "optimized" operating mode with separate adjustments to accommodate a different stock, operating level, track format, EQ characteristic, etc.
- "Pickup" (insert) Record Capability with adjustable delay, and "Sync" Reproduce with automatic monitor transfer.
- Provision for remote selection of monitor function, and defeatable "Auto Mute" to attenuate playback during high speed search.
- Adjustable circuitry to reduce the effects of tape compression and phase distortions.
- Increased erase, bias and signal headroom for high coercivity tapes.
- Switchable "VU" or 10ms, quasi-peak program monitoring.
- Two or more units easily interconnected for stereo or multi-track installations.

The 380 represents Inovonics' fourth generation of self-contained Magnetic Recording electronics for professional audio recording applications. The 380 is suitable either for new OEM installations or for substantially improving the performance of existing magnetic tape and film recording equipment.

Specifications

Signal-to-Noise Ratio: (in dB, referred to a "peak" record level 6dB above 250nW/m; 20Hz-20kHz; 2- or multi-track format):

	Overall		Standby	
	u'wtd.	wtd.	u'wtd.	wtd.
30 ips	-65	-74	-79	-86
15 ips	-63	-72	-75	-84
7 1/2 ips	-64	-72	-75	-84

Line Input: "Electronically-balanced," bridging; accepts nominal line levels between -10 and +10dBm in Calib position of Input Gain control. Control affords additional \pm 12dB gain range.

Line Output: Balanced, transformer-isolated; provision for balanced, transformerless operation. May be adjusted for nominal line levels between +4 and +10dBm. Clipping Level, +28dBm into 600 ohm load; +300dBmV into bridging inputs.

Power Requirements: 105-130VAC (230V available), 50/60Hz; 0.3A (plus transport).

380-00 **\$1020.00**

387 Magnetic Reproduce Electronics

The 387 rackmount chassis may be configured with one, two, three or four channels of plug-in preamplifier modules for magnetic tape or film playback. Each module is complete with metering, a defeatable vernier level trim control and three groups of level set and wide range, three point equalization presets. The 387 accommodates a wide variety of head characteristics in NAB, IEC and SMPTE formats. Electronically-balanced, ultra low noise circuitry yields superior signal headroom and optimum frequency response.

Specifications

Frequency Response: 30 ips \pm 1dB, 45-25k
 15 ips/35mm \pm 1dB, 25-20k
 7 1/2 ips/16mm \pm 2dB, 20-18k

Line Output: Balanced; +26dBm clipping level

Power Requirements: 105-130VAC (230V available), 10W; 50/60Hz
Physical: 3 1/2" x 19" x 5"; 12 lbs. (4 channel)

387-00 Rackmount chassis **\$250.00**

387-10 Single plug-in amplifier module **280.00**

387-20 Blanking panel for unused channel positions **20.00**

INOVONICS, INC.

FM Stereo Generator



705

705 FM Stereo Generator

- FMX™ plug-in option
- Digital synthesis of pilot(s) and subcarrier(s) gives maximum stereo separation and stable operation with no trimming adjustments or other routine maintenance
- Internal phase-compensated lowpass input filtering provides complete pilot and SCA protection. A 25Hz highpass function reduces exciter PLL perturbations
- Built-in peak overmodulation protection and proprietary filter overshoot control circuits assure full modulation without need for additional composite processing
- Adjustable composite equalization can correct for STL or other system non-linearities
- Can interface with a variety of audio processing systems
- Easy set-up and maintenance. All components are readily available; no encapsulated or single-source parts are used

The 705 is a full-featured, stand-alone stereo generator incorporating all necessary lowpass filtering and transmission preemphasis functions. The subcarrier and pilot signals are generated by digital circuitry to assure optimum performance and drift-free operation.

FMS is the tradename for a patented, improved system of FM stereo broadcasting, fully compatible with the customary standards and practices used throughout the world. This means that not only can FMX transmission be received by existing mono and stereo receivers with no performance compromise, but the new generation of FMX equipped receivers can provide the broadcaster with a substantial increase in stereocasting coverage, up to 400% has been claimed by the inventors.

FMX employs a second, "quadrature" subcarrier at the same 38kHz as the regular L-R signal, but with a 90° phase offset. The additional subcarrier is modulated by "compressed" L-R information, and "expanded" in the FMX receiver for a much improved signal-to-noise figure.

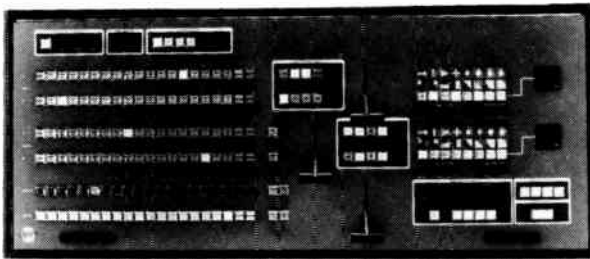
Because the new transmission format squeezes yet another subcarrier into the already "interleaved" composite stereo signal, stereo generator design becomes more critical to avoid potential overmodulation and other undesirable effects

Specifications

Frequency Response:	± 0.5dB, 25Hz-16kHz; ≥ -20dB at 10Hz, ≥ -60dB at 19kHz
Stereo Separation:	> 55dB, 25Hz-5kHz; ≥ 45dB, 5kHz-16kHz
Distortion:	< .15% THD in baseband and subcarrier at 95% modulation
Noise (Below 100% Modulation, Pilot Off):	≥ 75dB in baseband and subcarrier; 38kHz residual and "digital" noise above 54kHz, ≥ 60dB
Pilot:	19kHz ± 1Hz; < 2% THD (dist. products > 55dB below 100% mod.); injection level adjustable between 6% and 12% relative to 100% modulation
Inputs (Left and Right):	Active-balanced, bridging, accept line input levels between -10 and +15dBmV for 100% modulation
Input Filtering:	7-pole, phase-corrected, active-elliptic, "FDNR" lowpass with defeatable overshoot control circuitry. Third-order Chebyshev highpass section
Pre-Emphasis:	Selectable for 75μs or 50μs or flat transmission characteristics
Output:	Single-ended; selectable 75 ohm or "zero" (voltage source) impedance. Level adjustable between -5 and +12dBmV (0.5-3VRMS, or 1.2-8V p-p)
Overmodulation Protection:	Integral part of input filter overshoot control circuitry; defeatable with same
Digital Synthesis Sampling Rate:	608kHz (16X subcarrier)
FMX Option:	Auxiliary plug-in circuit board with all parameters preset. Easily user-installed (or exchanged with possible updated versions)
Power Requirements:	105-130 or 205-255VAC, 50/60Hz; 8W
Size:	1 3/4" x 19" x 7" (1U)
Shipping Weight:	8 lbs.
705 Stereo Generator	\$1250.00
FMX Plug-In Option	550.00

INTERGROUP TECHNOLOGIES

Production/Routing And Master Control Switchers



9420

9400 Series Production Switchers

- 10 or 20 inputs • Black/color background generator • 6 buses • 2 independent mix/effects systems • 16 patterns • Program/preview flip/flop mixer • Combination mix • Wipe • Keys • Internal • External • Chroma keys • Normal/reverse wipe direction • Hard, soft or bordered wipes • Modulation • Rate controlled positioners • Pattern preset • Spotlight, DSK/edger with 4 input source selector • Master fade-to-black • Blanking processor • Microprocessor controlled • Serial editor interface • Diagnostics • Technical manual • Extender card(s) • 25' (7.6m) cable

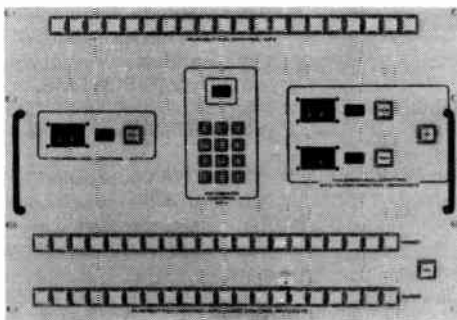
9420 Video Production Switcher—Illuminated Pushbuttons (20 inputs) \$28,500.00

9410E Video Production Switcher—Illuminated Pushbuttons (10 inputs) 21,300.00

9310E Production Switcher

- 10 inputs • Blackburst/color background generator • 4 buses • 2 mix/effects with shared pattern generator • 14 patterns • Program/preview mixer • Combination mix • Wipe • Key • Internal • External • Normal/reverse wipes • Hard, soft or bordered wipes • Modulation • Rate controlled positioner • Pattern preset • Spotlight • Master fade-to-black • Blanking processor • Microprocessor controlled • Serial editor interface • Diagnostics • Technical manual • Extender card(s) • 25' (7.6m) cable • Illuminated pushbuttons

9310E \$11,900.00



1100

1100 Series (BCD Controlled) or 1100C Series (Microprocessor Controlled) Routing Switchers

- Available in NTSC, PAL, and PAL-M • Vertical interval switching • Field expandable • Multiple audio channels • BCD controllers • Microprocessor controller • Modular construction • Audio breakaway capable • Individual frame power supplies • Various controllers available • Technical manuals • Extender card • 50' (15m) controller cable

Matrix Pricing on Request

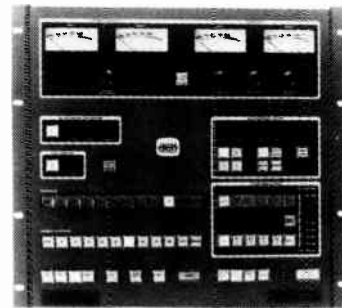
B-698

Refer to Green Section for Addresses and Telephone Numbers.

8001 Master Control Switcher

- 8 AFV inputs • Colorblack generator • 2 audio breakaway inputs • Audio over • Autotransitions • Machine control • Black hold • Serial interface • Diagnostics • TBC bypass • Technical manual • Extender card • 25' (7.6m) cable

8001 \$7,400.00



8012

8012/8020/8030 Master Control Switchers

- 12 to 30 AFV inputs • 5 audio breakaway inputs • Black/color background generator • Autotransitions • Audio over/under • DSK/edger with 4 input preselect • Monitor amplifiers • Blanking processor • Master fade-to-black • Technical manual • Extender cards • 50' (15m) control cable

8012 Master Control Switcher (12 inputs) . . . \$21,500.00

8020 Master Control Switcher (20 inputs) . . . 24,500.00



1616

1616 Series Video Only Routing Switchers

- 16 video inputs • Vertical interval switching • Loop-through inputs • Self-contained • Basic • Effects and component versions

1616B Basic 16 X 1 Video Only \$ 945.00

1616E Effects (Preset/Take, Chop) 1,350.00

1616R Remote Control Kit for above models [25' (7.6m)] 180.00
 Additional Cable/Per Foot 1.25
 Additional Cable/Per Meter 4.13

982 Series 10 X 1 AFV Routing Switchers

- 10 input • AFV system • Vertical interval switching • Loopthrough inputs • Self-contained • Remote controllable

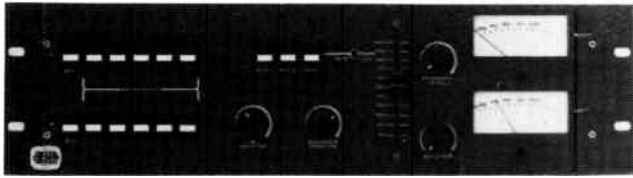
982 Routing Switcher 10 X 1 Audio Follow Video \$930.00

972 Two Additional Channels 650.00

992 Remote Control, Includes 25' cable. . . . 280.00
 Additional Cable/Per Foot 1.25
 Additional Cable/Per Meter 4.13

INTERGROUP TECHNOLOGIES

Production Switcher Accessories



908-4S



9026

640 Downstream Key Edger

• Built-in colorizer • Outline, drop-shadow, border and normal keys (external cut with video fill) • 4 input selector • Remote control • 3 1/2" self-contained unit

640 Downstream Keyer/Edger \$2980.00

4001 Digital Pattern Generator

• 30 creative digital patterns • Frame accurate auto transition (0-99) • 4 input key source selector • Normal/reverse wipe directions • Remote control via RS-422 • Self-contained • Field installable • Desktop mounted • NTSC/PAL/PAL-M • Optional oak side panels

4001 Digital Pattern Generator \$1650.00

660, 660-4 RGB Chroma Keyer

• Saturation selective • Soft keying • Full remote control • Full 360° hue selection • 660 uses one (1) module space in 5010 rack frame; 660-4 uses four (4) module spaces in 5010 rack frame

660 RGB Chroma Keyer \$1410.00

660-4 RGB Chroma Keyer (4 inputs) 2080.00

1240, 1240-4 Encoded Chroma Keyer

• Wide range of encoded video sources • Minimum chroma crawl • Uses one (1) module space in 5010 rack frame [two (2) with input selector]

1240 Encoded Chroma Keyer \$2870.00

1240-4 Encoded Chroma Keyer (4 inputs) 3150.00

924 Blanking Processor

• Self-contained unit with fade-to-black • Insert new blanking intervals into program output

924 Blanking Processor with FTB \$1500.00

9026 Autotransition/Event Storage Unit

• Autotransitions on M/E's Mix, FTB and DSK • General Purpose Interface (GPI) • 100 event storage/recall • Chaining of events for longer sequences • Editor interface built-in RS-232 or RS-422 • Stores entire switcher setup • Operated with 9300 or 9400 switchers

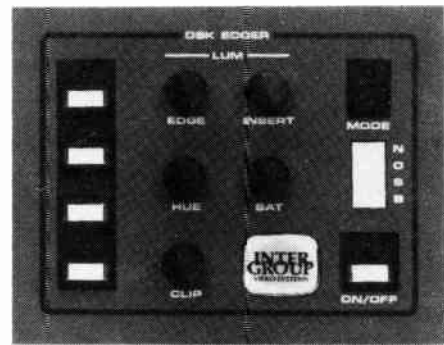
The 9026 offers both autotransitions for the 9300 or 9400 Production Switchers and Event Storage and Recall of 100 different panel "snap shots." The autotransitions may be triggered through the GPI with either a momentary closure or TTL active low to ground. Multiple events may be sequenced to perform complex series of events. A Serial Editor interface allows either RS-232 or RS-422 editor control in concurrent operation.

9026-3 9300 Switcher only \$2800.00

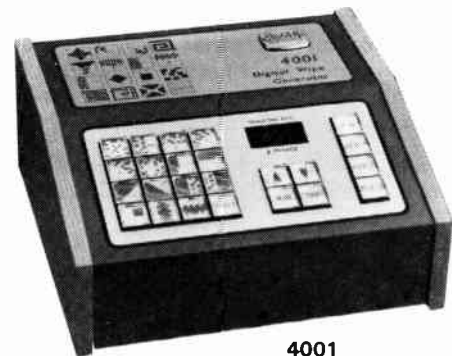
9026-4 9400 Switcher only 2800.00

908 Stereo Audio Follow Video

• 10 audio follow inputs • 5 audio breakaway inputs • Auto or manual control • Follows M/E1, M/E2, or mixer • VU meter for program out • Level adjust for program out • Linear fader for manual control • Stereo version available



640



4001

The Audio Follow Video package gives you the ability to mix audio sources concurrent with Fader movement on either the 9400 or 9300 Production Switchers. In addition to audio follow the 908 has 5 separate audio inputs for breakaway.

908-4S Stereo Version 9300/9400 Switchers only \$5600.00

Special Function Options:

5010 Rack Frame \$ 250.00

5050 Power Supply 250.00

924 Blanking Processor with Fade-to-Black 1500.00

4001 Digital Pattern Generator 1650.00

NOTE: Certain options require the use of a 5010 rack frame and 5050 power supply. This frame will accommodate up to seven (7) modules of options or audio/video terminal processing equipment.

5000 Series Distribution Amplifiers

- Reliable operation
- Sturdy frame construction
- Field expandable
- Modular design
- User Configured
- 110-240V AC 50/60Hz

The rack frames which house the electronics are constructed so that different models can be mixed in one frame. A 5010 rack frame will house a power supply like the 5050 and seven card spaces for terminal equipment and/or options. Each option or piece of terminal equipment when ordered will include:

- A rear assembly with connections for inputs and/or outputs wired to one or more card edge connectors
- One or more printed circuit boards
- Front handles or shields (where applicable) attached to each PC board

5010 RACK FRAME

With 5050 (Video) Power Supply

- Rugged steel construction
- Modular design to customize rack
- Seven plug-in modules

The 5010 rack frame is constructed of rolled steel for strength and durability, and designed to accommodate a maximum of eight video, pulse, or subcarrier distribution amplifiers, or seven audio distribution amplifiers. The modular design allows customer configuration of the distribution system. You install only the distribution amplifiers you require.

The 5050 Video Power Supply provides a source for the distribution of pre-regulated + 10V and -10VDC to an entire module frame.

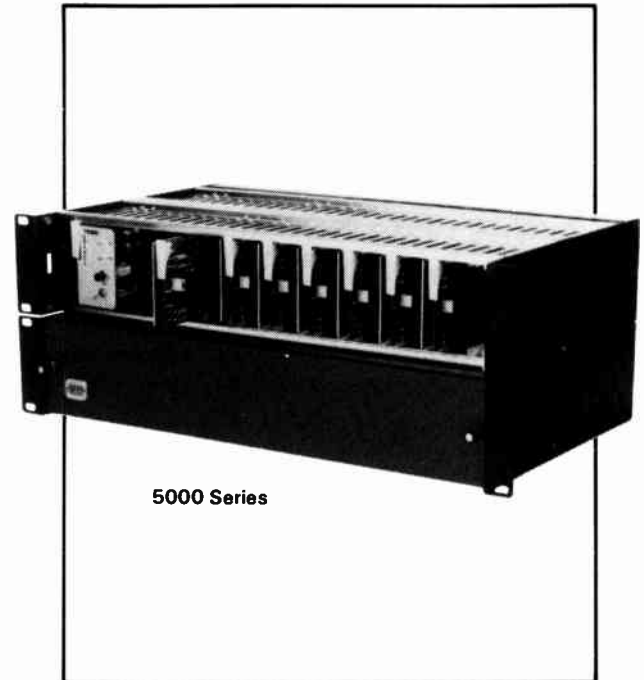
5010	\$250.00
5050 .....	.250.00

5130 Video Distribution Amplifier

- Specifically designed for NTSC and PAL standard color video systems
- Six isolated outputs
- Flat frequency response
- Minimum chroma-luminance delay (less than 10ns) minimal phase and gain distortion

The 5130 general purpose video distribution amplifier is a quality color and monochrome video distribution amplifier with six isolated outputs. Chroma-luminance delay is less than 10ns with minimal phase and gain distortions to provide the ultimate in video distribution amplifiers.

5130	\$180.00
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5190 Pulse Distribution Amplifier

- Four outputs, each individually driven
- Total regeneration of pulses allow any of the outputs to be operated unterminated
- Circuits or regenerative devices sensitive to hum or other low frequency disturbances are not utilized
- Shaped rise times (less than 100ns)
- Self-regulation of incoming DC voltages

The 5190 pulse distribution amplifier accepts a single pulse on the input, regenerates this pulse and distributes the pulse to four constant impedance outputs.

A high degree of isolation between the outputs is provided by the use of four individually driven outputs. This feature allows for any of the outputs to be operated unterminated.

The 5190 is not susceptible to hum or other low frequency disturbances since circuits or regenerative devices sensitive to these problems are not utilized.

5190	\$190.00
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INTERGROUP TECHNOLOGIES

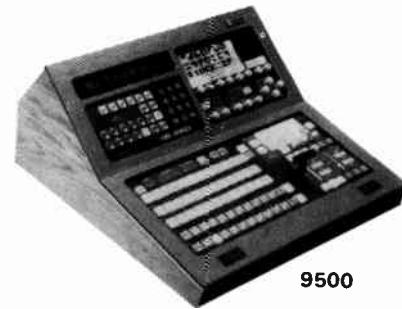
Production Switchers

9500 Series Production Switchers

• 2 complete mix/effects systems for maximum effects layering • 12 or 24 inputs providing for future expandability with +SIX • 4 linear keyers for crisp clean keys • REFEX Memory System for unlimited store and recall of effects • Internal auxiliary buses for optimum use of external devices • 6 ext. key sources/6 ext. key fills for maximum key flexibility • 7 layers of video for one pass productions • 10 hot keys for fast accurate event/sequence recall

Compact in size, but large in capability, the 12 input version of the 9500 can be rackmounted for reduced space applications. The 9500 was built around REFEX™ (Re-Programmable Effects) and uses extensive memory management for all aspects of the switcher operation. Not only does the 9500 offer more event storage than any other product (over 800 events), but the amount of what is stored in memory is much greater. All key selections store every parameter which effects that particular key. Even patterns have the ability to store pattern modifiers. The operator can select between six different preference registers recalling the unique switcher configuration they desire.

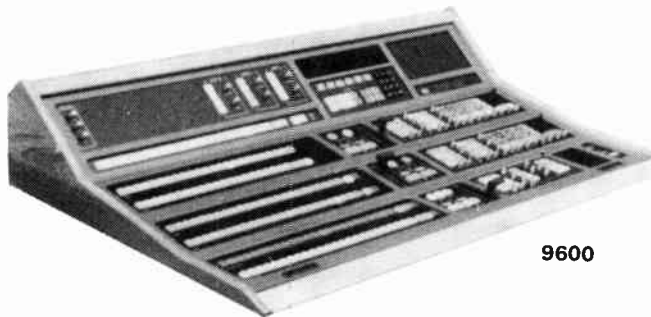
9512 Production Switcher \$28,500.00
9524 Production Switcher 34,500.00



9500

Options

9557	Dual Key Edger	\$3,500.00
9555	Dual Chroma Key/Aux./Prv.	3,500.00
9542	Serial Editor Interface	1,500.00
9551	Waveform Generator 2nd	3,200.00
9508	Stereo Audio Follow	8,500.00
9502	REFEX Level II	2,500.00
9503	REFEX Level III	7,500.00
9506	Redundant Power Supplies	3,650.00
9509	GPI Output Control	250.00



9600

9600 Series Video Production Switchers

• 16 or 24 inputs • 6 matte generators including black/color background • 8 buses • 1 or 2 mix/effects • 42 basic wipe patterns • Program/preview flip/flop mixer • Combination mix • Wipe • Key • 12 input external key bus with 12 input key fill bus • Second keyer with edging in each mix/effects • Panel microprocessor • Frame microprocessor • Serial RS-422 link • 4000' max. separation • 5 input downstream keyer with edging • Mask generator per mix/effects and DSK • Auto transitions • Preference programming, and event save/recall/play (REFEX I) • Dual auxiliary bus • Serial editor interface • Diagnostics • Technical manual • Extender cards • 50' (15m) cable • M⁴-Key—multi-element, multi-plane, multi-level memory key • Extensive standard pattern modifiers • Pattern Attribute Memory System (PAMS) • Title controls • Preview select • Fade-to-black

The heart of the 9600 is the microprocessor-based system known as REFEX. The visible benefits are concerned primarily with system setup, event storage, sequence automation and editing, off-line storage of events and peripheral equipment control; the true benefit of REFEX is much greater than the user-accessible functions.

REFEX Levels I through IV have been defined, Levels V and higher have not. It is this open-ended, fully compatible software/hardware enhancement effort which will insure 9600 owners of future growth options.

To prevent the loss of stored effects, all REFEX memory is battery backed-up in the event of main power failure.

The Series 9600 is one of the few new-generation production switcher systems to maintain the Program/Preset Bus Row architecture so necessary for on-air (or live-on-tape) applications. Yet the extensive effects automation capabilities of REFEX, the keying power of M⁴-Key, and the pattern memory and management of PAMS make it the most powerful post-production switcher available.

The Series 9600 is available in NTSC, PAL and PAL-M versions.

9616-1	Video Production Switcher—illuminated pushbuttons (16 inputs, 1 ME)	\$44,494.00
9616-2	Video Production Switcher—illuminated pushbuttons (16 inputs, 2 ME)	47,494.00
9624-1	Video Production Switcher—illuminated pushbuttons (24 inputs, 1 ME)	46,494.00
9624-2	Video Production Switcher—illuminated pushbuttons (24 inputs, 2 ME)	49,494.00

Options

9602	REFEX Level II	\$2,500.00
9603	REFEX Level III	7,500.00
9605	External Aux. Bus 8 Output VO	4,500.00
9606	Redundant Power Supplies	3,650.00
9608	Stereo Audio Follow	8,500.00
9609	GPI Output Control	250.00
9625	Triple Chroma Keyer	6,250.00
9629	Dual Extended Patterns	5,225.00
9641	Matrix Wipe Generator	1,950.00
9642	Serial Editor Interface	1,500.00

JSCP Series B/JSLP FM Broadcast Antennas

Common Features

- Excellent performance for stereo, SCA and quadraphonic broadcasting
- Excellent VSWR bandwidth
- Provides a relatively flat, non-reactive load to the transmitter, keeping crosstalk between the main and subcarrier channels to a minimum. Since the antenna load is flat throughout the significant FM sideband frequencies, this antenna does not significantly contribute to synchronous AM noise
- Conservatively rated at 10kW per bay up to four bays, with a 40kW maximum rating for four bays and above
- True circular polarization
- Rugged mechanical construction and mounting
- Supplied with standard galvanized brackets for round-leg mounting on uniform face towers. Special galvanized brackets can be supplied at additional cost for mounting on tapered towers, on poles, or for tower-face mounting. All hardware is included with mounting brackets. Custom antenna support poles can be supplied
- Tower space requirement and antenna input. Tower space requirement in feet for the JSCP/JSLP antenna array is equal to (984)/frequency in MHz (Number of bays-1). Tower space requirement in meters for the JSCP/JSLP antenna array is equal to (300)/frequency in MHz (Number of bays-1).
- Factory tuned on a "Customer" structure

The Series B JSCP antenna is an improved version of a circularly polarized FM broadcast antenna that has become the industry standard. Each bay consists of a radiating element with associated $1\frac{5}{8}$ " flange, and both element and line are bolted to the mounting bracket for that bay. The interbay feed lines are joined by $3\frac{1}{8}$ " flanges, using silver-plated inner conductor connectors for maximum contact life and minimum power loss.

The patented radiating element consists of four quarter-wave arms attached to a support boom, which also contains the element feed. A tuning cap, incorporating a large-radius tip, is supplied on each arm, which eliminates corona while facilitating field tuning, even to a slightly different operating frequency. The antenna system is fabricated of heavy gauge marine brass and copper throughout. The interbay line and element boom are pressurized up to the feed point by the transmission line pressurization system, with a pressure relief valve at the top of the antenna to allow pressurization system purging without the necessity of access to the top of the antenna.

The input connector location and size for the JSCP is:

- One bay: at the bay itself ($1\frac{5}{8}$ ", EIA male)
- Two through five bays: 3' below the bottom bay ($3\frac{1}{8}$ ", EIA female)
- Six and seven bays: 8' below the lowest bay ($3\frac{1}{8}$ ", EIA female)
- Eight through 14 bays: 13' below array center ($3\frac{1}{8}$ ", EIA female)

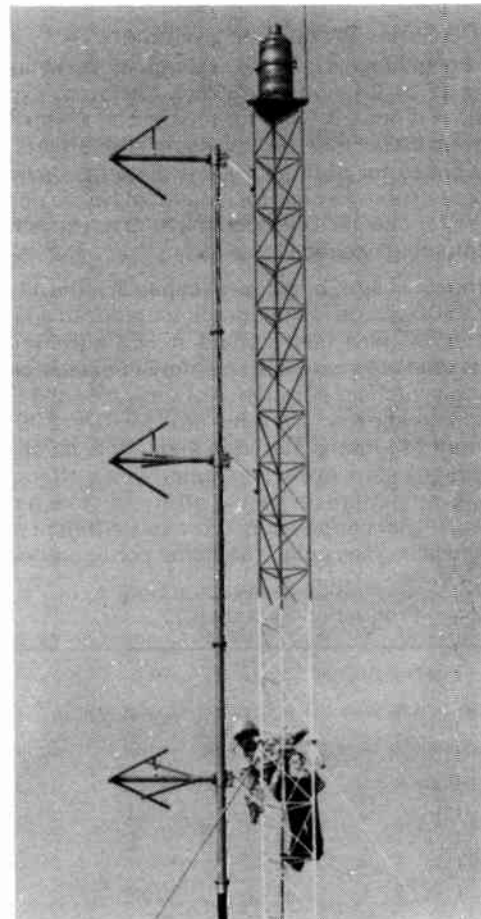
The JSLP antenna is the medium power version of the JSCP antenna. Each bay consists of a JSCP style radiating element with a $1\frac{5}{8}$ " shunt feed line supported by a galvanized steel mounting bracket; standard round leg mounting brackets for a uniform face tower are included with each antenna. Silver plated inner conductor connectors are used throughout for maximum contact life and minimum power loss.

The input connector location and size for the JSLP is:

- One bay: at the bay itself ($1\frac{5}{8}$ ", EIA male)
- Two through five bays: 3' below the bottom bay ($1\frac{5}{8}$ ", EIA female)
- Six and seven bays: 8' below the lowest bay ($1\frac{5}{8}$ ", EIA female)
- Eight through 14 bays: 13' below array center ($1\frac{5}{8}$ ", EIA female)

The circularity of the JSCP/JSLP element is ± 1.0 dB in free space. The azimuth pattern will tend to be distorted somewhat by the structure on which the antenna is mounted. Circularity on a steel pole is typically ± 1.2 dB, with circularity on an 18" face tower typically ± 1.9 dB, and on a 42" face tower typically ± 4.8 dB.

Electrical deicing equipment is available in installations where windloading from radomes would exceed the capabilities of the support structure or where icing occurs infrequently. The deicing system consists of a stainless steel sheathed high reliability heater element in each



JSCP

arm, plus the boom, providing a total of 500W of heating with 240V, 50/60Hz applied. The system can be operated at $\frac{1}{4}$ power on 120V under light icing conditions in order to conserve electricity. The deicing system includes heaters, bay junction boxes and flexible interbay cable.

An optional precision thermostat system is available for use with the JSCP deicers. The thermostat turns on the heaters only over the temperature range of 32° to 20°F which is the range over which most icing occurs.

Radomes are recommended in environments where regular icing and sleet conditions prevail, in order to preserve the antenna's excellent VSWR specifications.

Custom directional antenna patterns are available to meet FCC requirements, or for use in countries where such directional antennas are readily useable. Nulls may be produced depending on protection requirements of azimuth heading and null depth.

For reduced low angle radiation near the tower, a low RFR model of this antenna is available.

Options

FCC-directionalization, pattern measurement service, pattern optimization, beam tilt and null fill, special mounting brackets.

JAMPRO ANTENNAS, INC.

FM Broadcast Antennas

JSCP Series B FM Broadcast Antennas (cont'd)

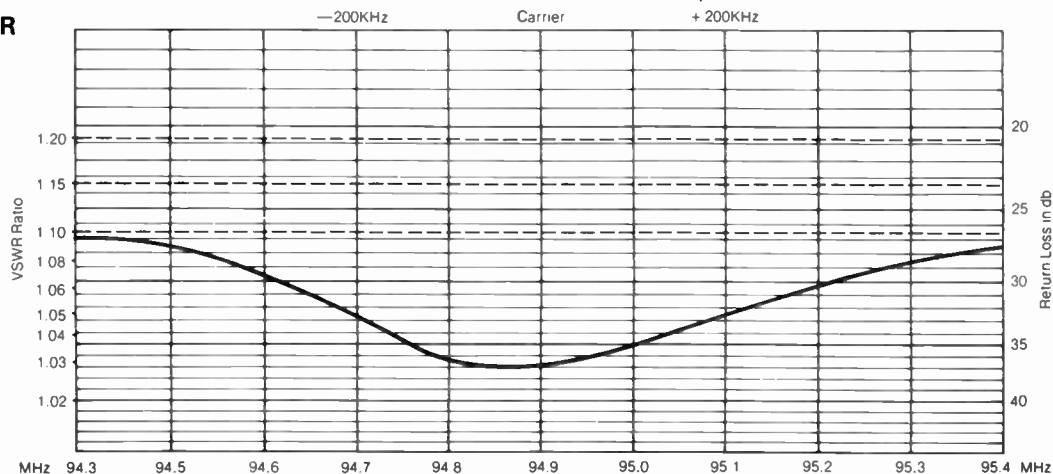
Specifications

Type No. —Bays	Power Gain Ratio	Gain In dB	Field Gain	FS at 1 Mile 1kW MV/M	Safe Power Rating	Input Feed Point	Net Weight With Mounting Brackets	Windloads At 50/33PSF (112 mph) With Mounting Brackets
JSCP-1 With Deicers With Radomes	0.46	-3.37	0.678	93.2	10kW	End	25 lbs. 34 lbs. 55 lbs.	48 lbs. 57 lbs. 128 lbs.
JSCP-2 With Deicers With Radomes	1.0	0.0	1.0	137.6	20kW	End	125 lbs. 143 lbs. 185 lbs.	195 lbs. 219 lbs. 355 lbs.
JSCP-3 With Deicers With Radomes	1.5	1.76	1.23	168.4	30kW	End	199 lbs. 225 lbs. 289 lbs.	320 lbs. 368 lbs. 560 lbs.
JSCP-4 With Deicers With Radomes	2.1	3.22	1.45	199.2	40kW	End	274 lbs. 308 lbs. 394 lbs.	443 lbs. 516 lbs. 763 lbs.
JSCP-5 With Deicers With Radomes	2.7	4.31	1.64	225.2	40kW	End	350 lbs. 393 lbs. 500 lbs.	568 lbs. 664 lbs. 968 lbs.
JSCP-6 With Deicers With Radomes	3.2	5.05	1.79	246.0	40kW	End	498 lbs. 506 lbs. 678 lbs.	730 lbs. 851 lbs. 1210 lbs.
JSCP-7 With Deicers With Radomes	3.8	5.80	1.95	268.0	40kW	End	532 lbs. 591 lbs. 742 lbs.	854 lbs. 999 lbs. 1414 lbs.
JSCP-8 With Deicers With Radomes	4.3	6.34	2.07	285.2	40kW	End	609 lbs. 677 lbs. 849 lbs.	979 lbs. 1148 lbs. 1619 lbs.
JSCP-9 With Deicers With Radomes	4.9	6.90	2.21	303.8	40kW	Center	713 lbs. 796 lbs. 1025 lbs.	1122 lbs. 1316 lbs. 1842 lbs.
JSCP-10 With Deicers With Radomes	5.5	7.40	2.35	322.4	40kW	Center	774 lbs. 859 lbs. 1074 lbs.	1265 lbs. 1483 lbs. 2065 lbs.
JSCP-11 With Deicers With Radomes	6.0	7.78	2.45	336.8	40kW	Center	868 lbs. 969 lbs. 1240 lbs.	1388 lbs. 1632 lbs. 2270 lbs.
JSCP-12 With Deicers With Radomes	6.6	8.20	2.57	353.2	40kW	Center	929 lbs. 1032 lbs. 1289 lbs.	1514 lbs. 1780 lbs. 2475 lbs.
JSCP-14 With Deicers With Radomes	7.8	8.92	2.79	383.5	40kW	Center	1051 lbs. 1158 lbs. 1473 lbs.	1760 lbs. 2077 lbs. 2885 lbs.
JSCP-16 With Deicers With Radomes	8.9	9.49	2.98	410.5	40kW	Center	1175 lbs. 1285 lbs. 1657 lbs.	2010 lbs. 2375 lbs. 3295 lbs.

An automatic deicer control is available:

- JI-1 Single step thermostat for 1 to 5 bays
- JI-10 Two temperature settings: on at 32°F, off at 20°F
- JI-25 Same as JI-10 with contactor to handle 6 or more bays

Measured VSWR

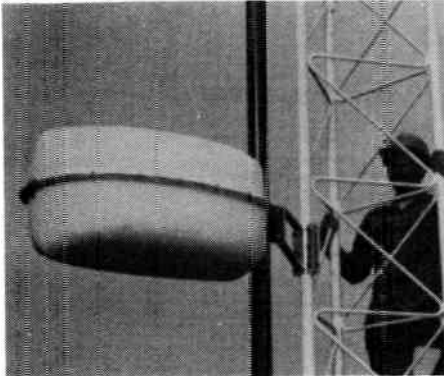


Typical Measured VSWR Plot of Four Bay JSCP-4 Antenna (KSAN-FM, Metromedia, Inc. Station San Francisco, CA)

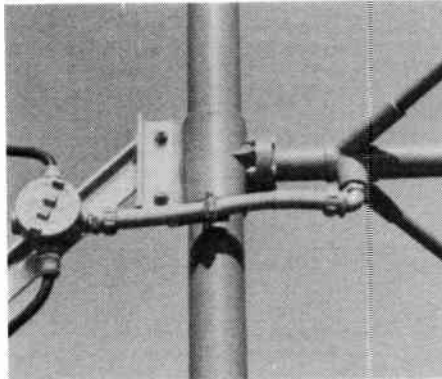
Prices and Specifications Subject to Change Without Notice.

JAMPRO ANTENNAS, INC.

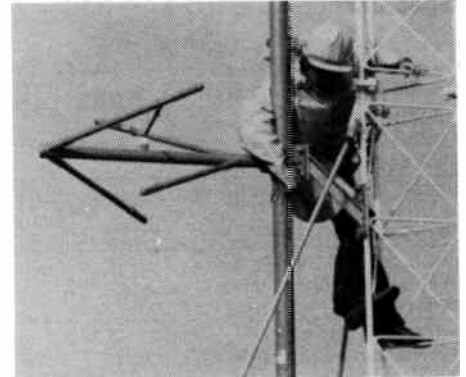
FM Broadcast Antennas



Electrically transparent radome encloses the specially designed radiating element



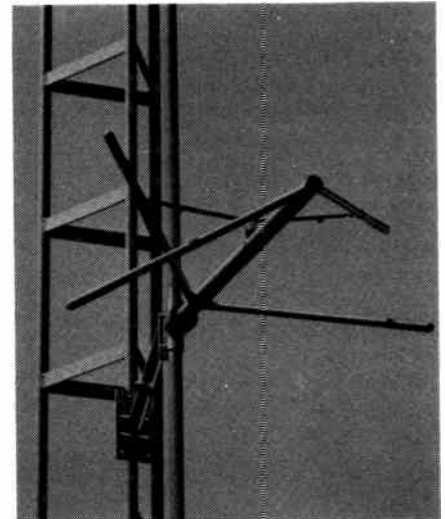
Deicer assembly insures maximum environmental protection



Rigger Assembling. Antenna assembly is quick and simple via EIA flanges, with the antenna bolted directly to the mounting bracket for maximum rigidity.

**JSLP FM Broadcast Antennas (cont'd)
Specifications**

Type No. — Bays	Power Gain Ratio	Gain In dB	Field Gain	FS At 1 Mile 1kW MV/M	Safe Power Rating	Input Feed Point	Net Weight	Windload 50/33PSF
JSLP-1 With Deicers With Radomes	0.46	-3.37	0.678	93.2	10kW	End	25 lbs. 34 lbs. 55 lbs.	48 lbs. 57 lbs. 128 lbs.
JSLP-2 With Deicers With Radomes	1.0	0.0	1.0	136.7	10kW	End	102 lbs. 120 lbs. 162 lbs.	163 lbs. 187 lbs. 323 lbs.
JSLP-3 With Deicers With Radomes	1.5	1.76	1.23	168.4	10kW	End	157 lbs. 183 lbs. 247 lbs.	256 lbs. 304 lbs. 496 lbs.
JSLP-4 With Deicers With Radomes	2.1	3.22	1.45	199.2	10kW	End	213 lbs. 247 lbs. 333 lbs.	347 lbs. 420 lbs. 667 lbs.
JSLP-5 With Deicers With Radomes	2.7	4.31	1.64	225.2	10kW	End	270 lbs. 313 lbs. 420 lbs.	440 lbs. 536 lbs. 840 lbs.
JSLP-6 With Deicers With Radomes	3.2	5.05	1.79	246.0	10kW	End	399 lbs. 407 lbs. 579 lbs.	570 lbs. 691 lbs. 1050 lbs.
JSLP-7 With Deicers With Radomes	3.8	5.80	1.95	268.0	10kW	End	414 lbs. 473 lbs. 624 lbs.	662 lbs. 807 lbs. 1222 lbs.
JSLP-8 With Deicers With Radomes	4.3	6.34	2.07	285.2	10kW	End	472 lbs. 540 lbs. 712 lbs.	755 lbs. 924 lbs. 1395 lbs.
JSLP-9 With Deicers With Radomes	4.9	6.90	2.21	303.8	10kW	Center	557 lbs. 640 lbs. 869 lbs.	866 lbs. 1060 lbs. 1586 lbs.
JSLP-10 With Deicers With Radomes	5.5	7.40	2.35	322.4	10kW	Center	599 lbs. 684 lbs. 899 lbs.	977 lbs. 1195 lbs. 1777 lbs.
JSLP-12 With Deicers With Radomes	6.6	8.20	2.57	353.2	10kW	Center	716 lbs. 819 lbs. 1076 lbs.	1162 lbs. 1428 lbs. 2123 lbs.
JSLP-14 With Deicers With Radomes	7.8	8.92	2.79	383.5	10kW	Center	800 lbs. 907 lbs. 1222 lbs.	1344 lbs. 1661 lbs. 2469 lbs.



JSLP

JLCP Series 2 FM Broadcast Antennas

- Designed for lower power
- Circular polarization
- Factory tuned on a "Customer" structure
- Custom options available
- Rated at 3kW per bay and 7.5kW per antenna system of two to six bays
- VSWR rating is 1.1:1 or better \pm 150kHz after field tuning
- Free space circularity of the radiating element is \pm 1.0dB. The azimuth pattern will tend to be distorted somewhat by the structure on which the antenna is mounted
- Supplied with standard galvanized brackets for round-leg mounting on uniform face towers. Special galvanized brackets can be supplied at additional cost for mounting the JLCP on tapered towers, on poles, or for tower-face mounting. All hardware is included with mounting brackets. Custom antenna support poles can be supplied
- Tower space requirement and antenna input. Tower space requirement in feet for JLCP antenna array is equal to (984)/frequency in MHz (Number of bays -1). Tower space requirement in meters for the JLCP antenna array is equal to (300)/frequency in MHz (Number of bays -1)

The JLCP Series 2 Antenna has proven itself in years of service as a reliable, low cost, low power CP FM system based on completely pressurized feed arrangement. The radiating element and line are fabricated of high strength marine brass and copper and are attached to the support structure by a galvanized steel bracket. Standard round leg mounting brackets for a uniform face tower are included with each antenna.

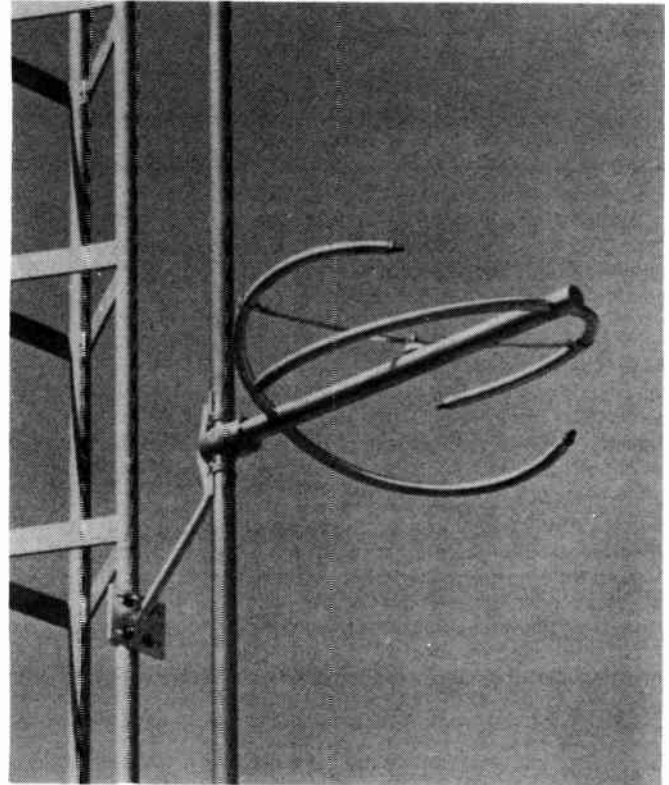
Custom directional antenna patterns are available to meet FCC requirements, or for use in countries where such directional antennas are readily useable. Nulls may be produced depending on protection requirements of azimuth heading and null depth. Full scale antenna range testing and pattern certification are offered for directional antennas.

Low-windload radomes are offered for the JLCP-2 antenna for environments where icing and sleet conditions prevail, in order to maintain good VSWR. The radomes are constructed of electrically transparent fiberglass reinforced plastic and attached to the element boom on both ends for maximum rigidity. Electrical deicers not available.

For reduced low angle radiation near the tower, a low RFR model of this antenna is available.

Options

Pattern measurement service, pattern optimization, beam tilt and null fill, and special mounting brackets. Larger center fed antennas available on special order.

**JLCP****Specifications**

Type No. — Bays	Power Gain Ratio	Gain In dB	Field Gain	FS At 1 Mile 1kW MV/M	Safe Power Rating	Input Feed Point	Net Weight	Windload 50/33 PSF
JLCP-1 With Radomes	0.475	-3.23	0.69	94.94	3kW	End	22 lbs. 48 lbs.	54 lbs. 122 lbs.
JLCP-2 With Radomes	0.955	-0.20	0.977	134.44	7.5kW	End	61 lbs. 112 lbs.	134 lbs. 299 lbs.
JLCP-3 With Radomes	1.50	1.76	1.22	167.87	7.5kW	End	90 lbs. 167 lbs.	214 lbs. 460 lbs.
JLCP-4 With Radomes	2.05	3.12	1.43	196.77	7.5kW	End	119 lbs. 221 lbs.	294 lbs. 619 lbs.
JLCP-5 With Radomes	2.60	4.15	1.61	221.54	7.5kW	End	148 lbs. 276 lbs.	374 lbs. 780 lbs.
JLCP-6 With Radomes	3.15	4.98	1.77	243.55	7.5kW	End	177 lbs. 330 lbs.	455 lbs. 978 lbs.

- NOTES:** 1. Weight and windloads shown include mounting brackets.
2. Two through six bays: 7' below the bottom bay (1 $\frac{5}{8}$ " EIA female).
3. All inputs are 1 $\frac{5}{8}$ " EIA female.

JAMPRO ANTENNAS, INC.

FM Broadcast Antennas

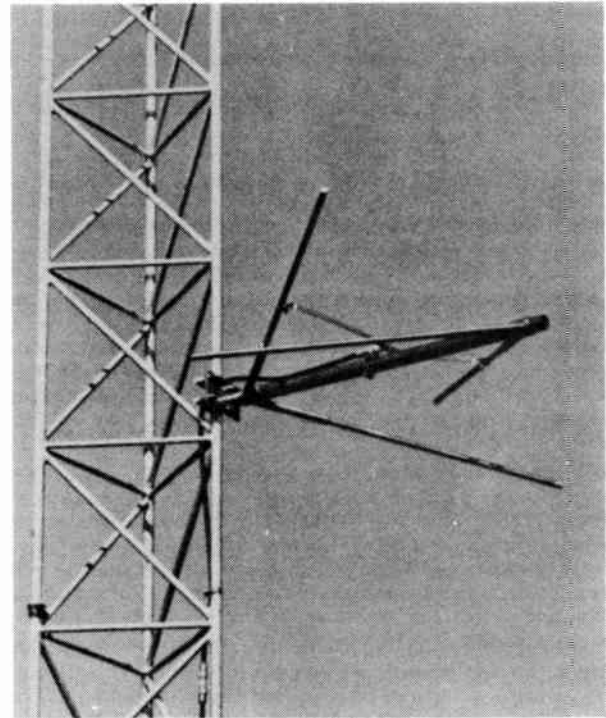
JLLP FM Broadcast Antennas

- Circular polarization
- Quality and economy
- Rated at 1kW per bay with a maximum of 4kW for four bays. In a multi-element array a power divider is used which has a 7/8" EIA flanged input (female)
- VSWR rating is 1.1:1 or better \pm 150kHz after field tuning the elements
- Free space circularity of the JLLP antenna is \pm 1.0dB. The azimuth pattern will tend to be distorted somewhat by the structure on which the antenna is mounted

The JLLP FM antenna has been designed to meet low budget and educational stations requiring an inexpensive antenna. A high quality antenna was designed and based on the JSCP radiating element. By using an external and non-pressurized feed system, manufacturing costs are kept to a minimum. Each bay consists of a radiating element that is fed with flexible cable with type "N" connectors. Two or more bays are fed through a power divider and cable system which has a 7/8" EIA flange input (female). The element is constructed of high strength marine brass and can be mounted directly to a tower leg or pole. The JLLP antenna is designed to be an "off the shelf" item with the customer assembling a portion of the antenna. This method also reduces shipping and handling costs. A complete set of instructions is included to aid in assembly and tuning of the antenna.

Electrical deicing equipment is available for the JLLP in installations where windloading from radomes would exceed the capabilities of the support structure or where icing occurs infrequently. The deicing system consists of a high reliability heater element in each arm, providing a total of 400W of heating with 240V, 50/60Hz applied. The system can be operated at 1/4 power on 120V under light icing conditions to conserve electricity. The deicing system includes heaters, bay junction boxes and flexible interbay cable. Radomes not available.

For reduced low angle radiation near the tower, a low RFR model of this antenna is available.



JLLP

Specifications

Type No. — Bays	Power Gain Ratio	Gain In dB	Field Gain	FS at 1 Mile 1kW MV/M	Safe Power Rating	Net Weight	Windload 50/33 PSF
JLLP-1	0.475	-3.23	0.69	94.94	1kW	14 lbs.	36 lbs.
JLLP-2	0.955	-0.20	0.977	134.44	2kW	34 lbs.	82 lbs.
JLLP-3	1.50	1.76	1.22	167.87	3kW	50 lbs.	114 lbs.
JLLP-4	2.05	3.12	1.43	196.77	4kW	64 lbs.	146 lbs.

Mechanical Data

Antenna Type	Frequency MHz	ES		AH	
		Ft.	Meters	Ft.	Meters
JLLP-1	88	Single Bay		Single Bay	
	98				
	108				
JLLP-2	88	11.1	3.38	11.1	3.38
	98	10.0	3.05	10.0	3.05
	108	9.1	2.77	9.1	2.77
JLLP-3	88	11.1	3.38	22.2	6.77
	98	10.0	3.05	20.0	6.37
	108	9.1	2.77	18.2	5.55
JLLP-4	88	11.1	3.38	33.3	10.15
	98	10.0	3.05	30.0	9.14
	108	9.1	2.77	27.3	8.32

JAMPRO ANTENNAS, INC.**FM Broadcast Antennas****JHCP FM Broadcast Antennas**

- Extremely high-power corona-free operation
- Excellent VSWR bandwidth
- Heavy-duty mechanical construction
- True circular polarization
- Conservatively rated at 30kW per bay, with a maximum system rating of 80kW for three bays and above. These ratings are reduced well below both the average and peak power ratings for the power distribution system, with corona and high voltage arcing problems eliminated by the use of very low Q radiating elements. This lowers the surface charge density over the radiating surface areas preventing corona at 30kW levels, even during rain or fog
- VSWR bandwidth of 1.1:1 or better ± 200 kHz of carrier
- Circularity of the JHCP element is ± 1.0 dB in free space. The azimuth pattern will tend to be distorted somewhat by the structure on which the antenna is mounted, with circularity of the antenna typically ± 1.2 dB mounted on a steel pole and typically ± 3.0 dB mounted on a 30" face tower. The pattern measurement service is recommended for this and all antennas to insure that there are no azimuth pattern nulls at the broadcaster's service area
- Supplied with standard galvanized brackets for round-leg mounting on uniform face towers. Special galvanized brackets can be supplied at additional cost for mounting the JHCP on tapered towers, on poles, or for tower-face mounting. All hardware is included with mounting brackets. Custom antenna support poles can be supplied

Tower Space Requirement and Antenna Input

- Tower space requirement in feet for the JHCP antenna array is equal to $(984)/\text{frequency in MHz} (\text{Number of bays}-1)$. Tower space requirements in meters for the JHCP antenna array is equal to $(300)/\text{frequency in MHz} (\text{Number of bays}-1)$

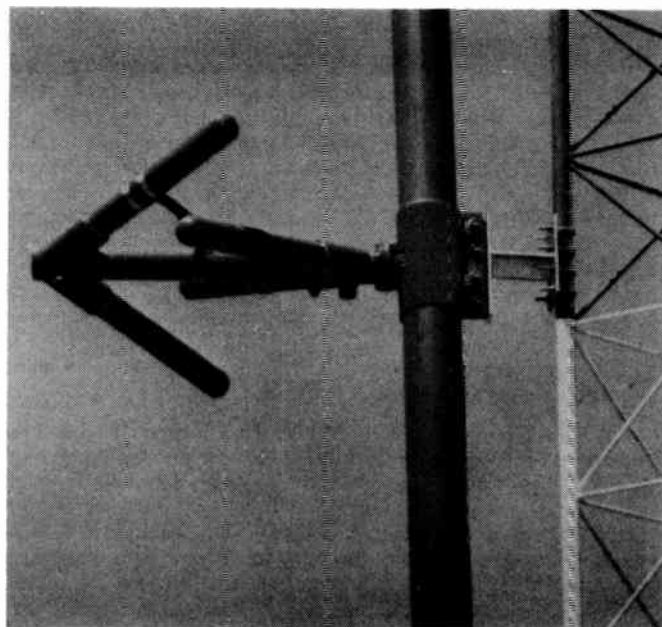
The input connector location and size for the JHCP is:

- One bay: at the bay itself ($3\frac{1}{8}$ " , EIA male)
- Two through four bays: 3' below the bottom bay ($6\frac{1}{8}$ " , EIA female)
- Five and six bays: 8' below bottom bay ($6\frac{1}{8}$ " , EIA female)
- Seven through 12 bays: 13' below array center ($6\frac{1}{8}$ " , EIA female)

The JHCP antenna is a circularly polarized FM antenna for the broadcaster who wants extremely high-input power capability. Each bay consists of a radiating element with its associated $6\frac{1}{8}$ " interbay feed line. The element and line are supported by a heavy brass casting which is attached to the support structure by its mounting bracket. The radiating element consists of four 3" diameter quarter wave arms attached to a $3\frac{1}{4}$ " brass boom by castings.

Specifications

Type No. and Bays	Power Gain	Gain In dB	Field Gain	FS At 1 Mile KW, MV/M	Net Weight	Safe Power Rating	Input Feed Point	Windload 50/33 PSF
JHCP-1	.46	-3.37	0.678	93.2	212 lbs.	30kW	End	269 lbs.
JHCP-2	1.0	0	1.0	137.6	425 lbs.	60kW	End	540 lbs.
JHCP-3	1.6	2.04	1.25	172	634 lbs.	80kW	End	806 lbs.
JHCP-4	2.1	3.22	1.46	201	1077 lbs.	80kW	End	1254 lbs.
JHCP-5	2.7	4.31	1.65	227	1167 lbs.	80kW	End	1460 lbs.
JHCP-6	3.3	5.19	1.82	250	1320 lbs.	80kW	End	1662 lbs.
JHCP-7	3.9	5.91	1.97	270	1540 lbs.	80kW	Center	2055 lbs.
JHCP-8	4.5	6.53	2.11	291	1758 lbs.	80kW	Center	2330 lbs.
JHCP-10	5.7	7.56	2.38	328	2202 lbs.	80kW	Center	2827 lbs.
JHCP-12	6.7	8.26	2.59	356	2640 lbs.	80kW	Center	3410 lbs.

**JHCP**

The interbay feed lines and boom are pressurized out to the feed point by the transmission line pressurization system. A pressure relief valve is supplied at the top of the antenna for pressurization system purging as well as overpressure relief.

Deicing equipment is recommended for the JHCP in environments where regular icing and sleet conditions prevail, in order to preserve the antenna's excellent VSWR specifications. The deicing system consists of a stainless steel sheathed heater element in each element arm for a total of 1kW of heating with 240V, 50/60Hz applied. The system can be operated at $\frac{1}{4}$ power on 120V under light icing conditions in order to conserve electricity. Bay junction boxes and interbay cable are supplied with the heaters. A precision thermostat system is available as an accessory to control the deicers. The JHCP antenna is optionally available with custom beam tilt and/or null fill.

Custom directional antenna patterns are available. Full-scale antenna range testing and pattern certification are offered for directional antennas. For reduced low angle radiation near the tower, a low RFR model of this antenna is available.

JAMPRO ANTENNAS, INC.**FM Broadcast Antennas****JBCP FM Antennas**

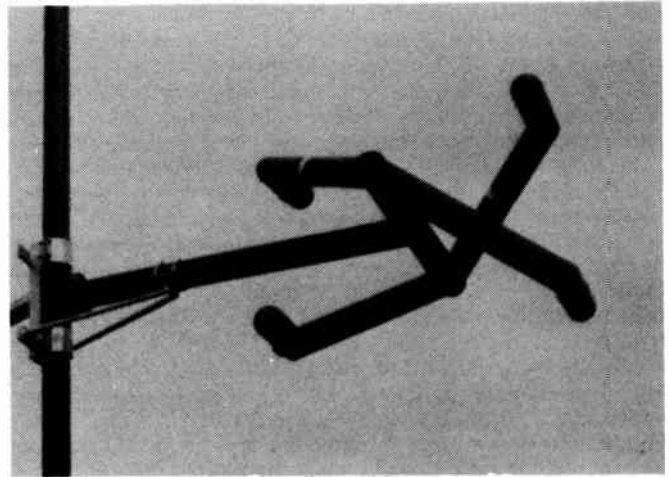
- Inherently broadband, using an internal pressurized feed system with a VSWR of 1.20:1 or better over a 4MHz bandwidth, making it suitable for diplexing. On a single frequency, the VSWR is 1.07:1 \pm 200kHz of carrier with field tuning; deicers are not normally required, as the typical VSWR is 1.4:1 or better with up to 1/2" of radial ice. The individual radiating elements may be field tuned for best VSWR. The VSWR at the antenna input without field tuning will be 1.5:1 or less when side mounted on a tower
- Supplied with standard galvanized brackets for round-leg mounting on uniform face towers. Special galvanized brackets can be supplied at additional cost for mounting the JBCP on tapered towers, on poles, or for tower-face mounting. All hardware is included with mounting brackets. Custom antenna support poles can be supplied

The JBCP antenna is a circularly polarized FM antenna designed for applications requiring relative insensitivity to icing along with high antenna input power. The antenna elements are fabricated of high strength thick wall brass and copper with a 3 1/8" outside diameter. The JBCP antenna will handle up to 40kW per bay and up to 120kW per system, depending upon the number of bays, shunt line size and input connector.

Options

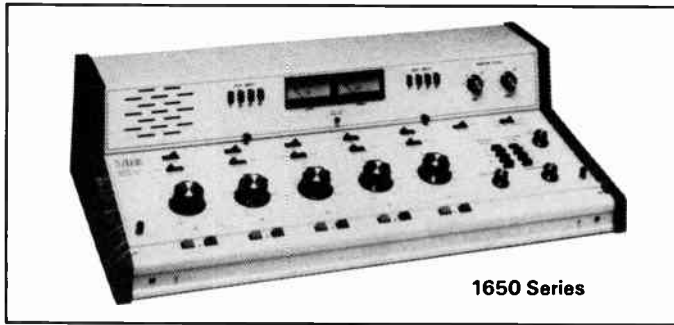
Pattern measurement service, pattern optimization, beam tilt and null fill, and special mounting brackets.

For reduced low angle radiation near the tower, a low RFR model of this antenna is available.

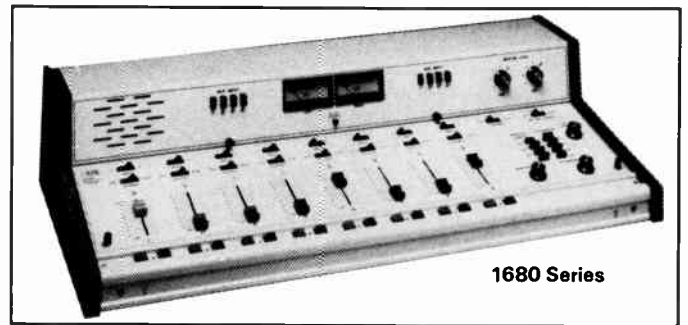
**JBCP****Specifications**

No. of Bays	Power Gain Ratio	Gain In dB	Field Gain	Type Feed	Female 50 ohm Input	Safe Power Rating	Calculated Weight lbs.	Calculated Wind Load Without Ice 50/33 PSF	Calculated Wind Load With 1/2" Radial Ice, 50/33 PSF
1	0.46	-3.37	0.678	End	3 1/8"	40kW	83	109	143
2	1.0	0.0	1.0	End	3 1/8"	40kW	222	320	421
2	1.0	0.0	1.0	Center	6 1/8"	64kW	318	443	559
3	1.5	1.76	1.23	End	3 1/8"	40kW	342	502	628
4	2.1	3.22	1.45	End	3 1/8"	40kW	461	685	905
4	2.1	3.22	1.45	Center	6 1/8"	64kW	555	811	1047
5	2.7	4.31	1.64	End	3 1/8"	40kW	579	868	1148
6	3.2	5.05	1.79	End	3 1/8"	40kW	709	1076	1429
6	3.2	5.05	1.79	Center	6 1/8"	64kW	813	1221	1589
7	3.8	5.80	1.95	End	3 1/8"	40kW	828	1259	1671
8	4.3	6.34	2.07	End	3 1/8"	40kW	947	1439	1911
8	4.3	6.34	2.07	Center	6 1/8"	64kW	1050	1589	2076
10	5.5	7.40	2.35	Center	3 1/8"	40kW	1208	1835	2439
10	5.5	7.40	2.35	Center	6 1/8"	64kW	1288	1956	2563
12	6.6	8.20	2.57	Center	3 1/8"	40kW	1445	2201	2925
12	6.6	8.20	2.57	Center	6 1/8"	64kW	1525	2324	3050
2	1.0	0.00	1.0	End	6 1/8"	40kW	340	436	540
3	1.5	1.76	1.23	End	6 1/8"	80kW	513	714	878
4	2.1	3.22	1.45	End	6 1/8"	120kW	740	991	1217
5	2.7	4.31	1.64	End	6 1/8"	120kW	920	1269	1555
6	3.2	5.05	1.79	End	6 1/8"	120kW	1135	1630	1992

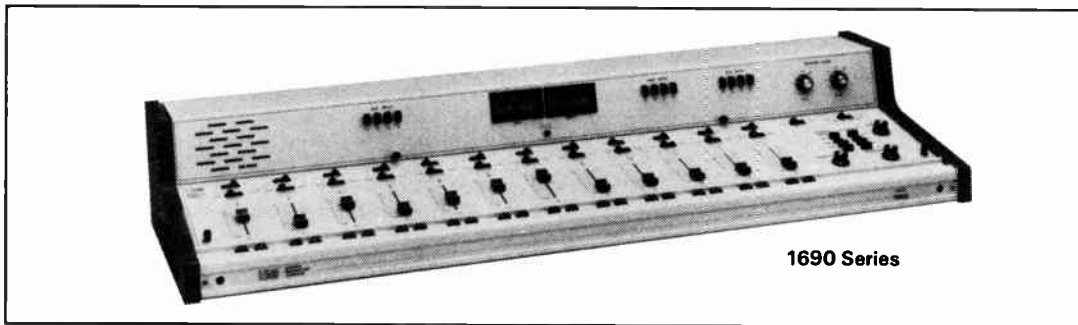
- NOTES:**
1. Weights and windloads shown include mounting brackets.
 2. Windload ratings are 50/33 PSF, 112 miles per hour.
 3. Feed point when end fed, 3' below bottom bay. When center fed 13' below center.
 4. All inputs EIA flange, female.



1650 Series



1680 Series



1690 Series

1650/1680 and 1690 Broadcast Consoles

- Nine on-air boards
- Choice of 5-mixer, 8-mixer or 12-mixer units
- Choice of Penny and Giles, Shallco or rotary conductive plastic attenuators
- + 24dBm output into 600 ohm load
- Better than 90dB signal-to-noise ratio
- Built-in monitor, headphone and cue amplifiers
- Built-in cueing loudspeaker

These consoles offer a choice of five, eight or twelve mixers and a choice of attenuator types as well. There is ample provision for customization to fit individual station requirements, but no accessories are required to put them on the air—each board is ready to operate as supplied from the factory.

High Output, Low Distortion, Low Noise

The Series 1650/1680 and 1690 Consoles have unusually high output capability: + 24dBm into 600 ohm loads, so that today's dynamic program material can be safely handled without clipping. An overload indicator LED is located between the VU meters, and its threshold can be internally adjusted to alert the operator that a downstream device, such as an STL, may be clipping.

These consoles are also unusually quiet: the signal-to-noise ratio of the microphone channel, from input to console output, is > 74dB with -50dBm input and + 8dBm output, or

> 90dB referenced to maximum output. Distortion is extremely low, as well. At the full output level of + 24dBm into 600 ohms, the THD of both Program and Audition channels is < 0.25% over the range of 30Hz to 15kHz; at normal + 4 or + 8dBm operating level, the THD is typically < 0.02%.

1651	5 Mixer Console, utilizing rotary conductive plastic attenuators	\$3046.00
1652	5 Mixer Console, utilizing Shallco precision rotary step attenuators . . . . .	.3796.00
1653	5 Mixer Console, utilizing Penny & Giles precision straight line attenuators. . . . .	.4096.00
1681	8 Mixer Console, utilizing rotary conductive plastic attenuators . . . . .	.3796.00
1682	8 Mixer Console, utilizing Shallco precision rotary step attenuators . . . . .	.5046.00
1683	8 Mixer Console, utilizing Penny & Giles precision straight line attenuators. . . . .	.5446.00
1691	12 Mixer Console, utilizing rotary conductive plastic attenuators . . . . .	.6846.00
1692	12 Mixer Console, utilizing Shallco precision rotary step attenuators . . . . .	.7146.00
1693	12 Mixer Console, utilizing Penny & Giles precision straight line attenuators. . . . .	.7346.00

JBL PROFESSIONAL**Limiters/Equalizers****1178 Dual Peak Limiter**

• Two independent peak limiters with perfect tracking when used in stereo mode • Attack time front panel adjustable from 20-800ms independent of peak duration or frequency • Release time front panel adjustable from 50ms to 1.1 sec • Pushbutton selection of four compression ratios, to satisfy various program requirements • High impedance, balanced, bridging inputs • Balanced, transformer outputs • Low noise, low distortion • Switchable meter ballistics (VU, peak)

1178	Dual peak limiter	.....	\$996.00
SC2	Security cover for 1178	.....	.36.00
301	XLR/QG adaptor	.....	.28.00

1176LN Peak Limiter

• Pushbutton selection of four compression ratios, to satisfy various program requirements • Attack time front panel adjustable from 20-800ms independent of the degree of limiting • High impedance, balanced, bridging input • Balanced, transformer output • Stereo coupling, with accessory 1176SA

1176LN	Peak limiter	.....	\$648.00
SC2	Security cover for 1176LN	.....	.36.00
1176SA	Stereo adaptor	.....	.48.00
301	XLR/QG adaptor	.....	.28.00

LA-4 Compressor/Limiter

• Long-life LED optical attenuator • Smooth, natural sounding RMS action • Selectable compression ratios • True standard volume indicator (VU) • Input overload indicator • Simple stereo coupling • 2:1 compression with 20:1 limiting

LA-4	Compressor/limiter	.....	\$548.00
DR-1	Double rackmount for two LA-4s	.....	.28.00
SR-1	Single rackmount for one LA-4	.....	.28.00
301	XLR/QG adaptor	.....	.28.00

7110 Limiter Compressor

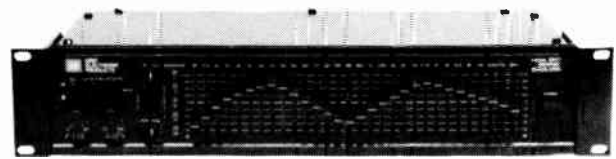
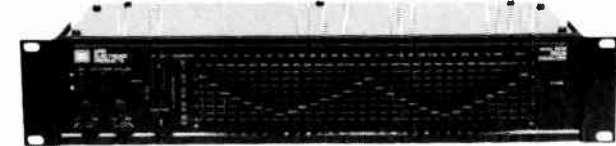
• Smart-Slope compression ratios adjustable from 1.5:1 thru infinity: 1 and permits independent settings for limiting threshold, attack and release times, and output level • Both peak and/or average gain reduction • User control of threshold, peak/average blend, attack and release times and compression ratio • Simple set-up with Automatic Preset pushbutton • Bright, easy to read displays • Space saving single rack space size • Active balanced input with enough threshold range to provide full limiting action with input signals down to -20dBm • Output display's zero reference is adjustable from -10dBm to +8dBm • Unbalanced output is capable of +22dBm into 600 ohms • Automatically bypasses itself, connecting the input directly to the output, when power is off

7110	Limiter Compressor	.....	\$450.00
SC-6	Security cover	.....	POR
16-14550	Output transformer	.....	POR

537 1/3-Octave Graphic Equalizer

• 27 adjustable equalizers on ISO 1/3-octave center frequencies • 12dB boost or 12dB attenuation at each center frequency • Stepless, noiseless controls, precision calibrated • State-of-the-art active L-C filter circuitry • Low distortion, lowest noise, minimum phase shift • Zero insertion loss, up to 20dB gain • Standard rackmounting, only 3 1/2" high • Optional front panel security cover • Competitively priced

537	1/3-octave graphic equalizer	.....	\$1096.00
SC1	Security cover	.....	.36.00
301	XLR/QG adaptor	.....	.28.00

**5547A****5549****535 Dual Graphic Equalizer**

• Two channels in one compact package • 10 adjustable equalizers in ISO 1-octave center frequencies for each channel • 12dB boost or 12dB attenuation at each center frequency • Stepless, noiseless, calibrated controls • Gain variable from -10 to +20dB • State-of-the-art synthesized LC filter circuitry • Low distortion, lowest noise, minimum phase shift • Standard rackmounting, only 3 1/2" H

535	Dual graphic equalizer	.....	\$596.00
SC1	Security cover	.....	.36.00
301	XLR/QG adaptor	.....	.28.00

533 Octave Graphic Equalizer

• Synthesized LC filter circuitry with smooth combining characteristic • Gain variable from -10 to +20dB, wide dynamic range • Low distortion, low noise, minimum phase shift • 10 adjustable equalizers on ISO 1-octave center frequencies • 12dB boost or 12dB attenuation • S/N better than 106dB at maximum output • Input of +20dB • Output +24dBm

533	Octave graphic equalizer (mono)	.....	\$436.00
DR-1	Double rackmount	.....	.28.00
SR-1	Single rackmount	.....	.28.00

5547A Graphic Equalizer/5549A Room Equalizer

• 1/3-octave filters on ISO centers 25Hz to 20kHz • ± 12dB range at center frequency (5547A) 0 to -15dB range at center frequency (5549A) • Fully active-custom hybrid amplifiers in filter circuits • Unique gain structure controls optimize headroom and signal-to-noise ratio for different signal level environments • High and low frequency tunable end cut filters • Active and passive bypass modes • XL, phone jack and barrier strip connectors • Rugged, reliable, roadable

Inputs and Outputs

Both input and output may be wired for balanced or unbalanced operation to match the needs of the system. Input and output connections may be made through 3-pin XL-style, 3-conductor 1/4" phone jacks, or to barrier strip with bare wire or lug connection. All standard. Choose the connector type that suits your needs. The connectors are wired in parallel allowing "loopthrough" connections.

Tunable End Cut Filters

Continuously variable filters at each end of the frequency spectrum control the available bandwidth of the system with a 12dB per octave slope. The high frequency slope is switchable to 6dB per octave to aid in contouring, and a bypass switch removes them from the circuit completely.

5547A	.....	\$849.00
5549A	.....	.897.00

JBL PROFESSIONAL

Mixers

1620 Music Mixer

- Eleven inputs
- Stereo outputs for house, booth and headphones
- Two stereo tape outputs
- Processor loop
- Mono light controller output
- Flexible switching matrix
- Reliable performance
- Ideal for disco, small club or broadcast production

The 1620 Music Mixer is an extremely flexible multi-input stereo mixer designed for the most critical and demanding applications. The outstanding features and reliability make it the perfect choice for night-clubs, broadcast production, mobile discos and other installations where high quality is essential.

The 1620 has six independent stereo channels, each with its own level and balance controls. The standard configuration has two stereo phono inputs, one transformer isolated mike input with variable gain, and eight stereo line level inputs. Three of the eight line inputs can accept additional phono or mike preamp cards. These optional cards permit combinations such as five phono inputs, one mike input, and five line inputs; two phono inputs, four mike inputs, and five line inputs, or any other combination you may require. The standard mike input and eight line inputs are selected to any of four level and balance controls through a flexible switching matrix.

The output circuits of the 1620 also have extraordinary flexibility. Separate outputs for house and booth amplifiers are provided, each with its own level control. The house output is transformer-isolated so that remote amplifiers may be fed with minimum likelihood of noise pickup in the interconnecting lines.

A separate headphone circuit has its own selector switch, allowing its source to come from any of the six input controls (pre-fader) or from the program output; its level control feeds an internal headphone amplifier



1620

and front panel stereo 1/4" (6.3mm) phone jack. For convenience in attaching lighting controllers, an isolated mono (L + R) output is provided on a rear panel jack; this output is not affected by any of the output level controls, so that lighting intensity will not be affected by overall level adjustments. Separate bass and treble controls for left and right channels affect the house, booth, headphone and mono outputs. The inflection points of these controls have been carefully selected for minimum midrange coloration and maximum flexibility.

Additionally, two separate tape outputs are provided for making recordings, and a processor loop allows connection of equalizers or other signal modification equipment.

1620 \$996.00

Specialty Items

- 950 ANCA (Ambient Noise Controlled Amplifier) \$1096.00
- 964 Digital Metronome876.00
- DR-2 Double Rackmount for two 964's28.00
- SR-2 Single Rackmount for 96428.00
- 1621 Mic Preamp Module for 162096.00
- 1622 Phono Preamp Module for 162096.00

5330 VCA Controlled Mixer (Preliminary)

- All microphone inputs switchable for line level use
- Voltage controlled outputs are standard to facilitate remote control
- Plug-in VCA option available for controlling inputs 1 through 6
- Low cut filters on all microphone inputs
- Preset trims on all controls are accessible through the front panel to limit range of operation and maximum gain
- Built-in output limiter to avoid blasting or overload
- Built-in output level meter
- Electronically balanced inputs for outstanding common mode rejection and RF immunity
- Transformer coupled outputs to break ground loops
- 48V phantom supply built-in
- Effects loop to allow insertion of ancillary equipment

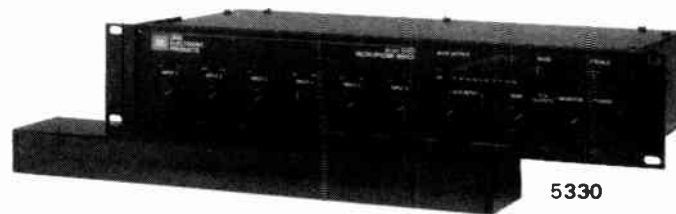
All inputs are voltage controlled through use of an optional card or alternately can be manually controlled in the normal manner.

All units come standard with voltage controlled output amplifiers to facilitate remote control of output levels. Two outputs are provided which may be used for main and monitor or alternately to feed two separate zones. Use of the VCA controls naturally allows ganging of the gain controls of multiple units where desired. Further, priority muting of all channels by channel one is available by remote DC control.

Screwdriver adjustable gain trim controls are available at all mike/line inputs and at both outputs, allowing the presetting of reasonable maximum gains on these controls. The tone controls are also provided with a range trim control which can reduce their effectiveness to zero in applications where their use is not desired.

These trim controls allow the option of limiting control range to levels more suited to unskilled users. (Use of the trim controls allows local or remote gain control to the preset maximum only.)

Fully floating transformer coupled outputs are included to break ground loops and provide power line isolation. These transformers are driven by output stages capable of a full + 24dBm output.



5330

Infrequently used switches are located on the rear panel to preclude inadvertent operation. In addition to the mike/line switches are switches to activate the phantom supply and to defeat the limiter.

Limiting of the output is internally preset to gradually increase above -3 on the output bar graph display and designed to be fully operational at the top of the red part of the display.

Other items are a polycarbonate overlaid front panel with markings on the obverse, which is easily cleanable and virtually indestructible; adjustable rack ears which allow flush mounting the 5330, with or without the optional security cover; and a modular power source, separate from the main chassis, which makes for absolutely no external hum field to interfere with adjacent equipment.

5330 VCA \$897.00

6215 Power Amplifiers

- Space saving single rack space
- Output power 35W per channel into 8 ohms, 45W per channel into 4 ohms, 90W mono bridged into 8 ohms
- Rear panel switch for stereo, dual mono or mono bridge operation
- Fully complementary output
- Low negative feedback — Low T.I.M
- Individual stepped gain controls
- Active balanced input
- Input connectors — XLR, phone jack and barrier strip

The 6215 is a professional power amplifier that has been engineered to meet rigorous demands of musicians, sound reinforcement companies, broadcasters and touring groups. It is equally at home in fixed installations and studios where precise reproduction of complex waveforms must be accomplished.

6215\$597.00

6230, 6260 Power Amplifiers

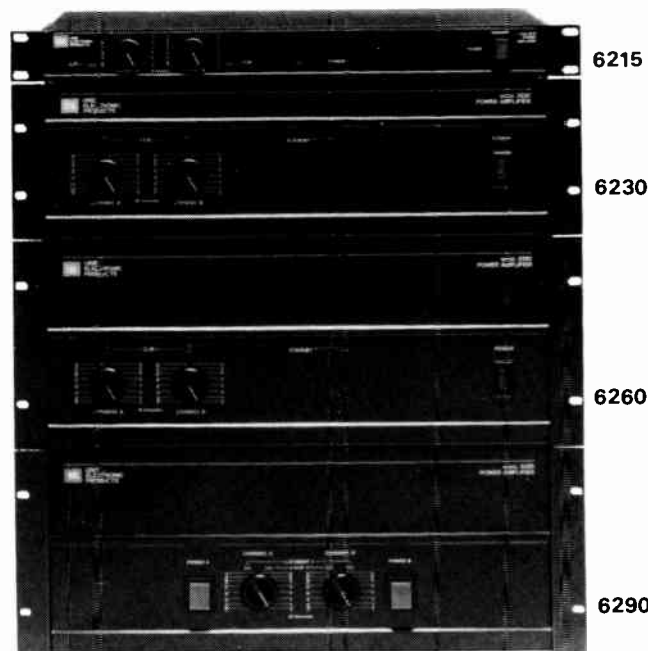
- Active balanced bridging input circuitry
- Full complementary driver and output circuitry
- Low transient intermodulation distortion (TIM)
- Rugged, road worthy construction
- Individual stepped gain controls
- XL-type, phone jack, and barrier strip input connectors
- Heavy-duty 5 way output binding posts
- Rear panel switch for bridged, dual mono, or stereo operation
- Front panel/heat sinks are made of heavy aluminum; chassis of heavy gauge steel

Designed to meet the most critical professional sound requirements. These power amplifiers are rugged and road worthy, conservatively rated, and can handle highly reactive loads with ease.

The engineering design approach stresses the optimization of each stage, allowing high slew rate and relatively low loop gain. Overall feedback has been held to a minimum and is employed only to stabilize the gain and the operating point. This design approach results in amplifiers with excellent performance under the most demanding dynamic input and load conditions.

Specifications

Output Power	6230		6260	
	Rated Power 20Hz - 20kHz	Midband Power 1kHz	Rated Power 20Hz - 20kHz	Midband Power 1kHz
8 ohm stereo (per channel)	75W	110W	150W	190W
4 ohm stereo (per channel)	150W	175W	300W	315W
16 ohm bridge	150W	220W	300W	380W
8 ohm bridge	300W	350W	600W	630W
Dimensions:	5 1/4" x 19" (133 x 483mm)		7" x 19" (178 x 483mm)	
Depth:	10 1/2" (267mm)		10 1/2" (267mm)	
Net Weight:	23 lbs/ (10.4kg)		42 lbs. (19kg)	
6230	\$639.00			
6260 .....	.897.00			



6290 Dual Monophonic High Power Amplifier

- High output power — 600W per channel into 4 ohms, 1200W into 8 ohms mono bridge mode
- Fully independent audio channels and power supplies
- Fully complementary output
- Low negative feedback, low TIM
- Active balanced inputs with XLR, phone plug, and barrier strip
- Rugged, proven design

The 6290 is a dual monophonic professional power amplifier that has been engineered to meet the rigorous demands of sound reinforcement companies and touring groups. It is equally at home in fixed installations and studios where precise reproduction of complex waveforms must be accomplished at high power levels.

The 6290 features two independent high power amplifiers in one heavy gauge steel chassis. Both channels, with the exception of the mains power cord, are individually powered and protected. There are several benefits to this type of design. Should a channel failure occur in the stereo or dual mono mode, the other channel will not be affected and will continue to operate in the normal manner at full power capability. If the amplifier is being operated in the mono bridge mode, the loss of one channel will not inhibit the other channel, but allows continued operation with a 3dB power reduction.

Other design aspects of the 6290 include low intermodulation distortion (TIM). TIM is one of the more definitive methods for measuring displeasing (audible) distortion mechanisms, and is kept to a minimum by using local feedback in predriver stages. Only a small amount of negative feedback is used to establish the operating point and set the gain. Another factor that contributes to the sonic integrity of the amplifier is the use of fully complementary devices in all predriver, driver, and output stages.

Input terminations can be made to the 6290 by using any standard 1/4" TRS, XL-type connector, or barrier strip. Output terminations are accomplished with five way binding posts, and AC fuses are accessible from the rear of the unit.

6290\$1347.00

JBL PROFESSIONAL

Studio Monitors

4406 Studio Monitor

- Frequency Range: (-6dB): 45Hz-27kHz • Frequency Response (± 2 dB): 55Hz-20kHz • Sensitivity: 87dB SPL, 1W (2.83V), 1m
- Power Rating: 75W, pink noise • Transducer complement: 6.5" (165mm) LF, filled polypropylene cone; 1" (25mm) HF, pure titanium dome

The 4406 is the most compact of JBL's studio monitors and is intended for use where space is restricted. Its close driver spacing produces a coherent sound source, making it ideal as a direct-field monitor for console placement.

Optimum enclosure porting and careful network design ensure smooth response, which extends lower in frequency than is usual for an enclosure of such modest size. Response to 27kHz ensures that the upper musical octave (10kHz to 20kHz) will be reproduced with complete accuracy, making the Professional Series Studio monitors ideal for monitoring critical digital and advanced analog recordings.

4406\$189.00



4406

4408 Studio Monitor

- Frequency Range (-6dB): 40Hz-27kHz • Frequency Response (± 2 dB): 50Hz-20kHz • Sensitivity: 89dB SPL, 1W (2.83V), 1m
- Power Rating: 100W, pink noise • Transducer Complement: 8" (200mm) LF, felted cone; 1" (25mm) HF, pure titanium dome

The 4408 compact monitor is intended for use where space is restricted. Its close driver spacing produces a coherent sound source, making it ideal as a direct-field monitor for close-in broadcast applications.

4408\$237.00



4408

4410 Studio Monitor

- Frequency Range (-6dB): 35Hz-27kHz • Frequency Response (± 2 dB): 45Hz-20kHz • Sensitivity: 91dB SPL, 1W (2.83V), 1m
- Power Rating: 125W, pink noise • Transducer Complement: 10" (250mm) LF, Aquaplas laminate cone; 5" (125mm) midrange cone; 1" (25mm) HF, pure titanium dome

The 4410 studio monitor consists of a three-way vertical array of transducers. The system is provided in mirror imaged pairs in order to ensure absolute accuracy of stereophonic imaging. The 4410 is the logical choice for critical digital recording applications where wide bandwidth, linear response, and accurate imaging are essential.

4410L,R\$375.00



4410

4412 Studio Monitor

- Frequency Range (-6dB): 35Hz-27kHz • Frequency Response (± 2 dB): 45Hz-20kHz • Sensitivity: 90dB SPL, 1W (2.83V), 1m
- Power Rating: 150W, pink noise • Transducer Complement: 12" (300mm) LF, Aquaplas laminate cone; 5" (125mm) midrange felted paper cone; 1" (25mm) HF, pure titanium dome

The 4412 is a three-way monitor system designed for demanding recording and broadcast applications. It is oriented horizontally so that it can be easily integrated into control room architecture, or mounted on the console itself. It is provided in mirror-imaged pairs for accurate stereophonic imaging. The 4412 is capable of remarkably high acoustical output, attaining in many applications those levels normally associated with compression driver monitor systems.

4412L,R\$579.00



4412

Refer to Green Section for Addresses and Telephone Numbers.

JBL PROFESSIONAL

Studio Monitors/Speakers

4425 Bi-Radial™ Studio Monitor

• Smooth, accurate response from 40Hz to 16kHz • Sensitivity: 91dB-SPL, 1W/1m • Flat power response Bi-Radial horn • 200W continuous program power capacity • High-frequency transducer: a pure titanium diaphragm compression driver with edge-wound aluminum ribbon voice coil, copper-plated pole piece, and diamond pattern diaphragm suspension • Low-frequency transducer: 12" (300mm) driver with 3" (76mm) edge-wound copper ribbon voice coil

The 4425 maintains a 100°x100° coverage pattern from its crossover frequency (1200Hz) up to 16kHz. Smooth power response is ensured from the lowest frequencies up to 1200Hz, and flat power response is maintained above that frequency. At the same time, axial response is remarkably smooth, and the combination of controlled power and axial response ensures the reflected sound field in the control room will be free of coloration.

4425 L,R \$849.00

4430/4435 Bi-Radial Studio Monitors

• Frequency Response: 4430—(± 3dB) 35Hz-16kHz; 4435—(± 3dB) 30Hz-16kHz • Power Capacity: 4430—300W; 4435—375W • Sensitivity: 4430—93dB SPL; 4435—96dB SPL

Developed to meet the challenge of digital and advanced analog recording technology, the 4430 and 4435 represent a significant approach to two-way studio monitor design. The incorporation of the Bi-Radial horn in a monitor loudspeaker provides constant vertical and horizontal polar coverage, control of the reverberant field, flat power response, image stability, and coherent sound. The two models also feature improvements in compression driver, low frequency transducer, and dividing network technology. Both systems exhibit wide bandwidth, smooth frequency response, high efficiency, wide dynamic range, and exceptional reliability.

The two models differ chiefly in their frequency capabilities. The two 15" (380mm) low frequency drivers of the 4435 provide greater bass output than is provided by the single 15" bass driver of the 4430.

4430L,R \$1347.00
4435L,R 1899.00

4312A Control Monitor

• 12" (300mm) long excursion low frequency transducer • 5" (130mm) midrange transducer • 1" (25mm) titanium dome high frequency transducer • Suitable for vertical or horizontal placement • Mirror-imaged for accurate stereo imaging

The 4312A extends the high frequency bandwidth of its predecessors through the use of the O35Ti driver. This high frequency transducer uses a 1" (25mm) pure titanium dome, which maintains flat on-axis response to 27kHz.

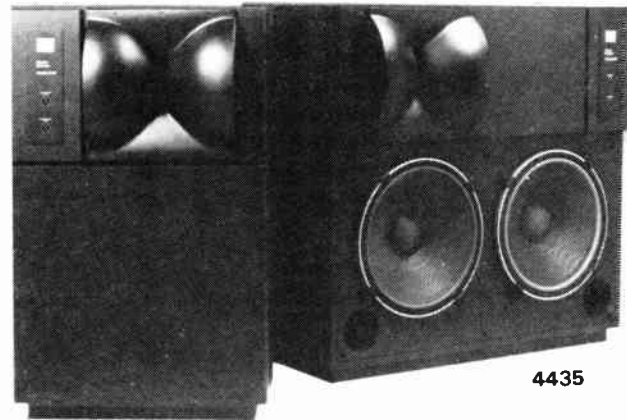
4312AL,R \$450.00

SLT-I Miniature Loudspeaker System

• Frequency Response: (± 3dB) 100Hz to 18kHz • Power Capacity: 50W • Sensitivity: 87dB SPL, 1W/1m • Nominal Impedance: 8 ohms • Crossover Frequency: 4kHz • 5 1/4" low frequency loudspeaker, 1" high frequency dome radiator • Diecast aluminum enclosure • Integral mounting bracket

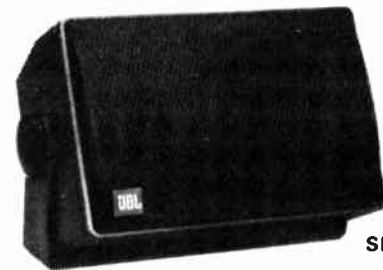
Compact and rugged, the SLT-I mounts easily in restaurants, churches, recording studios and mobile audio video installations. It also makes an extremely high quality personal monitor for professional or home use.

SLT-I \$159.00



4430

4435



SLT-I



Control I

Control I™ Personal Sized Monitor Loudspeaker

• Frequency Response: (± 3dB) 120Hz to 20kHz • Power Capacity: 150W • Sensitivity: 90dB SPL, 2.83V, 3.3' (1m) • Nominal Impedance: 4 ohms • Crossover Frequency: 6kHz • Finish: black • Dimensions: 9 1/4" x 6 1/4" x 5 5/8" D • Net Weight (each): 4 lbs. (1.8 kg) • Vented enclosure is molded from dense, nonresonant polypropylene structural foam • Transducers are magnetically shielded • High power handling with integral protection circuit network • 5 1/4" low frequency loudspeaker, 3/4" polycarbonate dome tweeter • Unique series of mounting adaptors • Compact and durable, it performs equally well in recording studios, mobile audio video control rooms and broadcast studios

Control I per pair/\$180.00

Control 5™ Compact Control Monitor Loudspeaker

• Same features as Control I except: • Frequency Response: (± 3dB) 75Hz to 20kHz • Power Capacity: 175W • Sensitivity: 92dB SPL, 2.83V, 3.3' (1m) • Crossover Frequency: 3kHz • Finish: Black or gray • Dimensions: 15 1/4" x 9 7/8" x 9" D • Net Weight (each): 10 lbs. (4.5kg) • Sonic advantages afforded by a larger enclosure • 6 1/2" low frequency loudspeaker and a 1" titanium dome tweeter

Control 5 per pair/\$297.00

JVC PROFESSIONAL PRODUCTS COMPANY

M-II Multi-Function Editing Recorder

KR-M860U M-II Multi-Function Recorder

- High-speed search at up to 32 times normal speed in either direction
- Quick-response jog control
- 9-pin serial remote control connector
- Off-tape monitoring during recording
- Comprehensive character display gives information on tape time, edit data, speed data, error messages, etc.
- Installation in a standard EIA 19" rack
- Control panel tilttable up to 90° for easy operation
- Time code display superimposed on output video signal
- 12-pin component signal input/output to interface with Y/R-Y/B-Y component signals
- Direct drive motors for drum, capstan and reels
- Plug-in printed circuit boards for improved serviceability

Sophisticated Editing Recorder

The KR-M860U incorporates the picture quality and features which make the M-II format the choice of broadcasters, and is the end of the M-II production chain which makes it possible to maintain a single format from the initial field recording right up to broadcasting with quality that rivals that of 1" VTRs. The versatile KR-M860U accepts both 90- and 20-minute M-II cassettes, and its full array of editing functions and built-in Time Base Corrector make it suitable for professional editing and broadcasting applications.

Broadcast-Quality Video and Audio

Through use of the M-II format with Chroma Time-Compressed Multiplexing (CTCM), the pictures recorded and played back maintain full broadcast quality over several generations. Auto-Tracking (AT) heads make stills, slow motion and forward search (up to twice normal speed) completely noiseless. The playback tape speed can be varied by approximately $\pm 7\%$ for perfect timing with other source programs. Accompanied by 2-channel FM audio embedded in the chroma track or 2-channel linear audio with switchable Dolby* C noise reduction, the total quality of programming more than rivals that of 1" VTRs.

Extended Recording Time of 90 Minutes

The higher recording density of the metal particle tape and CTCM recording in the M-II format make possible a continuous recording and playback time of 90 minutes with a single cassette. Approximately the size of VHS cassettes, the M-II cassettes are ideal for tape libraries which are required to hold many hours of broadcast-quality material.

Comprehensive Editing Functions

In addition to a full range of editing functions including automatic insert and assemble edits, preroll, retry, preview, review, and so forth, the KR-M860U incorporates a TBC with a 32H correction capability for synchronization in a multi-component editing configuration. The built-in time code generator/reader allows recording of SMPTE LTC and VITC time codes.

*Dolby noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation. Dolby and the double-D symbol are the trademarks of Dolby Laboratories Licensing Corporation.

Specifications

Recording System:	Rotary 4-head, 2-track helical scanning
Tape Speed:	67.693mm/sec
Tape:	1/2" metal particle tape
Recording Time:	90 min. (with JVC KC-MPL90)
Rewind/Fast Forward Time:	Within 3 min. (with JVC KC-MPL90)



KR-M860U

Video

Signal System:	NTSC system, 525 lines, 60 fields
Modulation System:	Y: Frequency modulation, C: Time-compressed multiplexing
Bandwidth:	Y: 4.5MHz + 0.5dB/-3.0dB, C: 1.5MHz + 0.5dB/-3.0dB
S/N Ratio:	Y: > 49dB, C: > 50dB
Input	
Video In:	1.0V p-p, 75 ohms On/Off
Ref Video In:	1.0V p-p, 75 ohms On/Off
Component In:	Switchable on front panel Y: 1.0V p-p, 75 ohms, R-Y: 0.7V p-p, 75 ohms, B-Y: 0.7V p-p, 75 ohms

Output

Video Out:	Out 1: Sync On/Off, Out 2: Composite output, Out 3: Superimposed time code On/Off, 1.0V p-p, 75 ohms
Component Out:	Y: 1.0V p-p, 75 ohms, R-Y: 0.7V p-p, 75 ohms, B-Y: 0.7V p-p, 75 ohms
Blackburst Out:	Sync: 0.286V p-p, Burst: 0.286 V p-p
WFM Out:	Switchable: Video In/YRF/CRF/Y/R-Y/B-Y/Video Out, RF Out: 0.5V p-p, 75 ohms

Audio

Normal audio (channels 1 and 2)

Frequency Response:	50-15,000Hz + 1.5/-3.0dB
S/N Ratio:	> 56dB (with Dolby NR off)
Distortion:	< 1% (with 1kHz reference signal)
Wow and Flutter:	< 0.15% RMS

FM audio (channels 3 and 4)

Frequency Response:	20-20,000Hz + 1/-2dB
Dynamic Range:	> 80dB
Distortion:	< 0.6% (with 1kHz reference signal)

Input

Audio In:	CH1/CH2/CH3/CH4 Switchable: +8/+4/-20dBm, 600 ohms/10K ohms balanced
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Time Code In:

	0.5V p-p—8V p-p, high impedance, unbalanced
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Output

Audio Out:	CH1/CH2/CH3/CH4 Switchable: +8/+4/-20dBm, 150 ohms/600 ohms balanced
Time Code Out:	2.5V p-p, low impedance, unbalanced
Monitor Out:	-20dBm, 600 ohms, balanced (variable level)
Headphone out:	-20dB to infinity, 8 ohms
Power Requirement:	90-130V/200-260VAC, 50/60Hz
Power Consumption:	300W
Dimensions:	10 ⁷ / ₁₆ " H x 17 ¹ / ₈ " W x 23 ⁵ / ₈ " D
Weight:	95 lbs.

KR-M860U \$32,500.00

Accessories

SA-K61U	Rackmount Adaptor for KR-M860	\$ 85.00
SA-M20U	Remote Control Panel for KR-M860	2,000.00

Prices and Specifications Subject to Change Without Notice.

B-715

KR-M800U M-II Editing Recorder

- **CTCM for higher picture quality**
The M-II format utilizes Chroma Time-Compressed Multiplexing (CTCM) with the Y and C components recorded on independent tracks. The high picture quality is maintained through use of high-density metal particle tape, even after several generations of duplication
- **Selectable CTCM/Component output and separated Y/C output**
Two outputs are available in the M-II format; CTCM (with Y and time-compressed color difference signals, as used by M-II equipment) and component (Y and independent color difference signals). A Y/C 358 output is also provided for compatibility with S-VHS decks
- **Selectable CTCM/Component/Composite input**
Any of three input signal formats can be selected from the front panel, for ease of operation in multi-format configurations
- **Maximum recording/playback time of 90 minutes**
Using a cassette about the size of VHS cassettes containing 1/2" high-density metal particle tape, recording/playback time has been extended to 90 minutes, a 50% increase over the 60 minutes in the 3/4" U-VCR format. A smaller 20-minute ENG cassette is also available and it can be used with the KR-M800U without an adaptor
- **Dolby* C noise reduction for audio**
Advanced Dolby C noise reduction is provided for 2-channel audio recording and playback to eliminate tape hiss and improve the audio S/N ratio
- **High-speed search at 32 times normal speed**
Any desired scene can be located quickly by searching at 32 times normal speed in either direction. The search speed can be varied continuously between still and 4 times normal speed and switched to a maximum of 32 times normal speed. Search is possible at up to 4 times normal speed while viewing color pictures, without using an external time base corrector. The Y signal follows the timing of the C signal to maintain the relative time difference between them within 20ns.
- **Jog control**
For more accurate retrieval of edit points, a jog control is provided on the front panel, making possible fast access to any required edit point.
- **Comprehensive editing functions**
The KR-M800U has a full range of editing functions for both assemble and insert edits, including Preroll, Auto Edit, Edit In/Out, Trim, Go To and Preview/Review. Whether it is used as a stand alone unit or with an optional editing controller (RM-86U), it ensures excellent operability and professional results
- **Professional-quality edits**
To produce edits that are clean and accurate, the KR-M800U has a frame synchronization capability with capstan speed override and vertical interval switching
- **Capstan servo control**
This servo control has the high-speed response needed to maintain precise tape travel, even during sudden changes in speed
- **Separate audio and video/tracking meters**
The KR-M800U has three illuminated meters for audio channels 1 and 2, and indicating the video carrier level in playback to aid in tracking adjustment, as well as the level of the input video signal in the stop and record modes
- **Adjustable operation panel**
The operation panel can be tilted 90°, in seven increments of 15° each, for optimum utility
- **Digital tape counter/lap timer**
The KR-M800U's fluorescent display shows either the current tape position, the edit-in/out points, or elapsed recording time, in hours, minutes, seconds and frames. This readout is updated from the CTL pulse
- **Front loading mechanism**
To facilitate rackmounting, the KR-M800U has a front loading mechanism; when mounted in a standard 19" rack, it occupies 6 units



KR-M800U

MII

Other Standard Features

- RF output for external DOC
- Hour meter
- Switching regulator
- Balanced XLR audio connectors
- Direct-drive motors
- Digital drum servo
- Tape tension control
- Large, illuminated pushbuttons
- SMPTE time code input/output connectors
- External sync/subcarrier input, reference sync output
- Y/C 358 output connector
- 12-pin Component/CTCM input connector
- 12-pin Component/CTCM output connector
- 45-pin parallel remote control connector
- Front panel connectors for two microphones and a set of headphones (with level control)
- 8-pin monitor connector
- XLR audio monitor output
- 17⁹/₁₆" x 11³/₁₆" x 23¹⁵/₁₆"
- 89 lbs.

Higher picture quality. Longer recording time. Superior systems flexibility. Greater space saving. These features and more make M-II the cost-effective choice of leading broadcasters.

M-II is a video format developed to meet the requirements of the professional video community. Exactly suited for the current state of development in video technology, it uses the CTCM component video recording method, and high-density metal particle tape in a cassette approximately the size of a VHS tape while maintaining broadcast quality.

The KR-M800U is a full-function editing recorder which is designed to serve as the hub of a multi-format editing system. It is designed for easy integration with 3/4" U-VCR and S-VHS as well as M-II equipment and component digital effects units.

The KR-M800U has features that will appeal to video producers and editing staff in TV stations, production houses and anywhere else where professional-quality video communications are required.

Accessories

Monitor cable, power cord, 12P-12P dubbing cable

KR-M800U \$13,500.00

* Dolby noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation. Dolby and the double-D symbol are the trademarks of Dolby Laboratories Licensing Corporation.

JVC PROFESSIONAL PRODUCTS COMPANY

*M-II Portable Recorder/
Camera Recorder*

KR-M460U M-II Portable Recorder

- Backspace editing for high-precision assemble edits
- Off-tape monitoring during recording
- Audio dubbing on linear audio channel 1 or 2
- Backup battery for time code generator/reader
- 8-digit LCD display indicating time codes, control track data and battery condition
- Color playback circuitry with simplified dropout compensator
- LED and audible warnings for servo, condensation, slack tape, tape end, low battery and clogged heads
- High-speed search at up to 5 times normal speed in either direction
- 9-pin serial remote control connector
- Error prevention mechanism which makes control buttons inoperative during recording
- 49dB S/N, video
- Power supply flexibility with external DC input
- 4³/₄" H x 11¹/₈" W x 13³/₁₆" D
- 17.2 lbs.

Compact, Yet Offording 90 Minutes of Recording

Compact size, light weight and low power consumption have been achieved with no compromise in rugged construction. Both standard M-II (90-minute) and compact ENG/EFP (20-minute) tapes can be used without an adaptor.

Systems Flexibility

For wider applications, the SMPTE 26-pin camera connector will accept both component and composite signals. The built-in time code generator/reader allows recording of SMPTE LTC and VITC time codes. Sync In and SC In connectors are provided for the connection of a TBC. Or with a TBC with CTCM input, stable pictures can be transmitted via a microwave link from the site where the news is being gathered.



KR-M460U

MII

The KR-M460U is a portable M-II VCR capable of recording for 90 minutes using an M-II cassette roughly the size of a VHS cassette. With a size and weight comparable to a portable 3/4" U-format VCR yet packed with all the features, performance, and operability that professionals need, newsgathering and field production will have added mobility and versatility while picture quality is improved. And with the M-II format, the KR-M460U's signals will maintain their high quality for several generations; throughout initial recording, editing, and broadcasting.

KR-M460U \$13,500.00

Accessory

SA-M30U Soft Case for KR-M460U \$300.00

KR-M260U M-II Recorder For Camcorder

- Backspace editing for high-precision assemble edits
- Off-tape monitoring during recording (luminance signal only)
- Time code generator/reader for both LTC and VITC time codes
- External time code generator terminal provided
- Backup battery for time code generator/reader
- 8-digit LCD display indicating time codes, control track data and battery condition
- Monochrome playback circuitry included for viewfinder monitoring of playback pictures
- Speaker built-in for audio monitoring and audible warning
- LED and audible warnings for servo, condensation, slack tape, tape end, low battery and clogged heads
- Five tape control buttons
- Operation inhibit switch
- Designed to be directly coupled to any component docking camera
- 49dB S/N, video
- 430 lines resolution
- Power supply flexibility with external DC input
- 4⁹/₁₆" H x 7¹/₂" W x 7⁷/₈" D
- 7.8 lbs.

Compact and Rugged Construction

The KR-M260U is designed for demanding ENG/EFP applications in a camcorder configuration. Using a rugged diecast aluminum chassis, its high-precision mechanism with direct-drive motors is reliable wherever it is used. The cassettes used are specially designed for field applications, allowing continuous recording of 20 minutes. These compact cassettes can be loaded on any full-size M-II VCR without an adaptor.



KR-M260U

MII

The KR-M260U has been developed as a compact and lightweight component input portable M-II VCR with design emphasis on the functions and operability required by a VCR used in a camcorder combination. By combining the KR-M260U with a suitable camera unit, together they can be used as a camcorder featuring excellent mobility and high picture quality with 20 minutes of recording using a compact ENG/EFP M-II tape, which in turn enables maintenance of the same format from recording, through editing, to broadcasting. All this makes the KR-M260U ideal for newsgathering and other on-location applications.

KR-M260U \$10,500.00

JVC PROFESSIONAL PRODUCTS COMPANY

PbO Color Cameras



KY-320BU



KY-950BU

Cameras shown with optional viewfinder and lenses

KY-320BU/KY-950BU
Three-PbO Tube Color Production Cameras
Common Features

- High horizontal resolution and S/N ratio
- Separate horizontal and vertical pin and trapezoidal distortion correction circuits improve registration accuracy
- SSG circuit conforms to RS-170A
- Color matrix circuit for further improved color reproduction
- Low power consumption

Common Specifications

Optical System:	f/1.4 3-tube R/G/B prism system (with quartz filter)
Focusing/Deflection System:	Electromagnetic focusing, electromagnetic deflection
Encoder:	NTSC (IQ encoder)
Synchronizing System	
Internal:	Built-in SSG (conforming to RS-170A)
External:	VBS or BB
Lens Mount:	Bayonet
Sensitivity (Typical):	f/4.5 at 2000 lux, 89.9% reflectance
Min. Illumination (Typical):	f/1.7, 38 lux (3.6fc) [+ 18dB On, 89.9% reflectance]
S/N (Typical):	59dB (contour correction Off, gamma 1, bandwidth 4.2MHz, matrix Off, I/Q Off)
Contour Correction	
Horizontal:	Dual-edged
Vertical:	2H, with comb filter
Color Bar Generator:	Split bar (100% white)/full field (75% white) switchable
Optical Filters:	Closed, 3200°K, 5600°K, 5600°K + 25% ND
Gain Boost:	0dB, +9dB, +18dB
Variable Blanking:	10.6μs/10.8μs/10.9μs switchable 18H/19H/20H switchable
Input Signals	
Return Video Signal (VBS):	1.0V p-p, 75 ohm
Genlock Signal:	VBS (1.0V p-p, 75 ohm) or BB (0.43V p-p, 75 ohm)
Microphone Signal:	-52dBm, 600 ohm, balanced
Output Signals	
Composite Video Signal (VBS):	1.0V p-p, x2 (BNC/14-pin connector)
Test Signals (VS or VBS):	R, G, B, -G, ENC
Audio Signal:	-52dBm, 600 ohm balanced/-20dB unbalanced or balanced (switchable)
Audio Monitor Signal:	8 ohm, -20dB
VCR Control Signal:	Contact or 4V supply (switchable)

Power Supply: + 12VDC (10.5 to 17V)
Ambient Temp.: -4° to + 122°F (-20° to + 50°C)
Dimensions: 10³/₄" H x 4⁹/₁₆" W x 11¹³/₁₆" D (271.5 x 115 x 299mm)

Standard Accessories: Tripod base, chest rest, mike holder, registration pattern, shoulder strap, extension board, board extractor, dust cover, bias lamp, 2 fuses (3.15A)

KY-320BU

- 2/3" S-M Plumbicon* tubes achieves high stability
- VF-550U, RS-500U, RS-T900U and KA-3U(A) etc. for ENG/EFP, mobile production van and studio applications

Specifications

Pickup Tubes:	2/3" S-M Plumbicon (S4803) x 3
Horiz. Resolution:	650 lines (G CH center)
Registration	
Zone 1:	Within 0.1% (circle 80% of picture height)
Zone 2:	Within 0.2% (circle of picture width)
Zone 3:	Within 0.3% (area outside Zone 2)
Power Consumption:	1.45A
Weight:	9 lbs. (4.1kg)

KY-320BU 3-tube color camera head only \$ **9,995.00**
KY-320BUP 3-tube color camera less lens. Includes: VF-P915 1.5" ENG viewfinder, AA-C50U AC adaptor and battery charger, DC-C50U NiCad battery, CB-95 shipping case with casters, Q95 Anton Bauer battery bracket **11,630.00**

KY-950BU

- 2/3" LOC Diode Gun Plumbicon tubes
- Innovative preamp circuits
- RS-500U multi-core type remote control unit, RS-T900U triax unit, K-3U(A) component adaptor for ENG/EFP, mobile production van and studio applications

Specifications

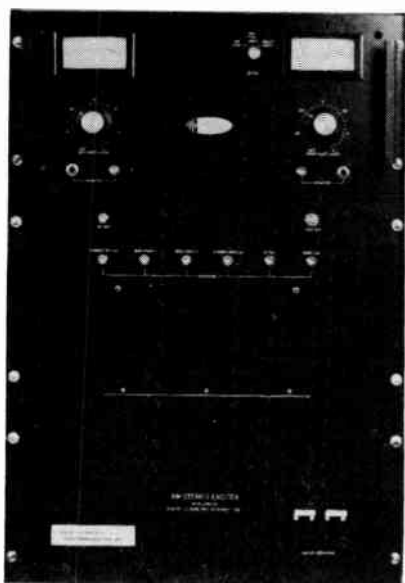
Pickup Tubes:	2/3" LOC Diode Gun Plumbicon (XQ3427)x3
Horiz. Resolution:	700 lines (G CH center)
Registration	
Zone 1:	Within 0.05% (circle 80% of picture height)
Zone 2:	Within 0.1% (circle of picture width)
Zone 3:	Within 0.3% (area outside Zone 2)
Power Consumption:	1.95A
Weight:	9.9 lbs. (4.5kg)

KY-950BU 3-tube color camera \$ **22,000.00**

*Diode Gun Plumbicon is a registered trademark of N.V. Philips

KAHN COMMUNICATIONS, INC.

*Frequency Extender/Processors/
Stereo Exciter*



STR-84

STR-84 AM Stereo Exciter

The STR-84 Exciter is based upon a recently patented invention which significantly reduces distortion, especially for heavily separated stereo material. The Exciter also provides extended stereo separation, from 50Hz to approximately 7,000Hz typically providing over 35dB over much of this range. This separation is, unlike phase separation systems, available not only in transmitter monitors, but is available in high quality receivers even beyond the normal mono coverage.

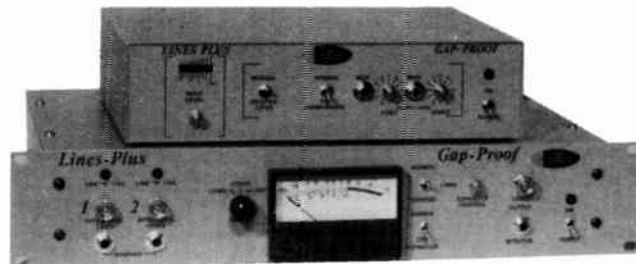
The unit also allows for sum and difference stereo processing and provides transformerless audio circuitry. The sum stereo processing can, if desired, use clipping which can then be maintained through this equipment without tilt.

The spectrum characteristics of the STR-84 Exciter allow broadcasters to fully modulate without fear of causing interference. Thus, there is no sacrifice of mono coverage. Indeed, major all-talk stations have reported mono enhancement. Also, there is no platform motion or noise increase in weak signal locations, and the system can be used with any normal transmitter and with even problem directional antennas.

STR-84 \$14,900.00

APS-01 Power-Side™ Frequency Extender

- Easier tuning, fatter dial, higher fidelity with "Boom-Boxes" and tunable home radios
- "Sideband tuning" allows listeners to tune out both adjacent and co-channel interference
- Dramatic reduction in distortion from directional antennas with all radios including digital car radios
- Reduces power line and building re-radiation distortion and loss of modulation with all radios including digital car radios
- Reduces the depth and severity of selective fading with all radios including digital car radios
- Makes your station a good spectrum neighbor
- Increases coverage for both mono and Kahn/Hazeltine type stereo receivers. Stations gain increased listenership while supporting the AM stereo system that "isn't afraid of the dark"



LPGP-1

Power-side is a patented method for increasing the coverage of AM broadcast stations. One of the two sidebands of the AM signal is enhanced in power and freed of pre-emphasis so as to allow listeners to "sideband tune." The other sideband provided additional pre-emphasis so that resulting signal is fully compatible with center tuned digital radios.

Besides reducing of co- and adjacent channel interference, Power-side improves intelligibility and the quality of signals with continuously tunable radios. Power-side also reduces fading antenna null distortion and re-radiation distortion with all radios including digital car radios.

APS-01 \$15,775.00

LPGP-1 Lines-Plus™ Frequency Extender

- "Gap-Proof" circuit
- Zero frequency translation error
- Portable transmitter fits into many attache cases

The LPGP-1 is a frequency extender system designed to provide gap-proof frequency response over two dial telephone lines. The LPGP-1 prevents the audio frequency gap common to some frequency extenders through the use of pilot tones and PLL circuits. The LPGP-1 also prevents line disconnects from extraneous 2,600Hz noise components by switching a filter in the circuit as needed. With the extender, a full 50Hz to 5,000Hz frequency response is possible over two dial telephone lines.

LPGP-1-T Transmitter \$5,260.00
LPGP-1-R Receiver 6,700.00

GNL-86 "Good 'n Loud" Audio Processor

The GNL-86 is a combination of the Non-Symmetra-Mod with a modern version of the Symmetra-Peak and a "brick wall clipper" for negative going modulation. The GNL-86 comes in both mono and stereo models giving you a loud signal with quality sound. It is compatible with multiband processors as manufactured by Dorrough and Orban.

GNL-86 \$2,660.00
GNL-86 (stereo version) 2,960.00

KANGAROO VIDEO PRODUCTS, INC.

Carrying Cases



KVP-25

Kangaroo Video Pack™ Recorder Packs

The Kangaroo Video Pack provides efficient organization and convenient access for all the gear you need to carry. Designed by a news photographer to meet the rugged demands of ENG field use, the original Kangaroo Video Pack was the first recorder bag to provide straps and pockets to hold tapes, batteries, cables, microphones—everything you need to get the job done. Even white-balancing is easy with built-in white balance panels.

Compact enough for one-man operation, versatile enough for two-man crews, with the Kangaroo Video Pack you can pick up and go, knowing that you have everything you need for a simple interview or an all-day SWAT operation.

Recorder Packs

All packs come complete with pockets, hand and standard shoulder strap.)

KVP-1A	Sony BVV-1, Thompson VR-611, Bosch BCB-1, Ampex CVR-1 (with VA-1 or Ikegami VBA-1A adaptor)	\$220.00
KVP-1B	Sony BVV-1, Thompson VR-611, Bosch BCB-1, Ampex CVR-1 (with VA-1V adaptor)	220.00
KVP-20	Sony BVW-20, Thompson VT-625, Bosch BCB-20, Ampex CVR-20	189.00
KVP-21	Bosch BCN-21	210.00
KVP-25	Sony BVW-25, BVW-21, Thompson VT-626, VT-624, Bosch BCB-25, BCB-21, Ampex CVR-25, CVR-21	220.00
KVP-35	Sony BVW-35	220.00
KVP-50	Sony BVU-50	210.00
KVP-100	Sony BVU-100, VO-3800, blue only	210.00
KVP-110	Sony BVU-110	210.00
KVP-150	Sony BVU-150	220.00
KVP-220	Panasonic AU-220	210.00
KVP-500	Panasonic AU-500	220.00
KVP-2000	Sony Digital	120.00
KVP-4400	JVC CR-4400U, Panasonic NV-9400, Hitachi SV-340, blue only	210.00
KVP-4400LU	JVC CR-4400LU, RCA HE-1020, Ampex VPR-4400, blue only	210.00
KVP-4700	JVC CR-4700U, PR-4800U, CR-4900U, Panasonic NV-9450	169.00
KVP-4800	Sony VO-4800	162.00
KVP-5000	Panasonic NV-8420	120.00
KVP-6200	JVC BR-6200	140.00
KVP-6400	Panasonic AG-6400	140.00
KVP-6800	Sony VO-6800	179.00



Semi-Tough

Kangaroo Semi-Tough™ Camera Cases

The original side-loading camera case, the Kangaroo Semi-Tough is ideal for airline travel, or those limited space situations where having your camera with you is a must. The Semi-Tough has a rigid frame of tough aircraft aluminum completely surrounding the camera, while a convenient detachable pocket holds batteries, tapes, and cables. The Semi-Tough comes complete with hand strap and heavy-duty padded shoulder strap for over-the-shoulder carrying.

KCC-SEMTGH	Ikegami HL-79A, HL-79D, HL-79E, ITC-730A, Sony BVP-250, BVP-300, BVP-330, DXC-M3A, Thompson 501, 601, 701, Hitachi FP-10, FP-21, FP-22, SK-81, SK-91	\$265.00
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Super Tough

Kangaroo Super-Tough™ Camcorder Cases

The Kangaroo Super-Tough meets a variety of carrying needs for users of the following camcorder combinations: Sony BVP-3, BVP-30, BVW-3, BVW-30 and the BVW-3 and BVW-30 with DC-100 battery.

This smart-looking, top-loading case has a triple-hemmed, U-shaped aluminum frame to maximize equipment protection while dense Evazote foam helps insulate the camera's most sensitive components from the bumps of daily use. Inner pockets on both sides hold extra batteries, tapes, headset and tripod plate. A three-way zipper system makes top-loading easy and ideal for access from the back of car or remote van.

KCC-STGH3	Sony BVP-3 or BVP-30	\$280.00
KCC-STGHB3	Sony BVW-3 or BVW-30	280.00
KCC-STGHLTD	Sony BVW-3 or BVW-30 with DC-100 battery	280.00
KCC-SUPTGH	Custom designed to fit any camera height, length, width	280.00

KANGAROO VIDEO PRODUCTS, INC.

Carrying Cases



Raincover



Nagra Pack

Kangaroo Raincover

The Kangaroo Raincover means technically designed protection for expensive portable television cameras and camcorder combinations which are sensitive to virtually any environmental hazard. Rain, sleet, snow, wind and dust are sealed out while the user has freedom of access to all equipment controls.

Also available is a special design to block RF interference in congested urban areas or near radar and transmitter sites.

KRC-B1	Sony BVW-1 Betacam	\$124.00
KRC-B105	Sony BVW-105	124.00
KRC-B3	Sony BVW-3, BVW-30 Betacam.	124.00
KRC-B3BVF	Sony BVW-30 with BVF-50 viewfinder	159.00
KRC-M2	Sony DXC-M2	114.00
KRC-M3	Sony DXC-M3	114.00
KRC-M3A	Sony DXC-M3A	114.00
KRC-3	Sony BVP-3, BVP-30.	114.00
KRC-3BVF	Sony BVP-3 with BVF-50 viewfinder.	149.00
KRC-5	Sony BVP-5	114.00
KRC-300	Sony BVP-250, BVP-300, BVP-330	114.00
KRC-3000	Sony DXC-3000	114.00
KRC-730	Ikegami ITC-730A, ITC-730AP	114.00
KRC-79D	Ikegami HL-79A, HL-79D.	114.00
KRC-79E	Ikegami HL-79E	114.00
KRC-83	Ikegami HL-83	114.00
KRC-95	Ikegami HL-95	114.00
KRC-B95	Ikegami HL-95 with Beta recorder.	124.00
KRC-HK357	Ikegami 357.	195.00
KRC-320	JVC KY-210, KY-320, KY-950.	114.00
KRC-CCD	RCA CCD.	114.00
KRC-A1	Sharp A1	114.00
KRC-Z31	Hitachi Z31	114.00

Kangaroo Nagra Pack

The Kangaroo Nagra Pack, designed for Nagra recorders with 5" or 7" tops, provides the same basic convenience and protection that has gone into all of our video packs. The Nagra Pack has detachable pockets to hold tapes, batteries, wireless microphone and cables, while the front pocket holds four 7-inch tapes or eight 5-inch tapes. A convenient back flap provides quick access to batteries, while the clear rain flap allows use of controls while still providing protection from inclement weather. There's even a front sleeve to hold a clapboard.

The Kangaroo Nagra Pack gives Nagra users the secure, lightweight convenience needed for field recording.

Audio Packs

KAP-Nagra	Nagra IV-S (Time Code), IV-SJ, 4.2, E	\$225.00
KAP-SQN3	SQN3	41.00
KAP-SQN4	SQN4	54.00
KAP-FP31	Shure FP-31	35.00
KAP-FP32	Shure FP-32	39.00
KAP-TC5	Sony TCD5M	89.00
KAP-160	Audio Developments 160.	41.00
KAP-FT3	FilmTech 3	41.00
KAP-FT4	FilmTech 4	54.00

Kangaroo Gripper™ Strap

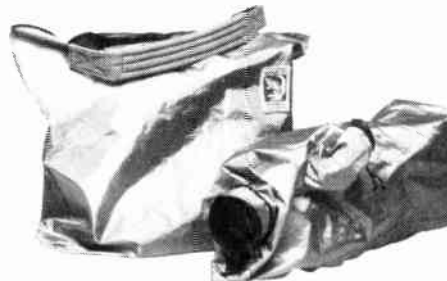
The Kangaroo Gripper Strap is a heavy-duty shoulder strap that won't slide off nylon parkas, ski jackets, or other slippery material. Padded with our durable Evazote closed-cell foam, the Gripper Strap's three-way action gives you important shock-absorbing capability to carry even the heaviest equipment more safely and comfortably than ordinary shoulder straps.

The Gripper Strap comes with two sliders for easy attachment and adjustable length. It's available in brown, blue, green, rust and gray. It fits all Kangaroo Video Products carrying cases, and many other bags and cases.

KAC-Gripper \$30.00



Gripper Strap



Emikote Products

Emikote™ Products

Emikote Products—an advanced line of products and custom design services for the protection of sensitive electronic equipment and recording media from the effects of electro-magnetic radiation.

Designs to cover cameras, recorders and camcorders are now available from Kangaroo as well as custom product design services.

Kangaroo's Emikote material shields out the electro-magnetic interference commonly found at or near transmitter sites, radar installations, congested urban areas and military bases.

KEP-CC	Emikote Camera Cover (specify camera) . . .	\$750.00
KEP-RC	Emikote Recorder Cover accommodates most broadcast and industrial portable recorders (specify recorder)	650.00

Rotary Phase Converter for AM/FM Radio and Television Broadcast Transmitters

The Phasemaster® T-Series Rotary Phase Converter is specially engineered and manufactured for use with all types of radio and television transmitters. It converts single-phase power to 3-phase in locations not economically served by 3-phase lines.

Phasemaster® is particularly valuable in situations where the high cost of installing utility-supplied 3-phase power is prohibitive. A Phasemaster® T-Series Rotary Phase Converter can be installed for a fraction of the cost of obtaining 3-phase utility lines.

Utilities often use open delta systems to reduce distribution costs. However, the absence of a third transformer allows the line voltage to fluctuate excessively across the open leg. This condition is unacceptable for broadcast use. When used with open delta systems, the Phasemaster® closes the delta, eliminates undesirable fluctuations and regulates all three lines.

Phasemaster® is low in initial cost, high in performance and has a proven service record of more than 15 years in commercial broadcast installations worldwide. Phasemaster® has been sized and tested for compatibility with most makes and ratings of commercial transmitters.

Performance

The Phasemaster® T-Series Rotary Phase Converter incorporates many superior performance benefits:

- Voltage produced through Phasemaster® is regulated within a range of 2-5% of the single-phase primary electrical supply.
- Output wave forms and phasing are nearly identical to utility-supplied 3-phase.
- The converter has the ability to buffer line transients and voltage spikes.
- Integral lightning protection adds to operating reliability.
- Systems are available to accommodate dual power output ratings, for example in daytime and nighttime transmission. Also available with automatically controlled high-low-power switching.
- The converter is designed to operate indefinitely on a continuous 24-hour-a-day basis, with or without a load, without injury to the converter.
- Units can be remotely controlled.
- Operating cost savings are realized by taking advantage of lower kilowatt-hour rate structures.

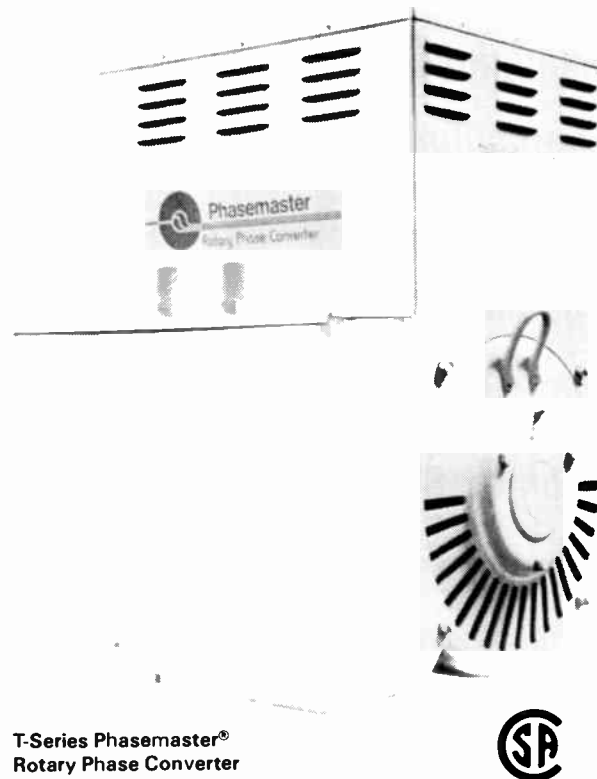
Construction

Phasemaster® is built with high-quality materials and components to meticulous manufacturing standards. An extra-large wiring panel is provided for accessibility and ease of making connections. Phasemaster® has no relays, switches, governors or other service-prone components.

Applications

Phasemaster® T-Series Rotary Phase Converters are for use in any application where control of voltage is critical. They are available in a range of sizes for AM/FM and TV transmitters, rated from 1 to 50kW. A list of stations where Phasemaster® has been installed is available.

Phasemaster® is manufactured under U.S. Patents 3349316, 3387202, 3609430, 4410807, Canadian Patent 786933 and Patents Pending.



T-Series Phasemaster®
Rotary Phase Converter

Model	Voltage*	Shipping Weight	Price
T-1300	230	145	\$ 1885.00
T-2000	230	190	2220.00
T-2500	230	227	2565.00
T-4000	230	365	3060.00
T-5000	230	430	3695.00
T-7500	230	497	4135.00
T-8000	230	640	5180.00
T-10000	230	788	6075.00
T-12000	230	905	6650.00
T-14000	230	950	7875.00

* Available in 460V no additional charge.

To select the proper T-Series Phasemaster®, the following information is required:

Type of broadcasting: AM, FM, or television.
 Manufacturer, model number and kW rating of transmitter.
 AM transmitters: power consumption at average modulation and 100% modulation, in kW, KVA or amps.
 FM transmitters: power consumption at 110% current draw.
 Operating voltage.
 Elevation of transmitter installation.
 Any variations in power consumption due to broadcasting at different power levels; for example, daytime vs. night.
 Incoming service single-phase or open delta.

K & H PRODUCTS, LTD.

Video Carts/Cases

Porta-Brace® Shoulder Cases w/Rain-Top for Camcorders.



Sunny Days



Rainy Days

Full-time Shoulder Case provides protection against bumps, scrapes, dust, heat and cold on your shoulder or off.

Extra feature added with the lightweight pop-out Rain-Top which is sewn to the main body so it can't be lost or left behind. (Stuff it into the slim side pocket when the sun shines).

When ordering your Shoulder Case be sure to send camera model number...recorder model number...and battery style to be used \$285.00

HB-40 CAM Heavy-duty Shoulder Strap—use Sony strap hardware \$35.00



TRIPOD MUMMY CASE

A case for professional tripods with fluid heads. A soft, lightweight, thickly padded Cordura® Case that is water-proof and durable. There are pockets for many accessories; handles, tripod platforms, fish poles and mics. Also will carry lighting kit with light stands. Comes with maple wooden handle and shoulder strap.

. \$228.00

Run Bag



Why should a run bag be cluttered? Speed is necessary, so be organized, find those spares and extras in a hurry.

RB-1 Small \$103.00
RB-2 Large 108.00

Director Case



Room for Producer/Director tools of the trade plus a detachable SLR or small video camera bag to take for candid shots.

DC-1 \$150.00

Porta-Brace® Monitor Cases



Protection and glare reduction guard with adjustable pedestal, also easy access to battery, switches, controls and cable connections.

Lightweight Field Monitors (stays in protective case)

- MO-8020 Sony PVM-8020/BVM-8021 8" Monitor . . \$115.00
- MO-CT500 Panasonic CT-500 5" Monitor 115.00
- MO-22U JVC TM22U/44U/41U 115.00
- MO-5863 Leader LVM-5863A Wave Form/Monitor 115.00

Porta-Brace® Monitor/Player

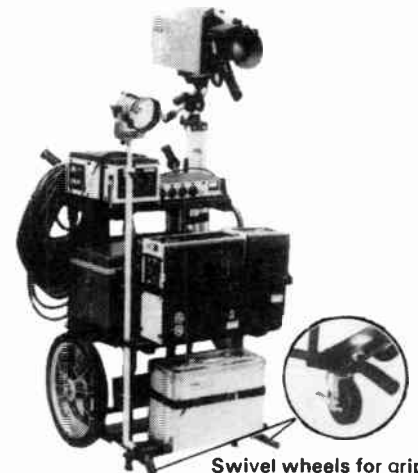


Large Portable Monitors (remove from case to use)

- MO-AG500 Panasonic AG-500 10" Monitor/Player . . \$120.00
- MO-R9U JVC TM-R9U 120.00
- MO-130 Panasonic CT-130 13" Monitor 135.00

Heavy-duty shoulder strap included, firm grip hardwood handle, great lightweight transport case.

Porta-Brace® "Grip"



Swivel wheels for grip

Versatile, heavy-duty carts for studio or field use. Optional light stands, tripod quivers, and carry-all cases available from \$615.00

Porta-Brace® Waist Belt Production Pack



Basic Pack includes waist belt w/quick-release buckle and two multi-pocketed, general-purpose pouches, other specialized pouches can be added. (Designed for BETACAM users and others.)

BP-2 \$97.00

Prices and Specifications Subject to Change Without Notice.

B-723

K & H PRODUCTS, LTD.

Video Cases

Porta-Brace® Video Recorder Cases

Designed to provide custom-fitted protection in the field while allowing immediate access to controls, connections, and batteries through weather-protected openings.

Your choice of heavy-duty contoured suede leather strap HB-40 or 2" webbed strap HB-20 is supplied with purchase of recorder case. Comes with sewn-on front pockets for cassettes, batteries, mics, etc., two white balance cards (one removable). "Piggin Strings"™ available for organizing cables.

Your choice of Heavy-Duty Shoulder Strap, the HB-20 or HB-40 included with purchase of recorder case.

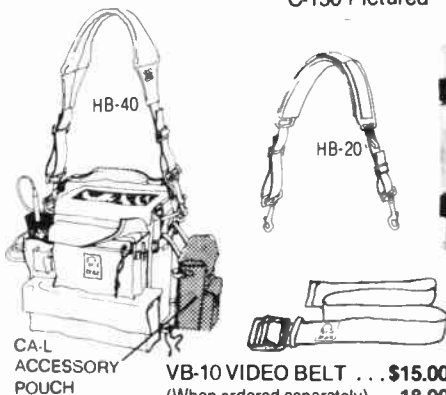
Model	Recorder Carried	List
C-50	Sony BVU-50	\$177.00
C-110	Sony BVU-110	177.00
C-150	Sony BVU-150	177.00
C-6800	Sony VO-6800	177.00
C-BVW-35	Sony BVW-35/Ampex CVR-35	177.00
C-7400	Panasonic AG-7400	165.00
C-4900	JVC CR-4900U, CR-4700, PR-4800E, Panasonic NV-9450	177.00
C-6200	JVC BR-6200U	177.00

Other and newer models available

IMPORTANT: Please designate HB-20 or HB-40 when ordering.



C-150 Pictured



CA-L ACCESSORY POUCH

VB-10 VIDEO BELT . . . \$15.00
(When ordered separately) . . 18.00

Time code, wireless, and all-purpose accessory pouches available.

..... from \$16.

Porta-Brace® Lightning Case



Soft-shell, padded, lightweight waterproof carrying case for ENG, EFP lighting outfits. Will carry lights, stands, barn doors completely assembled. Rigid protective compartment for filters, scrims, gels, and bulbs. Carries umbrellas, reflectors, clamps, several tota lights and other lighting accessories.

..... from \$260.00

Porta-Brace® Quick-Draw Camera Case

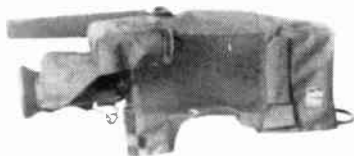


This professional camera case is a convenient way to carry and protect your camcorder on the ground, in your car and in the air. With its hard-shell construction and aluminum viewfinder guard, this padded nylon case means lightweight security for your camera. Heavy-duty Shoulder strap included.

Ask dealer to fit your camera From \$285.00

Porta-Brace® Rain Covers

Protection against dust as well as moisture damage with this tailored rain cover for individual three-tube models. You have easy access to all openings, adjustments and connections.

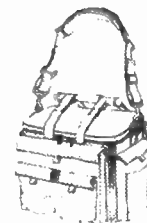


RAIN COVERS
for all popular three-tube cameras.
Specify camera model number.
RC—(No. your camera) \$122.00

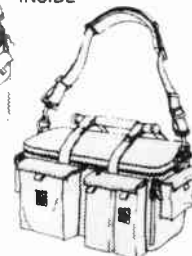
Porta-Brace® Production Cases



PC-3, 8 3/4"W x 27 1/2"L x 12 3/4"H INSIDE



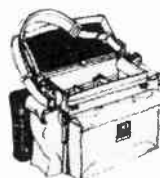
PC-1,
9"W x 16"L x 16"W
INSIDE



PC-2,
8 3/4"W x 21 1/2"L
x 12 3/4"H
INSIDE



PC-101
8"W x 13"L x 9"H INSIDE



PC-202
6 1/2"W x 11 1/2"L x 11 1/2"H INSIDE

Large Capacity Organizer Cases

Heavy-Duty Shoulder Strap Included

PC-1 one divider, five outside pockets, two mesh pockets \$273.00

PC-2 two dividers, five outside pockets, six see-through mesh pockets . . . 298.00

PC-3 seven outside pockets, three dividers, two extra end handles (for two-person carry), nine see-through mesh pockets.

..... 325.00

Medium Capacity Organizer Cases

Heavy-Duty Shoulder Strap Included

PC-101 Audio Case, one divider, one clip-on pouch, four see-through mesh pockets, three outside pockets \$174.00

PC-202 Lights and tapes case, one divider, one clip-on pouch, one see-through mesh pocket, five outside pockets 167.00

KINOTONE, INC.

16mm Projector

FP-18 TV PROJECTOR

For use in TV, film to tape transfers, and special studio systems.

- Rack Mounting with adjustable Pedestal, 24V Control System, Control Panel, built-on Proximity Sensor (Auto Stop)
- Film Run Mechanism Forward/Reverse
- Crown Groove Intermittent 5 Blade Shutter
- Picture Dowser/Change Over, Still/Step Frame
- Curved Gate
- SMPTE Specs for Jump and Weave
- 5000 foot Film Capability, Remote Control for all Functions
- 24 Frames per second
- Audio: Preamplifier/Line Amplifier Module built-in with +8dBm Output Level into 600 ohm Load B+ Power Supply
- Light Source: Halogen Light Source, 2 Lamp Turret System with Automated Change 250W, 24V
- Drive Motor: 110-250V, 60Hz Synchronous
- Reel Drives: Friction Drive, 5000' capacity
- Optical Playback: Sound Drum Damping Assembly, Sound Drum Accelerator, Solar Cell, Exciter Lamp, Exciter Lamp Power Supply

Precision Projection

The projector's extremely high picture stability, less than .19% jump and weave, is achieved by the unique Philips grooved disk mechanism, curved gate, and ceramic film edge guides. The intermittent mechanism was developed especially for 16mm film systems using a 12 tooth sprocket for film control and protection. This combined with the rotating 5 blade disk shaped shutter, dual halogen lamp with automatic lamp change, provides a highly efficient projection system compatible with 25 or 30 frame TV systems.

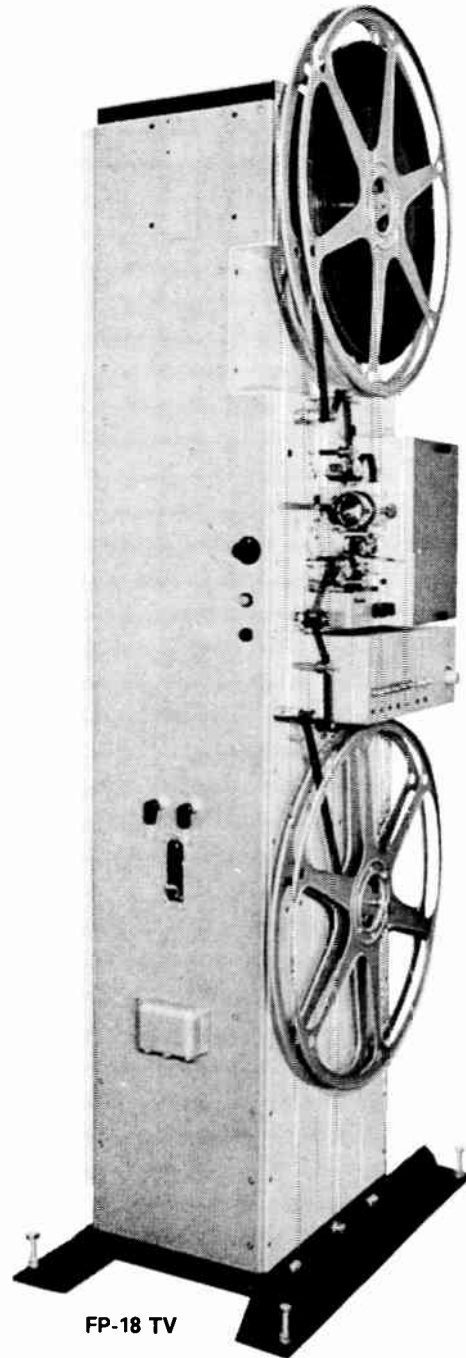
Optimal Sound Quality

The sound reproducing system follows the pattern of professional standards used in 35 or 70mm reproducers. A rotating sound drum machined to high standards, fitted with a split damping drum and flywheel accelerator provides for a fast stabilization time and provides for less than .2% wow and flutter. The scanning optics can be adjusted (by lever) to compensate for standard or non-standard recordings. A manual switch will shift the system from optical to magnetic if so equipped.

Audio

The preamplifier module is located within the cabinet. It provides for pre-amplification of selected signals with plug-in equalization boards for optical or magnetic signals. The output provides for a +8dBm signal into a 600 ohm load. Each input is individually controlled for balance, with an overall master and a bass/treble boost circuit.

FP-18 \$29,460.00



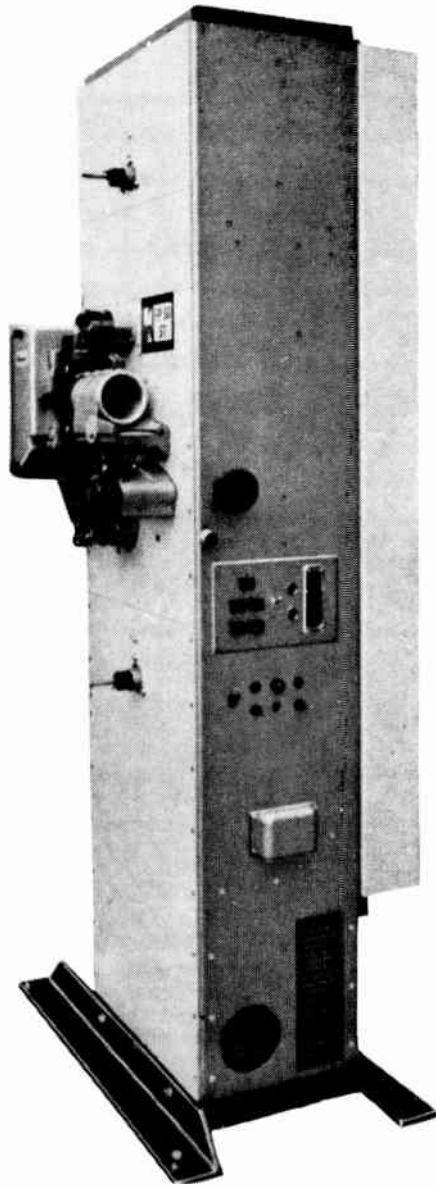
Accessories

Lensholder (Anamorphic)	\$ 485.00
Aperture Air Valve	460.00
Remote Focus	765.75
Remote Focus/Remote Frame	1,755.75
Torque Motor Film Reel Drive, Upper and Lower	4,000.00
Torque Motor Film Reel Drive, Upper Only	2,150.00
Remote Control Panel	600.00
Cable per ft. for above	5.00
Lens-ISCO (with iris)	
50mm f/1.9	\$275.00
65mm f/1.6	357.00
75mm f/1.7	385.00

Refer to Green Section for Addresses and Telephone Numbers.

KINOTONE, INC.

35mm Projector



FP-30 TV

FP-30 TV PROJECTOR

The FP-30 TV Projector utilizes the basic film transport and system as found in the professional 35mm systems widely used for exhibition, and studio applications. The high speed intermittent movement with 5 blade shutter renders the system compatible with 25 or 30 Frame operation. The system meets all SMPTE specifications.

- Equipped with Column and adjustable Pedestal
- 35mm Film Transport
- Fast Pull Down Intermittent 5 Blade Shutter
- Step Frame
- Proximity Sensor (Auto Stop)
- Sound Reproducer, Optical with Solar Cell Pick-up and Exciter Lamp
- DC Exciter Lamp Power Supply
- Sound Drum Accelerator
- Picture Change-Over Relay, Dowser Control
- Electrical Control System 24V DC
- SMPTE Spec on Jump and Weave
- Spool Shafts and Frictions: 6000' capacity
- Drive Motor: Synchronous 115V, 60Hz, 24 p/s
- Lens Support: Vernier Focus, Lensholder, Set of Aperture Plates
- Light Source: Halogen Lamphouse 250W, 36V, 2 Lamp System, Automatic Lamp Change

Precision Projection

The FP-30 TV Projector utilizes a single piece, curved gate of self-lubricating delrin material. The gate, with delrin runner strips and ceramic guides, provides a film path exactly controlled with minimal pressure, providing high picture stability with minimal stress on the film.

Optimal Sound Quality

The optical reproducer follows all of the state-of-the-art designs, resulting in low wow and flutter. The rotating sound drum and the flywheel accelerator provides fast sound stabilization. The high quality slit lens and scanning system provides for high quality sound reproduction.

Audio

The FP-30 TV System is normally provided without Pre Amplification. The solar cell output being easily coupled to Station audio systems. Where a 0 level signal is required, an audio system can be provided as an accessory.

FP-30 \$29,150.00

Accessories

Magnetic Reproducer, 4-Track	\$5,000.00
Aperture Air Valve . . . . .	.495.00
Remote Focus	1,100.00
Remote Focus/Frame	1,775.00
Reverse Run	3,375.00
Torque Motor Drive, Upper and Lower Reel	4,000.00
Torque Motor Drive, Upper Reel only	2,150.00
Remote Control Panel	600.00
Cable per ft. for above . . . . .	.5.00
Lens Requirements	Special Quote

KNOX VIDEO PRODUCTS

Character Generator/Title

K40 Microfont™ Character Generator

- Self-contained single 58-key keyboard unit with small external power unit
- 16-page internal memory, expandable to 64 pages
- 2 complete upper and lower case fonts: 20 and 32 line Helvetica
- 256 characters
- Complete foreign language set in large size
- Double size font expander key
- NTSC or PAL operation (specify)
- Internal sync generator
- Separate black and white preview output with status line
- Striping on each display line, plus one at top of page
- 32-color palette
- Roll, crawl and title modes
- Italics by line
- Computer interface
- Non-volatile memory

The K40 Microfont offers an array of features in a low cost color character generator: finely resolved fonts, wide choice of colors, broad capture genlocking and mixing, full range rolls and crawls, and automated display sequences.

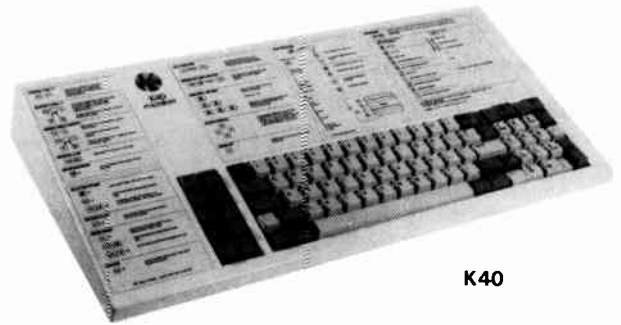
Easy to use, the K40 is ready to title from the moment you turn it on. Its entire instruction set is printed on the keyboard.

Each line may be individually colored in background and striping, and character colors may be completely intermixed on every line.

The Microfont is housed in a single 58-key unit complete with an internal sync generator. A standard NTSC video input is also provided for synchronizing the K40 to an external video source. An internal mixer adds the K40's output to the incoming video signal, a separate preview output carries the character generator output together with an additional line of characters showing the current system status.

All control functions are generated by the keyboard; an optional parallel interface is provided for operation by computer or remote keyboard.

- K40** \$2495.00
- 64-page memory upgrade 275.00
- Optional four-font upgrade 275.00



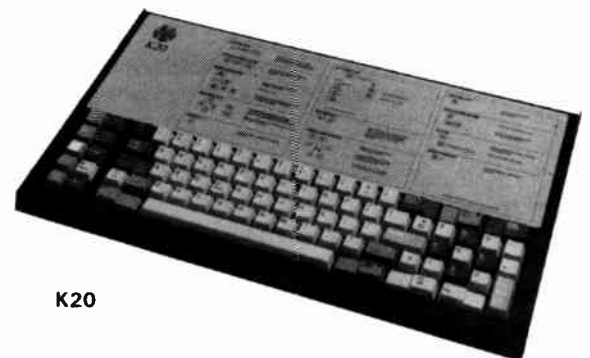
K40



K20 Titler

- Self-contained single 58-key keyboard unit
- 16-page internal memory, expandable to 64 pages
- Line-by-line character color
- Transparent or solid color backgrounds
- Built-in genlocking keyer
- One complete upper and lower case font—Helvetica
- Second upper case font—Eurobold
- NTSC or PAL operation (specify)
- Internal sync generator
- Separate preview output with cursor
- 8-color palette
- Title and 4-speed roll modes
- Computer interface
- Non-volatile memory

- K20** \$1395.00
- K12** Monochrome version of K20 1095.00



K20

KNOX VIDEO PRODUCTS

Character Generators

K200 Chromafont II™ Color Character Generator

- Eight included fonts, each in two sizes
- 128 color groups organized into eight palettes
- 512 color selection
- 10-speed roll and crawl modes
- Underlining and pinstriping
- Italics, superscript, and subscript
- 8000 character memory

The Chromafont II offers the small studio another step forward in quality production capability. Fully resolved, proportionally spaced fonts and rich variation in color and style of display make this character generator a standout in its price range.

Combining very low power digital technology with pipeline architecture, the Chromafont II puts a fine finish on your productions without the usual price-to-performance tradeoff. It genlocks to almost any signal, keys automatically, and can fade to title, fade to picture, and fade to black.

Incredibly easy to use for a machine with such a variety of fonts, colors, and positioning abilities, the Chromafont II has all the important operational essentials printed on the cover of its keyboard. A complete technical manual is included for those wishing to explore the finer points of display making.

The Chromafont II is equally at home as a stand alone unit, downstream in a simple editing suite, or upstream through a sophisticated production switcher. A unique execute mode allows a long sequence of display operations to be programmed ahead of time and then executed hands-off after a single keystroke.



K200



K100 Option C

- K200 \$4550.00
- K200 Complete system with disk upgrade, 500 page storage . . . 6090.00
- K200 Disk upgrade, 500 pages. 1540.00

K100 Chromafont Option B Color Character Generator

- Four fonts: two upper and lower case, two upper case only — all in two sizes (eight 32-character font blocks)
- Full range color control (512 color palette) of background and character, organized as 16 selectable combinations. Color palette includes transparency
- Second 512 color palette for fade/cut/dissolve effects
- Character-by-character color control
- Individual character background color control
- Character-by-character underlining and pinstriping
- Horizontally and vertically adjustable shadow edging
- Flexible non-volatile 8000-character memory. Can be organized as up to 256 lines or up to 64 pages
- Multi-speed roll and crawl
- Fade Control: allows fade to and from black, dissolves from color to color
- Italics: two forward and two backward slants
- Variable line height
- Superscript and subscript
- Serial interface for computer control or extra keyboards
- NTSC or PAL-B compatibility
- Portable, detachable keyboard



Screen Display Composed on a Chromafont Option B, Including One Extra Font

The full color character generator of choice when the budget is limited, the K100 Chromafont represents a unique approach to character generator design.

Advanced high speed pipeline architecture puts sophisticated display capability in your hands at minimal expense.

Compact and versatile, the K100 is equally at home in the EJ van or in the studio. Its superior display adds elegance to routine titling such as schedule changes or weather alerts.

The K100 also offers the small studio or production house a true alternative to costly and inconvenient outside titling services.

- K100 \$3990.00

Chromafont Option C Upgrade

Option C adds to the capabilities of the K100 Chromafont:

- Four new type fonts: one upper and lower case and numerals, two upper case and numerals, one upper case only — all in two sizes
- Unlimited floppy disk storage: frees K100 internal memory space
- Automated timed display sequences
- Pre-cued displays with built-in pauses

- Option C Upgrade \$5880.00
- Upgrade Only 1890.00

EASTMAN KODAK COMPANY

Professional Video Tape

HG KODAK Video Cassettes (High Grade)

For use with VHS and Beta format video recorders. Designed for excellent picture sharpness, color brilliance, sound clarity, and reliability.

T-30 VHS	\$9.49
T-60 VHS	9.99
T-120-HG VHS	10.99
L-750-HG Beta	8.99

XHG KODAK Video Cassettes (Extra High Grade — Broadcast Quality)

Extra High Grade video cassettes in VHS and Beta recorder formats. For use at extended playing speeds and for repeated recording and playback. High-density particle packing has excellent capability for re-recording, erasure, and signal stability.

T-120-XHG VHS	\$8.99
L-750-XHG Beta	10.99

8mm KODAK Video Cassettes

8mm KODAK video cassettes for use with the KODAVISION Series 2000 Video System and other 8mm systems. MP video tape offers an advanced metal-particle coating for excellent density and sensitivity.

MP6-30	\$12.99
MP6-60	13.99
MP6-90	14.99
MP6-120	16.00
HC-2 8mm head cleaner cassette	16.99

EASTMAN HG Professional Video Cassettes

T-30 VHS	\$8.07
T-60 VHS	8.36
T-120 VHS	8.87
L-250 Beta	7.45
L-500 Beta	8.67

EASTMAN Sports Pack

Designed to meet the quality and economy demands of the sports market. This 40-cassette carton incorporates four 10-packs of EASTMAN Professional Video Cassettes, HG and T-30, in specially designed inner cartons having integrated carrying handles.

T-30 VHS	\$3.99
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EASTMAN XHG Professional Video Cassettes

T-120 VHS	\$9.84
L-500 Beta	9.97

EASTMAN Pro Format Broadcast Video Cassettes

Designed for Betacam and M-Format production while also being ideally suited for automated cart machine applications. Dependent upon equipment used and bias settings, Pro Format and Pro Format II products present a selection of audio and video signal-to-noise output to maximize overall performance. Both products feature our professional, high-quality, reliable shell.

PB-5 Betacam	\$ 14.66
PB-20 Betacam	18.52
PB-30 Betacam	21.14
PV-20 M-Format	21.60

EASTMAN Pro Format II Broadcast Video Cassettes

Designed for Betacam and M-Format production. Dependent upon equipment used and bias settings, Pro Format and Pro Format II products present a selection of audio and video signal-to-noise output to maximize overall performance. Both products feature our professional, high-quality, reliable shell.

PB-20 Betacam	\$18.52
PB-30 Betacam	21.14
PV-20 M-Format	21.60

Library Case

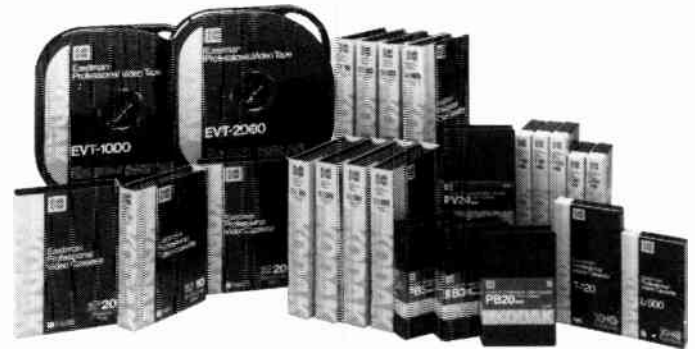
Heavy-duty plastic cases designed to both store and protect your valuable video cassettes. The case is injection-molded from black PVC material with a clear 1/2" window for labels. Available for both Beta and VHS formats. Packaged 40 individual cases to a case. Available in black only.

VHS	\$ 1.69
Beta	1.69

EASTMAN Professional Video Cassettes

EP-930 Professional Series

KCA-10 U-Matic	\$14.99
KCA-20 U-Matic	16.50
KCA-30 U-Matic	17.83
KCA-60 U-Matic	23.06
KCS-20 (Mini) U-Matic	15.28



EB-930 Broadcast Series

KCA-10 U Matic	\$16.19
KCA-20 U-Matic	17.73
KCA-30 U-Matic	19.63
KCA-60 U-Matic	24.91
KCS-10 (Mini) U-Matic	15.15
KCS-20 (Mini) U-Matic	16.38

EP-950 Duplication Series

High quality, bulk packaged for cost-effective duplication. Shell constructed of special anti-static resin to help ensure a low dropout rate due to the elimination of charge-induced dust attraction.

EP-950 U-Matic	.POR
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EP-950 Professional Video Cassettes

KCA-10 U-matic	\$14.99
KCA-20 U-matic	16.50
KCA-30 U-matic	17.83
KCA-60 U-matic	23.06
KCS-10 Mini U-matic	13.53
KCS-20 Mini U-matic	15.28

EB-950 Broadcast Video Cassettes

KCA-10 U-matic	\$16.19
KCA-20 U-matic	17.73
KCA-30 U-matic	19.63
KCA-60 U-matic	24.91
KCS-10 Mini U-matic	15.15
KCS-20 Mini U-matic	16.38

ESP-750 U-matic Superior Performance (SP) Series

When used in conjunction with a U-matic SP video cassette recorder, the ESP-750 video cassettes offer superior signal-to-noise ratios in chrominance and luminance, significantly reduced levels of dropouts, and outstanding sound reproduction. A third generation copy of Eastman ESP-750 video tape recorded and played with the U-matic SP VCR is comparable to the resolution and image quality of a first generation original made with a conventional U-matic VCR and tape. The ESP-750 video cassettes are also compatible with existing U-matic video recorders.

ESP-750 U-Matic	.POR
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EVT-2000 1" EASTMAN Professional Video Tape

1" EASTMAN professional video tape affords the optimum reproduction capability your important programs demand generation after generation.

In Flame Retardant Shipper B-Format, C-Format

VT-34	\$86.75
VT-48	94.64
VT-64	131.46
VT-96	198.50
VT-105	209.02

In Corrugated Unit Box B-Format

VT-64	\$125.95
VT-96	192.98
VT-126	264.23

C-Format

VT-34	\$81.24
VT-64	125.95
VT-96	192.98
VT-105	203.50
VT-126	264.23
VT-157	322.07
VT-188	415.40

Refer to Green Section for Addresses and Telephone Numbers.

B-729

LAIRD TELEMEDIA, INC.**Character Generator****1500 Character Generator****SYSTEM FEATURES:****Resident Memory**

- Internal text memory and font memory are size interactive • Variable page length

Fonts

- 35ns resolution • Multiple resident font capability • 96 characters per font • Multifont library (70 fonts included) • Proportional spacing • Character cell adjustment • 12-56 scan-line character sizes

Display Editor

- Instant italics (forward or backward with choice of multiple angles)
- Auto centering (line and page) • Underline • Insert and delete character • Insert and delete row • Seven edge modes: no edge, outline, full border, and 4 quadrants of drop shadow • 8 edge intensity levels

Color

- 65,536 colors resident, 946 displayable per page

Dual 3 1/2 Disk Memory

- Loadable operating system software • System initialization user defined by auto-sequence • Page, font, and auto-sequence loadable from disk

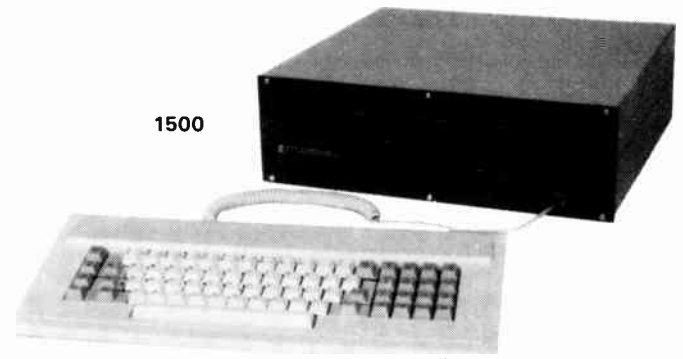
Operates on NTSC composite format with optional 1032 Color Encoder, or NTSC Y/C format with optional 1032 Y/C Encoder

The 1500 is a high quality television broadcast character generator system with some graphics capability. It is capable of displaying multiple font styles and sizes in a single message. Custom logos and symbols can be included in the font styles. Each character style and size is created from an entirely different high-resolution font file. None of the fonts is stretched, squashed, or otherwise distorted to achieve multiple effects, which assures consistent quality and legibility in each display.

The 1500 is essentially a two channel system. One channel is the Preview/Status Channel and the other is the Program Channel. All message information is entered into the Preview/Status Channel and then transferred to the Program Channel, allowing editing while on-air.

The 3 1/2" dual disk drive system and the logic system are both in one chassis. The single chassis unit can be used as rackmount or an attractive desktop unit.

1500	Character generator—includes 1500 chassis with two 3 1/2" disk drives, keyboard and 70 standard fonts. Requires color encoder.	\$ 7,695.00
1500-PROM	Character generator—includes 1500 and 6 standard fonts. 1530 option required for camera entry and font compose options. Requires color encoder.	4,500.00
1500-EX	Character generator—includes 1500 chassis, 1511 expanded keyboard and 70 standard fonts. Requires color encoder	8,495.00
1500-TURBO	Character generator—includes 1500 chassis with 3 1/2" disk drive, 1511 expanded keyboard, 1534 hard disk and 70 standard fonts. Requires color encoder	9,900.00
1500-LX	Character generator—includes main chassis with 3 1/2" disk drive, 1511 keyboard, 1524 data tablet, 1526 camera entry, 1528 font compose, 1534 hard disk, 1540 expanded graphics and 70 standard fonts. Requires color encoder.	16,500.00
Options		
1401	Optional font set for 1500-PROM.	\$395.00
1402	Optional international font set for 1500-PROM.	395.00
1403	6 font set, custom, select any 6 from library for 1500-PROM	650.00
1422	Computer interface kit for 1450 and 1500 series.	200.00
1505	Memory upgrade, expand from 262 to 512K for older 1500 CGs.	160.00



1510	Keyboard for second location. For remote use—requires 1516 power supply.	\$ 349.00
1511	Direct access keyboard—an expanded keyboard making the most of the commonly used menus, functions, and the entire character set, directly accessible with a single keystroke. Increases user operating speed. For remote use—requires 1516 power supply	995.00
1516	Power supply required for a remote/second keyboard or a 1524 Data Tablet, rackmountable, with 15' cable	695.00
	Longer cable for 1516—add per foot.	1.00
1520	Rackmount kit—for 1500 and 1500-EX	112.00
1520-PROM	Rackmount with slide for 1500-PROM	112.00
1524	Data tablet with 1516 option, requires 1528, for 1500 and 1500-EX	1,495.00
1525	Data tablet—logos, drawings and fonts can be traced into the 1500 with an electronic stylus. Speeds the editing process when used in conjunction with font compose. Requires 1528 font compose for operation for 1500 and 1500-EX	995.00
1526	Camera Entry—Requires separate B & W video camera, copy stand and 1528 font compose for operation	1,995.00
1528	Font Compose—Requires 1524 for 1500 and 1500-EX	495.00
1530	1500-PROM upgrade. Two 3 1/2" disk drives, 70 disk loadable fonts. Required for camera entry and font compose options	3,695.00
1534	Hard disk memory-20M byte	1,495.00
1540	Expanded graphics option for 1500, must have 1524, should have 1526, 1528 and 1534.	3,995.00
ITC-510	Ikegami B/W camera, for 1526 camera entry.	995.00
330-02	Bencher Copymate, copy stand for ITC-510	400.00
1550	Font base, development aid for 1528 font developer, specify type style.	70.00
1032	Color encoder, RGB to NTSC, required for 1500-PROM, 1500 and 1500-EX, (rackmount)	1,325.00
1032-Y/C	Same as above with full Y/C compatibility	1,895.00
BC-200	Tripp Lite uninterruptible power supply, 200W for 1450	400.00
BC-325	Tripp Lite uninterruptible power supply, 325W for 1500, 1500-EX, 1500 PROM	500.00
	Additional fonts for 1450 and 1500-PROM, choose six only, requires factory installation, six additional fonts are maximum.	675.00

LAIRD TELEMEDIA, INC.

Character Generators

1450 Color Character Generator

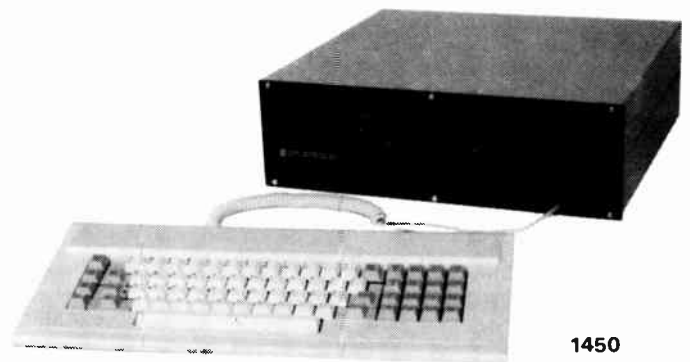
• 35ns resolution • Capable of producing 65,000 different colors • Six resident fonts • 100 pages of memory and a keyboard • Built-in color encoder • Features enhancements such as italics, edging, outline, four quadrants of drop shadow, and eight intensity levels • Vertical and horizontal flip • Inverted video • Flash and underline • Capable of roll up or down at any of nine speeds • Crawl left or right at any of six speeds • Can be used either downstream or as a stand-alone system • Encoder modulates RGB signals into composite NTSC • Rack-mountable

The standard configuration of the 1450 includes six resident fonts, 100 pages of memory, and a keyboard. Built-in is a color encoder with the same high quality and specifications as the 1032 Color Encoder.

The 1450 features: Italics (at one of seven angles from 12° to 56°), Edging (with full edge, Outline, four quadrants of Drop Shadow, and eight intensity levels), vertical and horizontal flip, inverted video, flash and underline. The 1450 also has the ability to roll up or down at any of nine speeds and crawl left or right at any of six speeds.

The 1450 can be used "upstream", "downstream", or as a "stand-alone" system. The video signal can be "phased" or timed, both vertically or horizontally, with the primary video source.

An optional 1422 Computer Interface Kit allows the 1450 to communicate with IBM® compatible computers. This feature permits unlimited, permanent storage of text on the computer's floppy disc.



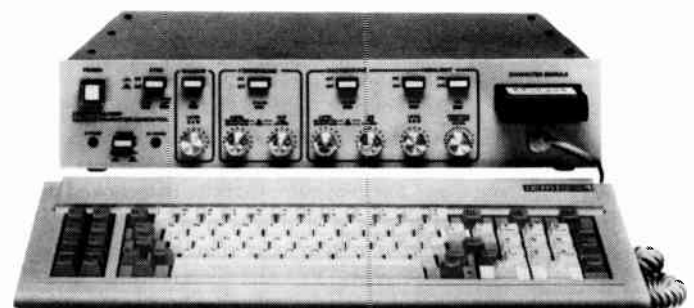
1450

- 1450** Includes six fonts and encoder, should have optional BC-200 Power Supply \$3995.00
- BC-200** Tripp Lite uninterruptable power supply, 200W 400.00
- 1401** Optional font set 395.00
- 1402** Optional international font set 395.00
- 1403** 6 font set, custom, select any 6 from library . . . 650.00
- 1420** Rackmount, with slide 112.00
- 1422** Computer Interface Kit 200.00

CG-7000/ES and CG-7000Y/C Color Character Generators

• Vertical scroll in four speeds • Full editing capability • Simplified line and page centering • Optional remote control gives random access to first 15 pages or manual sequencing through all pages • Flashing effect available on any character, word, line or page • Drop shadow, lower right, with 0–100 IRE level control shadow • Characters can be filled in or colored by any external video signal. Allows multicolored or special texturing effects • Key output permits interface to any SEG • Text will only appear within SMPTE safe title area • Special highlight window can surround any line; can be colored • Main unit will auto start and run without keyboard. Permits text to be programmed in advance and run later at trade shows, meetings, point-of-purchase displays, etc. • Internal battery protects memory up to three years • Automatic bypass of video during power loss • Will automatically switch to internal sync if genlock source is lost • Crystal controlled sync generator • 80 pages or 12,160 characters of memory space • Proportional spacing • Character special effects • Optional rackmount with slide for main unit • Optional fonts • Auto page sequence in four speeds • Auto sequence of all lines on all pages at any screen position in four speeds, replaces horizontal crawl • Automatic line centering • Insert and delete a line • Automatic page centering • Copy a line • Copy a page • Move a page • Program pages to display in any desired order prior to scrolling, auto paging or auto lining • Pause or freeze text in place when scrolling, auto paging or auto lining • Go to page number command

The CG-7000Y/C is the same as the CG-7000/ES except that it is fully Y/C compatible. The CG-7000Y/C has a Y-3.58 dual input, built-in Y/C channel keyers, and Y-3.58 dual outputs.



CG-7000/ES

The CG-7000 series is simple and user-friendly. Unlike most other models, the CG-7000 series is made for video people, not computer operators. Many complex operations have been made easy by removing them from the keyboard, and are performed with simple, ordinary controls and switches on the front panel of the main unit.

- CG-7000/ES** \$2195.00
- CG-7000Y/C** 2995.00

Accessories

- RM-5** Rackmount for CG-7000 \$ 80.00
- RC-30** Remote Control, for CG-7000 120.00
- FM-15—Series** Font Module, additional font styles for CG-7000 100.00
- FM-16—Series** Font Module, deluxe font styles for CG-7000 150.00
- MM-1400** Memory Module, for CG-7000 120.00

LAIRD TELEMEDIA, INC.

Multiplexers/Uniplexers

5300 Optical Multiplexer

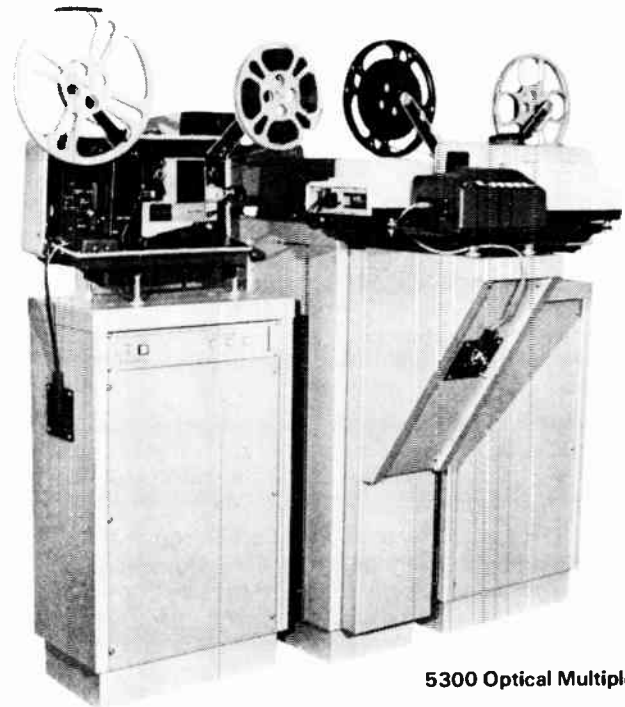
The 5300 Optical Multiplexer provides as many as three separate film images projected for televising by a single camera. First-surface mirrors and precision optics ensure excellent results in color TV applications. An integral field lens provides an intermediate image plane upon which both camera and projector lenses are focused. The field lens mounting is designed to permit insertion of a special screen for alignment purposes. The mirrors are shifted by individual electric gear motors through a unique torsion-bar/pitman coupling and produce an "instant" vertical wipe image transfer. The optical transfer assembly is supported for a 48" optical center by a bench pedestal.

- * **5300** For three input sources (small image). Includes optical transfer assembly with field lens and cover, bench pedestal and local control **\$2095.00**
- * **5330** For three input sources (large image). Includes optical transfer assembly and cover, bench pedestal and local control . . . **\$3680.00**
- 5040** Large image field lens and mounting assembly for 5330 Multiplexer. (Required for camera without integral field lens.) . . **\$1105.00**

Shelves and Stands

(For 5300, 5330 Multiplexers)

- 5104** Stand for cameras or projectors with optical center height between 8 1/4" and 12 1/4". Includes mounting adaptor. (Specify camera or projector model when ordering) **\$425.00**
- 5107** Shelf for camera or projector. Includes mounting adaptor. (Specify camera or projector model when ordering) **\$310.00**

**5300 Optical Multiplexer**

5108 Stand for camera or projector with height of less than 8 1/4" from mounting base to center of optics. Includes mounting adaptor. (Specify camera or projector model when ordering) **\$425.00**

* Does not include camera or projector mounting shelves or stands.

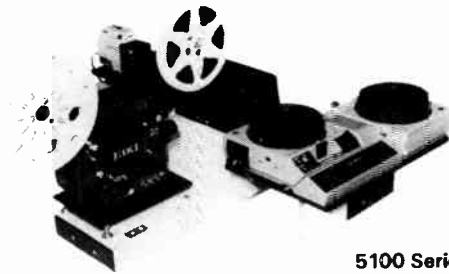
5100 Series Optical Diplexer/Uniplexer

The 5100 provides two separate film images that may be selectively projected for televising by a single camera. The 2-input projector complement may include either 16mm or Super 8 motion picture film in combination with 35mm 2" x 2" slides.

- 5116** Assembly with first surface mirror and field lens. Includes shelves and adaptors for camera and film projector. (Specify camera and projector when ordering). **\$1200.00**
- 5116 + 35** Diplexer Assembly—for two input sources. Includes first surface mirror, field lens, bench assembly and shelves (desktop mount) for 35mm slide projector and 16mm film projector. (Specify camera or projector, dedicated or dolly-up) **\$1790.00**
- 5135** Uniplexer Assembly same as above for one 35mm slide projector. **\$1075.00**

Lens Accessories

- 5015** Lens Extender—for "C" mount lens: 3/16" for 2/3" format camera. 3/8" for 1" format camera **\$ 21.00**
- 5017** 50mm f/1.4 Lens—for "C" mount camera, includes lens extender: 3/16" for 2/3" format camera. **240.00**
3/8" for 1" format camera. **240.00**
- 5019** 55mm lens with Bayonet mount for prism optic 2/3" tube cameras **1515.00**
- 5023** Variable Focusing Kit—for use on 4320 projectors, with 7" lens, when full projected slide image is preferred, from all slide formats. (Normal projected image is overscanned to SMPTE standards). **395.00**
- 5035** 35mm Lens with Bayonet mount for WV-555 1/2" tube camera **890.00**

**5100 Series Optical Diplexer/Uniplexer****Multiplexer Accessories**

- 5021** Test Slide/Loop Kit—includes Resolution, Registration, and Flesh Tone slides and Resolution 16mm film loop **\$ 225.00**
- 5021A** Test Film, 6' loop, Resolution 16mm film **42.00**
- 5021B** Test Slides, includes Resolution, Registration and Flesh Tone slides **200.00**
- 5036** Neutral Density Filter Kit—assortment of 6 filters, 2 pieces of glass and mounting hardware supplied. (For small image. One kit for each projector recommended) **110.00**
- 5037** Neutral Density Filter Kit—assortment of 6 filters, 2 pieces of glass and mounting hardware supplied. (For large image. One kit for each projector recommended) **235.00**
- 5050** Neutral Density Light Wheel & Automatic Light Control—maintains output from camera at 1V composite video. (Uses 2550 Remote Control) **2150.00**

LAIRD TELEMEDIA, INC.

Film Projectors/Accessories

Film Projectors

ST-180(R)	Elmo Regular 8mm 15fps Projector. Includes 25-50mm zoom lens. silent only. (Requires 5107 shelf, uses 2551 remote control and 3510 remote adaptor.) . . . \$ 800.00
ST-180(S)	Elmo Super 8mm 20fps Film Projector. Includes 25-50mm zoom lens. (Requires 5107 shelf, uses 2551 remote control and 3510 adaptor.) 800.00
HD-1500	Pitch Controller (Super 8 sound) 625.00
GS1200TC	Elmo Super 8 24fps TV Film Projector. Includes 25-50mm zoom lens, optical and magnetic playback, and magnetic record. (Requires 5108 stand, uses 2553 remote control and 3522 adaptor for remote control.) 1875.00
16-CLLTI	Elmo Slotload 16mm TV Film Projector. Includes 75mm lens, optical and magnetic playback. (Requires 5108 stand, uses 2551 remote control and 3518 adaptor for remote control.) 2640.00
ENT-OTLTI	Eiki Autoload 16mm TV Film Projector. Includes 3" lens, optical playback and remote adaptor. (Requires 5108 stand, uses 2554 remote control.) 2373.00
ENT-2LTI	Eiki Autoload 16mm TV Film Projector. Includes 3" lens, optical and magnetic playback, and remote adaptor. (Requires 5108 stand, uses 2554 remote control.) 2924.00
ENT-3LTI	Eiki Autoload 16mm TV Film Projector. Includes 3" lens, optical and magnetic playback, magnetic record and remote adaptor. (Requires 5108 stand, uses 2554 remote control.) 3475.00

Note: It is recommended that one neutral density filter kit, 5036 or 5037, be ordered for each projector in the system.

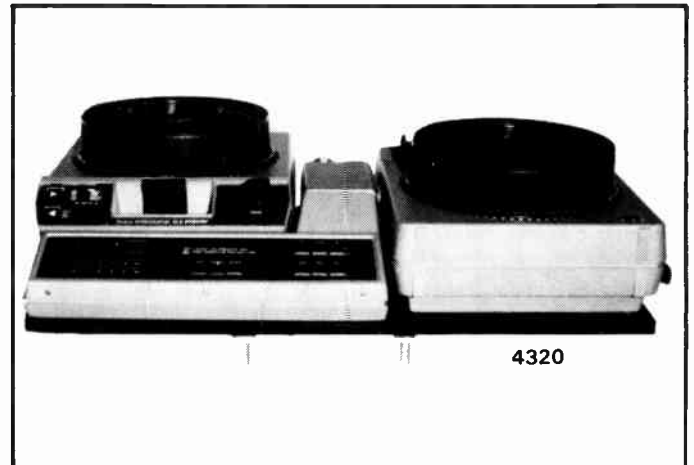
Slide Projectors

4300	Eastman Single Drum Slide Projector. With Kodak III E Projector, holds 80 35mm slides. Includes modified 7" lens and adjustable mount. (Requires 5107 shelf or 5108 stand, uses 2543 remote control and 3504 adaptor for remote control.) \$ 590.00
4320	Dual Drum Dissolve Slide Projector, with Kodak III E Projectors, holds 160 35mm slides. Provides a large capacity projector with a time controlled dissolve transition. The dissolve time and the dwell time can be programmed to run automatically. The 4320 dual offers the alternate sequencing of up to 160 glass, metal, plastic, or paper-mounted 2" x 2" slides. Image transfer between successive slides is accomplished by a means of a stationary optical beam splitter, thus slides selected from either of the two storage drums share a single, high-quality projection lens. This, together with the use of a quartz halogen light source, makes the projector ideal for color television applications. The single-chip, programmable microcomputer based electronics allow for user computer interface, an unlimited number of remote inputs, and a real time sequencer. Includes modified lens and adjustable mounting hardware. (Requires 5107 shelf or 5108 stand, uses 2545 remote control and 2546 tone generator/decoder.) With 7" lens for small image system 4200.00 With 7 1/2" or 9" lens for large image system . . 4700.00

Remote Controls

(All modules use 1/3 remote control frame width unless otherwise specified.)

2540	Remote Control Frame. Accepts up to three remote control modules. Blank filler panels provided, if necessary. Frame: 1 3/4" H x 19" W x 1 1/4" D \$ 60.00
2541	Remote Control for 5300 or 5330 Multiplexer. Controls input sources 1, 2 and 3. (Not required when LTI projector remote controls are furnished.) 120.00
RC50-2541	50' cable 46.00
RC100-2541	100' cable 75.00



2543	Remote Control for 4300 Single Drum Slide Projector. Controls "Off," "Ready," "Forward," and "Reverse" slide change \$150.00
RC50-2543	50' cable 62.00
RC100-2543	100' cable 105.00
2545	Remote Control for 4320 Dual Drum Dissolve Slide Projector. Includes all local control functions. Full width remote frame furnished 515.00
RC50-2545	50' cable 80.00
RC100-2545	100' cable 125.00
2546	Tone Generator/Decoder for 4320/2545 Dissolve Projector System 350.00
2549	24V Power Supply for Uniplexer Remote Control. . . 190.00
2550	Remote Control for 5050 ND Light Wheel. 80.00
RC50-2550	50' cable 47.00
RC100-2550	100' cable 75.00
2551	Remote Control for film projectors. Controls "Off," "Ready," and "Show" modes. 120.00
RC50-2551	50' cable 49.00
RC100-2551	100' cable 80.00
2553	Remote Control for Elmo GS1200TC Projector. Controls "Off," "Ready," "Show," "Forward," and "Reverse." 150.00
RC50-2553	50' cable 73.00
RC100-2553	100' cable 115.00
2554	Remote Control for Eiki ENT-2LTI and ENT-3LTI Projectors. Controls "Off," "Ready," "Show," "Forward," and "Reverse." 150.00
RC50-2554	50' cable 73.00
RC100-2554	100' cable 115.00
3504	Remote Adaptor for 4300 Slide Projector 115.00
3510	Universal Remote Adaptor with AC power cord for all projectors without remote provisions. Includes local controls, "Off," and "Ready." (Used with 2551 Remote Control.) 155.00
3518	Remote Adaptor for 16-CLLTI Elmo Projector. . . 155.00
3522	Remote Adaptor for GS1200 TC Elmo Projector . . 150.00

Note: One Instruction/Service Manual supplied with each Multiplexer and both Dual Drum Slide Projectors.

Extra Manual	\$25.00
Service Manual for Eiki and Elmo Projectors	45.00

LAIRD TELEMEDIA, INC.

Distribution Amplifiers/Color Encoders

DA-5030 and DA-5040

Audio and Video Distribution Amplifiers

• Each DA has 6 outputs • Broadcast quality video specs • VHS and Beta Hi-Fi quality audio specs • DA-5030 will distribute SMPTE time codes • DA-5040 also functions as video equalizing amp • External power supply • Rackmountable, 4 per space • Front panel level and compensation controls • Front panel test points • Signal-to-noise ratio: DA-5030: 90dB, 0dBm in/out, 600 ohm load; DA-5040: 75dB peak video to RMS noise, weighted • Connectors used: DA-5030: RCA; DA-5040: BNC

DA-5030 Audio DA

This product is equally useful for distributing audio signals or SMPTE time code. The DA-5030 has one looping audio input and six outputs. This DA is mono only, but its input can be looped to additional DA inputs to increase the total number of outputs. The compensation adjustment can be used to offset the poor frequency response of 1/2" and 3/4" VCR audio tracks.

Accessories included: Service info, power loop cable
Options: PS-20 power supply, RM-4 rackmount

DA-5040 Video DA

This product is equally useful as either a distribution amplifier or a video equalizing amplifier. The DA-5040 has one looping input and six outputs. The input can be looped to additional DA inputs to increase the total number of outputs. The compensation adjustment can be used to equalize or compensate for high frequency loss on long cable runs. Up to 1500 feet of RG-59/U can be compensated.

Accessories Included: Service info, power loop cable
Options: PS-20 power supply, RM-4 rackmount

DA-5030/5040 Power Supply

Both DAs are powered from an external power supply. Power can come from the optional PS-20 Power Supply which furnishes 18VDC, 9W. As an alternate, any regulated 12VDC power supply can be used. (Any hum or noise present on a 12VDC power supply may not be fully filtered by the DA. Therefore, use special care in selecting a 12VDC supply.) The DAs have looping DC power connectors which allow multiple DAs to be powered from a single power supply. Each PS-20 Power Supply will operate two DA-5040 or four DA-5030.

DA-5030	\$220.00
DA-5040	220.00
RM-4 Rackmount adaptor	25.00
RM-6 Rackmount for DA-5030, DA-5040, RS-410, and RS-420	60.00
PS-20 Power supply, AC adaptor for DA5030/5040	24.00
PS-40 Power supply, deluxe version for DA-5030/5040	120.00

DA-5020 Video and Audio Distribution Amplifier

• Video and stereo audio DA combined into one unit • Broadcast quality video specs • VHS and Beta Hi-Fi quality audio specs • Rackmountable • More outputs per rack space — 12 video, 12 audio • Front panel level and frequency compensation controls • Front panel test points • NTSC and PAL operation • Signal-to-noise ratio: Video: 75dB peak video to RMS noise, weighted; Audio: 90dB, (0dBm in/out, 600 ohm load)

The DA-5020 is a versatile distribution amplifier that combines video and stereo audio into one cabinet. Twelve matched, isolated video outputs are provided from a single video input. Twelve audio outputs are provided from each of the two audio inputs. The inputs are looping or bridging so that additional DAs can be stacked to provide more outputs, such as 24, 36, 48, etc. The compensation control on the audio DA is designed to help offset the loss of frequency response encountered on 1/2" and 3/4" VCR audio tracks. The video compensation control will compensate for the loss of high frequencies on long cable runs. Up to 1500 feet of RG-59/U can be compensated.

Accessories Included: Rackmount hardware, service info

DA-5020	\$590.00
DA-5020/PAL PAL version, 230VAC	590.00



DA-5020



1032

1032 and 1032Y/C NTSC Color Encoder

• High quality, low cost R-Y, B-Y axis encoding • Ideal for non-broadcast, industrial applications • Allows the RGB source to have H and V phase matching • Contains a complete, RS-170A genlocking sync generator • Internal sync generator has stand-alone crystal mode • Operates in both upstream and downstream configurations

The 1032 changes RGB video, the 3-wire output of many character generators, cameras, etc., into composite NTSC video. The 1032 also allows the RGB signal to be "phased" or timed both vertically and horizontally with primary video. The 1032 encoder is an ideal mate to the 1500 character generator, and can also be used equally well with many other television products and systems.

The 1032 contains a complete genlocking, RS-170A sync generator that will readily lock to stable or unstable sources. It further has the ability to automatically switch over to a temperature-stabilized, internal, crystal-controlled sync generator in the event the program material is lost. Internal jumpers can be programmed to allow the unit to operate in various modes including upstream, such as an input to a switcher, or downstream, such as utilizing the 1500 character generator built-in keyer.

The 1032 will not allow encoding or non-standard, non-NTSC, or computer-generated signals. The RGB source must be 525 line, 60 field, analog, and capable of genlocking.

The 1032Y/C converts RGB signals to two-wire, NTSC, Y-C (3.58MHz) video fully compatible with S-VHS VCR's. The program or genlock input can be either composite or two-wire Y/C. This unit has a key input connector and a built-in, two-channel Y/C keyer, an external key clip level adjustment, and an internal key signal polarity-reversal switch. When mated with a Laird 1500 Series Character Generator, the encoder turns the CG output into NTSC, Y/C video. The CG's key output can also be fed to the encoder key input. This allows CG text to be keyed over external Y/C video by the encoder. The internal keyer will maintain the Y/C signals in two independent channels.

This model also has a composite, single wire, encoded output that can be used regardless of whether the input video is composite or Y/C. This feature permits the 1032Y/C to be used in a total composite system, yet allows full upgrading later to a Y/C system without scrapping either the CG or the encoder.

1032	\$1325.00
1032Y/C	1895.00

LAIRD TELEMEDIA, INC.

Video Processors/Routing Switchers

VC-2000 Professional Video Enhancer/Processor

- Ideally suited to 1/2" and 3/4" videotape correction
- Copy-guard stabilizer
- Fade to black control
- Four audio and video outputs
- Rackmountable
- Automatic regeneration of all sync signals
- Image enhancement and noise reduction
- Signal-to-noise improvement-luminance: Up to 6dB with "Noise Level"
- Useful as a remote camera control unit
- Optional plug-in RF modulator
- Signal-to-noise ratio: 60dB
- Connectors used: BNC (video), RCA (audio), F (RF)

The unit automatically generates sync and blanking signals, both horizontal and vertical, plus color burst signals. The insertion of synchronizing signals plus back porch clamping permit the VC-2000 to solve a variety of stability problems. Jitter, flicker, bending, and rolling are automatically corrected in most cases.



VC-2000

Accessories included: Rackmount hardware

- VC-2000** \$860.00
- VC-2000/PAL** PAL version, 230VAC 860.00
- RFC-34 RF Modulator**, channel 3 or 4 (NTSC) 70.00

VC-2500 Automatic Video Processor

- Automatically maintains correct video levels
- Automatically maintains stable, regenerated sync
- Ideal for driving RF modulators
- Ideal for video tape duplicating
- Clamp circuit removes hum and flicker
- Four video and audio outputs
- Available in NTSC or PAL models

The VC-2500 is ideal for applications where it is necessary or desirable to provide technically correct levels and stable video at all times, automatically and unattended. The VC-2500 is a video processor and as such it completely regenerates all horizontal and vertical sync and blanking signals. The sync regeneration along with an active back porch clamp circuit will



VC-2500

correct most of the stability problems encountered with video. Problems such as jitter, satellite receiver flicker, bending and rolling are corrected automatically in most cases.

- VC-2500** \$560.00
- VC-2500/PAL** PAL version, 230VAC 560.00
- RFC-34 RF Modulator**, channel 3 or 4 (NTSC) 70.00

**RS-400, RS-410, and RS-420
Passive Routing Switchers**

RS-400 Passive Routing Switcher

- 12 video inputs, 1 video output, 12 stereo audio inputs with stereo outputs
- Unbalanced audio
- Audio follow video switching
- Pushbuttons have self-indicator feature
- Suitable for desktop mounting
- Rackmount hardware

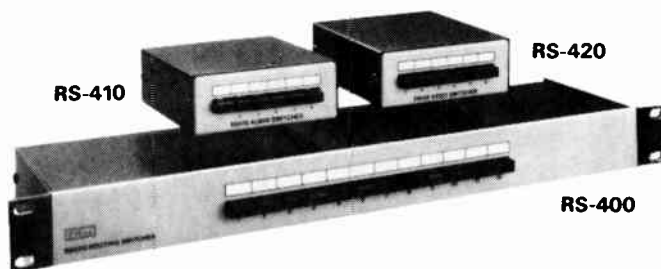
RS-410 Passive Routing Switcher

- Six stereo audio inputs with output for each channel
- Unbalanced
- Suitable for desktop mounting
- Four switchers can be rackmounted in optional RM-6 rackmount
- Pushbuttons are non-indicating

RS-420 Passive Routing Switcher

- Six video inputs, one video output
- Pushbuttons are non-indicating
- Suitable for desktop mounting
- Four RS-410/RS-420 switchers can be rackmounted in optional RM-6 rackmount

These three switchers can be used in general purpose audio or video routing applications where selection from multiple sources is required. They should not normally be used when the switching must occur "on line" or during a program in process, because they could introduce a glitch at the switching point.



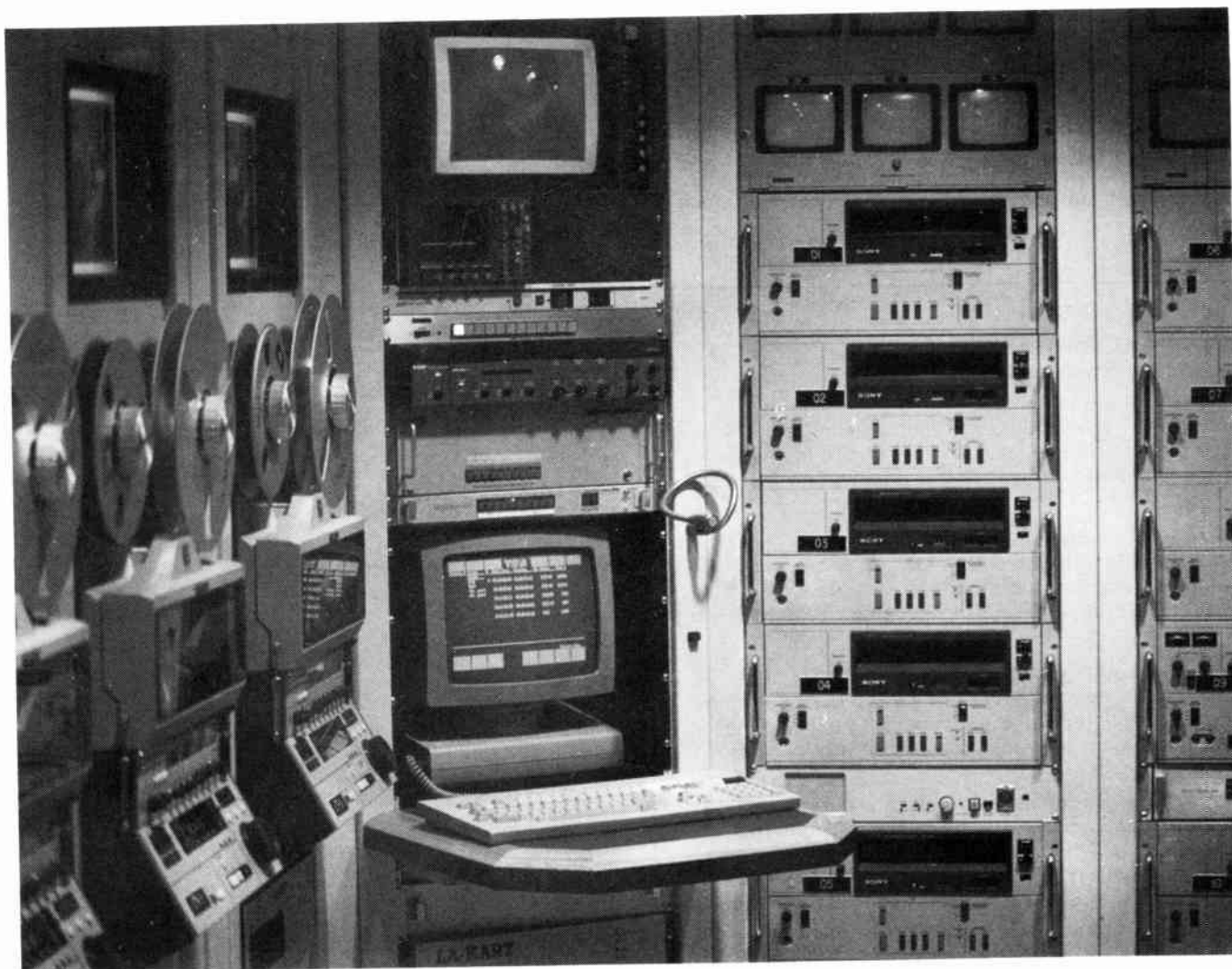
The switchers contain no active electronics and consume no power. High quality switches with gold contacts are used for high reliability operation. Gold plating is also used on all the audio input and output connectors to improve reliability. All unselected inputs are internally terminated to help minimize crosstalk. All pushbuttons are interlocking.

- RS-400 12x1 video/stereo audio** \$300.00
- RS-410 6x1 stereo audio** 100.00
- RS-420 6x1 video** 100.00
- RM-6 Rackmount for RS-410/420** 60.00

LAKE SYSTEMS CORP.*Broadcast Automation***Highlights of the new generation in fully automatic videotape machine control programming — LaKart II from Lake Systems Corporation.**

- LaKart II controls any format cassette machine: U-matic, Beta, M2 or new digital machines
 - Powerful, multi-tasking computer allows several simultaneous operations: on-air, striping and traffic functions
 - Component processing for enhanced quality available for U-matic
 - Tape uses SMPTE/EBU time coding for accuracy with user bits for program ID
 - Individually programmable VCR pre-roll to get tapes to air fast
 - Tape status for each event on screen so operator can correct problems prior to air
 - Prints "as run" log and tape "pull list"
- LaKart II controls external tape machines in the same manner as it operates cassette machines. Time code and user bits are utilized on spare audio track
 - "User friendly" software with single keystroke execution and custom screen setup by individual user
 - Multiple cuts per cassette to save tape costs
 - 2500 catalog events in RAM, 1000 events in execution, unlimited events and catalog on disk
 - Uninterruptable power source standard for computer protection
 - Software options include:

Traffic interfaces to COLUMBINE, JDS/BIAS, ENTERPRISE, VCI and COMPULINK	
Delay Record	General Purpose Interface
Compile	Master Control
Satellite Recording	Switcher Interfaces



LEADER INSTRUMENTS CORP.

Test Equipment

LCG-396 NTSC Color Bar Pattern Generator

The LCG-396 is a versatile NTSC video generator suitable for testing, servicing and evaluating a broad range of video systems including video tape recorders, CATV and MATV systems, video monitors and television receivers. It provides 11 test patterns including the standard NTSC color bars for measuring and adjusting color purity, white balance, luminance, chrominance, and convergence. Outputs include composite video, H or V scope trigger, subcarrier and RF (CH3 or 4). Other features include variable chroma, luminance and set-up levels, and selectable interlaced or progressive scanning. Also available as an option are RGB outputs on the rear panel for testing color computer display systems and video game color circuitry. The LCG-396 is supplied with a comprehensive user's manual including detailed VTR, TV and monitor application data.

- LCG-396** \$ 995.00
- LCG-396 PAL M** PAL M version of LCG-396 1265.00
- LCG-398B** SECAM III color bar generator 1850.00
- LCG-399A** PAL B color bar generator 1995.00
- LCG-402** PAL N color bar generator 1450.00

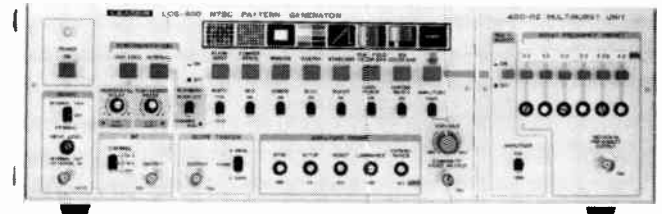


LCG-396

LCG-400 NTSC Video Sync/Test Generators

The LCG-400 provides both genlock and internal synchronization with the full range of video signals needed for testing and adjusting monitors, cameras, VCRs and overall performances of color and B & W TV systems. It is available with either multiburst (LCG-400M) or sweepmarker (LCG-400S) generators. The LCG-400 will sync with all standard composite video and blackburst signals including those from quad head and helical scan VTRs. Patterns include EIA and full field color bars, 5-step modulated staircase, 8 color rasters, crosshatch and dot convergence, circle and corner marker with on/off control of chroma and luminance. Both interlace and progressive scanning are provided. Outputs include composite video, subcarrier, blackburst, selectable vertical or horizontal drive, and CH 3/4 RF. Units are supplied for either bench-top or rackmounting (rails included).

- LCG-400M** \$2295.00
- LCG-400S** 2295.00

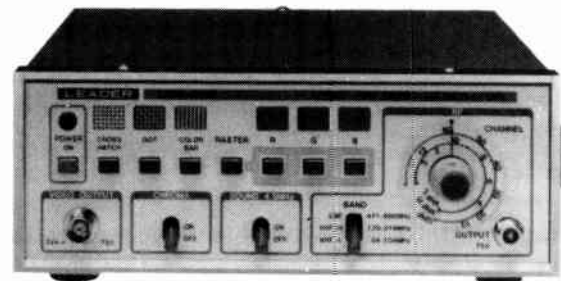


LCG-400

LCG-409 Battery Powered NTSC Pattern Generator

A fully portable, battery-operated NTSC pattern generator, the LCG-409 provides video test patterns specified in the service literature for consumer and industrial VCRs, VTRs, video monitors, TV receivers, projection models, and other video components and systems. Patterns available into a 75 ohm video load are crosshatch, dots, full-field NTSC color bars, full raster signals of white (100%), yellow, cyan, green, magenta, red, blue and black (set-up). Chroma may be switched off at the front panel for a luminance gray scale. An RF modulator covering all U.S. broadcast VHF and UHF channels facilitates receiver checks. In addition, an internal 1kHz audio tone frequency modulates a 4.5MHz sound carrier to provide sound and tuning checks of receivers and tuners. A front-panel switch permits the sound carrier to be switched off. The unit is powered by four "C" cells for complete portability, as well as isolation from the power line.

- LCG-409** \$545.00



LCG-409

LEADER INSTRUMENTS CORP.

Test Equipment

LCG-410 Video Sync/Test Signal Generator

Designed in response to the need for a source of specialized test signals for calibration and adjustment of professional video equipment, the LCG-410 Digital Video Test Signal Generator features precision NTSC EIA, SMPTE and full field color bars, staircase, modulated staircase, multiburst (50% and 100%), 2T sin²/12.5T modulated sin² pulse and bar signal, window, dot/crosshatch, full red and white rasters.

All signals are synthesized from a 10-bit digital to analog converter for precision and long term stability. Signals comply fully with the requirements set down in EIA RS-170A.

The unit occupies one vertical unit of rack space (1³/₄") and weighs only 13.2 lbs. Provision is included for remote control and subcarrier frequency accuracy is ± 10Hz.

LCG-410 \$2,695.00



LCG-410

LCG-420 NTSC Sync/Test Signal Generator

The LCG-420 main frame features a precision sync generator, color bar generator, convergence generator and routing switcher. Up to three modules can be accommodated: a multiburst/video-sweep unit, linearity generator and a pulse-bar unit.

The sync generator features full RS-170A compliance using the internal reference. The sync generator will lock to externally-supplied sync/subcarrier, or will genlock to composite video or blackburst.

The color bar generator provides full field, EIA or SMPTE bars as well as split-field color bars with Y reference, solid red or reversed color bars in the lower half. Full raster displays of primary and complementary colors at 75% amplitude are also available.

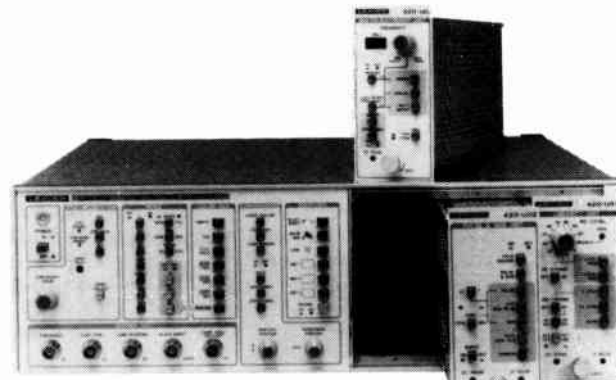
The convergence section of the main frame provides a combined dot crosshatch pattern set up for use with the Ball chart. The convergence pattern is also available with larger squares (fewer intersections) superimposed over the window and as a border on the color bar pattern.

The 420-U01 Multiburst/Sweep Module offers standard multiburst signals with the frequency of the last burst variable. A three digit readout shows the last burst frequency, as well as the frequency of a variable drop-out marker in the sweep mode, and the frequency of the CW video signal in the manual mode. The sweep signal repeats at the field rate and reaches 10MHz.

The 420-U02 Pulse-Bar Module provides the basic test signals widely used to analyze transient performance including sin² pulse, bar, modulated 12.5T sin² pulse and modulated bar. A selection of T or 2T pulses adapts the signal to 8MHz or 4MHz systems, and both a field square and window signal may be selected for field and line measurements of tilt or sag.

The 420-U03 Linearity Module provides the signals widely used to measure linearity in the form of differential gain and phase. The unit features 5 and 10 step modulated staircase as well as modulated ramp. In addition, full raster signals at levels from zero to 100 IRE in 10 IRE steps can be selected with added chroma at single and triple levels. A bounce signal to check clamps and alternate switching of selection are also featured in this module.

LCG-420 \$5,495.00
420-U01 Plug-in Multiburst Sweep Module. 1,695.00
420-U02 Pulse and Bar Plug-in Module. 1,335.00
420-U03 Linearity Plug-in Module 1,195.00



LCG-420



LVG-1604

LVG-1604A 125MHz Programmable Video Generator

Designed to satisfy the signal generation requirements of the most advanced high resolution raster scan CRT displays, the LVG-1604 Programmable Video Generator provides the user with a wide variety of standard as well as fully programmable patterns. Video test patterns can be easily generated with a dot clock rate of up to 131MHz and rasters of up to 4096 pixels by 4096 lines depicting standard or user defined patterns. A wide range of special functions allows the user complete control over the unit's activities making the unit one of the most flexible programmable video generators on the market today.

The LVG-1604 has the capability of storing 100 sets of display conditions in two separate mediums; battery backed RAM and EPROM for a total storage capability of 200. An RS-232-C port enables the user to burn the user's own EPROM or to connect the unit to a computer for unlimited storage capability. Display conditions are programmed and stored in terms of pattern and character selection, RGB, on/off and insert, sync status and raster format. Raster formats can be specified with variable parameters such as clock frequency, character cell size, character cells displayed, number of raster lines, horizontal and vertical blanking, horizontal and vertical sync width, interlace status and other factors which define the electrical characteristics of the pattern(s) displayed. Video outputs are provided in analog, TTL and ECL formats.

The unit is portable and requires no external connections during programming. Furthermore, the unit's ease of operation makes the LVG-1604 extremely valuable since programming may be done in the lab, at the user's desk or even at home with minimal effort.

LVG-1604A \$13,400.00

LEADER INSTRUMENTS CORP.

Test Equipment

LMS-237 TV Stereo Signal Generator

The LMS-237 TV Stereo Signal Generator provides all important stereo TV test signals, such as baseband audio (including SAP), baseband video and modulated carriers on TV channels 3 and 4. Signals comply with the popular Zenith/dbx system.

Complete control of the audio signal is available from the LMS-237. In addition to the internal audio oscillator, jacks for external modulating signals are also provided. Noise reduction may be selected on the L-R and SAP channel, and all components of the stereo signal can be controlled. Four of the most important video patterns are provided—dots, crosshatch, color bars and white raster.

LMS-237 \$5500.00
 GPIB Option for LMS-237 200.00

LMS-238 TV Stereo Signal Generator

The LMS-238 is a TV stereo generator designed to test and align MTS stereo decoders. Test signals are provided for both stereo and SAP operation. Outputs at CH-3/CH-4, VIF, SIF and composite, facilitate rapid troubleshooting to the area of circuit malfunction.

On-screen character displays (L+R, L, R, L-R) indicate the selected mode of generator operation. The four selectable, internal modulation frequencies (300Hz, 1kHz, 3kHz, 8kHz) at 14.1% modulation (-17dB) are supplied. The unit features low distortion, excellent stereo separation and frequency stability.

LMS-238 \$600.00

LFC-944B VHF/UHF Field Strength Meter

The LFC-944B is a portable battery operated field strength meter designed for testing and measuring the performance of CATV and MATV systems. It provides for measuring levels of -40 to +60dBmV on VHF channels and -30 to +40dBmV on UHF channels. The meter scale is also calibrated to make measurements in microvolts. An accurate attenuator provides up to 70dB attenuation in 10dB steps. Accurate detent tuning is provided for VHF channels and UHF tuning for channels 14 to 83 is with a continuous control. The LFC-944B is supplied with a sturdy carrying case.

LFC-944B \$595.00

LFC-945 CATV Level Meter

The LFC-945 CATV Level Meter is a rugged, accurate instrument for measuring signal levels in CATV and MATV Systems. It covers the two frequency ranges 40 to 300MHz and 470 to 890MHz with accuracies of ± 1.5dB and ± 2dB respectively. Tuning of individual channels is facilitated by large dials marked with both frequency and channel, an electronic fine tuning control and a built-in sound amplifier and a loud-speaker which enables separate field strength measurements of the audio and video signals.

Three 20dB switchable attenuators and a 25dB meter scale provide an input signal range of -35 to +60dBm (0dBm = 1mV).

The LFC-945 will also measure AC voltages on the cable system from 0 to 50VAC with an accuracy of ± 5% fs.

Power is supplied by rechargeable NiCad cells and the power switch is automatically set to off when the protective cover is closed.

The LFC-945 weighs just 8.8 lbs. and is supplied with a battery charger, rechargeable batteries, 300:75 ohm balun and nylon web carrying/operation strap.

LFC-945 \$895.00

LSW-333 FM/VHF/UHF

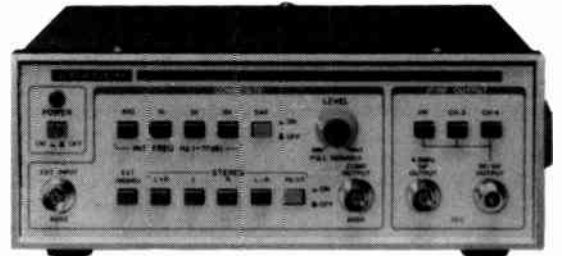
All-Channel Sweep/Marker Generator

The LSW-333 is a complete test and alignment instrument for the RF and IF tuned circuits of VHF and UHF television receivers and FM radios. It is used in production testing and aligning, and in servicing. Front-panel displays of ideal IF and chroma response curves with marker positions permit fast and precise alignment in accordance with manufacturers' recommendations. The LSW-333 has three bias supplies, selectable marker tilt (vertical or horizontal), and vertical and horizontal polarity reversal.

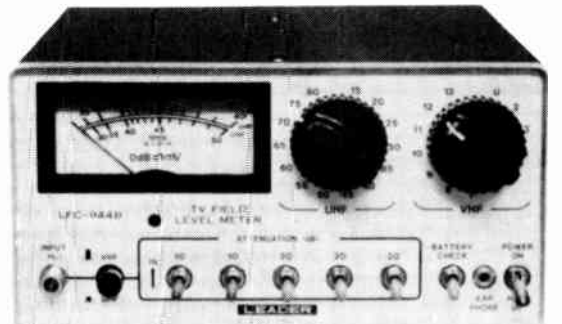
LSW-333 \$995.00



LMS-237



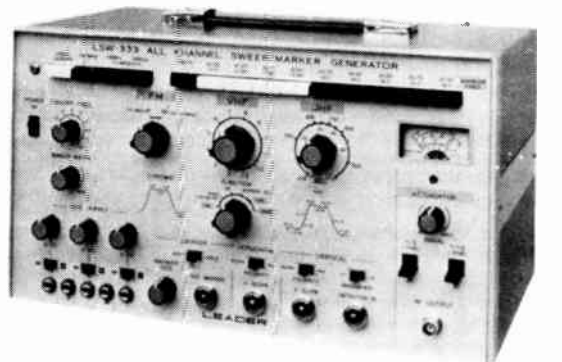
LMS-238



LFC-944B



LFC-945



LSW-333

Prices and Specifications Subject to Change Without Notice.

LEADER INSTRUMENTS CORP.

Video Test Equipment

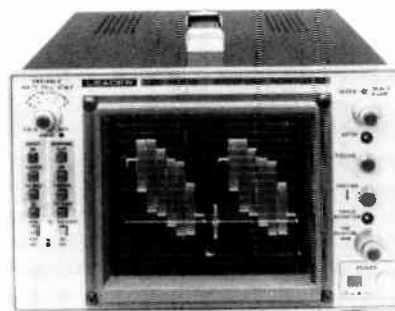
LBO-5860B/H Waveform Monitor

The LBO-5860B is an economical half-rack Waveform Monitor. The unit has an internal graticule and a 7kV (16kV "H" model) accelerating potential for bright, easy-to-read displays. Total RGB and YRGB (optional) capability is available and horizontal sweep speeds of 2H (2 lines), 1μs/div (expanded 2 lines), 2V (2 fields) and 2V Mag (expanded 2 fields) are standard.

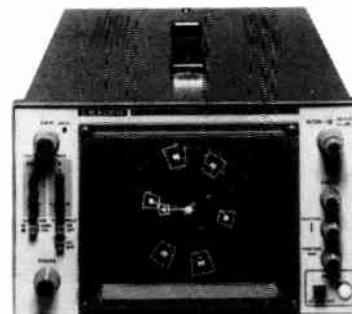
The LBO-5860H Waveform Monitor offers all these features in addition to allowing the Vertical Internal Test and Reference signals to be displayed by a front panel line selector. Lines 7 through 21 can be selected from field one or two without interference from the active portion of the video signal. The instrument also has a blanking output to blank the companion Vectorscope during the active portion of the video signal allowing differential gain and phase measurements to be accomplished easily.

The LBO-5860B/H are half-rackmountable and can be mounted side by side with the LVS-5850B Vectorscope. The LBO-5860H is also available in a PAL/SECAM version as the LBO-5861A.

- LBO-5860B NTSC \$ 1740.00
- LBO-5860H NTSC (lines 7-21 line select) 1995.00
- LBO-5861A PAL 2475.00
- LBO-5865 NTSC (full line select). 2695.00



LBO-5860B



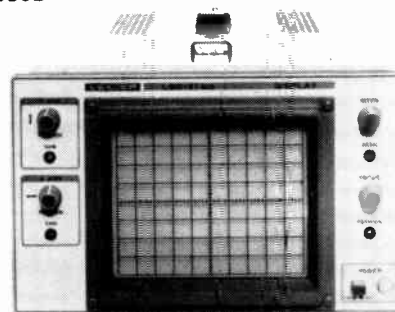
LVS-5850B

LVS-5850B Vectorscope

The LVS-5850B Vectorscope provides a convenient method for observing and measuring the relative phase and amplitude of chrominance signal components. It utilizes a unique technique which electronically displays the "inner boxes" which represent error limits of ± 2.5° and ± 2.5 IRE units. This improves the accuracy of phase and amplitude adjustments by eliminating errors due to CRT non-linearities. The LVS-5850B includes three loop-through inputs including a dedicated external subcarrier reference input which is front panel selectable. Either of the two composite video loop-through inputs can also be selected as the reference signal and all three inputs can be displayed individually.

The unit is also equipped with a Z-axis blanking input to provide blanking during the active portion of the video signal and unblanking during the VITS signal for a stable, jitter-free display. A test circle pattern is also selectable for a quick calibration check of the instrument. Another front panel pushbutton provides for either 100% or 75% amplitude levels. A gain control, with a detented calibrated position, provides for continuous amplitude adjustment. A phase control permits rotating the display through 360°. The LVS-5850B is supplied in a protective carrying case or in a 1/2" rack width configuration.

- LVS-5850B NTSC \$ 1995.00
- LVS-5851A PAL Vectorscope 2660.00



LBO-51MA

LBO-51MA Display Monitor

For special low-cost applications — The LBO-51MA is driven by R-Y and B-Y video signals, from a precision chroma decoder or a Tektronix 650 HR series picture monitor equipped with R-Y and B-Y outputs. The LBO-51MA has the added capability of displaying individual VITS and VIRS lines* when used with LBO-5860 waveform monitor.

The unit's CRT display area is 8 x 10cm. Combines 3MHz bandwidth on X and Y axes, with 4MHz on Z axis. Phase shift between X and Y axes is less than 3° at 1MHz (R-Y and B-Y signals are approximately 600kHz).

The absolute accuracy of the LBO-51MA display is dependent upon the accuracy of the precision chroma decoder being used to drive it.

*VITS and VIRS lines may be observed only when the signal delay inherent to the chroma decoder being used is not excessive (10 to 15μs).

- LBO-51MA \$ 1195.00



LVM-5863A

LVM-5863A EFP Color Monitor/Waveform Monitor

The LVM-5863A Monitor has full monitoring capabilities for video cameras, VCRs and audio recorders. Its 2H/2V waveform monitor provides the most useful displays an operator can have. A switchable IRE filter facilitates lens-opening checks. And the 1V/0.25V selector acts as a 4X magnifier to simplify setup level and black-balance checks. Yet, the LVM-5863A is easy to use since controls are kept to a minimum. And, it makes field productions as technically and artistically correct as they can be.

- LVM-5863A \$2150.00
- LBO-5864 EFP Waveform Monitor only 1350.00

LECTROSONICS, INC.

Wireless Microphone System

**VHF Pro Series Systems/
VHF Pro Miniature Systems**

This system is the result of over 10 years of design and manufacturing experience in wireless microphones. It embodies the very latest circuitry available. You are assured of complete freedom of movement and freedom from worry. The system operates on the interference-free "high band" channels which provides operating range up to a quarter-mile. At normal distances, the transmitter signal is so strong that it will completely mask out RF noise from devices such as computers and electronic organs.

The transmitter and receiver are both housed in solid machined aluminum for rugged durability. A host of useful features make the system extremely easy to use with virtually any type of sound or videotaping system. Many components are available today that simply didn't exist a few years ago. These components provide radical improvements in performance, at lower prices than ever before possible.

M119/M140 Microphone

Freedomike wireless systems are supplied with a tiny high quality lavalier microphone. M119 is an omni-directional model. M140 is a cardioid model.

The lavalier microphones include:

- Tie tack mount
- Clip on tie bar mount
- Clip on "goody" mount (excellent for thin fabrics)
- Windscreen

M185 Lavalier Transmitter

Superlative RF and audio performance housed in machined aluminum. 5 pin input connector matches any microphone available. Modulation LED's on control panel allow precise, quick gain adjustments. Self-adjusting battery compartment fits any alkaline 9V battery.

Specifications

Audio Output:	Variable from -40dBm to +3dBm
Antenna Input:	Rear panel BNC connector 50 ohm
Controls:	Front panel On/Off slide switch Front panel output level control knob Red RF LED indicates carrier "On" Red power LED Two red modulation level LED's: -20 & 0dB
Indicators:	
Weight:	9.5 oz. with battery
Dimensions:	1.1 x 2.8 x 4.6"
Operating Frequencies:	150 to 216 MHz crystal controlled
Sensitivity:	2.0µV for 50dB S/N ratio (companded) 1.7µV for 30dB S/N ratio (w/out compander)
Signal-to-Noise Ratio:	100dB flat; 106dB A-weighted
Squelch Quieting:	Greater than 100dB
AM Rejection:	-40dB (10µV to 0.1V input levels)
Modulation Acceptance:	± 15KHz
Spurious/Image Rejection:	Greater than 100dB
Power Requirements:	9V batt., external 12VDC, 110VAC via supplied Ch-12 adapter
Power Consumption:	35mA max. 12 to 16 hour battery life



CR185 M140 M185

Pro Miniature System

Lavalier System includes:

- M185 Transmitter
- CR185 Mini-Receiver
- M140 Cardioid Microphone

Pro Miniature Lavalier System \$1295.00

Handheld System includes:

- H185 XLR Plug-on transmitter
- CR185 Mini-receiver
- without microphone

Pro Miniature Handheld System \$1295.00



CR185 M185

Pro Miniature Lavalier System

System includes:

- M185 Transmitter
- CR185 Mini-Receiver
- M140 Cardioid Microphone

Pro Miniature Lavalier System \$1295.00

Pro Miniature Handheld System

System includes:

- H185 XLR plug-on transmitter
- CR185 Mini-receiver
- without Microphone

Pro Miniature Handheld System \$1295.00

Refer to Green Section for Addresses and Telephone Numbers.

LEE COLORTRAN, INC.

Lighting Kits

Reporterlight Kits — HMI Portable/Location Lighting

270W Reporterlight Kit I

Kit includes:

- 310-002 Lamphead, manually operated focusing • 118-101 4-Leaf Barndoor • 171-052 Electronic ballast to operate on mains, including mains cord • 130-102 Diffusion filter in pouch • 130-202 Conversion filter in pouch • 148-202 Kit I Carry Case • 476-655 HMI lamp 270W, single ended socket

320-002 \$4700.00

270W Reporterlight Kit III A

Same as Kit I with the following exceptions:

- 310-003 Lamphead with motor-driven focusing (for remote control—alternative to 310-002)

320-004/A \$5015.00

270W Reporterlight Kit III B

Same as Kit II with the following exceptions:

- 310-003 Lamphead with motor-driven focusing (for remote control—alternative to 310-002)

320-004/B \$5265.00



Reporterlight

Production Kit—Film/ENG Lighting

Designed to illuminate a 10'H x 15'W x 10'D area.

Applications include news, sports, weather, commercials, instruction, etc. Total connected load 45.8A at 120V.

Kit includes:

- (3) 100-515 1000W Fresnel • (3) 118-013 8 Leaf Barndoor • (3) 142-101 25' Extension Cable • (3) 152-053 Compact Stand w/Casters • (1) 142-215 Outlet Box w/2 Outlets 25' Cable • (3) 176-097 1000W Lamp • (2) 104-031 Broad • (2) 152-053 Compact Stand w/Casters • (2) 176-022 1000W Lamp • (1) 104-041 Multi-Broad • (2) 120-007 Diffusion Frame • (1) 142-101 25' Extension Cable • (1) 152-053 Compact Stand w/Casters • (1) 176-024 500W Lamp • (2) 148-001 Case

150-062 \$4500.00



Production Kit

Location Lighting Kit—Complex Lighting Set-Ups

One case carries all equipment. Channel leg stands for reliable support. Draws 41.6A at 120V and 14.5A at 220V.

Kit includes:

- (2) 100-301 Multi-10 • (2) 118-013 8-Leaf Barndoor • (1) 122-147 Scrim Set—Single Half Single • (2) 176-012 1000W, 120V Lamp (150-056 Kit) • (2) 176-015 800W, 220V Lamp (150-057 Kit) • (2) 104-051 Mini-King • (2) 118-003 4-Leaf Barndoor • (1) 148-001 Case • (2) 152-051 Mini-Stand with 5/8" Stud • (2) 152-052 Compact Stand • (2) 176-022 1000W, 120V Lamp (150-056 Kit) • (2) 176-027 800W, 220V Lamp (150-057 Kit)

150-056 (120V) \$1900.00

150-057 (220V) 1900.00



Location Lighting Kit

Flight Kit Fast, Simple Set-Up

Accessory holders on Multi-6 for simple set-up.

Draws 27.5A at 120V and 15A at 220V.

Kit includes:

- (2) 100-151 Multi-6 • (2) 118-013 8-Leaf Barndoor • (1) 122-147 Scrim Set—Single, Half Single • (2) 176-002 650W, 120V Lamp (150-058 Kit) • (2) 176-007 800W, 220V Lamp (150-059 Kit) • (2) 104-051 Mini-King • (2) 118-003 4-Leaf Barndoor • (1) 148-007 Case • (3) 152-051 Mini-Stand with 5/8" Stud • (1) 156-001 Gaffer Grip • (2) 176-022 1000W, 120V Lamp (150-058 Kit) • (2) 176-027 800W, 220V Lamp (150-059 Kit)

150-058 (120V) \$1800.00

150-059 (220V) 1800.00



Flight Kit

LEE COLORTRAN, INC.

Lighting Kits

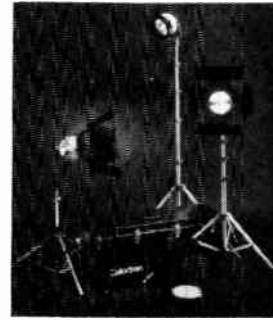
Color Beam 800 – Fast Set-Up

Uses three cool touch Color Beam 800 units. Total connected load 16.3A at 120V and 11A at 220V.

Kit includes:

- (3) 400-201 Color Beam 800 • (1) 122-147 Scrim Set—Single, Half Single • (1) 148-007 Case • (3) 152-051 Mini-Stand with 5/8" Stud
- (3) 118-013 8-Leaf Barndoor • (3) 126-027 Accessory Holder • (3) 176-002 650W, 120V Lamp (150-060 Kit) • (3) 176-007 800W, 220V Lamp (150-061 Kit)

150-060 (120V) \$1540.00
 150-061 (220V) 1540.00



Color Beam 800

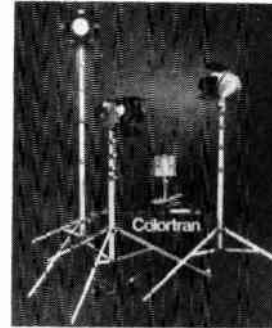
Pro-Kit IV—Foreign Location Work

Designed for use with 120V or 240V lamps for foreign location work. Draws: 20A at 120V and 11A at 220V.

Kit includes:

- (2) 100-091 Mini-Pro • (2) 104-341 Mini-Broad • (3) 118-016 4-Leaf Barndoor • (1) 142-011 25' Extension Cable • (1) 148-030 Metal Case • (3) 152-050 Mini-Stand with 1/2" Stud • (1) 156-012 Gaffer Grip • (2) 176-002 650W, 120V Lamp (150-052 Kit) • (2) 176-092 600W, 120V Lamp (150-052 Kit) • (2) 176-007 800W, 220V Lamp (150-053 Kit) • (2) 176-094 650W, 220V Lamp (150-053 Kit)

150-052 (120V) with metal case \$1280.00
 150-053 (220V) with metal case 1280.00



Pro-Kit IV

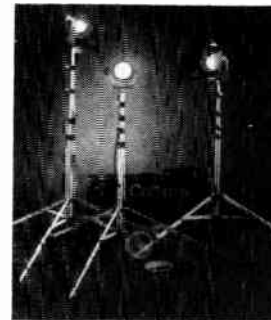
Mini-Pro Kit

Designed for use with 30V battery power, 120V, or 220V. Draws 15A at 120V and 8A at 220V.

Kit includes:

- (3) 100-091 Mini-Pro • (2) 118-016 4-Leaf Barndoor • (1) 122-137 Scrim Set—Single, Half Single • (1) 142-011 25' Extension Cable • (1) 148-030 Metal Case • (3) 152-050 Mini-Stand with 1/2" Stud • (3) 176-092 600W, 120V Lamp (150-050 Kit) • (3) 176-094 650W, 220V Lamp (150-051 Kit)

150-050 (120V) with metal case \$1100.00
 150-051 (220V) with metal case 1100.00



Mini-Pro Kit

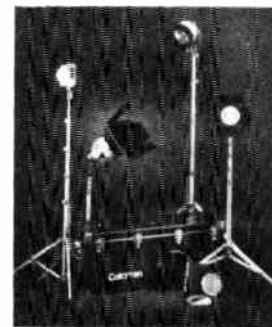
Camerman's Lighting Kit

All equipment fits in one case. High output lighting equipment for optimum production lighting. Draws 27A at 120V and 14.5A at 220V.

Kit includes:

- (2) 400-201 Color Beam 800 • (2) 126-027 Accessory Holder • (2) 118-013 8-Leaf Barndoor • (1) 104-341 Mini-Broad • (2) 118-016 4-Leaf Barndoor • (1) 122-137 Scrim Set—Single, Half Single • (1) 148-007 Case • (2) 152-050 Mini-Stand with 1/2" Stud • (2) 152-051 Mini-Stand with 5/8" Stud • (4) 176-002 650W, 120V Lamp (150-054 Kit) • (4) 176-007 800W, 220V Lamp (150-055 Kit)

150-054 (120V) \$1595.00
 150-055 (220V) 1595.00



Camerman's Lighting Kit

Battery Belt Kit

Batteries are rechargeable NiCad Cells. Belt comes complete with 14-hour overnight charger and an integrated cable. Charger designed for 120 and 240V input power.

150-063 \$1500.00

Kit includes:

- (1) 100-091 Mini-Pro • (1) 140-003 30VDC Cord • (1) 140-021 Battery Belt w/Charger unit (120/240V) • (1) 148-030 Carry Case (Metal) • (1) 156-005 Mini-Pro Handle • (1) 176-090 250W, 3400°K, 30V Lamp, 25 hours

150-063 \$1550.00



Battery Belt Kit



Mini-Pro With Handle

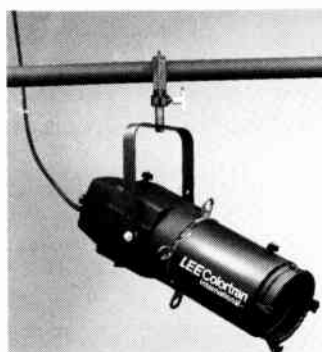
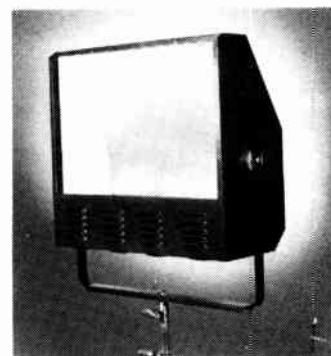
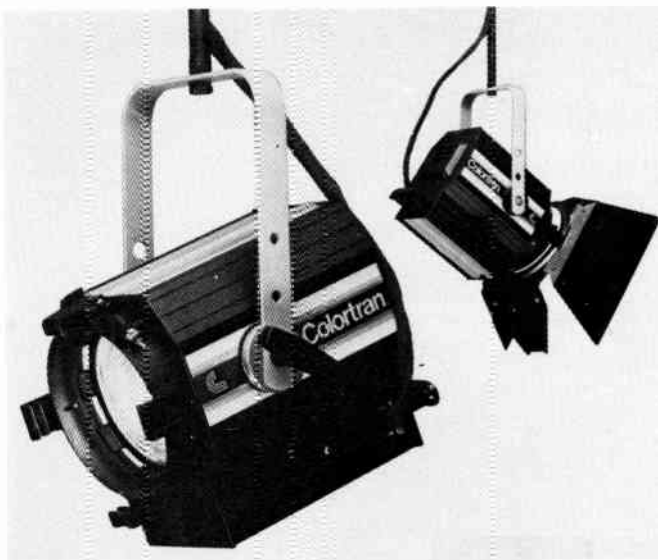
Optional

140-022 Battery Belt with fast charge capability in place of 140-021 Add \$100.00

140-023 For High Speed Charger Add 820.00

LEE COLORTRAN, INC.

TV Lighting



6" and 8" Fresnels

- Lamp sockets are U.L. recognized, medium bipost 6" units, and mogul bipost 8" unit
- Easy handling, lightweight aluminum construction
- The combination of diecast and extruded aluminum promotes heat exchange and rapid dissipation. Combine this with flow through ventilation and you have a cooler operating unit with longer lamp and gel life
- An improved rack and pinion design with Torlon® insulators for a smooth focusing action
- Lens door is diecast with removable beefed-up gel clips and a spring loaded safety clip for rugged trouping requirements
- All operating controls are thermally insulated for cool handling operations
- The ultimate fresnel performance...high intensity spot with a smooth even flood field

100-516	1kW 6" Television Fresnel	\$230.00
118-013	Eight Leaf Barndoor	.66.00
120-005	Color Frame	.5.00
122-147	Set, Single, Half Single Scrim	.32.50
130-003	Dichroic Filter	.195.00
138-045	Combo Stud with Flat Yoke	.17.00
138-049	6" High Hat	.18.00
138-059	Safety Cable	.9.00

Lamps

176-102	500W, 3200°K, 100 hour	\$.62.00
176-147	750W, 3200°K, 200 hour	.90.50
176-097	1000W, 3200°K, 250 hour	.99.00
476-049	650W, 3200°K, 200 hour	POR
476-061	1000W, 3200°K, 200 hour	POR

100-526	2kW 8" Television Fresnel	\$345.00
118-032	Eight Leaf Barndoor	.105.00
120-015	Color Frame	.6.50
122-148	Set, Single, Half Single Scrim	.35.00
138-045	Combo Stud with Flat Yoke	.17.00
138-051	8" High Hat	.25.00
138-059	Safety Cable	.9.00

Lamps

176-161	1000W, 3200°K, 250 hour	\$.113.00
176-157	1500W, 3200°K, 300 hour	.145.00
176-075	2000W, 3200°K, 400 hour	.157.00

Studio Lighting

A complete line of "Made in America" production equipment, for your television studio requirements. Ellipsoidal effects projectors with field angles from 5° to 40° for throws up to 100'. Lightweight and efficient, Focusing Scoops, Soft Lights, Cyc Strips for fill and cyclorama lighting requirements. Plus variable load suspension units and distribution equipment custom built to your needs.

TV Studio Packages

Description	120V	220-240V	List
	Cat. No.	Cat. No.	
15 x 20 Standard Studio Package	181-001	181-011	POR
15 x 20 Expanded Studio Package	181-002	181-012	POR
20 x 30 Standard Studio Package	181-003	181-013	POR
20 x 30 Expanded Studio Package	181-004	181-014	POR
30 x 40 Standard Studio Package	181-005	181-015	POR
30 x 40 Expanded Studio Package	181-006	181-016	POR
40 x 60 Standard Studio Package	181-007	181-017	POR
40 x 60 Expanded Studio Package	181-008	181-018	POR
60 x 80 Standard Studio Package	181-009	181-019	POR
60 x 80 Expanded Studio Package	181-010	181-020	POR

LEE COLORTRAN, INC.

Fresnels/Ellipsoids

6" and 8" Theater Fresnel

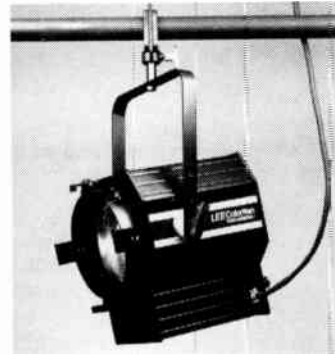
• 1000W lamp (6") 2000W lamp (8") • Beam candlepower: Spot-175,000 Flood-11,200 (6") Spot-358,000 Flood-37,500 (8") • Lamp sockets U.L. recognized, medium prefocus (6") mogul prefocus (8") • Easy handling lightweight aluminum • Combination of diecast and extruded aluminum promotes heat exchange and rapid dissipation • Improved rack and pinion design with Torlin® insulators for smooth focusing • Lens door is diecast with removable gel clips and a spring loaded safety clip for rugged trouping requirements • All operating controls are thermally insulated for cool handling • High intensity spot • C clamp included with all hanging models

- 213-515* 6"\$205.00
- 213-525* 8"365.00

1kW, 2kW, and 5kW Pole Op Fresnels

• Rugged sheet metal construction with diecast reinforced accessory clips built to withstand trouping and rough handling • Optical system designed for maximum photometric output • Double wall construction for optimum cooling • U.L. recognized floating diamond four point contact mogul bipost socket (patented) • All operator controls are thermally insulated • Rapid turn, rack and pinion focus mechanism for manual and pole operated versions for international applications • Applications: key lighting • C clamp included with all hanging models

- 1000W**
- 100-201 Stand Model 6" Lens\$418.00
 - 100-205* Hanging Model 6" Lens400.00
 - 100-215* Pole Op 6" Lens580.00
- 2000W**
- 100-221 Stand Model 8" Lens\$671.00
 - 100-225* Hanging Model 8" Lens645.00
 - 100-235* Pole Op 8" Lens840.00
- 5000W**
- 100-241 Stand Model 10" Lens\$1000.00
 - 100-245* Hanging Model 10" Lens995.00
 - 100-255* Pole Op 10" Lens1200.00



Theater Fresnel



Mini-Pro

Mini-Pro®

• Utility yoke contains finger operated on/off switch • Recessed power receptacle permits use of detachable 120 or 30V power cord • Completely portable. Designed for stand mounting or handheld operation • Operates at 30V, 120V, or 240V AC/DC • Safety lock prevents accidental loss of accessories from mounting clips • Smooth field. No hot spots • Variable focus produces 3:1 range • Dichroic Filter available for daylight shooting • "Quartz" Lamps for high efficiency • Applications: key, back, kicker, side lighting • Maximum wattage: 650W

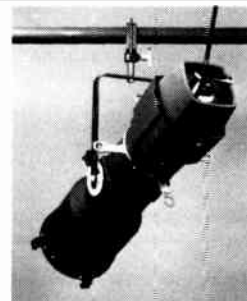
- 100-091\$140.00

Ellipsoids

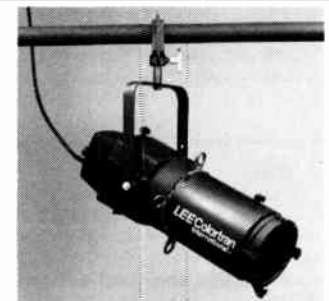
• Designed to frame areas, project patterns and create special effects • For throws of 14' to 140' • Rugged diecast housing assembly • High performance optical train with plano-convex lenses permits greater light transmission, fewer aberrations, improved field control and higher efficiency • Lenses are fabricated of low expansion borosilicate glass • Easily field modified to create 40°, 30°, or 20° field angle in one unit • Lenses are shock mounted • Joy stick design assures fast, precise filament alignment without tools • Lens barrel design permits you to easily focus to a hard or soft field edge • Framing shutter concept enables you to create nearly any three or four sided shape • Solves keystone problem • Each shutter travels in its own plane eliminating interference problems • Equipped with a built-in pattern slot • Available with an optional iris without the loss of other beam shaping capabilities

- 40° and 30° Ellipsoid**
- Incorporates a single 4.5" and 6" diameter plano-convex lens • Outperforms 750W and 1kW 6" x 9" and 6" x 12" existing spotlights • Designed for throws from 14' to 55'
 - 213-055* 40°\$340.00
 - 213-065* 30°340.00
- 20° Ellipsoid**
- Single 6" x 9" plano-convex lens • Outperforms 750W and 1kW 6" x 16" existing spotlights • Designed for throws from 30' to 67'
 - 213-075*\$340.00
- 12° Ellipsoid**
- Single 6" x 12" plano-convex lens • Equivalent in performance to higher priced generic 8" spotlights • Designed for throws from 45' to 80'
 - 213-095*\$340.00
- 10° Ellipsoid**
- Incorporates a single 8" diameter plano-convex lens • 8" unit is equivalent in performance to existing 10" and 12" spotlights • Designed for throws from 55' to 108'
 - 213-105*\$540.00

*Hanging fixtures are listed without terminations but priced with connectors. When ordering, please specify termination required. If you are ordering fixtures with bare wire leads, please deduct \$8.00 from price.



5° Ellipsoid



Ellipsoid Spotlight

- 5° Ellipsoid**
- High transmission from 10" diameter plano-convex lens • With its reflector design, single lens optical system and with optional iris assembly it actually outperforms many followspots • Suited to long-throw applications and is effective from 110' to 140'
 - 213-115\$700.00
- Mini-Ellipse**
- Designed for throws from 6' to 40' • Accepts a range of high output Tungsten-Halogen Lamps from 250W to 500W at 120V and 500W at 240V.
 - 213-155* 30°, 40°, 50°\$215.00
- Zoom Mini 40/65, 25/50, 15/30**
- For any application from a 9' circle at a 7' throw to a 9' circle at a 35' throw • A 600W lamp increases light output by nearly 50% over conventional 500W screw-based systems • Lamp house design allows constant orientation of the filament support bridge for a more compact light source
 - 213-305* 40/65\$235.00
 - 213-315* 25/50235.00
 - 213-325* 15/30235.00

LEE COLORTRAN, INC.

Fill/Flood Toning Lights

**Fill/Flood Toning Lights
Mini Soft-Lite and 1K/4kW Soft-Lite**

• Ultra lightweight • High light output with soft shadows • Combo stud fits 5/8" studs or 1 1/8" females • Ventilation system increases lamp life • Ideal for location interiors for soft-fill lighting • All aluminum construction

104-171 Mini Soft-Lite

• Shares all the standard features listed above plus • 2 switches for intensity control • 14 lbs. \$435.00

- 120-021 Diffusion frame 35.00
- 138-059 Safety cable 9.00
- 152-053 Compact stand castered 145.00

104-181 1k/4kW Soft-Lite

• Shares all the standard features plus • 4 individually switched lamps for intensity control • With single, pin plugs • 25 lbs. \$875.00

- 120-022 Diffusion frame 64.00
- 138-059 Safety cable 9.00
- 142-102 Extension cable #14/3 25' 20A female T.L. NEMA L5-20P male U-Ground (2 required) 60.00
- 142-400 Cable, 25' #8/3 with female single pole pin plugs and 100A stage plug 295.00
- 152-054 Super stand with adaptor 300.00
- 158-003 C-clamp assembly to modify for pipe mounting 18.00

Lamps, ANSI-Code for Mini and 1K/4kW Soft-Lites

- 176-019 500W, 120V, 2900°K, 10,000 hour, EJD \$45.00
- 176-021 1000W, 120V, 3200°K, 500 hour, FCM 41.50
- 176-027 800W, 220V, 3200°K, 150 hour, EME 41.50

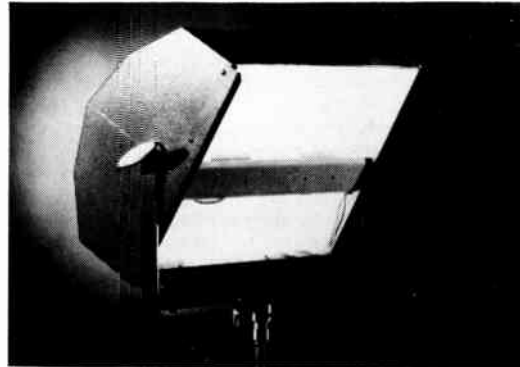
Broad

• Designed for wide field, medium throw applications • "Quartz" lamps provide long life and constant light output • Designed for continuous duty applications • Wide variety of lamps • All accessories secured with safety clip • Heavy-duty sockets provide improved cooling and lamp life

- 104-031 Stand Model \$275.00
- 104-032 Hanging Model 275.00

Multi-Broad

• Focus for beam control • Designed for medium to wide field applications • Uses tungsten halogen lamps for high efficiency • All accessories secured with safety clip • Heavy-duty sockets provide improved cooling and lamp life



Mini Soft-Lite

- 104-041 Stand Model \$330.00
- 104-042 Hanging Model 330.00

Accessories for Broad and Multi-Broad

- 118-010 Four Leaf Barndoor \$113.00
- 120-007 Diffusion Frame 29.00
- 138-059 Safety Cable 9.00
- 152-053 Compact Stand Castered 145.00

Set-Light

• For uniform lighting of large surfaces • Barndoors provide sharp cut-off • Heavy-duty sockets provide improved cooling • Wide range of "Quartz" lamps • One piece reflector for increased output • Compact size for tight mounting positions

- 108-002 Hanging Model \$216.00
- 138-059 Safety Cable 9.00

Lamps, ANSI-Code for Broad, Multi-Broad, and Set Light

- 176-019 500W, 120V, 2900°K, 10,000 hour, EJD \$45.00
- 176-022 1000W, 120V, 3200°K, 400 hour, frosted, FHM 46.00
- 176-024 500W, 120V, 3200°K, 400 hour, frosted, FDN 39.50
- 176-026 750W, 120V, 3200°K, 400 hour, frosted, EMD 49.50
- 176-027 800W, 220V, 3200°K, 150 hour, EME 41.50

Cyc Strip

• One piece reflector for high output • Wide range of tungsten halogen lamps • Heavy-duty sockets for improved cooling and lamp life • One light through three light models equipped with male connectors one end and female connectors other end for convenient feed-through and curve lighting problems • Four light through nine light equipment with center feed male connectors for easy installation

- 108-472 1 Light, 1 Circuit, M. and FM. 20A. 3P. Pin \$ 295.00
- 108-492 2 Light, 2 Circuit, M. and FM. 20A. 3P. Pin 400.00
- 108-502 3 Light, 3 Circuit, M. and FM. 20A. 3P. Pin 525.00
- 108-592 4 Light, 4 Circuit, M. 20A. 3P. Pin 625.00
- 108-532 6 Light, 3 Circuit, M. 20A. 3P. Pin 800.00
- 108-562 9 Light, 3 Circuit, M. 30A. 3P. Pin 1150.00
- 120-020 Diffusion Frame 21.00
- 126-014 Safety Frame 33.00
- 138-059 Safety Cable 9.00
- 158-009 Pipe and Floor Mounting Assembly 64.00
- 158-014 Yoke and C-Clamp Mounting Assembly for 1 Light Cyc Unit. 70.00
- 158-016 Yoke and C-Clamp Mounting Assembly for 2 Light Cyc Units 73.00
- 158-017 Yoke and C-Clamp Mounting Assembly for 3 Light Cyc Units 76.00

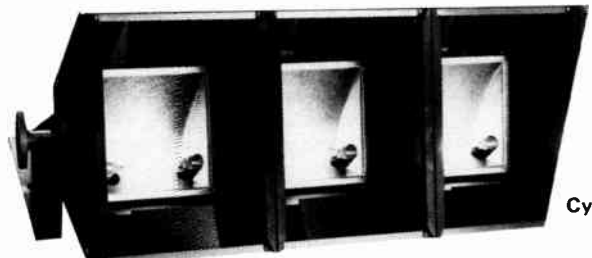
Lamps, ANSI-Code

- 176-019 500W, 120V, 2900°K, 10,000 hour, EJD \$45.00
- 176-022 1000W, 120V, 3200°K, 500 hour, frosted, FHM 46.00
- 176-024 500W, 120V, 3200°K, 400 hour, frosted, FDN 39.50
- 176-026 750W, 120V, 3200°K, 400 hour, frosted, EMD 49.00
- 176-027 800W, 220V, 3200°K, 150 hour, EME 41.50

NOTE: Mounting assembly not included with Cyc Strip.

Far Cyc

• Will uniformly illuminate 40 vertical feet of cyc on 12' centers 10' from cyc
Designed to operate on 20A circuits • Reduces power consumption by as much



Cyc Strip

as 50% • Light output is flat from top to bottom • Gelatran frame design permits uniform radiation over color media • Uneven fading is eliminated • Gelatran life increased by as much as 50% • 1kW lamps available

- 108-362 1 Light, M. 20A. 3P. Pin, 17 lbs. \$290.00
- 108-382 2 Light Horizontal, 2 Circuit, M. 20A. 3P. Pin, 26 lbs. 555.00
- 108-412 3 Light Horizontal, 3 Circuit, M. 20A. 3P. Pin, 37 lbs. 775.00
- 108-392 4 Light, 4 Circuit, M. 20A. 3P. Pin, 43 lbs. 985.00
- 120-058 Color Frame (one per lamp) 29.00
- 138-059 Safety Cable 9.00
- 138-064 Safety Frame (one per lamp). 55.00

Lamps, ANSI-Code

- 176-142 1500W, 120V, 3200°K, 400 hour, frosted, FGT \$69.50
- 176-182 1000W, 120V, 3200°K, 500 hour, FFT 71.50

Far Cycs furnished with mounting assembly, spill masks, and grounding connectors.

LEE COLORTRAN, INC.

Dimming

DIMENSION 192-000 SERIES

Dimmer Module

- The Dimension 192 dimmer module represents an elegant design
- Using conservatively-rated, fully proven components, we have packaged 2–2400W dimmers into minimum space. This is partly achieved by the rack bus design, and partly by the unique control and power connector systems
- Each dimmer is independently cooled with adjacent dimmers being separated by a cooling air flow of 400 ft./min. of ambient air
- State-of-the-art solid-state relays and chokes are used to achieve broadcast-quality filtration

Rack

- 192—1.2 or 2.4kW dimmers per rack. The most in the least amount of space
- Each dimmer is independently cooled with ambient air from the front of the rack. This accounts for a lack of temperature gradient in the rack
- Top and bottom access panels for line and load runs
- Plug-in dimmer and control modules make the Dimension 192 rack fully serviceable
- The Dimension 192 contains auxiliary functions as a standard and built-in feature. The need for an "aux cabinet" is eliminated in most systems
- Dimmers of different ratings (1.2, 2.4, 6.0, and 12.0kW) may be located anywhere in the rack
- Three identical control modules display system status with LEDs
- Plug-in electronic system controls up to 192 dimmers. Each module controls up to 64 dimmers
- Spare module provided per system for emergency backup
- Maintenance—fully front accessible, no side or back access required

166-300	Dual 1.2kW Dimmer Module, 120VAC	.....POR
166-302	Dual 2.4kW Dimmer Module, 120VAC	.....POR
166-304	6.0kW Dimmer Module, 120VAC	.....POR
166-306	12.0kW Dimmer Module, 120VAC	.....POR
166-307	Dual 2.4kW Non-Dim Module, 120VAC	.....POR
166-308	6.0kW Non-Dim Module, 120VAC	.....POR
166-309	Dual 2.0kW Dimmer Module, 240VAC	.....POR
166-310	5.0kW Dimmer Module, 240VAC	.....POR
166-311	10.0kW Dimmer Module, 240VAC	.....POR
166-312	Dual 2.0kW Non-Dim Module, 240VAC	.....POR
166-313	5.0kW Non-Dim Module, 240VAC	.....POR
166-314	12.0kW Non-Dim Module, 120VAC	.....POR
166-315	10.0kW Non-Dim Module, 240VAC	.....POR

Control Module

- Fully plug-in, the module controls all 64 dimmer locations in a vertical column. There are three control modules per rack
- The module controls all functions of dimmer access, timing, and ramping as well as deciding which channels are digital, which are analog, which channels are on panic and does it all with reliability
- Front panel indicators show status of feeder bus bars and power supply, signal status, and rack overtemp

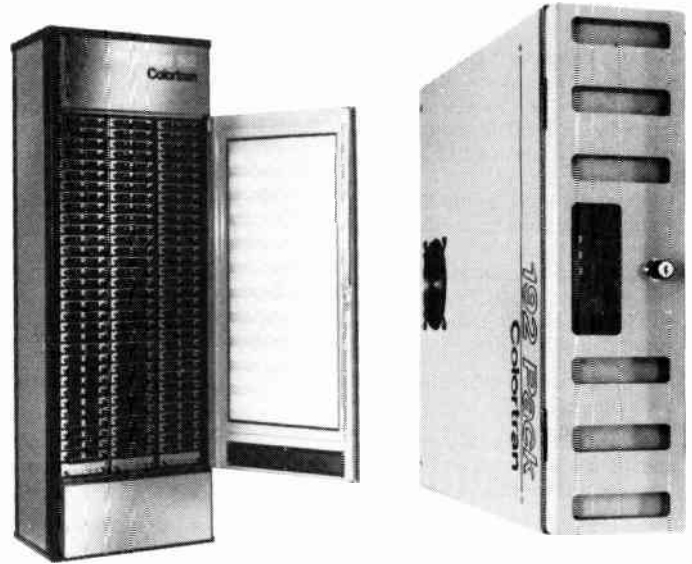
166-341	Analog	.....\$750.00
166-342	Multiplex	.....\$900.00

Wall Pack

- Plug-in Dimmer Modules
- Plug-in Electronic Control Modules
- Single or three phase power
- Ambient cooling with front-to-rear air flow
- All electrical connections, both incoming and outgoing power and control, are made to factory labeled terminal strips
- Multiple packs may be installed in various configurations, each requiring minimum wall space
- The Pack has a lockable door, together with an electrostatic filter system
- Instant change from analog to digital control signal (RS422)
- Lightweight—easy to mount—only 65 lbs.

200-715	12-2.4kW Dimmers with Terminal Connection	.....POR
200-725	6-6.0kW Dimmers with Terminal Connection	.....POR

Both Terminal versions include door.



Rack

Wall Pack

192 Pack

- Plug-in Dimmer Modules
- Plug-in Control Module
- Completely front access
- Half the size of other products
- High reliability—proven with thousands of dimmer modules already in use
- Instant change from analog to digital control signal (RS422)
- Lightweight—only 57 lbs.
- Single or three phase power
- Ambient cooling with front-to-rear air flow

200-712	12-2.4kW Dimmers with 24-20A, 3-wire, Pin Connectors	.....\$3355.00
200-714	12-2.4kW Dimmers with 12-20A, Duplex Receptacles	.....\$3355.00
200-716	12-2.4kW Dimmers with 12-20A, Twistlock Receptacles	.....\$3355.00
200-717	12-2.4kW Dimmers with 24-20A, 3-wire, Pin Connectors and special 5 Pole, 100A, Union Inlet Receptacle	.....\$3655.00
200-722	6-6.0kW Dimmers with 6-60A, 3-wire, Pin Connectors	.....\$3685.00
200-726	6-6.0kW Dimmers with 6-50A, Twistlock Receptacles	.....\$3685.00

192 Pack Master

- Reliable
- Compact
- Blackout switch
- Super lightweight
- Dimmer Overheat Indicator
- Exclusive Independent Scene
- Bump switches with level control
- 2 scene operation, 12 or 24 channel
- Scene, independent and Grand Masters
- High resolution LED fade progress bar graph

200-171	Pack Master 12 Channel	.....\$1195.00
200-172	Pack Master 24 Channel	.....\$1595.00
200-173	Pack Master 36 Channel	.....\$1995.00
157-144	Plastic Cover for Pack Master 12	.....\$83.00
157-146	Plastic Cover for Pack Master 24	.....\$105.00
157-148	Trouping Case for Pack Master 12	.....\$345.00
157-150	Trouping Case for Pack Master 24	.....\$470.00

LEE COLORTRAN, INC.

Lighting Control

Scene Master™ 60 Lighting Control System

- Clarity of operation
- 60 manual controllers are available for setting scenes and recording rapidly up to 60 pile on overlapping submasters
- Console stores up to 120 cues which can be recorded from manual or memory
- In standard format the Scene Master will handle up to 120 dimmers and has options to control up to 512 dimmers
- Optional disk drive
- Printer and handheld remote
- High resolution CRT with clearly defined information areas
- Extensive built-in effects program
- Bump keys and more

The Scene Master 60 represents an ideal marriage of manual and memory systems.

The Control Console is a microprocessor based lighting control system, specifically designed and constructed for the control of theatrical and television dimming systems.

The Control Console does not require the use of any peripheral device such as disk drive or cassette to function. The system operating program is stored in a programmable read-only memory.

The Control Console consists of a portable console, approximately 37" long and 14" deep and one detached 12" amber CRT with integral tilt and swivel bases. Color monitor is optional.

The CRT is a graphics quality amber monitor with a minimum of 1000 dots per line horizontal resolution and 360 lines vertical resolution.

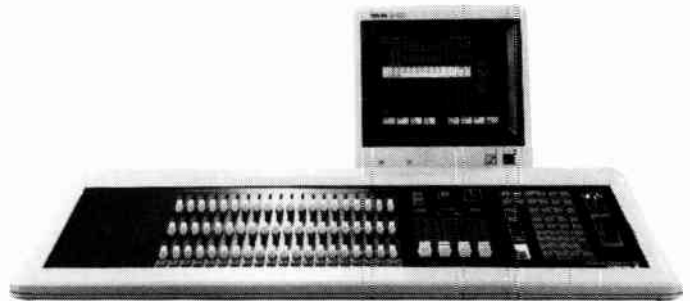
The Console is equipped with non-volatile memory for cue storage with optional 3 1/2", industry standard disk drive used for library storage utilizing environmentally protected, high reliability diskettes with hard plastic cases.

- 168-760** Scene Master 60, 120V, digital output. Amber monitor, controls 200 dimmers with 60 manual channels **\$5775.00**
- 168-764** Scene Master 60XL, 120V, digital output. Amber monitor, controls 500 dimmers with 60 manual channels **6775.00**
- 168-768** Scene Master 60XLC, 120V, digital output. Color monitor, controls 500 dimmers with 60 manual channels **POR**
- 28426** Scene Master 60 operating manual **20.00**

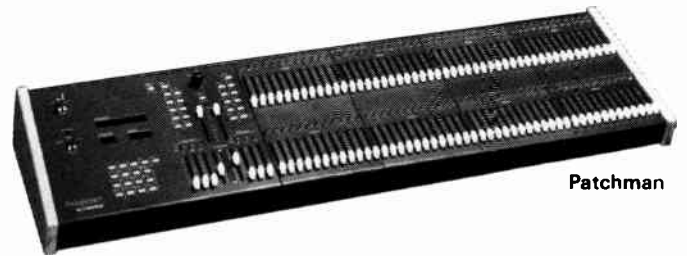
Options available: 240V, analog output

Patchman™ Portable Lighting Control System

- 10 scenes preset — 2 live plus 8 in memory
- Hardwood end caps
- System on/off keyswitch
- Patch control keyswitch
- LED over temp indicator
- LED display; dimmer, channel, intensity
- Memory select switches (Scene X)
- Chase on/off switch
- Chase rate controller
- Memory select switches (Scene Y)
- Channel controllers; Manual section, 2 rows of 12 each—expandable to 96
- Scene Y submasters
- Fade rate controllers
- Crossfader with LED bargraph progress meters
- Scene X submasters
- Softpatch keypad; 0-9, clear, and, thru, channel, dimmer and store to patch up to 512 dimmers



Scene Master 60



Patchman

Patchman offers ten scenes, each with its own submastering assignments. Patch at levels, so every channel can be a groupmaster. There's a split dipless crossfader for timed or manual control variable rate chase, memory back-up and a host of other control functions.

- 168-700** Patchman, 12-channel **\$3985.00**
- 168-701** Patchman, 24-channel **4675.00**
- 168-702** Patchman, 36-channel **5375.00**
- 168-703** Patchman, 48-channel **6050.00**

Accessories

- 157-142** 24-channel plastic cover **\$ 95.00**
- 157-143** 48-channel plastic cover **139.00**
- 168-660** 6' cable **79.00**
- 168-661** 25' cable **110.00**
- 168-666** 100' cable **170.00**
- 168-667** 50' cable **140.00**
- 168-668** 150' cable **240.00**
- 168-669** 200' cable **290.00**
- 168-670** Flush control connection wall plate — Fits standard single gang box. **69.00**
- 168-680** Blank wall plate—cover unused gangs in surface back box **17.50**
- 168-681** Six-gang surface back box **240.00**
- 168-698** 3' slave cable—connects between dimmer packs **58.00**

Control Junction Box and Wall Plate

Control Junction Box

- Permits plug-in control connection of up to 30 dimmers and 6 non-dims
- Three 6-channel control packs and one 12-channel master/control pack may be plugged into the master junction box via prewired control cables
- Junction box is prewired for contractor's field connections

Control Junction Box POR

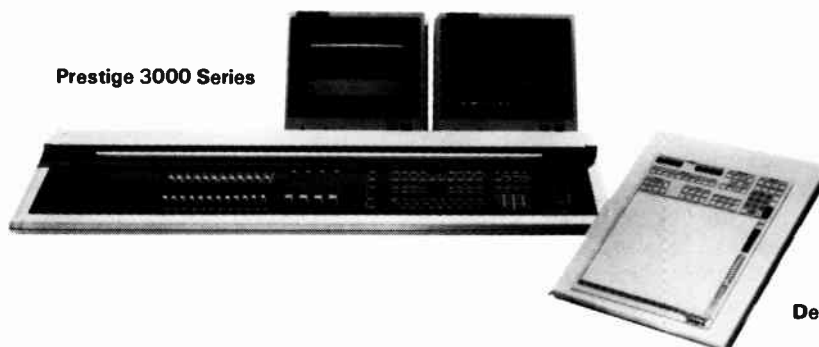
Wall Plate

- Designed to fit standard single gang switchbox
- Permits connection of 6 control channels
- Wires color coded for contractor identification
- Brushed stainless steel cover plate

Wall Plate POR

LEE COLORTRAN, INC.

Lighting Control



PRESTIGE SERIES LIGHTING CONTROL SYSTEMS

Prestige 1000 and 2000 Features:

- 24 pile-on submasters provide for annual control of complete "stage looks." 12 bump buttons allow instantaneous activation of associated submasters. Submasters 1-12 may be selected as inhibitive faders
- Four timed faders provide for timed or manual execution of cues or cue parts
- Playback controls allow an operator to start an entire cue including cue parts and follow-on cues with a single button. Running cues may be stopped, reversed, speeded up, slowed down, or taken over manually
- Record/Cue functions and "soft" screen keys allow simple, straightforward recording and editing of cues, groups, submasters, effects, patch, and setup with a minimum of console "clutter." The screen keys focus the user's attention on commands which are useful in a particular display and allow for easy software upgrades to the console. Numeric keypad allows rapid construction of unlimited combinations of channels, groups, cues, submasters, and effects for digital level setting or adjustment on the wheel
- Position keys allow the user to move up, down, left, or right in various displays
- Wheel provides a continuous rotation device for setting and adjusting levels
- Power keyswitch and overtemperature indicator
- High resolution color CRT provides the following user selectable displays: Stage, Cue, Group, Submaster, Effect, Cue sheet, Track Sheet, Playback, Patch, and Setup
- 3.5" disk drive provides library storage for shows.

The Prestige 1000 controls up to 200 dimmers, on up to 100 channels, and up to 200 cues and groups may be recorded.

- 168-340 Prestige 1000 Series, 120V, Digital OutputPOR
- 168-341 Prestige 1000 Series, 240V, Digital OutputPOR
- 168-342 Prestige 1000 Series, 120V, Analog OutputPOR
- 168-343 Prestige 1000 Series, 240V, Analog OutputPOR

NOTE: All Prestige 1000 Series consoles come with amber monitor only 168-329 (120V) or 168-330 (240V).

Prestige Series 2000 controls up to 400 dimmers on up to 200 channels, and records up to 300 cues or groups. The operating program is stored in programmable read-only memory. In case of power failure, random access memory shall be retained by an automatic battery backup power supply.

The Prestige 2000 console has all the user functions listed in the Prestige 1000 text with exceptions. A color monitor is standard and the following peripheral options are available: Designer Remote, Handheld Remote, and a hard copy Printer.

- 168-344 Prestige 2000 Series, 120V, Digital OutputPOR
- 168-345 Prestige 2000 Series, 240V, Digital OutputPOR
- 168-346 Prestige 2000 Series, 120V, Analog OutputPOR
- 168-347 Prestige 2000 Series, 240V, Analog OutputPOR

NOTE: All Prestige 2000 Series consoles come with amber monitor 168-329 (120V) or 168-330 (240V).

- 168-348 Prestige 2000C Series, 120V, Digital OutputPOR
 - 168-349 Prestige 2000C Series, 240V, Digital OutputPOR
 - 168-350 Prestige 2000C Series, 120V, Analog OutputPOR
 - 168-351 Prestige 2000C Series, 240V, Analog OutputPOR
- NOTE: All Prestige 2000C Series consoles come with color monitor 168-331 (120V) or 168-332 (240V)

Prestige 3000 Features:

- Key Switch—powers up the system and activates the backup
- Dual Display Screens—provide a choice of ten different displays containing precise information for specific tasks (i.e. Set up, Stage, Playback, Preview, Patch)
- Screen, Record and Cue Keypads with 8 Soft Keys—store cue groups and submasters into the Prestige 3000's electronic memory
- Control Keypad—allows the user to write out and enter commands for the Prestige 3000, revise a channel or dimmer list, and create subsets of channel groups or existing cues
- Position Keypad—makes it effortless to move up, down, right, and left through the system's displays
- Level Wheel—adjusts channel levels or fade rates
- Alphabetic Keyboard—allows the user to label designs and write notes or names onto submasters and groups
- Submaster and Bump Buttons—permit manual adjustment of submaster fades
- Playback Controls—permit the manual altering of the light system to fit the show in progress

The Prestige Series of control consoles, the 1000, 2000, and 3000 are as practical as they are powerful. No matter which you choose, from the remarkable Prestige 1000 all the way up to the feature packed Prestige 3000, you get a microprocessor based lighting control system that gives you speed and flexibility.

The Prestige 1000 is our state-of-the-art base model, the 2000 adds a package of advanced features, and our top of the line 3000 unit, takes you to the farthest advance of technology.

- 168-360 Prestige 3000 Series, 120V, Digital Output (2) Color Monitor 168-331 (120V)POR
- 168-361 Prestige 3000C Series, 240V, Digital Output (2) Color Monitors 168-332 (240V)POR
- 168-362 Prestige 3000C, 120V, Analog Output (2) Color Monitors 168-331 (120V)POR
- 168-363 Prestige 3000C, 240V, Analog Output (2) Color Monitors 168-332 (240V)POR
- 168-370 Designer's Remote Magic Sheet (120V) Magic Sheet, Video Receiver and Color MonitorPOR
- 168-371 Designer's Remote Magic Sheet (240V) Magic Sheet, Video Receiver and Color MonitorPOR
- 168-750 Magic Disk Writer \$6000.00

Accessories for Prestige 2000 and 3000

- 168-324 PrinterPOR
- 168-368 Magicsheet/Designer's Remote* \$5100.00
- 168-327 Handheld RemotePOR
- 168-750 Magic Disk Writer (Amber CRT Only) 6100.00
- 28213 Prestige 1000/2000 Operating Manual 26.00
- 28214 Prestige 3000 Operating Manual 26.00

*Color CRT Monitor available at an additional cost. Consult factory.

Magic Disk Writer™

The Magic Disk Writer is a self-contained unit which allows an operator, lighting designer, or student to use the Magicsheet option independently of the Prestige lighting console. The Magic Disk Writer may be used to cue a show from scratch or to modify cues in an existing show in a remote location such as a hotel room or drama lab. The unit will also fully simulate playback of a show, except that it will not actually drive dimmers. The capability of driving a printer is also provided.

The system has a standard IBM keyboard port and will fully support all standard IBM PC software provided it is supplied on 3.5" disks. This system serves as a low cost teaching device for lighting design as well as a standard IBM PC. Lighting programs written on the Magic Disk Writer may be transferred via a disk to any Prestige system for operation, for example, by the designer after entering his own pick up notes to the show, or by the student to display and critique his homework in the theater.

The Magic Disk Writer consists of a Summagraphics MM1201 digitizer tablet overlay and stylus, a Taxan KX12 monochrome CRT, and a processor unit. The processor unit contains a Faraday 6413/256 computer card, a Teac FD35B disk drive, and a Power General 3050-1 power supply. All major components are identical to those used in the Prestige 1000 except for the addition of memory to the processor card. A power switch is located on the front of the unit, the disk drive and IBM keyboard connector are located on the right side, and the Magicsheet, printer and AC connectors are located on the rear. During normal operation, the CRT is placed on top of the processor unit and the Magicsheet is placed in front. The Magicsheet software is loaded automatically on powerup from disk. An optional IBM keyboard may be placed to the side of the Magicsheet for operation of standard software.

The Magic Disk Writer operates identically to a Magicsheet on a Prestige 2000 or 3000 console. A special setup option is provided to allow the operator to select whether show disks are created with Prestige 2000 or 3000 format. A special write protected disk is provided with the system which contains both MSDOS and the Magicsheet operating program. The Magicsheet program is automatically loaded and started when AC power is applied to the system. If the IBM keyboard option is installed, the operator may interrupt the Magicsheet program and load other IBM compatible software by inserting the appropriate 3.5" disk. Since the system is not used in live performance situations, no battery backup is provided.

168-750 Magic Disk Writer (Amber CRT Only)
.....\$**6100.00**

**Magicsheet**

The Magicsheet is the lighting designer's easel. With its stylus and your lighting plot attached to the "smart" pad you can enter your plan directly into the Prestige system. Then with the touch of your stylus you'll be able to access a variety of the extensive features of the control board, from the level wheel, to playback, to cueing. Once entered, touching your symbols with the pen can call up cues and fades, trigger effects, and run through lighting sequence as quickly as you can brush the symbols. Linking up the Magicsheet/Designer's Remote with the main console gives you the ultimate features of the Prestige system from a variety of vantage points. You can review your designs as fast as you create them from the perspective of actor or audience. With the monitor attached to the Magicsheet you can call up the same displays you would in the booth.

- 168-331 Magicsheet/Designer's Remote***
.....\$**5100.00**
- 168-370 Designer's Remote Magicsheet (120V)**
Magicsheet, Video Receiver and Color
Monitor**.POR**
- 168-371 Designer's Remote Magicsheet (240V)**
Magicsheet, Video Receiver and Color
Monitor**.POR**

*Color CRT Monitor available at an additional cost.

LEE COLORTRAN, INC.

Studio Lighting Package

20' x 30' Studio (6.1m x 9.1m) Standard Television Package

Designed to meet the requirements for television production lighting, each package presents fixtures, power distribution, dimming and control on the basis of one circuit for approximately every 15 square feet of studio area and one dimmer for every circuit.

The 20' x 30' (6.1m x 9.1m) Studio Package consists of the following major components:

Lighting Fixture Package

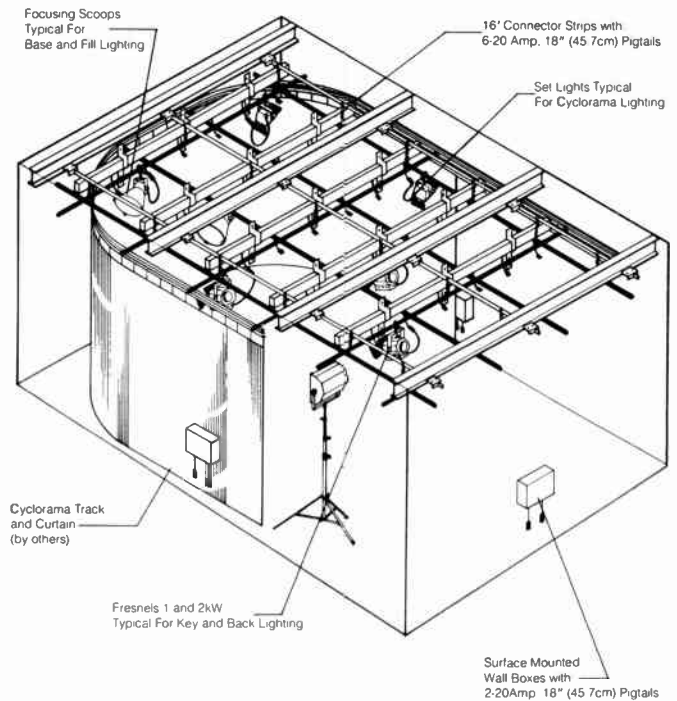
• **Fixtures**—Fresnels for key and back lighting. Focusing Scoops for base and fill, and set lights for cyclorama lighting are all part of the basic package and are supplied with all required accessories • **Accessories** • Barndoors • Color frames • Safety cables • C-clamps, and lamps are supplied by Colortran as required by the bill of materials

Dimming and Control System

• Wall mounted dimmer packs with plug-in power modules and plug-in analog control modules • Manual Control Console—Pack Master 36 with 3 scenes, 2 presets and 36 intensity adjustments

Distribution System

• Connector strips are completely prewired at the factory with terminal access by an easily removable cover. Finished matte black enamel with 3" white graphics on front and back for circuit identification • All connector strips are supplied with 18" pigtail receptacles in standard NEMA twistlock termination 20, and 50A capacities. Alternates are available if specified, such as flush mounted receptacles and termination variations (pin connector or U-ground types) • Plugging boxes are available in three basic configurations: surface, recessed, or pipe mounted. Unless otherwise specified boxes are supplied in a surface mounted style with required pigtails



	Qty.	Model No.	Description
Fixture Package			
Key and Back Lighting	10	100-516	6" Fresnel
	10	118-013	8 Leaf Barndoor
	10	120-005	Color Frame
	10	138-059	Safety Cable
	10	176-097	EGT Lamp, 1000W, 250 hr., 3200°K
Base and Fill Lighting	6	104-236	1kW Focusing Scoop
	6	120-010	Color Frame
	6	138-059	Safety Cable
	6	176-176	EGJ Lamp, 1000W, 400 Hr., 3200°K
	2	104-171	Mini-Softlite
	2	120-021	Diffusion Frame
Cyc Lighting	2	152-053	Compact Stand, castered, 52"-154"
	4	176-021	FCM Lamp, 1000W, 500 Hr., 3200°K
	6	108-006	Set Light
	6	120-000	Color Frame
	6	138-059	Safety Cable
Effects Lighting	6	176-026	EMD Lamp, 750W, 500 Hr., 3200°K
	1	213-316	25/50 Zoom Mini Ellipse Pattern Projector
	1	120-012	Color Frame
	1	138-006	Accessory Holder
	1	138-010	Pattern Holder
	1	238-000	Set of 6 Patterns
Support Equipment	1	138-059	Safety Cable
	1	176-104	FMR Lamp, 600W, 2000 Hr., 3200°K
	2	530-009	11' Pantograph, 4 spring
	2	142-738	15' 12/3 SO Cable with male and female, 20A, 3-pin twistlock connectors

Qty.	Model No.	Description
Dimming and Control System		
3	200-715	192 Pack, wall mounted, each with: 12 2.4kW plug-in SSR dimmers, complete with primary circuit breakers and toroidal chokes
3	166-341	Analog Control Modules for 192 Pack
1	200-173	Pack Master 36
		3 Scene Control Console with:
		2 Scene Preset with Split Dipless Crossfader LED Fade Progress Bargraph and Fade Rate Adjustment
		1-Independent Scene
		1-Independent Master
		1-Grand Master
		1-Blackout Switch
		36-Bump Buttons with Intensity Adjustment
3	200-621	25' Control Cable
3	200-583	Control connection wall plate with: Receptacle for control cable (requires 1 gang back box, not supplied)
Distribution System		
5	172-556	16' Connector Strip, 3" x 4" section wireway, with: 6-20A NEMA L5-20R pigtails, complete with terminal compartment and necessary mounting hardware
3	174-883	Surface mounted wall box, size 4" x 8" x 12" with: 2 20A NEMA L5-20R pigtails, complete with terminal sets

Prices and Specifications Subject to Change Without Notice.

LEITCH VIDEO OF AMERICA, INC.

Sync Generators

SPG-102N NTSC Master Sync Generator

Top-of-the-line RS-170A Master Generator. Includes automatic digital genlock, 100SD color black output module and 100LD Pulse Shaper. Many options to match virtually any pulse system concept. High stability master color standard, frequency converter and resolver for external reference, remote control, color bars, grating/dot signals, and much more.

SPG-102N		\$3995.00
100CS	Master color standard . . . . .	.720.00
100FC	Freq. converter and resolver (5MHz) . . . . .	.610.00
100LD	Pulse shaper and line driver . . . . .	.280.00
100ME	Module extender . . . . .	.65.00
102PM	Pulse monitor . . . . .	.210.00
102RP	Remote control panel	1200.00
102RC	Resolver control for use with 100FC . . . . .	.570.00
200BD	Bar and dot generator . . . . .	.260.00
200CB	Color bar generator (2 modules) . . . . .	.775.00
200CB-1	Color bar timer (reverse color bars upgrade, Rev. D) . . . . .	.275.00
	Extra instruction manual . . . . .	.55.00

SPG-120N NTSC Sync Generator

Popular, low cost, no options RS-170A Generator for fixed or mobile installations. Includes automatic digital genlock and color black output.

SPG-120N	\$2500.00
Extra instruction manual . . . . .	.55.00

SPG-130N NTSC Sync Generator

Full-featured RS-170A Generator. Compact, modular design with automatic digital genlock and 130BO color black output module. Programmable timing assignment option for up to 8 sources. Remote control and source ident also available.

SPG-130N		\$2995.00
130TA	Timing assignment . . . . .	.425.00
130SI	Source ident . . . . .	.390.00
130FI	Frame ident . . . . .	.350.00
100ME	Module extender . . . . .	.65.00
	Extra instruction manual . . . . .	.55.00

ACO-131 NTSC/PAL Auto Change-Over

Maintain pulse system security with two sync generators and this high quality, automatic switching device. Monitors color black and/or pulses/subcarrier. Activates switch-over on 3dB drop of any signal.

ACO-131		\$2485.00
131PM	Pulse monitor (2 modules) . . . . .	.460.00
131RP	Remote control panel . . . . .	.485.00
100ME	Module extender . . . . .	.65.00
	Extra instruction manual . . . . .	.35.00

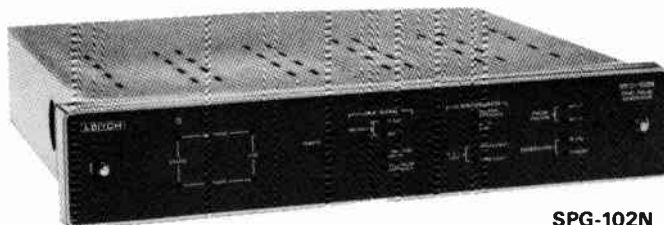
SPG-1300N NTSC Sync Pulse Generator

- Low cost, modular 1RU design
- Adjustable blanking widths and bright burst flag position
- NTSC digital genlock
- RS-170A zero SCH sync/subcarrier, black and test signal outputs
- Independent timing for pulses, black and test signals
- No warm-up, high stability TCXO

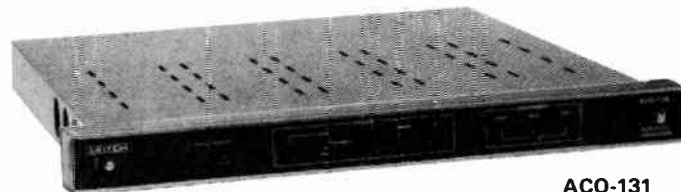
The SPG-1300N is an advanced, modular design for master or slave operation. The basic generator has two plug-in modules (genlock, power supply) which are housed in a 1RU mounting frame. Three module options can be included to suit specific requirements. Slots are normalized for the Pulse Generator, Black and Tone and Test Signal modules. However, each slot can accept any option and provide the primary outputs.

The high-stability, no warm-up TCXO has a horizontal phasing range of more than 12µs advance and 4µs delay. Three phasing controls allow fine, medium and coarse adjustments.

The optional 1300PG Pulse Generator module has two outputs of sub-carrier and one output each of sync, blanking, H drive, V drive, burst flag and color frame ident. Level controls for subcarrier and pulse outputs are provided. Vertical can be advanced 1 line. H blanking start and



SPG-102N



ACO-131

finish, as well as burst flag position are adjustable in 16 steps of 70ns. V blanking can be set to 18, 19, 20, or 21 lines. A switch allows color frame ident to start coincident with the vertical block or line 10/field 1.

The optional 1300BT Black and Tone module has two 75 ohm outputs of RS170A zero SCH color black. Fine, medium and coarse phasing of the outputs is independent of Genlock phasing.

The low impedance, balanced stereo tone output can be switch selected as color frame-locked 400Hz or 1kHz. Level is adjustable from 0 to +8dBu. In addition, a left channel ident tone can be selected.

The optional 2600TG Test Signal Generator modules represent the latest technology in 12-bit (4096 steps) digital test signal generator on a single card.

The dual BNC outputs can be level adjusted and conform to RS-170A zero SCH at all times.

In addition, the 2600TG modules are available in various 525-line standards, such as NTSC, RGB, YIQ, B-MAC, M2 etc., so this means two formats can be mixed within the same mounting frame. Custom test signals can optionally be requested and are subject to a one-time programming charge.

SPG-1300N	With 1300PG pulse generator and 1300BT black and tone boards	\$2495.00
2600TG	Test Generator Module . . . . .	.895.00
100ME	Module extender . . . . .	.65.00
	Extra instruction manual . . . . .	.55.00

MTG-2600N Multi-Format Test Generator

MTG-2600N	2RU, includes one 2600TG and power supply	\$3295.00
2600TG	Test generator module . . . . .	.895.00
1300BT	Color black output and tone generator module . . . . .	.495.00
1300PG	Pulse generator module . . . . .	.495.00
100ME	Module extender . . . . .	.65.00
	Extra instruction manual . . . . .	.65.00

SPG-110P/SPG-180M PAL Master Sync Generators

Extremely stable, broadcast quality source of all pulses, subcarrier and a variety of video test signals for PAL systems B, G, H and I. Automatic or manual genlock modes include crash and slow lock. Modular design with several options permits customized configurations.

SPG-110P	Includes 110LD Line Driver, 110SB-3 Color Black Output, 250GD Grating and Dot and 250CB Color Bar Generator	\$4995.00
SPG-180M	PAL Sync Generator for system M (Brazil) Includes 180SB sync and burst module . . . . .	.3295.00
110CS	Color standard for SPG-110P . . . . .	.735.00
110SI	Subcarrier input for SPG-110P . . . . .	.90.00
110LD	Line driver for SPG-110P . . . . .	.250.00
110RP	Remote control panel for SPG-110P	1050.00
	Extra instruction manual for SPG-110P . . . . .	.65.00
100ME	Module extender . . . . .	.65.00
	Extra instruction manual for SPG-180M . . . . .	.55.00

LEITCH VIDEO OF AMERICA, INC.

Sync/Test Generators

SPG-141P/SPG-1510P PAL Sync Generators

For PAL systems B, G, H and I. Standard features of this compact, very stable generator include automatic crash and slow lock, black burst output and SC/H corrector module. Frame is wired for optional color bar signals.

- SPG-141P** \$3,295.00
- SPG-1510P** PAL sync generator for systems B, G, H and I 3,295.00
- 250CB** PAL color bar generator for SPG-141P 620.00
- 1510CB** PAL color bar generator for SPG-1510P 595.00
- 1101ME** Module extender for SPG-1510P 150.00
- 100ME** Module extender for SPG-141P 65.00
- Extra instruction manual 55.00

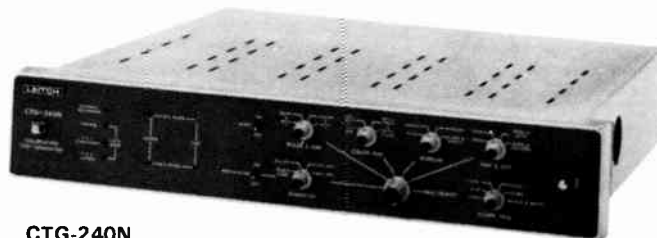


SPG-141P

CTG-240N NTSC Calibration Test Generator

Stand-alone, RS-170A source of most commonly used video test signals, NTSC system pulses, subcarrier and trigger signals. Unit features separate test signal outputs and one switched output.

- CTG-240N** \$7,550.00
- 100ME** Module extender 65.00
- Extra instruction manual 55.00



CTG-240N

DTG-1110N NTSC Digital Test Generator

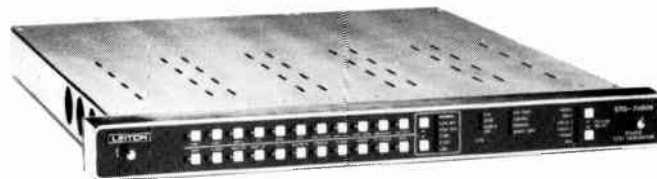
Single rack unit, one generator version of the DTG-1010N. Ideal for small fixed or mobile installations. Includes outputs of sync blanker, and subcarrier.

- DTG-1110N** \$5,995.00
- 1010RP** Remote control panel 740.00
- 1000ME** Module extender 225.00
- Extra instruction manual 65.00

DTG-1010N NTSC Digital Test Generator

Guaranteed accuracy and stability. Unit contains RS-170A genlock SPG and 5 digital test generators with 40 test signals each. Independent remote control for each generator allows simultaneous test procedures. Includes CCIR 473-3 VITS and outputs of sync, blanking, subcarrier and trigger signals.

- DTG-1010N** With 5 data store modules \$11,500.00
- DTG-1010N-1** With 1 data store module 7,195.00
- 1000DS** Data store module 1,450.00
- 1010RP** Remote control panel 740.00
- 1000ME** Module extender 225.00
- Extra instruction manual 65.00



STG-2500N

ITG-3400N NTSC Insertion Test Generator

The ITG-3400N allows simple and reliable insertion of eight standard, internal vertical interval test signals into program video. These digitally generated, 12-bit precision waveforms conform to CCIR (NTC-7) and FCC specifications. One external, user-supplied signal source can also be selected.

The application of microprocessor control and digital technology in general, together with the latest analog circuit components, results in a unit with previously unavailable features and high quality video specifications.

- ITG-3400N** \$5,895.00
- 1101ME** Module extender 150.00
- 100ME** Module extender 65.00
- Extra instruction manual 65.00

STG-2500N NTSC Studio Test Generator

The STG-2500N provides 22 computer-generated video test signal types specifically designed for baseband video studio equipment and general in-plant applications. Where applicable, the signals are also available at low APL, high APL and luminance only for a total of 56 different test signals. Additional signals include three VITS packages (FCC, CCIR (NTC-7), CCIR with VIRS) and a full range of trigger signals. Test signals are stored in EPROMs and may be adapted to changing industry standards. Conversion to analog form occurs with 10-bit precision. Test signals are directly selectable with front panel push buttons.

- STG-2500N** \$5,995.00

TTG-2500N/XTG-2500N

NTSC Transmission Test Generators

The compact TTG-2500N NTSC Transmission Test Generator provides 22 computer-generated video test signal types specifically designed for FM transmission link measurements. Where applicable, the signals are also available at 10%, 50% and 90% APL for a total of 60 different test signals. Additional signals include three VITS packages (FCC, CCIR (NTC-7), CCIR with VIRS) and a full range of trigger signals. Test signals are stored in EPROMs and may be adapted to changing industry standards. Conversion to analog form occurs with 10-bit precision. Test signals are directly selectable with front panel pushbuttons.

- TTG-2500N** NTSC Transmission Test Generator (FM) . . . \$5,995.00
- XTG-2500N** NTSC Transmitter Test Generator (AM) 5,995.00
- 2500RP-T** Remote control panel for TTG-2500N 870.00
- 1000ME** Module extender 225.00
- Extra instruction manual 65.00

LEITCH VIDEO OF AMERICA, INC.

Video Processing

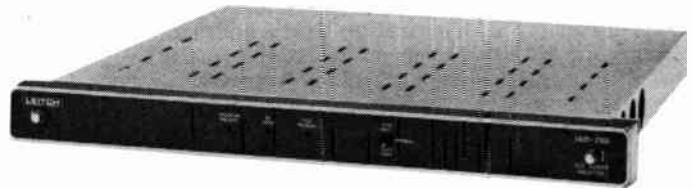
VIP-1101N NTSC Vertical Interval Processor

- Digitally generated sync, burst and black
- RS-170A SC/H always maintained
- RS-170A or narrow H blanking selectable
- Microprocessor control
- Comprehensive self-diagnostics, including setup and timing modes
- Digital front panel status display
- Automatic failure bypass
- Transient-free switching
- RS-232C remote control interface
- Digital power-down memory
- Digitally temperature compensated, high stability crystal oscillator
- Programmable signal loss handling
- Differential video inputs
- High efficiency switching power supply

VIP-1101N	NTSC Vertical Interval Processor (2 VI source inputs standard) Complete with detachable power cord and instruction manual.	\$4,295.00
1101IP	Input preselect (module)	555.00
1101ME	Module extender	150.00
100ME	Module extender	65.00
	Extra instruction manual	60.00



VIP-1101N



IAD-750

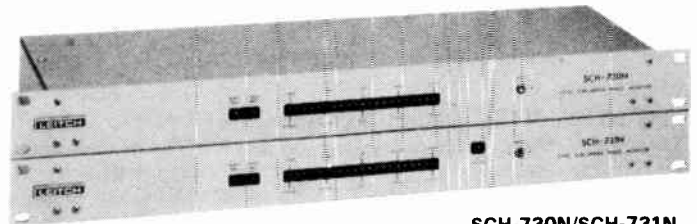
IAD-750N Vertical Interval Adder/Deleter

- Inserts one VI source
 - Controls lines 16 through 19
 - Automatic video continuity
 - Failure bypass
 - The IAD-750N will accept up to two of the 660 Series distribution amplifiers
- | | | |
|----------|------------------------------------|------------|
| IAD-750N | | \$1,820.00 |
| 100ME | Module extender | 65.00 |
| | Extra instruction manual | 30.00 |

SCH-710P/SCH-711P

PAL Sync/Subcarrier Phase Monitor

- PAL version is calibrated to show preferred SCH phase according to EBU Technical Statement D23-1984. SCH-711P has H timing indication.
- | | | |
|----------|-------------------------------------------------------|------------|
| SCH-710P | | \$1,295.00 |
| SCH-711P | | 1,495.00 |
| 710UM | H Timing indication upgrade kit for SCH-710P. | 585.00 |
| | Extra instruction manual | 20.00 |

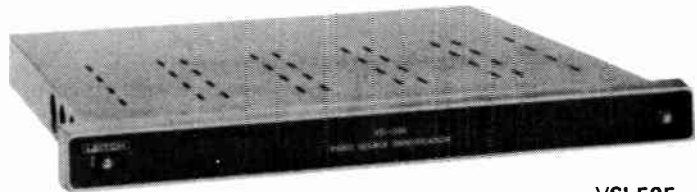


SCH-730N/SCH-731N

SCH-730N/SCH-731N

NTSC Sync/Subcarrier Phase Monitor

- This stand-alone instrument performs a direct, accurate measurement of the sync/subcarrier phase relationship (SCH per RS-170A) in a composite video signal. SCH-731N includes H timing comparator to show color framing between two signals.
- | | | |
|----------|--------------------------------------------------------|------------|
| SCH-730N | | \$1,300.00 |
| SCH-731N | | 1,600.00 |
| 730UM | H Timing indication upgrade kit for SCH-730N | 300.00 |



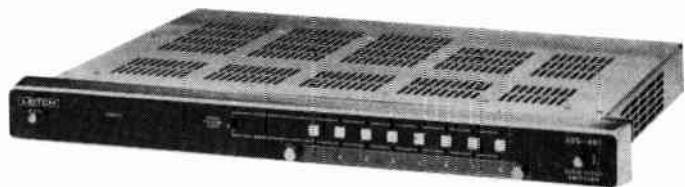
VSI-505

VSI-505 PAL/NTSC Video Source Identification

- Mounting frame accepts up to eight 130SI Source Ident modules
 - Each module can be programmed for up to eight alphanumeric characters
 - Character height is 9 or 18 lines
 - Variable positioning
 - Additive mix to video
 - Remote enable/disable
- | | | |
|---------|------------------------------------|------------|
| VSI-505 | | \$1,095.00 |
| 130SI | Source ident | 390.00 |
| 100ME | Module extender | 65.00 |
| | Extra instruction manual | 30.00 |

AVS-481 Audio/Video Switcher

- Wideband, low crosstalk switcher for critical applications
 - Frame accepts one 8 x 1 video and one or two 8 x 1 audio matrices
 - Accurate delay matching, married or separate switching
- | | | |
|--------------------------|--------------------------------------------------------------------------------------------------------------------|----------|
| AVS-481 (Includes 481VS) | | \$895.00 |
| AVS-481-1 | Audio/video switcher mounting frame without front panel control. Requires the 481RP remote control panel | 695.00 |
| 481FR | Mounting frame and power supply. | 495.00 |
| 481VS | 8 x 1 video switching matrix | 495.00 |
| 481AS | 8 x 1 audio switching matrix | 150.00 |
| 664PS | Power supply. | 395.00 |
| 481RP | Remote control panel | 365.00 |
| 481ME | Module extender for 481VS | 185.00 |
| 100ME | Module extender for 481AB | 65.00 |
| | Extra instruction manual | 45.00 |



AVS-481

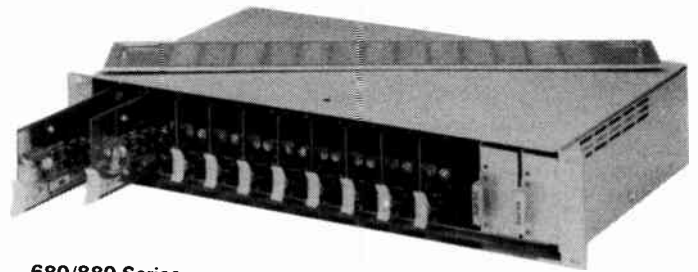
LEITCH VIDEO OF AMERICA, INC.

Distribution Amplifiers Video Processing

680 Series Video Mainframe/Modules

Comprehensive range of DAs for signal distribution and processing, such as equalization, clamping and delay. Universal mounting frames accept any type of amplifier in any slot.

FR-681	Video DA mounting frame. 1 RU, flat front panel. Accepts any mix of up to four 680 series modules. Includes one 664PS	\$495.00
FR-681-C	Video DA mounting frame. Same as FR-681 but with fold-down, casting front panel in place of flat front panel	545.00
FR-682	Video DA mounting frame. 2 RU, flat front panel. Accepts any mix of up to ten 680 series modules. Includes one 664PS	750.00
FR-682-C	Video DA mounting frame. Same as FR-682 but with fold-down, casting front panel in place of flat front panel	795.00
VDA-680	Video distribution amplifier	175.00
VEA-680	Video equalizing amplifier without sub-module	250.00
VEA-681	Video equalizing amplifier with clamping	270.00
VEA-682	Video equalizing amplifier with sub-module	300.00
PDA-660	Pulse distribution amplifier	230.00
VCA-660	Video clamping amplifier	275.00
SVD-680	Switchable video delay amplifier (470nS)	475.00
SVD-600/160	160ns passive video delay	240.00
SVD-600/320	320ns passive video delay	410.00
SVD-600/640	640ns passive video delay	650.00
664PS	Power supply	395.00
100ME	Module extender	65.00
	680 Series instruction manual	40.00



680/880 Series



VPA-310P



VPA-330N

880 Series Audio Mainframe/Modules

Very low noise (100dB S/N), virtually transparent, DA. Input over-voltage protection. Two mounting frame sizes available.

FR-881	Audio DA mounting frame. 1 RU, flat front panel, screw terminal back. Accepts any mix of up to four 880 Series modules. Includes one 860PS	\$520.00
FR-881-C	Audio DA mounting frame. Same as FR-881 but with fold-down, casting front panel in place of flat front panel	545.00
FR-882	Audio DA mounting frame. 2 RU, flat front panel, screw terminal back. Accepts any mix of up to twelve 880 Series modules. Includes one 860PS	695.00
FR-882-C	Audio DA Mounting frame. Same as FR-882 but with fold-down, casting front panel in place of flat front panel	775.00
ADA-880	Audio distribution amplifier	245.00
ADA-881	Audio Distribution Amplifier. Eight low impedance outputs. Very low noise (100dB S/N), +30dBu maximum output level, gain range -6 to +33dB, input over-voltage protected and excellent output isolation	\$230.00
ATG-880	Audio Tone Generator. Switch selectable 400 and 1000Hz audio tones. Available on four dual outputs at levels of +8, +4, 0 and -10dBm.	
	The ATG-880 is particularly suited for stereo installations as it provides four sets of stereo outputs, each at a different level. A feature of the tone generator in this application is the Ident switch which causes one of the output channels in each set to pulse off and on	\$225.00
860PS	Power supply	420.00
100ME	Module extender	65.00
	880 Series instruction manual	40.00

VPA-310P PAL Video Processing Amplifier

• Automatic lock mode • Constant sync and burst output • Programmable VITS retention • For systems B, G, H and I

This VPA version, with its high stability SPG, satisfies the most critical user requirements. Pulse outputs and remote control are optional.

VPA-310P		\$5500.00
310RP	Remote control panel	675.00
110LD	Line driver	250.00
100ME	Module extender	65.00
	Extra instruction manual	65.00

VPA-330N NTSC Video Processing Amplifier

• RS-170A front panel SC/H indication • H and V blanking width adjustable • Selectable VIT retention • Video gain control • Fade to black • Soft white clip • Hard white clip • Soft black clip • Hard or soft clamping • Input video lock • External reference lock • Video and/or chroma AGC • Total bypass • Differential input (optional) • Equalizing (optional) • Cue dot (optional)

VPA-330N		\$4850.00
VPA-331N	Same as 330N except has chroma gain control and auxiliary video input	4995.00

Options for VPA-330N and VPA-331N

330CD	Cue dot generator	\$265.00
330PE	Processor equalizer (factory installed)	335.00
330RP-1	Main remote control panel	725.00
330RP-2	Aux. remote control panel	700.00
330RP-3	Cue dot control panel	550.00
100ME	Module extender	65.00
	Extra instruction manual	65.00

LEITCH VIDEO OF AMERICA, INC.

Clock Systems

CSD-5300N Master Clock System Driver

State-of-the-art Master Clock Driver. Serves as master, submaster or slave. Telephone interface for automatic time checks. RS-232 interface for remote programming and computer reference. Outputs include SMPTE time code, impulse, parallel BCD and more.

CSD-5300N		\$3950.00
5300CD	Impulse driver . . . . .	.210.00
5300MB	Modem board . . . . .	.475.00
5300RI	Reference interface . . . . .	.465.00
5300ME	Module extender . . . . .	.145.00
100ME	Module extender . . . . .	.65.00
	Extra instruction manual . . . . .	.60.00

CDD-5400 Clock Distribution Driver

The CDD-5400 not only increases the impulse clock load capacity of your Master Clock System driver, it also provides load isolation and overload protection. The compact, 1RU mounting frame comes with a plug-in power supply and will accept one or two distribution driver modules, depending on your expansion or distribution requirements. LED status indicators and fault alarms keep you informed. Also features power back-up and rear panel connections.

CCD-5400	Includes one 5400ID impulse driver	\$1495.00
5400ID	Second impulse driver . . . . .	.790.00
1101ME	Module extender . . . . .	.150.00
100ME	Module extender . . . . .	.65.00
	Extra instruction manual . . . . .	.40.00

CDA-5500 Clock Driver Autochange

• Autochange for two CSD-5300 Master Clock System Drivers • Compatible with CSD-510 Master Clock System Drivers • Switches impulse drive, time code, RS-232 and telephone line • Accepts external 24VDC stand-by power

CDA-5500	Includes 5500CS cable set	\$1995.00
5500TS	Telephone switch . . . . .	.280.00
1101ME	Module extender . . . . .	.150.00
100ME	Module extender . . . . .	.65.00
	Extra instruction manual . . . . .	.40.00

DTD-5200 Series Digital Time/Date Displays

The DTD-5200 Series are microprocessor controlled devices and accept standard serial time code in SMPTE or EBU format. No input selection or switching is needed for either type of code. The decoded signal drives a 6-digit, 7-segment real time (time of day) display in hours, minutes and seconds (HH:MM:SS). Either the 24-hour format or the 12-hour format with AM/PM indication can be selected.

The time displays are available in rackmount, console mount or desktop versions. Readout digits are 0.8" H. The brightness of the readout can be set to one of four levels with a rear panel DIP switch.

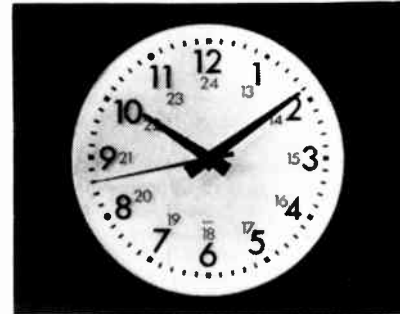
The time display units are compatible with a user-defined time offset when driven from the CSD-5300N Clock System Driver.

One instruction manual is supplied with each shipment. Optional, genuine hand-rubbed oak wood frames available for most clock models.

DTD-5200	Time/date display	\$ 875.00
DTD-5201	Time/date display with parallel BCD output . . . . .	.950.00
DTD-5202	Time/date display with DQC output . . . . .	.1250.00
DTD-5203	Dual time/date display . . . . .	.1750.00
DTD-5210	Desktop version of the DTD-5200 . . . . .	.875.00
DTD-5220	2.25" LED read out display . . . . .	.1250.00
	Extra instruction manual for the 5200 Series . . . . .	.35.00



CSD-5300N



5012



DTD-5203

DAC-5000 Series Analog Clocks

The DAC-5000 Series clocks are designed to combine the advantages of large, easily understood analog time displays and the self-setting capability of digital SMPTE/EBU serial time code readers. This advanced automation is made possible by a unique, digitally controlled drive mechanism. A microprocessor is used to decode the digital time code information and precisely position each hand via three independent motors.

DAC-5005	Digital analog clock 5" desktop	\$695.00
DAC-5006	Digital analog clock 5" rackmount . . . . .	.655.00
DAC-5008	Digital analog clock 8" wall mount . . . . .	.695.00
DAC-5012	Digital analog clock 12" wall mount . . . . .	.695.00
DAC-5016	Digital analog clock 16" wall mount . . . . .	.795.00
RM-5008	Rackmount kit for the DAC-5008 . . . . .	.60.00
RM-5012	Rackmount kit for the DAC-5012 . . . . .	.60.00
RM-5016	Rackmount kit for the DAC-5016 . . . . .	.60.00
WM-5012	Dual wall and ceiling mount kit for two DAC 5012's	100.00
	Extra instruction manual . . . . .	.30.00
AIC-5108	12VDC analog impulse clock 8" wall mount . . . . .	.450.00

VCD-5600 Video Character Display

- Keys SMPTE/EBU time code (HH:MM:SS) into program video
- Simultaneous display of time and text • Three character sizes
- RS-232/422 input
- Time window can contain EEPROM-stored source ident

The VDC-5600 is a 1RU, stand-alone device, designed to key SMPTE/EBU time code derived real time (HH:MM:SS) into program video. No input selection or switching is needed for either type of code. Time can be displayed in 12-hour format with AM/PM indication, or in 24-hour format. Local time-offset can be added in 30 minute increments. The unit is also compatible with a user-defined auxiliary offset when it is driven from the CSD-5300 Clock System Driver. A second line under the time numerals can be used for source identification. The characters appear white on program background or on a black matte. The time/ident window can be positioned anywhere in the picture area.

VCD-5600N		\$1895.00
5600CD	Second Character Display . . . . .	.895.00
1101ME	Module extender . . . . .	.150.00
	Extra instruction manual . . . . .	.40.00

LEITCH VIDEO OF AMERICA, INC.

Still File System/Frame Synchronizer

DSF-3100N NTSC Digital Still File System

- Capacity of 1500 fields/750 frames (upgradable to 10,000)
- Will store the slide as a true color frame (a true color frame requires 4 times the amount of memory as a field)
- Single or dual channel (configurable for preview/on air or A/B operation)
- High quality video specifications
- Compact control panel with back-lit 20" x 2" LCD display and tally LEDs
- Uses standard personal computer with SCSI Interface
- Integrated descriptive library database
- Networking

DSF-3100N \$29,900.00

Includes the following items:

- 3100CU control unit (accepts optional second disk drive)
- 3101DD disk drive (1500 fields storage)
- 3100FB frame buffer
- 3100RP remote control panel
- 3100KB keyboard
- 3100ZX system software
- 3101ZX configuration and diagnostics software
- 3100MAN technical manual
- 3101MAN operations manual
- 3100SD status display (monochrome)

Options

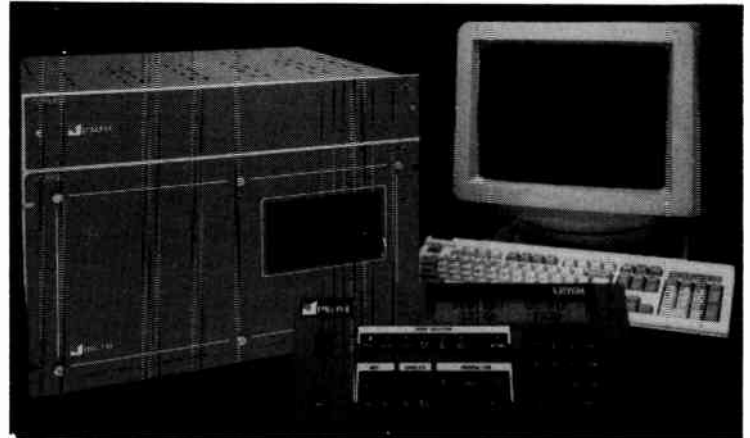
- 3100FB** Second channel (with input) \$15,000.00
- 3100FB-1** Second channel (output only) 10,000.00
- 3100SD** Status display (color) 895.00
- 3100RP** Extra remote control panel 2,495.00
- 3000RA** Remote control assignment 1,195.00
- 3000ME** Module extender 195.00
- 1000ME** Module extender 225.00
- 3100MAN** Extra technical manual 75.00
- 3101MAN** Extra operations manual 75.00

Optional Extra Storage

- 3101DD** Additional 1200 fields \$5,000.00
- 3100EX** Expansion frame 8,000.00
(Includes one 3101DD. Accepts up to two 3101DD)

Optional Backup/Archiving

- 3100TD** Streamer tape drive and one tape \$3,000.00
- 3100TA** DC-600A tape cassette (for 3100TD) 65.00



DSF-3100N

DFS-3000N NTSC Digital Frame Synchronizer

Sophisticated digital circuitry and engineering advancements have produced a frame synchronizer that eliminates "frame grabbing" or picture "freezing" due to noisy video signals. Available in both two-field and four-field versions. With the four-field version the DFS-3000N is able to deal with the four color fields of the NTSC system and eliminate the horizontal shift of the picture that is associated with two-field operation.

The compact frame synchronizer's output is RS-170A zero SC/H at all times. The unit has RS-232C ports for remote control operation and interface with audio delay synchronizers. The remote control panel has the same functions as the front panel of the DFS-3000N. Other features include field or frame freeze, three modes of trouble-free hot switching, VIR corrector, auxiliary video input and four programmable output system phase presets. The programmable presets and the field or frame freeze functions can be activated through the remote control RS-232C port.

The DFS-3000N NTSC Digital Frame Synchronizer is available in an 8-bit or 9-bit version (2-field memory), complete with detachable 3-pin power cord and instruction manual.



DFS-3000N

		8-Bit System 256 Levels	9-Bit System 512 Levels
DFS-3000N	NTSC Digital frame synchronizer with one 3000FM (two-field version)	\$10,995.00	\$12,500.00
3000CF	Comb filter	1,665.00	1,995.00
3000FM	Frame memory	1,665.00	1,995.00
3000RP	Remote control panel	1,195.00	1,195.00
3000RA	Remote control assignment	1,195.00	1,195.00
3000ME	Module extender	225.00	225.00
1000ME	Module extender	225.00	225.00
	Extra instruction manual	65.00	65.00

Refer to Green Section for Addresses and Telephone Numbers.

Starflex Professional Series Modular Television Systems Products

The Starflex modular frame system provide the flexibility which permits you to select the Starflex electronic functions you need and arrange them in the frame in any manner you desire. Starflex modules for signal distribution, timing or processing, either analog or digital, can be used in the Starflex frame simultaneously.

3000	Frame and one 150W power supply	\$495.00
3030	Frame (no power supply).	179.00
1011	Blank panel—single width	15.00
1031	Extender board—single width	100.00

Starflex 3120 Master CRS Generator

This module is one bay wide. The primary purpose is to generate CRS and supply it to the Starflex frame bus. When the front panel switch is on "internal", the unit performs this primary purpose. When "external" is selected, CRS must be provided to the unit through a BNC input. This optional selection permits the 3120 to function as a "CRS Slave" timing module. The 3120 has two BNC CRS outputs available to drive additional Starflex frames.

3120	\$895.00
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Starflex 3125 Black Burst to CRS Translator

This module is one bay wide and provides translation of a black burst signal to a CRS signal. Input is by a loopthrough BNC and the 3125 locks to a black burst signal and maintains color field one throughout the translation to CRS.

The 3125 detects loss of black burst and/or an improper SC/H relationship. CRS is applied to the frame bus under normal output conditions, but can be factory wired to the rear panel BNC output.

3125	\$895.00
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Starflex 3140 External CRS Slave

The 3140 module is one bay wide with two high impedance loopthrough inputs. The unit locks to an external BNC CRS input only and has a ± 5 s timing adjustment. The unit's purpose is to apply CRS to the Starflex frame bus. An example of use would be the transfer of timing from another Starflex frames' CRS source.

3140	\$895.00
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Starflex 3150 External CRS Black Burst Slave

The 3150 is one module bay wide and accepts CRS from an external source (rear panel BNC), supplies it (CRS) to the frame bus and supplies black burst to a BNC output.

It provides user adjustable "H" rate pulse widths, horizontal timing control, and 360° SCH.

3150	\$895.00
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Starflex 3020 150W Power Supply

The power supply is separate from the frame, and may be positioned anywhere in the frame, as desired. May be used in multiples. Use of removable modular rear panels allows totally customized connectors and labeling.

3020	\$326.00
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Starflex 3410 CRS Slave

The 3410 is one module bay wide, employing two high impedance loopthrough inputs. It locks to a CRS input only and CRS is selectable between the motherboard bus (normal) or the rear panel BNC input (optional). The 3410's outputs are timing pulses only.

3410	\$895.00
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Starflex 3420 CRS-Black Burst Slave

The 3420 is one module bay wide, employing two high-impedance loopthrough inputs, accepting 1V p-p CRS. The CRS input is selectable between the motherboard bus (normal), or rear panel BNC (optional). Output of the 3420 is two black burst, 75 ohms, terminated.

3420	\$895.00
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Starflex Series

Starflex 3500 Precision Video Distribution Amplifier

The 3500 is a one input, six output (75 ohm) precision distribution amplifier with full pulse and subcarrier capability. It incorporates a fully differential front end circuit with an extremely high common-mode rejection ratio. It is immune to parasitic high frequency failure and capable of handling the bandwidth of HDTV.

It is available with feedback clamp as well as cable equalizer options.

3500	\$319.00
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Starflex 3520 Universal Distribution Amplifier

The 3520 is a one input (high impedance loopthrough), six output (75 ohm, terminated) video distribution amplifier. It provides an economic alternative for the user who does not require the feedback clamp or cable equalizer options of the Starflex 3500. The 3520 is capable of handling the HDTV bandwidth.

3520	\$214.00
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Starflex 4350 Videoscope

The 4350 is a third generation Videoscope designed to use only one bay in the Starflex frame system. The 4350 Videoscope displays an accurate measurement of the SC/H and timing relationship of any NTSC standard video signals on any NTSC standard monitor, B and W or color.

Innovative use of a video insert display allows determination of reference signal SC/H phase and burst amplitude, and allows comparison with system SC/H phase as well as vertical and horizontal timing. This information is displayed while allowing the input signals to be viewed. To avoid washout of the Videoscope information with high APL, a Shadow mode is available which reduces contrast in the display insert portion. Additionally, the Videoscope display insert can be completely deactivated for crucial monitoring.

4350	\$2350.00
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Starflex 4500 Digital Frame Synchronizer/Time Base Corrector

This module is two bays wide with two inputs. The main input is a high-impedance loopthrough black burst for frame synchronization, ± 3 dB from .429V p-p nominal. The second input is a VTR BNC, 75 ohm terminated. It has a 15-pin subminiature "D" remote connector.

The unit has two outputs. One is a time base corrected BNC video output that has auto-bypass operation. If the unit loses reference black burst (module is removed or loss of frame power), or if bypass is selected, the input video will be hard bypassed to this output BNC.

The second BNC output is for monitoring purposes and is time base corrected. A freeze frame can be selected by a front panel control.

4500	\$3995.00
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Starflex 6500 Audio Distribution Amplifier

This module is one bay wide with one input and six outputs (150 ohm output capability). The 6500 incorporates balanced (transformerless) differential input and output circuitry.

The signal-path is direct-coupled throughout (no capacitors) and possesses low noise, minimum phase shift and wide power bandwidth (200K). In addition, the 6500 creates a differential (balanced) output from a single-ended input.

Two 6500's may be operated in a stereo configuration by utilizing the two audio-send buses in the Starflex system frame.

6500	\$360.00
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LENCO, INC.*Terminal Equipment***300 Series Terminal Equipment****PFM-300 Mainframe and Power Supply**

Heart of the system. Consists of a power transformer, power supply and nine cells with connectors \$ 875.00

PFM-300-1 300 System Mainframe

With dual power supplies 1095.00

PFM-301 Mainframe and Power Supply

System frame with a dual power transformer and power supply 1595.00

PPS-302 Spare Power Supply For PFM-300 frame \$ 145.00**PBL-305 300 Series Blank Panel Single width** 15.00**PBL-306 300 Series Blank Panel Double width** 16.00**PEX-308 300 Series Extender Board** 71.00**PEX-309 300 Series Extender Board**

For double width units 128.00

PSG-310 Digital Color Sync Generator

Ultra-stable and trouble-free generator with features not normally found in broadcast equipment 1238.00

Variable Blanking Width Assembly (option 1) 170.00**PSG-311 Digital Color Sync Generator**

Engineered to operate with helical VTRs or other unstable time base signal equipment 1238.00

Variable Blanking Width Assembly (option 1) 170.00**PMG-312 Master Sync Generator**

Designed to provide high quality. Meets demanding specs . . . 2575.00

PSG-313A Digital Sync Generator

Frame resident, genlocking, RS170A, designed for broadcast, industrial and computer graphics, broadcast spec oscillator. 1535.00

PFT-314 Frame Timing Module

Receives signal and supplies PFM-300 all six drive signals . . . 1095.00

PGS-315 Sync Generator Substitute Module

Performs generator functions, jitter free and can be perfectly timed. 663.00

PFI-316 Frame Interface Module

Inexpensive way to supply signals to PFM-300 frame. Does not have delay circuits. 413.00

PCO-317 Automatic Sync Changeover Switch 655.00**PCO-318 Automatic Sync Generator Changeover**

With black burst for PFM-301 frame only (option 1) 922.00

Black Burst Generator For PCO-318 only (option 2) 275.00**Remote Control For PCO-318** 220.00**PCB-320 Encoded Color Bar Generator**

Features a single composite delay circuit 1082.00

PBB-321 Black Burst Generator

Provides composite sync, set-up and burst 655.00

PBD-322 Bar Dot Visual Reference Generator

Provides standard dot grading signals and linearity test signals . . . 922.00

PMB-323 Multiburst/Sweep Generator

A combination of two generators for overall system measurements 1025.00

PSS-324 Stairstep/Ramp Generator

Features a negative signal for all combinations of test signals . . . 1133.00

PPB-325 SIN² Pulse Window Generator

Features nine test signals. 1334.00

PFF-329 Blackburst/Background Generator

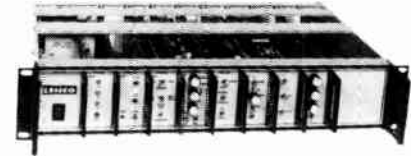
Provides the black input to switching systems 700.00

PSD-340 System Delay Module

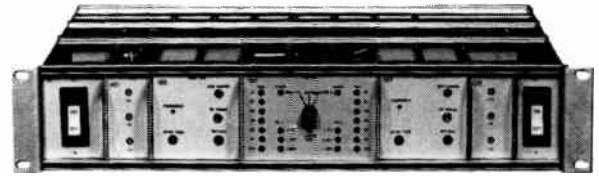
Supplies all drive signals to any video source with timing capabilities 605.00

PST-341 System Timing Module

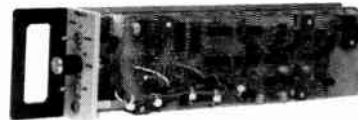
With optional black burst output, features delay and advance, requires PMG-312 to provide system distribution and timing 1095.00



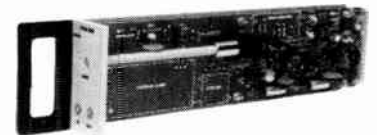
PFM-300



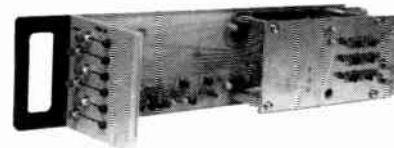
PFM-301



PSS-324



PVA-350



PSW-367

PBT-342 Black Burst Timing Module

Features delay and advance, requires PMG-312 \$ 1095.00

PPA-343 Pulse Distribution Amplifier

For standard methods of individual pulse distribution 314.00

Pulse Delay Assembly

For PPA-343 (option 1) 214.00

PFO-344 Fan-out Pulse Distribution Amplifier

Six separate and independent DA cells, features one input and one output with unity gain 413.00

PSA-346 Subcarrier Distribution Amplifier

Provides 3.58MHz sine wave, pure and distortion free 435.00

PVA-350 Video Distribution Amplifier

Flat to 15MHz, auto DC offset control, low noise, 70dB common mode rejection 319.00

Feedback Clamp Assembly (option 1) 121.00**Cable Equalizer Assembly (option 2)** 99.00**Sync Adding Assembly (option 3)** 66.00**PVA-351 White Clip Video Amplifier**Provides 60dB common mode rejection, gain is adjustable ± 6 dB, frequency response is flat to 10MHz 424.00**PVA-352 Utility Video Distribution Amplifier**

Quality performance, LED remains lit when correctly powered, front mounted gain control and test points. 197.00

PVD-354 Variable Delay Video AmplifierFeatures no insertion loss, will provide 1,051 μ s of equalized video delay 1095.00**PRC-365 Processing Amplifier with Sync Generator**

High performance requires only PFM-300 and power supply . . . 2079.00

PSW-367 6 x 1 Vertical Interval Switcher

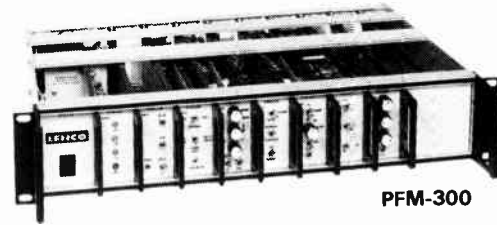
Provides six test signals, switches to either genlock video or one other external video source 605.00

300 SERIES TERMINAL EQUIPMENT

PFM-300 Mainframe and Power Supply

The PFM-300 Mainframe is the heart of the 300 System. It consists of a power transformer, the PPS-302 Power Supply, and nine cells with connectors mounted on a "mother board". The PPS-302 supplies the power buses in the frame with $\pm 15\text{VDC}$ and $+8\text{VDC}$.

PFM-300 Mainframe and power supply \$ 875.00
PFM-300-1 300 System Mainframe
 with dual power supplies. 1095.00

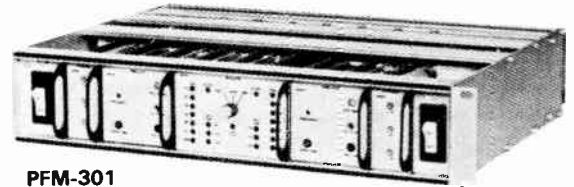


PFM-300

PFM-301 Mainframe and Power Supply

Unlike the PFM-300, the PFM-301 is a system frame with a dual power transformer and power supply. It is designed to house two PMG-312 Master Sync Generators and one PCO-318 Changeover unit only.

PFM-301 Mainframe and power supply \$ 1595.00



PFM-301

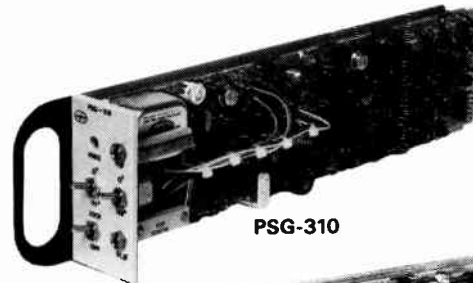
Accessories

PPS-302 Spare power supply for PFM-300 frame \$ 145.00
P8L-305 300 Series blank panel—single width 15.00
PBL-306 300 Series blank panel—double width 16.00
PEX-308 300 Series extender board 71.00
PEX-309 300 Series extender for double width units 128.00

**PSG-310 Digital Color Sync Generator
 W/RS-170 Genlock**

The PSG-310 Digital Color Sync Generator exemplifies the latest in design techniques of digital engineering. The unique circuit allows us to offer an ultra-stable and trouble-free generator, with exclusive features not normally found in broadcast quality equipment.

PSG-310 Digital color sync generator \$ 1238.00
 Option 1 Variable blanking width assembly 170.00

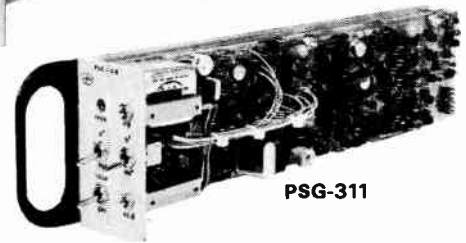


PSG-310

PSG-311 Digital Color Sync Generator

The PSG-311 Digital Color Sync Generator incorporates the same unique design techniques that are found in the PSG-310 Sync Generator. The only exception is in the genlock circuitry. The PSG-311 was engineered to operate with helical VTR's or other equipment that supplies unstable time base signals.

PSG-311 Digital color sync generator \$ 1238.00
 Option 1 Variable blanking width assembly 170.00



PSG-311

PMG-312 Master Sync Generator

The PMG-312 is a professional Master Color Sync Generator designed to meet the most demanding specifications for performance and stability. The design criterion was to provide a high quality master color sync generator that includes all the features desired by the discerning engineer. Utilization of the latest state-of-the-art techniques are incorporated in the PMG-312.

PMG-312 \$ 2575.00



PMG-312

**PSG-313A Frame Resident, Genlocking,
 RS170A Digital Sync Generator**

Developed to meet the advanced technology demands of the Broadcast, Industrial and Computer Graphics video markets.

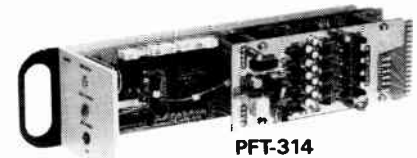
Features: RS170A specification, Digital Design, Multifunction genlock with exclusive PC lock, Panel status lights, Full 360° Sch phasing, Full $\pm 5\mu\text{s}$ H phasing, Fail safe mode for loss of burst, Broadcast spec. TCVCXO (Temperature Controlled, Voltage Controlled, Crystal Oscillator).

PSG-313A \$ 1535.00

PFT-314 Frame Timing Module

The PFT-314 basically has the same system responsibility as its sister unit, the PGS-315 Generator Substitute unit. That is, its primary function is to receive an external signal and supply the PFM-300 frame mother board with all the six drive signals. The PFT-314 has major differences: The input signal is a Composite Reference Signal (CRS) instead of individual drive signals; provides a complete set of output signals for use external to the frame; has advanced timing capabilities instead of just delay, and subcarrier is phase locked to H Sync.

PFT-314 \$ 1095.00



PFT-314

300 SERIES (cont'd)

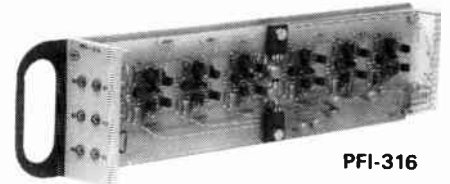
PGS-315 Sync Generator Substitute Module

The PGS-315 Sync Generator Substitute module is a valuable member of the overall 300 System concept. It has the primary function of replacing the PSG-310 or PSG-311 Sync Generators when external drive sources are available to the PFM-300 Frame. The PGS-315 accepts Sync, Blanking, H-Drive, V-Drive and Subcarrier from an external source, processes these signals and distributes them to the proper buses in the frame. The identical digital delay circuits, as described in the PSD-340 System Delay Module, are also in the PGS-315 Module, providing the system timing capabilities for the frame. Because the PGS-315 is not a generator, although in this application it is performing the same function, the pulses supplied to the frame are absolutely jitter free and can be perfectly timed.

PGS-315\$663.00



PGS-315

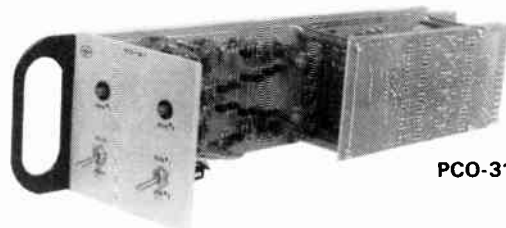


PFI-316

PFI-316 Frame Interface Module

The PFI-316 Frame Interface Module is a unique and inexpensive way of allowing an external generator to supply signals to the PFM-300 Frame. It has the primary function of replacing the PSG-310 or PSG-311 when external drive pulses are available to the PFM-300 Frame. The PFI-316 accepts Sync, Blanking, H-Drive, V-Drive, Subcarrier, and Burst Flag from an external source for proper distribution to the mother board buses in the frame. There are no delay circuits in the PFI-316. Its function is simply to apply the proper level and impedance of each signal to the frame.

PFI-316\$413.00



PCO-317

PCO-317 Automatic Sync Changeover Switch

The PCO-317 Automatic Sync Changeover Switch is a remarkable state-of-the-art device designed to instantly recognize the failure of any synchronizing signals and immediately switch to an alternate source. Signal sensing circuits monitor each input for the level and timing of the Sync, Blanking, Horizontal Drive, Vertical Drive, Burst Flag, and Subcarrier signals. Upon loss of the primary generator, the PCO-317 will supply the frame buses with the alternate source only if their signals are acceptable to the changeover module's parameters. It will not switch to a faulty generator.

PCO-317\$655.00

PCO-318 Automatic Sync Generator Changeover with Black Burst (for PFM-301 frame only).\$922.00

Option 1 Black Burst Generator, (for PCO-318 only)\$275.00

Option 2 Remote Control for PCO-318.\$220.00



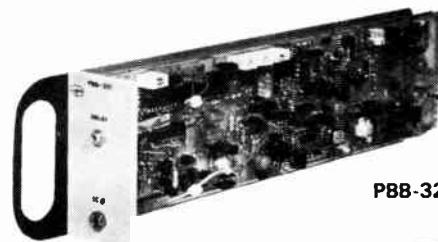
PCB-320

PCB-320 Encoded Color Bar Generator

The PCB-320 Encoded Color Bar Generator is a precision test signal generator engineered to conform to the EIA RS-189-A and NTSC specifications. Reflecting the progressive concept of the 300 System, the PCB-320 includes the new SMPTE Alignment Color Bar Test Signal with chroma and black set signals. The encoder is a true NTSC standard as evidenced by the precise filtering of the I and Q channels shown by the waveform.

One of the exclusive features of the PCB-320 is the single control composite video delay circuit which, for the first time, allows system timing of test signals.

PCB-320\$1082.00

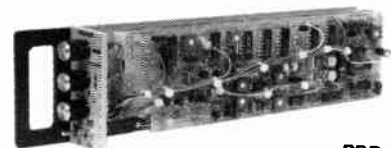


PBB-321

PBB-321 Black Burst Generator

The PBB-321 Black Burst Generator is a precision professional broadcast quality Black Burst Generator that provides a "Color Black" video signal composed of composite sync, set-up and color burst. This signal is used as the black reference input to switching systems, cameras or may be used as a signal source to genlock remote sync generators to "House" sync.

PBB-321\$655.00



PBD-322

PBD-322 Bar Dot/Visual Reference Generator

The PBD-322 Bar Dot/Visual Reference Generator is one of the 300 System's most technically advanced signal generators. It is two separate and independent generators providing the standard dot grading signals, and a new linearity test signal, including a "Safe Title" signal.

The Bar Dot Generator digitally produces EIA standard horizontal and vertical bars, cross hatch, and dot signals used in the testing for convergence of color monitors and camera sweep circuits. Horizontal and vertical position controls, plus pattern selection, are located on the front panel.

PBD-322\$922.00

LENCO, INC.

Terminal Equipment

300 SERIES (cont'd)**PMB-323 Multiburst/Sweep Generator**

The PMB-323 Multiburst and Sweep Generator is a combination of two precision test signal generators which are required for overall system frequency response measurements. A front panel switch provides for selection of either the Multiburst signal, the Sweep signal, or both (on alternate lines). Other switches allow for the selection of full or reduced amplitude and burst on-off. The multiburst frequencies are preset to EIA standards but burst frequencies can be adjusted to 10MHz if required. Stability of both amplitude and frequency is assured by a precision function generator operating within a feedback loop. The burst levels are fixed and cannot change as are the sync and setup levels. The Sweep Generator provides a linear sweep at a horizontal rate from 0.5MHz to approximately 12MHz with overall flatness of 0.2dB. Fixed markers are provided at 2.0MHz intervals.

PMB-323 \$1025.00

PSS-324 Stairstep/Ramp Generator

The PSS-324 Stairstep/Ramp Generator provides a precision test signal for measuring differential phase and gain, luminance linearity, and burst phase error of a video system. An exclusive feature of the generator is a negative signal for all combinations of test signals. This is a very important function for the testing of differential phase and gain in the burst region. Strict conformity to the standards of IEEE 206 is adhered to, as well as a true video bounce test that conforms to standard APL definitions.

PSS-324 \$1133.00

PPB-325 SIN² Pulse Window Generator

The PPB-325 Sin² Pulse Window Generator is another in the series of fine, precision, state-of-the-art signal generators. Unique engineering and packaging techniques have provided the following nine precision test signals in a one module width plug-in unit: Modulated 12.5T and 20T, T, 2T, or T/2 pulses, window or bar signals and the exclusive "pluge" pulse. The PPB-325, with a combination of front panel switches and internal strapping options, can provide almost any combination of the nine signals. This feature was designed to allow the user to determine the proper test signals which are best suited for his particular system application.

PPB-325 \$1334.00

PFF-329 Black Burst/Background Generator

The Black Burst section of the PFF-329 provides a "Color Black" video signal composed of composite sync, setup, and color burst. This signal is used as the black input to switching systems, or may be used as a signal source to genlock remote sync generators to "House" sync.

The Color Background section produces a solid field of color and, when connected to the input of a special effects generator or video insert keyer, provides color backgrounds for titles and other inserts. A standard feature of all 300 System Generators is a composite delay which provides for delaying the output signal up to 1.5μs to assist in system timing.

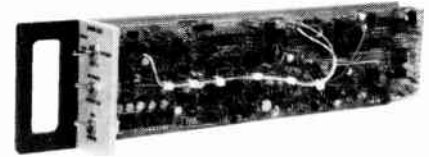
PFF-329 \$700.00

PSD-340 System Delay Module

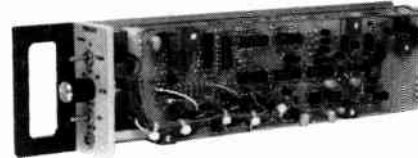
The PSD-340 System Delay Module has completely changed the traditional system timing techniques as they are now used. This unique system concept obsoletes the use of pulse and subcarrier distribution amplifiers, as well as excessive cable or other external delay devices used in system timing. The PSD-340 will supply all drive signals to any video source, including subcarrier, with the unique capability of timing these signals to your system requirements. This jitter-free device can be compared with having an individual genlock sync generator driving each camera, switcher, VTR, etc.

PSD-340 \$605.00

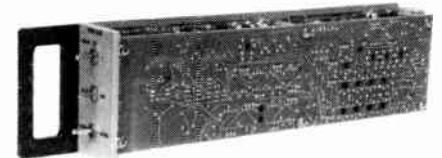
PMB-323



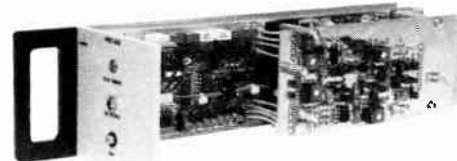
PSS-324



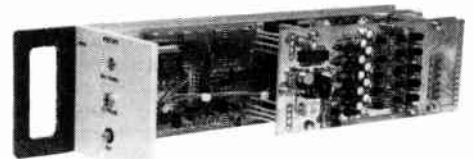
PPB-325



PST-341



PBT-342

**PST-341 System Timing Module with Optional Black Burst Output**

The PST-341 System Timing Module is a new generation of system timing equipment added to the "300 System". It not only has delay, but advance as well. The PST-341 requires the Composite Reference Signal (CRS), from the PMG-312 Master Sync Generator via the PFM-300 Frame mother board. This Composite Reference Signal supplies Master Sync Generator timing information to the PST-341 for the purpose of system distribution and timing.

PST-341 \$1095.00

PBT-342 Black Burst Timing Module

The PBT-342 Blackburst Timing Module not only has delay, but advance as well. The PBT-342 requires the Composite Reference Signal (CRS) from the PMG-312 Master Sync Generator via the PFM-300 Frame mother board. This Composite Reference Signal supplies Master Sync Generator timing information to the PBT-342 for the purpose of system distribution and timing of blackburst required devices.

PBT-342 \$1095.00

PPA-343 Pulse Distribution Amplifier

The PPA-343 Pulse Distribution Amplifier is an important module in the overall concept of the 300 System. Although the PSD-340 System Delay Module is the modern method of pulse distribution and system timing, there are still many applications where the standard methods of individual pulse distribution are required.

PPA-343 \$314.00
Option 1 Pulse Delay Assembly for PPA-343 214.00

LENCO, INC.*Terminal Equipment***300 SERIES (cont'd)****PFO-344 Fan-Out Pulse Distribution Amplifier**

The PFO-344 is a universal fan-out amplifier consisting of six separate and independent DA cells. Each cell has one input and one output with unity gain. Each cell can be programmed by changing connector positions to select any combination of drive pulses. The pulses are made available on the frame mother board by any of the 300 Series sync generators or an interface module.

PFO-344 \$413.00

PSA-346 Subcarrier Distribution Amplifier

The PSA-346 Subcarrier Distribution Amplifier was designed to supplement the versatile 300 System's unique concept and incorporates the same state-of-the-art design techniques found in all of the 300 System modules. The PSA-346 is a precision, ultra-stable, regenerative subcarrier amplifier whose advanced circuitry provides a pure, distortion-free 3.58MHz sine wave.

PSA-346 \$435.00

PVA-350 Video Distribution Amplifier

The PVA-350 Video Distribution Amplifier reflects a new concept in engineering techniques, bringing to the 300 System a versatile state-of-the-art video amplifier with outstanding performance characteristics. The PVA-350 is flat to 15MHz, has a unique automatic DC offset control, and offers low noise, excellent stability, and virtually no distortion. A differential amplifier on the input is standard in the PVA-350, and provides 70dB of common mode rejection.

PVA-350 \$319.00

Option 1 Feedback Clamp Assembly \$121.00

Option 2 Cable Equalizer Assembly \$99.00

Option 3 Sync Adding Assembly \$66.00

PVA-351 White Clip Video Amplifier

The PVA-351 Video White Clip Distribution Amplifier has a differential high impedance looping input that is standard and provides more than 60dB of common mode rejection for reduced ground loop hum pickup. Gain is front panel adjustable over a ± 6 dB range. Frequency response is flat to 10MHz. The PVA-351 offers low noise and excellent stability with virtually no signal degradation. Four 75 ohms source terminated DC coupled outputs are provided with excellent low frequency transient response and 40dB of isolation.

PVA-351 \$424.00

PVA-352 Utility Video Distribution Amplifier

The PVA-352 provides the quality-conscious as well as cost-conscious user the features and performance expected by broadcasters and video production houses.

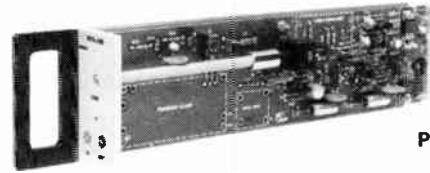
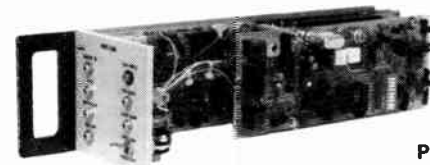
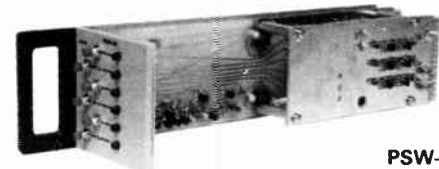
Dependable video distribution within a television facility is critical. The front mounted power status LED remains lighted when the PVA-352 is correctly powered. A front mount gain control provides precise adjustments of each distribution amplifier for a variety of applications. The front mounted video test points allow critical system analysis without removing the module from the frame.

PVA-352 \$197.00

PVD-354 Variable Delay Video Amplifier

The PVD-354 Variable Delay Amplifier is a precision device that has widespread system applications when quality and accuracy of video timing is desired. Most passive video display devices have a very sharp frequency roll-off above 5MHz and show an insertion loss of about 6dB. This requires the use of a video distribution amplifier with enough gain to bring the signal up to normal. The PVD-354, however, is a wideband device that has no insertion loss, and will provide up to 1,051 μ s of equalized video delay, with infinite resolution of delay setting.

PVD-354 \$1095.00

**PVA-350****PVD-354****PRC-365****PSW-367****PRC-365 Processing Amplifier with Sync Generator**

The PRC-365 is a high performance video processing device. It is designed for use in studios, master control facilities or transmitter locations. It features standard or helical lock, differential video input, luminance only black clip, a soft white clip, internal digital sync generator, vertical interval line select, front panel controlled pedestal, genlock capability and a front panel LED that indicates the presence or absence of video. The PRC-365 requires only the PFM-300 Frame and Power Supply for operation.

PRC-365 \$2079.00

PSW-367 6x1 Vertical Interval Switcher

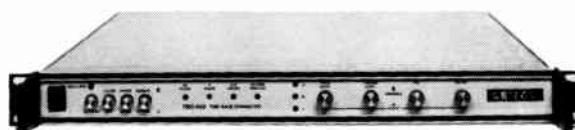
The PSW-367 6x1 Test Switcher was designed to provide a unique and economical method of selecting the various output signals from the test signal generators that may be installed in the PFM-300 Frame. In addition to the six test module signals, provisions have been included to allow the PSW-367 to switch to either the "Genlock Video" or one other external video source. The PSW-367 will switch during the vertical interval and the LED display will constantly monitor the switch status.

PSW-367 \$605.00

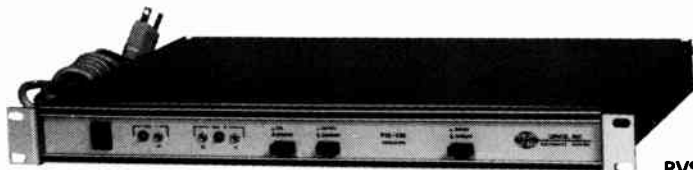
PSG-412



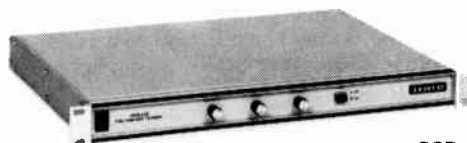
T8C-450



PVS-430



PCD-473



THE 400 SYSTEM

PSG-412 Master Sync Generator with Genlock, RS170A*

The PSG-412 is a Master Sync Generator with genlock. This unit meets the proposed RS-170A specifications. It maintains an accurate SC/H phase condition. There are 2 outputs of each drive pulse plus blackburst, video, CRS, burst flag and color field identification. CFI is programmed for field 1 line 10. An ovenized crystal is used to maintain an accurate internal timebase. All pulse widths are adjustable except VD and field ID. Vertical blanking is selectable between line 17 through 21. Also converts the genlock video to RS-170A by inserting a regenerated blackburst signal.

- PSG-412 \$3502.00
- P8L-400 1 3/4" x 19" Blank Panel* 43.00

PCO-418

Automatic Sync Pulse Changeover for PSG-12*

The PCO-418 Automatic Changeover Switch instantly recognizes the failure of any of nine pulses and immediately switches to an alternate generator. There are nine LEDs metering each generator. A nine position DIP switch allows the lock-out of any of the nine generator pulses. A front panel switch selects GEN-1 or GEN-2 or Auto. The unit switches on failure of HD, VD, SY, SC, BL, CRS, BF, BB and CFI.

- PCO-418 \$1995.00

VNM-428 Video Noise Meter*

The VNM-428 is a Video Noise Meter that offers the in-service capability of making accurate real time signal-to-noise measurements. It has a built-in calibrator that insures an accuracy of 1% through its range of 28.5dB to 76dB. The signal-to-noise ratio is shown directly on a large LED display. The VNM-428 can be calibrated to read directly in either the EIA or PAL-M system standards.

- VNM-428 \$2145.00

PVS-430 Videoscope

The PVS-430 provides a true method for certifying the correct SC/H phase relationship. The PVS-430 will measure very accurately the SC/H phase relationship and compare the video input of a switcher or mixer for precise and accurate system timing. In an editing system, the Videoscope provides a useful method of determining off-tape SC/H phase.

- PVS-430 \$3245.00
- PVS-435* Videoscope with video display and LED readout 4153.00

T8C-450 Digital Time Base Corrector

The T8C-450 high performance unit is sophisticated in its techniques yet its simplistic design allows unparalleled performance in a wide range of professional broadcast applications.

At less than 15 lbs. and only 1 rack unit tall, this digital device with its remarkably low power consumption requires no external cooling. The T8C-450 is engineered to be ultra reliable to keep downtime to a minimum, yet its totally digital design allows for quick and easy servicing. An essential part of any professional editing system, this compact unit has been constructed to be rugged enough to withstand the toughest applications.

With its state-of-the-art components, the T8C-450 is the answer to today's requirements for space-saving design, superior quality and unbeatable economy for the professional video user.

- T8C-450 \$5995.00

*Indicates availability for PAL System also

PRC-465 Processing Amplifier

The PRC-465 is a self-contained stand alone processing amplifier. The unit features chroma processing, a 10MHz luminance band pass, luminance only black clip, white clip, and a line by line VIT-VIR pass or delete selector. The unit has its own built-in sync generator, but may be set up to run off of an external video reference source such as blackburst. An internal switch allows the unit a greater lock range and enables the device to process the output of a helical scan VTR. Front panel controls provide adjustment of Burst Phase, Horizontal Phase, White Clip, Set Up, Video Gain, Chroma Gain, and Proc On/Off switch.

- PRC-465 \$2525.00

PCE-466 Color Encoder*

The PCE-466 Encoder produces an NTSC/EIA color signal from either a three or four channel video source. The fourth, or luminance channel, is optional. The encoder requires red, green, blue, sync, SC and blanking input. Split field color bars meeting RS-189A are standard. Full field or split bars are selectable internally. Front panel switches allow the selection of operate, color bars, black burst or mono. All inputs are 75 ohm loopthrough. Two video outputs.

- PCE-466 \$3450.00
- PCE-4661* Plug-in luminance channel 795.00
- PCE-4662 Plug-in genlock option 747.00

PSW-467 Vertical Interval Bridging Switcher*

The PSW-467 is a 12 x 1 vertical interval bridging switcher. It is designed to efficiently and economically route or delegate video signals.

- PSW-467 \$1150.00

PAF-467 Audio Follow Bridging Switcher*

The PAF-467 is a 12 x 1 Audio Follow Video Switcher designed as a companion to the PSW-467 Video Switcher.

- PAF-467 \$940.00

PSR-467 Remote Control*

The PSR-467 Remote Control is a self-contained rackmounted unit that can be located up to 1000' from the switcher location. It requires no external power source because it receives its power from the PSW-467 or PSW-468 Video Switcher.

- PSR-467 \$604.00
- PSR-4673* Remote control P.C. board assembly 289.00

PSW-468 Remote Vertical Interval Video Switcher*

The PSW-468 is a 12 x 1 remotely controlled, vertical interval video switcher. This switcher has no push buttons. All input switching is controlled by the companion PSR-467 remote control unit or PSW-467 vertical interval switcher.

- PSW-468 \$985.00

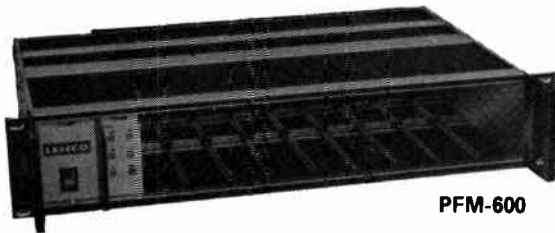
PCD-473 NTSC Component Decoder

The PCD-473 is a self-contained chroma demodulator. The unit provides outputs of red, green, and blue signals or Y, R-Y, B-Y, signals, or I, Y, Q signals. Selection of outputs is internal to the unit through a jumper system. The unit features a comb filter which is switchable in and out of service through a lighted front panel switch. The front panel controls provide adjustment of Hue, Saturation, and Video level. A regenerated composite sync output is standard on the PCD-473.

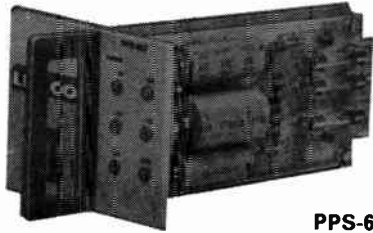
- PCD-473 \$3190.00

LENCO, INC.

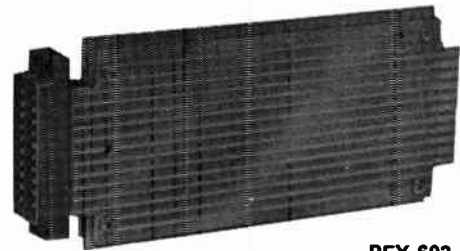
Terminal Equipment



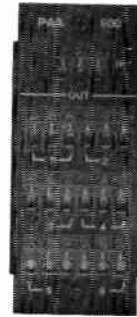
PFM-600



PPS-602



PEX-602



PAA-600



PAA-601

600 SERIES AUDIO TERMINAL EQUIPMENT

PFM-600 Main Frame and Power Supply*

The PFM-600 Main Frame is designed to accommodate both audio and video components. It is a nondedicated frame that will have virtually any configuration of audio and video components.

The nine cell design will house any 600 Series Audio modules and most of the 300 Series Video modules. The frame includes the PPS-602 Power Supply, a switchable tap transformer, RFI shielding and an exclusive rear panel design.

PFM-600 \$875.00

PPS-602 Power Supply*

The PPS-602 Power Supply is available as a separate unit for the PFM-600 Main Frame. The unit provides the frame with unregulated DC supplies of $\pm 15\text{VDC}$ and $+8\text{VDC}$ for the video modules and $\pm 24\text{VDC}$ for the audio modules. The individual modules regulate these voltages to 12 , $+5$ and 20VDC . Each supply on the PPS-602 is fused for maximum protection.

PPS-602. \$165.00

PEX-602 Extender Board*

The PEX-602 is an extender board for the PPS-602 Power Supply. The PEX-602 extends the PPS-602 out front of the PFM-600 Main Frame for easy servicing. The unit is made up of two extender boards mounted back to back.

PEX-602 \$87.00

PAA-600 Rear Module Cell*

The PAA-600 is the rear module cell for the PAA-650 and PAA-651 Audio Distribution Amplifiers. The PAA-600 is a one in, six out, into 600 ohms rear module cell. The PAA-600 is RFI shielded with ferrite beads and a capacitor network. The unit utilizes captive pressure screw terminals to

secure the audio cables. Signal feeds can be connected externally to the PFM-600 Main Frame and after all connections are made, the PAA-600 can be secured to the frame with only two screws.

PAA-600 \$72.00

PAA-601 Rear Module Cell*

The PAA-601 is the rear module cell for the PAA-650 and PAA-651 Audio Distribution Amplifiers. The PAA-601 is a one in, two out, into 150 ohms rear module cell. The PAA-601 is RFI shielded with ferrite beads and a capacitor network. The unit utilizes captive pressure screw terminals to secure the audio cables.

PAA-601 \$70.00

PAM-600 Rear Module Cell*

The PAM-600 is the rear module cell that is to be used with the PAM-626 Audio Monitor Amplifier. The PAM-600 features A and B channel external inputs, either balanced or unbalanced, A and B internal bus outputs, and A and B outputs to drive 8 ohm speakers. All connections are made with a captive pressure screw terminal block.

PAM-600 \$66.00

PMA-600 Rear Module Cell

The PMA-600 is the rear module cell that is to be used with the PMA-670 Impedance Matching Amplifier. Two phono jacks accommodate the low level, high impedance, unbalanced outputs and the other two phono jacks are the inputs from low high impedance sources. There are two sets of captive pressure screw terminal blocks. One set is for the inputs from two high level, low impedance 600 ohm level sources. The other set is the outputs for two high level, low impedance, 600 ohm signals.

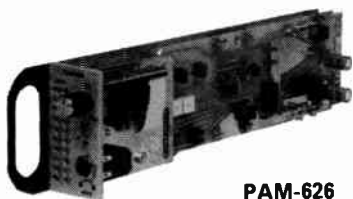
PMA-600 \$66.00

*Indicates availability for PAL System as well as NTSC Systems as shown.

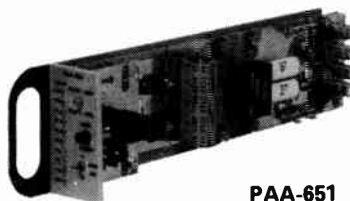
Refer to Green Section for Addresses and Telephone Numbers.

LENCO, INC.

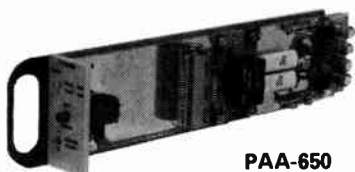
Audio Terminal Equipment



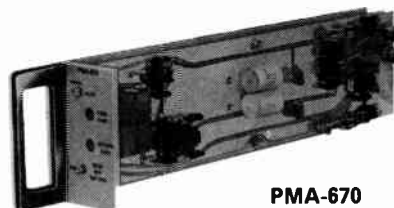
PAM-626



PAA-651



PAA-650



PMA-670

600 SERIES AUDIO TERMINAL EQUIPMENT (cont'd)

PVA-600 Rear Module Cell*

The PVA-600 is the rear module cell compatible with all usable 300 Series video modules. This single wide module cell contains 8 isolated BNC connectors. The PMG-312, PFT-314 and the PSW-367 will require 2 PVA-600 rear module cells to operate in the PFM-600 Main Frame.

PVA-600 \$68.00

PBL-605 and PBL-606 Blank Rear Panels*

The PBL-605 and PBL-606 are blank rear panels for the PFM-600 Main Frame. These rear module cells will provide a clean environment for the mother board and connectors by isolating the unit from dust and debris. The PBL-605 is a single wide blank rear module cell and the PBL-606 is a double wide blank rear module cell.

PBL-605 \$13.00

PBL-606 15.00

PAM-626 Audio Monitoring Amplifier*

The PAM-626 is a 4.5 watt per channel audio amplifier for the PFM-600 Main Frame. Four inputs provide for two internal and two external signal sources, either combination of which can be monitored on the two, 10-LED peak level meters. The convenient headphone jack permits monitoring either combination of inputs. Headphone volume is controlled by means of the speaker/headphone volume control on the front panel. A front panel switch selects either the two internal A and B bus signals or the two external A and B input signals. The correct rear module cell must be specified to match the appropriate module.

PAM-626 \$495.00

PAA-650 Audio Distribution Amplifier*

The PAA-650 features a transformerless balanced bridging circuit, with the input AC coupled to protect it from excessive DC and diode protected to prevent overloading of the input cell. The common mode circuit provides over 70dB

of common mode rejection on the input signal. The balanced input circuit can be converted to accept an unbalanced input simply by connecting the + or - input to ground. Signal-to-noise ratio is approximately -105dBv and frequency response is +0 to -0.2dB from 20Hz to 20kHz. The PAA-650 also features front panel selection of of the A/B bus system for monitoring purposes. The appropriate rear module cell must be specified when ordering this unit.

PAA-650 \$424.00

PAA-651 Audio Distribution Amplifier with Peak Level Metering*

The PAA-651 Audio Distribution Amplifier is identical in electrical specifications to the PAA-650. The PAA-651 features a front panel peak level meter. The peak level meter consists of 10 LEDs that operate in the range from -25dBm to +15dBm. The LEDs also serve as an overload indicator. A front panel switch on the PAA-651 allows the operator to take the output signal and place it on the A or B bus in the PFM-600 Main Frame. This allows a PAM-626 Monitoring Amplifier to select these signals and deliver them to speaker or headphone outputs. The appropriate rear module cell must be specified when ordering this unit.

PAA-651 \$495.00

PMA-670 Impedance Matching Amplifier*

The PMA-670 was designed to address the problems of two channel record-playback interfacing of balanced and unbalanced lines. The PMA-670 accepts two channels of high impedance unbalanced audio and outputs these two channels as 600 ohm balanced audio. The unit will also accept two channels of 600 ohm balanced audio and output these signals as unbalanced outputs. Phono jacks are used for low level high impedance inputs and outputs. Captive pressure screw terminals are used for the 600 ohm balanced high level inputs and outputs. The appropriate rear module cell must be specified when ordering this unit.

PMA-670 \$407.00

*Indicates availability for PAL System as well as NTSC Systems as shown.

LEXICON, INC.*Delay/Synchronizers/Compressor/Expanders*

1300

1300 Mono/1300S**Stereo Digital Audio Delay Synchronizers**

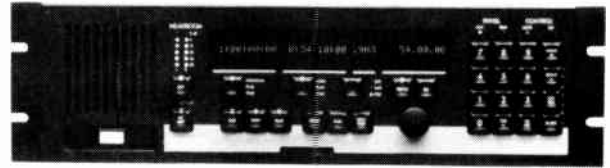
- Allows broadcasters to effectively solve lip sync problems
- Decodes the hysteresis and frame offset information from any video synchronizer
- Three standard decoding options are supplied: Pulse-width decoding, "wild-feed"/genlock decoding or serial data decoding
- Removable delay configuration control module
- Available in stereo or mono
- Allows synchronous operation of multiple units in master/slave configurations
- Up to two seconds of delay
- Full 20Hz to 20kHz bandwidth
- <0.025% distortion
- Dynamic range: >90dB
- Channel separation: >80dB
- Balanced inputs and outputs
- Displays and indicators have been engineered for ease of operation

At the heart of the 1300 is a microprocessor-controlled removable Delay Configuration Control Module. This module can be software-and/or hardware-configured to conform to any delay/sync decoding scheme for optimum compatibility with any video synchronizer or broadcast environment, now or in the future. This not only provides tremendous flexibility, but is also a protection against obsolescence. Three standard decoding options are provided: a pulse-width decoding scheme, a "wild feed"/genlock decoding scheme, or a serial data decoding scheme. Each has its own specialized software and corresponding interface panel. Any other decoding scheme may be customized to suit a specific application.

On the front panel, digit switches can set a delay offset value (displayed in milliseconds or frame units). The Delay Configuration Control Module determines the frame offset time, based on control signal input and the particular decoding scheme set-up, and scans the front-panel control settings to set the total delay. For those decoding schemes requiring a separate hysteresis signal, a dedicated logic input on the panel of the respective Delay Configuration Control Module decodes hysteresis information to ensure accurate determination of the frame offset time.

The 1300 has also addressed a potential problem in large broadcast set-ups, that of communication with the separately-located video and audio distribution areas. A Remote Video Sensing Module has been designed for physical placement in the video distribution area, with the ability to communicate frame offset and hysteresis information to the main chassis of the 1300 located in the audio distribution area. Communication with the Delay Configuration Control Module of the main chassis is enabled through an RS-422 communications link and Serial Data Interface Panel. The Remote Video Sensing Module can be hardware-configured to match the input requirements of the video sync signals, with standard interface panel options for "wild feed"/genlock inputs (Video Sense Interface Panel), pulse-width inputs (Pulse-Width Interface Panel), or serial data inputs (Serial Data Interface Panel).

1300 Mono with 683ms delay	\$3,700.00
4096ms delay	4,500.00
1300S Stereo with 341ms delay	4,200.00
2048ms delay	4,995.00



2400

1200C Mono/2400 Stereo Audio Time Compressor/Expanders

- Compact three unit high (5 1/4") rackmount
- Modular construction
- On-board diagnostics
- Hinged front panel for ease of servicing

Designed for use on both polyphonic music and voice, the 2400 is a true stereo device which employs digital signal processing algorithms to provide mono compatibility and precise stereo imaging. The 2400 is designed to change the running time of video, film or audio program material while maintaining the original audio pitch.

The 2400 system is designed to interface with SMPTE or EBU time code referenced synchronizers or directly to tape machines with time code follow capability. By generating variable rate time code, the 2400 is able to control play time precisely. Using a synchronizer, both audio and video machines can simultaneously time compress/expand in sync—a major benefit for post production applications.

The front panel, which is ergonomically designed for ease of operation, features a 40-character alphanumeric display, 10 storage registers with battery backup for saving complete front panel set-ups and "soft" knob control for changing expansion/compression parameters. The system enables the user to remote an additional panel via a 9-pin sub-miniature "D" type RS-422 connector.

Built-in programmable relays provide contact closures for external switching. This enables interfacing with control switchers and other machine control systems. Special machine control functions can be custom-designed by the user for a particular application, such as normal play, variable speed play, etc.

Interfacing of time compression/expansion for station automation can thus be provided.

The 2400 can also perform as a pitch shifter with adjustments made by the pitch shift ratio control on the machine's front panel. Entries can be made in either musical interval or pitch ratio formats. Applications extend to all requirements for high quality pitch shifting such as single tracks, special effects or a full mix.

The ten storage registers (or memory groups) feature a nonvolatile memory. Once the parameters for a particular requirement are set up, they can be recalled automatically. The memory groups can be labelled to create a "comment field" for each. All functions, parameters and registers, even for those not shown on the front panel, have battery backup.

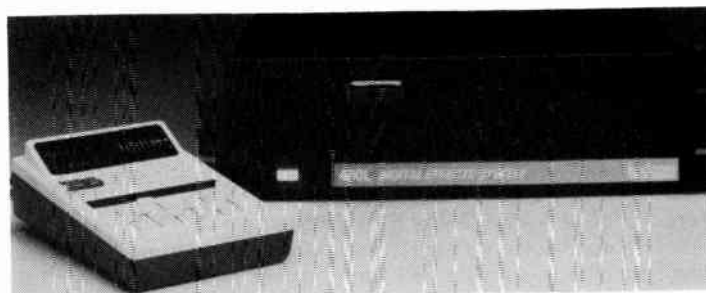
1200C Mono	\$ 9,500.00
2400 Stereo	14,950.00

LEXICON, INC.

Digital Reverberation/Effects

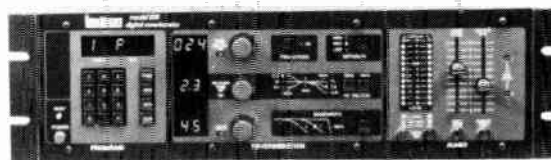
480L Digital Effects System

- Built with proprietary Lexicon custom VLSIs, the HSPs provide the processing power necessary to create sophisticated reverb and effects. The 480L can perform 16 million operations per second
- 18-bit equivalent analog-to-digital conversion for superb dynamic range
- Optoisolation of analog circuits from digital circuits ensure optimum S/N ratio. Ground loops between digital and analog sections are eliminated
- Active balanced inputs and outputs provide superior isolation from both audio and RF common mode noise
- High input and output levels for optimum compatibility
- A 68000 microprocessor mediates all communications from the motherboard, LARC, automation connector, digital I/O connector, MIDI connectors and the non-volatile memory cartridge
- Phase-lock loop circuitry gives the 480L the ability to lock onto an external clock and to become a slave to an external digital device
- Detailed system diagnostics
- User registers for storing program setups are located in the host's internal non-volatile memory. There are 50 user registers inside the box and 50 in a removable cartridge for the convenience and security of your clients
- The 480L has two LARC connectors allowing a number of different configuration possibilities. For example, you can have two LARCs hooked up to one 480L. This allows you to simultaneously and independently control two programs running in the same box or you can have a LARC in one control room using half of the 480L, and a LARC in another control room using the other half of the box
- The 480L can run any two of its programs simultaneously. For example, you can run a sampling program in one half of the box while a reverb program is running in the other half. The two programs can be used entirely independently, or they can be internally "patched" together in any of several flexible configurations
- In addition to its analog inputs and outputs, the 480L is also equipped with a digital I/O connector. This allows you to add signal processing to a stereo mix without ever leaving the digital domain. If you have a signal that's already in the digital domain, you avoid any signal degradation associated with extra conversion. This I/O also allows you to connect the output of one 480L to the input of another 480L without leaving the digital domain



LARC

480L



200

Sampling Rate: 48.0kHz/44.1kHz — selectable
Dimensions: Mainframe—Standard 19" rackmount.
 5.25"H x 19"W x 14.5"D; LARC—9.5"H x 5.9"W x 3.2"D

*These specifications are for 48kHz sampling rate conversion.
480L With LARC remote control \$9700.00
SME sampling memory expander 1999.00
480L Non-volatile memory cartridge 98.00
480L to Sony 1610/1630 interface cable assembly 220.00

200 Digital Reverberator

- Rackmountable
- On-board, front-panel reverb mix and level controls
- Ideally suited for use by small-to-medium-size studios, live performers, broadcasters and sound reinforcement companies
- Extremely broad range of control over all reverberant parameters
- Bandwidth of 10kHz
- High quality audio circuitry for wide dynamic range and freedom from distortion
- Adjustable front panel input level and mix controls
- Two inputs and two outputs provide spacious stereo returns from mono or stereo sources
- A whole range of subtle enhancements for recording electronic or acoustic instruments
- Non-volatile, memory-storage registers and numerous factory presets make the full range of processing functions instantly accessible
- Input mute and reverberation stop functions make it easy to set up and control reverberation
- Remote function jacks
- Standard keypad

The 200 is a full-featured digital reverberation/room simulation system that puts the capabilities of advanced Lexicon reverbs within the reach of modest budgets. Engineered to provide the versatility and sound quality in ambience processing, the rackmountable 200 features on-board, front-panel reverb mix and level controls and is ideally suited for use by small-to-medium-size studios, live performers, broadcasters, and sound reinforcement companies. It provides superb reverb performance heretofore only available to world-class studios.

200 \$4800.00
A-FS-97 Single footswitch \$21.00
A-FS-41 Dual footswitch 46.00
A-CP-41 Control pedal 55.00

Specifications

Audio Inputs

(Two): +6 to +28dBm, electronically balanced; +6 to +28dBm, unbalanced. Connectors: Female XLR-3

Common Mode

Rejection Ratio: > 40dB, 20Hz to 20kHz

Transformer

Option: User-installable, Jensen JE-11P-1

Audio Outputs

(Four): +6 to +24dBm, transformerless balanced (600 ohms); +6 to +20dBm unbalanced (600 ohms); minimum load impedance 150 ohms. Connectors: Male XLR-3

Common Mode

Rejection Ratio: > 35dB, 20Hz to 20kHz

Transformer

Option: User-installable, Jensen JE-123-SLPC

Frequency

Response*: 20Hz to 20kHz, +0.5dB, -1dB

Dynamic Range*

100dB typical, 96dB minimum, 22.4kHz un-weighted noise bandwidth

Total Harmonic

Distortion and Noise: ≤0.01% at 1kHz limit level (+18dBm unity gain). ≤0.05% 20Hz to 20kHz at 20dB below limit level

IM Distortion:

≤0.05% SMPTE IM at limit level

Channel

Separation: ≥75dB, 20Hz to 20kHz

LEXICON, INC.

Digital Audio Effects

PCM41 Digital Delay Processor

- High performance
- Versatile digital delay
- Compact, affordable package
- Single delay output (800ms max. delay), blend and recirculation with phase invert and EQ
- Flexible sweep section with sine or square wave combined with envelope follower modulation provides rich chorusing and unique effects
- Designed with the needs of stage performers and small studios in mind

PCM41 \$715.00

PCM42 Digital Delay Processor

- An enhanced signal processor derived from the PCM41 framework
- Includes all features of the 41; plus delay times to 4800ms (with infinite repeat), numeric delay readout, metronome/clock output
- 2-stage limiter to protect against input overload, and foot pedal control of blend and recirculation

PCM42 1200/2400ms, 1 input, 1 output,
2.4 sec delay \$ 1000.00
PCM42 w/MEO — 2400/4800ms, 4.8 sec delay . . . 1235.00

PCM70 Digital Effects Processor

- Choose from more than 40 imaginative factory programs
- Using these factory programs as a basis, you can create 50 of your own individualized programs and store them in separate user registers
- That gives you instant access to a total of more than 90 available programs
- To help you create your own programs, there are up to 50 parameters per program
- Full basic MIDI control—you can switch any factory program or user program register remotely
- The PCM70 can utilize all 128 MIDI-specified channel presets
- Any program number on your MIDI controller can be assigned to any factory program or user program register on the PCM70, with the aid of its built-in corresponding register table

PCM70 \$2295.00

Accessories

PCM41, PCM42 and PCM70

A-CP-41 Control Pedal

Adjusts delay time and VCO functions; includes 10' stereo cable with connectors. \$55.00

A-FS-41 Dual Footswitch Assembly

Controls Bypass and Repeat functions; includes 10' cable assembly. \$46.00

A-FS-97 Single Footswitch Assembly

Register advance or bypass or repeat \$21.00

MRC MIDI Remote Controller

- Standard MIDI controls
- Factory and user-programmed setups
- Expanded control for the LXP-1
- Remote operation for the PCM70
- Macro programming for FM synthesis



PCM41



PCM42



PCM70

- Alphanumeric display
- Multiple MIDI inputs and outputs
- 4 programmable slide controls
- 4 programmable pushbuttons
- Assignable external controllers
- Expansion capability

The MRC (MIDI Remote Controller) is an intelligent, alphanumerically based, remote terminal that brings a new level of versatility to the world of MIDI. The MRC is a multi-faceted device that can handle both standard, generic MIDI controls and system exclusive protocols under software control. It provides special control for the LXP-1 Digital Multi-Effects Processing Module, the PCM70, and a unique "macro" mode for programming FM synthesizers, as well as MIDI program change and standard MIDI controllers.

MRC \$399.00

LXP-1 Multi-Effects Processor

- Simple, intuitive operation
- Hall, plate, and room reverberation in different sizes and brightnesses
- High quality delay and chorus effects
- Variable decay time and delay parameter offer hundreds of variations on each program
- MIDI program change response; fully mapped
- Dynamic MIDI, and System Exclusive Implementation provide detailed control functions in real time

The LXP-1 offers superb sound quality, a full range of delay and reverberation effects, fast intuitive programming, and an industry-leading MIDI implementation, all at an affordable price.

LXP-1 \$499.00

LIGHT WAVE SYSTEMS

Microphone Windscreens/Mount

SUPER-SCREEN/SUPER-MOUNT SYSTEM

Super-Screen

- Enhanced midrange (dialogue) with 100 loss
- Reduced sibilance/rumble
- High wind noise attenuation 25+ dB with screen alone
- 4 pin, 4 pos. bayonet lock
- Extremely low sound bounce
- Super light and strong
- Unaffected by rain and snow
- Cable exit at shockmount
- Small cable loop

Super-Mount

- The quietest and original LWS design
- Upper and lower twin vee way jaws slip into windscreen breech and lock
- Variable soft to hard suspension
- Modular design — interchangeable isolator cradles
- Use pistol grip or fishpole yoke
- Tough solvent proof plastic
- Clean lines — superb finish



Super-Screen/
Super-Mount

MINI-SCREEN/MINI-MOUNT SYSTEM

Mini-Screen

- Enhanced midrange (dialogue)
- May be boom or fixture mounted, or used handheld
- Can be used in severe rain and snow
- Expected lifetime is 15 to 20 years
- Made of tough polyethelene, polyurethane and nylon
- Primary use is for the professional video camera microphone
- Will attenuate wind noise 20dB or more than the largely inefficient foam sock



Mini-Screen-BC

Mini-Mount-BC

Mini-Mount

- Low profile and lightweight
- Natural frequency of 3 to 5 cycles
- Double cantilevered suspension
- Balanced to function with or without a matching Mini-Screen
- Clip for fast loading and unloading
- Available for most all short and long range directional microphones

The Mini system is designed for all ENG, EFP, documentary and areas of feature work. It is recommended for all manner of inside work, where fast pans of pop can cause real problems. The Mini system will provide a balanced indoor/outdoor clean recording with reduced sibilance and scratch for a deep enhanced midrange presence.

Model	Model	Microphone
Windscreen/ Super-Screen	Suspension Mount/ Super-Mount	Type
SS816 . . . \$225.00	SM816 . . . \$115.00	Senn. 816
SS416 . . . 210.00	SM416 . . . 110.00	Senn. 416
SSM80 . . . 210.00	SMM80 . . . 110.00	Senn. ME 80
SSM88 . . . 265.00	SMM88 . . . 110.00	Senn. ME 88
SSK82 . . . 225.00	SMK82 . . . 115.00	Neumann KMR 82
SSK81 . . . 210.00	SMK81 . . . 110.00	Neumann KMR 81
SS190 . . . 210.00	SM190 . . . 130.00	Neumann RSM 190
SSSCH . . . 205.00	SMSCH . . . 130.00	Schoeps (w/Cut 1)
SS815 . . . 225.00	SM815 . . . 110.00	Audio Technica 815
SS835 . . . 215.00	SM835 . . . 110.00	Audio Technica 835
SSC74 . . . 225.00	SMC74 . . . 120.00	Sony C74
SSC76 . . . 265.00	SMC76 . . . 120.00	Sony C76
SS672 . . . 225.00	SM672 . . . 120.00	Sony ECM672
SSCK9 . . . 265.00	SMCK9 . . . 120.00	AKG CK9
SSCK8 . . . 225.00	SMCK8 . . . 115.00	AKG CK8
SS568 . . . 215.00	SM568 . . . 110.00	AKG 568EB

Model	Model	Microphone
Windscreen/ Super-Screen	Suspension Mount/ Super-Mount	Type
SS737 . . . \$225.00	SM737 . . . \$115.00	Beyer MC 737
SS736 . . . 215.00	SM736 . . . 110.00	Beyer MC 736
SS707 . . . 225.00	SM707 . . . 120.00	Beyer CK 707
SS706 . . . 210.00	SM706 . . . 115.00	Beyer CK 706
SSH40 . . . 200.00	SMH40 . . . 120.00	Senn. MKH 40
SSM89 . . . 265.00	SSM89 . . . 120.00	Shure SM89

SSC (High Wind) Coverall/\$38.00 Specify model screen

Mini-Screen	Mini-Mount	
MS8C1 . . . \$110.00	MM8C1 . . . \$125.00	Sony Betacam
MS8C2 . . . 110.00	MM8C2 . . . 135.00	Sony CCD
	MMIKE . . . 135.00	Ikegami
MS816 . . . 145.00	MM816 . . . 110.00	Senn. 816
MS416 . . . 110.00	MM416 . . . 110.00	Senn. 416
MSM80 . . . 110.00	MMM80 . . . 110.00	Senn. ME 80
MS405 . . . 110.00	MM405 . . . 110.00	Senn. 405
MS435 . . . 110.00	MM435 . . . 110.00	Senn. 435
MSK82 . . . 125.00	MMK82 . . . 110.00	Neumann KMR 82
MSK81 . . . 110.00	MMK81 . . . 110.00	Neumann KMR 81
MSSCH . . . 110.00	MMSCH . . . 110.00	Schoeps
MS835 . . . 110.00	MM835 . . . 110.00	Audio Technica 835
MS815 . . . 125.00	MM815 . . . 110.00	Audio Technica 815
MSC74 . . . 110.00	MMC74 . . . N/A*	Sony C74
MS672 . . . 110.00	MM672 . . . 110.00	Sony ECM672
MSCK8 . . . 110.00	MMCK8 . . . 110.00	AKG CK8
MS568 . . . 110.00	MM568 . . . 110.00	AKG C568EB
MS737 . . . 145.00	MM737 . . . 110.00	Beyer MC 737
MS736 . . . 115.00	MM736 . . . 110.00	Beyer MC 736
MS707 . . . 145.00	MM707 . . . 110.00	Beyer CK 707
MS706 . . . 115.00	MM706 . . . 110.00	Beyer CK 706
MS190 . . . 125.00	MS190 . . . 110.00	Neumann RSM 190

MSC (High Wind) Cover (for all models) \$25.00 Specify screen

FP12 Microphone Boom — Telescoping Camlock (4' to 12') . . \$180.00
 FP6 Microphone Boom — Telescoping Camlock (28" to 6') . . 180.00
 FPY Microphone Boom Yoke — Super-Mount Handle
 Alternative 25.00

Please specify either 3/8" or 5/16" thread size for all mounts, booms and yokes. Spare or alternate isolator cradles are available for the super-mount. Price is calculated by deducting \$50.00 from the appropriate super-mount price, e.g., SM816 at \$115.00 less \$50.00 = \$65.00.
Note: Please specify whether C451 or C460 when ordering AKG CMS units.

*N/A — Use Supermount

PETER LISAND MACHINE CORP.

Tripod Systems/Dollies

Ultra I

Consists of: Ultra I Fluid Head and Claw Ball Assembly, JRA-83M Tripod with Spider Assembly, MQR-84S Quick Release with 2" adjustment and safety lock, Dual Handles

Specifications

Load: Up to 30 lbs.
Weight: Head and tripod—17 1/2 lbs.
Size: 7" H x 7 1/2" W
Height: Head and tripod—closed 45" / extended 59" / at rest 40 1/2"
Pan: 360°
Tilt: 90°
Base: Ball or flat
Finish: Black vinyl
Accessories: Reversible feet, strap, Sta-Sets, case

Ultra I \$2137.31

Ultra II

Consists of: Ultra II Fluid Head and Claw Ball Assembly, JRA-74 Tripod with Spider Assembly, LQR-84S Quick Release with 2 1/2" adjustment and safety lock, Dual Handles

Specifications

Load: Up to 50 lbs.
Weight: Head and tripod—22 lbs.
Size: 8" H x 8" W
Height: Head and tripod—closed 45 1/2" / extended 59" / at rest 42"
Pan: 360°
Tilt: 90°
Base: Ball or flat
Finish: Black vinyl
Accessories: Reversible feet, strap, Sta-Sets, case

Ultra II \$2463.43

Ultra 250

Consists of: Ultra 250 Fluid Head and Integral Aluminum Tripod with Handle

Specifications

Load: Up to 18 lbs.
Weight: Head and tripod—11 lbs.
Size: 5" H x 5 1/4" W
Height: Head and tripod—closed 42" / extended 59" / at rest 45"
Pan: 360°
Tilt: 90°
Base: Flat
Finish: Black vinyl
Thread
Size: 1/4"-20" or 3/8"
Accessories: Quick release, strap

Ultra 250 \$1538.05

Ultra 500

Consists of: Ultra 500 Fluid Head and Claw Ball Assembly, JRA-83M Tripod with Spider Assembly.

Specifications

Load: Up to 25 lbs.
Weight: Head and tripod—15 lbs.
Size: 7 1/2" H x 5" W
Height: Head and tripod—closed 44 1/2" / extended 60" / at rest 42"
Pan: 360°
Tilt: 90°
Base: Ball or flat
Finish: Black vinyl
Accessories: Reversible feet, strap, quick release

Ultra 500 \$1650.00

Ultra Classic

Consists of: Ultra Classic Fluid Head and Claw Ball Assembly, JRA-74 Tripod with Spider Assembly

Specifications

Load: Up to 50 lbs.
Weight: 28 lbs.
Size: 14" H x 11 1/4" W
Height: Head and tripod—closed 51" / open 64"

Camera

Platform
Dimensions: 5 1/2" W x 6" L
Elevation: Approximately 2"
Pan: 360°
Base: Ball or flat
Finish: Black vinyl
Tilt: 90° depending on camera position and platform elevation.
 Five pre-set drag adjustments
Accessories: Extra handle (attaches to camera base), Sta-Sets, case

Ultra Classic \$3560.45

Heavy-Duty Tripod Dolly

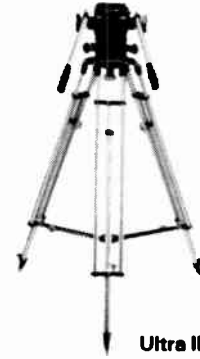
- 5" deluxe rubber tired swivel wheels
- Individual wheel locks
- 46" spread
- 10" in depth, folded
- Available in screwdown and springlock systems

Heavy-Duty Dolly \$508.00—\$566.00

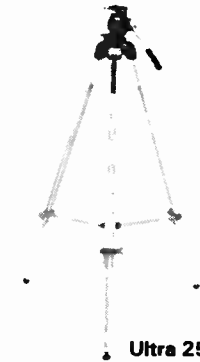
Video Tripod Dolly

- Smooth, silent
- Heavy, 1/8" wall aluminum tubing
- 4" diameter swivel wheels
- Folds up
- 10" in depth, folded
- 46" spread
- Locking configuration optional

Video Dolly \$459.00-\$541.00



Ultra II



Ultra 250



Ultra Classic



Heavy-Duty Tripod Dolly

PETER LISAND MACHINE CORP.

Tripods/Accessories

JRA-83M Tripod System

• True fluid action maintains a smooth regulated motion by a sensitive system without brake shoes, bands, or other mechanical parts to interfere with its operation. Separate positive locks and drag are featured on the pan and tilt. Tilt achieves a full 90° vertical position • Sealed leak-proof chamber • Adjustable quick release will counterbalance camera and lens requirements (optional) • Spider assemblies available • Versatile control—use right, left or dual handles • Reversible foot, rubber-tipped for interiors and standard metal points for outside use, can be ordered with either of the JRA tripods (optional) • Tripods come with various top castings to accommodate existing systems • Tripod weighs 7 lbs., 16 lbs. with head

JRA-83M \$517.16—\$558.21



JRA-83M Tripod and Fluid Head

JRA-74 Junior Motion Picture Tripod

• Finely machined tubular aluminum legs and stainless steel parts and nylon bushings. Rustproof and noiseless • Regular, intermediate and baby versions • Adjustable from 39" closed to 60" open. Flexible leg adjustment • Adjustable spider assembly • Weight: 9 1/2 lbs.

JRA-74 \$550.00—\$599.25

LST-80 Heavy-Duty Tripod

• Built for cinema and video weighing • Only 22 lbs. complete with built-in spider assembly • Aluminum legs and stainless steel parts and nylon • Will support 200 lbs. • For studio and location use • Available in standard, regular, intermediate and baby versions

LST-80 \$1017.91—\$1050.75



LST-80

LQR-84S Quick Release System

• Safety lock feature • Two parts to the system • Lower section mounts to tripod with 1/4" or 3/8" threaded thumbscrew • Upper section mounts to camera tripod socket • For most movie, television press and view cameras • All aluminum except latch

LQR-84S \$229.00



LQR-84S

MQR-84S Medium Duty Quick Release System

• Rapid mounting • Lightweight, only 9 oz. • Quick release plate • Durable and accurate • Stands up to all conditions

MQR-84S \$221.00

The Re-Inforcer Tripod Adaptor

The Re-Inforcer is a unique accessory for the Sony tripod adaptor which is supplied with the Sony line of industrial CCD color cameras such as the DXC-3000 and the Sony line of broadcast portable cameras and camcorders.

The Re-Inforcer is an aluminum plate which attaches to the two sliding devices on the bottom of the tripod adaptor and is then screwed into any head. The unit will allow the user to move the tripod adaptor forward and backward in order to obtain the best center of gravity for proper balance, but when tightened down, gives a very rigid base. The adaptor, as it is originally supplied, is not as rigid as when the Re-Inforcer is attached.

Re-Inforcer \$40.00



The Re-Inforcer

LISTEC VIDEO CORP.

Teleprompters

On-Camera Displays

A-4075 9" Enhanced Display

- 110VAC or 12VDC battery input • ENG/EFP use
- A-4075**\$3000.00
- A-2271** Transit case725.00
- A-1002** 4AH, 12VDC NiCad battery with charger335.00

A-2015W 15" Display

- A-2015W** 110VAC input\$1995.00
- A2266** Transit case for A-2015W display700.00

A-2015EFP Standard Monitor Prompter with 15" CRT

- EFP above lens configuration • 110VAC input
- A-2015EFP**\$1995.00
- A-2265** Transit case650.00

A-2009 9" Display with Collapsible Hood

- A-2009**\$1995.00

Stand-Alone Display

A-2015SA Standard Monitor Prompter with Roll-Around Dolly

- Recommended for use with lightweight ENG cameras
- 15" stand-alone monitor with standard hood assembly mounted on roll-around dolly with self-adjusting height

- A-2015SA**\$2150.00
- B-2000** Trapezoidal mirror225.00

Conference Prompting

A-2015CS 15" Floor Mounted Prompter

- Conference prompter complete with floor mounted monitor, separate clip mounted mirror and microphone type stand

- A-2015CS**\$1000.00
- A-2268** Transit case595.00

Manual Script Tables

A-2200 Long Script Table

- 2/3" Vidicon camera with 16mm f/1.6 variable iris lens • Dual adjustable lights • Conveyor belt drive for end-to-end placement of 8 1/2" x 11" hard copy • Variable speed, forward and reverse with plug-in control

- A-2200**\$2700.00
- A-2280** Transit case825.00

A-2210 Short Script Table

- Short drive table for continuous roll scripts

- A-2210**\$2475.00
- A-2215** Short drive table with DC input2775.00
- A-2290** 7AH, 12VDC NiCad battery, charger for A-2215595.00

Accessories

- A-2211** 4" wide ruled paper roll for A-2210 script table\$ 7.50
- A-2260** 25' extension cable for variable speed control85.00
- A-2261** 6' extension cable for variable speed control65.00
- A-2281** Transit case for A-2210 short script table450.00

A-9600 Prompter Image Enhancer

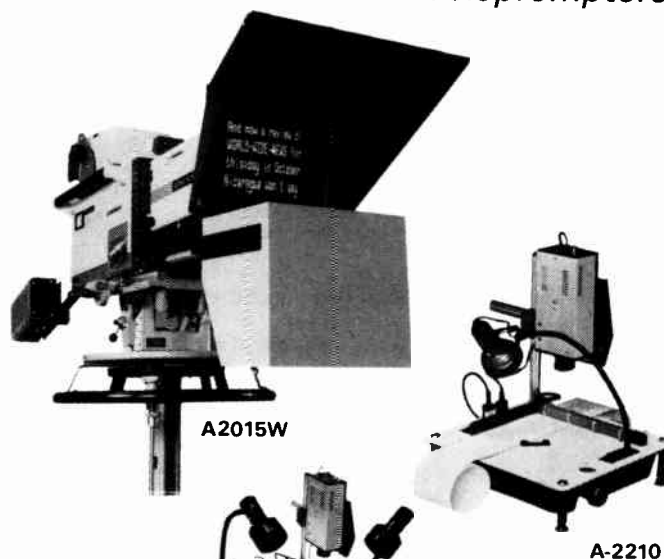
- Rackmountable/stand-alone unit includes:

- Two video inputs, four outputs • Reverse video • Separate bypass control • Separate controls to optimize white level, sharpness and background

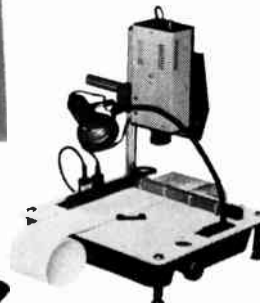
- A-9600**\$825.00
- A-9650** Video polarity changer with built-in (1 in 4 out), VDA and video presence indicator550.00

A-5000T Prompter Display Device (PDD)

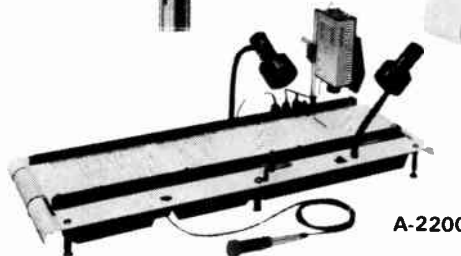
- Driven from any computer with word processing • Infinite speed resolution • Multiple character sizes, and fonts • Proportional spacing • Printer output • Optional international characters • Time remaining display • Holds up to 9600 lines of text • Stores up to 255 stories • Optional color backgrounds • Simple control box separate with speed control • Rackmountable or desktop unit • Compatible with standard NTSC monitors



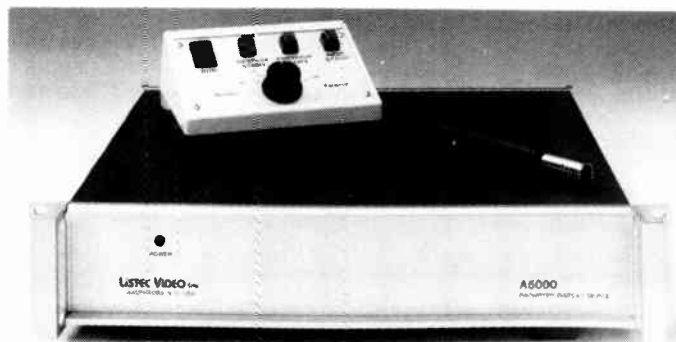
A2015W



A-2210



A-2200



A-5000T

The PDD is a stand-alone display device providing formatted prompting text from standard text created on a host computer or a newsroom computer system. Connection from the host computer to the PDD can be direct for local situations or by means of a telephone modem for remote operation. Display of prompting text may be controlled by the host computer, a terminal, or the optional remote control box. Control functions available include speed, reordering of run-down and other functions.

The PDD may be connected to any host computer which has the capability to edit plain text files, send ASCII text files to a serial port at a data speed up to 9600 baud and for optimum integrity support the Xon/Xoff protocol. This feature allows the host computer to request prompter display to return catalog of stories in memory.

- A-5000T** Stand alone prompting device, providing formatted text from host computer running standard word processing. Accepts commands and returns information from host or standard terminal.\$4995.00
- A-5000V** As above but with video board for status display using standard video monitors5375.00
- A-5001** Optional simple control box, provides start, pause, next, previous story commands, complete with variable speed control knob250.00
- A-5002** Optional ergonomically designed speed control with pause button in casing for comfort.225.00
- A-5003** Color option, provides 7 (seven) additional background colors400.00
- A-5004** International character set300.00
- A-5005** Transit case525.00
- A-5006** Closed caption output995.00

LITTLITE

Gooseneck Lamps/Accessories

LITTLITE SETS

High intensity Littlite has a 5W bulb with a finned hood. Low intensity has a 2.4W bulb with a smooth tubular hood.

"L" Series sets come complete and ready for easy surface mounting. All sets include bulb, mounting base and fully adjustable dimmer. Sets also include a 6' cord, 2-piece snap mount, screws for permanent mounting and a wall plug-in transformer. "A" versions do not include the transformer, and can be powered by any available 12V supply.

Low Intensity Series

Detachable Lamp with Base

L-1/6	6"	\$49.95	L-1/6A	6"	\$40.95
L-1/12	12"	49.95	L-1/12A	12"	40.95
L-1/18	18"	49.95	L-1/18A	18"	40.95

Attached Lamp with Base

L-2/6	6"	\$39.95	L-2/6A	6"	\$30.95
L-2/12	12"	39.95	L-2/12A	12"	30.95
L-2/18	18"	39.95	L-2/18A	18"	30.95

High Intensity Series

Attached Lamp with Base

L-3/6	6"	\$49.95	L-3/6A	6"	\$40.95
L-3/12	12"	49.95	L-3/12A	12"	40.95
L-3/18	18"	49.95	L-3/18A	18"	40.95

Detachable Lamp with Base

L-4/6	6"	\$59.95	L-4/6A	6"	\$50.95
L-4/12	12"	59.95	L-4/12A	12"	50.95
L-4/18	18"	59.95	L-4/18A	18"	50.95

Individual Gooseneck Lamps

Littlite "P", "G" and "X" Series lamps can be built into any device that requires lighting.

"G" Series Goosenecks have a BNC type swivel connector

"P" Series Goosenecks have a 3/8" diameter (1/8" NPT) threaded end with ground lug and nut.

"X" Series Goosenecks have a 3-pin male "XLR type" connector.

Individual Permanent Mount Lamp			Individual Permanent Mount Lamp		
6P	6"	\$16.00	6P-HI	6"	\$26.00
12P	12"	18.00	12P-HI	12"	28.00
18P	18"	20.00	18P-HI	18"	30.00
Individual Detachable Lamp			Individual Detachable Lamp		
6G	6"	\$23.00	6G-HI	6"	\$33.00
12G	12"	25.00	12G-HI	12"	35.00
18G	18"	27.00	18G-HI	18"	37.00
Individual Detachable Lamp (XLR)			Individual Detachable Lamp (XLR)		
6X	6"	\$25.00	6X-HI	6"	\$35.00
12X	12"	27.00	12X-HI	12"	37.00
18X	18"	29.00	18X-HI	18"	39.00

Accessories

DM Dimmer Rheostat

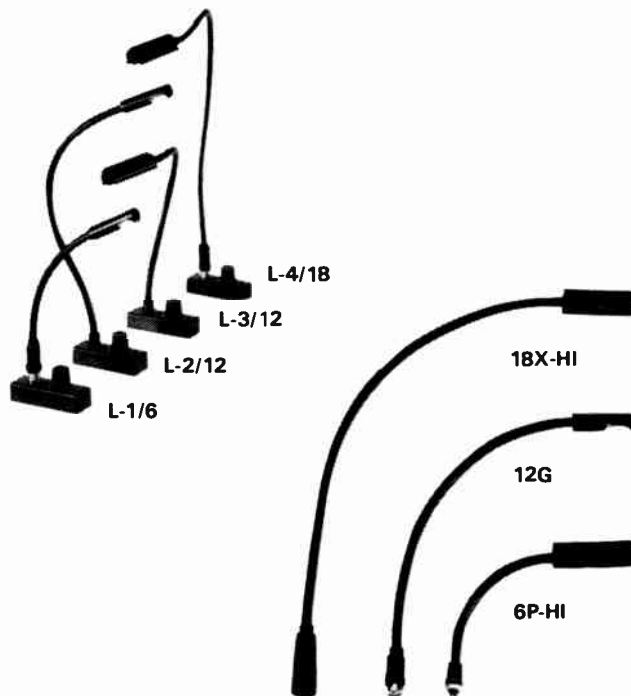
Varies the intensity of P, G, or X Series Goosenecks. Will dim two low intensity or one high intensity lamps \$5.00

PS Panel Socket

Mates with the G Series Gooseneck Swivel Connector. Mounts in a 3/8" hole in material 1/8" or less thick, or in an MP \$2.40

WB Weighted Base

A heavy metal plate that is screwed onto the bottom of the light allowing an L model to become a movable free-standing light source . \$6.00



MP Mounting Plate

A 1 1/4" square metal plate with a 3/8" hole in its center \$3.00

HIC High Intensity Conversion Set

A high intensity hood and Q-5 bulb to convert low intensity lamps to high intensity. Simply remove the old hood and bulb, insert the Q-5 bulb and slip on the HI hood. \$15.00

CL Adjustable Clip

Adjusts to clamp on edges from 1/16" to 3/4" thick. Included are a mounting bracket, springplate, screws, and washers \$4.00

1815 Bulb

12V, 230mA, 2.4W bulb for the low intensity lamps \$1.00

Q-5 Bulb

12V, 380mA, 5W tungsten halogen bulb for the high intensity lamps. \$7.00

WXF Wall Transformer

Plugs into a 110VAC outlet and supplies 12VAC up to 930mA . . \$12.00

SM Snap Mount

A pair of self-adhesive pads used whenever you need quick easy placement and removal of an L-series lamp \$2.00

CF Color Filter

For use with the high intensity Gooseneck lamps, which have a slot in the hood for the filters. They come in a set of four colors: dark and light red, amber and blue. \$3.00

CP Cigarette Lighter Plug

Used to power a lamp from a cigarette lighter outlet \$3.00

LV Low Voltage Hookup Kit

Included parts and instructions for wiring lamps into a 12V system. Included fuse and holder, connectors and line taps \$6.50

SC Storage Clips

Use to secure Littlites for transit or storage. Includes two mounting screws \$1.00

LNR COMMUNICATIONS, INC.

Redundancy Switches/Video Exciters

Redundancy/Protection Switches

A number of integrated redundant receiver, exciter and converter configurations are available. Switchover to a back-up unit may be

- automatic (controlled by summary alarm, OBN or other operating parameter)
- manual
- by patching
- by remote command

With the addition of a Receiver Select panel, automatic switchover to a redundant unit is accomplished in less than 100msec. Both receivers are preset to the same operating frequency and gain. When an alarm from the on-line unit appears, the Receiver Select automatically pulses the latching transfer switch to transpose its outputs. Switchover may also be manually performed. Contact closures for operation from a console mimic panel are standard.

A Remote Receiver Select panel is an available option. Similar exciter protection panels for one-for-one selection of exciters are available.

The converter switch slides into the main frame of the converter assemblies. The output transfer switch provides access to both converter outputs. This feature enables the use of both converters simultaneously with one channel on-line and the other in a test mode. The switch includes manual override and remote monitoring and control capability.

The converter 1:1 redundancy switch is also available in a 19" rack-mountable version.

A manual 1:N back-up represents the lowest cost solution for applications containing more than two Receiver or Exciter Chains. LNR's modular construction simplifies plug-in and patching for this requirement.

For stations requiring automatic switchover, a 1:N Protection Switch can be provided which automatically tunes the frequency-agile converter in the back-up receiver or exciter to the operating frequency of the malfunctioning on-line unit. The baseband switch section simultaneously transfers the baseband line to the back-up unit. Manual override and remote control capability are provided.

LVE-6 C-Band and LVE-14 Ku-Band**Low Profile Video Exciters**

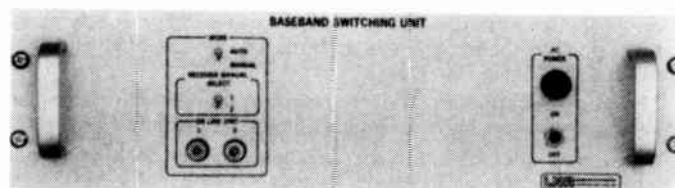
- Small size—only 1 rack unit (1³/₄" high)
- Light weight—15 lbs. (7 kg.)
- High RF output—0dBm standard
- RF, video and audio performance exceeds RS-250B
- Front panel full/half transponder selection
- Compatible with NTSC, PAL, B-MAC, SECAM and other video standards
- Up to 4 audio subcarriers, synthesized 4.2 to 8.1MHz in 2kHz steps, optional
- 1:1 protection switch with automatic switchover, optional
- Remote frequency control (BCD/TTL, RS422 or other), optional
- Increased power output (+6dBm), optional

The LNR LVE-6 and LVE-14 Low Profile Video Exciters are broadcast-quality satellite video exciters designed for the special requirements of mobile satellite newsgathering systems. Advanced highly integrated RF and baseband circuitry provides RS250B performance in a light-weight cost-effective package just 1³/₄" high and 24" deep. The LVE series features synthesized RF tuning in 0.5MHz steps, and includes up to four front-panel-selectable subcarriers that are synthesized in 2KHz steps. Pushbutton selection of full- or half-transponder operation is standard, and high power (0dBm) output is included at no extra cost.

A human-engineered front panel includes only operator-significant controls to minimize possible operator error in the field. For example, the unit provides front panel monitor points for video and RF output power and frequency, as well as on/off selection and alarm indication for each subcarrier.

The LVE series video exciters have been specifically designed with portable and truck mounted uplinks in mind by offering substantially reduced weight (15 lbs.), size (1³/₄" high) and power consumption (100W).

Converter Switch

Baseband Switching Unit
8880

For the UC6 and DC4 Frequency Converters, the protection switch employs a Model ALO5 Auxiliary Local Oscillator to obtain the requisite frequency agility for the back-up Up or Downconverter.

8880 Baseband Diversity Switch

The 8880 Baseband Diversity Switch selects the better of two output signals from two Message Receivers. The preferred baseband signal is determined by monitoring the Out-of-Band Noise of the two receivers. The fully solid-state subsystem fits in a standard 19" rack.



Video Exciter

LVE-14

Performance Specifications

RF Output Frequency:	14.0 to 14.5GHz (Ku-band model LVE-14) 5.925 to 6.425GHz (C-band model LVE-6)
Power Output:	0dBm (+6dBm available as option)
Carrier Type:	525/625 line video (switch selectable)
Bandwidth:	Full or half transponder (frontpanel select)
Signal Level	
Adjustment Range:	0 to -15dBm
In-band Spurious:	-70dB
Muting:	Activated by summary alarm (with bypass for test) or by lighted, guarded front panel switch
Connector Impedance:	SMA 50 ohms (Ku-band)—Type N female/50 ohms (C-band)
Return Loss:	23dB (typ.) 21dB (min.)

LOGITEK ELECTRONIC SYSTEMS, INC.

Audio Consoles

PERFECTIONIST AUDIO CONSOLES

- "Workhorse" 8-mixer and 12-mixer consoles with outstanding audio performance
- Easy installation using pre-wired stand-alone punch blocks
- 32 Selectable stereo inputs labeled with patch-panel style designer strips
- P&G rotary or slide faders plus solid-state switches for unsurpassed reliability
- Simple, one-button operation simultaneously assigns bus, turns on channel and starts external equipment

The Perfectionist is built like a tank, with an all-steel case, rugged P&G rotary or slide faders and dependable solid-state half-effect switches.

And, it uses the latest in low-noise amplifiers, silent photoresistor audio switching, balanced mixing buses and toroidal power transformers for the cleanest sound from any console on the market today.

A single pushbutton on each mixing channel simultaneously assigns the signal to the program bus, turns on the channel and starts external machines.

The four stereo inputs on each mixer are labeled with patch-panel style strips for uncluttered, unambiguous designation.

All controls are located on the wrist-level mixing deck, eliminating awkward controls on the meter bridge.

And, our exclusive AUD ↔ PGM pushbutton makes complicated programs easy to set-up and mix.

All inputs and outputs are pre-wired via a cable snake to standard telephone punch blocks, which can be mounted up to six feet from the console.

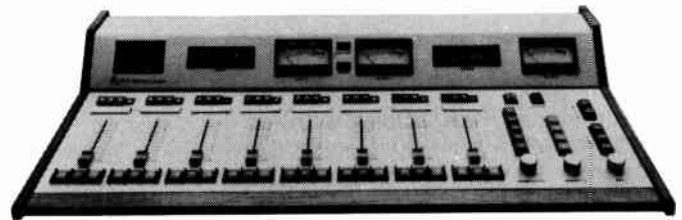
Machine control signals can be set for level or pulse operation, and are steered through the input selector switches.

And, a built-in distribution amp provides four isolated outputs from each program and audition channel, eliminating external gear.

Of course, all ICs are mounted in collet-style sockets for reliability and easy replacement, and complete diagrams and parts lists come with each console.

SPECIFICATIONS

Mixing Channels	
Perfectionist-12	12
Perfectionist-8	6
Line Inputs	4 Active-balanced line-level stereo inputs per mixing channel totalling 48 on the Perfectionist-12 or 32 on the Perfectionist-8
Microphone Inputs	4 Active-balanced monaural microphone preamps per console, which may be routed to any 4 line-level inputs. 4 additional preamps may be added as an option
Input Levels and Impedances	
Line Inputs	0 dBm normal, +23 dBm maximum, 600 ohms
Microphone Inputs	-60 dBv normal, -30 dBv maximum, 1000 ohms
Frequency Response	20-20,000Hz, ±0.25 dB
Signal-to-Noise Ratio	
Line Inputs (ref. 0 dBm input)	88 dB
Microphone Inputs (ref. -50 dBv input)	75 dB
Total Harmonic Distortion	
At +4 dBm Output	.008% maximum
At +23 dBm Output	.02% maximum



PERFECTIONIST-8SL

Crosstalk	-80 dB typical
Overall Gain	> 120 dB
Program/Audition Outputs	4 isolated active-balanced distribution outputs from each program and audition channel
Program/Audition Output Levels	+4 dBm = 100% VU, +23 dBm maximum (VU meters may be adjusted for 0 dBm - +10 dBm = 100% VU.)
Program/Audition Output Impedance	600 ohms resistive
Headphone/Monitor Inputs	Two balanced external inputs (air and aux) plus program and audition channels feed separate headphone and speaker selectors. Cue is also fed to headphone selector only
Headphone Amplifier	15 watts/channel fed to parallel jacks mounted below desk level to operator's left and right
Monitor Outputs	2 stereo line-level active-balanced outputs of which one stereo output has fixed level and one stereo output has level controlled by the Speaker pot on console
Cue Amp Power Muting	5 watts Muting control inputs are accessed on punch blocks and fed from any four remote control outputs. Each monitor output is separately muted. Cue muting matches control room monitor muting
Remote Control Outputs	Open-collector transistor to ground sinks up to 250 mA when mixing channel is switched to program bus. Each mixing channel can be switch-selected for pulse or constant control output. Control outputs are steered through input selector pushbuttons
Remote Control Inputs	Momentary SPST closure activates program, audition, off and AUD PGM functions
Meters	
Perfectionist-12	5 meters: left program, right program, left audition, right audition and mono. Mono meter source is switchable for program, audition or an external input
Perfectionist-8	3 meters: left, right and mono, switchable for program or audition
Dimensions	
Perfectionist-12	47-3/4"W x 15"D x 8-1/4"H overall, 5"H above table
Perfectionist-8	35"W x 15"D x 8-1/4"H overall, 5"H above table
Finish	Textured beige epoxy-painted steel
Perfectionist-12SL	12 mixers, 48 inputs, stereo, slide faders
Perfectionist-12RY	12 mixers, 48 inputs, stereo, rotary faders
Perfectionist-8SL	8 mixers, 32 inputs, stereo, slide faders
Perfectionist-8RY	8 mixers, 32 inputs, stereo, rotary faders
Extra 4 microphone preamps for Perfectionist	

LOGITEK ELECTRONIC SYSTEMS, INC.

**Audio Console Switcher/
Meter/Monitor**

Audiorack Compact Audio Console

- A complete 6-in, 2-out broadcast console in a 19" rackmountable or tabletop cabinet
- Built-in talkback, tone generator and distribution amp eliminate out-board equipment
- Conductive plastic faders and hall-effect switches for reliability, mike/line selectors for versatility, and a built-in tone oscillator for mixing accuracy
- Exclusive "preview-program swap" pushbutton that lets interview hosts switch from mikes to spots and back using a single control
- Complete capability for remote control, machine start and audio-follow
- All integrated circuits and program, preview and off pushbuttons are socket-mounted for simple maintenance

Specifications

Frequency Response

(Any Input): 50-15,000Hz, ±0.2dB
20-20,000Hz, ±0.3dB

S/N Ratio

Mike Input: 76dB
Line Input: 64dB

Total Harmonic Distortion

at +4dBm Output: 0.07% typical, 0.10% maximum
Overall Gain: Mike level input > 120dB
Output Level: 100% VU 0dBm, maximum rated +21dBm, mike level outputs -60dBm

Output Impedance

Line Level Outputs: 600 ohms active balanced
Mike Level Outputs: 150 ohms active balanced

Input Levels

Mike Inputs: -60dBV normal, -40dBV maximum
Line Inputs: 0dBm normal, +20dBm maximum

Remote Control

Outputs: During program "on" state: open-collector transistor to ground, will sink up to 250mA. During "off" state: floating

Remote Control Inputs

(Audio-Follow-Video): Momentary SPST closure to activate program or off functions

Headphone Outputs: Level > 600 ohm load +10dBm

Cue Amp Level: 5W

Current Consumption: 117VAC supply, 300mA typical, 500mA maximum; 12VDC supply, 2.5A typical, 5A maximum

Dimensions: 5 1/4" H x 19" W x 13" D

Weight: 20 lbs.

Audiorack 6-input, 2-output rackmount console. \$2995.00

Options for Audiorack Consoles

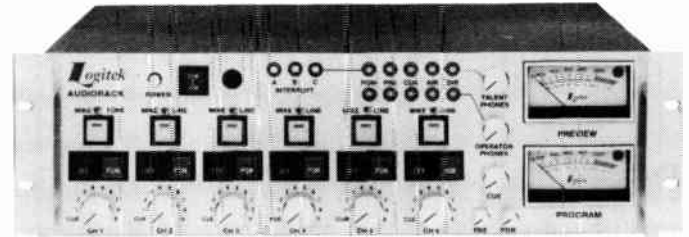
Built-in supply for 12VDC operation. \$185.00

Sloped wooden cabinet for desktop mounting 198.00

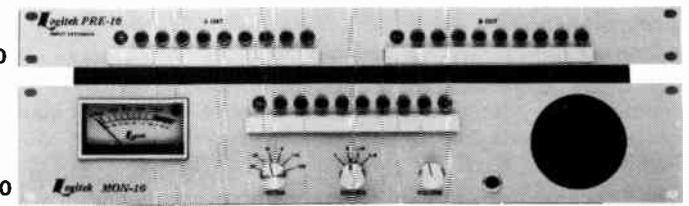
Rugged carrying case for transport 400.00

**PRE-10 Input Expander and
MON-10 Multi-Source Meter/Monitor**

- Reliable audio switching, metering and monitoring
- Easy to install, simple to operate
- Excellent for recording booths, edit suites, vans or audio test rack



Audiorack



PRE-10

MON-10

The PRE-10 input expander is a passive routing switcher which feeds any of ten monaural inputs to either of two outputs. You can use it any place where you have more sources than you have audio inputs to connect them to, such as at the input to a console or to a tape deck.

The MON-10 multi-source meter/monitor feeds any of ten stereo inputs to a single stereo output, and also feeds the selected input to a multi-range meter, a 6W speaker, and a front panel headphone jack. So you can not only select your source, you can meter and monitor it as well.

Once you've selected your input, you can choose the left ("A") channel, the right ("B") channel, the mono sum (A+B) or the out-of-phase sum (A-B) to feed to the meter and speaker.

PRE-10 10-input, 2-output mechanical switcher \$370.00
MON-10 10-input selector/meter/monitor-stereo 735.00

PRE-10 Specifications

Inputs: 10 monaural
Outputs: 2 monaural

Input/Output Levels and Impedances:

Any input level and impedance can be used since the unit is totally passive. Inputs may be balanced or unbalanced. Output level, impedance and balancing will match that of the selected input.

Dimensions: 1 3/4" H x 19" W x 4 1/2" D (one rack unit)

MON-10 Specifications

Inputs: 10 stereo
Line Outputs: 1 stereo

Input Level

Normal: 0dBV
Maximum: +23dBV

Input Impedance: 140K ohms balanced

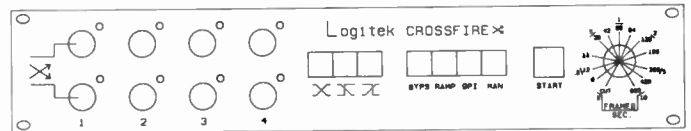
Line Output Level: Line output switching is passive so the output level, impedance and balancing is the same as that of the selected input

Connectors: Wire-capturing terminal blocks

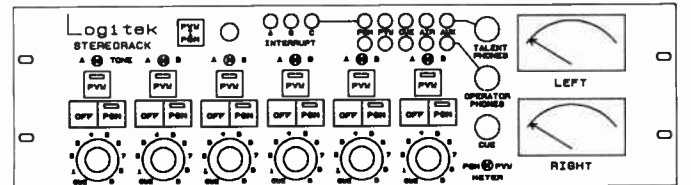
Dimensions: 3 1/2" H x 19" W x 7" D

LOGITEK ELECTRONIC SYSTEMS, INC.

Console/Crossfader



Crossfire



Stereorack

Crossfire

- 4-input automated crossfader
- Automatically fades between any 2 stereo or mono buses
- Add to any mixer or feed directly from VTRs or ATRs
- Optional 10 x 2 manual input expander
- Controlled by GPI, computer-generated ramp, external pots or manually
- 3 selectable fade types, variable fade duration

The Crossfire is an automated audio crossfader driven by GPI or ramp control, which lets you start three different kinds of audio crossfades hands-free, or lets your video edit system run audio levels for you.

The Crossfire turns any four-channel mixer into an automated mixer, by letting you crossfade between output channels.

You just set the pre-fade and post-fade levels, start your edit sequence, and let your controller's GPI signal do the rest.

You don't even really need a mixer, since you can connect the outputs of two VTRs (or any two dual-channel sources) directly to the Crossfire and use it to ride gain either automatically or manually.

The Crossfire lets you choose between a direct crossfade (where the two signals "criss-cross" at equal rates), a fade-out (music fades under a "hot" voice at the beginning of a segment), and an up-and-under (music fades up gradually under voice, at the end of a segment).

Plus, you can set the fade rate, in either seconds or approximate frames, anywhere from instant (cut) to ten seconds.

If your edit controller provides ramp signals for direct audio control, the Crossfire can use those as well.

Just connect the ramp up to the Crossfire's "Remote" inputs, and do everything through the controller.

Or, if you just want to control your audio in one location without actually having the audio board right there, you can use the Crossfire as a remotely-controlled console and install remote audio pots where you need them.

The Crossfire is designed to be quick to install and easy to use.

All inputs and outputs are balanced, and can be connected to any combination of balanced and unbalanced equipment.

All connections are made on durable, wire-clamping terminal blocks, so you don't need costly connectors.

Controls are carefully arranged and clearly labeled, so you don't have to be an audio wiz to run the Crossfire.

And, when it comes to audio performance, the Crossfire is fully "broadcast quality," with extremely low noise and distortion, high headroom, and near-perfect frequency response.

The Crossfire is built using premium components for years of trouble-free use.

All integrated circuits are mounted in reliable collet-style sockets for easy replacement, and all parts are standard items, fully identified in the accompanying manual.

Crossfire \$1350.00

Stereorack

- 11-input, 2-output rackmount console-stereo
- Stereo pan control on each input channel
- Low-noise, low-distortion circuitry for excellent audio performance
- 11 balanced stereo inputs, 2 stereo output channels
- Up to 7 assignable mike inputs
- Built-in talkback, tone generator, machine controls, output DAs

Our Stereorack console is a complete stereo studio console in a 19" rackmountable package.

The Stereorack has six balanced stereo input channels, selectable from 11 stereo sources or a built-in tone generator.

Each input channel can feed either or both of two fully-metered stereo output channels, and each output channel feeds a built-in 1 x 4 stereo distribution amp.

Any of the input sources can be pre-routed through one of seven mike pre-amps, for maximum flexibility.

So you have all the "ins" and "outs" you might need, to get you out of tight spots you may find yourself in.

Each input pot includes a concentric pan control for stereo balance, and a detent cue switch feeding a built-in 6W cue amp.

For reliability, conductive-plastic pots are used throughout, and socketed hall-effect pushbuttons control bus switching.

Separate headphone feeds are included for the operator and for three talent, crew or guest positions, and the operator and the director can talk to the crew through a built-in talkback system using a remote mike or the talkback mike on the front panel.

And, the Stereorack can start machines remotely and can itself be controlled externally for audio-follow applications.

High performance op-amps minimize distortion and hiss, while careful grounding, balanced buses and a toroidal power transformer virtually eliminate hum.

So you can use the Stereorack for any type of program without making excuses for your sound.

And, to keep your Stereorack running, all integrated circuits as well as the hall-effect switches are mounted in high-reliability collet-style sockets, all connectors are gold-plated, and all components are commercially available.

Stereorack \$4250.00

LOGITEK ELECTRONIC SYSTEMS, INC.

Modular Distribution System

Audio Accessory System

- Wide variety of audio amplifier modules including distribution amps, AGC amps and mike preamps
- Optional twin power supplies for full redundancy
- Up to ten 1-in, 6-out distribution amp modules per frame
- Extremely reliable, excellent audio performance

The Audio Accessory System is an excellent audio distribution amp if you have several, or many, different audio sources to distribute.

It's also an automatic-level amp, a multiple-input monitor amp, a mike preamp, a line amp, a balancing amp, a voltage-controlled amp, or any combination of these. As your needs change, you can add or re-arrange audio modules to fit your requirements.

All Audio Accessory System modules, as well as its mainframe and optional redundant power supply, are rugged and extremely reliable.

A single printed circuit board connects all audio modules to the power supplies and input/output terminals, so internal wiring is eliminated.

Each audio module has built-in power regulators, so a failure in one module is unlikely to cause other modules to fail.

The optional redundant power supply shares the load with the standard supply and each automatically assumes the full load if the other fails.

And, each supply has status lights and an indicating fuseholder to let you know what's happening inside.

Audio Amplifier Modules

MAS-DA Distribution Amp: 1-in, 6-out audio DA with front panel input gain control and fixed-level outputs.

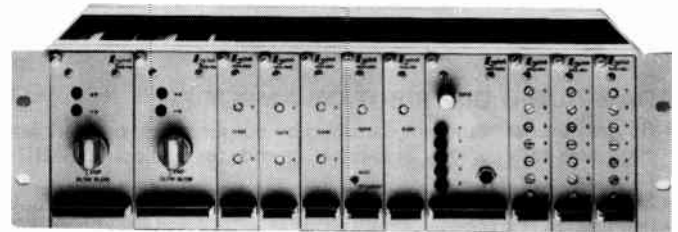
MAS-ADJ Distribution Amp: 1-in, 6-out audio DA with independent front panel level controls for the input and for each output.

MAS-MKE Dual Microphone Preamp: Two microphone preamps with front panel level controls and internal high/low gain switches.

MAS-MON Speaker/Headphone Amp: 6W speaker/headphone amp with front panel level control and headphone jack, fed from any of five selectable inputs. Occupies two amplifier positions in mainframe.

MAS-LA Line Amp: 1-in, 1-out audio line amp with front panel level control. For balanced or unbalanced inputs and outputs.

MAS-AGC Automatic Gain Distribution Amp: 1-in, 6-out audio DA with automatic gain riding plus front panel level control. Automatic gain can be bypassed using front panel AGC/Standby switch. Automatic gain range is 35dB, with user-adjustable attack time from 100-1000 μ s and release time from 1-10 sec. (for 10dB change).



Audio Accessory System

MAS-VCA Remote Gain Distribution Amp: 1-in, 5-out audio DA with front panel level control plus remote gain adjustment using external pot or voltage. External control can be bypassed using front panel VCA/Standby switch.

Mainframe and Accessories

MAS-MF Mainframe: Can hold up to ten amplifiers and two power supplies. Shipped complete with one power supply, an extender board and a manual describing the mainframe and all amplifier and power supply modules.

MAS-PS Power Supply: Supports a full frame of amplifiers or can share the load with a second supply. Power rails are diode-steered for automatic switchover. One MAS-PS module is included with each mainframe at no extra charge.

MAS-BKS Small Blank Panel: Covers one amplifier module space.

MAS-BKL Large Blank Panel: Covers two amplifier module spaces, or one power supply module space.

MAS-MF	10-amplifier mainframe with supply	\$595.00
MAS-DA	1-in, 6-out distribution module . . . . .	.225.00
MAS-ADJ	1-in, 6-out distribution module— adjustable outputs . . . . .	.290.00
MAS-AGC	1-in, 6-out AGC module . . . . .	.320.00
MAS-VCA	1-in, 5-out VCA module . . . . .	.295.00
MAS-LA	1-in, 1-out line amp module . . . . .	.200.00
MAS-MKE	2-channel mike preamp module . . . . .	.245.00
MAS-MON	5-input, 6W monitor amp module . . . . .	.235.00
MAS-PS	Back-up power supply module . . . . .	.265.00
MAS-BKS	Blank panel for one module position . . . . .	.32.00
MAS-BKL	Blank panel for two module positions . . . . .	.32.00

Specifications

	MAS-DA, MAS-ADJ	MAS-AGC	MAS-VCA	MAS-MKE	MAS-MON
Input Level: normal	MAS-LA 0dBm	MAS-VCA 0dBm		-60/-40dBV	0dBm
(Note 1) maximum	23dBm	21dBm		-40/-20dBV	23dBm
Output Level: normal	0dBm	0dBm	0dBm	0dBm	
maximum	23dBm	21dBm	23dBm	23dBm	6W
Impedance (ohms): input	600	600	600	150	600
(Note 2) output	600	600	600	600	4-8
Frequency Response (\pm db): 50Hz-15kHz	0.1			0.1	
20Hz-20kHz	0.25	0.25		0.25	0.25
Total Harmonic Distortion: typical	0.006%	0.05%		0.01%	0.03%
maximum	0.05%	0.18%		0.1%	0.2%
Intermodulation Distortion: typical	0.004%	0.05%		0.01%	0.03%
maximum	0.01%	0.15%		0.04%	0.2%
Signal/Noise: measurement	80dB	65dB		74dB	85dB
reference input	0dBm	0dBm		-50dBV	0dBm
Output Isolation: typical	80dB	80dB			
minimum	75dB	75dB			

Notes: 1) MAS-MKE modules have internal gain switches for each input, which provide a 20dB gain reduction for high-level microphones. Input levels depend on the setting of these switches.
2) All 600 ohm and 150 ohm impedances can be increased to 50K ohms by removing input load resistors. Other impedances can be achieved by replacing the input load resistor of the desired value.

LOGITEK ELECTRONIC SYSTEMS, INC.

Distribution Amplifier/Audio Interface

ADA-8 AUDIO DISTRIBUTION AMPLIFIER

- Rugged output stage not damaged by output shorts or overloads
- High-slew-rate circuitry accurately reproduces audio and SMPTE time code
- Extremely low noise and low distortion for high-quality audio distribution

The ADA-8's output circuitry is actually an audio power amplifier with isolation resistors added. Which means that even with all outputs shorted or grounded, the amplifier is still operating well below its maximum capacity.

So you can feed all sorts of balanced and unbalanced audio equipment simultaneously, and they won't load each other down, or crosstalk from one to another.

The ADA-8's high-slew-rate amplifier circuitry is virtually free of harmonic and intermodulation distortion. And frequency response is essentially perfect. So the ADA-8 is good enough to distribute high-quality sources, like your main program line or the output of a digital audio player.

And, the ADA-8 will accurately distribute SMPTE time code.

- ADA-8M** 1 balanced input, 8 balanced outputs-mono \$365.00
- ADA-8S** 1 balanced input, 8 balanced outputs-stereo 460.00

Specifications— ADA-8

Frequency Response	50Hz-15KHz, ±0.1dB; 20Hz-20KHz, ±0.25 dB
Input Level	0 dBm typical, +22 dBm maximum
Output Level (adjustable)	0 dBm typical, +23 dBm maximum
Total Harmonic Distortion	
At 0 dBm Output	0.006% typical, 0.02% maximum
At +23 dBm Output	0.006% typical, 0.05% maximum
Intermodulation Distortion	
At 0 dBm Output	0.007% typical, 0.01% maximum
At +23 dBm Output	0.008% typical, 0.01% maximum
Signal/Noise	0 dBm input, 74 dB
Output Isolation	80 dB typical, 75 dB minimum (20KHz)
Input Impedance	Balanced or unbalanced 600 ohms, (Load resistor can be removed to change to 300 kohms)
Output Impedance	Balanced 600 ohms
Dimensions	1-3/4"H x 19"W x 7"D (standard rackmount)

PAI-4 PRO AUDIO INTERFACE

- Reduces audio hum and RFI on VTRs, digital disks, audio recorders
- Front-panel playback controls allow mixer-free level matching

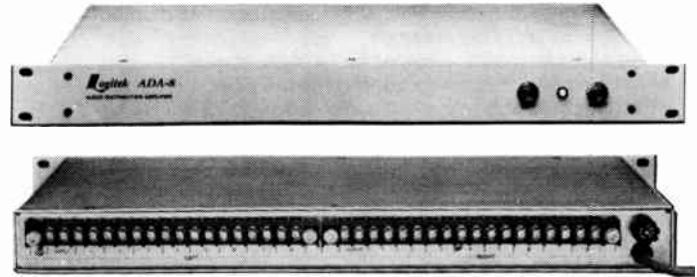
To add hum-resistant balanced audio to your 3/4" VTRs, compact disc players or unbalanced audio recorders, add the PAI-4 to the equipment you already have.

You'll reduce hum, interference and crosstalk picked up by unbalanced audio lines. And, your balanced mixers and DAs will work better because they'll be matched with the proper impedances and levels.

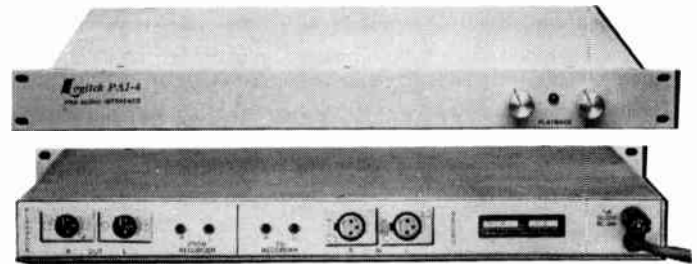
The PAI-4's front-panel playback level controls let you adjust channel levels without using your mixer.

Of course, the PAI-4 itself adds no significant noise or distortion to your audio signals.

- PAI-4** 2-channel balanced/unbalanced interface \$360.00



ADA-8 FRONT PANEL (Top) REAR PANEL (Bottom)



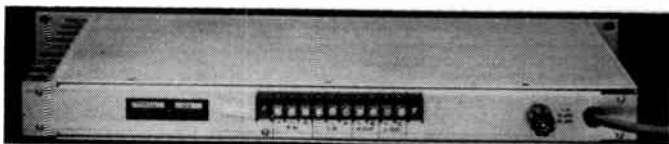
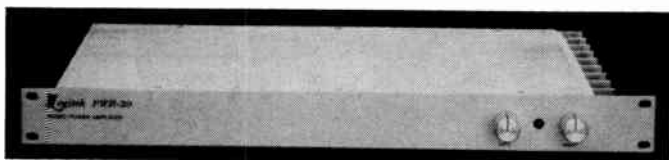
PAI-4 FRONT PANEL (Top) BACK PANEL (Bottom)

Specifications— PAI-4

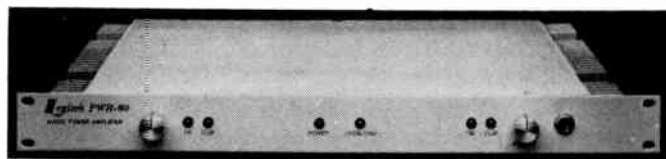
Input Level-Record	0 dBm typical, +22 dBm maximum
Input Level-Playback	-10 dBv typical, +22 dBv maximum
Output Level-Record	-10 dBv typical, +12 dBv maximum
Output Level-Playback	0 dBm typical, +22 dBm maximum
Playback Gain Control Range	-60 dB to +27 dB
Frequency Response	20Hz-20kHz, ±0.1 dB
Signal/Noise	
Record	0 dBm input, 82 dB
Playback	-10 dBv input, 81 dB
Crosstalk	85 dB typical, 70 dB minimum (20kHz)
Total Harmonic Distortion	
At 0 dBm Output	0.004% maximum
At +22 dBm Playback Output	0.008% maximum
At +12 dBv Record Output	0.006% maximum
Intermodulation Distortion	
At 0 dBm Output	0.007% maximum
At +22 dBm Playback Output	0.011% maximum
At +12 dBv Record Out	0.007% maximum
Input Impedance-Record	600 ohms, (Load resistor can be removed to increase to 50 kohms)
Input Impedance-Playback	10 kohms
Output Load Impedance-Record	10 kohms
Output Load Impedance-Playback	600 ohms
AC Line Input Voltage	50-60Hz, 105-129V, (optional factory modification for 220-240 VAC)
Dimensions	1-3/4"H x 19"W x 7"D

LOGITEK ELECTRONIC SYSTEMS, INC.

Power Amplifiers



PWR-30 FRONT PANEL (Top) BACK PANEL (Bottom)



PWR-80 FRONT PANEL (Top) BACK PANEL (Bottom)

PWR-30 AUDIO POWER AMPLIFIER

- Crisp clean, audio performance and moderate power perfect for edit suites, small studios, trucks
- Balanced inputs eliminate input noise and RFI
- Built-in overload protection, oversized heat sinks for excellent long-term reliability

Since the PWR-30 is a broadcast-quality amplifier, it, of course, has fully balanced inputs and complete RFI protection. So it won't amplify noise picked up by your input wires. And, it won't amplify signals from nearby broadcast transmitters.

Like all of our products, the PWR-30 is built to last. All output transistors are mounted on an oversized heat sink to reduce long-term temperature wear.

Each output stage is fused to minimize damage from output shorts or speaker failures. And, all integrated circuits in the PWR-30 are socketed for quick, simple replacement.

PWR-30 30-watt power amplifier \$415.00

SPECIFICATIONS

Audio Output Power (load: 4-8 ohms)	Monaural 30 watts RMS 50 watts peak; stereo-per-channel 15 watts RMS 22 watts peak
Frequency Response	20Hz-20KHz, ±0.25 dB
Total Harmonic Distortion	Typical 0.02%, maximum 0.15%
Intermodulation Distortion	Maximum 0.04%
Signal/Noise (ref. rated power out, 0 dBv in)	90 dB
Input Level	Normal 0 dBv, maximum +23 dBv
Input Impedance	10 kohms
Overload Protection	Output amplifier fuses and power supply fuses
Dimensions	1-3/4"H x 19"W x 7"D
Power Requirements	117 VAC, 0.5 A, 50-60Hz (optional factory modification for 220-240 VAC)

PWR-80 AUDIO POWER AMPLIFIER

- Standard connectors and built-in muting simplify installation
- Rugged design
- Balanced inputs and toroidal power transformer for low-noise operation
- Normally available from stock for same day shipment

Our products are known for reliability and simple service, and the PWR-80 is no exception.

We overbuild our heat sinks so you can run the PWR-80 at full output power with full confidence.

Each speaker output is fused, and our overload protection circuit prevents output shorts from damaging internal circuitry.

Each side of the PWR-80's milspec circuit card can be accessed easily by removing the unit's top and bottom covers.

All ICs are mounted in gold-plated sockets, for quick replacement. And, of course, a complete maintenance manual with parts lists and diagrams is included with each unit.

PWR-80 80-watt power amplifier \$595.00

SPECIFICATIONS

Audio Output Power (load: 4-8 ohms)	Monaural 80 watts RMS 160 watts peak; stereo-per-channel 40 watts RMS 65 watts peak
Frequency Response	20Hz-20KHz, ±0.25 dB
Total Harmonic Distortion	Typical 0.04%, maximum 0.18%
Intermodulation Distortion	Maximum 0.03%
Signal/Noise (ref. rated power out, 0 dBv in)	100 dB
Input Level	Normal 0 dBv, maximum +23 dBv
Input Impedance	10 kohms
Muting Control	SPST switch closure
Overload Protection	Current overload circuit plus speaker fuses and power supply fuses
Dimensions	1-3/4"H x 19"W x 11"D
Power Requirements	117 VAC, 1.5 A, 50-60Hz (optional factory modification for 220-240 VAC)

LOGITEK ELECTRONIC SYSTEMS, INC.

Speakers/Timers/Preamp and Audio Displays

Pyramid MET-7 Futuresonic Speaker

- Exceptionally clean "audiophile" sound in a compact rack-mount package
- 200W maximum power prevents damage from accidental overdrive
- Perfect for trucks, edit suites, remotes, office monitoring

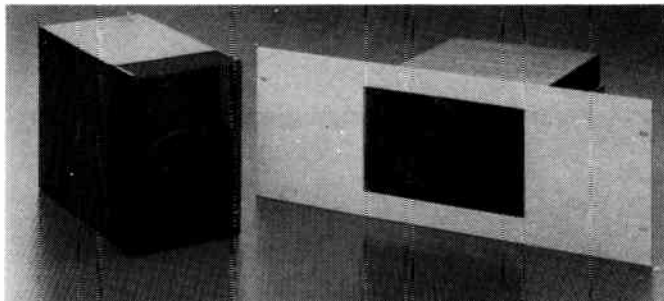
The MET-7 is an excellent speaker for a small studio, remote truck, edit suite or anywhere else where sound quality is vital but space is precious.

It's also attractive enough to use as an office or lobby monitor when you want the full clarity of your audio signal to come through.

MET-7 Full-range studio monitor \$172.50
MET-7 Rackmount Kit 45.00

Specifications

Impedance: 4-8 ohms
Sensitivity: 1W/1 meter/Pink Noise -87dB SPL
Recommended Amplifier Maximum: 200W
Power (RMS): Minimum: 20W
Driver Complement: 5" coaxial woofer/mid-range, 2" coaxial tweeter



MET-7 (Shown in rackmount on right)

Size: 7⁵/₈" H x 5¹/₄" W x 10" D (19.36 x 13.33 x 25.4cm)
Weight: Net each: 6.6 lbs. (3kg)
 Gross per pair: 15.5 lbs. (7kg)
Cabinet Construction: High density particle board
Cabinet Finish: Walnut with black perforated grill
Level Indicators (Two): Green for 1/2W input, Red for 100W input

T-100 Presettable Up/Down Timers

- Rugged, reliable operation
- Choice of stand-alone or rackmount models
- Large, easy-to-read digits

T-100 timers are simple to install and use. Each T-100 operates in count-up or count-down mode and has a full 99-minute, 59-second range, displayed on large, bright orange digits. In count-up mode, grounding the rear panel reset jack sets the time to 00:00 and restarts the count. In count-down mode, independent preset pushbuttons for each digit make the T-100 easy to set. And, in case you're not watching closely, the display flashes when it gets down to 00:00.



T-100ACE

T-100 ACE .56" LED displays-117VAC \$265.00
T-100 ACB Includes control output and buzzer. 315.00
T-100 ACR Rackmounted 315.00
T-100 ACBR Rackmounted with buzzer. 345.00
GraLab 167 60-minute mechanical timer-8" face . . . 93.00



BPA-200

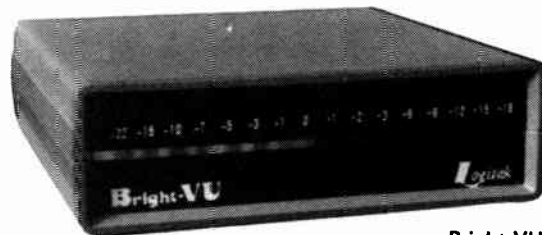
BPA-200 Phono Preamp

Patented balanced-input circuitry keeps hum and RFI out, so the sound remains clean in virtually any environment.

Gold-plated input connectors eliminate corrosion which can degrade long-term performance. The input load capacitance is dip-switch adjustable, for perfect matching to your cartridge and cable. All equalization is passive, to eliminate transient feedback distortion.

Internal grounding prevents, RF from being picked up and amplified.

BPA-200 Balanced-Input Phono Preamp-Stereo . . . \$295.00



Bright-VU

Bright-VU LED Audio Level Displays

Bright-VU LED level displays respond almost instantaneously so you can see the full extent of every peak. And, the color-coded LEDs can be easily read even across a large room, making it perfect for network and cable control rooms and any place where equipment is beyond arms reach.

Bright-VU Mono \$185.00
Bright-VU Rackmount Kit (Specify Mono or Stereo) . . . 32.00
Bright-VU Stereo 310.00
Bright-VU Supply 32.00

LOWEL-LIGHT MFG., INC.

Location Lighting

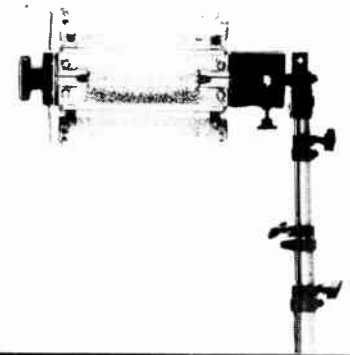
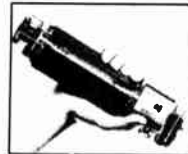
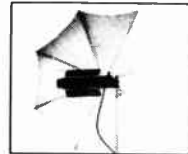
Lowel systems and kits have been in use since 1959 for video, film and still photography. They are a successful combination of innovative design, high strength materials, and careful workmanship. As a result, the lights and accessories are extremely efficient, lightweight and

durable. Their versatility is unequalled. We have received eight United States patents, an Academy Award Certificate and International acclaim.

Tota-Light

- Interchangeable 1000, 750 and 500 watt tungsten halogen lamps—120 volts • 800 watt lamp—220/240 volts • Patented gull-wing reflector produces remarkably efficient output • Exceptionally wide, smooth beam angle. One unit can provide even illumination of four walls from the corner of a room • Basically non-focusing, however, reflecting doors offer some intensity and spread control • Light control system: umbrella, gel frame, gels, small flags, and others • Mounting system: stand, wall/door mount, clamps • Weighs only 2 1/4 lbs. (1.02 kg). Closes up compactly for storage/travel • Patent #3,852,582

T1-10 Head \$112.00



Omni-Light

- Interchangeable 650, 600 and 420 watt tungsten halogen lamps—120 volts • 650 watt lamp—220 and 240 volts • 250 watt lamp—30 volts (battery operation) • 100 watt lamp—12 volts (automobile and battery operation) • Unprecedented spot/flood focusing range • Interchangeable, special purpose reflectors • Uses many Tota-light accessories • Light control system: four way expandable barndoors, high intensity and other reflectors, umbrella, gel frame, gels, snoot, scrims, dichroic filter, cookaloris and others • Mounting system: stand, clamps, wall/door mount • Weighs only 2-5/8 lbs. (1.19kg) • Patent #4,187,531

O1-10 Head \$135.00



DP Light

- Interchangeable 1000, 750 and 500 watt tungsten halogen lamps—120 volts • 1000 and 650 watt lamps at 220 and 240 volts • Wide smooth beam pattern with continuous focusing to intense spot • Quick change, special purpose reflectors • Convenient, fast, one-hand tilt control • Light control system: four way expandable barndoors, high intensity and other reflectors, large umbrella, gel frame, gels, scrims, dichroic filter, snoot, cookaloris and others • Mounting system: famous KS stand, clamps, wall mount, and others • Weighs only 3-7/8 lbs. (1.76kg) • US Patent #D210927

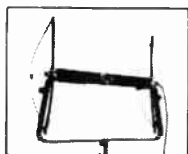
D2-10 Head \$150.00



Softlight 2

- 2000 watt maximum capacity. Uses two 1000, 750 or 500 watt lamps at 120 volts or two 800 watt lamps at 220/240 volts • Unit folds in half, nearly flat, for storage/travel • Large, soft-shadow source utilizes aluminized Nomex reflecting surface which will not scorch or discolor • Light control system: adjustable and fixed barndoors for flare control, subject shading and gel mounting; gels • Mounting system: stand, clamps • Weighs only 8 lbs. (3.63kg) • Both lamps can be switched on and off individually • US Patent #3,712,978

S2-10 Head \$285.00



Prices and Specifications Subject to Change Without Notice.

LOWEL-LIGHT MFG., INC.

Lighting Systems/Kits

TOTA/OMNI SYSTEMS

Tota-Light, Omni Light and Reflectors				
T1-10	tota-light	2 1/4 lbs.	1.02kg	\$112.00
01-10	omni-light	2 5/8 lbs.	1.19kg	135.00
01-13	omni-light 30V	2 1/4 lbs.	1.02kg	145.00
01-15	#1 reflector	2 oz.	57g	13.00
01-16	#2 reflector	2 oz.	57g	13.00
01-17	#3 reflector	2 oz.	57g	13.00
01-18	#4 reflector	2 oz.	57g	13.00

Tota/Omni Light Controls				
T1-20	tota-frame GELS: PACKAGE OF 5, 10" x 12" (25x30cm)	6 oz.	17kg	\$24.50
T1-69	blue frost gels	2 oz.	57g	10.50
T1-70	day blue gels	2 oz.	57g	10.50
T1-71	n.d. 3 gels	2 oz.	57g	10.50
T1-72	frost gels	2 oz.	57g	10.50
T1-78	assorted gels	2 oz.	57g	10.50
T1-25	tota-brella	8 oz.	.23kg	30.00
T1-34	tota-tatch	2 oz.	57g	11.50
T1-50	flexishaft 16" (2)	4 oz.	.11kg	17.50
T1-52	tota-flag	4 oz.	.11kg	15.00
T1-54	tota-flector	6 oz.	.17kg	19.50
LFT	lightflector/tilter	1 3/4 lbs.	.79kg	75.00

Omni Light Controls				
01-20	complete barndoor	8 oz.	.23kg	\$52.50
01-21	barndoor frame	2 oz.	57g	25.00
01-22	rectangular leaf	2 oz.	57g	10.00
01-23	triangular leaf	1 oz.	28g	10.00
01-50	diffused glass	3 oz.	85g	30.00
01-51	dichroic filter	3 oz.	85g	77.50
01-52	clear glass	3 oz.	85g	26.50
01-53	snoot	4 oz.	.11kg	28.50
01-54	full scrim	2 oz.	57g	12.50
01-55	half scrim	2 oz.	57g	12.50
01-56	graduated scrim	2 oz.	57g	15.50
01-57	cooaloris	2 oz.	57g	13.50

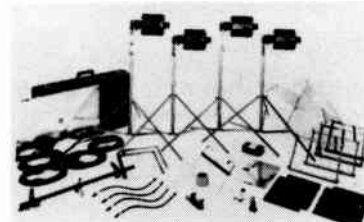
Tota/Omni Supports and Mounts				
01-33	omni-stand	27 1/8 lbs.	1.30kg	\$87.00
KPH	half pole	1 lb.	.45kg	41.00
SC-10	large space clamp	1 1/2 lbs.	.68kg	48.50
SC-20	small space clamp	1 1/4 lbs.	.57kg	42.50
T1-30	tota-clamp	4 oz.	.11kg	18.50
T1-32	tota-mount	10 oz.	.28kg	25.00
GT-12	gaffer-tape 12 yards	8 oz.	.23kg	9.00
GT-30	gaffer-tape 30 yards	1 1/4 lbs.	.57kg	17.50
LSS	screw-in stud (2)	3 oz.	85g	10.50
T1-35	tota-daptor	4 oz.	.11kg	15.00
T1-36	tota-tilter	4 oz.	.11kg	21.00

Tota/Omni Cables				
T1-80	16' tota/omni cable	13 oz.	.37kg	\$22.50
01-81	5' omni 30V cable	7 oz.	.20kg	35.00
01-82	omni 12V car adaptor	1 oz.	28g	5.00
LOE25	25' extension cable	23 1/8 lbs.	1.08kg	25.00
KCC	cable clips (40)	4 oz.	.11kg	9.00
K4CC	cable clips (10)	1 oz.	28g	4.50

Tota/Omni Storage				
T1-61	tota-lampak	2 oz.	57g	\$ 14.50
01-61	omni-lampak	2 oz.	57g	14.50
T0-61	tota/omni lampak	2 oz.	57g	14.50
01-65	tota-packet	2 oz.	57g	11.50
T1-85	tota-case	5 lbs.	2.27kg	95.00
T0-87	molded tota/omni case 87	10 lbs.	4.54kg	130.00
T0-84M	molded tota/omni case 84M	12 1/2 lbs.	5.67kg	180.00
01-86M	molded omni case 86M	14 1/2 lbs.	6.58kg	215.00
T0-89	heavy-duty case	28 lbs.	12.70kg	425.00
T1-82	tota tube case	2 3/8 lbs.	1.08kg	78.00

Lamps for Tota-Light tota lampak available — stores 5 lamps						
EHA	120V	300W	2000 hr.	frost	2900°K	POR
FDN	120V	500W	400 hr.	frost	3200°K	POR
FCZ	120V	500W	2600 hr.	frost	3000°K	POR
EMD	120V	750W	400 hr.	frost	3200°K	POR
FHM	120V	1000W	300 hr.	frost	3200°K	POR
EMF	240V	800W	250 hr.	frost	3200°K	POR

Lamps for Omni Light omni lampak available — stores 6 lamps						
EYL	12V	100W	50 hr.	clear	3200°K	POR
DYG	30V	250W	15 hr.	clear	3400°K	POR
EK8	120V	420W	75 hr.	clear	3200°K	POR
DYS/DYV	120V	600W	75 hr.	clear	3200°K	POR
EKD	120V	650W	25 hr.	clear	3400°K	POR
DYR/220	220V	650W	50 hr.	clear	3200°K	POR
DYR/240	240V	650W	50 hr.	clear	3200°K	POR



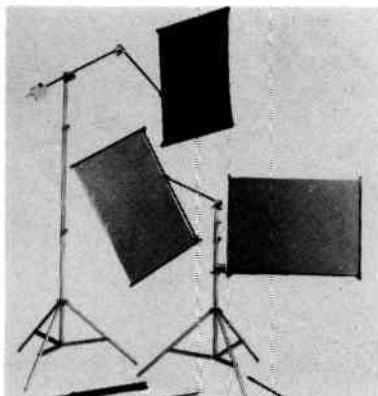
T1-94M

TOTA/OMNI KITS

T1-93M	Carry-on Kit	19 lbs.	8.62 kg	\$675.00
3 tota-lights, 16' cables (less lamps); 3 tota-frames; assorted gels; 3 tota-flags; 1 tota-flector; 4 flexishafts; 1 tota-mount; 1 tota-clamp; 1 small space-clamp; 1 12 yard gaffer-tape; 1 tota-lampak; 1 tota-case. (T1-85)				
T1-90	Tube Kit	14 lbs.	6.35kg	\$510.00
2 tota-lights, 16' cables (less lamps); 1 tota-brella; 1 tota-frame; 1 assorted gels; 2 omni-stands; 1 tota-lampak; 1 tube case. (T1-82)				
T1-92M	Trans-Kit	29 lbs.	13.15kg	\$770.00
3 tota-lights, 16' cables (less lamps); 3 tota-brellas; 3 omni-stands; 1 tota-lampak; 1 tota/omni molded case. (T0-87)				
T1-94M	T4 Kit	42 lbs.	19.05kg	\$1335.00
4 tota-lights, 16' cables (less lamps); 1 tota-brella; 4 tota-frames; 2 assorted gels; 1 lightflector/tilter; 4 tota-flags; 1 tota-flector; 4 flexishafts; 1 tota-tatch; 4 omni-stands; 1 tota-mount; 1 tota-clamp; 1 large space-clamp; 1 12 yard gaffer-tape; 1 tota-lampak; 1 molded tota/omni case. (T0-84M)				
01-92	Action Kit	30 lbs.	13.61kg	\$950.00
3 omni-lights, 16' cables, #1 reflectors (less lamps); 3 omni-barndoors; 3 omni-stands; 1 omni-lampak; 1 molded tota/omni case (T0-84M)				
01-93	Omni 3 Kit	34 lbs.	15.42kg	\$1150.00
3 omni-lights, 16' cables, #1 reflectors (less lamps); 3 omni-barndoors; 2 full scrims; 1 half scrim; 1 tota-brella; 3 tota-frames; 2 assorted gels; 3 omni-stands; 1 tota-mount; 1 tota-clamp; 1 12 yard gaffer-tape; 1 omni-lampak; 1 molded tota/omni case. (T0-84M)				
01-94M	Spatial Kit	44 lbs.	19.96kg	\$1495.00
4 omni-lights, 16' cables, #1 reflectors, (less lamps); 4 omni-barndoors; 1 #3 superspot reflector; 1 diffused glass; 2 full scrims; 1 half scrim; 1 graduated scrim; 4 tota-frames; 2 assorted gels; 4 omni-stands; 1 large space-clamp; 1 tota-clamp; 1 omni-lampak; 1 molded omni case. (01-86M)				
T0-97	Basically 3 Kit	28 lbs.	12.70kg	\$825.00
2 tota-lights, 16' cables (less lamps); 1 omni-light, 16' cable, #1 reflector (less lamp); 1 omni-barndoor; 1 full scrim; 1 tota-brella; 1 tota-frame; 1 assorted gels; 3 omni-stands; 1 tota/omni lampak; 1 tota/omni molded case. (T0-87)				
T0-95	Ambi Kit	41 lbs.	18.60kg	\$1445.00
2 tota-lights, 16' cables (less lamps); 2 omni-lights, 16' cables, #1 reflectors (less lamps); 2 omni-barndoors; 2 full scrims; 1 half scrim; 2 tota-brellas; 4 tota-frames; 2 assorted gels; 2 tota-flags; 1 tota-flector; 4 flexishafts; 1 tota-tatch; 4 omni-stands; 1 tota-mount; 2 tota-clamps; 1 12 yard gaffer-tape; 2 tota/omni lampaks; 1 molded tota/omni case. (T0-84M)				
T0-98	Elemental Kit	31 lbs.	14.06kg	\$925.00
1 tota-light, 16' cable (less lamp); 2 omni-lights, 16' cables, #1 reflectors (less lamps); 2 omni-barndoors; 1 full scrim; 1 tota-brella; 2 tota-frames; 1 assorted gels; 3 omni-stands; 1 tota/omni lampak; 1 tota/omni molded case. (T0-87)				
T0-96	Solo Kit	60 lbs.	27.22kg	\$2250.00
2 tota-lights, 16' cables (less lamps); 4 omni-lights, 16' cables, #1 reflectors (less lamps); 2 #3 superspot reflectors; 4 omni-barndoors; 2 diffused glass; 2 full scrims; 2 half scrims; 1 graduated scrim; 1 cooaloris; 3 tota-brellas; 6 tota-frames; 3 assorted gels; 1 lightflector/tilter; 4 tota-flags; 1 tota-flector; 4 flexishafts; 5 omni-stands; 1 tota-mount; 2 tota-clamps; 1 large space clamp; 2 tota-tatches; 1 12 yard gaffer-tape; 2 screw-in studs; 2 tota/omni lampaks; 1 molded omni case. (01-86M)				
To order above kits with heavy-duty case (T0-89) Substituted for standard kit case, see below;				
T1-93MHD	Carry-on/heavy-duty case	42 lbs.	10.05kg	\$1005.00
T1-90HD	Tube Kit/heavy-duty case	40 lbs.	18.14kg	857.00
T1-92MHD	Trans/heavy-duty case	47 lbs.	21.31kg	1065.00
T1-94MHD	T4/heavy-duty case	58 lbs.	26.30kg	1580.00
01-92HD	Action/heavy-duty case	45 lbs.	20.41kg	1195.00
01-93HD	Omni 3/heavy-duty case	49 lbs.	22.22kg	1395.00
01-94MHD	Spatial/heavy-duty case	57 lbs.	25.85kg	1705.00
T0-97HD	Basically 3/heavy-duty case	46 lbs.	20.86kg	1120.00
T0-95HD	Ambi/heavy-duty case	56 lbs.	25.40kg	1690.00
T0-98HD	Elemental/heavy-duty case	49 lbs.	22.22kg	1220.00
T0-96HD	Solo Kit/heavy-duty	73 lbs.	33.11kg	2460.00

LOWEL-LIGHT MFG., INC.

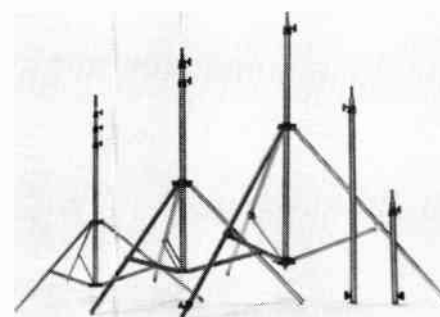
Lighting Support Systems/Accessories



FRAME-UP LOBO & LOBO ARM



CLAMPS AND MOUNTS



STANDS, POLES, BOOMS, RIGS

CLAMPS & MOUNTS

Clamps			
SC-10	large space-clamp	1 1/2 lbs.	.68kg \$48.50
SC-20	small space-clamp	1 1/4 lbs.	.57g 42.50
SC-15	large bar	8 oz.	.23kg 22.50
SC-25	small bar	4 oz.	.11kg 16.00
SC-35	clamping arm (1)	6 oz.	.17kg 10.50
SC-30	stud bracket	4 oz.	.11kg 12.00
T1-30	tota-clamp	4 oz.	.11kg 18.50
KG	grip	1 3/4 lbs.	.79kg 27.50
KI-10	interlink	12 oz.	.34kg 21.50
KI-11	double male stud	4 oz.	.11kg 7.00

Mounts			
T1-32	tota-mount	10 oz.	.28kg \$25.00
D2-32	tape-up bracket	8 oz.	.23kg 27.50
GT-12	gaffer-tape 12 yards	8 oz.	.23kg 9.00
GT-30	gaffer-tape 30 yards	1 1/4 lbs.	.57kg 17.50
LSS	screw-in stud (2)	4 oz.	.11kg 10.50
T1-35	tota-daptor	4 oz.	.11kg 15.00
T1-36	tota-tilter	4 oz.	.11kg 21.00
F1-30	lowel lobo	10 oz.	.28kg 18.50
F1-40	lobo arm	3 oz.	.85g 14.50

STANDS, POLES, BOOMS, RIGS

Stands and Poles			
GS	grand stand	6 lbs.	2.72kg \$175.00
KS	ks stand	4 5/8 lbs.	2.10kg 108.00
O1-33	omni-stand	2 7/8 lbs.	1.30kg 87.00
KP	full pole	1 3/8 lbs.	.62kg 48.50
KPH	half pole	1 lb.	.45kg 41.00

Accessories			
LC	lowel casters (3)	2 3/8 lbs.	1.08kg \$48.50
LA	lowel anchors (4)	12 oz.	.34kg 9.50
LW	lowel weight	4 1/4 lbs.	1.93kg 23.50
KWW	water weight	8 oz.	.23kg 16.50
KCL	ceiling link	10 oz.	.28kg 18.50
T1-30	tota-clamp	4 oz.	.11kg 18.50
KG	grip	1 3/4 lbs.	.79kg 27.50
KI-10	interlink	12 oz.	.34kg 21.50
KI-11	double male stud	4 oz.	.11kg 7.00

Storage			
MCSEM	molded multi case	16 1/2 lbs.	7.49kg \$215.00
V44CC	variflector case	4 1/4 lbs.	1.93kg 95.00
T1-82	tube case	2 3/8 lbs.	1.08kg 78.00
RU	roll-up carrier	3 1/4 lbs.	1.47kg 98.50

Booms and Rigs			
SP-90	big boom 1 grand stand; 1 grip; 1 full pole; 2 lowel weights; 1 set lowel casters (3); 1 package cable clips (10)	20 1/2 lbs.	9.30kg \$325.00
SP-91	basic boom 1 ks stand; 1 grip; 1 full pole; 2 lowel weights; 1 set lowel casters(3); 1 package cable clips (10)	19 lbs.	8.62kg 265.00
SP-92	hi-lo-elbow 1 ks stand; 1 grip; 1 half pole	7 lbs.	3.17kg 165.00
SP-93	background support 2 ks stands; 2 interlinks; 2 full poles	13 1/2 lbs.	6.12kg 335.00

FLAGS, GELS, UMBRELLAS

Flags, Frames, Umbrellas, Mats, Gels			
F1-15	standard frame-up	14 oz.	.40kg \$ 60.00
F1-20	large frame-up	1 lb.	.45kg 65.00
D2-24	dp frame	8 oz.	.23kg 40.00
T1-20	tota-frame	6 oz.	.17kg 24.50
T1-52	tota-flag	4 oz.	.11kg 15.00
B1-25	big brella	3 1/2 lbs.	1.59kg 160.00
D2-25	dp brella	21 oz.	6.6kg 48.50
T1-25	tota-brella	8 oz.	.23kg 30.00
MATS FOR STANDARD FRAME-UP: 20x24" (50x60cm)			
F1-42	black mat	3 oz.	.85g \$17.50
F1-43	translucent mat	3 oz.	.85g 15.00
MATS FOR LARGE FRAME-UP: 24x34" (61x86cm)			
F1-52	black mat	4 oz.	.11kg \$25.00
F1-53	translucent mat	4 oz.	.11kg 22.50
STANDARD FRAME-UP GELS: PACKAGE OF 3, 20x24" (50x60cm)			
F1-70	day blue gel	4 oz.	.11kg \$17.50
F1-71	n.d. 3 gel	4 oz.	.11kg 17.50
F1-72	frost gel	4 oz.	.11kg 17.50
LARGE FRAME-UP & SOFTLIGHT 2 GELS: PACKAGE OF 3, 24x34" (61x86cm)			
S2-69	blue frost gels	7 oz.	.20kg \$29.50
S2-70	day blue gels	7 oz.	.20kg 29.50
S2-71	n.d. 3 gels	7 oz.	.20kg 29.50
S2-72	frost gels	7 oz.	.20kg 29.50
S2-79	special colors	7 oz.	.20kg 29.50
DP GELS: PACKAGE OF 4, 12x16" (30x41cm)			
D2-69	blue frost gels	2 oz.	.57g \$13.50
D2-70	day blue gels	2 oz.	.57g 13.50
D2-71	n.d. 3 gels	2 oz.	.57g 13.50
D2-72	frost gels	2 oz.	.57g 13.50
D2-78	mixed gels	2 oz.	.57g 13.50
TOTA/OMNI GELS: PACKAGE OF 5, 10x12" (25x30cm)			
T1-69	blue frost gels	2 oz.	.57g \$10.50
T1-70	day blue gels	2 oz.	.57g 10.50
T1-71	n.d. 3 gels	2 oz.	.57g 10.50
T1-72	frost gels	2 oz.	.57g 10.50
T1-78	assorted gels	2 oz.	.57g 10.50

Mounting Devices			
F1-30	lowel lobo	10 oz.	.28kg \$ 18.50
F1-40	lobo arm	3 oz.	.85g 14.50
GS	grand stand	6 lbs.	2.27kg 175.00
KS	ks stand	4 5/8 lbs.	2.10kg 108.00
O1-33	omni-stand	2 7/8 lbs.	1.30kg 87.00
T1-50	flexi-shaft (2)	4 oz.	.11kg 17.50
T1-30	tota-clamp	4 oz.	.11kg 18.50
T1-34	tota-tatch	2 oz.	.57g 11.50
T1-35	tota-daptor	4 oz.	.11kg 15.00
KG	grip	1 3/4 lbs.	.79kg 27.50
K1-10	interlink	12 oz.	.34kg 21.50
SC-10	large space-clamp	1 1/2 lbs.	.68kg 48.50
SC-20	small space-clamp	1 1/4 lbs.	.57kg 42.50
LW	lowel weight	4 1/4 lbs.	1.93kg 23.50
RU	roll-up carrier	3 1/4 lbs.	1.47kg 98.50

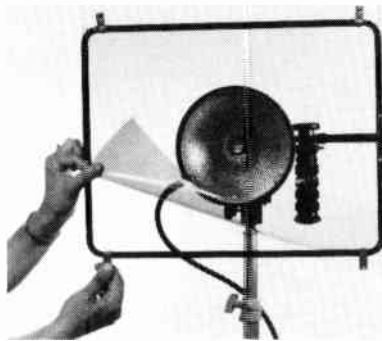
Frame-Up Sets			
F1-90	standard frame-up set 2 standard frame-ups, 3 lobo; 1 lobo arm	3 1/2 lbs.	1.6kg \$170.00
F1-95	large frame-up set 2 large frame-ups; 3 lobo; 1 lobo arm	4 lbs.	1.80kg 180.00

Refer to Green Section for Addresses and Telephone Numbers.

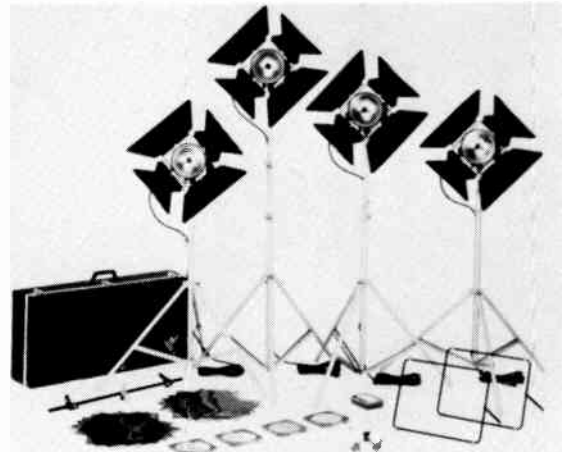
B-785

LOWEL-LIGHT MFG., INC.

Lighting Systems/Kits



DP with Gel Frame



D2-97

DP SYSTEM

DP Light and Reflectors			
D2-10	dp light	37 ³ / ₈ lbs.	1.76kg \$ 150.00
D2-15	#1 reflector	2 oz.	57g 13.50
D2-17	#3 reflector	2 oz.	57g 13.50
D2-18	#4 reflector	2 oz.	57g 13.50

DP Light Controls			
D2-20	complete barndoor	1 lb.	.45kg \$ 62.50
D2-21	barndoor frame	4 oz.	.11kg 25.00
D2-22	rectangular leaf	4 oz.	.11kg 13.50
D2-23	triangular leaf	2 oz.	57g 13.50
D2-50	diffused glass	4 oz.	.11kg 34.00
D2-51	dichroic filter	4 oz.	.11kg 107.50
D2-52	clear glass	4 oz.	.11kg 30.00
D2-53	snoot	6 oz.	.17kg 38.50
D2-54	full scrim	3 oz.	85g 14.50
D2-55	half scrim	3 oz.	85g 14.50
D2-56	graduated scrim	3 oz.	85g 17.50
D2-57	cookaloris	3 oz.	85g 14.50
D2-24	dp frame	8 oz.	.23kg 40.00

GELS: Package of 4, 12" x 16" (30 x 41 cm)			
D2-69	blue frost gels	2 oz.	57g \$ 13.50
D2-70	day blue gels	2 oz.	57g 13.50
D2-71	n.d. 3 gels	2 oz.	57g 13.50
D2-72	frost gels	2 oz.	57g 13.50
D2-78	mixed gels	2 oz.	57g 13.50
D2-25	dp brella	21 oz.	.40kg 48.50
T1-50	flexi-shaft 16" (2)	4 oz.	.11kg 17.50
T1-52	tota-flag	4 oz.	.11kg 15.00
T1-54	tota-flector	6 oz.	.17kg 19.50
LFT	lightflector/tilter	13 ³ / ₄ lbs.	.79kg 75.00

DP Supports and Mounts			
KS	ks stand	45 ³ / ₈ lbs.	2.10kg \$ 108.00
KP	full pole	13 ³ / ₈ lbs.	.62kg 48.50
KPH	half pole	1 lb.	.45kg 41.00
LC	lowel casters (3)	23 ³ / ₈ lbs.	1.08kg 48.50
LA	lowel anchors (4)	12 oz.	.34kg 9.50
LW	lowel weight	4 ¹ / ₄ lbs.	1.93kg 23.50
SC-10	large space-clamp	1 ¹ / ₂ lbs.	.68kg 48.50
SC-20	small space-clamp	1 ¹ / ₄ lbs.	.57kg 42.50
D2-32	tape-up bracket	8 oz.	.23kg 27.50
GT-12	gaffer-tape 12 yards	8 oz.	.23kg 9.00
GT-30	gaffer-tape 30 yards	1 ¹ / ₄ lbs.	.57kg 17.50
T1-30	tota-clamp	4 oz.	.11kg 18.50
KI-10	interlink	12 oz.	.34kg 21.50
KG	grip	13 ³ / ₄ lbs.	.79kg 27.50
LSS	screw-in stud (2)	4 oz.	.11kg 10.50

DP Cables and Storage			
LQE25	25' extension cable	23 ³ / ₈ lbs.	1.08kg \$ 25.00
KCC	cable clips (40)	4 oz.	.11kg 9.00
K4CC	cable clips (10)	1 oz.	28g 4.50
D2-61	dp lampak	2 oz.	57g 14.50
MCSEM	molded multi case	16 ¹ / ₂ lbs.	7.49kg 215.00
D2-89	heavy-duty case	37 lbs.	17kg 450.00

DP Retrofit			
D2-05	quartz d retrofit	8 oz.	.23kg \$ 15.00

DP KITS

D2-95	dp brella kit	48 lbs.	21.78kg	\$ 1085.00
3 dp lights, #1 reflector (less lamps); 3 dp brellas; 3 ks stands; 1 dp lampak; 1 molded multi case				
D2-93	dp 3 kit	45 lbs.	20.41kg	1125.00
3 dp lights, #1 reflectors (less lamps); 3 dp barndoors; 3 ks stands; 1 dp lampak; 1 molded multi case				
D2-94	dp 4 kit	55 lbs.	24.95kg	1425.00
4 dp lights, #1 reflectors (less lamps); 4 dp barndoors; 4 ks stands; 1 dp lampak; 1 molded multi case				
D2-96	dp remote kit	52 lbs.	23.58kg	1535.00
3 dp lights, #1 reflectors (less lamps); 3 dp barndoors; 1 #3 superspot reflector; 1 diffused glass; 1 full scrim; 1 graduated scrim; 1 dp brella; 3 dp frames; 1 mixed gels; 1 pack day blue gels; 1 lightflector/tilter; 2 tota-flags; 2 flexi-shafts; 3 ks stands; 1 large space-clamp; 1 dp lampak; 1 molded multi case				
D2-97	close quarters kit	58 lbs.	26.31kg	1635.00
4 dp lights, #1 reflectors (less lamps); 1 #3 superspot reflector; 4 dp barndoors; 2 full scrims; 1 half scrim; 1 graduated scrim; 2 dp frames; 1 mixed gels; 1 pack day blue gels; 4 ks stands; 1 large space-clamp; 1 dp lampak; 1 molded multi case				

To Order Above Kits With Heavy-Duty Case (D2-89) Substituted For Standard Kit Case, See Below:

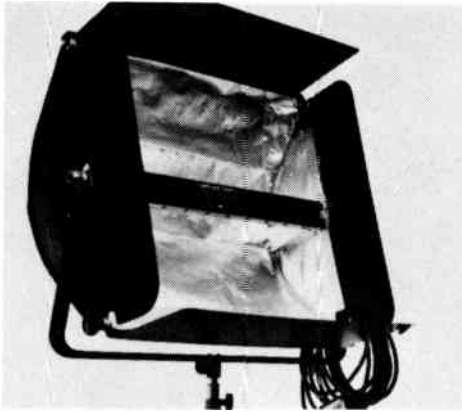
D2-95HD	dp brella/hd case	68 ¹ / ₂ lbs.	31.06kg	\$ 1320.00
D2-93HD	dp 3/hd case	65 ¹ / ₂ lbs.	29.70kg	1360.00
D2-94HD	dp 4/hd case	75 ¹ / ₂ lbs.	34.24kg	1660.00
D2-96HD	dp remote/hd case	72 ¹ / ₂ lbs.	32.88kg	1770.00
D2-97HD	close quarters/hd case	78 ¹ / ₂ lbs.	35.60kg	1870.00

LAMPS FOR DP LIGHT dp lampak available — stores 4 lamps

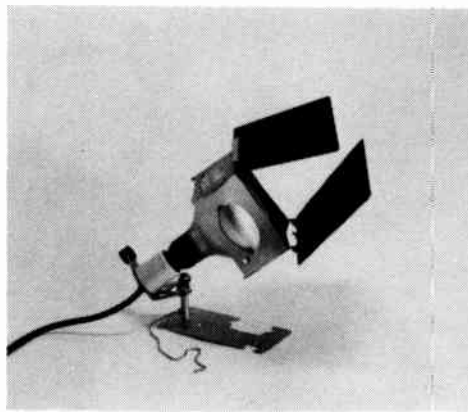
EHC	120V	500W	300 hr.	clear	3200°K	POR
EHD	120V	500W	2000 hr.	clear	3000°K	POR
EHF	120V	750W	300 hr.	clear	3200°K	POR
EHG	120V	750W	2000 hr.	clear	3000°K	POR
FEL	120V	1000W	300 hr.	clear	3200°K	POR
FKR/220	220V	650W	300 hr.	clear	3100°K	POR
FEP/220	220V	1000W	150 hr.	clear	3200°K	POR
FKR/240	240V	650W	300 hr.	clear	3100°K	POR
FEP/240	240V	1000W	150 hr.	clear	3200°K	POR

LOWEL-LIGHT MFG., INC.

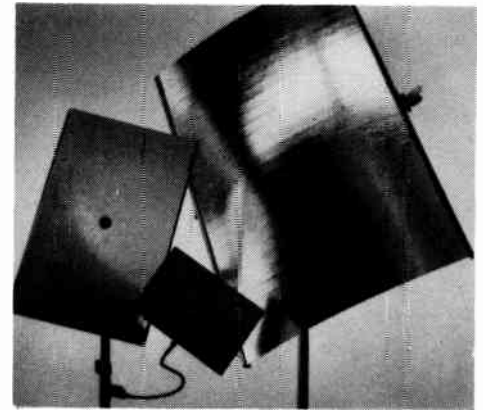
Lighting Systems/Kits/Reflectors



Softlight 2



Lowel-Light



Reflectors

SOFTLIGHT SYSTEM

Softlight 2 Gels

S2-10	softlight 2	8 lbs.	3.63kg	\$285.00
S2-20	complete barndoor	2 lbs.	.91kg	75.00
S2-21	top or bottom door	10 oz.	.28kg	30.00
S2-22	side barndoor	5 oz.	.14kg	15.00
S2-30	reflector shell	6 oz.	.17kg	70.00

Gels: Package of 3, 24" x 34" (61 x 86cm)

S2-69	blue frost gels	7 oz.	.20kg	29.50
S2-70	day blue gels	7 oz.	.20kg	29.50
S2-71	n.d. 3 gels	7 oz.	.20kg	29.50
S2-72	frost gels	7 oz.	.20kg	29.50

Softlight 2 Supports and Mounts

KS	ks stand	4 ⁵ / ₈ lbs.	2.10kg	\$108.00
KP	full pole	1 ³ / ₈ lbs.	.62kg	48.50
KPH	half pole	1 lb.	.45kg	41.00
SC-10	large space-clamp	1 ¹ / ₂ lbs.	.68kg	48.50
SC-20	small space-clamp	1 ¹ / ₄ lbs.	.57kg	42.50
KG	grip	1 ³ / ₄ lbs.	.79kg	27.50
KI-10	interlink	12 oz.	.34kg	21.50
T1-30	tota-clamp	4 oz.	.11kg	18.50
KWW	water weight	8 oz.	.23kg	16.50
LW	lowel weight	4 ¹ / ₄ lbs.	1.93kg	23.50
LC	lowel casters (3)	2 ³ / ₈ lbs.	1.08kg	48.50

Storage

KCC	cable clips (40)	4 oz.	.11kg	\$ 9.00
K4CC	cable clips (10)	1 oz.	.28g	4.50
T1-61	tota-lampak	2 oz.	.57g	14.50
S2-51M	molded softlight case	13 lbs.	5.90kg	190.00
S2-53M	molded softlight case	13 lbs.	5.90kg	175.00
RU	roll-up carrier	3 ¹ / ₄ lbs.	1.47kg	98.50

Softlight Retrofit

S2-06	softlight retrofit	17 ⁷ / ₈ lbs.	.85kg	\$42.50
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SOFTLIGHT KITS

S2-92	standard soft kit	29 lbs.	13.15kg	\$ 625.00
1 softlight 2 (less lamps); 1 ks stand; 1 complete set barndoors; 1 tota-lampak; 1 molded softlight case (S2-51M)				
S2-91	light soft kit	24 lbs.	10.89kg	535.00
1 softlight 2 (less lamps); 1 complete set barndoors; 1 tota-lampak; 1 molded softlight case (S2-51M)				
S2-93	triple soft kit	43 lbs.	19.50kg	1165.00
3 softlight 2 (less lamps); 3 complete set barndoors; 1 tota-lampak; 1 molded softlight 3 case (S2-53M)				

LAMPS FOR SOFTLIGHT 2

tota-lampak available— stores 5 lamps

FDL	120V	500W	400hr.	clear	3200°K	\$32.00
FCL	120V	500W	2600hr.	clear	3000°K	26.00
EJG	120V	750W	400hr.	clear	3200°K	40.00
EME/EJB	240V	800W	250hr.	clear	3200°K	37.00
FCM	120V	1000W	300hr.	clear	3200°K	32.00

LOWEL-LIGHT SYSTEM

Lowel-Light and Accessories

LL1	lowel-light	10 oz.	.28kg	\$33.50
BR40	barndoor	4 oz.	.11kg	33.50
BR-1	replacement flap	1 oz.	.28g	8.50
BR-2	complete bulbmount only	3 oz.	.86g	20.00
GT-12	gaffer-tape 12 yards	8 oz.	.23kg	9.00
GT-30	gaffer-tape 30 yards	1 ¹ / ₄ lbs.	.57kg	17.50
K5C	lowel-light case	2 ¹ / ₈ lbs.	.96kg	72.50

Lowel-Light Kit

K5BR	lowel-light K5BR kit	8 ¹ / ₄ lbs.	3.74kg	\$375.00
5 lowel-lights (less lamps); One 12 yard gaffer-tape; 5 barndoors; 1 lowel-light case				

REFLECTORS

Reflectors

LFT	lightflector/tilter	1 ³ / ₄ lbs.	.79kg	\$ 75.00
LF	lightflector	1 ⁵ / ₈ lbs.	.74kg	57.00
T1-54	tota-flector	6 oz.	.17kg	19.50
V44A	variflector II	14 lbs.	6.35kg	275.00
V44RS	replacement panel	7 ¹ / ₄ lbs.	3.29kg	110.00
V44CK	side channels (2)	3 ¹ / ₂ lbs.	1.59kg	120.00

Supports and Mounts

GS	grand stand	6 lbs.	2.72kg	\$175.00
KS	ks stand	4 ⁵ / ₈ lbs.	2.10kg	108.00
O1-33	omni-stand	2 ⁷ / ₈ lbs.	1.30kg	87.00
LA	lowel anchors (4)	12 oz.	.34kg	9.50
LW	lowel weight	4 ¹ / ₄ lbs.	1.93kg	23.50
T1-36	tota-tilter	4 oz.	.11kg	21.00
T1-50	flexi-shaft 16" (2)	4 oz.	.11kg	17.50
T1-30	tota-clamp	4 oz.	.11kg	18.50
T1-34	tota-tatch	2 oz.	.57g	11.50
LC	lowel casters (3)	2 ³ / ₈ lbs.	1.08kg	48.50

Storage

V44CC	variflector case	4 ¹ / ₄ lbs.	1.93kg	\$95.00
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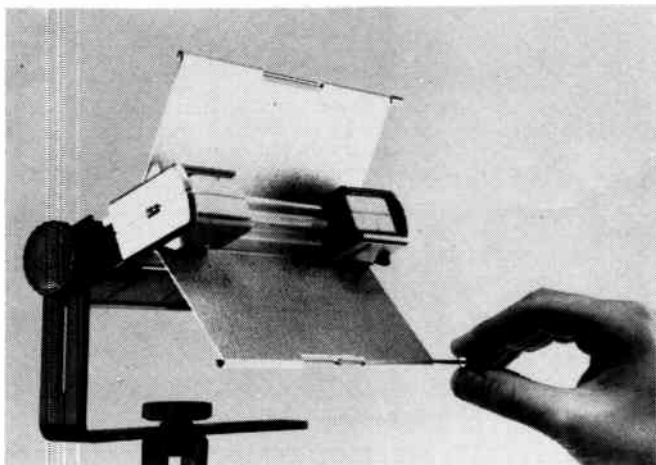
Kit

V44SC	variflector II kit	25 lbs.	11.34kg	\$525.00
1 variflector II; 1 grand stand; 4 lowel anchors; 1 variflector case				

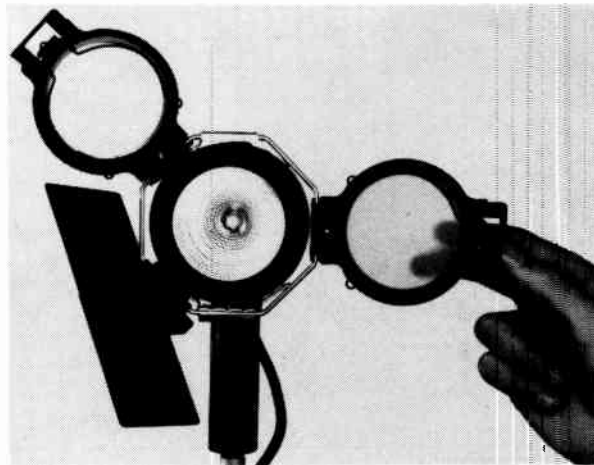
Prices and Specifications Subject to Change Without Notice.

LOWEL-LIGHT MFG., INC.

Lighting



V-light (ViP System)



i-light (ViP System)

ViP System

The ViP System is both a practical and sophisticated system designed to take advantage of fast films, lenses and video cameras. ViP consists of three very small, highly compatible, professional lights. The ViP System also includes a wide range of unique light control and mounting components, most of which can be used interchangeably among the three fixtures. Many Tota-light and other Lowel accessories (already in the field) can also be used with the three ViP lights.

A distinguished collection of ViP and other existing Lowel accessories position all three lights on stands, on cameras, on walls, on doors, on sets, in hand, in seconds. This unprecedented component integration provides maximum versatility and economy.

V-light

The V-light is a broad, efficient 500W halogen source with a protective glass shield. It is bright enough to light a small room, small enough to fit in a large pocket.

V1-10 V-light \$95.00

i-light

The tiny, focusing i-light uses an inexpensive 12V, 100V or 55W halogen lamp. Whether handheld or camera mounted it can provide that essential fill light, eye-light, highlight, and contrast control, without overwhelming the available, natural light.

i-110 i-light \$110.00

Pro-light

The focusing Pro-light uses various voltage lamps: 250W, 120V; 200W, 30V, 100W, 12V. It has interchangeable special purpose reflectors, unique barndoors, five swing-away accessories, plus a gel frame and brella. All of these components are shared with the i-light.

ViP Kits

P1-10 Pro-light \$105.00

ViP Kits

All ViP kits are unusually compact and ideal for many video, film and still photography assignments ranging from basic to sophisticated, from soft to dramatic, from studio to remote locations.

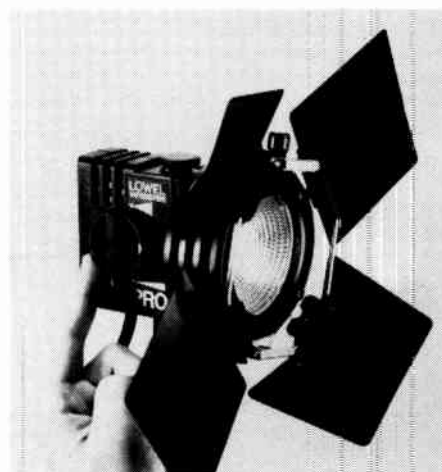
ViP KitsPOR

Light-Array

The Light-Array uses six standard 4' fluorescent tubes. It travels in one portable case with its own boom, ballast, barndoors and stand. It is ideal for shoots where existing fluorescent illumination is photographically unacceptable without some fill or side modeling light. The tubes for the Array can usually be borrowed at the supermarket, office, school or showroom location to assure perfect color balance with the prevailing fluorescents.

This 8 sq. foot, cool, lightweight, super-soft location or studio source can be rotated horizontally, vertically or diagonally, even boomed over the subject. The Array is available with a 120V, efficient electronic ballast, which also serves to counterbalance its boom.

Light-ArrayPOR



Pro-light (ViP System)



Light-Array shown with Full Array Kit

LOWEL-LIGHT MFG., INC.

Portable Lighting Systems

ViP SYSTEM KITS

V1-90 Easy-V Kit

2 V-lights (complete) less lamps, 2 ViP stands, 1 Totabrella, 1 Tota-frame, 1 assorted Tota gels, 1 ViP Lampak, 1 V shoulder case, 12.7lbs. \$435.00

V1-92 Tripla-Kit

3 V-lights (complete) less lamps, 3 ViP stands, 2 Totabrellas, 1 Tota frame, 1 assorted Tota gels, 1 Vipod with Stud-link, 1 ViP Lampak, 1 ViP shoulder case, ViP-86, 16.9 lbs. . . . \$635.00

V1-928 Tripla-Kit with ViP-88 Case

Same as above with ViP-88 Case substituted for ViP-86 Case, 18.2 lbs. \$700.00

VP-95 Far and Wide Kit

2 V-lights (complete) less lamps, 2 Pro-lights (complete) less lamps, 2 Pro-light 4-way barndoors, 4 ViP stands, 1 Tota-brella, 4 Tota-frames, 2 assorted Tota gels, 1 Swing-in diffuser, 1 Swing-in full scrim, 1 Swing-in half scrim, 2 Flag-links, 1 Tota-tatch, 2 Flexi-shafts (1 pkg.), 2 Tota-flags, 1 Vipod with Stud-link, 1 large Space Clamp, 2 scissor-mounts (1 pkg.), 1 Lobo, 1 Lobo arm, 1 ViP Lampak, 1 ViP-87 Case, 33.9 lbs. . . \$1195.00

VP-96 Sophisti-Kit

3 V-lights (complete) less lamps, 2 Pro-lights (complete) less lamps, 2 Pro-light 4-way barndoors, 5 ViP Stands, 2 Totabrellas, 3 Tota-frames, 2 assorted Tota gels, 1 Swing-in diffuser, 1 Swing-in full scrim, 1 Swing-in half scrim, 1 Swing-in graduated scrim, 1 lightreflector with tilter, 1 Vipod with Stud-link, 1 Cam-link, 1 handle with Low-link, 1 Tota-clamp, 2 scissor-mounts (1 pkg.), 1 ViP Lampak, 1 ViP-87 Case, 36.5 lbs. \$1325.00

VP-97 Jet Set

2 V-lights (complete) less lamps, 1 Pro-light (complete) less lamps, 1 Pro-light 4-way barndoor, 3 ViP stands, 1 Tota-brella, 1 Tota-frame, 1 assorted Tota Gels, 1 Vipod with Stud-link, 1 Tota-clamp, 1 ViP Lampak, 1 ViP Shoulder Case, ViP-86, 16.8 lbs. \$665.00

VP-978 Jet Set with ViP-88 Case

Same as above with ViP-88 Case substituted for ViP-86 Case, 19.7 lbs. \$730.00

VP-98 Intro-Kit

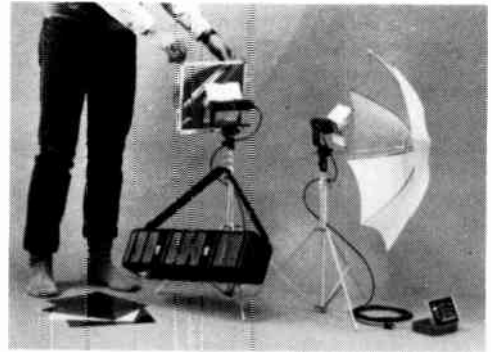
1 V-light (complete) less lamps, 2 Pro-lights (complete) less lamps, 2 Pro-light 4-way barndoors, 3 ViP stands, 2 Tota-frames, 1 assorted Tota Gels, 1 Vipod with Stud-link, 1 ViP Lampak, 1 ViP Shoulder Case, ViP-86, 16.6 lbs. . . . \$675.00

VP-988 Intro-Kit with ViP-88 Case

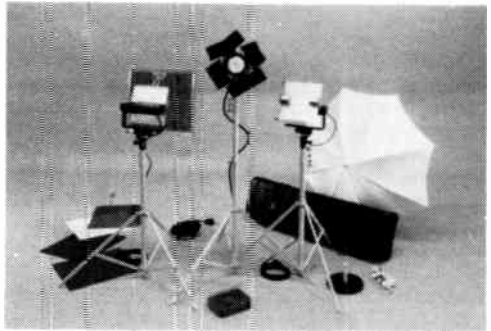
Same as above with ViP-88 Case substituted for ViP-86 Case, 19.4 lbs. \$740.00

P1-93 All Pro Kit

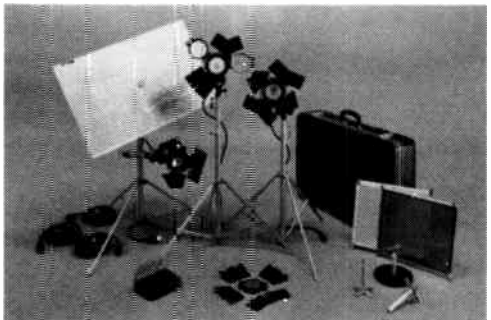
3 Pro-lights (complete) less lamps, 3 Pro-light 4-way barndoors, 3 ViP stands, 2 Tota-frames, 1 assorted Tota gels, 1 Swing-in Diffuser, 1 Swing-in full scrim, 1 Swing-in half scrim, 1 Lightreflector with tilter, 1 Vipod with Stud-link, 1 Tota-clamp, 2 scissor-mounts (1 pkg.), 1 ViP Lampak, 1 ViP-87 Case, 27.9 lbs. \$925.00



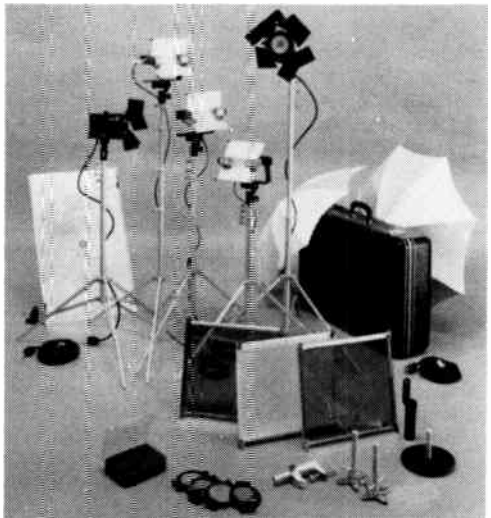
V1-90



VP-97



P1-93



VP-96

LPB, INC.

AM Transmitters

AM-50/150 Series AM Transmitters

The LPB AM-50/150 series of AM broadcast transmitters is the result of over 20 years of internationally recognized low power AM broadcast equipment experience. With over 1500 units of the AM-50/150 series basic power amplifier and more than 5000 total units of low power AM transmitters in the field, LPB continues to be the leader in low power AM technology.

The AM-50/150 series transmitters are modular in construction to provide 3 nominal power classifications—50W, 100W, and 150W carrier output, designated by model numbers AM-50, AM-100, and AM-150 respectively. The separate exciter provides continuously variable RF drive to the RF power amplifier to allow adjustment to TPO from approximately 50% of the nominal rating to 110% of nominal for precise adjustment of radiated power.

The AM-50, AM-100, and AM-150 transmitters are composed of three rackmountable sub-assemblies—power supply, exciter, and RF power amplifier.

The exciter (designated the AM-5E) is actually a self-contained transmitter mounted in an enclosure occupying 5 1/4" of rack height. The AM-5E contains power supply, crystal, oscillator, modulation stage, and the driver stage for the power amplifier. Front panel controls include an AC power switch and accompanying green LED power-on indicator, recessed screwdriver-adjustable audio gain and RF drive controls, and a professional VU meter with a red LED 100% peak modulation indicator. The VU meter indicates RMS averaged audio levels while the LED indicator is set to indicate 100% peak modulation. This combination provides total modulation indication to prevent overmodulation on peaks and rapid transients which are too brief to be indicated on the VU meter. Connections to the exciter are made on the rear panel and consist of a 3-wire grounded line cord, screw terminals for audio input and a standard SO-239 (UHF type) connector for RF output.

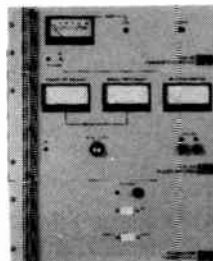
The power supply sub-assembly occupies 7" of rack space and provides the DC power requirements for the RF power amplifier and an AC outlet for the exciter so the entire transmitter may be activated in a single step by throwing one switch to the "on" position. The power supply unit also contains a 24VDC relay which may be used to turn the transmitter on from a remote location. Front panel controls are the AC on-off switch, a remote-local control switch, power-on LED and resettable circuit-breaker. Connections to and from the power supply are made through a 4-pin connector (for DC output), a 2-pin connector (for remote control), a chassis mounted AC outlet and 3-wire grounded line cord.

The RF amplifier assembly occupies 8 3/4" of rack space. This assembly contains metering for the RF amplifier modules, power splitters and combiners, and fuse protection for each RF module. The power rating of the transmitter is determined by the number of individual chassis-mounted RF modules—2 for the AM-50, 4 for the AM-100, and 6 for the AM-150. Front panel controls and indicators include switchable RF amplifier collector current and collector voltage meters, relative RF output meter, power on indicator, fuses for each RF amplifier, and red LED fuse-fail indicators. Rear panel connectors include a 4-pin connector (for DC input), SO-239 connectors for both RF input and output and a BNC jack for feeding an RF sample to the modulation monitor.

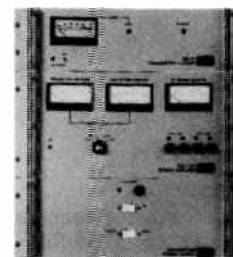
Interconnect cables for power supply to RF amplifier and exciter to RF amplifier are supplied with the equipment. When specified, LPB can also provide connectors for remote control of the transmitter and other cabling requirements.

Specifications

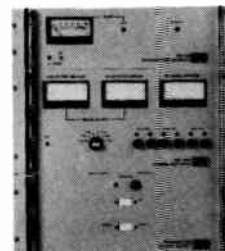
R.F. Power Output: AM-50: 25 to 55W; AM-100: 50 to 110W; AM-150: 75 to 165W
Type of Emission: 30A3, amplitude modulation
Frequency Range: 530kHz to 1610kHz, crystal controlled
RF Output Impedance: 50 ohms nominal, unbalanced, type SO-239 connector
RF Load Range: 30 to 70 ohms resistive, 3:1 VSWR reactive
Carrier Frequency Stability: +10Hz, -20° to +50° C. at 105V to 128V line or 210 to 256V line



AM-50



AM-100



AM-150

RF Harmonic Suppression (minimum): AM-50: 60dB; AM-100: 63dB; AM-150: 65dB
Carrier Shift at 1kHz: < 2% at 100% modulation
Noise Level: At least 55dB below 100% modulation
Audio Input: -10 to +10dBm for 100% modulation, 600 ohms balanced
Audio Frequency Response: 1dB, 20Hz to 15kHz, at 95% modulation
Audio Frequency Distortion: 2% max. 50Hz to 7500Hz, 3% max. 20Hz to 15kHz
RF Sample Output: 5-10V rms, 50 ohms, BNC connector
Metering: Modulation level (VU; average and peak)
 RF power amplifier collector current
 RF power amplifier collector voltage
 Relative RF power output

Transmitters and Accessories for Low Power

Authorization Licensed Commercial Broadcast Stations

(State transmitter frequency when ordering)

AM-30P	30W AM transmitter for 2 to 30 TPO	\$ 825.00
AM-60P	60W AM transmitter for 6 to 60 TPO.	1995.00
AM-100P	100W, 10-100W	3495.00
-TPS	Tri-power setting relay control for above transmitters	
-MMP	Modulation monitor port for above transmitters (specify monitor)	
AM-50	50W AM transmitter for 25 to 55W TPO	4150.00
AM-100	100W AM Transmitter for 50 to 110W TPO	5395.00
AM-150	150W AM transmitter for 75 to 165W TPO	6195.00
AM-5E	Exciter (spare) for AM-50/100/150	1595.00
AM-50-PA	Power amplifier (spare) for AM-50.	1850.00
AM-100-PA	Power amplifier (spare) for AM-100	2895.00
AM-150-PA	Power amplifier (spare) for AM-150	3550.00
PS-1	Power supply (spare) for AM-50	1250.00
PS-2	Power supply (spare) for AM-100/150	1625.00
T-XP	Crystal (spare) to meet FCC part 73 and part 90.242 specifications. . . . .	.65.00

Transmitters for Travelers' Information Service

TX2-30	30W AM transmitter FCC type approved for Part 90.242 TIS	\$1295.00
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LPB, INC.

*Broadcast Audio Processing/
Furniture/Tone Arm*

DA-1-8/DA-1-16 Audio Distribution Amplifiers

The DA-1-8 provides eight 600 ohm balanced non-transformer line outputs with isolation in excess of 80dB between outputs. Nominal output level is +8dBm from inputs in the range of -14 to +20dBm. A gain control is included, as is a headphone monitor of the outputs. The input is either 600 ohm balanced line terminating or 6K ohm balanced line bridging. Audio response is ± 0.25dB from 10Hz to 20kHz and distortion is well below 0.5% throughout this range at an output level of +22dBm.

The DA-1-8 is built in a standard 1 3/4" EIA rack panel of satin brushed aluminum finish. Power switch, LED power indicator and input level control are all front panel mounted. Input and output connections are via convenient barrier screw terminals on the rear of the unit.

The DA-1-16 is a pair of DA-1-8 Audio Distribution Amplifiers side-by-side on a single similar 1 3/4" EIA rack panel. The DA-1-16 offers the flexibility of use in two modes: as a mono input 16 output (1 x 16) or a stereo input, 8 output (2 x 8) distribution amplifier.

- DA-1-8 \$245.00
- DA-1-16 425.00
- DASK Semiconductor Spares Kit for DA-1-8 or DA-1-16 35.00

S-2 Audio Compressor/Limiter

- Separate gain and output level controls
- Asymmetric modulation capability
- Controls wide range of input levels
- Stereo and quad operation provisions
- FM model available
- Very low distortion
- High signal-to-noise ratio
- Integrated circuit construction

The S-2 is designed to automatically control the audio signal level applied to transmitter (AM, FM and TV), recording, sound reinforcement and public address circuits. The S-2 is a compact total system for compressing the dynamic range of audio signals to enable the use of higher average audio levels. These higher levels assure operation with maximum allowable power. In an AM broadcast transmitter application, the effect is higher average percent modulation, hence a much louder audio signal at the receiver output.

- S-2 \$550.00
- S-2SK Semiconductor Spares Kit
for S-2 45.00

dj-10 Modular Studio Furniture System

The dj-10 Modular Studio Furniture System provides the necessary flexibility required for custom studio design while retaining modular capabilities for future expansion.

Available in the conventional height of 29", the dj-10 System will satisfy most requirements demanded of production and "on-air" studios.

Constructed of 3/4" and 1 1/2" warp-free materials and finished with durable formica type laminates, the dj-10 System presents a sturdy and pleasing contemporary appearance. Console table tops and turntable cabinet tops are finished in "Antique Ivory," the turntable bases, and console table supports are finished in "Regency Walnut."

Furniture is shipped disassembled and is easily reassembled with all hardware included.

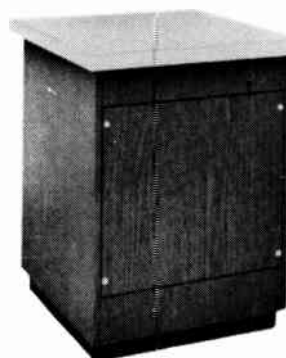
- C-1 Single Turntable Cabinet \$495.00
(for turntable cutout, specify type and add \$15.00)
- C-2 Double Turntable Cabinet. 695.00
(for turntable cutouts, specify type and add \$30.00)
- T-1 Console Table, 66" x 24" top surface,
with legs 575.00
- T-2 Console Table, 88" x 24" top surface,
with legs 625.00



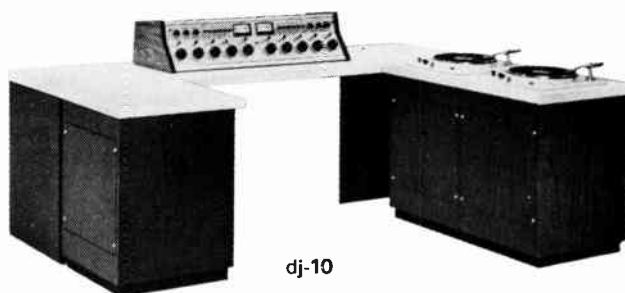
DA-1-16



S-2



C1



dj-10



S-8A

S-8A 12" Professional Tone Arm

- Lightweight alloy head shell and arm
- Removable head shell accepts EIS/JIS standard cartridges
- Adjustable arm height
- Plug-in 60" output cable assembly with separate ground wire
- Extremely low friction horizontal and vertical pivots

- S-8A \$90.00
- S-8AH Extra head shell for S-8A 10.00

LPB, INC.

Audio Consoles

Signature III Audio Consoles

LPB Signature-series broadcast audio consoles began almost two decades ago. Well over 2,000 units at stations throughout the US and overseas have won many friends and repeat sales for their rugged reliability, ease of installation and operation, and for outstanding value received.

The new Signature III series is in production. Many are already in use. They are a significant update of prior models, and include 6, 8, 10 and 12 mixer duals, both mono and stereo. All are identical functioning full duals, i.e., the only difference between any two stereo (or mono) consoles is the number of mixers (and associated inputs).

Signature III consoles offer a more modern look in the familiar "form factor" of prior Signatures. Knobs and VU meters are all new. The cabinet is a bright new textured cream, with oak wood end panels. The new VU meters are bright and improve access to the meter lamps.

State-of-the-art semiconductors have improved many specifications. A headphone amplifier has been added with jacks on both sides of the front panel. On stereo models, all mixers may operate in mono or stereo, with the status of each indicated on panel LEDs. Remote start pushbuttons are standard, and optional mono mixdown is available on all stereo models.

Signature III consoles offer 3 inputs per mixer, rotary Shallco step or optional P&G stepless faders, plug-in modules, LED peak indicators, switchable mike gain, all transformer inputs and outputs and demonstrated RFI immunity. Mixers 1 through 4 accept either microphone or high level plug-ins (option available for more), others are fixed high level. Monitor speaker muting and tally relays are provided for mixers 1 through 3. Every fader has a cue position, and the consoles include an internal cue amplifier and 5" cue speaker as well as 12W/channel monitor amplifiers.

Models Available**Mono:**

S-11	6-mixer Dual	\$3295.00
S-15	8-mixer Dual	4195.00
S-21	10-mixer Dual	4795.00

Stereo:

S-10	6-mixer Dual	\$3995.00
S-13	8-mixer Dual	4995.00
S-20	10-mixer Dual	5895.00
S-24	12-mixer Dual	6695.00

Options

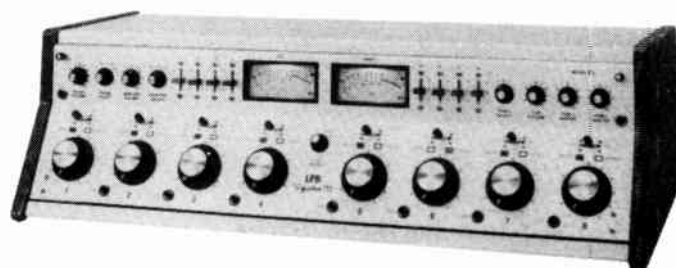
P&G rotary stepless faders	\$ 50.00
Mono Mixdown (on stereo models)	125.00
PSK semiconductor spares kit	75.00
PESM mono spares kit	400.00
PESS stereo spares kit	500.00
PCS copy stand	195.00
PMP microphone preamplifier	125.00
PIT high level input transformer	45.00
PLA line output amplifier	125.00
PPA power amplifier	100.00
PVA voltage regulator	65.00
PQH headphone amplifier	125.00

SPECIFICATIONS**Mixers:**

Total	6, 8, 10, or 12 (stereo only)
With Cue	all
Type	step atten or opt. stepless

Inputs:

Standard Factory Equipped —	
Mic (mono/stereo)	6
Hi-Level	all others
Optional Maximum —	
Mic (mono/stereo)	6
Hi-Level	all



S-13

Input Impedance:

Mic	150 ohms source, trans. bal.
Hi-Level	600 ohms, trans. bal.

Input Levels:

Mic	selectable —45/—55/—65dBm
Hi-Level	—10dBm

Outputs:

All Pgm.	+8dBm(OVU)
	clipping level above +22dBm
Monitor	12 watts per channel
Cue	1 watt with 5" int. spkr.
Hdprn	1 watt into 8 ohms

Output Impedance:

All Pgm	600 ohms, trans. bal.
Monitor	2 to 8 ohms
Headphones	8 ohms

Frequency Response:

All Pgm	within 1.0dB, 20Hz—2kHz
Monitor	within 1.5dB, 20Hz—20kHz

Total Harmonic Distortion:

All Pgm	0.05%, 20Hz—20kHz
	@ +18dBm output, -55dBm input
Monitor	0.1%, 20Hz—20kHz

I.M. Distortion:

All Pgm	less than 0.15%
	@ +22dBm output
Monitor	less than 0.2% @ 12 watts

Signal-to-Noise:

All Pgm	better than 75dB below
	+8dBm output, -50dBm input

Crosstalk:

	below noise level
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Stereo Separation:

	greater than 65dB
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Power Requirements:

Voltage	11/VAC (234VAC avail.)
Frequency	50/60Hz
Power	60 to 75 watts

Dimensions:

Height	9"
Depth	15"
Width—	
6 mixer	28-5/5"
8 mixer	32-5/8"
10 mixer	38-5/8"
12 mixer	45-5/8"
Weight	30/40/55/60 lbs.

Plug-In Modules:

Types	Mic Preamp, Hi-Level Input, Cue Amp, Line Amp, Power Amp and Voltage Regulator
Total	9 to 17

Cabinet:

Material	0.125" Aluminum
Finish	Textured scratch resistant bright cream exterior, clear anodized interior, oak end panels

Panel:

Material	0.125" Aluminum
Finish	Horizontally ground, brushed and clear anodized aluminum with black epoxy silk screening

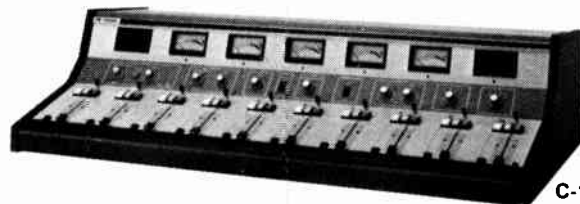
(Specifications subject to change)

LPB, INC.

Audio Consoles



C-8S



C-10SL

Citation Series Audio Consoles

• 2 models—8, and 10 mixer dual stereo • Transformer or Active Balanced Inputs and Outputs • 3 Inputs Per Mixer—internal pads allow mike/line selection on the same mixer • Two 4-Input Auxiliary Input Selectors—may be assigned to any mixer • Pre-fader Pushbutton Cue—in addition to normal CCW fader cue position • LED Status indicators—color coded to aid in instant identification of function selectors • Momentary or Continuous Remote Control Contacts—internally selectable, also controls optional digital timer reset/start • Full Metering Capability—two meters standard, up to four meters and/or digital clocks and timers optionally available, all meters provided with LED peak indicators • Gain selectable Microphone Preamps—provided with center tap access for phantom condenser microphone power, processor input/output port with buffer amplifier for outboard compressors, limiters, etc. • Programmable Muting Logic—internal pin-programmed matrix allows any selection of monitor and cue muting for the first five mixer positions • Accessories and Options—mono mixdown, high impedance (cassette) line input plug-ins, reference oscillator/line input plug-in, additional microphone input plug-ins, digital clock, digital timer, linear faders

SPECIFICATIONS

Mixers:	
C-8S	8
C-10S	10

Inputs (Standard Factory Equipped):	C-8S	C-10S
Mic	6 Stereo	6 Stereo
High Level	18 Stereo	24 Stereo
Total	24 Stereo	30 Stereo
External Monitor		1 Stereo
External Headphone		1 Stereo
External VU Meter		1 Mono, 1 Stereo

Input Impedance:	
Mic	150 ohms source, Transformer Balanced
Hi-Level	600 ohms terminating, Transformer Balanced
External Monitor (AIR)	4700 ohms, unbalanced
External Headphone (AIR)	4700 ohms, unbalanced
External VU Meter	100k ohms, balanced, 47k unbalanced
Mic Process	10k ohms, unbalanced

Input Levels:	
Mic	Selectable: -45 dBm, -55 dBm, -65 dBm
Hi-Level	-10 dBm
External Monitor (AIR)	250 mV
External Headphone (AIR)	250 mV
External VU Meter	1V rms = 0 VU
Mic Process	1.2V rms

Outputs:	
Program	Stereo + 8 dBm (OVU) clipping level above + 22 dBm
Audition	Stereo + 8 dBm (OVU) clipping level above + 22 dBm
Mono Mixdown (OPT)	Mono + 8 dBm (OVU) clipping level above + 22 dBm
Monitor	5, Stereo @ 1 V, 600 ohm load
Cue	1 @ 1/2 watt, with internal speaker
Headphone	1 @ 1/2 watt, Stereo, switchable between PGM, AUD, EXT, or Cue
Tape Out	3: Program, Audition, Mono Mixdown, -6 dBm into 600 ohms, +1 dBm, 10k ohm load
Cue Bus	1, mono @ -5 dBm
Mic Process	300 mV, 10k ohm load
Mic Send	500 mV, 10k ohm load

Output Impedance:	
Program	600 ohm load, Transformer Balanced
Audition	600 ohm load, Transformer Balanced
Mono Mixdown (OPT)	600 ohm load, Transformer Balanced
Monitor	600 ohms min. load
Cue Bus	4.7k ohms load
Headphone	8 ohms & up load
Tape Out	1k ohms source
Remote Start	Dry relay contacts rated 24 VDC and 200 ma

Frequency Response:	
Program	Within 1 dB 20 Hz—20 kHz
Audition	Within 1 dB 20 Hz—20 kHz
Mono Mixdown (OPT)	Within 1 dB 20 Hz—20 kHz
Monitor	Within 1 dB 20 Hz—20 kHz

Total Harmonic Distortion:	
Program, Audition, Mono Mixdown	Typ. 0.1%, 0.25%, max., 20 Hz—20 kHz @ + 18 dBm input
Monitor	0.3% max., 20 Hz—20 kHz @ 1 volt

Intermodulation Distortion (SMPTE):	
Program, Audition, Mono Mixdown	Less than 0.1% @ +22 dBm output
Monitor	Less than 0.11% @ 1 volt output

Signal to Noise:	
Program, Audition, Mono Mixdown	Better than 74 dB below +18 dBm output with -50 dBm input 20 Hz—20 kHz
Monitor	Better than 65 dB below 1 volt output

Crosstalk:	
Program, Audition, Monitor	Below Noise Level

Power Requirements:	
Voltage	117/234 VAC
Frequency	50/60 Hz
Power	100 watts max.

Cabinet:	
Material	0.125" Aluminum
Finish	Textured scratch resistant Armorhide
Panel	0.125" Aluminum
Finish	Matte Armorhide, epoxy paint silk screened

Dimensions:	
C-8S	39 1/2" W, 25 1/2" D, 11 1/2" H
C-10S	47" W, 25 1/2" D, 11 1/2" H

Shipping Weights:	
C-8S	95 lbs.
C-10S	110 lbs.

Consoles	
C-8S	8-channel Dual Stereo, Rotary Faders \$8495.00
C-8SL	8-channel Dual Stereo, Linear Faders \$9195.00
C-10S	10-channel Dual Stereo, Rotary Faders \$8995.00
C-10SL	10-channel Dual Stereo, Linear Faders \$9995.00

Options	
CCL	12/24 hour Digital Clock \$315.00
CTI	4 digit (99:59) Digital Timer, with cumulative/ event selector \$315.00
CVU	VU Meter Assembly with LED Peak indicator \$150.00
CMM	Mono Mixdown Line Amp \$125.00
CHO	Reference Oscillator/Line input preamp, stereo \$150.00
CHZ	High Impedance Line input preamp, stereo \$50.00

Spares	
CHL	Line input preamp plug-in stereo \$90.00
CMP	Microphone input preamp plug-in, stereo \$175.00
CLA	Line output amplifier plug-in, single channel \$90.00
CQH	Cue/Headphone amplifier plug-in \$90.00
CMA	Monitor drive/amplifier plug-in \$90.00
CPR	Power supply regulator module (includes chassis-mounted semiconductors) \$225.00
CAS	11 Position aux selector (2 ea.) in place of standard 4 position aux selectors \$315.00

Refer to Green Section for Addresses and Telephone Numbers.

Pepper Series — Miniature Quartz Lighting

- Compact, lightweight design location lighting
- Sturdy, cast-aluminum construction
- Full range of accessories, designed for fast and easy attachment and adjustments

The Pepper line consists of five focusing fresnel units, one open face and one soft light. Together they make a complete package for all types of photographic lighting situations.

The Pepper 100, 200, 420, 600 and 500/1K are all fresnel focusing luminaires designed to be used as key lights, back lights, eye lights, kickers and for effects. The Pepper Flood is a small, durable focusing quartz open faced light designed to provide an extremely clean, smooth field in all positions from flood to spot with maximum lighting efficiency. The Soft Pepper is a small, compact soft light designed for use as a fill light or as a shadowless key light.

Pepper 100 (1⁵/₁₆" Fresnel) 100/200W

Head	.....	\$175.00
4 Leaf Barndoors	.....	53.00
Scrim (3") Full or Half (Single, Double or Double/Double)	.....	8.30
Hinged Gel Frame	.....	18.20
Fiber Gel Holder	.....	1.90
Fiber Gel Holder with Filter Pak	.....	4.40
Snoot (4/1) Apertures 1 ³ / ₄ ", 1 ³ / ₈ ", 1", 5/ ₈"	.....	62.50

Pepper 200 (3¹/₈" Fresnel) 200W

Head	.....	\$210.00
4 Leaf Barndoors	.....	63.00
Scrim (4 ³ / ₁₆ ") Full or Half (Single, Double or Double/Double)	.....	8.30
Hinged Gel Frame	.....	21.50
Fiber Gel Holder	.....	2.50
Fiber Gel Holder with Filter Pak	.....	6.00
Snoot (5/1) Apertures 2 ¹ / ₂ ", 2 ³ / ₁₆ ", 1 ³ / ₄ ", 1 ³ / ₈ ", 1 ⁵ / ₁₆"	.....	69.50

Pepper 420 (3¹/₈" Fresnel) 420W

Head	.....	\$237.00
4 Leaf Barndoors	.....	63.00
Scrim (4 ³ / ₁₆ ") Full or Half (Single, Double or Double/Double)	.....	8.30
Hinged Gel Frame	.....	21.50
Fiber Gel Holder	.....	2.50
Fiber Gel Holder with Filter Pak	.....	6.00
Snoot (5/1) Apertures 2 ¹ / ₂ ", 2 ³ / ₁₆ ", 1 ³ / ₄ ", 1 ³ / ₈ ", 1 ⁵ / ₁₆"	.....	69.50
Handgrip	.....	16.50
Battery Belt with Cable	.....	POR
Pepperoptics (Fiber optic Lighting System)	.....	POR

Pepper 600 (4³/₈" Fresnel) 650W

Head	.....	\$288.00
4 Leaf Barndoors	.....	72.00
Scrim (5") Full or Half (Single, Double or Double/Double)	.....	8.30
Hinged Gel Frame	.....	26.50
Fiber Gel Holder	.....	3.20
Fiber Gel Holder with Filter Pak	.....	7.45
Snoot (5/1) Apertures 2 ¹ / ₂ ", 2 ³ / ₁₆ ", 1 ³ / ₄ ", 1 ³ / ₈ ", 1 ⁵ / ₁₆"	.....	88.50

Pepper 500/1K

Head with 5" Fresnel Lens	.....	\$390.00
4-Leaf Barndoor	.....	68.00
Gel Frame	.....	23.00
Snoot (3/1) Apertures: 4", 3", 2"	.....	78.00
3-Piece Snoot Set:	.....	109.00
Small Snoot #2	.....	35.00
Medium Snoot #3	.....	35.00
Large Snoot #4	.....	39.00
Full or Half Single Scrim	.....	8.00
Full or Half Double Scrim	.....	9.00



Pepper 100



Pepper 600 shown with Pepper Pot Dimmer



Pepper Flood



Soft Pepper

Pepper Flood 650W

Head	.....	\$242.00
4 Leaf Barndoors	.....	70.00
Dichroic Filter	.....	132.00
Handgrip	.....	35.00
Battery Belt with Cable	.....	POR

Soft Pepper 400W

Head	.....	\$240.00
Egg Crate	.....	82.50
Diffusion Frame	.....	13.50

Universal Pepper Accessories

Light Pepper Stake (stand)	.....	\$ 60.00
Medium Pepper Stake (stand)	.....	75.00
3" Baby Plate	.....	25.00
Drop Ceiling Butterfly Clamp	.....	14.20
Suction Cup Mount	.....	59.50
3" C-Clamp with 5/ ₈ " Pin	.....	29.00
6" C-Clamp with two 5/ ₈ " Pins	.....	39.60
1-Channel Pepper Pot Dimmer	.....	194.00
3-Channel Pepper Pot Dimmer	.....	550.00
Gaffer Grip with 5/ ₈ " Pin	.....	27.00
Pepperella	.....	53.60
Pepperella Adaptor	.....	29.00
Net Set (complete with Flexarm, Net Holder, Net and Silk)	.....	113.00
Flag (for Net Set)	.....	22.00

Cases

Custom Case Red	.....	\$346.50
Custom Case Green	.....	352.00
Custom Case Cyan	.....	381.00
Full Spectrum	.....	450.00

Pepper Paks — Complete Light Kits

4 Standard Kits:

Cyan Pepper Pak (2 Pepper 100, 2 Pepper 420, Accessories)	.....	\$1823.00
Green Pepper Pak (4 Pepper 420, Accessories)	.....	1930.00
Red Pepper Pak (3 Pepper 600, Accessories)	.....	1686.00
Full Spectrum Pepper Pak (1 Pepper 100, 200, 420, 400 Soft Light, 600, 650 Flood, Accessories)	.....	3094.00
Custom Kits Available on Request	.....	POR

LTM CORP. OF AMERICA

HMI Lighting

200W Luxarc System

Includes: Luxarc MARKIII head with 5" fresnel, Ballast MARKIII 120V/60Hz, 15' mains cable, 4-leaf barndoor, hinged gel frame.

Luxarc 200 \$2,583.00

200W Ambiarc System

Includes: Ambiarc MARKIII head with 5" clear lens, Ballast MARKIII 120V/60Hz, 15' mains cable, 4-leaf barndoor, hinged gel frame.

Ambiarc 200 \$2,400.00

575W Luxarc System

Includes: Luxarc MARKIII head with 7" fresnel and wire screen, Ballast MARKIII 120V/60Hz, 15' mains cable, 33' head to ballast cable, 4-leaf barndoor, hinged gel frame.

Luxarc 575 \$3,457.00

575W Cinepar System

Includes: Cinepar MARKIII head with 4 lens rings, Ballast MARKIII 120V/60Hz, 15' mains cable with Hubbell U ground, 33' head to ballast cable.

Cinepar 575 \$2,962.00

575W HMI Softarc System

Includes: Softarc MARKIII head with wire screen, Alimarc 575 MARKIII Ballast 120V/60Hz, 15' mains cable, 33' head to ballast cable.

Softarc 575 \$3,586.00

1200W Luxarc System

Includes: Luxarc MARKIII head with 10" fresnel and wire screen, Ballast MARKIII 120V/60Hz, 15' mains cable, 33' head to ballast cable, 4-leaf barndoor, hinged gel frame.

Luxarc 1200 \$4,837.00

1200W Cinepar System

Includes: Cinepar MARKIII head with 4 lens rings, Ballast MARKIII 120V/60Hz, 15' mains cable, 33' head to ballast cable.

Cinepar 1200 \$3,900.00

1200W HMI Softarc System

Includes: Softarc MARKIII head with wire screen, Alimarc 1200 MARKIII ballast 120V/60Hz, 15' mains cable with Hubbell U ground, 33' head to ballast cable.

Softarc 1200 \$4,426.00

2500W LTM Luxarc System

Includes: Luxarc MARKIII head with 12" fresnel, wire screen, hours counter, Ballast MARKIII 120V/60Hz, with retractable handle, 15' mains cable, 33' head to ballast cable, 4-leaf barndoor, hinged gel frame.

Luxarc 2500 \$7,311.00

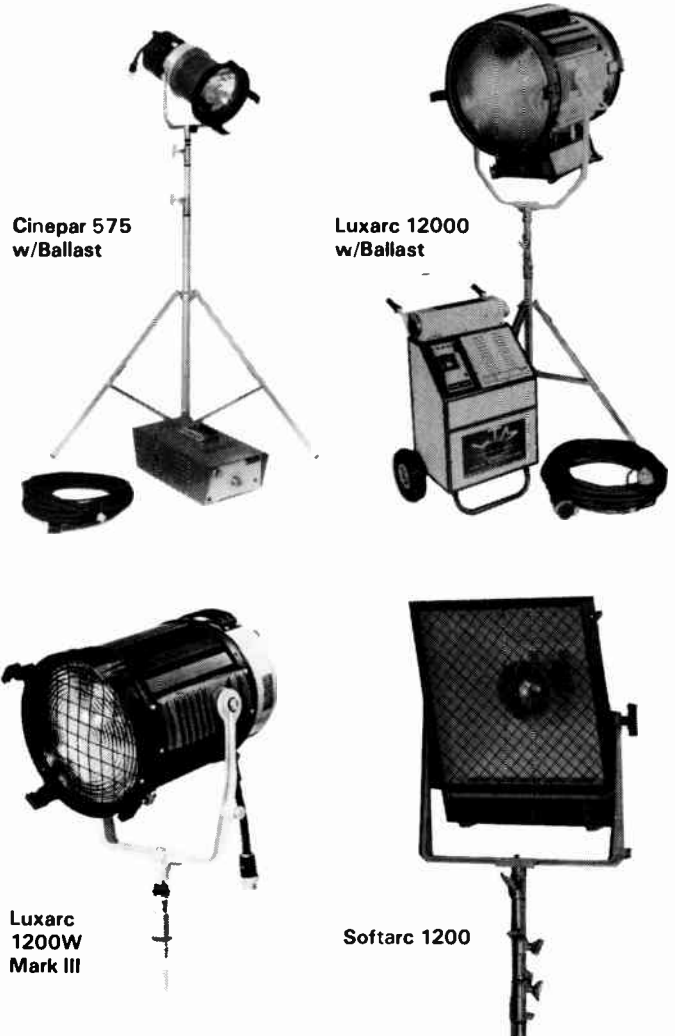
4000W Luxarc System

Includes: Luxarc MARKIII head with 14" fresnel, wire screen and hours counter, Ballast MARKIII 120V/60Hz, with retractable handle, 15' mains cable, 33' head to ballast cable, 4-leaf barndoor, hinged gel frame.

Luxarc 4000 \$9,585.00

6000W Luxarc System

Includes: Luxarc MARKIII head with 19" or 24" fresnel, wire



screen and hours counter, Ballast MARKIII 220V/60Hz or 120V/60Hz, 50' head to ballast extension cable, 15' mains cable.

Luxarc 6000, 19" fresnel, 220V ballast \$14,077.00

Luxarc 6000, 24" fresnel, 120V ballast POR

Luxarc 6000, 24" fresnel, 220V ballast \$18,917.00

12,000W LTM Luxarc System

Includes: Luxarc MARKIII head with 24" Fresnel, Ballast MARKIII 120V/60Hz or 220V/60Hz, 15' mains cable, 50' head to ballast cable.

Luxarc 12000, 120V ballast POR

Luxarc 12000, 220V ballast \$22,236.00

DC to AC Inverters

500W Inverter \$1,400.00

Inverter to Ballast Cable 80.00

1200W Inverter 2,690.00

Inverter to Ballast Cable 135.00

MSL 250 Fiber Optic Multi-Strand System

Includes: Light box, ballast, bulb.

MSL 250 \$3,361.00

270W Sun Gun System

Includes: Head with 5' head to ballast cable, Ballast with 5' ballast to battery cable (24 or 30VDC), 4-leaf barndoor, gel frame.

HMI Sun Gun System \$5,795.00

LIGHTWEIGHT LIGHTING

Minette/12V Camera Light

- 3" long, 3 1/4" diameter
- 10 oz.
- Simple: non-focusable
- Adjusted in medium spot position in a high performance reflector
- 12V FCR/100W—24V FDV/150W bulbs
- 2-pin

Minette\$144.90

Accessories

Barndoor and filter ring\$ 53.00
 Dichroic filter.....116.00

Varilux 2000

- Light, compact and focusable fixture with high intensity
- Ideal for news applications and use in confined areas
- Precise and smooth focusing
- Very wide spread
- Perfect ventilation
- Fast cooling-down of fixture
- FEX, P2-27, 230V, 2000W
- FEY 115V, 2000W
- Stamped aluminum
- 20A toggle switch
- Dural yoke, will fit any standard diameter 16mm stand or hanger spud

Varilux 2000.....\$637.00

Accessories

Rotating 4-leaf barndoor\$ 96.00
 Daylight conversion filter348.00
 Ventilated filterholder117.00
 Simple diffuser, stainless steel30.00
 Double diffuser, stainless steel30.00

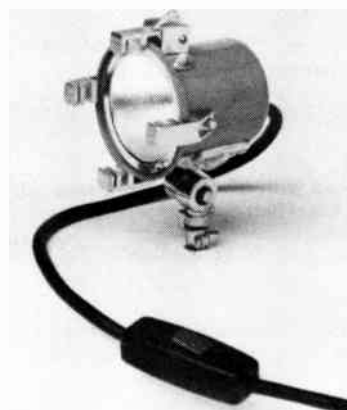
Kit 504 M/12

- Miniature unit including 4 small "Minette" lights mounted on gator grip
- Very small, compact and light
- For use in motor vehicles
- Easily dissimulated
- Very high light output
- Direct connection to car battery 12V
- 4 rotating barndoors (4-leaf) with incorporated filterholder device
- 12V, 50W and 100W, approx. 50 hrs. available
- Stamped aluminum
- Supplied with cable, switch and Cannon connector
- Spider box

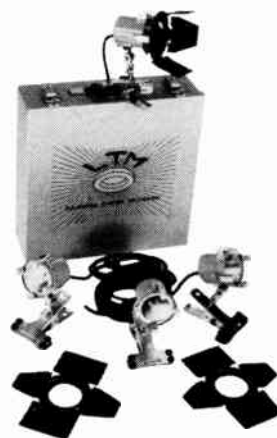
Kit 504 M/12\$1207.00

Accessories

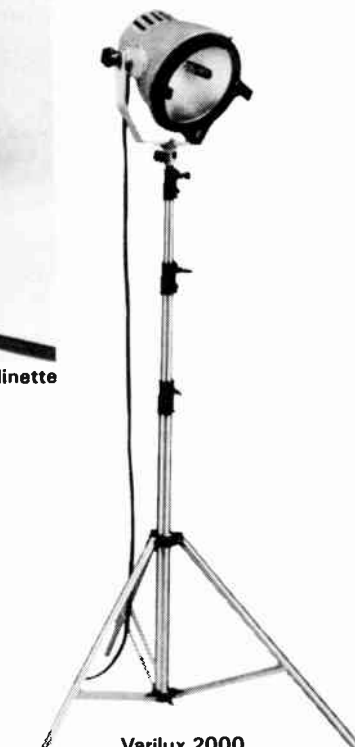
Daylight conversion filter\$116.00
 Rotating 4-leaf barndoor with filter holder53.00



Minette



Kit 504 M/12



Varilux 2000

Kit 503 M

- Small, lightweight unit
- Includes 30V battery with incorporated charger as well as handheld minilight
- Fixture is focusable
- Stamped aluminum
- Light switch as well as focusing are actuated singlehanded
- Excellent light output, thus ideal for news applications
- FBV 30V/250W, 30V/150W, 30V/350W—3400°K average life: approx. 6 hrs.
- Edison-Minican socket
- NiCad battery, 50 minutes operating time; 14 hrs. to re-charge; Cannon or Amphenol connectors
- Charger features 120-220V, circuit breaker for excessive overcharging, tension indicator light, main fuse, spare fuse

Kit 503 M\$1848.00

Accessories

Rotating 4-leaf barndoor with incorporated filter holder device.....\$ 53.00
 Daylight conversion filter115.00

Microphone Poles

- Carbon and fiber composite material, undentable
- Telescopic extension system
- Knurled friction locks
- Cable access, threaded yoke support, no nut necessary
- International standard threaded stud
- Scratch-resistant black finish
- Robust and super lightweight
- Minimum bow when fully extended
- Five sizes, from 15" to 16'7"
- 4'8" extension (with longest pole measures 21'5")
- Size, weight and balance for the most comfortable feel

Microphone Suspension

- Fits all sizes of poles
- Simple, effective suspension
- Threaded yoke support, no nut necessary
- Non glare black epoxy finish
- 3.25 oz.

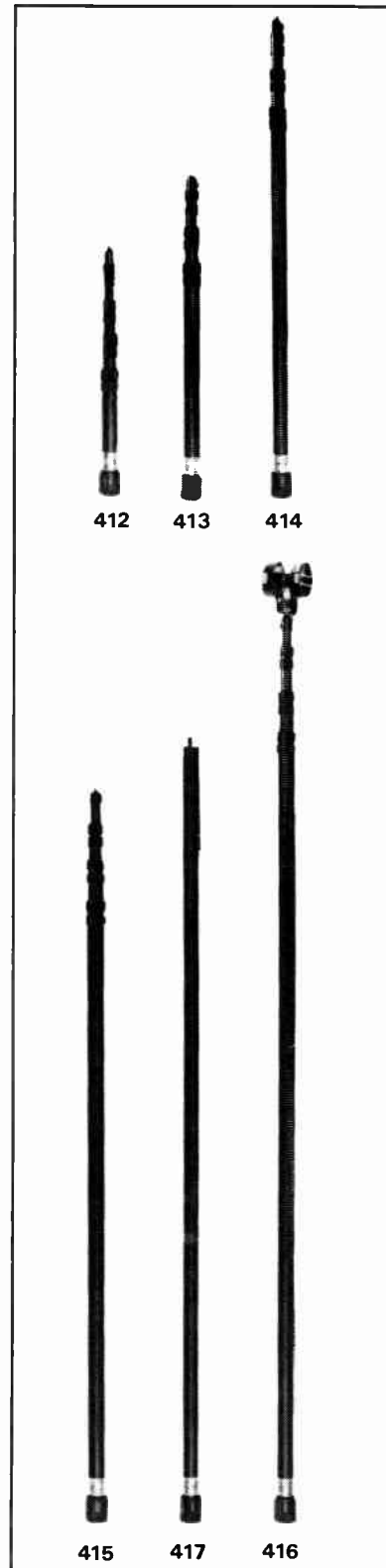


Microphone Suspension

Cat. #	Elements	Size	Weight	List Price
90A 412	5	15" to 44 1/2"	8.6 oz.	\$234.00
90A 413	4	20" to 63"	9.5 oz.	235.00
90A 414	4	31" to 9'	13.7 oz.	380.00
90A 415	4	4' 1" to 13' 8"	17.6 oz.	400.00
90A 416	4	5' 2" to 16' 7"	23 oz.	470.00
90A 417	1	4' 8" Extension Pole	9.5 oz.	298.00
301 070	—	Suspension	3.25 oz.	84.00



Above: Topmount
At Right: Foot



LUXO LAMP CORP.

Multipurpose Arms

LM-41

**LM-41 Arm**

Extension: 41"

Weight Range: 1 oz. to 3 lbs.

Color Selection: Gray, Tan, Oyster or Black

Recommended Mounts: A, B or C

LM-2

**LM-2 Arm**

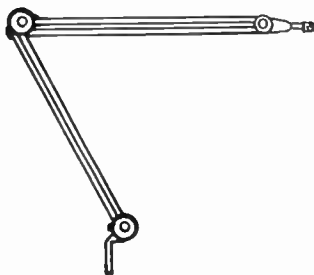
Extension: 26"

Weight Range: 1 oz. to 3 lbs.

Color Selection: Gray

Recommended Mounts: A, B or C

KM-1

**KM-1 Heavy-Duty Arm**

Extension: 40"

Weight Range: 3 to 4 1/2 lbs.

Color Selection: Oyster

Recommended Mounts: A, B or C



A



B



C

Mounting Brackets**Style A Mounting Bracket**

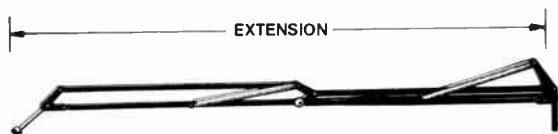
C-Clamp style fastens quickly to a horizontal surface such as a table or desk.

Style B Mounting Bracket

For permanent mounting onto a vertical surface such as the side of an equipment rack, mixer console, etc.

Style C Mounting Bracket

For permanent mounting onto a horizontal surface such as a table or desk.



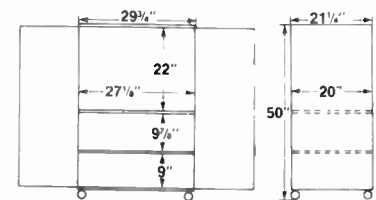
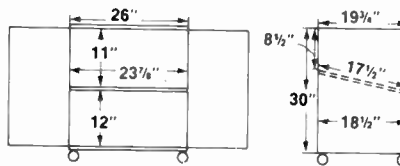
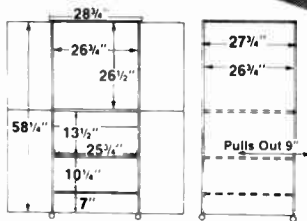
Covering a broad range of applications, Luxo Arms are used to support scientific instrumentation as well as audio microphones. They have been integrated into laboratory equipment, medical instruments and engineering devices.

The Luxo Multipurpose Arms put what you want where you want it. They move easily with the lightest touch and yet the precision spring balanced arms will keep it in position without drifting.

LUXOR CORP.

Mobile Cabinets/Visual Presentation Center

Executive Series Video Consoles

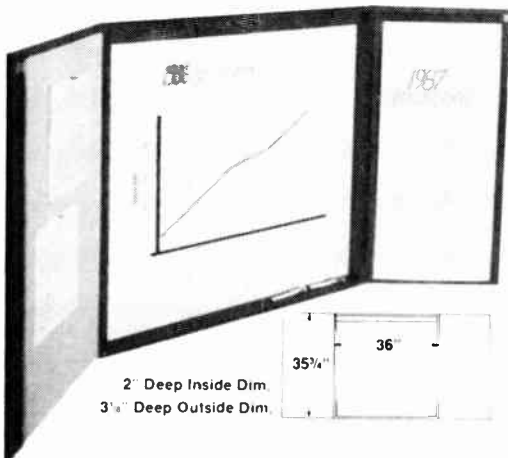


All Wood Console with Full Locking Doors. Matching walnut laminate. 3" heavy-duty casters. Complete with 20" 3-outlet grounded power cord assembly, U.L. listed. One roll-out shelf for video recorder. Ships fully assembled.
ES-60W \$833.00

30" All Wood Console with Full Doors Locking wood doors. Middle shelf is slanted. 2" furniture casters. Includes U.L. listed 20' power cord. Assembly required. 82 lbs.
ES-30W \$250.00

45" All Wood Console Provides security with locking doors and mobility. Recorder compartment has roll-out shelf. Includes U.L. listed 20' power cord. 142 lbs. Assembly required.
ES-45W With 4" casters, 2 with brakes . . . \$574.00
ES-45WC With 2" chrome ball casters . . . \$574.00

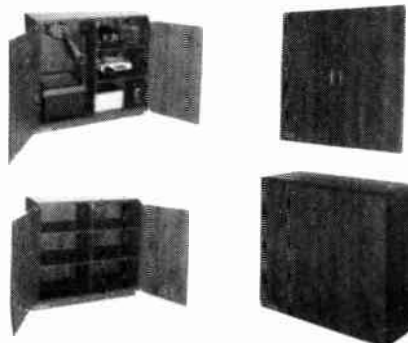
Executive Series Presentation Center



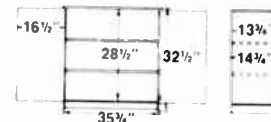
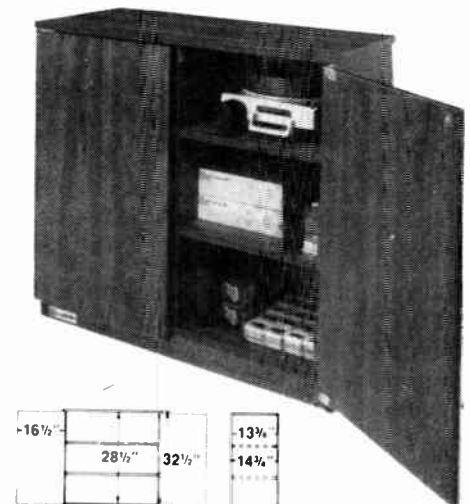
2" Deep Inside Dim.
 3 1/2" Deep Outside Dim.



Luxor's Wood Credenza is the ideal addition to the conference room or training center. The credenza can be used for storing overhead and slide projectors, AV equipment and accessories, even glassware. Constructed of wood with a rich walnut laminate finish. It complements the visual presentation center and adds a well coordinated look to both. Adjustable shelves add increased storage space. Ships fully assembled.



Visual Presentation Center. Wood with walnut laminate. Dry erase white porcelain steel writing surface. Flip chart and tackable textile surface included. Easy mount wall bar and hardware included. Ships fully assembled.
CON-36 \$425.00
Supplies. Flipchart paper pads. Carton of 4.
P-36-4 \$38.00



Wood Credenza has double doors, matching walnut laminate movable shelves for convenient storage of AV equipment and materials.
CON-SC \$409.00

Prices and Specifications Subject to Change Without Notice.

LYON LAMB VIDEO ANIMATIONS SYSTEMS, INC.

**Encoder/Sync
Generator**

ENC-VI Encoder/Sync Generator

- Video outputs:
 - RS-170A composite video
 - R-Y, B-Y, Y + sync component video
 - Optional PAL composite video
- Internal sync generator with standard outputs:
 - Composite sync (2)
 - Blanking
 - Burst flag
 - Subcarrier
 - Horizontal drive
 - Vertical drive
- Internal color bar and black burst generator
- Separate sync input accepts either composite sync, composite video or sync on green (of RGB)
- Separate subcarrier input with 360° phase adjustment for matched color framing with other video sources
- Accepts RGB with setup, or if needed, adds setup to video output
- Selectable loopthrough outputs or 75 ohm termination
- Horizontal phase adjustment

The ENC-VI is an advanced design full NTSC bandwidth encoder/sync generator for computer graphics to video applications. Outputs include both RS-170A composite and R-Y, B-Y, Y+ sync component video. The internal sync generator allows for genlock of RGB devices or the ENC-VI operates as a slave to incoming sync from the RGB source. The ENC-VI also accepts a subcarrier input for phase locked color framing to external video. Internal video switch allows for selection of EIA standard color bars or black burst.

- **Video Inputs: Red, Green, Blue**
Impedance: Switchable 75 ohm or high impedance for bridging.

Setup not included in RGB source (encoder's internal NTSC setup optional jumper out, encoder adds setup):
Input level: 0.661V p-p (100% level); 0.496V p-p (75% level).

Black level required during NTSC blanking intervals. Allowable range of DC black level: -2V to 2V.

Setup included in RGB source (encoder's internal NTSC setup option jumper in, encoder does not add setup):
Input level: 0.714V p-p (100% level); 0.549V p-p (75% level).

Blanking level required during NTSC blanking intervals. Allowable range of DC blanking level: -2V to 2V.



ENC-VI

- **Sync Genlocking Input**
Impedance: Switchable 75 ohm or high impedance for bridging.

Input level: 0.3V p-p to 4V p-p negative composite sync or 0.3V p-p to 1.5V p-p negative sync on composite video.

Genlocking is to external sync input if present, otherwise to .3V p-p negative sync on green if green input is present. Sync switch must be in external position for genlocking.

Time delay from genlock sync to composite video sync: Internally adjustable from 350ns to 1950ns in 70ns steps.
 - **Video Outputs: NTSC Composite Video**
Level: 1.0V p-p into 75 ohm termination, sync negative.
DC level on blanking: 0.0V.
Time delay from video input: 1050ns nominal.
 - **Component Video Outputs:**
R-Y, B-Y, Y + Sync
Levels (factory set, internally adjustable):
Y + S: 1.0V p-p into 75 ohm termination, sync negative.
R-Y: 0.7V p-p into 75 ohm termination.
B-Y: 0.7V p-p into 75 ohm termination.
DC level on blanking: 0.0V.
Time delay from video input: 120ns nominal.
 - **Video Internal/External Switch**
Selects Red-Green-Blue inputs or internal patterns for video.
 - **Bars/Black Switch**
Select EIA color bar pattern or black burst when video is switched internal.
 - **Chroma On/Off Switch**
Allows excluding subcarrier component (including burst) from Composite Video output.
- ENC-VI. \$4500.00

LYON LAMB VIDEO ANIMATIONS SYSTEMS, INC.

Animation Controllers

VAS IV Animation Controller

- Field accuracy
- 24 or 30 frames, or 60 fields-per-second selection (Dependent on VTR selection)
- Scene and individual frame numbering up to 325,000
- Frame counter and SMPTE time code display
- Precise editing and replacement of single or multiple frames
- Automatic search to any frame
- Updating data and status display superimposed to monitor
- Exclusive onboard Vertical Interval Frame Code™ Generator
- RS-232 interface at 300 or 9600 baud
- Frame change and hold capability
- User selectable scanner time-out

The VAS IV is a full function microprocessor based animation controller designed specifically for frame by frame recording/editing and frame grabbing. Available in NTSC and PAL, the VAS IV will control Betacam 1/2", U-matic 3/4", or 1" Type C videotape recorders. The system accepts any composite RS-170 A video source.

VAS IV generates and reads user selectable individual scene and frame numbers in the vertical interval, which prevents the loss of even a single frame whether the tape is stopped or in motion. Internal memory will store frame numbers up to 326,000 and scene numbers up to 127. Along with a full function control panel that allows operators to program recording and editing, registration, frame change, etc., all functions can be remoted to a host computer via an RS-232 port.

VAS V Animation Controller

- Field accurate single frame recording
- Recorder controls on front panel
- RS-232 at 300 or 9600 baud
- All functions controlled by host computer
- Onboard Vertical Interval Frame Code generator/reader
- Selectable frame code and data display
- Search to any frame
- SMPTE time code display
- Optional frame grab software
- Interfaces to a broad range of VTRs
- User selectable scanner time-out

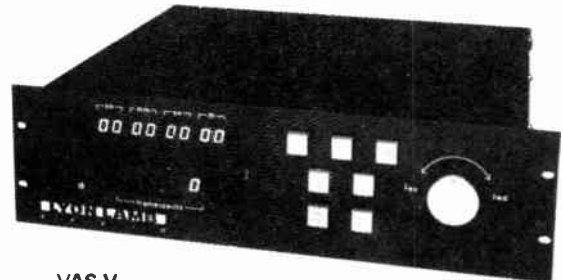
VAS V is a rackmounted animation controller designed for direct RS-232 interface with computer graphics and imaging systems. Available in NTSC and PAL, the VAS V will control Betacam 1/2", U-Matic 3/4", or 1" Type C videotape recorders to precisely record or edit on a frame by frame basis. Field accuracy is achieved by incorporating Lyon Lamb's exclusive Vertical Interval Frame Code generator/reader for all recording playback and frame searches.

Video Tape Recorders

- Ampex VPR-2, VPR-2B 1" Type C
- Ampex VPR-80 1" Type C
- Hitachi HR-210 1" Type C
- Sony BVH-2000 1" Type C
- Sony BVU-200 3/4" U-matic



VAS IV



VAS V

- Sony BVU-800 3/4" U-matic
- Sony BVU-820 3/4" U-matic
- Sony BVW-40 1/2" Betacam
- Sony VO-5850 3/4" U-matic
- Sony VO-5850 PAL 3/4" U-matic
- Ampex VPR-2B PAL 1" Type-C

- **Preroll Time**
2.5-4 seconds
Switch selectable setting
- **Front Panel Display**
6 Digits Number of frames recorded
8 Digits Tape position 1" Type C;
3/4" U-matic BVU-800;
1/2" Betacam BVW-40 (with
RS-422 serial interface)
- **Status Information**
Superimposed on video. No separate monitor required
- **Frame Code**
Recorded in vertical interval. Field accurate. (SMPTE time code not required)
- **Auto Search**
Automatic search to any frame within a scene for editing or adding to an old scene

- VAS IV \$9850.00
- VAS IV PAL (25fps) 9850.00
- VAS V (30fps, RS-232 control only) 8850.00
- Additional VTR interfaces for VAS IV and VAS V 1500.00
- Frame grabbing software for VAS IV and VAS V 500.00

Refer to Green Section for Addresses and Telephone Numbers.

LYON LAMB VIDEO ANIMATION SYSTEMS, INC.

Animation Controllers

VAS-DELTA Animation Controller

- Auto pre-black of videotape
- Exclusive vertical interval frame code
- Two-machine control
- Auto frame or field search
- Selectable scene playback from scene file memory
- Frame grab output to frame store or still store devices with selectable advance
- Simultaneous display of frame code or SMPTE time code
- Updating data display
- RS-232 at 9600 baud for remote control
- Expanded time lapse speeds
- Multiple frame recordings in Delta Step mode
- User selectable title matte

The VAS-DELTA is an animation controller specifically designed to interface with the Sony BVH-2500 Delta Time 1" VTR. The intelligent features of the VAS-DELTA and the instantaneous single-frame recording capabilities of the BVH-2500 provide a means to create highly complex animation sequences easily, quickly, and efficiently.

A unique feature of the VAS-DELTA is the frame-by-frame playback control of a Source VTR, either a BVH-2500, BVH-2000 or BVU-820. In addition to remotely controlling all Delta functions of the BVH-2500, users can program recording, editing, and frame grabbing in sequential, cycle, or skip (non-sequential) modes at 24 or 30 frames, or 60 fields per second. The VAS-DELTA generates and reads user-selectable individual scene and frame numbers that are displayable along with prerecorded SMPTE time code.

Computer graphics systems interface directly to the VAS-DELTA via an RS-232 port. The functional controls emulate all tape movement functions of the BVH-2500 for full remote control of both the record VTR and the source VTR.

The combination of the VAS-DELTA and BVH-2500 provides access to 108,000 still frames for direct display or user selectable output of any non-sequential group of frames to external still store devices. Operators can input frame numbers or SMPTE time code data to the memory in any order for recall of single frames. Also works with BVH 2500, BVH 2000, BVH 3000, BVW-40, BVW-75, BVU-800 series and BVU-950.

VAS-DELTA \$12,500.00
Additional VTR Interfaces 1,500.00

MINIVAS Animation Controller

- RS-232 interface at 9600 baud
- Works with all VTRs from same package
- Programmable for 1 or more frames per recording
- Frame grabbing with programmable offsets
- Frame grab trigger programmable from 0 to 9 fields in advance of frame to be grabbed
- Auto or preselectable time-outs
- Programmable in either vertical interval frame code or SMPTE time code
- Accurate search to any frame using VIFC or SMPTE time code
- Programmable playback of recorded segments for easy review
- Status information available through RS-232 with handshaking
- Remote VTR controls including Jog and Shuttle

The MINIVAS is an animation controller specifically designed to perform precise single frame recording and frame grabbing (capture) from PC based computer graphic systems to standard videotape recorders. Operations are performed over an RS-232 interface allowing for automated animation recording, grabbing, searching, and all VTR control functions. Field accuracy is achieved by the use of Lyon Lamb's proprietary vertical interface frame code. Additionally SMPTE time code is used interchangeably with VIFC for VTRs that have time code output available. An LED readout on the front panel displays frame code or SMPTE time code for positioning and location confirmation.



VAS-DELTA

The MINIVAS interfaces automatically to a wide range of VTR formats, from industrial 3/4" U-Matic to broadcast Betacam and 1" Type C machines as well as the high definition machines. All VTR interfaces reside in MINIVAS software so that the user may select or change VTRs at any time. Playback functions are performed directly from the computer keyboard and include operation of VTR controls with Jog and Shuttle, Search to a Frame, and Playback Frames.

MINIVAS \$4,980.00

VAS IIIB Video Pencil Test System

- Switchable recording speeds of 24 or 30 frames-per-second
- Selectable frames per recording
- Frame counter monitor display
- Playback in forward and reverse
- Four slow motion speeds
- Freeze frame
- Single-field advance
- Automatic search in forward and reverse
- 5:1 zoom lens

The VAS IIIB is a versatile, offline VHS videocassette animation system designed for precise frame-by-frame recording. The system, comprised of a specially modified VTR, high resolution camera with zoom lens, and monitor with high speed horizontal AFC circuits, satisfies the requirements of immediate testing of animation, special effects, stop-motion, time lapse, pixilation, and the shooting of storyboards.

Utilizing concepts first introduced in 1977 by the Academy Award-winning Lyon Lamb, the VAS IIIB incorporates additional features and microprocessor control for extremely accurate and efficient operation. A video-generated frame counter is recorded and displayed on the monitor for accurate frame count.

VAS IIIB Black and White System \$5,995.00
VAS IIIB Color System 7,850.00
Audio Option 450.00

LYON LAMB VIDEO ANIMATIONS SYSTEMS, INC.

High Resolution Converters

HRC High Resolution Converter

- Conversion from 1280 x 1024, 60Hz, non interlaced (RS-343) to standard NTSC (RS-170A) video
- High-quality image conversion
- Selectable form factor to conform to NTSC aspect ratio
- Internal sync generator with genlock and NTSC encoder
- Composite NTSC video and component RGB (low resolution) outputs
- Simple RGB connection to computer graphics source
- Self-contained rack-mountable package
- Compatible with Lyon Lamb video animation controllers

The HRC converts up to 1280 x 1024 60Hz non-interlace RGB video to NTSC video or low resolution 525-line RGB with no loss of graphic information. For the first time, users of high resolution display devices will be able to directly record or display their images in a standard video format. Rather than throwing away line and pixel information or simply providing a low resolution window, the HRC performs complex compression operations on the full 1280 x 1024 image. A high quality NTSC output is achieved in a typical conversion time of $1/10^{\text{th}}$ of a second. The HRC can interface to a range of high resolution formats including 1280 x 1024, 1024 x 1024 and 1024 x 768 non-interlace or interlace vertical refresh rates. As inputs, the device accepts RGB with H drive and V drive, RGB and Composite Sync or RGB with Sync on Green. Additional features include: Operator selection of picture aspect ratio, either square or 4:3, full remote control with a standard RS-232 interface, RS-422 interface or a TTL switch, allowing for direct use with all Lyon Lamb animation controllers, selectable outputs of composite video or low resolution RGB (RS-170A).

Specifications

High Resolution Inputs: Red, Green and Blue Video: 1V p-p, 75 ohms \pm volt maximum DC component; Sync Source: VD/HD composite sync or sync-on-green; Vertical Drive/Horizontal Drive, or Composite Sync: 2V p-p nominal, 75 ohms \pm 2V maximum DC component

Other Inputs: Genlock Sync Reference: Either 1V p-p RS-170A video or 4V p-p composite sync 75 ohms; Subcarrier Reference Input: 1-4V p-p, 75 ohms; Time Delay from Reference Sync to Output Sync: \pm 8 μ s in 70ns steps; Start Conversion Signal: TTL level, 75 ohms termination

RS-232/422 Serial Remote Control Interface: 9600 Baud
Output: NTSC/RS-170A Composite Video: 2 outputs, 1V p-p into 75 ohms; Red, Green and Blue: 2 outputs, 1V p-p into 75 ohms; Composite sync on all three outputs

Note: NTSC and RGB outputs are not available simultaneously

Composite Sync Input: For genlocking horizontal phase adjustment
Output Frequency Response: \pm 3dB 0-5.0MHz
 -46dB at 7.1MHz
S/N Ratio: 46dB

NTSC Output Resolution: H x V: 754 x 448 or 754 x 512, selectable
Pulse Outputs: Composite Sync, Composite Blanking: 4V p-p into 75 ohms. Nominally 500ns advanced of composite output. Synchronous with RGB outputs
Subcarrier Output: Continuous subcarrier in phase with burst in composite output. 2V p-p into 75 ohms

Input Subcarrier Phase Adjustment: Approximate \pm 180 $^\circ$ switched adjustment. \pm 100 $^\circ$ continuous adjustment

Output Subcarrier to Sync Phase Adjustment (SCH): Approximate \pm 180 $^\circ$ switched adjustment. \pm 100 $^\circ$ continuous adjustment

Conversion Time: 0.1 sec, nominal. Still frame to be converted must be present for entire conversion time



HRC

Dimensions: 7" H x 19" W x 18.1" D
Weight: 35.2 lbs.

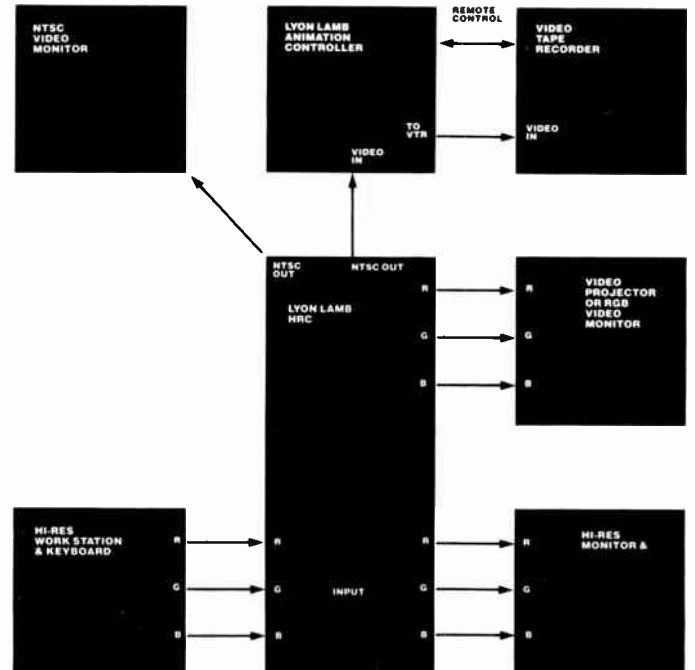
HRC Workstation Interfaces Currently Available For: Tektronix 4115, 4120 Series; Hewlett Packard 320 SRX; Silicon Graphics; Apollo DN580, DN590; Calcomp Vistagraphic 4500; Ramtek 4225, 4229; Imagraph AGC 1024 Series; Sun Microsystems 3100 Series; Megatek; Calma; Chromatics; Custom interfaces available.

HRC \$21,950.00

ILC High Resolution Interlace Converter

Converts high-resolution graphics images from 60Hz non-interlaced format to 30Hz high resolution interlaced format.

ILC \$24,700.00



3M COMPANY

Character Generators

D-5000 Character Generator

- Multi-font library 4 resident fonts • Dual 3.5" disc drive
- Proportional character spacing • Full editing capability
- High resolution character definition • 35ns • Multi-speed roll, crawl, reveal, and billboard dynamics • Auto centering, line and page • 512 color palette • Built-in sync and genlock
- 9 speeds roll and crawl • 100 page internal memory • Programmable roll, crawl, and roll masking • Built-in clock
- Built-in italics, all fonts • Internal colorizer • Background color in 4 line increments • Nonvolatile data storage • Split screen displays • Character kerning and overlap • Multi-color logos • Word flash and color change flash • Mix rolls and/or crawl with static displays • Slow reveal—7 speeds
- Billboard—9 speeds • Vertical roll, 9 rates plus pause (blinking to blanking), five different masks are selectable
- Horizontal crawl, 9 rates plus pause (blinking to blanking), position selectable

D-5000	\$10,995.00
Built-in keyer (factory retrofit)	800.00
4 additional resident fonts	675.00
24 hour memory backup unit	50.00
Keyboard	1,700.00
Chassis	9,295.00
Custom fonts	400.00
Custom logos	200.00
1 font chip set	125.00

Memory Expansion Options

Local disk drive single	\$1,850.00
Local disk drive dual	2,250.00
(Greater on line storage and disc duplication capability)	
4 Font RAM memory	1,150.00
(Down load 4 of 100 fonts from font library disc)	
Font library disc set	800.00

D-3600 Character Generator

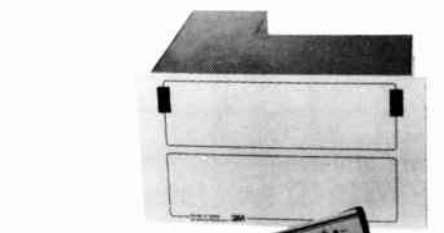
- 4096 color palette • 3.5" dual disc drives • 1000 pages of text can be stored on each diskette • 100 speeds roll and crawl
- Keyer genlock • 35ns • 16 heights • 16 widths • Single channel NTSC • 5 upper/lower case fonts, each 92 characters
- 256 sizes, row-by-row selectable • Characters may be inverted • Automatic proportional spacing • Formatting
- Duplication • May be rackmounted

D-3600	\$6,995.00
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D-3602 Character Generator

- Dual channel version of the D-3600 • Remote "next page" function • Preview/program, off line/on line and two independent program channels

D-3602	\$8,995.00
Dual channel upgrade kit for D-3600	2,000.00
Operator training video tape	50.00



D-5000



D-3600



D-2200

D-2200 Character Generator

- 512 color palette • Dual 3.5" disc drives • 10 speeds • 2 channel • Sync • Genlock • Keyer • 70ns • 8 fonts • 64 sizes • Fonts disc loadable • Edge to edge operation • 2000 pages of extended memory playback • Totally software driven
- Designed for independent facilities such as cable television and industrial/education television facilities • Ideally suited for two-channel production needs or unattended messaging applications

D-2200	\$4,995.00
Font library disc set	800.00
Instruction manual	50.00

3M COMPANY**Graphics Equipment****D-6000 Panther Graphics Generator**

• Advanced character generator/graphics/paint system
 • Camera grab • Painting and logo animation • 15 font faces
 • 35ns • Proportional spacing • 20M byte hard drive • 5" disk
 removable storage • Word processor text editing, dynamics,
 and paint software • 1024 colors • B/W camera load • Sync
 and genlock • Keyer • RGB and NTSC outputs • Single chan-
 nel

D-6000 \$15,995.00

Accessories/Options

Font library disk set \$800.00

Instruction manual D-6000 50.00

Operator training video tape (VHS) 50.00

Extra cable lengths for keyboard per ft./2.60

**D-6000****Silver Video Production Workstation****Digital Video Effects:**

• Compression and Mosaics • Wipes, slides, spirals, zooms,
 inlays

Animation:

• Real time animation over video • Cell by cell • Frame by
 frame VCR controller • 16 cell per screen

Font Generator:

• Anti-aliased fonts • 3M font library, disk, loadable • Auto-
 matic digitizing of logos, fonts and symbols • 16 levels of anti-
 aliasing

SEG Switcher:

• 4 input composite switching—cuts, wipes, DVE • Mirrors
 • Quad effects • Programmable rate control

Business Graphics:

• Pie charts • Bar graphs • Input data by keyboard

Paint System:

• 65,000 colors • Multiple brushes — airbrushing and transpar-
 encies • Multi-plane editing and undo function • Cut and
 paste • Continuous tone shading • Instant RGB color frame
 grab from VTR • Instant composite grab, black and white or
 color

The Silver consolidates 6 functions into a single video produc-
 tion workstation. It combines power and reliability with an
 easy-to-use icon menu. Designed for post production and cor-
 porate installations.

The Silver offers literally hundreds of creative applications. It
 can "grab" images from moving videotape and input informa-
 tion from either black and white or color video cameras. With
 the Silver, you can create your own fonts and special effects,
 and control multiple video inputs from VTRs—all from a single
 workstation that's menu driven.

The Silver has dual expansion capabilities through software
 and hardware. It is available as a modular machine to expand
 your hardware system as needed; and, Silver's application
 software is expandable through the use of software cartridges.

Silver \$12,000.00

Fader/Decoder

Decodes incoming composite video into RGB, has internal
 keyer and mixer \$5,600.00

Decoder

Decode incoming composite video into RGB. Not needed if
 above fader/decoder is used. \$3,500.00

**Silver Video Production Workstation****NTSC Saturation Controller/Encoder**

Converts RGB output from the Silver into NTSC with controlled
 output saturation to comply with National Television Standards
 Codes \$5,600.00

VTR Controller

Controls single frame VTRs for field accurate editing and cell by
 cell animation. Sony 5850 version \$3,900.00
 JVC CR8250U/CR850U version 3,900.00

Personal Computer Interface

For complete two way communication, file transportation or
 storage to IBM or compatible personal computer
 PC version \$3,500.00
 AT version 3,500.00

Accessories/Options**Memory Extension**

Three planes of memory for DVE effects 3 1/2" disk drive for
 storage and recall. \$9,000.00

Software Expansion

Airbrush, smoothing brush, gradations, 16 frame logo anima-
 tion 5-30fps, business charts and graphs, live video compres-
 sion integration, 4 input SEG/DVE \$5,600.00

3M COMPANY

Routing Switchers

15X SERIES ROUTING SWITCHERS

The Series 15X Routing Switcher offers an inexpensive method of eliminating patch panels and providing selectable distribution of audio and video signals. Any output channel can be independently programmed to select any input signal. The 15X Series offers very flexible control options which are divided into two categories—local and remote which can be intermixed within the same frame. Units are available in sizes: 2 outputs, 6 outputs, and 12 outputs. Also available with Audio Breakaway.

Plug-in input and output amplifiers are used for video and audio. The audio input amplifiers incorporate balanced inputs with common mode rejection for canceling hum on input lines. The video inputs have looping BNC connectors and terminating switches.

Local Control	Remote Control
15 in x 3 out \$3,300.00	15 in x 3 out \$ 4,300.00
15 in x 4 out 3,600.00	15 in x 4 out 4,800.00
15 in x 5 out 4,000.00	15 in x 5 out 5,700.00
15 in x 6 out 4,300.00	15 in x 6 out 6,300.00
15 in x 7 out 4,800.00	15 in x 7 out 7,500.00
15 in x 8 out 5,100.00	15 in x 8 out 8,500.00
15 in x 9 out 5,400.00	15 in x 9 out 9,300.00
15 in x 10 out 5,800.00	15 in x 10 out 10,000.00
15 in x 11 out 6,000.00	15 in x 11 out 10,800.00
15 in x 12 out 6,400.00	15 in x 12 out 11,500.00

Options

Vertical Interval Switching (Remote Only)	\$350.00
Audio Input/Output Cable (6' Pigtailed) 6 out frame	\$340.00
12 out frame	340.00
Remote Control Cable (Assembled and Tested)	\$ 50.00
	add per ft./1.00
Second Audio Level Switching (Remote Only) 6 out frame, add	\$1,240.00
12 out frame, add	1,475.00
Expansion Modules for: 15X Local Control Chassis, per output	\$ 510.00
15X Remote Control Chassis, per output	820.00
For 12 out frame with less than 6 outputs	1,500.00

15X-2 Series Video/Audio Routing Switchers

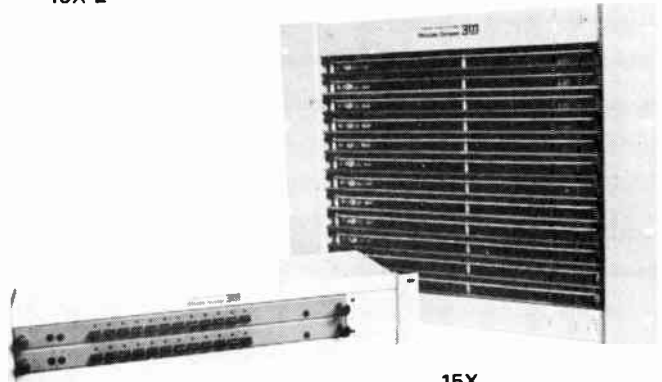
Local Control, Video Only 15 in x 1 out	\$2,000.00
15 in x 2 out	2,200.00
Local Control, Audio/Video 15 in x 1 out	\$2,300.00
15 in x 2 out	2,500.00
Remote Control, Video Only 15 in x 1 out	\$2,300.00
15 in x 2 out	2,500.00
Remote Control, Audio/Video 15 in x 1 out	\$2,600.00
15 in x 2 out	2,950.00
15X-2 with 1 Local Control Panel and 1 Remote Control Panel Video Only	\$2,340.00
Audio and Video	2,800.00

Accessories/Options

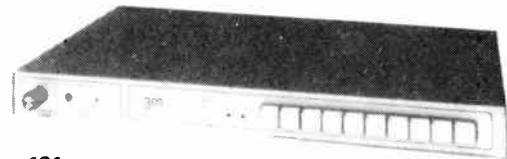
Vertical Interval Switching (Remote Only), add	\$ 350.00
Remote Control Cable (Assembled and Tested)	50.00
	add per ft./1.00



15X-2



15X



101

15X Series Video/Audio Routing Switchers

- Bridging crosspoints • Choice of local or remote controls
- Modular—field expandable • 3 frame sizes • Low crosstalk • Second audio level (optional) • LED status indicators • Input and output amps
- Terminating switches on inputs • Audio breakaway

Local Control

Mechanically interlocked pushbutton switches are used to select and switch the audio, video and tally signals.

Each video crosspoint is isolated from feeding back through the switch to the newly selected signal eliminating the glitch on other monitors. Each output has a separate plug-in tray containing the mechanical switch as well as the audio and video output amplifiers which are also separate plug-in units. LED status indicators above each pushbutton illuminate when the corresponding switch is depressed.

Remote Control

Standard remote controls are available for momentary pushbuttons. Remote control pushbutton trays are interchangeable with the local modules. Only DC voltages are used for control. Switch module assemblies are available in 12 x 1 and 15 x 1 sizes.

101 Series Vertical Interval Bridging Switcher

A 10 x 1 bridging switcher with built-in video and audio DAs featuring vertical interval switching on all inputs, lighted pushbuttons, and switch position memory. The switch position memory is effective for at least 30 seconds, and longer when connected to an external battery source (terminals provided).

101 Vertical Interval Bridging Switcher \$1,255.00

Accessories/Options

Remote Control	\$450.00
Instruction Manual (one supplied with each unit)	30.00

3M COMPANY

Routing Switchers

Series H Routing Switchers

- No internal maintenance or service adjustments
- DC coupled inputs to outputs allow analog switching circuits to handle certain data signals without DC-restore circuitry
- Bi-directional, parallel control bus with positive feedback from cross-point latches gives immediate and positive confirmation of cross-point latching
- Microprocessor control system simplifies design, maximizes dependability
- Single line coax control capability simplifies wiring and connections
- Separate plug-in video and audio output amplifier cards to assure that failures are isolated to one point and disable only one output if removed
- Each video path can have multiple associated audio paths (i.e., stereo, SMPTE time code, multi-lingual applications)
- The microcontrol system can provide one video with up to 5 audio levels with separate control for each level
- Audio-follow-video, video only, audio only, and audio breakaway for easy adaptation to any switching application
- I/O ports for RS232 computer terminal control, and standardized I/O protocol to allow for external CPU control by a variety of devices
- Improved temperature uniformity, hybrid ceramic substrates have stable and predictable dissipation characteristics
- Modular building block design with full expansion compatibility
- Control circuits are distributed by card, another valuable circuit redundancy feature

16 x 16 Audio/Video Matrix Card

The 16 x 16 audio/video matrix card is the basis of the Series H, 128 x 32 audio/video switching system. It provides up to 16 inputs and 16 outputs of audio and video switching on an 11 1/2" x 15 1/4" circuit board.

32 x 32 Routing Switcher Matrix

- No internal maintenance or service adjustments
- I/O parts for RS232 computer terminal control, and standardized I/O protocol to allow for external CPU control by a variety of devices
- The switchers are controlled by the 6600 microprocessor controller or a 6500 controller

The Series H 32 x 32 Routing Switcher provides 1 video and 1, 2 or 3 audio switching levels in the same enclosure. The switcher is designed for studio and remote truck applications.

The switcher design allows a user to install a frame configured to meet initial needs such as a 20 x 20 1 video, 2 audio and provide room for expansion to 32 x 32 1 video, 3 audio within the metal frame by means of plug-in modules. This ensures expansion without obsolescence of previously purchased hardware.

Because video switching demands absolute freedom from signal interruptions, Series H equipment is designed using redundant circuits for all critical functions.

The compact matrix frame is only 19 1/4" H (11 rack units) x 19" W x 17" D. The switcher represents 372 video and audio crosspoints per rack unit (13 3/4").

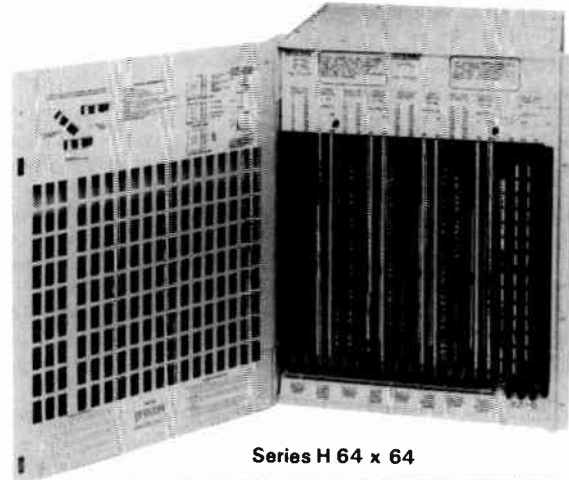
The 32 x 32 also is available in a video-only switcher or audio-only at 1, 2 or 3 levels. Each audio level is independently addressable, and the system can be configured to switch the audio levels with the video or each separate level independently.

64 x 64 Audio/Video Routing Switcher

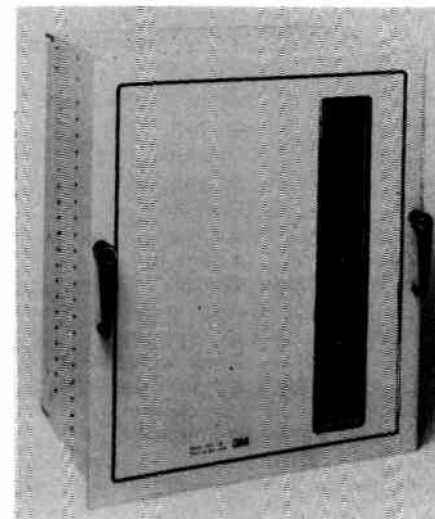
The Series H 64 x 64 routing switcher allows a user to install a frame configured to meet initial needs and provides room for expansion by means of plug-in modules.

The switcher provides 2 levels of switching, 1 video and 1 audio, in a matrix frame 22 3/4" H x 19" W x 17" D. The unit also is available with a companion 64 x 64 2 level audio only Series H frame, thus providing 64 x 64 1 video and 3 audios in two frames. The system can control up to five independent levels of audio.

The 64 x 64 routing switcher matrix is controlled by the 6600 microprocessor controller or a 6500 microprocessor-based control system.



Series H 64 x 64



40X-20

40X Routing Switchers

- Microprocessor Control System
- Single line (COAX) control system
- Self powered control panels
- I/O port for RS232 computer terminal
- Five ports for coaxial control lines
- Control lines can be looped from one panel to another
- Microprocessor unit mounts in 5 1/4" H x 19" W frame
- Output oriented routing switcher
- Maximum system reliability
- Wide variety of controls available
- Second level audio (optional)
- Input video clamping — back porch type (optional)
- 3-level switching in same frame — 1 video and 2 audio
- Audio/follow audio breakaway, or video only switching
- Vertical interval switching
- Options: second audio switching path, redundant power supplies

The 40X series switcher is designed to accommodate 40 inputs x 20 outputs in a single frame. Inputs are expanded individually and outputs may be added individually. Each 40 x 1 output channel is mounted on a single switch module board which plugs into the main frame. In the case of a 40 x 10, for example, this is equivalent to having ten 40 x 1 switchers in one frame. If one output card is removed, only one output is lost without affecting the remaining matrix. All output modules are interchangeable and any module may be unplugged while the routing switcher is in operation.

Breakaway audio is a standard feature with the 40X series. Audio can be selected separately from the video. Vertical interval switching is a standard feature in the 40X.

Microprocessor Based Control Panels for 3M Routing Switchers

Alphanumeric Type Control Panel

The alphanumeric control panel can be used as a single or a multiple channel control device. It can also be operated using numeric or alphanumeric addresses. Another feature is a software lockout which allows the operator to lock out selected channels when controlling multiple outputs. The "locked out" channels can only be used by other locations when released by the operator or when released from a designated supervisory location. The nomenclature used to designate the various input sources and output destinations are provided per each customer's requirements.

The alphanumeric control panels are available in the following configurations:

10 category by 99 sources per category, or a total of 999, alphanumeric single bus, multi bus, or full matrix (X/Y) control panel with audio and video breakaway and lockout capability (this panel will provide an alphanumeric presentation of preset and program).

Note: This panel may have limited outputs assigned as determined by the customer.

Four different modes can be chosen: 1) Video only, 2) Audio only, 3) Audio-follow-video, and 4) Audio/video split.

An operator can also initiate a pre-determined salvo group(s). This feature allows group switching of previously stored events.

15 category by 99 sources per category, or a total of 1485, alphanumeric single bus, multi bus, or full matrix (X/Y) control panel with audio-follow-video operation (this panel will provide an alphanumeric representation of preset and program).

*Note: This panel may have limited outputs assigned as determined by the customer.

3 digit 10 category by 99 sources per category alphanumeric single bus, multi bus, or full matrix (X/Y) control panel with audio and video breakaway and lockout capability (this panel will provide an alphanumeric representation of preset and program).

*Note: This panel may have limited outputs assigned as determined by the customer. 3 digit source selection (100-999) is also available.

Touchpad Numeric Type Control Panel

Touchpad controls have the advantage of requiring less space than pushbuttons and the ability of handling 99 source selections with no extra hardware. Readouts are used to tally the preset and line (output) status. A take button is used to provide the switch from preset to line. This panel reads out in numerics only. Audio breakaway capability is a standard feature with the Touchpad Panel. An optional touchpad is also available to provide control of two switcher outputs in an audio/follow or audio breakaway mode of operation.

Pushbutton Control Panel

Standard pushbutton panels are available in 20, 40 and 80 positions, using momentary computer-type pushbutton switches with LED indicator lights. Audio and video breakaway switching is standard with all pushbutton panels. An operator may accomplish audio-follow-video, video constant with audio breakaway, or audio constant with video breakaway type switching.

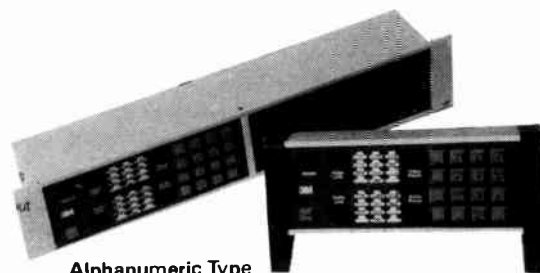
Illuminated Pushbutton Control Panel

This panel is the same as the LED panel except it uses lighted pushbuttons instead of LED indicators.

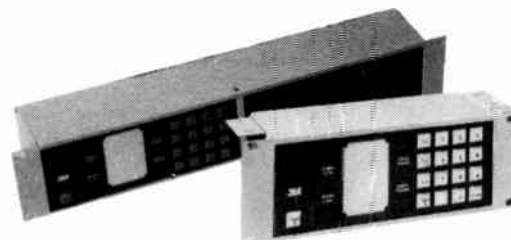
5 Position Leverwheel Control Panel

The five position control panel allows an operator from one 3 1/2" control panel, the capability of switching five consecutive outputs.

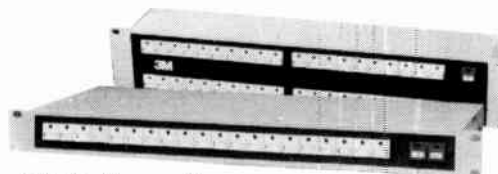
Both audio and video are selected by the leverwheels and switched in an audio/follow mode by pushing the take button. A lockout function is also available from each leverwheel switch control section. The use of this panel affords the customer a very economical panel and less space required to control a routing switcher.



Alphanumeric Type



Touchpad Numeric Type



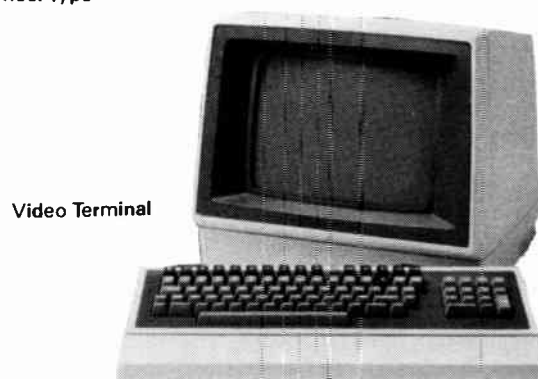
LED Pushbutton Type



Illuminated Pushbutton Type



Leverwheel Type



Video Terminal

Video Terminal

The Video Terminal is probably the most versatile and cost-effective means of control available. It not only provides a keyboard to address the microprocessor with any address possible with the software provided, but it also has a CRT that displays a complete matrix and machine control status as well as all the commands. Any future command changes can be accommodated by changing software. Additional features are included, such as salvo commands, "all call", machine control, etc. The video terminal is ideal for supervisory control.

3M COMPANY**Machine Control System****ESbus Machine Control System**

The ESbus Machine Control System is a powerful digital communications network linking machines and control locations. The system uses an open ended RS-422 serial communications bus which supports the SMPTE/EBU ESbus standard for serially controlled devices. Non-serial devices are controlled with serial to parallel machine decoders. One end of the bus terminates in a Bus Controller which acts in a supervisory role, monitoring the active nodes on the bus, and determining the availability of machines when selected at a control location. A slave bus controller is available to provide full redundancy for the bus controller, eliminating a potential single point failure.

In a stand-alone configuration the ESbus machine control system is a powerful tool for controlling machines throughout your facility. However, the maximum potential of the system is realized when it is integrated with other 3M broadcast control products to form a comprehensive control system which enhances the productivity of any operation. The 3M system concept is constantly evolving to reflect the changes in broadcast and production operations.

The parallel machine decoder converts serial commands into logic level outputs to drive VTR's and film islands with parallel control ports. Most popular machines are currently supported and outputs from the parallel machine decoder can be used for many custom control requirements.

The Series H routing switcher control system can be linked with an ESbus machine control system to provide control locations with integrated switcher and machine control functions. Selecting a controlled machine as an input source on a routing switcher control panel will automatically delegate control of the machine (if available) to the associated machine control panel.

In locations where traditional machine control capabilities are required, eight function pushbutton control panels are used. The machine(s) to be controlled are selected using the delegation pushbuttons (12 and 20 machine panels are available). Salvo starts of multiple machines are possible by selecting multiple machines using the delegation controls. The eight function buttons allow control of standard machine operating modes and indicate the machine's status to the operator.

The 324 Master Control Switcher ties to the ESbus system to provide pre-roll of machines for your "on air" operation. In addition, the 324 is offered with an integral ESbus control panel which provides the master control operator with access to all machines for support of "off air" operations.

With the Universal Machine Control Panel a wide range of features can be controlled on machines which offer enhanced external control capabilities. This controller is menu driven and includes a jog/shuttle control allowing it

DRC-125



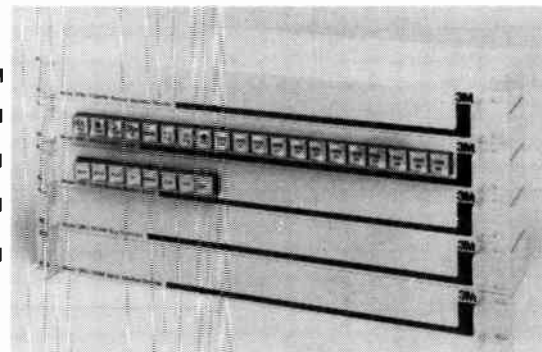
DRC-202A5M

DRC-120M

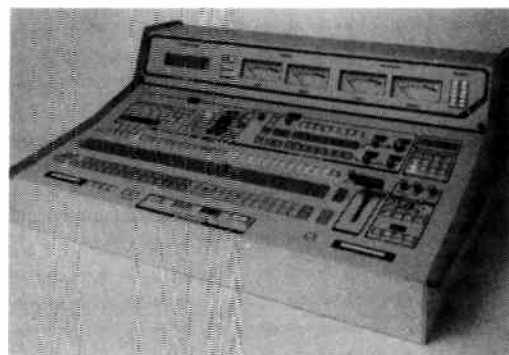
PRC-138M

DRC-001AM

DRC-320M



324



to exercise many of the advanced features made available through the machine's communications protocol. Depending on the machine, controlled features may include machine editing functions, the setting of mark points by time code entry, time code inquiry, and jog and shuttle of tapes or film.

The Serial Machine Decoder is used with machines that have serial control capability (ESbus and other serial protocols). This includes intelligent devices such as character generators, and still stores. Most serially controlled videotape machines are currently supported. The development of serial interfaces is an ongoing process: 3M will add interfaces as new machines become available and will work with you to develop interfaces for your specific requirements.

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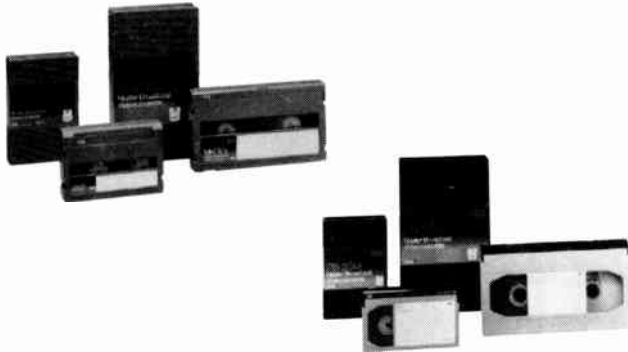
Videocassettes/Videocassette Hangers



3/4" Broadcast Videocassette Tapes Master Broadcast U-Matic (MBR™)

The Master Broadcast video tape is designed to meet your most exacting needs. The Anti-Stat System of treated component parts and shell and Anti-Stat leader dissipates static charge for lower dropout activity and better performance under adverse environmental conditions. Ten units per carton.

	Playing Time	Price
MBR-10 Hanger or Album	10	\$22.56
MBR-20 Hanger or Album	20	24.35
MBR-30 Hanger or Album	30	31.51
MBR-50 Hanger or Album	50	38.36
MBR-60 Hanger or Album	60	40.96
Mini MBR-5S Hanger or Album	5	22.72
Mini MBR-20S Hanger or Album	20	25.59



1/2" Broadcast Videocassettes

Broadcast quality products designed specifically for use on high speed 1/2" equipment such as Betacam SP, and MII Format. Has 3M's exclusive Anti-Stat Treatment. Twenty units per carton.

	Playing Time	Price
Betacam Format		
PB-5 Album	5	\$13.32
PB-10 Hanger or Album	10	14.80
PB-20 Hanger or Album	20	20.04
PB-30 Hanger or Album	30	22.91
PB-60L Hanger or Album	60	38.28
PB-90L Hanger or Album	90	50.54
Betacam SP Format		
PB-5M	5	\$27.14
PB-20M	20	33.86
PB-30M	30	37.35
PB-60ML	60	45.87
PB-90ML	90	71.87
MII Format		
MM10L Album	10	\$31.61
MM20S Album	20	36.87
MM30L Album	30	42.14
MM60L Album	60	63.21
MM90L Album	90	94.82
Broadcast VHS		
T60 Hanger or Album	60	\$19.28
T120 Hanger or Album	120	23.44

1/2" Scotch Videocassettes

Standard Grade VHS Videocassettes designed for general purpose applications. Twenty units per carton.

T-30	\$8.06
T-60	9.04
T-120	9.40

Broadcast U-Matics (UCA Color Plus)

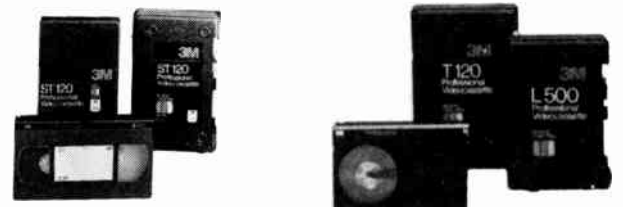
Broadcast UCA Videocassettes use a special Color Plus oxide video tape which provides a superior signal-to-noise ratio, color-noise ratio and lower dropouts. Ten units per carton.

	Playing Time	Price
UCA-5 Hanger or Album	5	\$20.11
UCA-10 Hanger or Album	10	20.47
UCA-20 Hanger or Album	20	23.32
UCA-30 Hanger or Album	30	25.71
UCA-60 Hanger or Album	60	34.60
UCA-75 Hanger or Album	75	56.78

Broadcast Mini-U-Matics (UCA Color Plus)

Mini U-matic videocassettes are designed for use with such mini U-matic portable recorders. Features Color Plus oxide. An "S" after the model number (UCA-10S) indicates mini size. Ten units per carton.

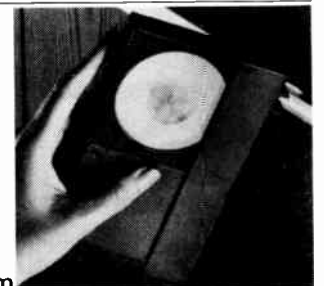
	Playing Time	Price
UCA-10S Hanger or Album	10	\$19.41
UCA-20S Hanger or Album	20	21.94
UCA-30S Hanger or Album	30	37.94



1/2" Professional Videocassettes

High grade quality product with superior electromagnetic and dropout characteristics designed for critical applications. Twenty units per carton.

Beta	Price	VHS	Price
L-250 Sleeve	\$ 9.95	T-30 Sleeve	\$10.03
L-500 Sleeve	11.52	T-60 Sleeve	10.91
L-750 Sleeve	14.55	T-120 Sleeve	12.90
L-125 Album Box	11.38	T-30 Album Box	12.56
L-250 Album Box	12.46	T-60 Album Box	13.52
L-500 Album Box	14.20	T-90 Album Box	15.74
L-750 Album Box	17.56	T-120 Album Box	15.74
S-VHS		T-150 Album Box	15.74
ST-30	POR	T-30 Hanger Case	11.96
ST-60	POR	T-60 Hanger Case	12.92
ST-120	19.99	T-90 Hanger Case	14.66
		T-120 Hanger Case	15.14
		T-150 Hanger Case	22.86



Snap Cap™ Hanger Bar System

- Allows maximum storage density (280 videocassettes in a 4' x 8' area)
- Adapts to many locations and space requirements
- Provides maximum protection of videocassettes without additional packaging
- Allows easy and uniform labeling
- Locks firmly onto videocassette but is easily removed
- Locks onto the hanger bar but is easily detached and transported
- Features light high strength aluminum bar
- Installs easily and inexpensively
- 40 units per carton

The Snap Cap Hanger System efficiently protects and stores your valuable videocassettes in a minimum of space while allowing you to transport and quickly access the tape.

	Playing Time	Price
Betacart		
BSC-5	5	\$15.30
BSC-30	30	24.84
Betacam		
PBSC-10	10	\$16.51
PBSC-20	20	21.68
PBSC-30	30	24.84

3M COMPANY

1" Video Tape/Accessories Videocassette Hangers



1" Helical Open Reel Video Tape

No. 479 — #479-1" Helical video tape is a special application tape that can only be used with type "C" video recorders.

No. 480 — #480-1" Helical video tape is an improved broadcast video tape providing better signal-to-noise, color-noise qualities and virtually eliminates head stiction. For use on all recorders capable of using 479 mastering/broadcast video tape (type "C" recorders).

	Cat. No.	Playing Time	Reel Size	Price
Ampex VPR-1, 2,	479-1-1630-R179B	34	1" x 8"	\$ 85.64
Sony BVH-1000,	479-1-1630-R179C132	34	1" x 8"	90.89
Video Memory	479-1-3170-R179B	66	1" x 9"	128.98
VM-1000	479-1-3170-R179C132	66	1" x 9"	134.23
	479-1-4610-R179B	96	1" x 10 1/2"	194.92
	479-1-4610-R179C129	96	1" x 10 1/2"	201.92
RCA TR 800,	479-1-5070-R179C129	105	1" x 10 1/2"	232.02
Merlin Eng. Mod.	479-1-6050-R179C134	125	1" x 11 1/2"	274.30
Ampex & Sony,	479-1-7500-R179C134	155	1" x 12 1/2"	336.10
Sony, BVH 1180,	479-1-9100-R179C134	188	1" x 14"	426.34
Hitachi HR300*				
Bosch-Fernseh,	479B-1-1630-R179B	34	1" x 8"	85.64
(BCN), IVC,	479B-1-1630-R179C132	34	1" x 8"	90.89
Philips, RCA,	479B-1-3170-R179B	66	1" x 9"	128.98
BCN-20 Portable	479B-1-3170-R179C132	66	1" x 9"	134.23
	479B-1-4635-R179B	96	1" x 10 1/2"	194.92
	479B-1-4635-R179C129	96	1" x 10 1/2"	201.92
Ampex VPR-1, 2,	480-1-1630-R179B	34	1" x 8"	89.92
Sony BVH-1000,	480-1-1630-R179C132	34	1" x 8"	95.17
Video Memory	480-1-3170-R179B	66	1" x 9"	135.44
VM-1000	480-1-3170-R179C132	66	1" x 9"	140.69
	480-1-4610-R179B	96	1" x 10 1/2"	204.68
	480-1-4610-R179C129	96	1" x 10 1/2"	211.68
RCA TR800,	480-1-5070-R179C129	105	1" x 10 1/2"	243.62
Merlin Eng.	480-1-6050-R179C134	125	1" x 11 1/2"	282.02
Mod. Ampex &	480-1-7500-R179C134	155	1" x 12 1/2"	352.92
Sony, Sony	480-1-9100-R179C134	188	1" x 14"	447.66
BVH 1180				
Hitachi HR 300*				
Bosch-Fernseh,	480B-1-1630-R179B	34	1" x 8"	89.92
(BCN), IVC,	480B-1-1630-R179C132	34	1" x 8"	95.17
Philips, RCA,	480B-1-3170-R179B	66	1" x 9"	135.44
BCN-20 Portable	480B-1-3170-R179C132	66	1" x 9"	140.69
	480B-1-4635-R179B132	96	1" x 10 1/2"	204.68
	480B-1-4635-R179C132	96	1" x 10 1/2"	211.68

- * 11 1/2" RCA TR 800
- 12 1/2" Merlin Engineering Modified Ampex & Sony Machines
- 14" Sony BVH 1180
- Hitachi HR 300

Tape Accessory Descriptions

- B** At the end of a catalog number indicates box
- R179** Flat flange reel, 1" x 8", 9" and 10 1/2"
- C129** Fire retardant shipping case for 1" x 10 1/2" flat flange reels
- C132** Fire retardant shipping case for 1" x 9" flat flange reels
- C134** Fire retardant shipping case for 1" x 11 1/2", 12 1/2", 14" flat flange reels



Hanger System

Hanger System

A videocassette case design that's triggered a revolution in 3/4" and 1/2" videocassette storage and handling. The shipper/storage case (patents applied for) represents a design concept based upon the idea that hanging your videocassettes not only is the best way to protect them from damage, but it will organize your storage area and simplify the way you transport videocassettes.

Shipper/Storage Case

This sturdy shipping box can be labeled and mailed with no other packaging needed. Its unique hanging hook and slide-snap latch are only two of the features of this case that opens to reveal a recess for storing the record-lockout button when you are not using the record mode. The stabilizer bars on the box bottom and the expandable, spine-handle simplify storage and retrieval in any situation.

CHB-1 Case Hanger

This extruded aluminum bar comes in 4' lengths and can be cut to fit doors, desk backs, cabinets, shelves, walls, etc. Standard screws or bolts anchor them securely to concrete, wood, plaster or metal surfaces, and when properly mounted, the bars can maintain weights of up to 240 lbs.

6 PH Six-Pack Hanger

A sturdy, aluminum frame that easily totes up to 6 videocassettes, with the case or without.

Video Tape Reels and Accessories

R139B-1-8	Empty metal video reel in box	\$29.85
VB-1-10 1/2	Empty cardboard video boxes	7.91
C129-1-10 1/2	Fire retardant empty	19.29
C132-1-9	Plastic shipper/	17.29
C134-1-14	Storage cases	28.79
C137-2-10 1/2		42.38
6-PH (Six-Pack)	Scotch	7.78
CHB-4 Bar (25 per carton)	Case hanger	5.12
H-Bar	Accessories	6.43
UCS-HC (Mini; C-124; recorded)	Head Cleaning	\$32.27
B-HC (Beta; hanger box; unrecorded)	Videocassettes	24.43
V-HC (VHS; hanger box; unrecorded)		25.55
VRB-1-6 1/2	Empty plastic spot reels in box	3.81
VRB-2-6 1/2	Spot reels in box	4.17
8125-1/4-90	Diagonal stripe hold-down tape	5.72
Re-Label Tape	Re-label tape	2.25

3M COMPANY

Open Reel Audio Tape/Cassettes/Accessories

Studio Mastering Tapes (12 per carton)

Cat. No.	Reel Size	List Price
250-1/4-1200	7"	\$12.86
2500-RN	10 1/2"	33.71
226-1/4-1200	7"	12.96
2500-RN	10 1/2"	33.71
227-1/4-1800	7"	17.12
3600-RN	10 1/2"	46.62

Mastering Tapes (12 per carton)

806-1/4-600	5"	\$ 7.32
1200	7"	11.39
2500-RN	10 1/2"	28.54
807-1/4-900	5"	9.27
1700	7"	15.32
3600-RN	10 1/2"	40.23
808-1/4-600	5"	7.32
1200	7"	11.39
2500-RN	10 1/2"	28.54
809-1/4-900	5"	9.27
1800	7"	15.32
3600-RN	10 1/2"	40.23

Logging Tapes

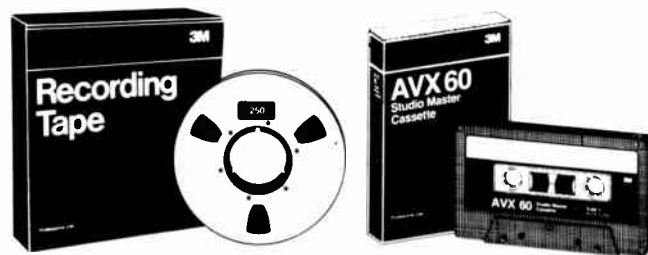
8206 is a 1.0 mil polyester tape with back treatment designed for logging. 8207 is a .5 mil version of the 8206. 8614 is a 1.0 mil polyester tape without back treatment for use on Magnasync recorders.

Cat. No.	Reel Size	Per Ctn.	List Price
8206-1/4-3600R183	10 1/2"	12	\$ 50.34
8206-1/2-3600R182	10 1/2"	10	94.02
8206-1-3600R182	10 1/2"	5	151.94
8206-1-10800FAA	15"	5	636.06
8207-1/4-3600PR7	7"	12	39.94
8614-1/4-3600RN	10 1/2"	12	52.76
8614-1/2-3600R182	10 1/2"	10	93.64
8614-1-3600R182	10 1/2"	5	159.56

Accessories

	Cat. No.	Reel Size	Per Ctn.	List Price
Reels in Bulk	PR-1/4-7 Trapezoid	7"	270	\$ 1.58
Empty Metal NAB Reels	RNB-1/4-10 1/2	10 1/2"	12	24.28
	12	12"	6	33.35
In Boxes	14	14"	6	32.18
Empty Boxes	B-1/4-7		48	2.80
Splicing Tape	41-7/32-66		40	3.29
	620-7/32-66		12	5.73
	66 Bulk		48	4.71
	67-7/32-100		12	6.82
	100 Bulk		48	5.78
Leader Tape	20-1/4-1000		12	9.08
	61W-1/4-1500		20	20.38
	61Y-1/4-1500		20	20.39
	62-1/4-1500		12	20.39
Hold-Down Tape	83-1/4-180 (Red)		10	4.12
Relabel Tape	Relabel Tape		48	2.25
Audio Recording Studio Dispenser Kit	RSD-1		1	149.52

RN = a 10 1/2" metal reel with solid NAB hub.



AVX Studio Master Cassettes — Boxed

AVX Cassettes are professional quality high output, low noise cassettes designed for the rigorous use of instructional applications. 5-screw shell with roller guides. 2-piece plastic album box with labels. 20 cassettes per master carton. Tensitized polyester.

AVX-20	0.5 mil.	\$1.12
AVX-30	0.5 mil.	1.19
AVX-46	0.5 mil.	1.25
AVX-60	0.5 mil.	1.36
AVX-90	0.3 mil.	1.89
AVX-120	0.25 mil.	2.48

AVX Bulk Cassettes

Bulk version of AVX Cassettes. Identical performance, but bulk packaged in master carton of 400; without labels or boxes. Designed especially for critical mastering applications.

Packed 25 identical cassettes per overwrapped tray, 4 trays per intermediate box, 4 intermediates of 100 cassettes per master carton. Black high impact styrene plastic shells are used.

AVX-10	\$.87
AVX-20	.91
AVX-30	.92
AVX-46	1.02
AVX-60	1.08
AVX-90	1.38
AVX-120	2.27

IRC Cassettes — Boxed

Instant Record Cassettes are leaderless, professional quality, low noise cassettes designed for instant recording applications such as dictating, interviewing, conference recording, slide sync, surveillance and information logging. 20 cassettes per master carton. Tensitized polyester.

IRC-30	.5 mil.	\$1.48
IRC-60	.5 mil.	1.72
IRC-90	.3 mil.	2.18

IRC Bulk Cassettes

Bulk version of IRC Cassettes. Identical performance, but bulk packaged without labels or boxes. 400 cassettes per master carton.

IRC-30	\$1.26
IRC-60	1.50
IRC-90	1.86

XSII Premium High Bias Mastering Cassettes

XSII-60	Norelco Case.	\$2.78
XSII-90	Norelco Case.	3.29

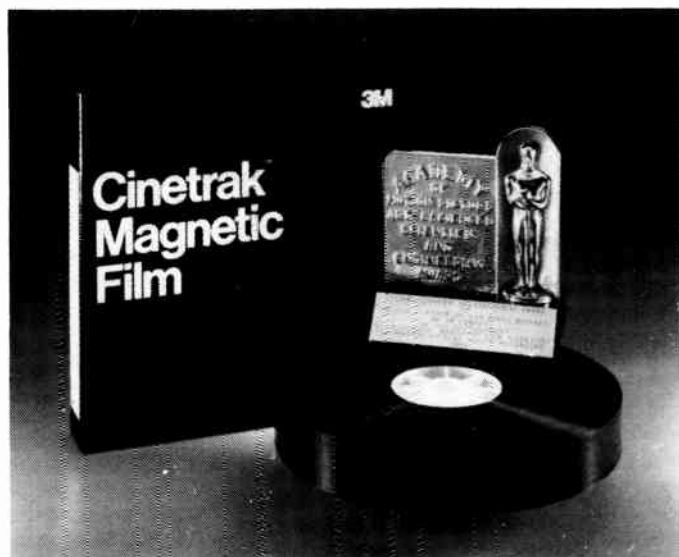
XSM Cassettes — Boxed

XSM Cassettes are metal bias, .5 mil tensitized polyester, 40 per carton.

XSMIV-C60	box/\$5.86
XSMIV-C90	box/7.55

3M COMPANY

Magnetic Film/Recording Cassettes



Magnetic Film

Cinetrak Magnetic Film has the same oxide formulation as 226 Audio Mastering Tape, with a special surface treatment to make it extremely smooth. The result is a dramatic reduction in asperity noise and an increase in high frequency response. For critical mastering applications, Cinetrak Magnetic Film outperforms any other magnetic film on the market. Its superior wearability allows it to be used repeatedly with no noticeable loss in signal-to-noise, output or frequency response.

337

Full coat low noise sprocketed magnetic film on 5 mil acetate base.

16mm	35mm
400SP	1000NN
1000SP	1000EN
1200SP	2000NN
1200DP	2000EN
2400SP	3000NN

338

Stripe coat low noise sprocketed magnetic film on 5 mil acetate base.

35mm
1000NN
1000EN
2000NN
2000EN
3000NN

340

Full coat low noise sprocketed magnetic film on 3 mil polyester base with back treatment.

16mm	35mm
1200SP	1000NN
2400SP	3000MNN

341

Full coat low noise sprocketed magnetic film on 5 mil polyester base.

16mm	35mm
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350

Full coat high output low noise sprocketed magnetic film on 5 mil polyester base.

16mm	35mm
1200SP	1000NN
2400SP	2000NN
	3000NN

351

Full coat high output low noise sprocketed magnetic film on 3 mil polyester base.

16mm	35mm
1200SP	1000NN
2400SP	3000NN

Splicing Tape

305 Transparent	
16mm	35mm
66DP 1.5 mil	66DP 1.5 mil
	66NP .600 mil

309 White

16mm	35mm
50DP 2 mil	50DP 2 mil

AV Open Reel

806 and 807 are high output/low noise open reel tapes designed for critical music mastering. 808 and 809 are low print/low noise open reel tapes designed for critical voice and general music mastering. 226, 227, and 250 are premium quality tapes for critical studio. 12 reels per master carton.

Studio Mastering Tapes (12 per carton)

Cat. No.	Reel Size
250-1/4-1200	7"
2500-RN	10 1/2"
226-1/4-1200	7"
2500-RN	10 1/2"
227-1/4-1800	7"
3600-RN	10 1/2"

Mastering Tapes (12 per carton)

806-1/4-600	5"
1200	7"
2500-RN	10 1/2"
807-1/4-900	5"
1700	7"
3600-RN	10 1/2"
808-1/4-600	5"
1200	7"
2500-RN	10 1/2"
809-1/4-900	5"
1800	7"
3600-RN	10 1/2"

Logging Tapes

Cat. No.	Reel Size	Per Ctn.
8206-1/4-3600RN	10 1/2"	12
8206-1/2-3600R134	10 1/2"	10
8206-1-3600R134	10 1/2"	5
8206-1-10 800FAA	15"	5
8207-1/4-3600PR7	7"	12
8614-1/4-3600RN	10 1/2"	12
8614-1/2-3600R134	10 1/2"	10
8614-1-3600R134	10 1/2"	5

Accessories

	Cat. No.	Reel Size	Per Ctn.
Reels in Bulk	PR-1/4 7 Trapezoid	7"	270
Empty Metal	RNB-1/4-10 1/2	10 1/2"	12
NAB Reels	12	12"	6
In Boxes	14	14"	6
Empty Boxes	B-1/4-7		48
Splicing	41-7/32-66		40
Tape	620-7/32-66		12
	66 Bulk		48
	67-7/32-100		12
	100 Bulk		48
Leader	20-1/4-1000		12
Tape	61W-1/4-1500		20
	61Y-1/4-1500		20
	62-1/4-1500		12
Hold-Down	83-1/4-180 (Red)		10
Tape	84-1/4-180 (Blue)		10
Relabel Tape	Relabel Tape		48
Audio			
Recording			
Studio			

MA-23VFM

23GHz FM Microwave Video System

- High power output 66mW typical
- Low cost, compact FM microwave system
- Full color compatible video plus audio, data, control
- All solid-state
- Simple installation and alignment
- Weather-resistant RF units
- Built-in 115VAC power supply
- Ready to mount on 2" to 4" O.D. pipe

M/A-COM's MA-23VFM system is a budget priced solid-state FM microwave radio system that provides reliable, short range video communications links in the 21.8 to 22.0GHz and 23.0 to 23.2GHz frequency band. This system is capable of transmitting full color video plus high quality subcarrier program channels with all of the advantages that only FM microwave systems can offer. The MA-23VFM system is ideal for relay of TVRO programs for CSTV systems as well as video conferencing or remote surveillance applications. The standard MA-23VFM system comes completely equipped with one subcarrier program channel for audio, data or telephone use.

The MA-23VFM system is an economical alternative to conventional coaxial cable links, especially where cable installation is impractical such as in congested downtown areas, across landscaped grounds or locations where trenching and aerial lines are not permitted. In these instances, the MA-23VFM system eliminates not only the prohibitive installation costs of cable systems, but also the lengthy delays encountered in obtaining municipal construction permits.

The compact, lightweight MA-23VFM system is engineered to provide reliable performance and simplicity of operation at reasonable cost. Transmitter and receiver subsystems are comprised of weather-resistant RF units equipped with integral high gain antennas designed for outdoor use, and a Control/Interface Unit containing power supply and baseband circuits. Distances of 250' (76m) between the Control/Interface Unit and RF heads are possible with no signal degradation. Units are completely aligned at the factory and do not require any adjustments once installed. Field proven, solid-state technology is employed featuring direct signal conversion Gunn Oscillators that have a long history of trouble-free performance in other M/A-COM products serving the communications industry.

The MA-23VFM is the logical choice for low cost microwave communications links for the following reasons:

- FM superheterodyne design is inherently superior to AM systems in an interference environment—less susceptible to atmospheric conditions (electrical storms), RFI, and EMI
- 7.5MHz bandwidth allows transmission of black and white or full color video
- The MA-23VFM system can be equipped with up to two internal subcarrier channels for audio, data, or telephone line replacement. Plug-in subcarriers are available to allow field upgrading to maximum subcarrier capacity in minutes

Primary Uses

- Teleconferencing
- CATV
- Surveillance
- Telephone via FDM

FM Advantages

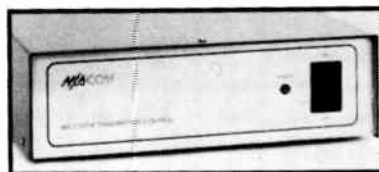
- Higher signal-to-noise ratio—Superior picture and audio and data quality
- Higher fade margin—Longer paths without repeaters
- Less susceptible to interference from electrical storms, RFI, and EMI

Options

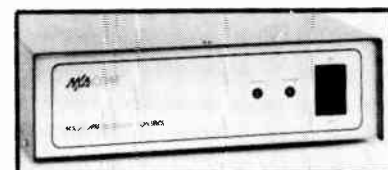
- 500kHz return for audio, data, or camera control
- 230VAC/625 line video operation



MA-23VFM, Pole Mount



Transmitter Remote Interface Unit



Receiver Remote Interface Unit

Specifications

General

Frequency Bands: 21.8 to 22.0GHz and 23.0 to 23.2GHz
Radio Capacity
MA-23VFM: 8MHz bandwidth, 525/625 line video plus 2 audio subcarrier program channels

Modulation: FM
Deviation: ± 4MHz
Antenna
Size: 12" diameter
Gain: 33dBi typical
Beamwidth (3dB): 3.5°

Video

Signal-to-Noise Ratio (with -35dBm RCL): 55dB min.
Subcarrier Bandwidth: 15kHz

Primary Power
Source: 120VAC (50 to 60Hz); 230VAC optional
Power Consumption
Transmitter: 50W
Receiver: 50W

RF units powered via interconnection cable by control/interface units.

Physical

Size (Transmitter or Receiver)
RF Unit (including antenna): 16" dia. x 10.75" D
Control/Interface Unit: 3" H x 10.5" W x 8.25" D
Weight
RF Unit: 9 lbs.
Control/Interface Unit: 4.5 lbs.

MA-23VFM (without audio) \$5500.00

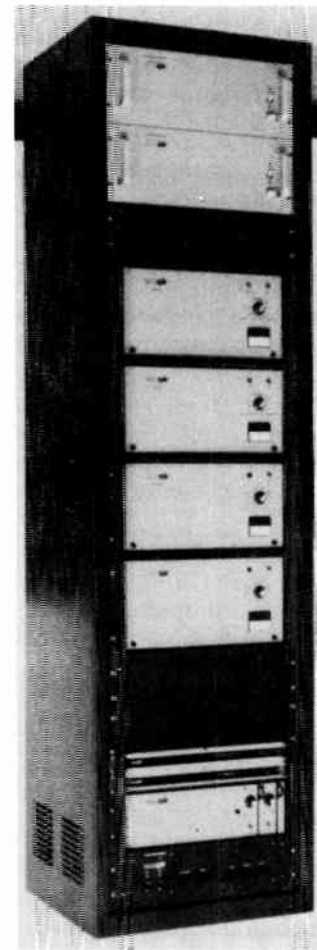
M/A-COM MAC, INC.**Microwave Systems****G-Line Series Point-to-Point Video Microwave System**

- 2, 2.5, 6, 7, 8 and 10 to 13GHz operating frequency bands
- 2GHz ultra low noise linear oscillator
- High power transmitter outputs
- Excellent signal-to-noise ratio
- Digital AFC
- Low transmission distortion
- Multihop capability
- Hot standby and space/frequency diversity options
- Unattended remote operation
- Flexibility

The G-Line series point-to-point video microwave systems operate in the 2, 2.5, 6, 7, 8, 10 and 13GHz bands. The G-Line equipment is fully solid-state, employing a blend of state-of-the-art and proven technologies. Both the high power transmitters and low noise receivers enable system designers the flexibility of optimum performance while maintaining cost effectiveness.

All G-Line series transmitters and receivers are readily accessed for service via a fold-down door on the front of the unit. All modules and test points are then easily accessible from the front of the rack for easy maintenance.

Multihop systems can be economically implemented with G-Line series equipment. This capability is a direct result of the linearity advantage achieved by the use of a high power 2GHz transistor oscillator (with low-order multiplication to higher frequencies). This gives the G-Line an advantage over both earlier high-order multiplication of UHF oscillators and klystrons. Up to four audio program channels can be carried above the video. Multiple subcarriers can be carried above the video signal using sub-carrier multiplex techniques. The MAC PAC-10/PAC-12 program audio system and SC-1 service channel converter allows the user the benefits of "that unused bandwidth" above the video.

**G-Line Model Specifications**

	MA-2G	MA-2.5G	MA-6G	MA-6GW	MA-7G	MA-12G	MA-12G w/PA-1202
Radio Frequency Bands Range (GHz)	1.990-2.110	2.3-2.68	5.925-7.125	5.925-7.125	7.125-8.500	10.7-13.25	10.7-13.25
Transmitter Output Power Range*	+ 39.0 dBm	+ 37.0 dBm	+ 30.0 dBm	+ 35.6 dBm + 35.6 dBm	+ 32.0 dBm	+ 27.0 dBm + 26.0 dBm + 26.0 dBm	+ 31.6 dBm + 31.6 dBm + 31.6 dBm
Receiver Noise Figure (including filter)	8.0 dB	8.5 dB	8.5 dB	8.5 dB	9.0 dB	9.0 dB	9.0 dB
Receiver Threshold (to 37 dB S/N)	- 80.0 dBm	- 79.0 dBm	- 79.0 dBm	- 79.0 dBm	- 79.0 dBm	- 79.0 dBm	- 79.0 dBm
Signal-to-Noise Ratio (10 kHz to 5 MHz)	75.0 dB	70.0 dB	70.0 dB	70.0 dB	70.0 dB	70.0 dB	70.0 dB

*Minimum to branching network.

Prices and Specifications Subject to Change Without Notice.

B-815

M/A-COM MAC, INC.**Microwave Systems****MA-18CC 18GHz Microwave Communication System**

- Meets or exceeds EIA-250B short haul specs
- Field tunable RF frequencies
- High-stability phase-locked TX source
- Built-in diagnostic alarms
- Receiver image rejection greater than 80dB
- + 18dBm RF output power
- High system gain
- Dual conversion receiver
- Built-in RF and IF monitor
- 10MHz baseband bandwidth standard
- Up to three audio subcarriers built in
- Range up to 15 miles

The 18GHz band offers an opportunity for broadcasters who are running into congestion on lower frequencies. 18GHz is a professional quality band with a range of up to 15 miles, and it still has plenty of available frequencies with a minimal probability of interference from other sources.

MA-18CC System is a solid-state FM microwave communication system, designed for broadcast and high-resolution video applications. It operates in the 17.7 to 19.7GHz frequency band, with the high frequency stability required by the FCC in this band.

It can carry up to three 15kHz subcarriers above the video for transmission of program audio channels, low-speed data or supervisory order wire in any combination. For more than three subcarriers, M/A-COM's PAC 10/12 audio modulators and demodulators may be used.

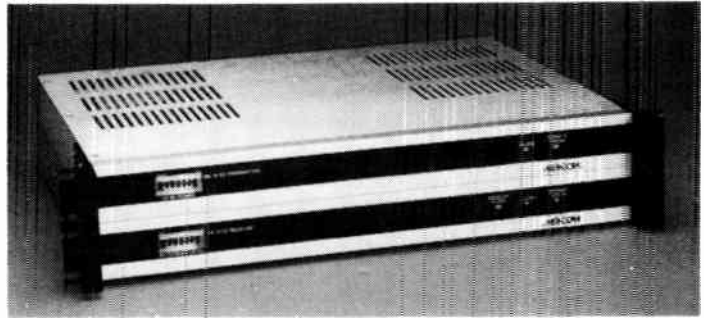
The compact, lightweight MA-18CC System is engineered to provide troublefree performance. Its weather-resistant RF transceiver assembly is integral to the antenna, and is designed for outdoor use. The two rackmountable baseband units contain power supply and baseband circuits, and are connected to the outdoor units with coaxial cable and power cable. No waveguide is necessary.

The transceiver is easily field tunable over the full 470MHz segment of the band, using dipswitches and the fine-tune control. The System features modular construction with easy access to all RF and electronic assemblies.

The transmitter features a high-stability RF source phase-locked to a stable crystal reference, plus high power output and a built-in RF monitor test port. The dual conversion receiver provides > 80dB of image rejection. The MA-18CC offers a full range of options, including multiplexing with up to four duplex systems using a single antenna, or hot standby for fully-redundant duplex protection.

Options

- Fully-redundant hot standby protection
- LNA for extended range
- Field installable, RX narrow band IF filter with AFC
- AC or DC operation—115/230VAC (50-60Hz), 24 or 48VDC
- 12MHz baseband bandwidth capability for high resolution video
- 525/625 line NTSC/PAL emphasis
- Multiplex configurations—up to four full duplex channels using a single antenna
- 2', 4' or 6' high-performance antennas

**MA-18CC****MA-23CC 23GHz Wideband Microwave System**

- Range to 10 miles
- Broadcast-quality NTSC 525/625 line video with up to 3 audio subcarriers
- Bandwidth to 10MHz \pm 3dB
- 2', 4', or 6' antennas, single or dual feeds
- Simplex or full duplex operation
- AC or DC power
- Compatible with MA-23DR digital microwave system

With up to 12MHz of bandwidth, the MA-23CC is the short-haul choice to deliver professional broadcast-quality or high-resolution video.

The 23CC is a solid-state analog microwave radio system operating in the uncongested 21.2 to 23.6GHz frequency band. With its wide variety of options and configurations, it's easy to design the ideal system to meet your needs.

Three antenna sizes are available in simplex, duplex or multiplex configurations, and allow transmission ranges of up to 10 miles. Repeaters allow even greater distances without significant degradation.

Combined with a digital audio processor, dynamic range audio increases to 110dB to deliver stereo-quality for AM or FM stations. And with the EIA-250B option, the 23CC is popular as a studio-to-transmitter link for television stations.

Transmission of high-resolution images such as CAD/CAM and medical imaging is achieved with 12MHz bandwidth, which delivers 1024 x 1024 video.

Easy access is provided to all RF and electronics assemblies. Transmitter and receiver consist of weather-resistant integrated antenna/RF assemblies designed for outdoor use. Rackmountable indoor baseband processing units contain power supply and baseband circuits. Interconnection between indoor and outdoor units is by coax cable and power cable—no waveguide is necessary.

Options

- EIA-250B
- Up to 3 plug-in audio subcarriers
- 12MHz bandwidth for 1024 x 1024 line high resolution video
- Digital data capability to 10M byte
- RF multiplexing of up to 4 duplex video or digital systems through a single antenna

M/A-COM MAC, INC.**Subcarrier Modulator/Demodulator****PAC-10/PAC-12 Program Audio Channel System**

- "Outstanding" head room and THD
- "Slim-line" — four channels for one rack unit of space
- Plug-in circuit card expansion
- Carrier alarm equipped with dual interface form-C contacts
- Frequencies
- Domestic — 4.83, 5.2, 5.8, 6.2, 6.8, 7.5, and 8.3MHz
- International — 7.020, 7.5, 8.065, 8.3, and 8.59MHz
- Front accessible

The PAC-10 Subcarrier Modulator and PAC-12 Subcarrier Demodulator provide a cost effective means of transmitting and receiving high quality program audio information over conventional microwave relay equipment.

The "outstanding" headroom of the PAC-10/PAC-12 system allows the user to handle those "hot" program sources available in today's competitive environment. This extended headroom keeps the total harmonic distortion at an imperceptible level.

The PAC-10/PAC-12 system conforms to the proposed RS-250C differential phase and gain standards for individual left and right stereo transmission. For those applications requiring composite multi-channel sound transmission, request M/A-COM's Bulletin MAC-MCS.

The "slim-line" PAC-10/PAC-12 system can accommodate up to four PAC-10 subcarrier modulators or PAC-12 subcarrier demodulators in a single rack space. This, along with the optional "slim-line" HSB-10/HSB-12 Hot Standby Switch, provides efficient use of precious rack space.

The PAC-10/PAC-12 program audio channel system provides the ability to insert audio subcarriers above the video channel in conventional microwave relay systems. The efficient use of this unused spectrum gives the system's engineer a solution for those troublesome "house-keeping" chores. The ability to transmit and receive various program audio sources, alarm reporting, status monitoring, and remote control provide an effective means of controlling costs while maintaining performance.

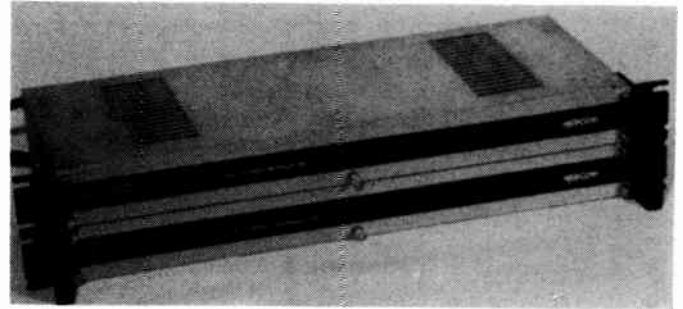
The System operates on its own internal 115VAC power supply. Optional power sources are 220VAC or DC power supply. A barrier strip is provided in the DC format for easy connection.

The System comes equipped with a carrier alarm detector. Four red LED's on the front panel indicate which module has failed as well as providing a summary alarm to a rear mounted 9 pin "D" type connector (mating connector supplied). This alarm is configured for "fail-safe" operation and provides a form-C interface.

The PAC-10/PAC-12 removable front panel provides ready access for servicing needs.

PAC-10 Modulator Operation

The audio input is 600 ohm balanced. This input is attenuated by the deviation control. This control is accessible



PAC-10/12

on the front edge of the printed circuit card. Deviation can easily be reset in the field without expensive test equipment.

Audio input and output preamplifiers isolate the 75 μ s pre-emphasis. They also provide the necessary level to the varactor controlled VCO for proper deviation.

The ECL voltage controlled oscillator (VCO) derives its stability from a phase-locked loop frequency synthesizer. The reference oscillator is crystal controlled.

The tuned subcarrier amplifier filters the desired frequency. A subcarrier level adjust is also provided on the front edge of the printed circuit card. The output is high impedance for easy bridging on the video line.

An alarm detector samples the output level and compares it to a preset threshold. When this threshold is exceeded, an alarm LED on the front panel of the PAC-10 chassis is illuminated. There is also a saturated collector and form-C interface available on the rear panel for remote alarming.

PAC-12 Demodulator Operation

The demodulator input filter is fed composite baseband through a high impedance bridging bus on the backplane of the PAC-12 chassis. The bandpass filter is tuned to the desired subcarrier frequency. A tuned buffer amplifier increases the desired level, while also providing an additional pole to the overall bandpass characteristic.

The filtered signal is fed to a quadrature detector. The quadrature detector integrated circuit contains limiting, detection, signal level sensing, and audio preamplification. The detected audio is fed through an emitter follower to the de-emphasis network. The "raw audio" is then filtered by an active low pass filter before going to the audio output amplifier. The output amplifier is then matched to provide a 600 ohm balanced output up to +18dBm.

A DC signal proportional to the subcarrier level is supplied to an alarm comparator. This level is compared to a preset threshold. When a fault occurs, a red LED on the front panel of the PAC-12 Demodulator chassis is lit. An alarm interface connector on the rear panel provides a saturated collector or form-C contacts for remote alarming.

Options

- 220VAC or DC power supply
- HSB-10/HSB-12 hot standby

M/A-COM MAC, INC.**Transmission Equipment****PA-1202 ADA Power Amplifier**

- High output power
- Compact, solid-state "fail soft" design
- Quick, economical means of boosting signal level
- Integral isolators and harmonic filter readily permit adaptation to existing microwave communications systems
- AC or DC powered models are available as options

The PA-1202 power amplifier is a solid-state, single-stage avalanche diode amplifier (ADA) designed to amplify the output signal of the MA-12G transmitter to a nominal level of 2W in the 10.7 to 13.25GHz frequency band. It is ideally suited for systems that need to be "stretched" or to overcome splitter losses in a point to multi-point system.

It is a compact unit designed for mounting at the rear of an existing M/A-COM MA-12G transmitter. Integral isolators at the input and output ports of the amplifier and a harmonic filter preserve the integrity of the amplifier without the need for extensive modification of the existing transmitter.

The amplifier power supply is contained in a standard 19"/48.3cm rackmount for ease of installation. Three primary supply voltages are available as specified: 115VAC at 60Hz; -24VDC and -48VDC.

DS-1 Baseband Diversity Switch

- Continuous monitoring of pilot and baseband noise levels
- Flexible modular construction
- Single or dual circuit switches
- Access to standby channel output
- Local or remote manual control
- Redundant dual plug-in modules for -24VDC, -48VDC or 115/230VAC power

The DS-1 Baseband Diversity Switch has been designed to complement the baseband hot standby switch for situations where it is important to maintain the best overall signal-to-noise ratio.

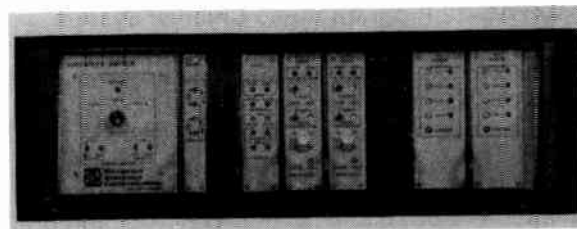
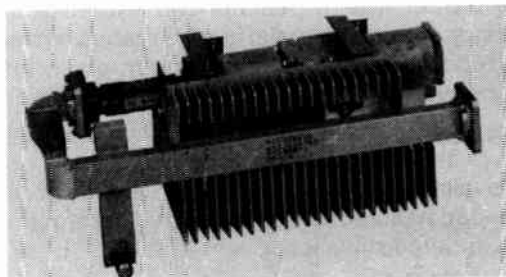
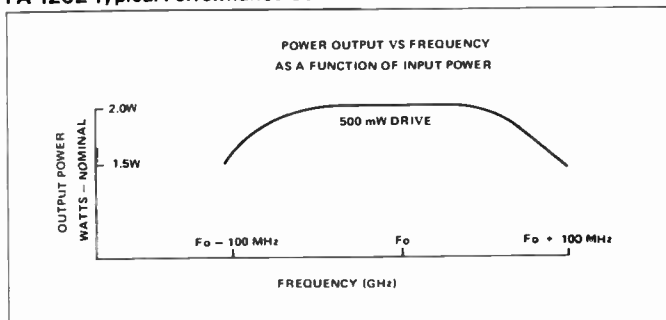
A typical application would be at the termination of a multihop system where the ability to monitor and compare the noise build-up in successive repeaters ensures the optimum choice of path. It can also be used at intermediate dropping points without interfering with through transmission at IF or baseband.

Mechanical

The switch is housed in a 3 rack unit (5 $\frac{1}{4}$ ") high 19" shelf unit. It comprises plug-in cards which slot into a printed circuit motherboard to which all baseband and power connections are made. This gives a highly reliable arrangement. The front panels carry clearly labelled LED displays to indicate switch position, relative noise level, local or remote control, etc. Extender cards are available for maintenance of the modules.

Electrical

High impedance pilot/noise monitor modules examine the condition of each of the baseband inputs and a logic

**DS-1****PA-1202****PA-1202 Typical Performance Curve**

module chooses the better channel path. Channel selection is based on the presence of a pilot at an acceptable level, and the lower noise level (with a 4dB differential in the range from close to threshold to 20dB higher). Failure of a pilot overrides the noise monitor to give rapid protection of the working circuit.

One or two plug-in switch modules can be used, for single or dual circuits, with common control but high isolation. A special bypass feature permits switch modules to be removed, without loss of traffic, for inspection or replacement.

Local and remote manual control is available and change-over contacts permit remote indications of switch position and manual override.

Dual positions are available for plug-in power modules and one or two power supply modules can be fitted. These can be any combination of -24VDC, -48VDC or 115/230VAC.

A spare module space is available for optional items to customer requirement (e.g., low pass filter, baseband amplifier, etc.).

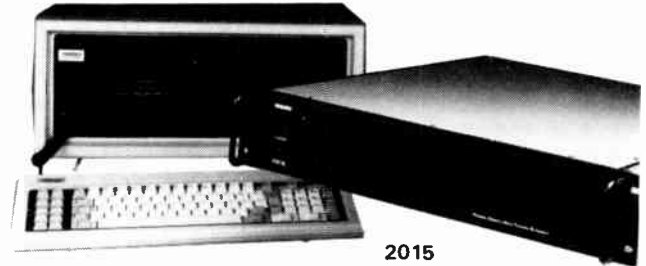
Refer to Green Section for Addresses and Telephone Numbers.

MAGNI SYSTEMS, INC.

**Test Signal Generators/
Video Graphics Cards**



1510A



2015

1510A Test Signal Generator

• 10-bit, digital test signal generator with 40 precision test signals: multiburst, NTC-7 composite, SMPTE color bars, matrix, modulated ramp, convergence, field squarewave, window, NTC-7 combination, multipulse, red field, bars/Y, modulated staircase, modulated bar, 50 IRE lum, 0 IRE lum • Field sweep signal to 6MHz • Custom test signals available • Genlocks to external or internal reference • 12 character source ID and audio tone outputs – standard with every unit • Sized to share side-by-side rack with waveform monitor • 16 signal 1510S also available • Choice of rackmount or portable configurations

1510A	Test signal generator	\$3,490.00
1510S	Same as 1510A with 16 test signals	2,490.00
Option 03	Adds black burst and drive signal outputs	600.00
Option AT	Adds audio tone (2-channel) output	350.00
Option 05	D2 output only	750.00
Option 05I	D2 input and output	1,200.00

1515 Component/Composite Test Signal Generators

• Multiple formats: Composite NTSC, RGB and Y/B-Y/R-Y, standard on all units • Betacam™, SMPTE, M-II and S-VHS formats available • Unique signals for testing distortions peculiar to component analog video: "dual timing pulse" signal for setting Y/C delay and gain, color sweep for encoder/decoder tests, crosstalk test, noise coring test, bowtie test for delay matching, linearity test, clamping test • 12-character source ID standard with every unit • D1 output, optional, provides front panel selection of four 4:2:2 component digital signals: 75% color bars, 5MHz line sweep with 2T pulse and bar, split field signal of luminance and color-difference with valid ramps, 100% color bars all of which meet RP125/EBU 3246 requirements

1515S	Component TSG (SMPTE format)	\$5,300.00
1515B	Component TSG (Betacam format)	5,300.00
1515M	Component TSG (M-II format)	5,300.00
1515U	Component TSG (SMPTE, Betacam, M-II and S-VHS formats)	6,300.00
Option 03	Adds black burst and drive signal	600.00
D1 Option	8-bit	1,500.00
D2 Option	10-bit	1,700.00

1517 Component (625/50) Test Signal Generator

• Supports RGB and the following Component Analog Video (CAV) formats: EBU (M-II™), Betacam, Y/CTCM, Y/CTDM • Sized for side-by-side rackmounting with a waveform monitor or vectorscope • 12-character source ID • Drive pulse outputs • Sync-lock • Dual Timing Pulses and timing bowtie test signals • Specific signals to ensure optimum CAV performance • Custom signals also available • Digital signal storage for reliable replication • Modular design allows easy testing and maintenance • In Average Picture Level (APL) Mode, test signals of 12.5% or 87.5% APL are provided by inserting 0% or 100% luminance level on three out of every four lines • Each instrument provides three signal sources, with each available on two isolated BNC connectors • Adaptor cables for connection to a Betacam or M-II 12-pin connector are available • D1 output, optional, provides front panel selection of four 4:2:2 component digital signals: 95% color bars, 5MHz line sweep with 2T pulse and bar, split field signal of luminance and color difference with valid ramps, plus 100% color bars, all which met RP125/EBU 3246 requirements

1517	Component (625/50)	\$6,930.00
Option 02	Drive signals output	350.00
Option 10	Single wide cabinet with handle	65.00
Option 30	Rackmount (for two units)	180.00
D1 Option	8-bit	1,650.00
D2 Option	10-bit	1,870.00

2015/2015PL Programmable Test Signal Generators

• Broad library of test signals in many formats including: Analog: NTSC, PAL, SMAC, CAV, HDTV, and film-to-tape – Digital: Composite and 4:2:2 component • Capability of generating signals from 525/60 (NTSC) to 1125/60 (HDTV) and beyond • Custom signal capability • 10-bit digitizing yielding 30MHz flat analog bandwidth • Utilizes IBM™ (or compatible) personal computer as controller • Software selectable clocks • Up to 3 channels are available, to be used independently or for 3-channel CAV signals

2015	Single channel	\$ 9,950.00
2015	Three channel	14,950.00
2015PL	3-channel 2015 with digital encoder flat to 10MHz for PAL output with 25Hz offset subcarrier	17,450.00
Optional	Non-volatile memory (single channel)	550.00
Optional	Non-volatile memory (three channel)	1,450.00

2021/2021PL Programmable Test Signal Generators

• 3-channel unit which may be configured with up to 4 test signal sets available • NTSC, PAL, SECAM, Component Analog Video (CAV) Signals for all current standards (525 and 625 line formats), 4:2:2 Component Digital, HDTV, and more signals available • Signal sets directly selectable by front panel switch • Non-volatile memory, standard, allows portability • Can be used side-by-side with a personal computer for repeated routines

2021	NTSC	\$ 16,400.00
2021PL	PAL	18,900.00

4000 Series Video Graphics Systems

• Broadcast quality video direct from PC graphics • Available for IBM or compatible PCs and the Amiga™ 2000 • Controlled edges and timing meet broadcast standards • NTSC and PAL versions offered • Full genlock with correct color framing • Software selectable bandwidths • Black burst reference output • Video input for internal graphics keying • External key input • Software controlled fades and keying • Next frame control output • Supports locked or unlocked subcarriers from VCRs • Optional broadcast mode display enhancement

In addition to the basic 4000 Series capabilities, the 4004 (NTSC) and 4005 (PAL) Video Graphics Systems provide these features:

	• Rear panel control. GPI for timecode • Low cost software available
	• 4096 colors • Key on colored backgrounds • Locks Amiga RGB to video rate along with encoded output
4004	(NTSC) for Amiga PC \$ 1,295.00
4005	(PAL) for Amiga PC 1,425.00
4030	(NTSC) for IBM PC 3,750.00
4031	(PAL) for IBM PC 4,345.00

MAGNI SYSTEMS, INC.

*Waveform Monitors/Vectorscopes/
Transcoders*

500 Series Waveform Monitors and Vectorscopes

The 500 Series offers the flexibility to accurately monitor component analog signals as well as composite video. The WFM560 Waveform Monitor provides 6 inputs, enabling you to run two complete channel sets in component format, or to tailor a combination of the two standards for your particular requirements. Switching between formats (SMPTE, Betacam, M-II) and displays (Alternate, Parade, A-B) is accomplished from the front panel, as is front panel memory storage of up to 18 switch position settings for later recall. Front panel status is recalled and restored in the event of a power down and repowering.

Basic component monitoring is available on the WFM530, with three inputs which can be dedicated to a single component train. Supporting either NTSC or PAL environments, the VS560/561 (with six inputs for composite video, color-difference and RGB signals) and VS530/531 (with three inputs for reliable composite vector display) expand their functionality through a serial interface allowing the operator to use line select and memory features through interconnection with one or more waveform monitors. Composite video and stereo audio displays are standard, as are graticule readouts in the VS560/561.

Graticule readouts, synchronously multiplexed with the video signal to ensure accuracy, provide an on-screen display of such parameters as input format, line selection and sweep speed, and are a standard feature of most 500 series instruments.

WFM530 Waveform Monitor

• Three inputs for composite monitoring • Advanced features for basic component capability • Supports NTSC, PAL, SECAM, 525/60 component and 625/50 component standards • Front panel memory • CRT readouts • Optional cursors • VITS display and line readout

WFM530 3-channel NTSC/PAL/SECAM/CAV \$2245.00

VS530/VS531 Vectorscopes

• Three inputs • Composite video and stereo audio displays • Alternate display and remote control • Supports NTSC (530) or PAL (531) standards

VS530 3-channel NTSC \$2245.00

VS531 3-channel PAL 2470.00

WFM560 Waveform Monitor/CAV Vectorscope

• Six inputs for full component and composite measurements, plus component vectorscope functions • Component format switching for SMPTE (EBU), Betacam, M-II • Supports NTSC, PAL, SECAM, 525/60 component and 625/50 component standards • Front panel memory • Time and voltage cursors, including risetime • Graticule readouts • VITS display and line readout • Built-in transcoder to feed RGB monitor

WFM560 6-channel NTSC/PAL/SECAM/CAV \$3600.00

VS560/VS561 Vectorscopes

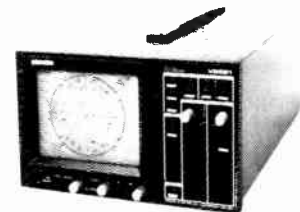
• Six inputs — composite and component vector displays • Switch selection of composite video and component standards • Stereo audio display • CRT readouts • 560 NTSC and 525/60 component standards; 561 switchable between NTSC, PAL, 525/60 and 625/50 component standards

VS560 6-channel NTSC/CAV \$3600.00

VS561 6-channel PAL/NTSC/CAV 3960.00



WFM560



VS561



125DA

1527 Combined Waveform Monitor, Vectorscope, Test Signal Generator

• Waveform and Vectorscope monitoring with a built-in test signal generator in one package • Simplified differential gain and differential phase measurements • SC-H phase measurement • May be used to measure the absolute SC-H phase of a single video signal even on "Demod Out" of type C recorder, relative SC-H phase of 2 signals, or incorrect color frame matching between 2 video signals even at points where the signals are not matched in time • A 10-bit, 4XFsc test signal generator with an expanded set of 24 test signals: Multiburst, field squarewave, SMPTE color bars, matrix modulated ramp, convergence, NTC-7 composite, calibration signal and more • Optional black burst output for master sync reference • Displays either of 2 external signal sources or built-in test signal generator. Display can be switched between output of TSG and output of device under test for easy comparison • 12-character source ID standard with every unit • Custom test signals available • Unique "auto" mode: matches test signal most often associated with each monitoring mode • Audio tone output standard • Choice of rackmount or portable configurations

1527-20 \$5750.00

1527 With SC-H phase measurement capability 7250.00

Option 03 Adds black burst and drive signal outputs 600.00

125AD/125DA CAV-Digital 4:2:2-CAV Transcoders

• Selectable RP125 8-bit or full 10-bit performance • Adjustable setup level, or setup removal selection • Crystal-locked oscillator • Switchable main/aux. inputs • Filters linear to 5MHz • All front panel functions remoteable • 525/60 and 625/50 switchable • Digital clamping for precise A-D blanking level matching • Three full bandwidth channels option • Built-in 8 signal digital test signal generator option • Optional VITS test signal • Multi-format CAV input (SMPTE, Beta, M-II, RGB) • CAV output switchable (SMPTE, Beta, M-II formats) • Locks to sync and burst • Differential video inputs • Ancillary data input • Simultaneous SMPTE CAV outputs with RGB • 2 isolated digital outputs

125AO Analog to digital \$7990.00

125DA Digital to analog 4995.00

Option 09 Digital test signal generator 1700.00

Option 10 10 digital VITS insertion includes Option 09 . . 2700.00

MARANTZ CO., INC.

Cassette Recorders/Microphones

PMD 430 Portable Cassette Recorder/Player

• Dolby B noise reduction • dbx noise reduction • 3 head design • Bias fine adjustment • Memory rewind • 3 position tape selector (metal, CRO₂, normal) • Limiter • 3 digit tape counter • 4 way power supply: 120VAC, 4.5VDC, 3 D cells, optional rechargeable RB430 battery pack • Built-in speaker • Headphone output jack • Pitch control ± 6% • Auto shut-off • Auto replay • 3 position microphone attenuator (-0, -15, -30dB) • Illuminated VU meters • Impact resistant case • Dimensions: 2" H x 8⁷/₈" W x 6¹/₂" D • 2.4 lbs.

PMD 430\$599.95

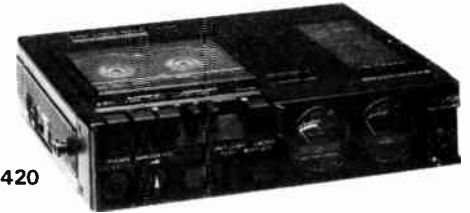


PMD 430

PMD 420 Portable Cassette Recorder/Player

• Dolby B noise reduction • Bias fine adjustment • Memory rewind • 3 position tape selector (metal, CRO₂, normal) • Limiter • 3 digit tape counter • Pitch control ± 6% • Auto shutoff • Auto replay • 3 position microphone attenuator (-0, -15, -30dB) • Illuminated VU meters • 4 way power supply: 120VAC, 4.5VDC, 3 D cells, optional rechargeable RB430 battery pack • Built-in speaker • Headphone output jack • Dimensions: 2" H x 8⁷/₈" W x 6¹/₂" D • 2.4 lbs.

PMD 420\$449.95



PMD 420

PMD 221 Deluxe Portable Cassette Recorder/Player

• 3 head design • 2 speed (1⁷/₈ and 1⁵/₁₆ ips) • Full auto shut-off • 3 way power with low battery indication • VU level indication • Switchable limiter • 3 position microphone attenuation (-0, -10, -20dB) • Built-in monitor speaker • 3 digit tape counter • Direct telephone connective jack • Telephone pickup jack • Line input and output jacks • External speaker jack • Anti-roll transport • Varispeed • 3 position tape selector (normal, CRO₂, metal) • Automatic or manual record level • Built-in electret condenser microphone • Cue and review • Volume and tone control • 3 position automatic noise cancel switch • External microphone jack • Headphone jack • Memory rewind and replay • Dimensions: 2" H x 8⁷/₈" W x 6¹/₂" D

PMD 221\$349.95

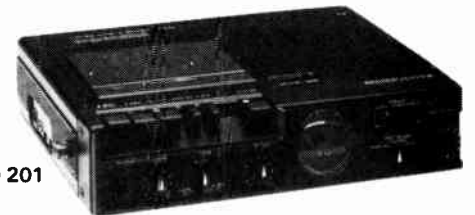


PMD 221

PMD 201 Portable Cassette Recorder/Player

• 2 head design • 2 speed (1⁷/₈ and 1⁵/₁₆ ips) • Full auto shut-off • 3 way power with low battery indication • VU level indication • Switchable limiter • 3 position microphone attenuation (-0, -10, -20dB) • Built-in monitor speaker • 3 digit tape counter • Direct telephone connective jack • Telephone pickup jack • Line input and output jacks • External speaker jack • Anti-roll transport • Varispeed • 3 position tape selector (normal, CRO₂, metal) • Automatic or manual record level • Built-in electret condenser microphone • Cue and review • Volume and tone control • 3 position automatic noise cancel switch • External microphone jack • Headphone jack • Dimensions: 2" H x 8⁷/₈" W x 6¹/₂" D

PMD 201\$279.95



PMD 201

Accessories

CLC-221 Cassette recorder carrying case (fits PMD-201, PMD-221)\$40.00
RB-430 Battery pack 75.00



Microphones

MICROPHONE	EC-1/EC-1S	EC-3/EC-3S	EC-5	EC-7	EC-9P	EC-15P	EC-33S
Pickup Pattern	Omni	Cardioid	Cardioid	Cardioid	Cardioid	Omni	Dual Cardioid
Transducer Type	Electret	Electret	Electret	Electret	Electret	Electret	Electret
Frequency Response	60Hz-13kHz	50Hz-15kHz	40Hz-15kHz	40Hz-16kHz	30Hz-17kHz	70Hz-16kHz	50Hz-15kHz
Sensitivity re: 1V/1Pa	-52dB	-52dB	-52dB	-52dB	-56dB	-52dB	-46dB
Maximum SPL	116dB	118dB	119dB	123dB	126dB	123dB	118dB
Output Impedance	2K ohm	1.5K ohm	2.2K ohm	250 ohm	250 ohm	250 ohm	1K ohm
Balanced Output	No	No	No	Yes	Yes	Yes	No
Price	EC-1 \$30.00	EC-3 \$42.00	\$58.00	\$88.00	\$140.00	\$100.00	\$80.00
"S" Denotes Stereo	EC-1S 34.00	EC-3S 48.00					

Refer to Green Section for Addresses and Telephone Numbers.

MARATHON PRODUCTS CORP.

Audio Tape Cartridges/Calibration Cartridges

300 Tape Cartridges NAB Type AA

- Virtually indestructible material for cartridge housing
- Constant tape tension permits lowest flutter and wow of any cartridge in the industry
- Uniform high frequency response
- Differential pulley provides smooth tape movement at speeds up to 30 ips
- Easily reloaded
- Positive action brake retains cue
- High quality polyester tape and heavy duty splice used in all factory prime cartridges
- All Marathon cartridges are run-in and periodically sweep recorded to verify response characteristics

300E Premium Gold Equalizer Cartridge

- Compatible with all type AA equipment
- Designed to improve "on air" sound
- Unique solution applied to relieve tension
- Increased "head wrap" provides better response
- Insignificant wow and flutter
- Ends problems of tape jamming and spillout

300S Azmi-Lock Continuous Tape Cartridge

- Phase aligned for superior fidelity
- Differential hub system for accurate tape tension
- Unique cartridge reel means no tape spillage

301 Head Cleaner

This specially designed Head Cleaner Cartridge maintains top performance of cart machines by a single 20 second pass with automatic stop. It incorporates the latest advances in silicon carbide and chromium oxide coated tapes to clean and polish tape heads.

302 Torque Test Cartridge

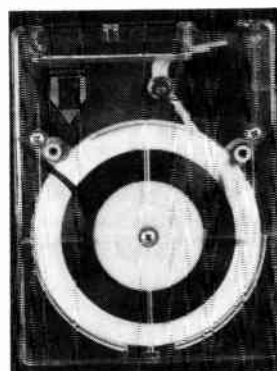
A cartridge designed to accurately measure tape pulling force of tape cart machines. By inserting into the deck in normal manner and activating start button, pulling force is read directly from a calibrated scale. Adjustments can then be made to the pressure roller to fall within the torque requirements of the machine manufacturer.

303 Strobe Speed Indicator

A test instrument to provide means of determining the tape speed within any cartridge used in the cart machine. The reading is by means of a rotating strobe disk with bars appearing stationary at correct speed. It is viewed with a separate neon lamp line cord supplied with each unit.

307 Cartridge Splicing Fixture

A fixture used for splicing cartridge tape to consistent, uniform loops. Splice block is built-in with blades, splice tabs and complete instructions.



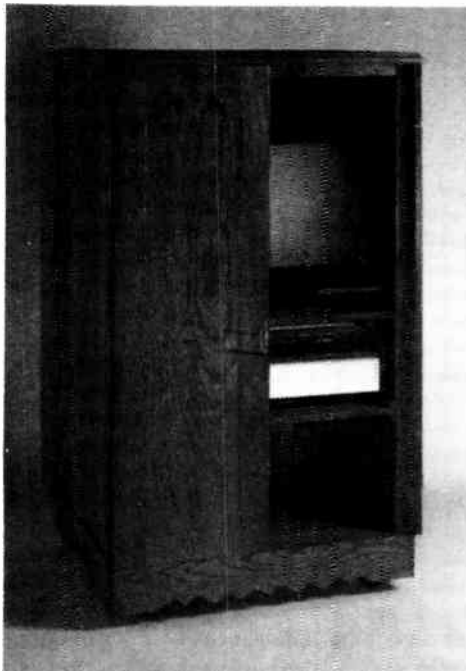
Continuous Loop Magnetic Cartridges

Length in feet	Time at 7.5 IPS	#300 NAB Type AA (Each)	#330E Equalizer Gold Premium	#300S Azmi-Lok	#600 NAB Type B
12.5	20 Sec.	\$3.15	Not	\$4.30	
19	30 Sec.	3.15	Recommended	4.30	
22	35 Sec.	3.15	Under 40 Sec.	4.30	
25	40 Sec.	3.45	\$4.60	4.60	
35.5	60 Sec.	3.45	4.60	4.60	
44	70 Sec.	3.45	4.60	4.60	
57	90 Sec.	3.75	4.90	4.90	
63	100 Sec.	3.75	4.90	4.90	
94	2:30 Min.	3.75	4.90	4.90	
132	3:30 Min.	4.10	5.20	5.20	
150	4:00 Min.	4.10	5.20	5.20	
180	4:30 Min.	4.10	5.20	5.20	
187	5:00 Min.	4.30	5.45	5.45	
287	5:30 Min.	4.30	5.45	5.45	
225	6:00 Min.	4.30	5.45	5.45	
244	6:30 Min.	4.60	5.75	5.75	
285	7:30 Min.	4.60	5.75	5.75	
319	8:30 Min.	4.60	5.75	5.75	
338	9:00 Min.	4.98	6.00	6.00	
356	9:30 Min.	4.98	6.00	6.00	
375	10:00 Min.	4.98	6.00	6.00	
394	10:30 Min.				\$6.00
469	12:00 Min.				7.50
680	16:00 Min.				8.35
Empty Cartridges		2.98	3.15	3.45	4.10
Delay Cartridges		4.30	4.30	5.20	

7 Sec. Minimum to 10 Sec.
Model 1200—Contact Factory
Type A (Round Back) Available—Contact Factory

Cartridge Machine Maintenance Accessories

301	Head cleaner cartridge	\$11.50
302	Torque test cartridge	16.00
303	Speed indicator with strobe power cord	20.00
304	Phase alignment cartridge for Azmi-Lok carts	34.50
306	"Care Pack" (head and pressure roller cleaning fluid)	set/4.50
307	Tape cartridge splicing fixture	25.00
308	Winding adaptor (specify cartridge size)	1.25
309	Pressure pads (specify type A and B or AA)	2.00
310	Re-Grip (pressure roller cleaner) 1 oz. bottle	3.00
311	Tape head cleaner, 3 oz. spray can	1.75
312	Splicing block—1/4" tape	5.75
313	Cartridge labels, white, 32 per sheet 2 3/4" x 1 1/2" 50 sheets 1600 labels	5.75
314	Cartridge labels, white or yellow—500 per roll 4" x 3/4"	roll/5.75
315	Splicing tabs—1/4" x 5/8"	roll/35.00
316	Lubricated tape 1/4" x 1800 ft. on 7" reel	11.00
317	Lubricated tape 1/4" x 7200 ft. on NAB hub	13.80
318	Equalizer kit—for field installation of marathon carts	1.25



2-Door Console



4-Door Console



VB-38-8W

MVC Series 2-Door/4-Door Video Consoles
Common Features

- Made from solid hardwoods and selected hardwood veneers
- Each set of doors is equipped with a brass plunge lock system
- Each console is built to meet your requirements, standard interior can be fitted with shelves positioned to suit your equipment exactly
- 4" heavy-duty casters
- 3-outlet power assembly with a 15' cord
- Fabric covered side speaker openings are available for video consoles with side mounted speakers
- Ample ventilation and service access is provided through the rear service opening
- The rear of each interior shelf is cut out to provide for cabling
- Complete enclosure

Video Bases — Stationary

- Designed to raise large video monitors high enough for group viewing
- Upper compartment provides waist-level storage for videocassette recorders
- Available with 8" clearance for 3/4" machines, and 4" clearance for 1/2" machines
- Lower compartment provides tapes and components storage
- Optional center shelf is available
- Optional backstops for tape storage also are available
- Features wood drawer pulls
- Antique brass pulls are available at no extra cost
- Constructed of solid hardwoods and selected hardwood veneers
- Optional extra shelf is solid wood
- 2" casters optional

Model	Description	Oak	Walnut Cherry White Oak Pickled Oak	Mahogany
2-Door Video Consoles				
MVC-50	50" Console	\$ 892.00	\$1062.00	\$1164.00
MVC-60	60" Console	951.00	1132.00	1241.00
MVC-77	77" Console	1004.00	1195.00	1310.00
4-Door Video Consoles				
MVC-60-4	60" Console	\$1021.00	\$1216.00	\$1333.00
MVC-77-4	77" Console	1074.00	1279.00	1403.00
Accessories				
MVC-S	Shelf	88.00	130.00	\$ 140.00
MVC-RS	Rollout option on any shelf			44.00

Model	38" Tall, 8" VCR	Oak	Walnut Cherry White Oak Pickled Oak	Mahogany
VB-38-8W	Wood pulls	\$561.00	\$623.00	\$684.00
VB-38-8B	Brass pulls	561.00	623.00	684.00
38" Tall, 4" VCR				
VB-38-4W	Wood pulls	\$561.00	\$623.00	\$684.00
VB-38-4B	Brass pulls	561.00	623.00	684.00
Accessories				
VB-S	Plain shelf	\$53.00	\$51.00	\$67.00
VB-TS	Shelf with tape backstops	61.00	70.00	76.00
VB-L	Set of 3 locks	35.00	35.00	39.00
VB	2" Casters	51.00	51.00	51.00

**STL-10 Aural Broadcast
Studio-Transmitter Links Intercity Relay**

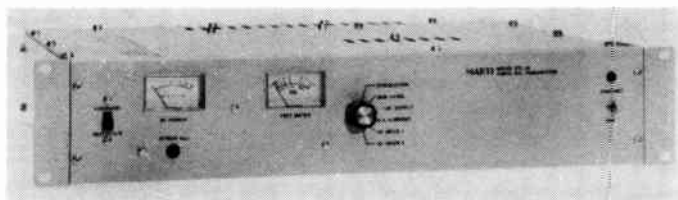
- Provides broadcast quality audio line-of-sight communications with two optional sub-carriers
- FCC approved under Parts 74 and 94
- Available for FCC narrow band channels
- Unexcelled stereo separation, noise and distortion specs
- Four user programmable pre-emphasis options
- Ga As FET LNA
- Five receiver bandwidths available for domestic and international
- Four program channels available in 500kHz bandwidth

R-10 Receiver

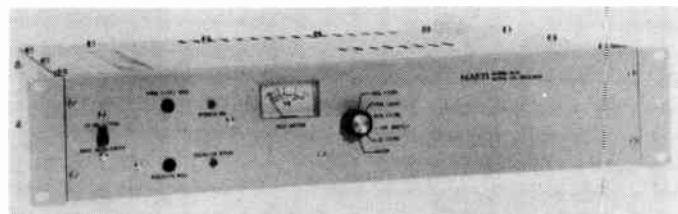
- Excellent square wave response
- User selectable audio processing provides 0, 25, 50 or 75 microsecond de-emphasis options
- Low pass filters designed to eliminate overshoot on complex audio waveforms
- Helical resonator pre-selector and double balanced mixer
- Computer designed bandpass filters for high selectivity with optimum phase and group delay
- Test meter on front panel indicates signal level, main channel audio level, subcarrier level, supply voltage, L.O. level and mixer level. Additional test points inside receiver
- Sensitivity switch on front panel provides optional 10dB RF attenuation for interference rejection
- Built-in automatic switching capability
- Accessory plug for external DC power, remote control, remote metering, etc.
- Low power consumption for operation on AC, solar cell, battery or other single polarity DC source
- Terminal strip for balanced 600 ohm audio output, BNC jacks for unbalanced audio output, Sub 1 output, Sub 2 output

STL-10 Transmitter

- Excellent square wave response
- User selectable audio processing provides 0, 25, 50 or 75 microsecond pre-emphasis options
- Low pass filters designed to eliminate overshoot on complex audio waveforms
- Calibrated RF watt meter for forward and reflected power
- Test meter on front panel indicates main channel peak modulation, subcarrier level, supply voltage, PA current, RF driver 1 and RF driver 2



STL-10 Transmitter



R-10 Receiver

- Built-in automatic switching capability by addition of optional plug-in logic board
- Accessory plug for external DC power, remote control, remote metering, etc.
- Low power consumption for operation on AC, solar cell, battery or other single polarity DC source
- Terminal strip for 600 ohm balanced audio input, BNC jacks for unbalanced audio input, Sub 1 input and Sub 2 input

Stereo STL System

- Package 51 includes:
- 2 STL-10/950 transmitters
 - 2 R-10/950 receivers
 - 1 HRC-10 transmitter combiner
 - 1 MTS-10 receiver combiner

Package 51 \$6795.00

Mono STL System

- Package 50 includes:
- 1 STL-10/950 transmitter
 - 1 R-10/950 receiver

Package 50 \$3195.00

Prices do not include antennas and transmission line.

Freq. Range (MHz.)	Application	FCC Part	B.W. Each Channel	System Specifications*			Channel Separation
				Frequency Response	Distortion*	Noise	
800-960	FM Stereo STL	74	200 KHz	±0.25 db. 20-15000 Hz.	0.25% or less	-78 db. or better	78 db.
800-960	FM Stereo STL	74	150 KHz	±0.25 db. 20-15000 Hz.	0.3% or less	-72 db. or better	72 db.
800-960	AM Stereo STL	74	100 KHz	±0.25 db. 20-15000 Hz.	0.3% or less	-72 db. or better	72 db.
928-960	Data or Background Music	94	100 KHz	±0.25 db. 20-15000 Hz.	0.3% or less	-72 db. or better	72 db.
928-960	4-Channel Sat. Pgm. Feed	94	100 KHz	±0.25 db. 20-15000 Hz.	0.3% or less	-72 db. or better	72 db.

Stereo System Differential Phase 0.5 DEG or Less

FCC ID: BEN9EZSTL-10/950

Prices and Specifications Subject to Change Without Notice.

STL-10 Domestic And Export System Specifications

Freq. Range (MHz.)	Transmitter	Maximum Power	Maximum Deviation	Receiver	Freq. Stab.	System Specifications*			Equipment Package No.
						Frequency Response	Distortion*	Noise	
800-960	STL-10/950	10 Watts	± 50 KHz.	R-10/950	.00025%	± 0.25 db. 20-15000 Hz.	0.25% or less	-78 db. or better	50, 51
400-480	STL-10/450	15 Watts	± 15 KHz	R-10/450	00025%	± 0.25 db. 20-15000 Hz	0.3% or less	-72 db. or better	55
280-340	STL-10/300	15 Watts	± 15 KHz.	R-10/300	.00025%	± 0.25 db. 20-15000 Hz.	0.3% or less	-72 db. or better	54
200-260	STL-10/215	15 Watts	± 15 KHz	R-10/215	00025%	± 0.25 db. 20-15000 Hz.	0.3% or less	-72 db. or better	53
140-180	STL-10/150	15 Watts	± 9 KHz.	R-10/150	.00025%	± 0.25 db. 20-15000 Hz.	0.3% or less	-65 db. or better	52

*System specifications shown are for 200 KHz Receiver IF bandwidth. Narrow-band channels requiring 85 KHz IF bandwidth have ± 0.25 DB response 0.3% distortion. Stereo systems available for new 200 KHz and 300 KHz bandwidths.

STL-10 TRANSMITTER SPECIFICATIONS

Frequency Range 800-960, 400-480, 280-340, 200-260 & 140-180 MHz
RF Power Output 15 Watts 140-480, 10 Watts 800-960 MHz
Carrier Frequency
Stability ± 0.0025% -20°C to +50°C
Type of Modulation Direct FM
Audio Input Balanced 600 ohms +8 dbm, Barrier strip BNC connector for unbalanced input
Subcarrier Inputs Two BNC connectors for Remote Control and Sub-carrier Inputs. 50 to 600 ohms unbalanced
Power Requirements 120/220* VAC, 50/60 Hz, 80 Watts, 13.5 V DC 2.6 Amps, 24-28V DC 2.6 Amps**
AC Power Supply Precision, electronically regulated with current limiting
Spurious Emission More than 60 db. below carrier.
Automatic Changeover Provision for Automatic Changeover
Accessory Connector 15 pin connector on rear panel provides filtered outputs for Remote Control, Automatic Changeover, Remote Power Metering and External DC Power
Metering Calibrated RF wattmeter reads forward and reflected power. Test meter reads main channel peak modulation, subcarrier level, supply voltage, P.A. current, RF Drive 1 and RF Drive 2.
Dimensions 3 1/2" High x 19" Wide x 14" Deep
Weight Net 11 lbs. Domestic packed 18 lbs.
RF Connector UG-58

FCC approved under parts 74 and 94

FCC ID: BEN9EZSTL-10/950

R-10 RECEIVER SPECIFICATIONS

Frequency Range 800-960, 400-480, 280-340, 200-260 & 140-180 MHz.
Sensitivity 4 microvolts for 50 db S/N 800-960 MHz
 14 microvolts for 60 db S/N 800-960 MHz
Input Impedance 50 ohms
Frequency Stability ± 0.0025% -10°C to +50°C
Selectivity Filter 3 DB 60 DB
 F200 200 570 KHz
 F85 85 165 KHz
Spurious Response -90 db (2)
Audio Output Balanced 600 ohms, +10 dbm., Barrier strip, BNC connectors for unbalanced output.
Subcarrier Outputs Two BNC connectors for Remote Control and/or Sub-carrier outputs. NOTE: (1).
Front Panel Controls 10 db attenuation switch, program level adjust, meter switch, squelch adjust.
Power Requirements 120/220* VAC, 50/60 Hz 10 Watts.
AC Power Supply Precision, electronically regulated with current limiting
Metering RF signal level, audio output level, subcarrier output level, +13V DC supply, L.O. level, mixer level. LED indicators for power and open squelch
Dimensions 3 1/2" High x 19" Wide x 12" Deep
Weight Net 10 lbs. Domestic packed 17 lbs.
RF Connector UG-58

NOTE (1) For subcarrier operation, R-10 receivers must be ordered with F-200 filters. F-200 filter already in domestic R-10/950 receiver

(2) R-10/950 has -70 db. spurious response

*AVAILABLE ON 220 VAC, 50 Hz UPON REQUEST

**REQUIRES APS-28/18 POWER SUPPLY

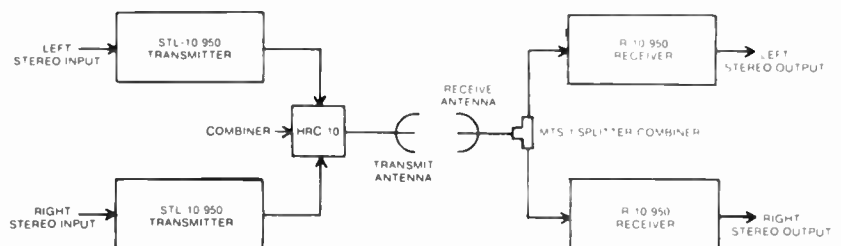
STEREO SYSTEM SPECS.

800-960 MHz.
500 KHz channel

L-R Differential Phase 20-15000 Hz 0.5 Degrees
 L-R Differential Amplitude 20-15000 Hz 0.1 DB
 Stereo Channel Crosstalk/Separation -78 DB
 Noise (Left or Right Channel) -78 DB
 Frequency Response 20-15000 Hz ± 0.25 DB
 Distortion (THD) 0.25%
 Type Emission 180 KF3E EACH
 Channel Spacing 250 KHz (± 125 KHz offset)

Stereo systems available for new 200 KHz and 300 KHz bandwidths.

MARTI STEREO STL (DUAL SYSTEM 800-960 MHz.)



STL-10 Studio-Transmitter Links Intercity Relay Packages

Frequency Band	STL Transmitters and Receivers - No Antennas	STL Monaural Systems with Antennas	STL Stereo Systems with Antennas
950 MHz.	PACKAGE 50 Mono \$3,195.00 1 STL-10/950 transmitter 1 R-10/950 receiver for STL PACKAGE 51 Stereo \$6,795.00 2 STL-10/950 transmitters 2 R-10/950 receivers for STL 1 HRC-10 transmitter combiner 1 MTS-1 receiver combiner	PACKAGE 50M \$5,024.00 1 STL-10/950 Transmitter 1 R-10/950 Receiver 2 P-9A48GN-1, 4' Dish 2 PG-1.5B Jumper Cables 2 K-1 Grounding Kits *TWO "N" FEMALE AND TWO "N" MALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED	PACKAGE 51S \$8,624.00 2 STL-10/950 Transmitters 2 R-10/950 Receivers 1 HRC-10 Transmitter Combiner 1 MTS-1 Receiver Combiner 2 P-9A48GN-1 4' Dish 2 PG-1.5B Jumper Cables 2 K-1 Grounding Kits *TWO "N" FEMALE AND TWO "N" MALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED
	150 MHz. Export Only	PACKAGE 52 \$3,195.00 1 STL-10/150 transmitter 1 R-10/150 receiver for STL	PACKAGE 52M \$3,541.00 1 STL-10/150 Transmitter 1 R-10/150 Receiver 2 YC-150 Yagi Antennas 2 PG-2B Jumper Cables 2 K-1 Grounding Kits *TWO "N" FEMALE AND TWO "N" MALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED
215 MHz. Export Only	PACKAGE 53 \$3,195.00 1 STL-10/215 transmitter 1 R-10/215 receiver for STL	PACKAGE 53M \$3,541.00 1 STL-10/215 Transmitter 1 R-10/215 Receiver 2 YC-215 Yagi Antennas 2 PG-2B Jumper Cables 2 K-1 Grounding Kits *TWO "N" FEMALE AND TWO "N" MALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED	PACKAGE 53S \$6,954.00 2 STL-10/215 Transmitters 2 R-10/215 Receivers 3 YC-215 Yagi Antennas 3 PG-2B Jumper Cables 1 MTS-1 Receiver Combiner 3 K-1 Grounding Kits *THREE "N" FEMALE AND THREE "N" MALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED
300 MHz. Export Only	PACKAGE 54 \$3,195.00 1 STL-10/300 transmitter 1 R-10/300 receiver for STL	PACKAGE 54M \$3,541.00 1 STL-10/300 Transmitter 1 R-10/300 Receiver 2 YC-300 Yagi Antennas 2 PG-2B Jumper Cables 2 K-1 Grounding Kits *TWO "N" FEMALE AND TWO "N" MALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED	PACKAGE 54S \$6,954.00 2 STL-10/300 Transmitters 2 R-10/300 Receivers 3 YC-300 Yagi Antennas 3 PG-2B Jumper Cables 1 MTS-1 Receiver Combiner 3 K-1 Grounding Kits *THREE "N" FEMALE AND THREE "N" MALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED
450 MHz. Export Only	PACKAGE 55 \$3,195.00 1 STL-10/450 transmitter 1 R-10/450 receiver for STL	PACKAGE 55M \$3,593.00 1 STL-10/450 Transmitter 1 R-10/450 Receiver 2 DB-438 Yagi Antennas 2 PG-2B Jumper Cables 2 K-1 Grounding Kits *TWO "N" FEMALE AND TWO "N" MALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED	PACKAGE 55S \$7,032.00 2 STL-10/450 Transmitters 2 R-10/450 Receivers 3 DB-438 Yagi Antennas 3 PG-2B Jumper Cables 1 MTS-1 Receiver Combiner 3 K-1 Grounding Kits *THREE "N" FEMALE AND THREE "N" MALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED

*see Marti pricing policy Page 1

Note: For customers in 950 MHz. band. If your STL path is 15 miles or less, see packages at the bottom of the inside front cover. 950 MHz stereo system prices are for 500 KHz channels. Consult factory for prices on new 200 and 300 KHz channels.

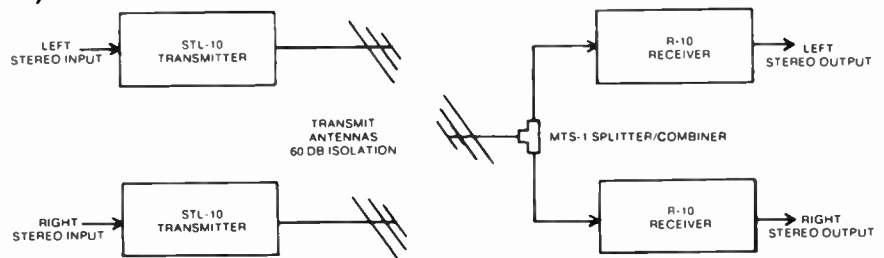
MARTI STEREO STL (DUAL SYSTEM 200-480 MHz.)

International Export

STEREO SYSTEM SPECS.

200-480 MHz.

Stereo Channel Crosstalk Separation -65 DB
 Noise (Left or Right Channel) -70 DB
 Frequency Response 20-15000 Hz ±0.25 DB
 Distortion (THD) 0.3%
 Type Emission 75 F3
 Channel Spacing 100 KHz (±50 KHz offset) minimum



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Refer to Green Section for Addresses and Telephone Numbers.

MARTI ELECTRONICS, INC.

Subcarrier Generator/Subcarrier Demodulator



\$695.00

MODEL SCG-10 SUBCARRIER GENERATOR

The Marti Model SCG-10 Subcarrier Generator is designed to operate in SCA service with an FM broadcast transmitter or, with a Model SCD-10 Subcarrier Demodulator, to form a subcarrier link on a microwave (STL) system. The SCG-10 has several options available which allow it to perform a wide range of functions in broadcasting and communications. Audio processing options include selectable pre-emphasis of zero, 75, 150 or 225 microseconds. Low pass audio filters of 3 KHz, 5 KHz or 7.5 KHz are available. For subcarrier link systems using the SCD-10 demodulator, a compander encode board plugs into the generator and a decode board into the demodulator to adapt the system to audio companding.

The SCG-10 employs an illuminated panel meter to aid in adjusting modulation and subcarrier output level.

MODEL SCG-10 SUBCARRIER GENERATOR SPECIFICATIONS

- Subcarrier Frequency Specify 26 KHz, 39 KHz, 41 KHz, 67 KHz, 92 KHz. Frequency test jack on front panel.
- Frequency Stability $\pm 0.18\% -10^{\circ}\text{C}$ to $+50^{\circ}\text{C}$.
- Subcarrier Purity Less than 0.5% THD.
- Modulation Direct FM
- FM Deviation Factory set for $\pm 7.5\%$ of subcarrier frequency.
- Modulator Distortion Less than 1% THD
- Audio Processing **Pre-Emphasis:** Zero, 75 us, 150 us or 225 us, user selectable
Low Pass Filters: Audio cut-off frequencies of 3 KHz, 5 KHz, or 7.5 KHz are specified with original equipment order. The lowest possible cut-off frequency is recommended. Maximum cut-off is 12% of subcarrier frequency.
Companding: An optional compander encode board is available for installation in the SCG-10 when used in a subcarrier link having a SCD-10 subcarrier demodulator with a compander decode board. Companding will reduce noise and can mask certain types of main to sub crosstalk.
- Frequency Response ± 1.5 DB 25 Hz to 95% of low pass filter cut-off frequency
- FM Noise More than 65 DB below 5 KHz deviation (measured through SCD-10 demodulator directly connected to SCG-10 output, 225 us, without companding). With companding -72 DB.
- Audio Input Impedance 600 ohms balanced (screw terminals or "D" connector pins)
- Audio Input Level Front panel adjustment -10 DBM to +8 DBM for 100% modulation.
- Muting Level Adjustable from 0 DB to 40 DB below 100% modulation (soft mute)
- Muted Carrier Level 60 DB below rated Max. output level.
- Subcarrier Output Front panel adjustment 0.3 V. to 7 V. P-P into 600 ohm load BNC connector.
- Remote Control Subcarrier can be remotely controlled by grounding a pin of accessory "D" connector.
- Metering Illuminated panel meter indicates peak modulation or subcarrier output level.
- Controls Meter switch, subcarrier control switch, modulation level, automatic mute delay, mute level, subcarrier output level, subcarrier frequency. Subcarrier frequency test jack also located on front panel
- Connectors BNC Jack for subcarrier output, 9 pin "D" connector for balanced audio input, remote control, FSK/subaudible input, ground, +18-20V. input, +13.5V input. AC receptacle. No. 6-32 screw terminals for balanced 600 ohm audio input.
- RF Protection All input/output circuits filtered for RF. Totally shielded and bonded aluminum enclosure.
- Operating Temp. Range -10°C to $+50^{\circ}\text{C}$.
- Power Requirements 120/220* VAC 50/60 Hz 10 watts, or 12-14 V. DC at 50 MA. or 24-28 V. DC at 70 MA.**
- Dimensions 19" wide x 12" deep x 1 1/4" high
- Weight 4.5 lbs. net, domestic packed 9 lbs.

* 220 V. AC operation to be specified on original order
** Requires APS-28/18 Power Supply



\$695.00

MODEL SCD-10 SUBCARRIER DEMODULATOR

The Model SCD-10 Subcarrier Demodulator is designed for use with Model SCG-10 Subcarrier Generator to provide a high quality subcarrier channel on a microwave link (STL) or FM station. The SCD-10 may be specified for operation on a standard subcarrier frequency used in FM broadcasting. The subcarrier input to this demodulator should be from a high quality FM receiver having adequate IF bandwidth with group delay characteristics sufficient for subcarrier work. The Marti R-10 Receiver with 200 KHz phase linear IF filter is excellent in this respect.

The SCD-10 has several options available, allowing it to perform a wide range of functions in broadcasting and communications. Audio processing options include selectable de-emphasis of zero, 75, 150 or 225 microseconds. Low pass audio filters of 3 KHz, 5 KHz or 7.5 KHz are available. For subcarrier link systems using the SCG-10 generator, a compander decode board plugs into the demodulator and an encode board into the generator to adapt the system to audio companding.

The SCD-10 employs an illuminated panel meter to aid in adjusting subcarrier input level and audio output.

MODEL SCD-10 SUBCARRIER DEMODULATOR SPECIFICATIONS

- Subcarrier Frequency Specify 26 KHz, 39 KHz, 41 KHz, 67 KHz, or 92 KHz
- Subcarrier Input 0.1 to 1 V. RMS, 10K ohms impedance, BNC connector. (Panel adjustment)
- Demodulator Distortion Phase locked FM detector has less than 0.6% THD
- Audio Processing **De-Emphasis:** Zero, 75 us, 150 us, or 225 us, user selectable.
Low Pass Filters: Audio cut-off frequencies of 3 KHz, 5 KHz, or 7.5 KHz are specified with original equipment order. The lowest possible cut-off frequency is recommended. Maximum cut-off is 12% of subcarrier frequency.
Companding: An optional compander decode board is available for installation in the SCD-10 when used in a subcarrier link having a SCG-10 subcarrier generator with a compander encode board. Companding will reduce noise and can mask certain types of main to sub crosstalk.
- Frequency Response ± 1.5 DB 25 Hz to 95% of low pass filter cut-off frequency.
- Signal/Noise Ratio More than 65 DB below 5 KHz deviation (using SCG-10 as signal source directly connected to SCD-10 input, 225 us)
- Audio Output Level +10 DBM maximum output level balanced and isolated into 600 ohms. Front panel adjustment range -60 DBM to +10 DBM
- Subcarrier Squelch Front panel adjustable squelch relay will squelch audio output over subcarrier level range of 0.1 to 2.0 volt input. Normally open relay contacts available at accessory "D" connector for external functions. LED on front panel indicates "squelch open" condition.
- Metering Illuminated panel meter indicates subcarrier input level or audio output level.
- Controls Meter switch, squelch adjust/squelch open (LED panel indicator), subcarrier input level adjust, audio output level adjust
- Connectors BNC jack for subcarrier input, 9 pin "D" connector for balanced audio output, squelch relay contacts. FSK output, ground, +18-20 V. input, +13.5 V. input. AC receptacle. No. 6-32 screw terminals for balanced 600 ohm output
- RF Protection All input/output circuits filtered for RF. Totally shielded and bonded aluminum enclosure
- Operating Temp. Range -10°C to $+50^{\circ}\text{C}$.
- Power Requirements 120/220* V. AC 50/60 Hz 10 watts, or 12-14 V. DC at 50 MA. or 24-28 V. DC at 70 MA.**
- Dimensions 19" wide by 12" deep x 1 1/4" high
- Weight 4.5 lbs. net, domestic packed 9 lbs

* 220V. AC operation to be specified on original order
** Requires APS-28/18 power supply

SYSTEM SPECIFICATIONS

10% Injection 225 us. Pre-Emphasis (NO COMPANDING)	Back to Back KHz Bandwidth			STL-10 Link KHz Bandwidth		
	3	5	7.5	3	5	7.5
NOISE DB	66	65	63	63	60	57
DISTORTION %	1.2	1.2	1.35	1.4	1.5	1.6
CROSSTALK MAIN-SUB DB	--	--	--	55	52	49

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Prices and Specifications Subject to Change Without Notice.

B-827

MARTI ELECTRONICS, INC.

Studio-Transmitter Links

**ATS-15D
TRANSMITTER SWITCHER**



\$750

Application	Provides switching between two Marti transmitters at power levels up to 500 watts 5db loss or less with type N female connectors
Switching Activation	DC samples of relative power output are provided from each transmitter to the switcher through adjustable pots to a voltage comparator. Switching can be set to occur at any RF power level
Operation	Unit can be operated from front panel and terminals are provided on the back for remote operation
Standby Power	The ATS-15D can be operated with the Marti UPS-12 uninterruptible power supply, so when AC power is lost DC power is supplied through the ATS-15D to both transmitters.
Power Requirements	The ATS-15D operates off 12 V.DC furnished by both transmitters.
Dimensions	1 3/4" High x 19" Wide x 13" Deep
Weight	3 Pounds 9 Oz.

ATS-15D TRANSMITTER SWITCHER SPECIFICATIONS

**ASO-200D
RECEIVER SWITCHER**



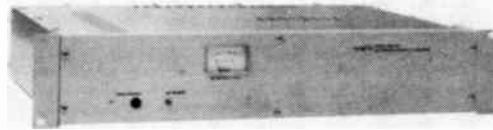
\$650

Application	Provides Audio and SCA switching between two receivers on the same frequency
Switching Activation	The ASO-200D switches all functions to the backup receiver upon loss of signal to the main receiver. The switching threshold is determined by the setting of the squelch relay in each receiver
Remote Operation	The standby receiver may be selected by using a latching relay tied to the station's remote control. A positive voltage output indicates which receiver is in use and the remote signal level sample is also available to be metered by the station's remote control
Local Operation	Two leds are provided on the front panel to indicate which receiver is in use. The standby receiver can be selected by pushing the test switch
Fail-safe	The ASO-200D provides two separate fail-safe outputs both normally closed, and open contacts are available
Power Requirements	12 volts D.C. - supplied by each receiver
Dimensions	1 3/4" High x 19" Wide x 13" Deep
Weight	3 Pounds

ASO-200D RECEIVER SWITCHER SPECIFICATIONS

MW-500 SPECIFICATIONS

Frequency Range	944-952 MHz
Gain (Power)	60 DB Max (Adjustable 35-60 DB)
Output (Power)	+27 DBM (500 MW) maximum operating power +30 DBM (1 watt) maximum output
Selectivity	MW-500 has three section input and output bandpass filters 3 DB bandwidth ± 3 MHz NOTE One or more external bandpass cavity resonators may be required for additional selectivity
Emission and Bandwidth	Meets requirements of Part 74.535 (g)
Stability	Input-output antenna and coaxial line attenuation must exceed amplifier gain for stability
Metering	Accurate RF output power meter is provided on front panel (0-2 watts) AC supply and battery voltage can be measured at accessory connector on rear of unit.
Connectors	Input and output RF connectors are UG-58 (Type N Female) Accessory connector is subminiature D 15 pin male
Power Supply	Internal AC Supply - Precision regulated 13.6V supply with current limiting and thermal shut-down AC supply also charges internal battery at constant voltage 115V 60 Hz standard 220 V 50 Hz available on request Internal Battery Supply - A 12 volt 6.5 amp-hour sealed lead-acid maintenance free battery is included in the MW-500 for back-up power. This battery is charged by the AC supply and will power the unit up to 36 hours
Temp. Range	-20°C to +50°C operating
Dimensions	3 1/2" High x 19" Wide x 12" Deep
Weight	Net 12 lbs with battery Domestic packed 17 lbs



\$2495

**MW-500
AURAL
BROADCAST
MICROWAVE
BOOSTER**

The Model MW-500 MICROWAVE BOOSTER is designed to receive, amplify and redirect an aural STL signal over or around an obstructing object in the direct path between the transmitting and receiving antennas. Since the booster uses the same frequency for re-transmitting, scarce spectrum is conserved. The booster will provide a maximum of 500 milliwatts output

power. It will also provide 60 DB power gain at any point it is inserted in the microwave path. Where applicable, the MW-500 can provide considerable cost savings over other types of repeaters. The MW-500 is available with internal battery backup and charger capable of operating the unit for 36 hours without commercial power.



FCC ID: BEN9EZMW-500

**UPS-12 UNINTERRUPTIBLE
POWER SYSTEM
\$425 LESS BATTERY**



The Marti model UPS-12 is a battery backup power system designed for use with Marti equipment capable of both AC and 12V DC operation. The system will instantly and automatically switch to a battery power source when the primary AC power fails. The UPS-12 is suited for backup power for Marti STL-10/R-10 Radio Link Systems as well as Marti RPT-15/CR-10 automatic relay stations and TSL-15 data links.

The DC power source is a sealed 12 Volt GEL Electrolyte maintenance free Lead-Acid battery

of sufficient amp-hour capacity to power the equipment for the required length of time. Batteries of 24, 38 and 60 amp-hours are available. The user may choose to purchase the battery locally to avoid shipping charges.

The Model UPS-12 is equipped with a precision constant voltage "Taper" battery charger to maintain the battery in a charged condition. The charger is set at 13.6 volts and is current limited to three amps (for battery discharged to 10 volts). Fully charged batteries are trickle-charged by the constant-voltage charger.

REFER TO PRICE LIST FOR BATTERY OPTIONS & PRICES.

UPS-12 SPECIFICATIONS

Type of System	DC-DC (Loss of primary AC power causes relay to select 12 Volt battery power)
Panel Indicators	Led indication of AC or DC operation
OC Power Source	Sealed maintenance free GEL Electrolyte Lead-Acid battery rated at 12 Volts 24 Amp hours. The battery is external and priced separately. Optional batteries of 38 and 60 A/H available
AC Power Source	120 V 50-60 Hz (220 V AC Available on special order) AC source must be same as radio equipment source
Battery Charger	Precision constant voltage charging with current limiting and trickle charge 3 amp current limit
OC Polarity Protection	Circuit breaker, fuse and diode reduce reverse polarity damage
Connectors	Screw terminals for DC, 3-Pin, receptacle for AC
Panel Size	Standard 19" x 3"
UPS-12 Weight	3 1/2 Lbs
Battery Weight	19.5 Lbs shipped separately. Approved for shipment as "Dry Cell" by DOT and IATA

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MARTI ELECTRONICS, INC.

Studio-Transmitter Links

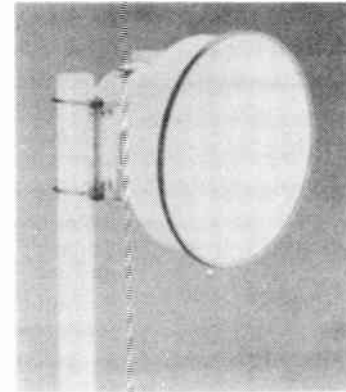
STL-23 Digital Aural Broadcast Studio-Transmitter Links

23 GHz DIGITAL STL

- * Simplex (STL) and duplex (STL/TSL) links available
- * FCC type accepted under parts 21 and 94
- * Compatible with digital PCM video format processors (not included)
- * Typical stereo audio quality delivered to broadcast transmitter using 16 bit processor.

RESPONSE: 10-20,000 Hz ± 0.5 DB
 NOISE: - 90 DB
 DISTORTION: Less than .005%
 STEREO SEPARATION: More than 80 DB

The Marti STL-23 digital studio-transmitter link delivers all the remarkable performance of today's compact disc digital audio to the input of the broadcast transmitter. With a dynamic range of better than 90 DB and stereo separation of more than 80 DB, the STL-23 emphasizes the obsolescence of the old "composite" STL concept. The STL-23 transmitter, receiver and subcarrier boards are located inside the weatherproof antenna assembly for cost saving and ease of installation. When comparing the cost of the STL-23 to 950 MHz "composite" STL's, the cost of antennas, coaxial cable and connectors, subcarriers and telemetry return link with antennas must be charged to the real costs of 950 MHz STL's. Such comparison will show the STL-23 to be cost effective. Microwave path length at 23GHz is limited by atmospheric absorption, with rainfall having the greatest effect. Contact Marti for data for use in calculation of 23GHz links in your area.



STL-23

SPECIFICATIONS

General

Frequency Band 21.2 to 23.6 GHz
 FM Deviation ± 7 MHz, designator 33800F9
 Channel Capacity 1 video plus 2 full duplex audio/data/control subcarriers
 Antenna Shrouded 24 inch, 38 DBI, V or H polarization, 2° beamwidth, + 57 DBM ERP, with Radome
 Alarms Loss of carrier alarm 10-15 VDC/1K ohms

Transmitter

Power Output65 mw typical (+ 18 DBM)
 Frequency Stability ± .02% - 30°C to 55°C
 Spurious Output Meets FCC part 94 requirements
 Video Input 1 Vp-p 75 ohms
 Subcarrier Input 0 DBM 600 ohm bal. screw terminals

Receiver

Noise Figure 22 DB nominal
 Threshold -77 DB
 Video Output 1 Vp-p 75 ohms
 Subcarrier Output 0 DBM 600 ohms bal. screw terminals

Power

Requirements 30 watts, 120 VAC into class 2 UL 24 V. transformer.
 240 VAC and DC options available - contact factory.

Weight

..... 25 lbs.

Mounting

Options 3.5 inch O.D. vertical pipe
 (contact factory) Hot standby switching, optical alignment tool, horizontal pipe mounting kit, 4.5 inch O.D. pipe mtg. hardware kit, 48" antenna

**PACKAGE A
 BASIC VIDEO**

1 Transmitter with 24" antenna
 1 Receiver with 24" antenna **\$6430.00**

**PACKAGE B
 STEREO STL WITH SUBCARRIER**

1 Transmitter with 24" antenna
 1 Receiver with 24" antenna
 1 Subcarrier channel (studio to transmitter, 12 KHz BW) **\$7645.00**

**PACKAGE C
 STEREO STL WITH BIDIRECTIONAL SUBCARRIER**

2 Transmitter/Receiver with 24" antenna
 1 Subcarrier channel (studio to transmitter, 12 KHz BW)
 1 Subcarrier channel (transmitter to studio, 12 KHz BW) **\$9285.00**

NOTE: Equipment packages include Radome cover for 24" shrouded antennas, mounting hardware for 3/8" or 4/8" inch O.D. 24 V.A.C power transformers, installation manual. No RF coaxial cable or waveguide is required on 24" antennas. Digital audio processors not included in above prices. 48" antennas are available - add \$2800 to package prices.

FCC LICENSING License application is made on form 402 under FCC part 94 "Private operational-Fixed microwave service." Part 94 frequencies are not coordinated by SBE. For frequency search and filing application, contact FCC Approved Data Base Service such as Spectrum Planning (214) 680-1000, Moffet, Larson and Johnson (703) 841-0500, Com Search (703) 620-6300, MFG in USA by Racon. FCC ID B2N9CL10050

TC-8/ARC-16 Remote Control Systems



The AMD model TC-8 (8 Channel) and ARC-16 (16 Channel) Remote Control systems are simple to operate, reliable, and cost effective. They are available for operation with Telco, STL, SCA or TSL with interface options for antenna monitor, computer or DTMF telephone. Status alarms may be programmed to display at the transmitter and studio and, optionally, call a programmed series of numbers with a voice message. Dial-up with speech may be added to either the transmitter or studio end, as well as the computer interface.

FEATURES

- * Metering Channels
- * Status Inputs
- * Raise & Lower Outputs
- * Delayed Failsafe Output
- * One Person Calibration
- * Non-Volatile Memory
- * Large Dot-Matrix Display
- * Optional Computer Interface
- * Radio or Wire Link
- * Space Saving 1 1/4" Rack Units

	TC-8	ARC-10
8	8	16
8	8	16
8	8	16
Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes	Yes

TC-8	AMD, Inc. 8 Channel Remote Control (2 Units)	\$2,495.00
ARC-16	AMD, Inc. 16 Channel Remote Control (2 Units)	\$3,495.00
ARC-16	16 Channel single unit configuration with telco/speech unit for control from any telephone	\$2,495.00
IP-8	Relay interface panel (10 Amp) 8 each status, raise, lower + failsafe. Two units required for ARC-16	\$495.00
CI-8	Computer interface for IBM-PC	\$495.00
TSU	Telephone/Speech unit permits control from telephone using DTMF. Also call-out alarms.	\$595.00
SSI	Studio status indicator.	\$150.00
SID	Studio I/O unit	\$495.00
AMI	Antenna monitor interface (6 towers on 2 channels)	\$350.00
SCA-1	Subcarrier receiver-Specify FM frequency and 67 or 92 KHz.	\$168.00

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Refer to Green Section for Addresses and Telephone Numbers.

ID Code or Name	Description of Item	Price
STL-10 Transmitter	STL-10 transmitter for all mono and stereo STL systems in 150, 215, 300, 450 or 950 bands.	\$1,597.50
STL-30 Transmitter	Export Mono STL transmitter 45 watts-150 MHz, 40 watts-215 MHz, 35 watts-300 MHz, 30 watts-450 MHz band.	\$1,995.00
R-10 Receiver	STL receiver in 150, 215, 300, 450 or 950 bands, low pass filter, two IF bandwidths, low power consumption, test meter.	\$1,597.50
MW-500 Booster	On-frequency microwave booster for re-transmitting STL signal around obstructions. 500 mw output power. Comes with internal battery.	\$2,495.00
STL-10/950 System	Domestic STL Mono System in 800-960 MHz band with one STL-10 transmitter and one R-10 receiver.	\$3,195.00
STL-10/950 System	Domestic STL Stereo System in 800-960 MHz band with two transmitters and receivers, combiners, etc.	\$6,795.00
STL-10/150 System	Export STL Mono System in 140-180 MHz band with one STL-10 transmitter and one R-10 receiver.	\$3,195.00
STL-10/215 System	Export STL Mono System in 200-260 MHz band with one STL-10 transmitter and one R-10 receiver.	\$3,195.00
STL-10/300 System	Export STL Mono System in 280-340 MHz band with one STL-10 transmitter and one R/10 receiver.	\$3,195.00
STL-10/450 System	Export STL Mono System in 400-480 MHz band with one STL-10 transmitter and one R-10 receiver.	\$3,195.00
STL-30/150 System	Export STL Mono System, 140-180 MHz, one 45 watt STL-30/150 transmitter and one R/10 receiver.	\$3,592.50
STL-30/215 System	Export STL Mono System, 200-260 MHz, one 40 watt STL-30/215 transmitter and one R/10 receiver.	\$3,592.50
STL-30/300 System	Export STL Mono System, 280-340 MHz, one 35 watt STL-30/300 transmitter and one R/10 receiver.	\$3,592.50
STL-30/450 System	Export STL Mono System, 400-480 MHz, one 30 watt STL-30/450 transmitter and one R/10 receiver.	\$3,592.50

STL Accessories**REMOTE CONTROL**

ID Code or Name	Description of Item	Price
TC-8	AMD Remote Control, 8 each metering, raise, lower, status.	\$2,495.00
ARC-16	AMD Remote Control, 16 each metering, raise, lower, status.	\$3,495.00
IP-8	Transmitter relay interface panel (two required for ARC-16)	\$495.00
CI-8	Optional computer interface	\$495.00
TSU	Telephone Speech Unit	\$595.00
ST4A	SCA receiver for metering	\$168.00
580-016	AC cord for STL-10 transmitters and R-10 receivers	\$5.50
APS-28/18	Power supply for operation of STL-10 transmitter and R-10 receiver from 24 VDC	\$65.00
ASO-200D	Unit for switching between two STL receivers. User needs to specify frequencies.	\$650.50
ATS-15D	Automatic transmitter switcher: (2) PG-1.5 cables with UG-58 "N" female connectors.	\$750.00
BPF-39/67	39/67 KHz subcarrier band pass filter/amplifier for R-10 receiver. Filters and amplifiers sub signal at STL relay station.	\$249.00
WP-498-1	Wacom single section, selective cavity resonator, 950 MHz	\$215.00
Crystals	Hi-accuracy STL-10 and R-10 crystals	\$17.95
WP430-1	Selective Cavity Resonator, single-section for operation in the 148-174 MHz band.	\$180.00
WP470-1	Selective Cavity Resonator, single-section for operation in the 406-512 MHz band	\$150.00
WP-688	Duplexer, 6-cavity, Combines transmitter and receiver to common antenna & line; 3.6 MHz separation	\$663.00
TBC-800-2	Transmitter combiner with cables to combine output of 2-STL-10/950 transmitters to antenna. Nominal isolation 70 DB.	\$1,198.00

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STL Accessories		
ID Code or Name	Description of Item	Price
K-1	Grounding and weatherproofing kit	\$8.00
RMC-10	Remote control for STL-10 transmitters	\$315.00
SCG-10	Subcarrier Generator tuned to 26, 39, 41, 67 or 92 KHz. Rack mount. 120 VAC (220 VAC onrequest)	\$695.00
SCD-10	Subcarrier demodulator tuned to 26, 39, 41, 67 or 92 KHz. Rack mount. 120 VAC (220 VAC on request)	\$695.00
800-263	Optional Comander board for factory or field installation in SCG-10 and SCD-10. Two (2) plug-in PC boards.	\$360.00
UPS-12	Uninterruptible Power System for Marti STL-10, R-10 ARS-15 relay and TSL-15 data link (less LCR-12V-24P battery)	\$425.00
LCR-12V-24P	Battery, Sealed Gel Lead-acid, 12 volt. 24 amp.-hours for use with Marti uninterruptible power supply UPS-12	\$122.00
040-007	Spare battery for MW-500	\$60.00

STL Antennas		
TYPE N FEMALE CONNECTORS		
ID Code or Name	Description of Item	Price
DB-438	Yagi antenna, 6 element, 10.0 db gain, 450-470 MHz. N Female connector.	\$176.00
P-9A48GN-1	Mark Product parabolic antenna, 4' multi-element dish, 18.9 db gain, non-pressurized feed, 890-960 MHz	\$890.00
P-9A72GN-1	Mark Product parabolic antenna, 6' multi-element dish, 22 db gain, non-pressurized feed, 890-960 MHz	\$1,110.00
P-9A96GN-1	Mark Product parabolic antenna, 8' multi-element dish, 25 db gain, non-pressurized feed, 890-960 MHz	\$1,760.00
P-9A120GN-1	Mark Product parabolic antenna, 10' multi-element dish, 27 db gain, non-pressurized feed, 890-960 MHz	\$2,450.00
SH-872GN	Mark Products "Shorthaul" cylindrical antenna, 19 db gain, 890-960 MHz	\$690.00
YC-150	Yagi antenna, 5 element, 9.0 db gain, 140-180 MHz	\$150.00
YC-215	Yagi antenna, 5 element, 9.0 db gain, 200-260 MHz	\$150.00
YC-300	Yagi antenna, 5 element, 9.0 db gain, 280-340 MHz	\$150.00

STL Transmission Line, Cables, Connectors		
ID Code or Name	Description of Item	Price
L44N	Type "N" female connector for 1/2" foam transmission line	Contact factory
L44W	Type "N" male connector for 1/2" foam transmission line	Contact factory
L45N	Type "N" female connector for 3/8" foam transmission line	Contact factory
L45W	Type "N" male connector for 3/8" foam transmission line	Contact factory
LDF4-50	Foam transmission line, 1/2", 50 ohm, jacketed, priced per foot	Contact factory
LDF5-50	Foam transmission line, 3/8", 50 ohm, jacketed, priced per foot	Contact factory
PG-1.5B	Jumper cable, 1.5' of RG-214 with UG-21 connectors	\$16.50
PG-2A	Jumper cable, 2' of RG-8U with PL-259 & UG-21 connectors	\$15.00
PG-2B	Jumper cable, 2' of RG-8U with UG-21 connectors	\$15.00

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B-831

Telemetry Links

MARTI TSL-10 SYSTEMS FOR PART 94, 928-960 MHz

If you are serious about data/voice transmission (TSL, ICR, TRL, etc.), you should look at part 94 "Private Operational-Fixed Microwave Service" in the 928-960 MHz band. Bandwidths of 25, 50, 100 and 200 KHz are available to broadcasters for many uses except the final link of an STL. These frequencies are professionally data base coordinated interference free channels for reliable communications. Marti has been providing FCC authorized equipment for this service over the past two years. Bandwidths are licensed based upon demonstrated need; the wider channels reserved for wide band FM, high data rate, or multichannel uses. Marti multichannel systems are not time-shared, which means that data flows continuously on each channel. License application is on Form 402. Frequency coordination is by approved firms like Spectrum Planning (214) 680-1000, Moffet, Larson and Johnson (703) 841-0500, Com Search (703) 620-6300. If you have requirements not met by the following part 94 packages, contact Marti for assistance.

- | | |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PACKAGE 94-1 SINGLE CHANNEL \$3,195.00 | PACKAGE 94-4 FOUR CHANNELS \$7,365.00 |
| 1 STL-10 Transmitter | 1 STL-10 Transmitter |
| 1 R-10 Receiver | 1 R-10 Receiver |
| | 3 Subchannels |
| PACKAGE 94-2 TWO CHANNELS \$4,585.00 | Additional Receive sites \$2,292.50 |
| 1 STL-10 Transmitter | |
| 1 R-10 Receiver | |
| 1 Subchannel | |
| PACKAGE 94-3 THREE CHANNELS \$5,975.00 | Antenna systems for above packages depend upon path length, number of receive sites, etc. See prices on page 10 or contact factory for assistance. For transmitter and receiver specifications, see page 3. |
| 1 STL-10 Transmitter | |
| 1 R-10 Receiver | |
| 2 Subchannels | |



TSL-10 FEATURES (PART 94, 928-960 MHz)

- ★ Four continuous data/voice channels on single carrier.
- ★ Multiple receive sites possible.
- ★ 25 KHz, 50 KHz, 100 KHz, 200 KHz bandwidths available.
- ★ Transmitter FCC authorized for part 94 service.
FCC ID: BEN9EZSL-10/950
- ★ Battery Backup Available with Marti UPS-12.



MARTI TSL-15 AND TSL-30 SYSTEMS FOR PART 74, 450-456 MHz

The Marti TSL-15 and TSL-30 Telemetry Links provide reliable telemetry circuits for AM, FM and television stations. Expensive and unreliable Telco lines can now be replaced with cost effective Marti TSL Systems. These links are simple to install, easy to operate and maintain. Marti has assembled complete equipment packages consisting of Transmitter, Receiver, Yagi Antennas, Identifier and optional items.

- TSL-30 PACKAGE (30 WATTS)**
 RPT-30/450 Transmitter
 1 CR-10/450 Receiver
 1 Model 1300 Station Identifier
 1 700-253 Rack Mounting Kit
- PACKAGE PRICE** **\$2979.50**
- TSL-15 PACKAGE (15 WATTS)**
 1 RPT-15/450 Transmitter
 1 CR-10/450 Receiver
 1 Model 1300 Station Identifier
 1 RMH-3B Rack Shelf
- PACKAGE PRICE** **\$2294.50**

- PART 74 TSL ANTENNA PACKAGE***
 2 DB-438 Yagi Antennas
 1 PG-2A Jumper Cable
 1 PG-2B Jumper Cable
 2 K-1 Grounding Kit
- PACKAGE PRICE** **\$398.00**

SYSTEM SPECIFICATIONS

Frequency (Group P) 450.01, 450.02, 450.98, 450.99
 455.01, 455.02, 455.98, 455.99 MHz.
 FCC 74.402 (a) (7)

Modulation 10F3 (± 1.5 KHz Deviation)

Frequency Response 50 Hz - 2800 Hz ± 2.0 DB

Distortion 2% THD

Signal to Noise Ratio 45 DB

TRANSMITTER
 See specification for RPT 15/450 or RPT-30

RECEIVER
 See specification for CR 10/450 receiver.

STATION IDENTIFIER
 A model 1300 station identifier is required by FCC rules for all domestic TSL systems to identify the TSL transmitter. Call signs for the identifier are assigned by the FCC when TSL frequencies are approved.

RPT-30 FCC ID: BEN9EZRPT30-450
 RPT-15 FCC ID: BEN9EZRPT15-450

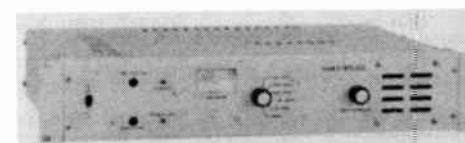
*Package prices do not include cost of two "N" female and two "N" male connectors and 1/2" transmission line.



RPT-30 TRANSMITTER

TSL-15 AND TSL-30 FEATURES (PART 74, 450-456 MHz)

- ★ Choice of Transmitter Power 15 or 30 watts Continuous Duty.
- ★ Transmitters are FCC type accepted.
- ★ Super-Selective Receiver with 90 db spurious rejection.
- ★ Test Meter built into both transmitter and receiver.
- ★ Receiver has adjustable squelch and carrier operated relay.
- ★ Built-in modulation control.
- ★ Internal AC supply in transmitter and receiver with provision for external DC operation. (UPS-12)
- ★ Optional Automatic Station Identifier
- ★ Analog or Digital Telemetry or Voice Modulation in 50 Hz-2800 Hz band.
- ★ Mic and Line Level inputs with mixing controls.
- ★ Built in 27 Hz status channel with relay contacts.



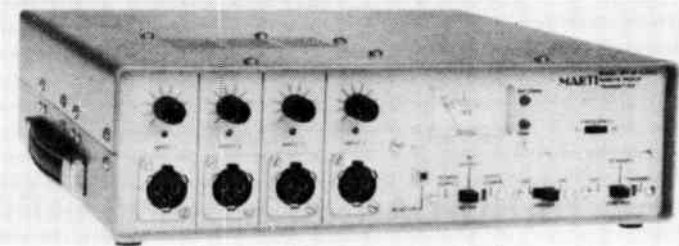
CR-10 RECEIVER

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MARTI ELECTRONICS, INC.

Remote Pickup Transmitters

RPT-30 Remote Pickup Broadcast Transmitter



Single Freq. \$1695
Dual Freq. \$1725

RPT-30 SPECIFICATIONS

Frequency Range and Maximum Power Output	140-180 MHz - 45 Watts 200-260 MHz - 40 Watts	280-340 MHz - 35 Watts 400-480 MHz - 30 Watts
RF Connector	SO-239	
Operating Temp. Range	-10°C to +45°C	
Modulation (Specify)	10F3 (± 1.5 KHz Deviation) 25F3 (± 4 KHz Deviation) 50F3 (± 8 KHz Deviation)	
Channels (Frequencies)	Two frequencies selected by switch Freq. separation 1 1/2% max	
Frequency Stability	Mobile .0005% Base .00025% (above 400 MHz)	
Spurious Emission	Meets FCC Requirements	
Audio Inputs	Four Balanced microphone (150 ohm) inputs (XLR3) with mixing controls. One input switchable to balanced line level at mic. No 4 input and "D" connector on rear.	
Modulation Control	Broadcast quality Compressor/Limiter built in.	
Encoding	Subaudible tone (27 Hz.) encoder built in.	
Metering/Indicators	Illuminated meter indicates audio compression, relative RF output, relative supply voltage. Flashing LED's indicate "Antenna" (VSWR) and high "Temp."	
Controls	(4) input level, meter sw., encode sw., power sw., frequency sw., monitor jack.	
Power Requirements	110-125 V, 50-60 Hz (220 V, 50 Hz. available on special order) DC operation on 11-13.5 V negative ground.	
Accessory Connector	9 pin "D" connector for DC power, remote control, encode, line level input	
Weight	12.4 lbs net, 16 lbs shipping wt.	
Dimensions	11.5 in wide x 3.5 in high x 13.3 in deep	

FCC ID: BEN9EZPT30-150
BEN9EZPT30-450

THE LEADING EDGE OF SIMPLICITY

Before we designed the RPT-30, we talked directly to hundreds of broadcasters to learn their needs, then we used that information and our 31 years experience in supplying thousands of RPU systems, to produce the ultimate in performance, reliability, quality and simplicity. Broadcasters want remote pickup equipment that can be operated by non-technical personnel to achieve professional sounding live remote broadcasts. They want rugged equipment that will operate continuously for days without "meltdown". The RPT-30 will operate with other Marti RPU equipment to form a complete wide coverage communications system with mobile and fixed repeaters. See pages 13, 14 and back cover.

RPT-30 FEATURES:

- ★ Frequency switch selects both frequency and deviation - simply-preventing operator error and interference.
- ★ Subaudible encoder activates repeaters or other equipment simply by a single switch (standard equipment on all Marti RPU)
- ★ Illuminated meter displays compressor gain reduction, relative power output or power supply voltage
- ★ Flashing LEDs indicate antenna VSWR problems and over-temperature condition.
- ★ Automatic modulation control by built-in FM compressor-limiter
- ★ Four balanced microphone mixing inputs, one switchable to balanced line level
- ★ Continuous duty-broadcast quality
- ★ FCC type accepted
- ★ Compatible with Marti mobile repeater, fixed automatic repeater and base station

RPT-30 ACCESSORIES

Part No.	Description	Price	Part No.	Description	Price
Crystal	Factory installed with original order - second frequency of DF	\$30.00	586-073	12' microphone cable for push-to-talk control of 700-251 mobile kit (requires MCD-70B mic.)	\$18.00
MCD-70C	Microphone with 3-pin XLR-3 plug, 14' cord	\$80.00	586-074	DC power plug, fuse, cable for RPT-30	\$19.50
MCD-70D	Microphone with 3-pin XLR-3 plug, 9' coil cord	\$80.00	585-037-1	Fixed repeat cable, CR-10 to RPT-30	\$27.50
TR-3	Antenna relay for RPT-30 for 2-way operation	\$35.00	585-037-2	Mobile repeat cable, AR-10 to RPT-30	\$27.50
700-251	Mobile mounting kit for RPT-30, 4 mtg. fasteners with DC power plug, fuse & cable	\$48.60	700-253	Rack mounting kit for RPT-30	\$19.50

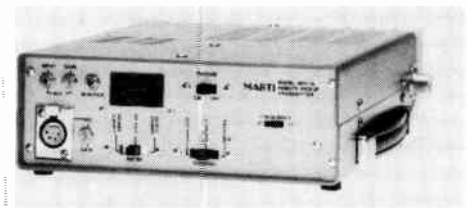
System Specifications					
Type Emission	Receiver Model No.	System Freq Response ±1.5 dB	dB	S/N Ratio	DR*
25F3	AR-10/150	CR-10/150	50-7.500	2	50
50F3	AR-10/450	CR-10/450	50-7.500	2	53
25F3	AR-10/450	CR-10/450	50-7.500	2	50
10F3	AR-10/450	CR-10/450	50-3.000	2	45
50F3	AR-10/450	CR-10/150	50-15.000	2	55

RPT-15 Portable/Mobile/Airborne Transmitter

RPT-15 SPECIFICATIONS

Frequency Range	400-480, 280-340, 200-260 & 140-180 MHz
RF Output	15 watts max into 50 ohms
RF Connector	SO-239
Operating Temp. Range	-10°C to +45°C
Modulation	See System Specs
Dual Frequency	Selectable dual-frequency operation Freq. separation 1 1/2% max
Spurious Emission	Meets FCC Requirements
Audio Inputs	One microphone and one high level unbalanced input. Individual mixing gain controls
Audio Input Level	Microphone input level can be from -68 DB to -35 DB. High level can be from 0.2 volts rms 8-600 ohms
Audio Input Impedance	Will accept microphone from 150 to 500 ohms
Audio Connectors	Input No. 1 (XLR-3), Input No. 2 miniature phone jack
Power Requirements	110-125 V AC, 50-60 Hz, 12.6 V DC (neg. gnd.) 2.25 Amps
Modulation Control	Broadcast quality Compressor/Limiter built in
Metering	Panel meter indicates audio compression, RF output, power supply DC
Weight	9 1/4 lbs net, 14 lbs gross
Dimensions	8 1/2" wide x 3 1/4" high x 12 1/2" deep

*28 V. DC operation requires APS-28 18 power supply.



MODEL RPT-15 is a compact 15 watt transmitter designed for portable and mobile remote broadcast service. It delivers the maximum power allowed by the FCC for airborne remotes such as traffic reports. The RPT-15 has a built-in power supply for operation on 115V. AC. It will also operate on an external 12-14 volt DC supply. Standard features include dual frequency and subaudible encoder for use with Marti automatic mobile repeaters and automatic fixed repeaters. All this plus famous Marti broadcast quality and continuous duty operation.

Single Freq. \$975
Dual Freq. \$1005

SYSTEM SPECIFICATIONS SAME AS RPT-30 ABOVE

FCC ID: BEN9EZPT15-150
BEN9EZPT15-450

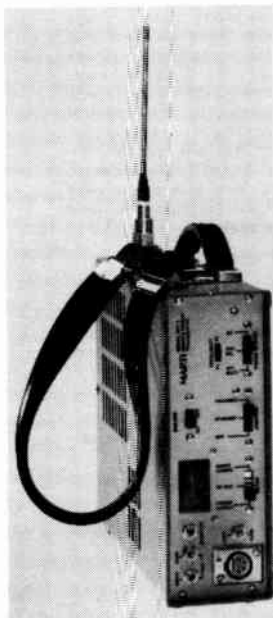
RPT-15 FEATURES:

- ★ Type accepted on all VHF-UHF RPU channels.
- ★ 15 watts continuous output.
- ★ Dual frequency capability.
- ★ Sub audible encoder.
- ★ Built-in metering.
- ★ Built-in AC supply.
- ★ FM Compressor-Limiter.
- ★ Mixing mic and line inputs.

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Refer to Green Section for Addresses and Telephone Numbers.

RPT-2 Hand-Carried Transmitter



RPT-2 Features

- ★ Type accepted on all VHF-UHF RPU channels
- ★ 2.5 watts continuous output
- ★ Dual frequency provision
- ★ Sub-audible encoder
- ★ Built-in metering
- ★ 3-way power option
- ★ Internal ni-cad battery
- ★ Internal charger and AC supply
- ★ FM Compressor-Limiter
- ★ Mixing mic and line inputs

RPT-2

HAND-CARRIED TRANSMITTER

The RPT-2 is a hand-carried broadcast quality, continuous duty transmitter. It will operate from its internal ni-cad battery, from 115 V. AC power, or from external 12 V. DC power. A special sub-audible encoder enables the RPT-2 to access Marti mobile repeaters for coverage of indoor events. 2.5 watts is the maximum power allowed by FCC Rule 74.431 (C) (1).

	Single Freq.	Dual Freq.
RPT-2 without Internal battery	\$895	\$925
RPT-2 with internal battery	\$945	\$975

FCC ID: BEN9EZRPT2-150
BEN9EZRPT2-450

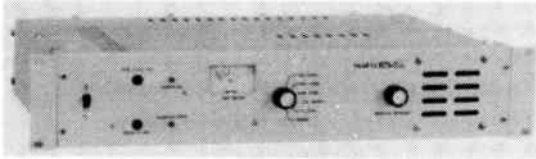
SYSTEM SPECIFICATIONS
SAME AS RPT-30

Remote Pickup Transmitters/Receivers

Item Type	Marti ID Code or Name	Description of Item	Price
Transmitter	RPT-2	Hand-carried, portable 2.5 watt transmitter without battery, single freq., tone encoder, UHF or VHF	\$895.00
Transmitter	RPT-2	Hand-carried, portable, 2.5 watt transmitter with battery, single freq., tone encoder, UHF or VHF	\$945.00
Transmitter	RPT-2-2	Hand carried, portable 2.5 watt transmitter without battery, dual freq., tone encoder, UHF or VHF	\$925.00
Transmitter	RPT 2-2	Hand-carried, portable, 2.5 watt transmitter with battery, dual freq., tone encoder, UHF or VHF	\$975.00
Transmitter	RPT-15	15 watt transmitter, single freq., compact portable or airborne, with tone encoder, UHF or VHF	\$975.00
Transmitter	RPT-15-2	15 watt transmitter, dual freq., compact portable or airborne, with tone encoder, UHF or VHF	\$1,005.00
Transmitter	RPT-30	30 watt transmitter at 450 MHz and 45 watts at 140-180 MHz, continuous duty, single freq., 4 audio inputs, tone encoder, UHF or VHF	\$1,695.00
Transmitter	RPT-30-2	30 watt transmitter at 450 MHz and 45 watts at 140-180 MHz, continuous duty, dual freq., 4 audio inputs with tone encoder, UHF or VHF	\$1,725.00
Receiver	AR-10	RPU mobile repeat receiver, single freq., UHF or VHF, built in AC power supply or operates on 12-15 VDC	\$1,045.00
Receiver	AR-10-2	RPU mobile repeat receiver, dual freq., UHF or VHF, built in AC power supply or operates on 12-15 VDC	\$1,075.00
Receiver	CR-10	RPU rack mount receiver, single freq., UHF or VHF, with monitor speaker in front panel	\$1,045.00
Receiver	CR-10-2	RPU rack mount receiver, dual freq., UHF or VHF, with monitor speaker in front panel	\$1,075.00

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CR-10 Base Receiver



Model CR-10 is a rack-mounted VHF or UHF base station receiver designed for broadcast remote pickup service. This receiver has dual frequency capability built in. Marti Technology has provided the highest frequency response with the lowest noise and distortion possible for the assigned channel band width. Special attention has been given to solving today's high interference problems. The CR-10 features a built-in test meter, squelch relay, monitor speaker, subaudible tone decoder, special noise reduction circuit, 90 DB spurious rejection.

CR-10 Single Frequency \$1045
CR-10 Dual Frequency \$1075

CR-10 SPECIFICATIONS

Frequency Range	400-480, 280-340, 200-260 & 140-180 MHz.		
Dual Frequency	Provision for Dual Frequency. Separation 0.2% Max.		
Sensitivity	0.5 microvolts for 20 db. S/N.		
Input Impedance	50 ohms.		
Frequency Stability	+.00025%-10° C to +50° C.		
Selectivity	Filter	3 DB	60 DB
	F 50	50 KHz	100 KHz
	F 36	36 KHz	60 KHz
	F 25	25 KHz	42 KHz
	F 10	8 KHz	15 KHz
Spurious Response	-90 db.		
Audio Output	Balanced 600 ohms. +10 dbm., Barrier strip.		
Monitor Output	0.5 watt monitor amp, speaker and level control.		
Subaudible Tone Decoder	800-229 Decode Board provides relay closure upon receipt of 27 Hz. tone.		
Front Panel Controls	Frequency select switch, program level adjust, meter switch, squelch adjust.		
Power Requirements	120/220° VAC, 50/60 Hz. 10 Watts. 13.5V.DC 300 MA.		
AC Power Supply	Precision, electronically regulated with current limiting.		
Metering	RF signal level, audio output level, sub. level, +13 V.DC supply, L.O. level, mixer level. LED indicators for power and open squelch.		
Dimensions	3½" High x 19" Wide x 12" Deep.		
Weight	Net 10 lbs. Domestic packed 17 lbs.		
RF Connector	UG-58		

FCC Approved Under Part 15 FCC ID: BEN9EZCR-10/150 BEN9EZCR-10/450

*Available on 220 Vac, 50 Hz. upon request.

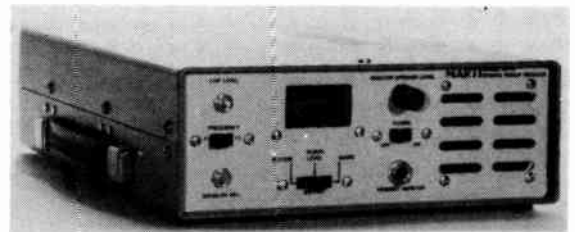
AR-10 Mobile Relay Receiver

AR-10 SPECIFICATIONS

Frequency Range	400-480, 280-340, 200-260 & 140-180 MHz.		
Dual Frequency	Provision for Dual Frequency. Separation 0.2% Max.		
Sensitivity	0.5 microvolts for 20 db. S/N.		
Input Impedance	50 ohms.		
Frequency Stability	+.00025%-10° C to +50° C.		
Selectivity	Filter	3 DB	60 DB
	F 50	50 KHz	100 KHz
	F 36	36 KHz	60 KHz
	F 25	25 KHz	42 KHz
	F 10	8 KHz	15 KHz
Spurious Response	-90 db.		
Audio Output (Line Level)	Balanced 600 ohms. -9 dbm., Barrier strip. Unbalanced 600 ohms + 4 dbm. at 15 pin connector.		
Monitor Output	Built-in Monitor Amp. (0.5 watts) Monitor speaker and level control. Headset monitor jack mutes speaker.		
Subaudible Tone Decoder	800-229 Decode Board provides relay closure upon receipt of 27 Hz. ± 0.1 Hz. Tone.		
Front Panel Controls	Frequency select switch, line level adjust, meter switch, squelch adjust, monitor speaker level, power switch, headset jack.		
Power Requirements	120/220° VAC, 50/60 Hz. 10 Watts. 13.5V.DC 300 MA.		
AC Power Supply	Precision, electronically regulated with current limiting.		
Metering	RF signal level, audio output level, decode level.		
Dimensions	3½" High x 9" Wide x 13½" Deep.		
Weight	Net 5½ lbs. Domestic packed 10 lbs.		
RF Connector	UG-58		

FCC Approved Under Part 15 FCC ID: BEN9EZAR-10/150
 BEN9EZAR-10/450

*Available on 220 Vac, 50 Hz. upon request.



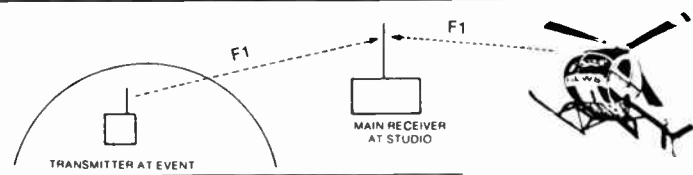
The Marti AR-10 series receiver is a portable or mobile repeater receiver. This receiver has a built-in AC power supply, and will operate from an external source of 12-15 volts DC. A built-in sub-audible tone decoder meets FCC rule 74.431 allowing this receiver to automatically turn on a mobile transmitter upon receiving an encoded signal from a hand-carried portable transmitter, thus automatically relaying a broadcast to the base station receiver over a greater distance. The receiver operates on all remote pickup frequencies and band widths. Other built-in features include dual frequency capabilities, monitor speaker, and terminals for feeding telephone lines in portable operations. A special noise reduction circuit provides an improvement of 6 db in S/N ratio for weak signals. The unit weighs only 5½ pounds.

AR-10 Single Frequency \$1045.00
AR-10 Dual Frequency \$1075.00

MARTI ELECTRONICS, INC.

Remote Pickup Systems/Mobile Relay Systems

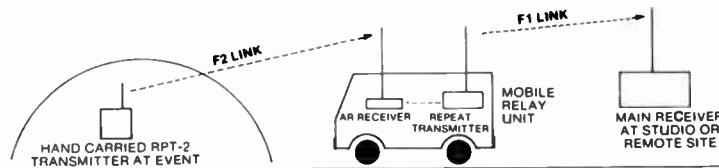
Remote Pickup (RPU) One-Way Systems



PACKAGE 1	PACKAGE 2	PACKAGE 3	PACKAGE 4
\$3,231.35	\$2,487.95	\$3,423.60	\$2,680.20
Mono RPU 140-180 MHz	Mono RPU 140-180 MHz	Mono RPU 400-480 MHz	Mono RPU 400-480 MHz
Mobile or Portable: 1 RPT-30/150 Transmitter 1 MCD-70C Microphone 1 700-251 Mobile Mounting Kit for RPT-30 1 ASPS-177 Mobile Antenna 1 PAV/150 Portable Antenna Studio: 1 CR-10/150 Receiver 1 SC-155AC Base Antenna 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED	Mobile or Portable: 1 RPT-15/150 Transmitter 1 MCD-70C Microphone 1 700-252 Mobile Mounting Kit for RPT-15 1 ASPS-177 Mobile Antenna 1 PAV/150 Portable Antenna Studio: 1 CR-10/150 Receiver 1 SC-155AC Base Antenna 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED	Mobile or Portable: 1 RPT-30/450 Transmitter 1 MCD-70C Microphone 1 700-251 Mobile Mounting Kit for RPT-30 1 ASP-1650 Mobile Antenna 1 YC-450 Portable Yagi Antenna 1 PG-20A Jumper Cable Studio: 1 CR-10/450 Receiver 1 ASPD-700 Base Antenna 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED	Mobile or Portable: 1 RPT-15/450 Transmitter 1 MCD-70C Microphone 1 700-252 Mobile Mounting Kit for RPT-15 1 ASP-1650 Mobile Antenna 1 YC-450 Portable Yagi Antenna 1 PG-20A Jumper Cable Studio: 1 CR-10/450 Receiver 1 ASPD-700 Base Antenna 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED
PACKAGE 5	PACKAGE 6	PACKAGE 7	
\$6,329.00	\$4,889.00	\$2,575.75	
Stereo RPU 400-480 MHz	Stereo RPU 400-480 MHz	Mono Aircraft RPU 400-480 MHz	
Mobile or Portable: 2 RPT-30/450 Transmitters 2 MCD-70C Microphones 2 YC-450 Portable Yagi Antennas 2 PG-20A Jumper Cables Studio: 2 CR-10/450 Receivers 1 ASPD-700 Base Antenna 1 2-YC Receiver Combiner 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED	Mobile or Portable: 2 RPT-15/450 Transmitters 2 MCD-70C Microphones 2 YC-450 Portable Yagi Antennas 2 PG-20A Jumper Cables Studio: 2 CR-10/450 Receivers 1 ASPD-700 Base Antenna 1 2-YC Receiver Combiner 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED	Mobile: 1 RPT-15/450 Transmitter 1 MCD-70D Microphone 1 AV-15 Aircraft Antenna 1 APS-28/18 Airborne Power Supply Studio: 1 CR-10/450 Receiver 1 ASPD-700 Base Antenna 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED	A Marti one-way Remote Pickup System is used by a broadcaster to send a program from an event to the studio. Voice or sound travels one direction, from the event to the studio. Programming from an aircraft requires special equipment which is included in Package 7. *Where connectors and transmission line are required use Female connectors and 1/2" transmission line and contact factory for pricing.

Unattended Automatic Mobile Relay

In applications where the Marti One-Way RPU system will not communicate from the event to the studio, an AUTOMATIC MOBILE RELAY station may be required. Additional components can be added to the Marti One-Way system to make it a Mobile Relay System. Components from the Marti One-Way system would still be used in the mobile relay system. Components listed below would make-up the F2 part of the Mobile Relay link.



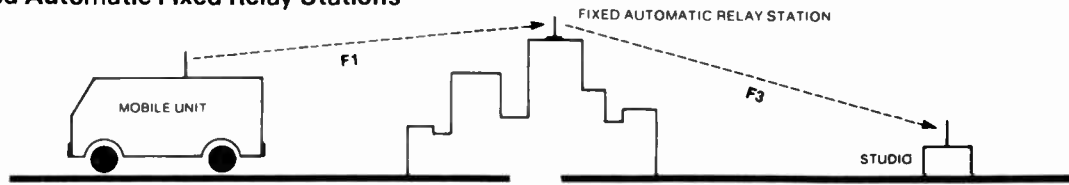
ON ALL MOBILE REPEATERS F-2 MUST BE AT LEAST 4.0 MHz FROM F-1.

PACKAGE 11	PACKAGE 12	PACKAGE 13
\$2,221.20	\$2,371.20	\$2,226.45
Automatic Mobile Relay For Use With Packages 1 & 2	Automatic Mobile Relay For Use With Packages 3 & 4	Automatic Mobile Relay For Use With Packages 3 & 4
1 RPT-2/450 Transmitter 1 MCD-70D Microphone 1 AR-10/450 Receiver 1 700-252 Mobile Mounting Kit for AR-10 1 585-037-2 Control Cable 1 ASP-1650 Mobile Antenna 1 PAV/450 Portable Antenna	1 RPT-2/450 Transmitter 1 MCD-70D Microphone 1 AR-10/450 Receiver 1 700-252 Mobile Mounting Kit for AR-10 1 585-037-2 Control Cable 1 ASP-1650 Mobile Antenna 1 PAV/450 Portable Antenna 1 WP-470-1 Cavity	1 RPT-2/150 Transmitter 1 MCD-70D Microphone 1 AR-10/150 Receiver 1 700-252 Mobile Mounting Kit for AR-10 1 585-037-2 Control Cable 1 ASPS-177 Mobile Antenna 1 PAV/150 Portable Antenna

For additional information on Mobile Repeaters, see AR-10 Specification Sheet.

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Unattended Automatic Fixed Relay Stations



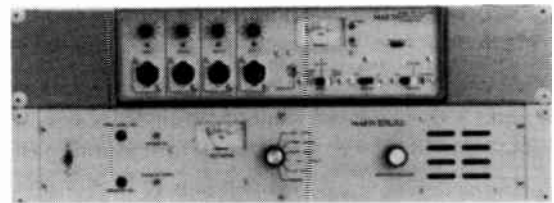
Automatic Relay Stations greatly increase the operating range and coverage areas of broadcast news and remote coverage of events. When used with MARTI portable, mobile and base station units, full broadcast quality audio is provided. Unlimited transmitting time is available since this equipment is designed for continuous 24 hour per day operation. Automatic Relay Stations (ARS) are available in two models. An ARS-15 transmits with a RPT 15 transmitter and an ARS-30 transmits with a RPT 30 transmitter. Both systems transmit the F3 frequency above in the 450 to 455 MHz band. F-3 must be at least 4.0 MHz from F-1.

EQUIPMENT TO BE LOCATED AT AUTOMATIC RELAY SITE

PACKAGE 40	\$3,228.00	PACKAGE 41	\$2,563.00	PACKAGE 42	\$3,809.00	PACKAGE 43	\$3,144.00
160 MHz In/450-455 MHz Out:		160 MHz In/450-455 MHz Out:		450 MHz In/455 MHz Out:		450 MHz In/455 MHz Out:	
1 CR-10/150 Receiver 1 585-037-1 Repeater Cable 1 SC-155AC Receiving Antenna 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED		1 CR-10/150 Receiver 1 585-037-1 Repeater Cable 1 SC-155AC Base Antenna 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED		1 CR-10/450 Receiver 1 585-037-1 Repeater Cable 1 ASPD-700 Base Antenna 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED		1 CR-10/450 Receiver 1 585-037-1 Repeater Cable 1 ASPD-700 Base Antenna 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED	
1 RPT-30/450 Transmitter 1 700-253 Rack Mounting Kit for RPT-30 1 PG-2A Jumper Cable 1 K-1 Weatherproofing Kit * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED 1 DB-436 Yagi Antenna**		1 RPT-15/450 Transmitter 1 RMH-3B Rack Shelf 1 PG-2A Jumper Cable 1 K-1 Weatherproofing Kit * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED 1 DB-436 Yagi Antenna**		1 RPT-30/450 Transmitter 1 700-253 Rack Mounting Kit for RPT-30 1 WP-678 Duplexer and Cables		1 RPT-15/450 Transmitter 1 RMH-3B Rack Shelf 1 WP-678 Duplexer and Cables	
**If TWO-WAY communication is required, replace DB-436 with ASPD-700 Base Antenna		**If TWO-WAY communication is required, replace DB-436 with ASPD-700 Base Antenna		*Where connectors and transmission line are required use Female connectors and 1/2" transmission line and contact factory for pricing.			

EQUIPMENT TO BE LOCATED AT STUDIO

PACKAGE 46	\$1,404.00
One-Way w/ Fixed Repeater:	
1 CR-10/450 Receiver 1 ASPD-700 Base Antenna 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED	



MODEL ARS-30

- 160 MHz Mobile Frequency to Fixed Repeater with a 450 or 455 MHz output frequency use Mobile part of Package 1, Package 40 or 41 and Package 46.
- 160 MHz Mobile Frequency to Fixed Repeater with a 450 or 455 MHz output frequency use Mobile part of Package 2, Package 40 or 41 and Package 46.
- 450 MHz Mobile Frequency to Fixed Repeater with a 455 MHz output frequency use Mobile part of Package 3, Package 42 or 43 and Package 46.
- 450 MHz Mobile Frequency to Fixed Repeater with a 455 MHz output frequency use Mobile part of Package 4, Package 42 or 43 and Package 46.

For Two-Way Communication on either Fixed Automatic Repeater or Two-Way Communication between event and direct to Studio, contact factory for equipment and quote.

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Refer to Green Section for Addresses and Telephone Numbers.

RPU Accessories

ID Code or Name	Description of Item	Price
040-001-1	Internal battery for RPT-2 transmitter	\$72.00
040-009	Portable battery for RPT-15 transmitter with belt strap, case & charger	\$100.00
2-YC	RPU receiver combiner 152-456 MHz	\$45.00
2YC-150	Stacking harness, for stacking two YC-153, YC-161, YC-161/PR, YC-166 or YC-170 Yagi antennas	\$35.00
2YC-450	Stacking harness, for stacking two YC-450 or two YC-455 Yagi antennas and "T" bar assembly	\$45.00
550-038	Microphone connector, 4 pin, fits RPT-2 transmitter	\$7.50
550-047	Microphone connector, 3 pin, fits RPT-30 transmitter, RPT-15 transmitter	\$7.50
580-116	AC cord for RPT-2, RPT-15, AR-10 & CR-10	\$5.50
585-069	DC cord for RPT-2 transmitter with connectors	\$17.50
585-070	DC cord for RPT-15 transmitter with connectors	\$17.50
586-073	12' microphone cable for push to talk control of 700-251 mobile kit (requires MCD-70B mic.)	\$18.00
586-074	DC cord for RPT-30 transmitter with fuse & cable	\$19.50
633-6	Duplexer with cables to connect AR-10/450 receiver & RPT-30 transmitter to common antenna. MOBILE USE ONLY.	\$350.00
APS-28/18	Airborne power supply 28-18 VDC for RPT-15	\$65.00
Crystal	Hi-accuracy crystal for RPU transmitters & receivers	\$17.95
800-226	Coaxial relay board, 50 ohm, N female connectors	\$54.60
DX-1	CRL noise reduction unit for RPM work	\$700.00
WP-430-1	Selective cavity resonator, single section for operation in the 406-512 MHz band	\$180.00
WP-470-1	Selective cavity resonator, single section for operation in the 406-512 MHz band	\$150.00
WP-678	Duplexer with cables to join CR-10 & RPT-15 or RPT-30 to common line & antenna. USED WITH FIXED AUTO RELAY.	\$663.00
K1	Grounding and weatherproofing kit	\$8.00
MCD-70	Microphone with push to talk switch & 14' standard cord 4 pin XLR-4	\$80.00
MCD-70B	Microphone with push to talk switch & 9' coil cord 4 pin XLR-4	\$80.00
MCD-70C	Microphone with 3-pin XLR-3 plug & 14' cord	\$80.00
MCD-70D	Microphone with 3-pin XLR-3 plug & 9' cord	\$80.00
MX-3000	Programmable mobile receiver for 2-way use, 12 VDC	\$350.00
Racom 1300	Station identifier for use in TSL system	\$200.00
RMH-3	Rack shelf for mounting RPT-2 transmitter	\$55.00
RMH-3B	Rack shelf with fan for mounting RPT-15	\$74.50
TR-2	Coaxial switching unit required in RPT-15 if used for base station or mobile two-way communications	\$35.00
TR-3	Antenna relay for RPT-30 for two-way operation	\$35.00
700-251	Mobile mounting kit for RPT-30, 4 mtg. fasteners with DC power plug, fuse and cable	\$48.60
700-252	Mobile mounting kit for RPT-15 or AR-10	\$25.20
700-253	Rack mounting kit for RPT-30 transmitter	\$19.50
WP-440-1	Selective cavity resonator with female connectors 200-300 MHz.	\$170.00

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MATTHEWS STUDIO EQUIPMENT, INC.

Stands

Century Stands

Cat. No.	Description	Metric Weight	Weight	List
339573	*20" Double Riser, Folding Mini Century Stand	3.18 Kg	7 lb	\$145.00
339561	30" Double Riser, Folding Century Stand	4.08 Kg	9 lb	160.00
339562	30" Double Riser, "Sliding Leg" Folding Century Stand	4.08 Kg	9 lb	170.00
339564	40" Double Riser, Folding Century Stand (Standard)	5.44 Kg	12 lb	155.00
339565	40" Double Riser, "Sliding Leg" Folding Century Stand	4.99 Kg	11 lb	185.00
339568	60" Double Riser, Folding Century Stand	5.90 Kg	13 lb	180.00
339571	60" Double Riser, "Sliding Leg" Folding Century Stand	5.90 Kg	13 lb	195.00

*Available with Standard leg size; please specify

Century Stand Accessories

Cat. No.	Description	Metric Weight	Weight	List
349577	Grip Head w/Single Extension Arm	1.47kg	3 lb./4 oz.	\$ 65.00
349578	Grip Head w/Double Extension Arm	2.47kg	5 lb./7 oz.	102.00
349575	Grip Head only - 2-1/2" (Century Stand Type)	.48kg	1 lb./1 oz.	28.00
349576	Grip Head - 4-1/2" (Roller Stand Type) w/1-1/8" Male Pin and Receiver for 1-1/8" Pin	2.35kg	5 lb./3 oz.	95.00

Light Stands

Cat. No.	Description	Metric Weight	Weight	List
386034	Preemie Baby	2.27 Kg	5 lb	\$ 139.00
386029	Beefy Baby Aluminum Stand	2.72 Kg	6 lb	154.00
386030	Beefy Baby (Double Riser-R.M.* Leg)	3.18 Kg	7 lb	167.00
386031	Beefy Baby (Triple Riser-R.M.* Leg)	3.63 Kg	8 lb	198.00
386025	Baby/Junior Stand (Double Riser) 5/8" Male Pin	6.35 Kg	14 lb	225.00
386020	Baby/Junior Stand (Triple Riser) 5/8" Male Pin	8.16 Kg	18 lb	285.00
386021	Low Boy Junior Stand	9.53 Kg	21 lb	295.00
386022	Junior Stand	10.89 Kg	24 lb	295.00
386033	Junior Stand (Triple Riser)	11.79 Kg	26 lb	325.00
386026	Low Boy Senior Stand	10.89 Kg	24 lb	305.00
386027	Senior Stand	11.79 Kg	26 lb	305.00
386028	Brace Stand	14.1 Kg	31 lb	399.00
387580	**Crank-O-Vator	30.8 Kg	68 lb	2,550.00

*R.M. — Rocky Mountain (articulated Leg for Leveling)

**Parts specifications breakdowns for these products are available upon request

Reflector and Light Stands

Cat. No.	Description	Metric Weight	Weight	List
386070	Lightweight Combo Reflector (Double Riser)	8.16 Kg	18 lb	\$235.00
389573	Combo-Reflector Lamp Stand (Double Riser)	10.43 Kg	23 lb	245.00
386066	Low Boy-Reflector Lamp Stand (Double Riser)	7.25 Kg	16 lb	235.00
386065	Sky High Combo-Reflector Lamp Stand (Triple Riser)	11.79 Kg	26 lb	285.00
389574	Aluminum Combo-Reflector Lamp Stand (Double Riser)	5.9 Kg	13 lb	305.00
386067	Aluminum Low Boy Combo-Reflector Lamp Stand (Double Riser)	3.86 Kg	8 lb/8 oz	305.00
386068	Combo Adaptor Wheels (3) (For 6065, 6066, 6067, 9573, 9574)	2.72 Kg	6 lb set	149.00
386032	Lightweight Adaptor Wheels (3) (for 6029, 6030, 6031, 6069, 6070)	2.04 Kg	4 lb/8 oz	127.00
429029	1-1/8" to 5/8" Stand Adaptor	.68 Kg	1 lb/8 oz	19.50

Overhead Stands

Cat. No.	Description	Metric Weight	Weight	List
377573	Medium Roller Stand (14 ft.)	14.06 Kg	31 lb	\$365.00
377572	Medium Roller Stand (No Wheels)	11.34 Kg	25 lb	315.00
377574	Hi-Hi Roller Stand (18-1/2")	16.33 Kg	36 lb	385.00
377569	Hi-Hi Roller Stand (No Wheels)	13.61 Kg	30 lb	365.00
377575	Hi-Hi Roller Stand-Wide Base (No Wheels)	15.42 Kg	34 lb	385.00

All Matthews products are available in stainless steel on request

All roller heads are delivered standard with "L" Handle. Butterfly type handle is available on request at no extra charge

Matthews has been providing stands to the professional industry for well over a decade. The complete line includes over 35 professional stands serving every possible production requirement. All stands are constructed of durable lightweight alloys, providing both ease of handling as well as stability.



MATTHEWS STUDIO EQUIPMENT, INC.

Dollies/Lighting Control

Doorway Dolly

The Doorway Dolly was designed to be an inexpensive camera dolly narrow enough to fit through most standard doorways. Over the years, Doorway Dollies have been used not only for this purpose, but also as efficient equipment transporters for camera cases, lighting fixtures, cables, etc.

Pneumatic tires are standard, but the doorway can be fitted with track wheels for use on straight dolly tracks.

Steering is accomplished by use of a pull handle (like a wagon). A steering feature has been added which allows the operator to steer from on board the dolly. This is accomplished by inserting the pull handle through the push bar on dolly front.

A recent addition available for the push bar is an angled fitting to allow the bar to tilt down 34° for more clearance between the dolly and dolly operator.

Tube Dolly

A specialized dolly originally designed to ride on sections of straight standard dolly track or tubing. The Tube Dolly was created to serve as a tracking platform for the older conventional type crab dollies (which were not capable of being adapted for track use). The crab dolly would be physically loaded onto the Tube Dolly. The rear carriage of the Tube Dolly is adjustable back and forth to compensate for differing wheel length of crab dollies.

Another application of the adjustable rear carriage is to serve as an outrigger platform for lighting or sound when camera is riding on the main platform.

Star Track Dolly™

The latest addition to the Matthews family of dollies, the Star Track is a versatile, portable dolly that travels in a bag. Even with the compact, lightweight design, the Star Track is as sturdy as a rock.

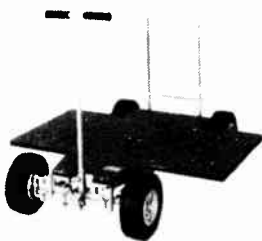
The unit offers creative camera control in the most remote or restricted locations.

Butterflies and Overheads

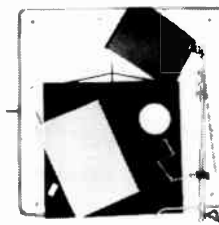
Butterflies and Overheads are portable, lightweight tubular frames that are designed to support any lighting control textile material, such as "silk" (diffusion), "net" (reduction), "solid" black (cutting), or "griffolyn" (reflective). The perimeters of all textile materials are color coded for easy identification (white/single scrim; red/double scrim; gold/silk/black/solid, etc.) The frames are designed to break down into easily assembled components for transportation and storage.

Reflectors

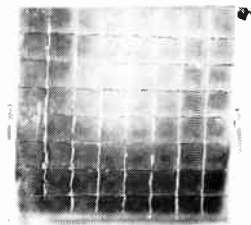
A Reflector is designed to redirect natural or artificial light. The two faces (sides) offer a choice of intensities. The "hard" side can be compared to the spot position of a studio lighting fixture. The "lead" or "soft" side yields a more diffused pattern of light. Similar to that of a fill light.



DOORWAY DOLLY



LIGHTING CONTROL



42 x 42 REFLECTOR

6' x 6' Butterflies

Cat. No.	Description	Metric Weight	Weight	List
309079	Frame (Breakdown)	5.10kg	11 lb/4 oz	\$ 140.00
309080	Butterfly Set (Breakdown)	8kg	17 lb/10 oz	497.00
309081	Single Scrim	.40kg	14 oz	69.00
309082	Double Scrim	.51kg	1 lb/2 oz	93.00
309083	Solid Black	1.02kg	2 lb/4 oz	82.00
309084	Artificial Silk (White)	.40kg	14 oz	73.00
309086	Storage Bag	.57kg	1 lb/4 oz	41.00
309605	China Silk (Not Included in Set/Optional)	.40kg	14 oz	89.00

20' x 20' Overheads

Cat. No.	Description	Metric Weight	Weight	List
	Overhead (Breakdown), (Can be used without end rails to hold 20' x 30' nets and silks)			
319600	Deluxe Frame (Breakdown) — 2 support stands required	61.7kg	136 lb	\$ 1350.00
319602	Custom Fit Nylon Bag (for #9600 Frame)	6.8kg	15 lb	235.00
319604	Frame (breakdown) — 4 support stands required (Includes 4 Tubing Hangers)	22.2kg	49 lb	795.00
429615	Tubing Hanger for 4 1/2" Grip Head (Can Accommodate 1" to 2" O.D. Tubing)	.31kg	11 oz	30.00
319588	Single Scrim	2.16kg	4 lb/12 oz	495.00
319599	Double Scrim	3.43kg	7 lb/9 oz	790.00
319524	Solid	15.2kg	33 lb/8 oz	375.00
319544	Artificial Silk (White)	6.12kg	13 lb/8 oz	425.00
319018	Storage Bag	1.02kg	2 lb/4 oz	89.00
319644	China silk (Not Included in Set/Optional)	6.12kg	13 lb/8 oz	590.00

Dollies & Dolly Track

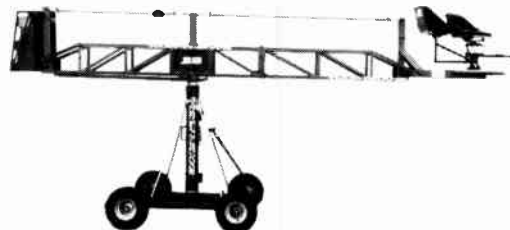
Cat. No.	Description	Metric Weight	Weight	List
395000	Doorway Dolly, Complete w/Push Bar, Pull Handles Side Boards	42.64kg	94 lb	\$ 1570.00
395001	Track Wheels for Doorway Dolly (Runs on Straight Track Only)	11.11kg	24 lb/8 oz Set	730.00 Set
395005	Doorway Dolly Push Bar Adaptors/Tilt 34° Angle (Set of 2)	1.02kg	2 lb/4 oz	37.00
395006	Doorway Dolly Flotation Wheel Adaptors (Set of 2)	6.80kg	15 lb	205.00
395045	Pop Off Wheel Conversion Kit	6.80kg	15 lb	795.00
395047	Western Dolly, Complete w/Push Bar and Pull Handle (w/Pop Off Wheels)	97.53kg	215 lb	1995.00
395050	Western Dolly (Complete w/Push Bar and Pull Handle)	95.26kg	210 lb	1695.00
395051	Western Dolly Push Bar Adaptor/Tilt 34° Angle (Set of 2)	1.02kg	2 lb/4 oz	35.00
397050	Curved Track B' Section	11.34kg	25 lb	368.00
397055	Straight Track B' Section (Racking)	14.46kg	31 lb/14 oz	295.00
680CL1	Over Center Latch	.23kg	8 oz	22.50
397056	Flotation Wheels w/Adaptor Plates & Case (Complete)	39.86kg	87 lb/14 oz	3795.00

Reflectors

Cat. No.	Description	Metric Weight	Weight	List
119054	2 Place Reflector Box	9.64kg	21 lb/4 oz	\$ 155.00
119055	4-Place Reflector Box	11.62kg	25 lb/10 oz	185.00
119056	Single Reflector Scrim	.11kg	4 oz	35.00
119057	Double Reflector Scrim	.11kg	4 oz	39.00
119069	24" x 24" Aluminum Hand Reflector w/Adjustable Yoke — 5/8" Socket	2.78kg	6 lb/2 oz	125.00

Tulip Crane™

The Academy Award winning Tulip Crane is a portable, professional camera crane system ideally suited for film and video commercial and feature applications. At home on rough terrain, studio floor, or standard dolly track, the Tulip Crane with its full range of accessories offers economy and portability without sacrificing creative versatility. The Tulip Crane folds to 8' for easy transport. The unit allows for fast set-up and strike time, offering a maximum height of 16.5' with a negative drop of minus 3'. The Crane was computer designed and is constructed of lightweight aerospace alloys. When totally assembled, the system weighs approximately 600 pounds. The Tulip Crane is certified to be mechanically safe.

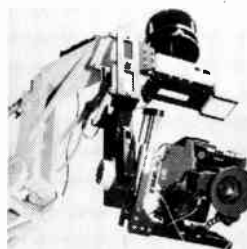
**Tulip Crane™ and Accessories**

Cat. No.	Description	Metric Weight	Weight	List
725051	Tulip Crane™ Arm – Complete With: 2 - #5058 Seats, 2 - #5059 Seat Brackets, 2 - #5060 Seat Offset Arms, 1 - Seat Turret Assembly, 1 - Main Bearing Arm Adapter, 2 - Horizontal Stabilizing Bars, 1 - Fine Tune Adjustment Weight, and Hardware.	188,70 Kg	416 lb	\$29,600.00
725054	Pedestal - Complete With: Vertical Post, Leveling Struts, 2 - Level Gauges, 1 - set (4) #5057 Feet, and Hardware.	84,37 Kg	186 lb	7,400.00
725055	Pneumatic Conversion Kit 2 Fixed Axle; 2 with Self-Contained Steering Mechanism. Used for Exterior Transportation.	59,88 Kg	132 lb	2,200.00
725056	Push/Pull Bar (2 Recommended)	6,35 Kg	14 lb	125.00

Cam-Remote™

The Cam-Remote is a sophisticated electronic pan and tilt head, designed by Ernst "Bob" Nettmann (two-time Academy Award winner/Technical & Scientific Category), in conjunction with Matthews' engineers. This system allows a camera to be completely operated without any artistic compromise from any distance as required.

The unit facilitates shooting from a limitless array of unusual, precarious, or tightly confined camera positions. In addition, the Cam-Remote brings a new element of safety to action and special effects photography, since it now allows cameramen and crews to capture dangerous shots or angles from a safe distance.

**Cam Remote™**

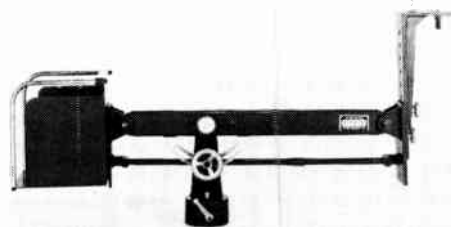
Cat. No.	Description	Metric Weight	Weight	List
759852	Pan/Tilt Head	22,68 Kg	50 lb	POR
759853	Control Desk	5,44 Kg	12 lb	POR
759854	Power Supply	4,54 Kg	10 lb	POR

Mini-Jib Arm™

A portable, versatile offset jib arm that is compatible with all dollies, the Mini-Jib may also be mounted on to its own heavy duty tripod. The Mini-Jib is capable of rotating 360 degrees with a minimum diameter of 2 feet and a maximum diameter of 7 1/2 feet.

The mounting configuration of the Mini-Jib is compatible with Elemack and may be adapted for use with Mitchell.

Additional arm length may be achieved with the use of one or more extension arms. The camera mounting elbow on the end of the arm may be attached at various heights, upright or inverted, to provide a multitude of camera positions.

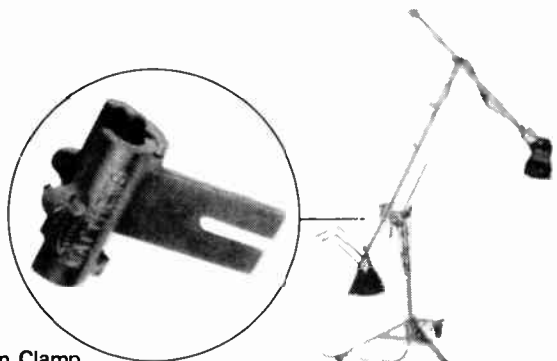
**Mini-Jib Arm™ & Accessories**

Cat. No.	Description	Metric Weight	Weight	List
515002	Mini-Jib Arm	46,26 Kg	102 lb	\$4,995.00
515003	Heavy Duty Tripod	10,89 Kg	24 lb	1,885.00
515004	Tripod Dolly	18,60 Kg	41 lb	1,530.00
515021	Extension Arm (Elemack to Elemack unless otherwise specified)	6,8 Kg	15 lb	295.00
515022	Counter Balance Weight (Approximately 12 lb)	5,44 Kg	12 lb	51.50
515023	Counter Balance Weight (Empty)	.91 Kg	2 lb	26.50
515024	Elemack (Arm) To Mitchell Adapter (For Additional Adapters. Please Specify O'Connor, Miller, Ronford, etc.)	5,22 Kg	11 lb/8 oz	250.00
515025	Mitchell To Elemack (Arm) Adapter	2,95 Kg	6 lb/8 oz	225.00

Refer to Green Section for Addresses and Telephone Numbers.

MATTHEWS STUDIO EQUIPMENT, INC.

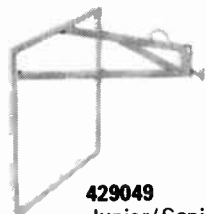
Mounting Equipment



429698
C-Boom Clamp



429050
Bazooka



429049
Junior/Senior Wall Sled



429048
Baby Wall Sled



429017
2 x 6 Wall Spreader



429016
2 x 4 Wall Spreader



429615
Tube Hanger



429688
45° Angle Drop Down



429614
Matht Gag

429677
Double Extension Hanger shown with **429679** 5/8" male pin

426019
Junior 36" Stand Extension

429676
Single Extension Hanger shown with **429612** Stirrup

Mounting Equipment

Cat. No.	Description	Metric Weight	Weight	List
429041	3" Baby Plate	.48kg	1 lb/1 oz	\$13.00
429085	6" Baby Plate	.62kg	1 lb/6 oz	14.00
429065	12" Baby Plate	.85kg	1 lb/14 oz	15.00
429590	Right Angle Baby Plate	.85kg	1 lb/14 oz	15.00
429582	Junior Wall Plate	1.64kg	3 lb/10 oz	28.00
429583	Set Wall Bracket	.79kg	1 lb/12 oz	28.00
429678	5/8" Drop Ceiling Scissor Clamp	.17kg	6 oz	9.00
429733	1/2" Drop Ceiling Scissor Clamp	.17kg	6 oz	9.00
429689	Drop Ceiling Cable Holder (For #9678)	.11kg	4 oz	5.00
429589	6" Furniture Clamp w/5/8" Pin	.68kg	1 lb/8 oz	29.00
429584	12" Furniture Clamp w/5/8" Pin	.82kg	1 lb/13 oz	30.00
429592	18" Furniture Clamp w/5/8" Pin	1.13kg	2 lb/8 oz	32.00
429593	24" Furniture Clamp w/5/8" Pin	1.28kg	2 lb/13 oz	34.00
429605	36" Furniture Clamp w/5/8" Pin	1.45kg	3 lb/3 oz	39.00
429595	Bar Clamp Adaptor w/5/8" Pin	.23kg	8 oz	15.00
429587	Gaffer Grip w/Two 5/8" Double Pins and Adjustable Jaws	.57kg	1 lb/4 oz	31.00

Cat. No.	Description	Metric Weight	Weight	List
429594	4" C-Clamp w/5/8" Pins	1.24kg	2 lb/12 oz	\$39.00
429695	6" C-Clamp	1.67kg	3 lb/11 oz	29.00
429596	6" C-Clamp w/5/8" Pins	1.70kg	3 lb/12 oz	40.00
429598	8" C-Clamp w/5/8" Pins	2.44kg	5 lb/6 oz	54.00
429694	4" C-Clamp	1.22kg	2 lb/11 oz	25.00
429696	8" C-Clamp	2.41kg	5 lb/5 oz	32.00
429229	10" C-Clamp	2.44kg	5 lb/6 oz	55.00
429690	C-Clamp w/Horizontal 1 1/8" Receiver (8" Clamp)	1.75kg	3 lb/14 oz	60.00
429697	C-Clamp w/Vertical 1 1/8" Receiver (8" Clamp)	1.75kg	3 lb/14 oz	60.00
429029	Stand Adaptor 1 1/8" to 5/8"	.68kg	1 lb/8 oz	19.00
427000	6" Pump Cup w/5/8" Pin	.57kg	1 lb/4 oz	65.00
427001	Double Suction Cup w/5/8" Pin	1.30kg	2 lb/14 oz	114.00
427002	Single Suction Cup w/5/8" Pin	.68kg	1 lb/8 oz	89.00
429580	Baby Triple Header	1.47kg	3 lb/4 oz	49.00
429581	Baby Double Header	1.75kg	2 lb/11 oz	39.00
429617	Junior Triple Header	3.85kg	8 lb/8 oz	86.00
429585	Junior Side Arm	.91kg	2 lb	43.00
429586	Baby Side Arm	.82kg	1 lb/13 oz	54.00
429751	Heavy-Duty Junior Side Arm	.82kg	1 lb/13 oz	55.00
429752	Heavy-Duty Baby Side Arm	.91kg	2 lb	55.00
429100	Baby Offset Arm	.74kg	1 lb/10 oz	28.00
429126	Baby Extendable Offset Arm	.62kg	1 lb/6 oz	54.00
429045	Junior Offset Arm	1.81kg	4 lb	34.00
429127	Junior Extendable Offset Arm	1.65kg	3 lb/10 oz	64.00
429046	Baby Trombone	4.39kg	9 lb/11 oz	105.00
429047	Junior Trombone	4.42kg	9 lb/12 oz	99.00
429624	Crowder Hanger — for 2 x 4 or 2 x 6 (Receives 1 1/8" — No Nailing Required)	.82kg	1 lb/13 oz	36.00
429492	TVMP Adaptor Stud	.23kg	8 oz	15.00
429625	Adaptor (5/8" For Crowder Hanger)	.74kg	1 lb/1 oz	21.00
429621	5/8" Receiving Mounting Plate	.28kg	10 oz	17.00
429622	Studio Overhead Grip Arm	2.8kg	6 lb/3 oz	92.00
429591	Trapeze	1.64kg	3 lb/1 oz	59.00
429050	Bazooka	3.80kg	8 lb/6 oz	99.00
429048	Baby Wall Sled	1.98kg	4 lb/6 oz	67.00
429049	Junior/Senior Wall Sled	3.06kg	6 lb/12 oz	77.00
429016	2' x 4' Wall Spreader	3.17kg	7 lb	59.00
429017	2' x 6' Wall Spreader	4.08kg	9 lb	64.00
429231	2' x 4' Tube Stretcher (Works in conjunction with 2' x 4' or 2' x 6' Wall Spreader) (Set of 2)	2.29kg	5 lb	57.00
429688	45° Angle Drop Down (For Reflectors or Lighting Fixtures w/1 1/8" Stud)	.74kg	1 lb/10 oz	31.00
426015	Baby 6" Stand Extension	.40kg	14 oz	22.00
426016	Baby 12" Stand Extension	.51kg	1 lb/2 oz	24.00
426017	Baby 18" Stand Extension	.62kg	1 lb/6 oz	27.00
426018	Baby 24" Stand Extension	.74kg	1 lb/10 oz	29.00
426019	Junior 36" Stand Extension	2.10kg	4 lb/10 oz	53.00
429597	Baby Matht Pipe Adaptor (w/5/8" Pin)	.81kg	13 oz	20.00
429613	Matht Becky Adjustable Hanger	1.76kg	3 lb/14 oz	42.00
429614	Matht Gag	.51kg	1 lb/2 oz	34.00
429642	Double Matht Gag	1.02kg	2 lb/4 oz	38.00
429615	Tubing Hanger for 4 1/2" Grip Head (Can accommodate 1" or 2" D.D. Tubing)	.31kg	11 oz	30.00
429618	Baby Pipe Clamp	.82kg	1 lb/13 oz	32.00
429619	Junior Pipe Clamp	.96kg	2 lb/2 oz	61.00
429676	Single Extension Hanger (3') (Terminates w/1/2" Female Thread) (\$3.30 Per Foot for Additional Footage)	3kg	6 lb/1 oz	120.00
429677	Double Extension Telescoping Hanger (3' to 6') (Terminates w/1/2-13 Female Thread) (\$6.60 Per Ft. for Additional Footage)	4.14kg	9 lb/2 oz	170.00
429612	Stirrup (For #9676 & #9677)	.45kg	1 lb	19.00
429679	5/8" Male Pin (For #9676 & #9677)	.14kg	5 oz	13.00
429680	1 1/8" Junior Receiver (For #9676 & #9677)	.20kg	7 oz	37.00
429681	Deck Pole	1.05kg	2 lb/5 oz	49.00
429682	Meat Axe (Specify Wood or Pipe Handrail)	4.54kg	10 lb	160.00
427080	*Maxi-Matht Pole (For Vertical or Horizontal Use) (Adjustable from 96" — 178")	2.25kg	4 lb/12 oz	76.00
427083	*Mini Matht Pole For Vertical or Horizontal Use) (Adjustable from 52" — 96")	1.30kg	2 lb/14 oz	49.00
427801	Baby Matht Boom	5.90kg	12 lb/1 oz	250.00
429648	Bailin Bracket	1.36kg	3 lb	29.00
429649	Small Tree Branch Holder	.17kg	6 oz	18.00
429650	Large Tree Branch Holder	.62kg	1 lb/4 oz	25.00
429233	Matht "T" Bar (4' Length)	6.80kg	15 lb	59.00
429490	Grip-A-Light w/1 1/8" Clamp	.34kg	12 oz	12.00
429491	Grip-A-Light w/1 1/2" Clamp	.34kg	12 oz	14.00
429496	Grip-A-Light w/5/8" Male Pin	.34kg	12 oz	13.00
429497	Grip-A-Light w/3/8" Male Pin	.34kg	12 oz	13.00
429698	C Boom Clamp	2.27kg	5 lb	120.00

*Designed w/Double Cam Action to securely lock the tubes from rotating while in use.

MATTHEWS STUDIO EQUIPMENT, INC.

Mounting Equipment/Accessories

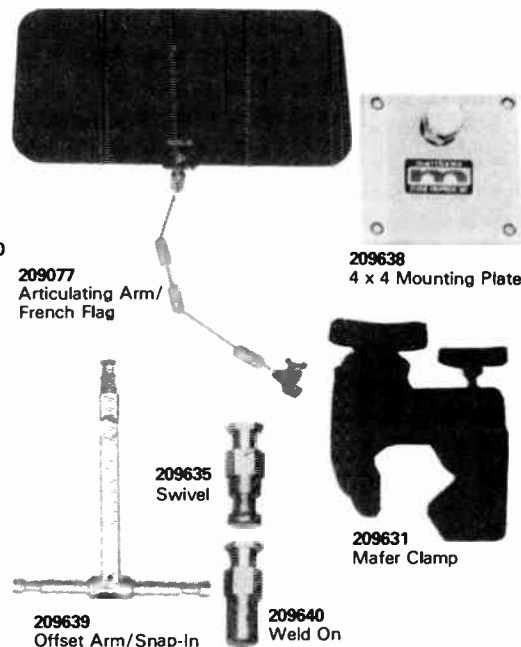
French Flag

The French flag is a small metal, opaque flag (used to shade the camera lens) mounted on the end of an articulating arm. The joints are spring-tensioned ball, and the arm terminates in a screw locking "U" clamp (3/4" inner diameter)

Articulating Arm (Flex-Arm)/French Flag

Cat. No.	Description	Metric Weight	Weight	List
209077	Articulating Arm/French Flag Camera Lens Shade (Spring Ball Joint)	4.82kg	1 lb/1 oz	\$ 64.00
209167	French Flag Only	.28kg	10 oz	14.00
209771	Articulating Arm (Flex-Arm) Spring Clamp	.62kg	1 lb/6 oz	85.00
209631	Mafer Clamp/Snap-in (Clamps to diameters from 1/2" to 1 7/8") (Clamps to flat surfaces from 0" to 2")	.43kg	15 oz	31.00
209632	5/8" Diameter Male Pin/Snap-in (For #9631)	.14kg	5 oz	7.00
209633	3/8" Diameter Male Pin/Snap-in (For #9631)	.05kg	2 oz.	7.00
209637	1/2" Pin/Snap-in (For #9631)	.11kg	4 oz	7.00
209634	* Articulating Arm/Snap-in Set	4.68kg	10 lb/5 oz	231.00
209635	Swivel/Snap-in (for #9631) (Joins Two Mafer Clamps Together)	.06kg	2 oz	7.00
209636	2 1/2" Grip Head/Snap-in (For #9631)	.60kg	1 lb/5 oz	38.00
209638	4" x 4" Mounting Plate/Snap-in (For #9631)	.23kg	8 oz	19.00
209639	Offset Arm/Snap-in (For #9631)	.57kg	1 lb/4 oz	32.00
209640	Weld On/Snap-in (For #9631)	.06kg	2 oz	8.00
349557	Mini-Extension Arm/Snap-in (For #9636)	.77kg	1 lb/11 oz	32.00

*Set represents one Mafer Clamp and one each of all Snap-in accessories. Set list price reflects a savings of 5%



Sandbags

Sandbags are employed on a set to provide additional ballast to objects, tall stands, or large surfaced units subject to wind (e.g., reflectors, butterflies, silks, etc.) Sandbags are also used as counter-balance weights for "boom arm" type configurations.

Weight descriptions (15 lbs., 25 lbs., 35 lbs., and 50 lbs.) refer to their capacity when filled. "Empty" refers to Sandbag shells that are sewn completely except for one inch in the seams, to accommodate filling the shells with sand. The seams are then to be sewn closed by the purchaser. This allows a savings in one-time shipping charges.

Sandbags

Cat. No.	Description	Metric Weight	Weight	List
299550	15 lb	6.80kg	15 lb	\$24.00
29955E	15 lb (Empty)	.11kg	4 oz	16.00
299552	25 lb	9.50kg	25 lb	32.00
29952E	25 lb (Empty)	.15kg	6 oz	23.00
299556	35 lb	15.88kg	35 lb	34.00
29956E	35 lb (Empty)	.23kg	8 oz	27.00
299551	50 lb	22.7kg	50 lb	45.00
299168	50 lb (Empty)	.34kg	12 oz	35.00
299555	15 lb Fly-A-Way (Velcro)	.11kg	4 oz	30.00
299607	Matth Gag (Double Zipper)	.20kg	7 oz	36.00



Century Stand Accessories

Grip/Gobo Heads

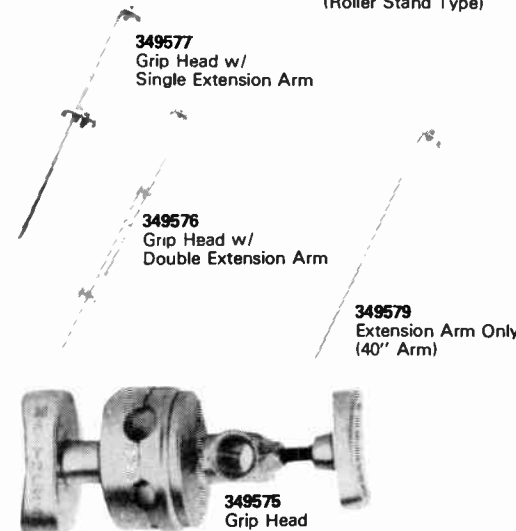
The term "Grip Head" refers to a head which seats onto or into a stand. "Gobo Head", on the other hand, is the mounting head on the end of an extension arm.

There are two sizes of Grip Heads available: the 2 1/2" or the 4 1/2". The 2 1/2" Grip Heads mount onto a standard 5/8" pin, similar to that found on Century Stand and "Baby" stands and other related mounting hardware.

The 4 1/2" Grip Head is intended for use with "Junior" (1 1/8" receiver) and other heavy-duty stands.

Century Stand Accessories

Cat. No.	Description	Metric Weight	Weight	List
349577	Grip Head w/Single Extension Arm	1.47kg	3 lb/4 oz	\$ 65.00
349578	Grip Head w/Double Extension Arm	2.47kg	5 lb/7 oz	102.00
349575	Grip Head only 2 1/2" (Century Stand Type)	.48kg	1 lb/ 1 oz	37.00
349576	Grip Head 4 1/2" (Roller Stand Type) w/1 1/8" Male Pin and Receiver for 1 1/8" Pin	2.35kg	5 lb/3 oz	95.00
429614	Matth Gag	.51kg	1 lb/2 oz	34.00
349579	Extension Arm Only (40" Arm)	.99kg	2 lb/3 oz	37.00
349557	Mini Extension Arm (20" Arm)	.54kg	1 lb/3 oz	32.00



MATTHEY

Video Delay Systems

Video Delay Boxes (Variable), DV Series

• Impedance: 75 ohms • Frequency Response: ± 0.05 dB Ripple up to 5.5MHz (0.1dB p-p) • Return Loss: 27dB • Temperature Range: 0-70°C • Max. Input Voltage: 2VDC • Performance of box and 19" rack units is a function of the delay line combinations used

Small metal boxes with BNC connectors provide infinitely variable video delay either with switches (type 180 or 360) or taps (type 097) over a range of 10-665ns. A ± 1 ns trim achieves precise timing at installation and will compensate for temperature and aging variations during subsequent maintenance. For longer delay requirements, these variable boxes may be cascaded with lump delay boxes (type DV 0100-1000) for a maximum delay of 2500ns. The prefix DV identifies boxes which can be used as "stand-alone" units or can be mounted on a 19" rack panel (Type 5) which accommodates 15 separate boxes. The prefix DN refers to similar boxes which are not rackmountable.

Adjustment of time delay in TV signal routes is important in all countries of the world. 75 ohm delay units are suitable for use in all TV systems including NTSC, PAL, SECAM, and all variations.

The Smaller Video Delay Units are designed to make the fullest use of the miniature DIP video delay line modules, and retain feature important to TV engineers.

Passive Delay Boxes

Rackmounted - V Series or Stand Alone N Series

Boxes with Switches and \pm Vernier

Delay Range-ns	Part Number	Price
3-9	UN 3/9	\$ 86.00
10-165	VU 180	226.00
	NV 180	241.00
10-330	NV or VU 360	434.00

Boxes with Taps and \pm Vernier

Delay Range-ns	Part Number NV	Price
15-165	097/A	POR
65-215	097/B	POR
115-265	097/C	POR
215-365	097/D	POR
315-465	097/E	POR
415-565	097/F	POR
515-665	097/G	POR

Rackmounted PC Card Delay (Infinitely Variable)

Video Delay Range 10-1830ns.

Type 175 Rack Frame: Height 1³/₄"; accommodates 10 PC cards (2 delay lines on each card); total 20 delays; BNCs on back of PC card; lucite front cover; cards mount horizontallyPOR

Type 350 Rack Frame: Height 3¹/₂"; accommodates 16 PC cards (2 delay lines on each card); total 32 delays; BNCs on back of PC card; lucite front cover; cards mount verticallyPOR

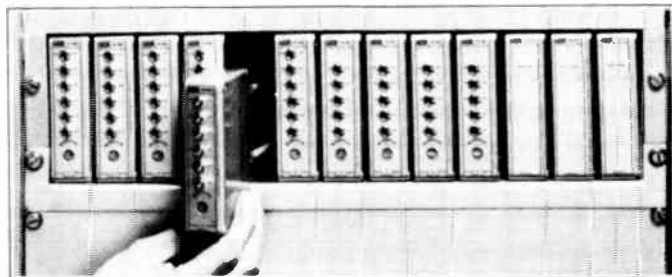
PC Card Delay Lines for 175 and 350 Series (not interchangeable)

Video Delay Channels Available

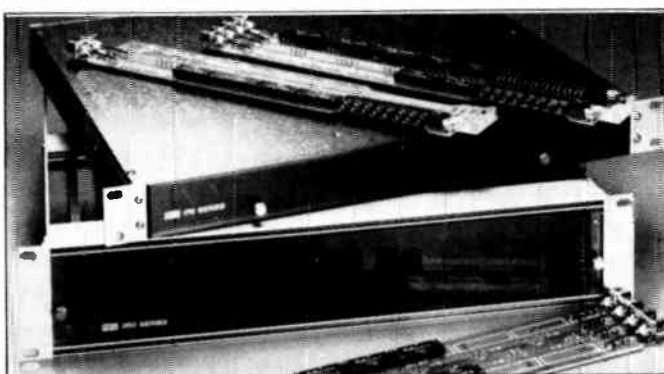
Available with Switches (Suffix "S") or Taps (Suffix "N")

Price On Request

Video Delay Ranges	Part Number Prefix 175 or 350	Video Delay Ranges	Part Number Prefix 175 or 350
10-170ns	A	810-1130ns	K
10-330ns	B	910-1230ns	L
170-490ns	C	1010-1330ns	M
210-530ns	D	1110-1430ns	N
310-630ns	E	1210-1530ns	P
410-730ns	F	1310-1630ns	R
510-830ns	G	1410-1730ns	S
610-930ns	H	1510-1830ns	T
710-1030ns	J		



Boxed Delay Lines



175/350 Series

Zero Loss Delay Video Delay Line

• 1 Input 1 Output • 1V p-p 'in' -1V p-p 'out' • 75 ohm active • Delay selection 10-1830ns • Delay trim at front 5ns (8° Ø PAL) 6.4 Ø NTSC

The Zero Loss Delay unit is designed to delay a composite color TV signal without significant distortion. The printed circuit card selected will determine the delay time available. If additional delay is subsequently required, the user may add more Matthey DIP delay modules in spaces provided. Gold plated switches or "handbags" ensure a long lifetime of very low noise operation.

The Zero Loss Delay unit can be fitted into any rack frame equipped with ± 15 V nominal DC power supply and an Amp-Blade 23-pin socket (such as the 3400 Series made by Grass Valley Group Inc.)

Features accessible without removing the PC card:

1. 5ns adjustment via 2 x 2ns switches and ± 1 ns fine trim screwdriver adjust.
2. Optional gain variation by screwdriver adjust ± 0.7 dB. (Note: gain is automatically compensated for each delay step switched).
3. Optional DC offset by screwdriver adjustment over the range ± 750 mV.

Items 2 and 3 are normally not necessary but can be fitted if stated on the order.

Price On Request

Part Numbers	Delay Times	Part Numbers	Delay Times
ZL 170	10-170	ZL 1130	810-1130
ZL 330	10-330	ZL 1230	910-1230
ZL 490	170-490	ZL 1330	1010-1330
ZL 530	210-530	ZL 1430	1110-1430
ZL 630	310-630	ZL 1530	1210-1530
ZL 730	410-730	ZL 1630	1310-1630
ZL 830	510-830	ZL 1730	1410-1730
ZL 930	610-930	ZL 1830	1510-1830
ZL 1030	710-1030		

MAXELL CORP. OF AMERICA

Professional Video Tape/Videocassettes

Broadcast Quality 1" Tape

- Most consistent RF output • Highest chroma S/N • Incredibly low dropout rate • After 1000 passes retains 100% of original signal
- Withstands three hours of still life without scoring or clogging • S version features shipper

Product	Length	Units Per Carton	Unit Price
CV-30	30 min.	5	\$ 73.60
CV-60	60 min.	5	95.50
CV-90	90 min.	5	125.50
CV-30S	30 min.	5	79.60
CV-60S	60 min.	5	101.50
CV-90S	90 min.	5	131.50



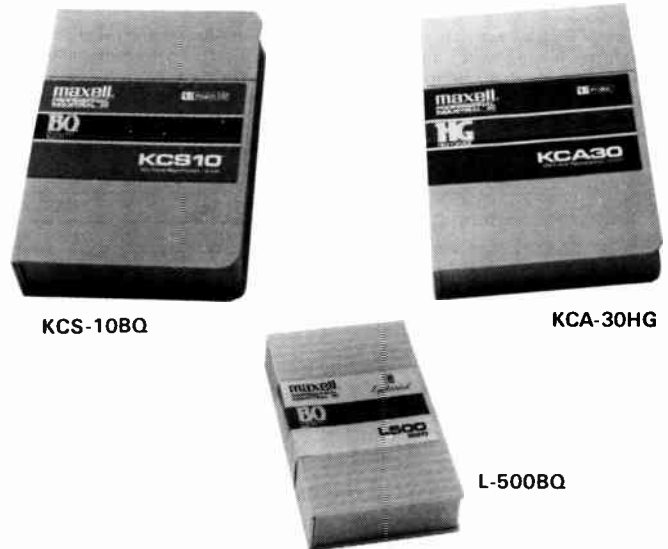
CV Series
1" Tape

Broadcast Quality U-Matic Epitaxial Videocassettes

- Exclusive epitaxial formulation • Outstanding picture clarity and consistent performance • Super-premium tape uses more sensitive oxide back coating that resists outside contaminants and prevents static bleed-off • Better tracking under adverse conditions such as heat, rain, cold and dust • Ideal for ENG applications

KCA U-Matic Broadcast Quality Videocassettes

Product	Length	Units Per Carton	Unit Price
KCA-5BQ	5 min.	20	\$23.90
KCA-10BQ	10 min.	20	25.90
KCA-20BQ	20 min.	20	27.43
KCA-30BQ	30 min.	20	29.51
KCA-60BQ	60 min.	20	47.95



KCS-10BQ

KCA-30HG

L-500BQ

KCS U-Matic Broadcast Quality "S" Series Mini Videocassettes
Broadcast Quality

KCS-10BQ	10 min.	20	\$22.54
KCS-20BQ	20 min.	20	27.01

High Grade U-Matic Videocassettes

- Exceeds industry standards • Unsurpassed chroma response • Maximum resolution and greater picture • Compatible U-Matics with any U-Matic system using 3/4" VTRs including cassette duplicating equipment

KCA-HG U-Matic Videocassettes

Product	Length	Units Per Carton	Unit Price
KCA-5HG	5 min.	20	\$23.00
KCA-10HG	10 min.	20	25.00
KCA-20HG	20 min.	20	26.50
KCA-30HG	30 min.	20	28.50
KCA-60HG	60 min.	20	41.50

Broadcast Quality VHS and Beta Videocassettes

- High video output, chroma output, chroma S/N and video S/N
- Audio is as perfect as video • Ideally suited for use with Betacam and Recam

Broadcast Quality VHS Videocassettes

Product	Length	Units Per Carton	Unit Price
T-30BQ	30 min.	20	\$16.99
T-60BQ	60 min.	20	17.99
T-120BQ	120 min.	20	20.36

Broadcast Quality Beta Videocassettes

L-500BQ	60 min.	20	\$17.99
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SQ Super-VHS Videocassettes

- Maxell SQ provides a tape for recording the wider band and higher frequencies associated with S-VHS recordings. When used with a S-VHS recorder, up to 420 lines of resolution is possible. Higher epitaxial particles, anchor segment interaction binder, micro-smooth tape surface and a higher precision tape shell.

Product	Length	Units Per Carton	Unit Price
SQ ST-120	120 min.	10/50	\$25.99
SQ STC-20	20 min.	10/50	21.99

Professional Industrial Plus VHS and Beta Epitaxial Videocassettes

- Accurately duplicates live images of every kind • Take into account even slight variations in individual color perception • Accurate color reproduction assured

VHS Videocassettes

Product	Length	Units Per Carton	Unit Price
T-30 PLUS	30 min.	10/50	\$7.99
T-60 PLUS	60 min.	10/50	8.99
T-90 PLUS	90 min.	10/50	9.25
T-120 PLUS	120 min.	10/50	9.99

Beta Videocassettes

L-250 PLUS	30 min.	10/50	\$7.99
L-500 PLUS	60 min.	10/50	8.99
L-750 PLUS	90 min.	10/50	9.99

MAXELL CORP. OF AMERICA

Professional Audio Tape

Instant Start Cassettes (Fully Packaged — With Albums and Labels)

Product	Length	Quantity	Price
IS-30	30 min.	10/100	\$1.49
IS-60	60 min.	10/100	1.75
IS-90	90 min.	10/100	2.00

Duplicator Series Cassettes (Bulk)

Duplicator Series cassettes are identical to the Communicator Series. The only difference is they are unlabeled.

Product	Length	Quantity	Price
DUP-30	30 min.	20/200	\$1.44
DUP-45	45 min.	20/200	1.60
DUP-60	60 min.	20/200	1.75
DUP-90	90 min.	20/200	2.42
DUP-120	120 min.	20/200	3.45

Communicator Series Cassettes (Fully Packaged — With Albums and Labels)

These cassettes feature wide frequency response and uniform output characteristics, assuring dependable performance from one end of the tape to the other, with normal bias and equalization settings, so they can be used with the vast majority of P/I recording equipment.

Product	Length	Quantity	Price
COM-30	30 min.	10/100	\$1.55
COM-45	45 min.	10/100	1.65
COM-60	60 min.	10/100	1.85
COM-90	90 min.	10/100	2.47
COM-120	120 min.	10/100	3.71

UDS Cassettes (Packaged — Ultra Dynamic)

UD Ultra Dynamic Cassettes high sensitivity high output of 5dB at 12,500Hz wide bias latitude and frequency range.

Product	Length	Quantity	Price
UDS I-46	46 min.	10/100	\$2.29
UDS I-60	60 min.	10/100	2.49
UDS I-90	90 min.	10/100	2.99
UDS II-46	46 min.	10/100	2.29
UDS II-60	60 min.	10/100	2.49
UDS II-90	90 min.	10/100	2.99

XLII Cassettes (Cobalt Ferrite Epitaxial — High Bias)

To be used with cassette decks that have a chrome position. By using the setting for chromium tape, the recorder will be adjusted for a different bias current. The difference is easily heard upon playback, where the noise level between sound and tape is reduced between 4 and 5dB.

Product	Length	Quantity	Price
XLII-46	46 min.	10/100	\$2.69
XLII-60	60 min.	10/100	2.99
XLII-90	90 min.	10/100	3.99

XLI-S Cassettes (Studio Series — Normal Bias)

The XLI-S is the finest ferric-based tape formulation available in a cassette designed to use normal bias and EQ. Frequency response extends to the widest limits ever achieved in this class of cassette, with greater sensitivity throughout the entire tonal range as well.

Product	Length	Quantity	Price
XLI-S-60	60 min.	10/100	\$3.99
XLI-S-90	90 min.	10/100	5.49

XLII-S Cassettes (Studio Series — High Bias)

The XLII-S represents an advanced tape formulation, high epitaxial, with notably finer magnetic particles, plus an entirely new molecular fusion binder system. (Use XLII-S with the recorder's Hi, or Chrome settings for bias and equalization — 70µs).

Product	Length	Quantity	Price
XLII-S-60	60 min.	10/100	\$3.99
XLII-S-90	90 min.	10/100	5.49



MX — Metal Tapes

When MX is recorded on a metal-compatible deck, the Maximum Output Level (MOL) is 2dB greater in the high frequency range than the output of a non-metal premium tape. Distortion is also dramatically reduced at the same input level.

Product	Length	Quantity	Price
MX-46	46 min.	10/100	\$4.49
MX-60	60 min.	10/100	5.29
MX-90	90 min.	10/100	6.99

UD 1/4" Open Reel Tapes

UD Ultra-Dynamic. The quality choice of professionals. Wide dynamic range and full frequency response has made this polyester tape the longtime favorite of studio professionals.

Product	Length	Quantity	Price
UD35-90	1800' x 7" RL-1 1/2 Hr.	10/40	7.49
UD35-180	3600' x 10 1/2" RL-3 Hr.	10/20	22.99
UD18-180	3600' x 7" RL-3 Hr.	10/20	9.99
UD25-120	2400' x 7" RL-2 Hr.	10/20	9.49

UD Microcassettes

Made with Maxell's famous UD tape formulation, UD microcassettes exhibit surprisingly high fidelity at both speeds of microcassette recorders.

Product	Length	Quantity	Price
MC-60UD 3 pack	60 min.	10/100	\$6.49

Professional Open Reel

XL Professional Back-Coated. Unsurpassed for high performance mastering. Totally responsive to all the demands of a live performance. Available in the "professional thickness" of 1.5 mil in addition to 1.0 mil thickness.

XLI-50-120B	Back-coated open reel tape on 10.5" NAB metal reel. 2500'		26.79
XLI-35-90B	Back-coated open reel tape on 7" precision plastic reel. 1800'		10.39
XLI-35-180B	Back-coated open reel tape on 10.5" NAB metal reel. 3600'		28.99
XLII-35-90	Open reel tape on 7" precision plastic reel for use with EE capable decks. 1800'		13.79
XLII-35-180	Open reel tape on 10.5" NAB metal reel for use with EE capable decks. 3600'		37.59

MCL, INC.**"C" Band High Power Amplifier System****10717 Traveling Wave Tube Amplifier C-Band 3kW**

The 10717 TWTA represents a major milestone in the development of 3kW C-band TWT Satcom amplifiers. The 10717 combines state-of-the-art traveling wave tube technology with state-of-the-art power supply design.

The advent of the Permanent Magnet (PM) Brazed Helix TWT obsoletes the coupled-cavity solenoid focused TWT and its associated bulky, inefficient circuitry.

The 10717 (specifically designed for the Brazed-Helix TWT) is contained in a single rack-type enclosure for simplified operation and maintenance, along with easier and less costly integration into earth station shelters.

Because of the dramatic reduction in system size, system control becomes much more centralized. Ten front panel mounted switches are all that is required for system control.

The Helix-Type TWT does not require an electromagnet focus solenoid power supply or an ion power supply. As a result, the savings on size and power efficiency are passed on to the system and ultimately the user.

The cathode and modulator high voltage power supplies are of switch-mode power converter (SMPC) configuration. The SMPC configuration is inherently much greater in power efficiency and can be made much smaller than a "linear" type power converter of equal output. The continuing technological advances occurring in both the high power FET switch transistor and integrated circuit regulator controller (pulse-width modulator) industries have allowed the design of the 10717's SMPC to focus on reliability, ruggedness, and trouble-free operation.

System maintenance is simplified by allowing access to all critical sub-assemblies. RF components are accessible behind the hinged control panel. The cathode P/S is mounted on slides, and the AC distribution panel/collector P/S is configured as a roll-out unit, mounted on wheels. In addition, vital system operating parameters are displayed, when desired, on front panel mounted high accuracy digital panel meters. Internal test points are provided. The cabinet is dark gray, panels are light gray.

Specifications

Frequency Range:	5.850-6.425GHz
Bandwidth:	575MHz at -1dB
Gain:	70dB rated power, 73dB small signal minimum
Gain Slope:	See table below
Gain Stability:	± 0.25dB/24 hours with constant drive
Gain Adjustment:	20dB continuously adjustable

	Power Variation In Band (dB)	40MHz BW dB/MHz
Mode 1 (PS = 3kW)	0.5	.02
Mode 2 (PS = 2kW)	1	.03
Mode 2 (PS < or equal to 500W)	3	.04

Output Power: At cabinet flange \geq 2700W (Mode 1)
Where Mode 1 = operation at $P_s \geq$ 3kW. Mode 2 = adjustment for optimization of 3rd order IM. P_s = output power at tube flange and waveguide losses are 0.6dB

Note: Two pairs of cathode and anode voltages may be needed

Output Power

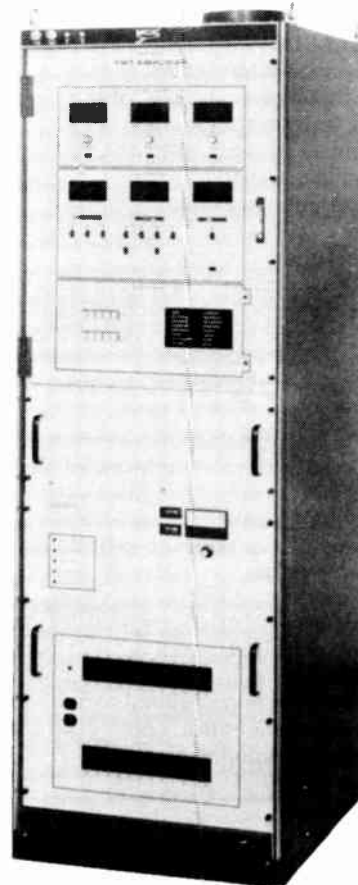
Stability: ± 0.1dB/hr. ± 0.25dB/24 hours
Input VSWR: 1.20:1 maximum
Output VSWR: (As seen by antenna feed system) 1.25:1 maximum

Load VSWR: 1.5:1 for specification compliance; trip set at 25% rated output power

AM-PM

Conversion: Mode 1, 6°/dB $P_s =$ 3kW
Mode 2, 3°/dB $P_s =$ 500W

Harmonic Output: 60dBc at rated output

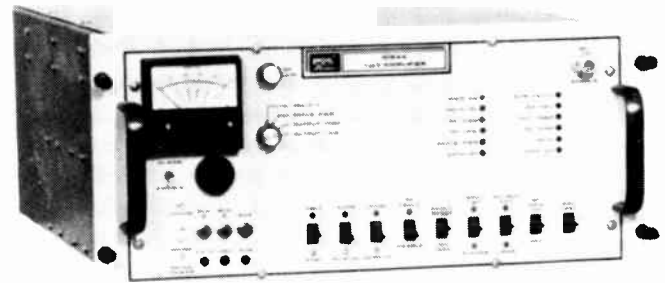
**10717**

Group Delay:	Linear, 0.1nsec/MHz. Parabolic, 0.05nsec/MHz ² . Ripple, 2.0nsec p-p
Residual AM:	Below 4kHz — 32dBc minimum — 4kHz to 500kHz, — 20(1 + log F) with F in kHz — above 500kHz — 60dBc minimum (measured in dB below rated single carrier in a 4kHz band)
Noise and Spurious:	From 4.2 to 12.0GHz — 60dBw/4kHz From 3.7 to 4.2GHz — 130dBw/4kHz From 12.0 to 40.0GHz, — 110dBw/MHz
RF Connectors:	Input, type N, output, CPR 137F
Line Voltage, Frequency and KVA:	480V ± 10%, 3 ϕ , 4-wire, 47-63Hz plus ground, 15KVA
Inrush Current:	250% maximum
Line Unbalance:	2% line to line voltage (3 phase units only)
Line Harmonics:	3% maximum line to line (3 phase units only)
Load Unbalance:	5% at maximum load (3 phase units only)
EMI Susceptibility:	Will survive ± 35% voltage transients
Dimensions:	78" H x 26" W x 32" D
Weight:	1300 lbs.
Operating Environment:	Temperature: 0 to +50°C Humidity, 85%/ Altitude to 10,000'
Shock and Vibration:	As encountered at satellite tracking ground stations

MCL, INC.**Transportable KU Band TWT Amplifiers****10844 Ku Band 300W Traveling Wave Tube Amplifier****General Performance Information**

- FET Switch Mode Power Supply (SMPS)
- Complete TWT protective circuitry
- Forced isolated air cooled; 400Hz blower used
- External RF inhibit available
- Redundant operation available
- Audible alarm
- Optical arc detection circuitry
- The TWTA is provided with two front panel switches to control external RF and/or WG switches (115AC). These can be used by the operator to control dummy load operation, optional excitation, etc.
- Digital Attenuator: 27C1802 with D16329-006 PCB, optional
- Remote Panel: 15313, optional
- Interconnect cable from remote panel to 10844, optional 03C1773-001. 25' std.
- Computer interface, optional
- 28VDC operation for external coax or WG switches, optional
- VDE line filter, optional

This single drawer TWTA is designed for small volume and 8³/₄" rack height. The unit uses a 300W traveling wave tube. It is designed to have additional features: power output metering, reflected power monitoring, digital attenuator option, waveguide and coax switch control, commonality with other units, arc detection, and additional monitors.

**10844****Electrical Specifications**

Power Out	
(Flange):	262W
Gain (dB):	Std., 45. With optional SSA, 70
Gain Adjustment	
Range:	20dB min.
RF Sample	
(N-F):	-48dB
Connectors:	Input SMA-F. Output WR75 flat flange
Line Power	
(Std.):	120VAC, 1 phase, 60Hz KVA: 2.2 max. P.F. 0.75 nominal

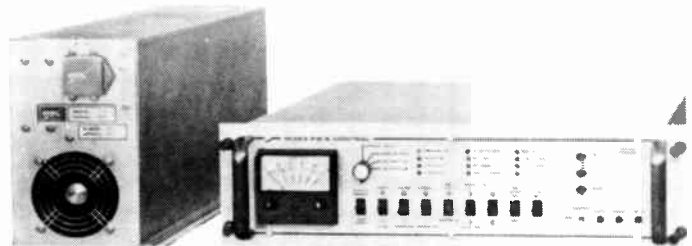
10906 Single Traveling Wave Tube Amplifier with Separated RF Module

- Remote Panel: 15346, optional
- Cable-Rem Pnl. to 15351, optional
- Digital Attenuator Remote: 27C1802 + PCB D16329-006, optional
- Cable Digital Attenuator Remote: 03B1788-001, optional
- Aluminum Heat Sink: 19D1430, optional
- 28VDC operation for external RF switches, optional
- Side Connector Exit RF Module: Order 10876, optional
- Computer interface, optional

This amplifier consists of two modules and is suitable for antenna mount or flyaway usage. It incorporates the same features as the 10844 and contains the same RF chain, TWT, blower assemblies, control modules, power supply, etc. A complete system consists of an RF module, a controller drawer, and interconnecting cables. This amplifier forms the basic unit for several of the redundant systems.

The 15346 RF module contains the TWT with input assembly including manual attenuator (or SSA and/or digital attenuator when ordered), output waveguide assembly (including arc detector), and cooling assembly (isolated forced air). The unit is watertight and suitable for outside use. It can also be utilized in a "flyaway" when properly shock-mounted for airline handling.

The standard unit with copper heatsink weighs 51 lbs. This can be reduced by using an optional aluminum heatsink (which also reduces the upper ambient limit from 50°C to 40°C).

**10906**

The 15351 control drawer occupies minimum rack space (5¹/₄"H) while housing all system electronics (except for arc detector PCB). Centralization of electronics allows operation in a more benign environment and increases system MTBF. The drawer is forced air cooled.

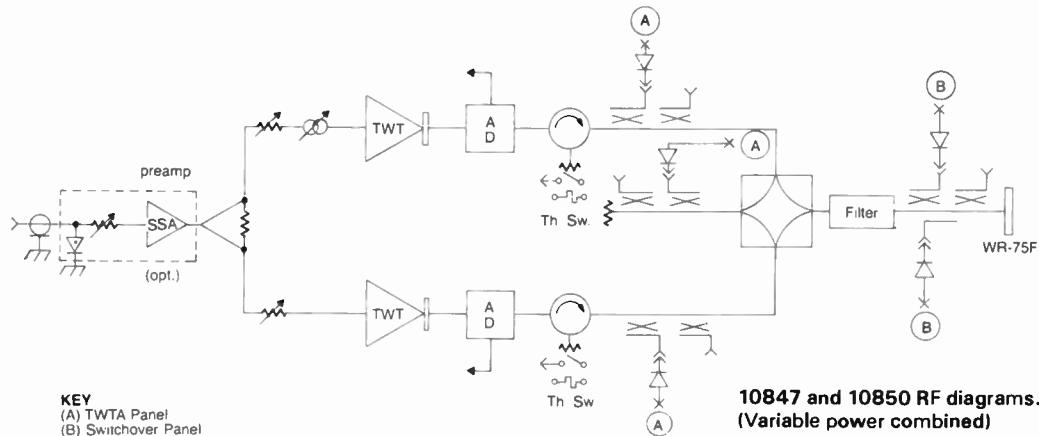
The interconnecting cables consist of a 37-pin "D" connector molded cable and an HV cable. The HV cable consists of HV wires covered successively by (1) a mylar wrap, (2) heavy metal shielding, and (3) sturdy industrial grade plastic tubing. Hermetic HV connectors are used and sealed with shrink tubing. These cables are watertight and are 25' long.

Electrical Specifications

RF Power Out	
(min.):	TWT: 300W; TWTA: 262W usable min.
Gain (dB):	Std., 45 (with opt. SSA, 70)
Input Line Power:	120VAC, 1 phase, 60Hz std. (options available); KVA: 2.2 with 0.75 P.F.

MCL, INC.

Redundant Systems Test Loop Translator Coax Switch Assembly



Transportable Redundant Systems

1-For-1 Switchover and Variable Power Combined (VPC)

Redundant systems are available for standard and custom input and output configurations. These units are designed to employ 10844 or 10901 as the basic TWTA module. Redundancy insures greater on-line availability and should be used where mission success is critical. The failure of one TWTA does not prevent completion of the transmission.

Typically, an RF power output sensor is used to detect the absence of power on an individual amplifier and initiate the action of placing the operative amplifier on-line.

There are two major types of redundant configuration:

1-For-1 Switchover

The basic system consists of two TWTAs and a switchover network, and switches between the two TWTAs. When a "power fail" signal occurs, action is taken to switch the other TWTA on line. The user is limited to the power output of a single amplifier. In addition, during TWTA switching there is typically a 100 μ s interruption of signal.

Variable Power Combined

This system consists of two TWTAs and a variable power combiner. The VPC has the capability of combining the output of both TWTAs—thus doubling the output power. Another advantage is "soft-fail" (no power interruption during transfer). This type of system is more expensive due to the VPC, phase equalization requirement, and additional circuitry. Most customers typically order the VPC configuration since they desire the additional power output capability on marginal days.

Fixed phase combining can also be used but it has the disadvantage of lower power out for single amplifier performance (-6dB from max. power while a VPC is -3dB).

MCL's standard configuration is a power divider with manual attenuators. As options, MCL offers digital attenuators and a preamplifier. Custom configurations including coaxial switches can be furnished as specified.

15364 SYSTEM

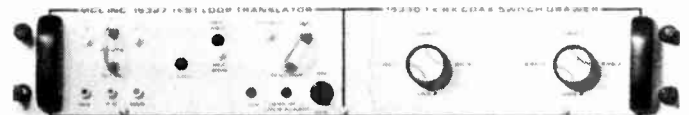
15327 Test Loop Translator

- Designed for TNG
- Front panel control, maintenance and monitoring
- 3.5" rackmount height, 30 lbs. total

The 15327 is a 14GHz to 12GHz frequency translator designed for testing of the up-link and down-link RF electronics. It is conveniently packaged for EIA standard 19" rackmounting. (The 15327 and 15330 are designed as half rack units and jointly require 3.5" height by EIA standard 19" W.) Front panel access allows input selection from 3 different sources, monitoring capabilities of DC voltages, and adjustments of phase voltage and frequency of the internal local oscillator.

15330 Transmit Receive Coax Switch Assembly

- 12/14GHz coaxial switching
- Operator manual switch override

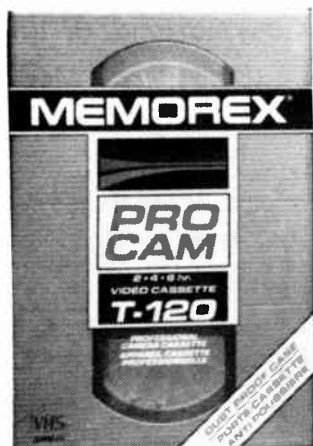


15364

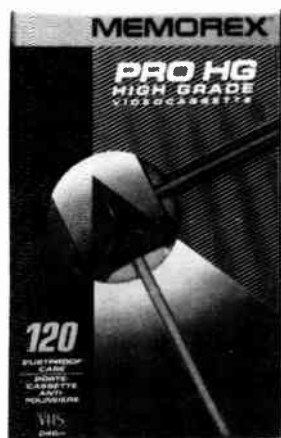
The MCL 15330 provides coaxial switching for communications down converter input and redundant video exciter outputs. In addition it provides a 950MHz to 1450MHz output from a 4 port antenna feed for video receivers. Diode coupled DC power supplies (15334) furnish redundant power to the block down converters. This unit is EIA standard 19" rack-mountable.

MEMTEK PRODUCTS

Videocassettes/Audio Cassettes



Pro Cam T-120



Pro HG T-120



CDXII

HS (High Standard) VHS Videocassettes

- For general purpose video recording

HS T-120 \$3.99

Pro HG (High Grade) VHS Videocassettes

- Permapass™ binder system provides ultra low head wear and high tape durability
- Includes Safeguard™ Storage Case

Pro HG T-120 \$4.99

Pro VHS-C High Grade Videocassettes

- Superb clarity, color, sharpness
- High density magnetic tape coating for exceptional picture quality even at the longest (SLP) recording speed

Pro VHS-C TC-20 \$5.99

Pro Hi-Fi VHS Videocassettes

- Developed specifically to capture the extraordinary sight and sound of VHS Hi-Fi or PCM digital systems
- Permapass binder system eliminates oxide shedding and extends tape life
- Anti-static cassette mechanism reduces electro-static attraction of dropout-causing dust and debris
- Includes the see-through version of the Safeguard Storage Case

Pro Hi-Fi T-120 \$6.99

Pro Cam VHS Videocassettes

- Designed to meet the demanding quality needs of portable recording
- Anti-static cassette mechanism reduces electro-static attraction of dropout-causing dust and debris
- Includes the see-through version of the Safeguard Storage Case

Pro Cam T-120 \$7.99

Pro Cam T-30 5.99

Standard Beta Format Video Tape

- For general purpose video recording

Standard L-750 \$4.99

Pro Series 8mm Videocassettes

- Ultra-fine metal particle formulation for outstanding image quality
- Specially designed cassette mechanism has fewer moving parts for maximum reliability
- Double-lid locking system helps protect the tape from dropout-causing dust and dirt

MP-30 \$4.99

MP-120 9.99

CDXII Metal Audio Cassettes

- Captures all the energy and subtlety of compact disc and digital audio music sources

- Metal formulation for use at the "high" or "CrO₂" chrome tape selector switch

CDXII C-90 \$4.49

CDXII C-90 2-pack 9.98

HBXII High Bias Audio Cassettes

- Improved sound reproduction vs. premium high bias tapes
- Superior sensitivity to deliver greater "sound presence"
- Use with "high" or "CrO₂" tape selector switch

HBXII C-60 \$2.59

HBXII C-60 2-pack 5.18

HBXII C-90 3.49

HBXII C-90 2-pack 6.98

HBII High Bias Audio Cassettes

- Exclusive crystal ferrite formulation delivers improved low frequency output and a bright high end for greater life and realism
- Reduced background noise for cleaner reproduction
- Requires equipment with "high" or "CrO₂" tape switch

HBII C-60 \$ 2.29

HBII C-60 2-pack 4.58

HBII C-90 2.79

HBII C-90 2-pack 5.58

HBII C-90 10-pack 27.90

MRXI Normal Bias Audio Cassettes

- Premium tape for all music reproduction
- Delivers higher output and greater sensitivity compared to standard cassettes
- Unique storage album for hassle-free tape storage and protection
- Use on any equipment at the "normal" switch position

MRXI C-60 \$2.19

MRXI C-60 2-pack 4.38

MRXI C-90 2.69

MRXI C-90 2-pack 5.38

dB Normal Bias Audio Cassettes

- Low noise, high output formulation
- General purpose tape for music or voice recording
- Use on any equipment at the "normal" switch position

dB C-46 \$1.39

dB C-46 2-pack 2.49

dB C-60 1.89

dB C-60 2-pack 2.99

dB C-90 2.29

dB C-90 2-pack 3.99

dB C-120 2.39

dB C-120 2-pack 4.29

Microcassettes

MMC-60 Dictation micro 2-pack \$5.89

MERLIN ENGINEERING WORKS

Video Standards Converter/ Audio Synchronizer/Monitor

ME-888B Digital Video Processor/Standards Converter

- Merlin ME-888B accommodates all world standards, including PAL-N used in Argentina, Uruguay and Paraguay
- Two modes of motion interpolation
- SECAM output encoder
- Eight-bit resolution — luminance and chrominance
- International television standards conversion
- Time base correction and color correction
- Noise reduction and detail enhancement
- Multistandard synchronization and freeze frame
- Genlock, DOC, Lum/Chrom Delay and Output Fade

In addition to being a bidirectional television standards converter, the ME-888B is also a synchronizer, noise reducer, color corrector, image enhancer, field and frame store and time base corrector.

Designed to the highest multistandard broadcast signal specifications, the ME-888B is capable of handling "worst-case" conditions found in converting standards via videocassette—unstable VTR's disturbed sync, noise generated by "available light" shooting and even multi-generation recordings.

Specifications

- Frequency Response:** (PAL, SECAM, NTSC, 4.4NTSC) ± 0.5dB 0 to 3.3MHz, -3dB at 3.5MHz
- Tolerance:** All SPG outputs are derived from the subcarrier (except 4.4NTSC)
- Signal-to-Noise Ratio:** 52dB CCIR weighted, flatfield. (Rhode and Schwarz UPSF2 meter)
Output luminance stability ± 15ns
- Luma/Chroma Displacement:** Horizontal: 600ns chroma advance, 100ns delay. Continuous adjustment. Vertical: 6 lines chroma advance, 1 line retard
- Power Supply:** Voltage 99-132V/187-264V (47-440Hz)
- Dimensions:** 10.5"H x 17.5"W x 16"D rackmountable

Inputs (75 ohm terminated)

- PAL, PAL-M, SECAM, NTSC, 4.4NTSC:** Monochrome 525/60 or 625/50. Level: 1V p-p ± 6dB. Continuous adjustment. High and low indicators
- D.O.C. (A & B channels):** RF or digital (switch)
- Reference:** Black burst or composite video, 0.3V p-p syncs

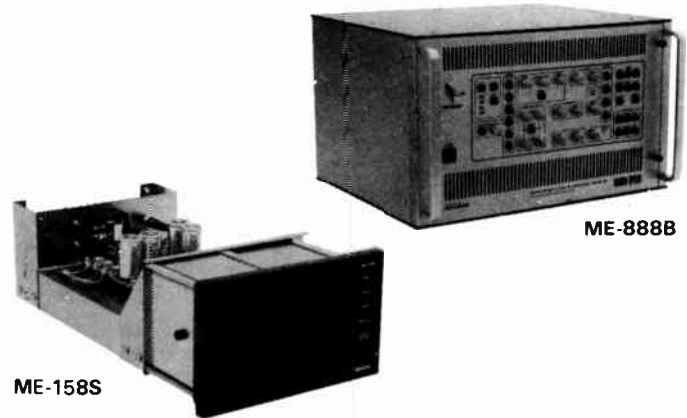
Outputs (75 ohms)

- Video, Video Monitor:** 1V p-p composite
- Y-U-V (optional RGB):** 0 ~ 1V p-p constant (fully adjustable)
- SPG (2V p-p pulses):** Burst gate; mixed blanking; mixed syncs; PAL indent; vertical drive; horizontal drive; black burst (0.3V p-p sync; subcarrier 1V p-p)

ME-888B	\$53,400.00
ME-808 Standards Converter for NTSC and PAL standards only. 8-bit signal processing	35,600.00
ME-808B Standards Converter for NTSC, PAL and SECAM. 8-bit signal processing	39,900.00

Options:

A	RGB input (separate unit)	\$2,000.00
B	RGB output (built-in) .....	.800.00
C	Remote panel for ME-888B	2,600.00
ME-830	Multi Standard Precision Decoder	3,680.00
ME-840	Multi Standard Precision Decoder with X, Y, Z output for Vectorscope display	6,000.00
ME-850	Multi Standard Precision Decoder with switchable waveform and vectorscope capabilities	9,800.00
VISTEK	V4022 NTSC Decoder (NTSC input/RGB, YUV Output)	7,300.00
VISTEK	V4032 NTSC Coder (RGB, YUV input/composite video output)	3,950.00



ME-158S

ME-888B

ME-278 Digital Frame Audio Delay for Lip Sync Restoration

- Thumbwheel selection (in half-frames of 1/2 to 7 1/2) of amount of delay
- Locks to composite video or sync, or free runs at approximated locked input
- 60dB LED bargraph input display
- Local or remote selection of frame delay and bargraph display
- Loopthrough video or sync frame lock
- Transparent digital coding/decoding (16 bit)
- PAL or NTSC (jumper select)
- Headphone monitor output
- Rackmount (19" x 1 3/4" rack)
- 120V 60Hz or 220V 50Hz AC power (jumper select)

The ME-278 Digital Audio Delay utilizes the latest in digital audio techniques to correct audio-to-video timing errors which are introduced when video programs are passed through framestores, standards converters, synchronizers, or digital effects systems. These units introduce lip-sync errors of several frames. This type of error is particularly objectionable because the audio is ahead of the video.

In the ME-278 the audio signals are digitized, stored in memory and clocked out with a delay corresponding to the video delay. The delay line in the ME-278 is manually selected in one-frame increments by a thumbwheel switch on the front panel. Half-frame increments are selected by a toggle switch. Alternatively, the ME-278 delay can be remote controlled via a BCD-coded signal. This allows control by frame store units which generate internal error signals. When signals with multiple audio channels are to be corrected, a number of ME-278 delay units can be ganged together with single unit control.

Specifications:

- Input Impedance:** 600 ohms balanced or 22K ohms unbalanced (jumper select)
- Output Impedance:** 600 ohms balanced
- Max. Input Level:** + 8dBm (other levels optional)
- Output Level:** + 8dBm (other levels optional)
- S/N Ratio:** > 60dB from peak operating level
- Frequency Response:** +/- 5dB 40Hz - 15kHz
-3dB at 10Hz and 18kHz
- Distortion:** < .07% at 1kHz

ME-278 \$3400.00

ME-158S Audio Monitor with Stereo Switching

A compact studio-quality audio monitor, with 3 balanced high impedance audio inputs via XLR connectors. Inputs 1 and 2 may be summed for a quick check of the audio phase in stereo.

Designed specifically for VTR or compact studio use, the ME-158S is completely self-contained with its own 40W power supply and fits directly into the standard Tektronix dual rackmount frame. The ME-158S employs a long-excursion 4" woofer with high frequency acoustic-suspension soft dome tweeter driven by a wide band high fidelity audio amplifier.

ME-158S \$980.00

Prices and Specifications Subject to Change Without Notice.

MERLIN ENGINEERING WORKS**Tape Delay/Conversion Kits****ME-488 Automated Tape Delay System**

The ME-488 Automated Tape Delay System is designed for those applications where continuous 24 hour delaying of program material is required or where blocks of programming need to be recorded and rebroadcast for time zone considerations.

The System consists of software, an IBM compatible AT computer and color monitor (rackmount or tabletop configuration), serial I/O boards, a computer-compatible time code reader board and a 10X1 audio follow video switcher with serial control.

The system will run any Sony Protocol RS-422 tape recorder including Sony BVU and BVW series VCR's, BVH-2000's, BVH-3000's and Panasonic MII's. Recorders not compatible with Sony RS-422 Protocol can be used with the addition of a protocol adaptor interface for each VTR.

Time code from the master time code generator is routed via a distribution amplifier to the VTRs and the computer controller to establish time of day. For continuous duty the system is simply started and allowed to run. In network delay applications where blocks of programming are delayed, the operator simply enters the time delay offset and start and stop times for delay. The system will then automatically cycle the recorders to achieve this delay. No operator intervention is necessary once the system is running. The computer monitor will display the status of each recorder at all times and the switcher position for operator confidence. A cycle counter will record the number of passes on each tape to facilitate tape replacement at appropriate intervals.

A system configured with 3 VTRs with a maximum record time of 90 minutes each can continuously delay program material for 2 hours. A 3 hour continuous delay can be achieved using four 90 minute VTRs.

Optional Equipment

- Uninterruptible power supply for computer
- Audio and video distribution amplifiers
- Time code distribution amplifier
- Audio and video monitoring
- Interfaces for non RS-422 serial controlled VTRs
- Redundant back-up system
- Pre-wired racks for turnkey installations

ME-488 with one day installation and training, excluding travel expenses **\$23,950.00**

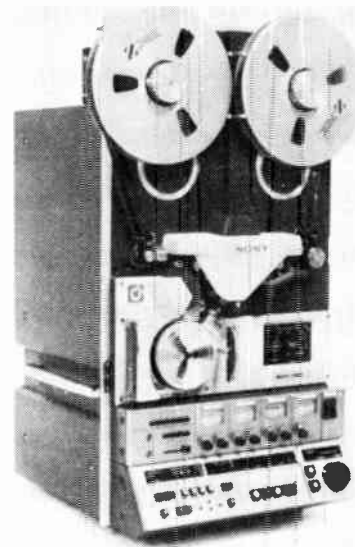
ME-238 Extended Play Conversion Kits

The ME-238 series of extended play kits are carefully engineered to fit specific models of Sony and Ampex 1", type "C" VTRs to allow most full-length movies and sporting events to be recorded on a single 14" reel (early Sony machines are limited to a 12 1/2" reel).

Extended play kits are currently available for the following VTRs.

Sony BVH-1000, BVH-1100 and BVH-1100A

- Record/play time: 2 hours, 40 minutes—12 1/2" reels
- Kits for older Sony machines are available for rackmount or stand-alone cabinet installations. Because of increased height, consoles must be modified to fit



Extended Play Conversion Kit as shown on
Sony BVH-1000
Sony BVH-1100
Sony BVH-1100A

Sony BVH-2000

- Record/play time: 3 hours—14" reels
- Although cabinet height is increased, the modified Sony BVH-2000 will fit into a standard rackmount

Ampex VPR-1, VPR-1C, VPR-2, VPR-2B

- Record/play time: 3 hours—14" reels
- This kit replaces the older version which accommodated only 12 1/2" reels. 3 hour kits are available for console or stand-alone machines. Because of the required extra width, modified VTRs cannot be rackmounted
- Extender panels are available for VPR-2 and VPR-2B consoles

Ampex VPR-80, VPR-6

- Record/play time: 3 hours—14" reels
- Kits are available for VTRs in stand-alone cabinets, rackmount or standard Ampex console

Marconi MR2-B

- Record/play time: 3 hours—14" reels
- The Marconi extended play kit is similar to the version used for the Ampex VPR-2B
- When ordering ME-238 Extended Play Kits, it is important that model and mounting configuration be specified

ME-238A	Extended play kit—Ampex VPR-2/2B console or table top	\$2,000.00
ME-238A-80	Extended play kit—Ampex VPR-80 console or table top	3,000.00
ME-238A-6	Extended play kit—Ampex VPR-6 console or table top	3,000.00
ME-238S	Extended play kit—Sony BVH-1000/1100	2,000.00
ME-238S-2000	Extended play kit—Sony BVH-2000	3,400.00
ME-238M	Extended play kit—Marconi type C VTRs	2,000.00
ME-268	Flywheel kit for plastic spot reels—Ampex/NEC/Sony	188.00

MICRON AUDIO PRODUCTS, LTD.**Wireless Microphone Systems****CNS 500 SERIES****COMPLEMENTARY NOISE SUPPRESSION**

- Wider Dynamic Range • Lower Noise • Extended Operating Range
- Increased Immunity from Interference • Improved Multi-Channel Performance

The standard MICRON range is joined by the 500 series, featuring the substantial enhancement of Complementary Noise Suppression.

TX-501/502**CNS POCKET TRANSMITTERS**

- > 115dB S/N Ratio • Wide Choice of Microphones
- Sophisticated Level Controls

Stringent testing at every stage of production ensures a high level of performance and long term reliability. Housed in lightweight stainless steel cases for durability and strength, the transmitters are capable of withstanding the heavy demands of location use. The shape of the case is both aesthetically pleasing and comfortable to wear, especially when concealment is important.

- TX-501** "CNS" pocket transmitter—single battery. Supplied with TFA2 flexible antenna, Lemo FC-2308 microphone connector and TBP-1 pouch \$1650.00
- TX-502** "CNS" pocket transmitter—double battery. Supplied with TFA-2 flexible antenna, Lemo FC-2308 microphone connector and TBP-2 pouch \$1700.00

TX-503 CNS HAND-HELD TRANSMITTER

- Strong Lightweight Stainless Steel Body • Interchangeable Heads
- Built-In Anti-Popping Filters • Dual Low Battery Warning • Line Up Oscillator

Omni-directional and cardioid versions are available and both types include an integral two layer windscreen. The power switch features an audio mute position allowing the transmitter to be powered without transmitting audio.

A three position audio sensitivity switch maximizes the signal-to-noise ratio for various applications. Particular attention has been paid to the successful handling of high sound pressure levels.

An electronic anti-popping filter affords protection against overload, even at high SPL. Further front end protection is provided by a 3 position bass roll off filter, which can be used to reduce wind noise or counteract close microphone effects.

- TX-503C** "CNS" handheld transmitter. Supplied with high performance AKG cardioid condenser microphone element and helicoil antenna \$1750.00
- TX-5030** "CNS" handheld transmitter. Supplied with high performance AKG omni-directional condenser microphone element and helicoil antenna \$1750.00

MR-510 CNS MOBILE RECEIVER

- Multifunction LED Display • Standard & Noise Suppressed Versions • Compatible with All Sound, Film and Video Recorders

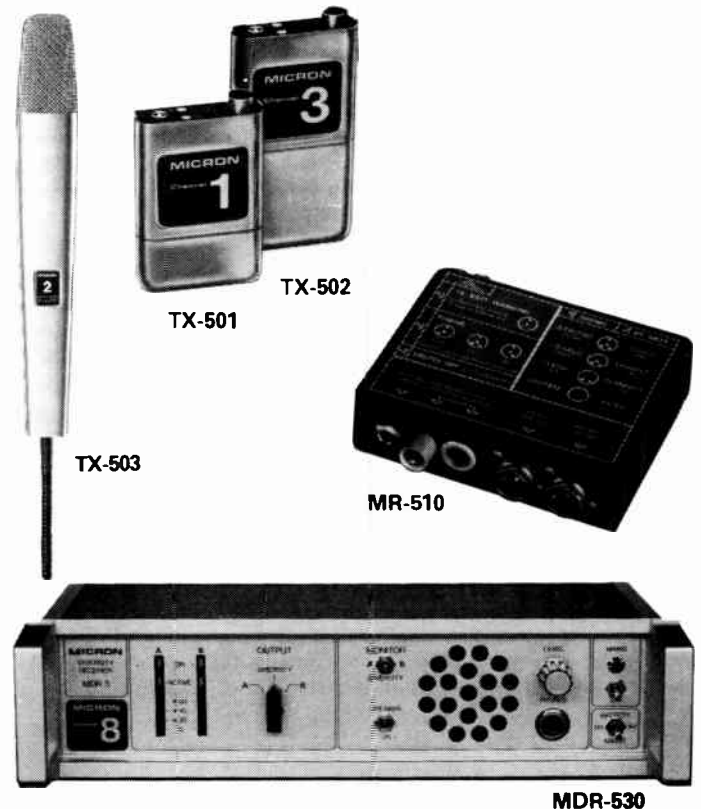
The MR-510 is housed in a rugged diecast case and is specifically designed to withstand the rigors of location work.

The balanced audio output is transformer isolated at low impedance microphone level.

The front panel jack socket provides headphone monitoring and can also be used as a high level auxiliary output.

External powering can be from any 12-30VDC supply with either +ve or -ve ground.

- MR-510** "CNS" mobile receiver. Supplied with HAR right angle helicoil antenna, RAO10PCM-R audio output cable and P-6973 power connector \$1650.00

**MDR-530 CNS DIVERSITY RECEIVER**

- Full Monitoring Facilities • Line and Mic Level Outputs • AC/Ext. 12V Powering

The MDR-530 is a compact, true diversity receiver utilizing the CNS noise suppression system which provides a dramatic improvement in the operating reliability of the radio microphone system. Dead spots are virtually eliminated and the effective operating range considerably increased.

Housed in a single unit, the MDR-530 receiver contains two high quality receiving sections which operate on the same frequency. A sophisticated selector circuit automatically provides the best audio output signal. Manual override is provided for unusual situations which require one antenna to be temporarily disabled.

- MDR-530** "CNS" mobile diversity receiver. Supplied with 2-HAD helicoil dipole antennas, 2-MAC20 coaxial cables and 1-RAO20CCM audio output cable \$4400.00
- MDR-530S** "CNS" mobile space diversity system. Supplied with TX-501 pocket transmitter, TFA2 flexible antenna, Lemo FC-2308 microphone connector, MDR-530 mobile space diversity receiver, 2-HAD helicoil dipole antennas, 2-MAC20 coaxial cables and 1-RAO20CCM audio output cable \$6050.00
- MDR-530SH** Same as above but with TX-503 handheld transmitter \$6150.00

MICROTIME, INC.

*Time Base Correctors/Synchronizers/
Scramblers*

Tx2 Time Base Corrector

• Color field identification pulse • RS-170A output in NTSC • Proc-amp controls with presets • Optional remote control • Shuttle to $\pm 40X$ • 13.5MHz sampling • Available in NTSC, PAL B and PAL M • Infinite window TBC • Freeze frame • Interpolated field freeze (field 1 or field 2) • Component and composite outputs • Noise reduction • Drop-out compensator • Standalone sync generator • Genlock • Can operate as a single TBC or two TBCs in one chassis for A/B roll • Operates with or without advanced sync • Dub or Component and composite inputs • Compatible with S-VHS, U-Matic, U-Matic SP, Betacam, and MII formats • RGB outputs available • VARI-TRAK™ mode allows dynamic tracking equipped VCRs to broadcast quality pictures from -1 to +3X play speed and viewable images up to $\pm 40X$ • Operates in PAL high band and low band dub

- Tx2 Single Component TBC \$ 8,995.00
- Tx2 Dual Component TBC 14,995.00
- Upgrade from Single to Dual 6,995.00
- Extender Card 500.00
- Remote Control 1,295.00
(Dual TBC Controls with 75' cable)
- RGB Output Option 495.00
- Betacam R, R-Y, B-Y interface 150.00
- S-VHS interface 150.00

Tx4 S-VHS Time Base Corrector

• Component 4:1:1 design • Y/C or composite processing • Full frame of memory provides freeze frame and interpolated field freeze • Can be operated with or without advanced sync • Chroma comb filter noise reduction • Will genlock or automatically reference to internal RS-170A sync generator (standalone mode) • Drop-out compensator • Proc amp controls with presets • Shuttle performance to $\pm 40X$

- Tx4 \$4,995.00
- Tx4 Remote Control 650.00

Tx4 Effects Remote Control

Operates complementary to the Tx4 TBC • Proc amp controls • Freeze selection • Timing controls • Variable picture position with joystick control • Quarter-size image with variable position • Variable mosaic checkerboard tiles • Variable horizontal, vertical blind effect • Variable posterization with luminance inversion • Chroma solarization with inversion • Preset transitions—push left, right, up, and down • Horizontal vertical wipe • 4 selectable transition speeds

- Tx4 Effects Remote Control \$3,995.00

S-134 Four Field Synchronizer with Scrambling Option

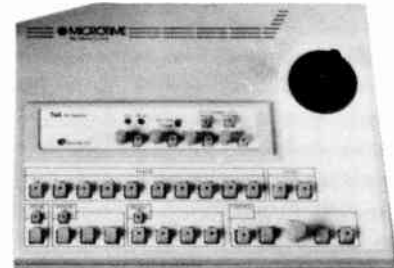
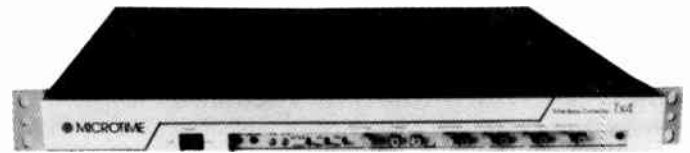
• Composite digital sampling • Noisy signal/non-synchronous signal "freeze" threshold adjustment • Stores two complete frames in memory, ensuring proper vertical interval processing • Four field/two frame Freeze selection • Can be interfaced with audio delay correctors to eliminate lip sync problems • Video scrambling/descrambling for secure transmission

- S-134 NTSC, PAL-B, PAL-M \$9,500.00
- Remote control with 75' cable 1,295.00
- Additional cable ft./2.50
- Remote control with 75' cable 1,295.00
- Additional cable ft./2.50
- Scrambler option 3,995.00

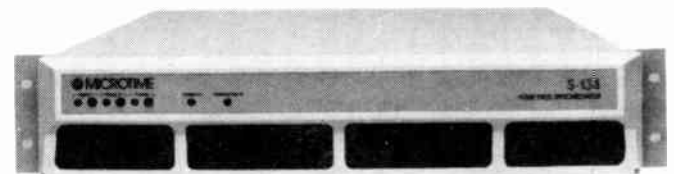
S-234 Four Field Synchronizer/TBC with Scrambling Option

The S-234 has all the features of the S-134 plus an infinite window, NTSC heterodyne TBC which will work with virtually all heterodyne VTRs with or without advanced sync. Auto mode switching samples the incoming video and automatically switches to TBC or synchronizer mode.

- S-234 NTSC only \$10,995.00
- Remote control with 75' cable 1,295.00
- Additional cable ft./2.50
- Scrambler Option 3,995.00



**Tx4 TBC
with Effects
Control**



S-134

300 Series

Features Common To All Three TBCs

• Wide window • Genlock or standalone operation • Constant RS-170A output in genlock, regardless of reference changes • LED to indicate optimum SCH calibration • Proc-amp controls with presets • Sync and blanking derived digitally for stability and repeatability • Composite or noncomposite outputs • Top access to all circuitry — no extender board required

T-300 Time Base Corrector

• 35 line memory—handles large gyro errors • Pictures in shuttle to $\pm 5X$ for rapid editing and previewing of tapes • 3.58MHz subcarrier feedback for wideband video processing • 8 bit 4X subcarrier sampling for transparent performance • Averaging velocity correction for best color performance • Lightweight, low profile, and low power consumption—ideal for mobile or ENG applications

- T-300 \$4,995.00
- Remote Control with 75' cable 1,295.00
- Additional cable ft./2.50
- Rack Slide Mounting Adaptor 95.00

T-320D Time Base Corrector

• Freeze, field 1/field 2 selectable • Vertical interpolator to minimize flicker in freeze • Digital comb filter for improved separation of luminance and chrominance • RF sensing drop-out compensator • Pictures in shuttle to $\pm 40X$ • Optional VARI-TRAK (factory installed) for Dynamic Tracking operation with BVU-820 and BVU-870 • Heterodyne and 3.58MHz feedback modes

- T-320D \$6,995.00
- VARI-TRAK option (factory installed) 500.00
- Remote Control with 75' cable 1,295.00
- Rack Slide Mounting Adaptor 95.00

T-320 Time Base Corrector

• 35 H-line window • RF sensing drop-out compensator • Pictures in shuttle to $\pm 40X$ • Heterodyne and 3.58MHz feedback modes

- T-320 \$5,995.00
- Remote Control with 75' cable 1,295.00
- Rack Slide Mounting Adaptor 95.00

MICROTIME, INC.

Digital Effects Systems

RP-1 3D Digital Effects System

- Rotation with three variable axes
- Variable perspective with simultaneous rotation
- Continuous compression and expansion
- Full 3D manipulation of frozen image
- Linear or curvilinear trajectory selectable by keyframe
- Variable aspect ratio
- Strobe
- Freeze
- Cropping of all four sides, independently or together
- Border with variable width
- Background/borders with variable color parameters
- Picture splits
- Mosaic, posterization, solarization, false colors and memory trails
- Y, R-Y, B-Y analog component inputs/outputs are standard in addition to the composite inputs/outputs
- Dual video inputs with 2 x 1 switcher
- Internal key with soft edge and position variable on four sides
- Timing and proc-amp parameters adjustable via control panel
- Advanced 16-bit digital filtering providing improved transparency
- High precision floating point arithmetic for accurate perspective
- Comprehensive directory of stored effects
- 20 on-line run registers
- Automatic input timing, frame synchronization
- Fluid smooth motion
- Numeric keypad for data entry
- Trajectory walk function via joystick
- Five soft keys for menus and future software developments
- Storage capacity of 256 sequences of 5056 keyframes per disk
- High resolution monitor
- Central diagnostic system
- Matte channel for flying linear key signals, dual inputs for front/back switching, optional
- Curved pictures — wide range of twists and curves
- Internal re-entry effects — uses the internal linear keyer to create tunnel, hall of mirrors and kaleidoscope effects
- Montage — up to five quarter size images can be frozen and then processed
- Varicomb NTSC decoder with 2 x 1 switching of component inputs, optional
- Varicomb PAL decoder with 2 x 1 switching of component inputs, optional
- Each RP-1 system can have up to 8 control panels



RP-1

RP-1	\$49,995.00
Matte Channel	8,995.00
Varicomb Decoder and 2 x 1 component switcher	9,995.00
Spare high-resolution IBM compatible 12" CRT	495.00
Extra RP-1 control panel	9,500.00
Extra extender card	500.00

Genesis 1/ACT 1™ Digital Effects System

ACT 1, the Artistic Control Terminal, combined with the Genesis 1 mainframe, increases creative capabilities to your imagination's limit. ACT 1 functions through the ease of the joystick.

- Flips, tumbles, zoom, variable position
- Drop shadow
- Mosaic
- Posterize
- Freeze, strobe
- Linear or curvilinear motion
- Border
- Crop
- Programmable 2 x 1 switcher
- Built-in preview keyer
- Key output signal for switcher interface
- Single keystroke operation for on-air application
- Edit controller interface for post production
- Component or composite mode
- Available in NTSC, PAL B, or PAL M



Genesis 1/ACT 1

Genesis 1/ACT 1 With 25' control cable	\$19,995.00
Extender Card	500.00
Additional Cable (2000' maximum)	ft/2.50
DATAKEY® 5 per package	475.00

MICROTIME, INC.

Graphics Systems

Image Plus

- 3D modeling and animation • Texture mapping and shaders • Metamorphosis
- Preview • Off-line rendering • 3D fonts and font generation • 32-bit paint system • Frame grab and video interface • Film interface • Disk storage options
- Extended memory

High resolution 3D graphics, animation and paint—all fully integrated. The user interface is designed by artists, for artists, to help you master this sophisticated graphics system and, whether you are an expert or a beginner, you will create stunning, complex images, in next to no time.

The Image Plus 3D is a full feature graphics workstation incorporating 32-bit full color paint, real time RGB frame grab, 3D modeling and animation, internal VTR controller and font generator software.

The Image Plus is based on a PC-AT compatible CPU with 80386 microprocessor and math co-processor for optimum rendering speed. Lower cost systems based on the 80286 CPU are also available.

3D Modeling and Animation:

Simple or complex models can be constructed quickly and easily, with a minimum of keyboard entries. The menu system guides you through the process from sketches, line art or free hand drawing to the finished model. After defining the models, create the paths (trajectories) for the models to follow. Several models can be on a single path, or each model can have its own unique path. Initially, the camera is fixed, but for more complex animation, you can program the camera position, and its point of attention. The result is models, camera and lights, all changing independently during the animation.

Texture Mapping and Shaders:

Phong, Gouraud, metals, reflectance maps, texture maps, solid and transparent surfaces are all standard. Texture maps can be created from scratch in paint, or from a frame grabbed image. All or part of an image can be mapped onto all or part of a model. Anti-aliasing to eliminate the "jaggies" is standard. Select horizontal, vertical, horizontal and vertical, or none, depending on the model.

Metamorphosis:

3D shapes, color and transparency can all undergo metamorphosis during an animation. Just define the starting model and the finishing model, and let the system do the rest. Turn a pumpkin into a vase, create a beating heart, or any number of unique transformations.

Preview:

If you want client approval of a preview, before final rendering is started, use wireframe preview to check the position and orientation of the models. Or use the fast rendered preview to check lighting and surfaces. You can even try several "what if" previews before committing to final rendering.

Off-Line Rendering:

With an Off-Line Renderer, your overall productivity at the creative workstation is increased significantly. Completed designs are transferred on the Local Area Network (LAN) to the off-line renderer, freeing up the workstation for the next design. The LAN can also be used to link various combinations of workstations and rendering stations for special applications. A 3-D system can be upgraded at any time by adding the rendering station.

Each frame is normally rendered to the internal disk drive, and then edited to tape as a sequence. This avoids tying up the VTR during the entire rendering process and eliminates unnecessary wear and tear on the tape deck.

3D Fonts and Font Generation:

6 vector based fonts are standard with all 3D systems. The paint-systems do not have this feature. Use these fonts to create text for subsequent 3D modeling and animation or use the font generator to scale and modify them. You can even create custom fonts from a frame grabbed input, or create them free-hand.

Paint:

The 32-bit paint system allows you to create or modify images with the full 16.8 million color spectrum. A complete set of brushes, including variable air brushes, and tools for cut, paste and move, etc. are provided. A set of 2D fonts for titling is standard in the paint system, and anti-aliasing can be turned on or off as required.

Frame Grab and Video Interface:

Hardware and software for real time RGB frame grab are standard. You can capture flat art, stills from a slide chain, or live video from a camera for use as a background, texture map or model outline. Digital matting is also standard. Create a model, matte it over a background and save the composited picture as a new background (all digitally). Keep adding new layers until the project is complete. In addition to frame grabbing, the paint system can matte an image over a live background for post production.

Image Plus video inputs and outputs are RGB. If you have a Betacam or MII video system, just add a component transcoder (available from Sierra Video Systems and other suppliers). If the system is composite NTSC, you will need to add an NTSC encoder, and possibly a decoder (available from Faroudja Labs, and other suppliers).

Serial remote control of a VTR for frame-accurate editing of the finished animation is also standard. The RS-422 controller is built into the system software. The Sony, BVW-40[®], BVH-2500[®], VO-5850[®], and other VTRs can be controlled.



Image Plus

Film Interface:

If the application calls for film output (transparencies, separations, etc.), Image Plus can optionally give high resolution rendered images. Frames can be rendered by the resolution independent software at standard TV resolution, or up to 8000 x 8000 pixels, without re-drawing the input. The Matrix PCR/QCR digital film recorder is currently supported for these high resolution formats, with aspect ratios of 2048 x 1536 and 4096 x 3072.

Disk Storage Options:

A Bernoulli box with removeable 20M byte cartridges allows you to transport data from one site to another. Conventional hard drives can also be added to suit your requirements.

Expanded Memory:

If your application calls for complex models to be rendered over high detail, frame grabbed backgrounds, you may want to add the EMS option. Models assembled over black which are merged with backgrounds in post production will not usually need the extra memory. In addition, EMS is a prerequisite for certain options.

Hardware Configuration:

The hardware supplied will depend on the model ordered as shown below.

Description	IP-1	IP-2	IP-3	IP-4	IP-5	IP-6
80386 CPU, Co-processor and keyboard		1		1		2
80286 CPU, Co-processor and keyboard	1		1		2	
1.2M byte floppy disk drive	1	1	1	1	2	2
40M byte hard drive*	1	1	1	1	2	2
Graphics tablet and puck	1	1	1	1	1	1
32-bit frame buffer	1	1	1	1	2	2
12" RGB video monitor	1	1	1	1	1	1
12" menu monitor	1	1	1	1	2	2
RS-422 VTR controller	1	1	1	1	1	1

* In some systems, two 20MB drives may be provided.

IP-1 Basic paint system	\$31,995.00
IP-2 Turbo paint system	37,995.00
IP-3 Basic 3D system	44,995.00
IP-4 Turbo 3D system	50,995.00
IP-5 Basic-plus 3D system	64,995.00
IP-6 Turbo-plus 3D system	75,995.00

3D 3D modeling and animation upgrade. Converts IP-1 basic paint to IP-3 basic 3D, or IP-2 turbo paint to IP-4 turbo 3D	\$15,995.00
RS-422 Second VTR controller for off-line systems IP-5 or IP-6) to allow rendering to a VTR from both the workstation and the off-line renderer	1,995.00
EMS-2MB Extended memory support - adds 2 MB of RAM to a basic system. Order quantity of 1 for IP-1, 2, 3, 4 and quantity of 2 for IP-5, 6. Includes hardware and software	1,795.00
EMS-3MB Extended memory support - adds 3 MB of RAM to a basic system. Order quantity of 1 for IP-1, 2, 3, 4 and quantity of 2 for IP-5, 6. Includes hardware and software	2,795.00
Render-1 Off-line rendering CPU (80286) with keyboard, menu monitor, 32 bit frame buffer, 1.2 MB floppy disk drive, 40 MB hard drive, LAN, RAM. Converts IP-3 basic 3D to IP-5 Basic-Plus 3D	18,995.00
Render-2 Off-line rendering CPU (80386) with keyboard, menu monitor, 32 bit frame buffer, 1.2 MB floppy disk drive, 40 MB hard drive, LAN, RAM. Converts IP-4 turbo 3D to IP-6 turbo-plus 3D	25,995.00
Matrix Digital film recorder interface for Matrix PCR QCR	2,995.00
Bernoulli Bernoulli 20 MB cartridge disk drive	5,495.00
Cartridge Bernoulli 20 MB cartridge	245.00
Maxtor Maxtor 140 MB hard disk drive to replace the standard 40 MB drive.	5,495.00
RIO Resolution independent object software. Requires extended memory support option	1,250.00
RIO-Font #1 Library of 8 outline fonts licensed from Bitstream, Inc. for use with RIO	445.00
RIO-Font #2 Library of 4 outline fonts licensed from Flamingo graphics for use with RIO	295.00

MICRO-TRAK CORP.**Broadcast Audio Consoles****6510/6509 Broadcast Consoles****Features Common to Both Models**

- **Microphone:** Balanced transformer input, low impedance microphones, adjustable
- **High Level:** 10K ohm input impedance, 20dBm nominal level
- **Phono:** Stereo magnetic phono cartridge, 47K ohm impedance, 5 to 10mV nominal level. RIAA equalized
- **High Level:** 10K ohm input impedance. 0dBm nominal input level
- **External Monitor Input:** Stereo input provides feed to monitor amplifiers when switch selected at front panel

Output Level

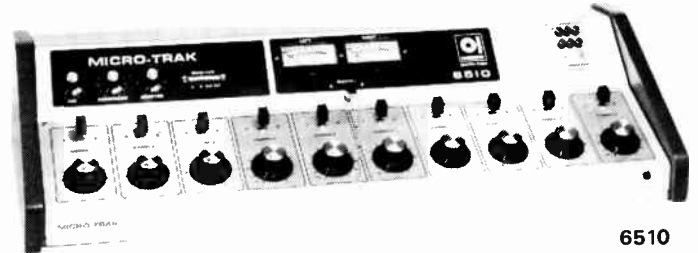
Program: + 8dBm into 600 ohm balanced stereo

Monitor Line: 0 into 600 ohm, unbalanced

Headphone: 2W into 8 ohm, monaural

Cue: 2W into internal speaker

Muting: One form C-contact for external "On-Air" light, etc.

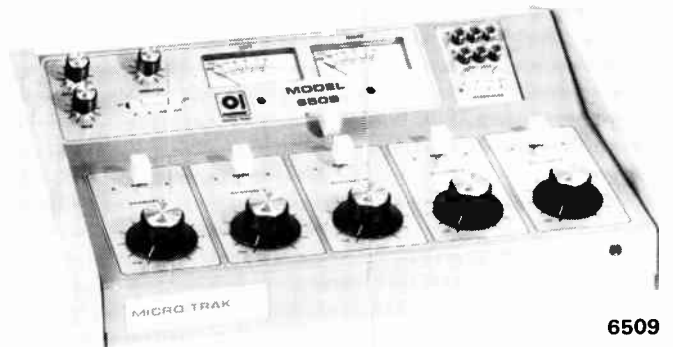


6510

6510DBS 10-Channel Stereo-Mono Broadcast Console Dual Bus

Inputs: Fourteen (10 mixer channels)

Standard Configuration: 1 microphone, 9 high level preamplifiers. Channel 9 and 10 have three switch selected input lines. Optional input preamplifiers may be selected to customer choice. Price may vary according to input, preamplifiers selected.



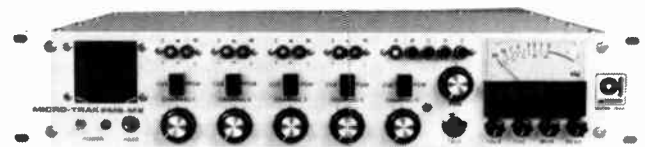
6509

6509RS (Stereo)/6509RM (Mono) 5-Channel Broadcast Consoles

Inputs: Nine (5 mixer channels)

Standard Configuration: 1 microphone, 4 high level preamplifiers. Channel 4 and 5 have three switch-selected input lines. Optional input amplifiers may be selected to customer choice. Price may vary according to input preamplifiers selected.

93020-001 Console-Stereo Broadcast 6510-DBS, 10 Ch, Dual Bus	\$3595.00
92000-001 Console-Broadcast 6509-RS 5 Ch, Single Bus Remote Stereo	1995.00
92000-003 Console-Broadcast 6509-RM 5 Ch, Single Bus Remote Mono	1795.00



PM5-MX

IIXL-5 and IIXL-10 Audio Consoles

- VCA and FET switching
- 10W per channel amp
- Can be equipped with an optional monaural mix card
- Ideal for high quality FM or AM with stereo in mind
- Cue speaker 2W pushbutton switch with LED indicator
- Headphone jack located on front

97001-001 Console-Stereo Broadcast IIXL-10 10 Ch, Slide Fade, VCA	\$4750.00
97001-002 Console-Stereo Broadcast IIXR-10 10 Ch, Rotary Fade, VCA	3995.00

PM5-SX/PM5-MX Audio Consoles

- PM5-SX stereo
- PM5-MX monaural
- 2 inputs per channel
- FET switching 1 through 4
- 13 total inputs
- Mike/line all channels
- 10W monitor amp
- Channel 5, 5 pushbutton switch selected
- Panel mounted analog VU meter
- 3" diameter cue speaker

98014-001 Console-Stereo TV/Broadcast PM5-SX 5 Ch, Panel Mount	\$2495.00
98001-001 Console-Monaural TV/Broadcast PM5-MX 5 Ch, Panel Mount	1795.00
98020-001 Console-Monaural Radio/Broadcast PM5-RS 5 Ch, Panel Mount	1795.00

MICRO-TRAK CORP.

*Audio Preamplifier/Distribution/
Power Amplifiers/Remote Mixer*

6411 Professional Stereo Phono Preamplifier

- Low noise and distortion
- Input: magnetic cartridge, stereo 47K ohms, 5mV nominal (15pf nominal)
- Input Level for Clipping: 300mV at 1kHz, RIAA
- Frequency Response: RIAA position $\pm .5$ dB RIAA phono equalization 40Hz to 15kHz
- Flat Position: $\pm .5$ dB 20Hz to 20kHz
- Adjustable HF Position: Corner frequency 5kHz, high frequency response plus or minus 10dB at 15Hz via 20 turn pot
- Rumble Filter: Switchable 3dB/octave high pass corner frequency at 40Hz, down 12dB at 5Hz
- Gain: RIAA 44dB at 1kHz flat 50dB adjustable
- Output: 600 ohms, transformerless balanced
- Nominal Output Level: 0dBm
- Maximum Output Level: 22dBm
- Signal-to-noise: 72dB typical
- Power Supply: 110-120VAC 50/60Hz

84100-000 \$229.50

7116/7213/7216 Audio Distribution Amplifiers

- Individual output level controls
- Rackmountable
- Input and Output level: +8dBm nominal
- Frequency response: ± 1 dB40 = 18,000Hz
- Hum and Noise: 70dB below +8dBm output level
- Power input: 115VAC 60Hz

82300-0017 7116 Distribution Amplifier 1 x 6 . . \$249.50
 82300-002 7213 Distribution Amplifier 2 x 3 . . \$279.50
 82313-000 7216 Distribution Amplifier 2 x 6 . . \$459.50
 82360-001 Rackmount adaptor for 7116 \$29.95

10P Audio Monitor Power Amplifier

- 10W per channel
- Stereo stand alone
- 19" panel mount option for D System-Ditty Desk
- Low distortion
- Clean crisp sound
- Output: 10W per channel stereo into 8 ohm load. 13W per channel stereo into 4 ohm load
- Input: -20dBm for full output. 25K ohms impedance
- Noise and Hum: -75dB typical relative to full output
- Distortion: 0.4% at full output
- Power Input: 115VAC 50/60Hz
- Connections: Input: RCA type phono jacks, two output: barrier terminal strip

92043-002 10P Stereo power amplifier \$229.50
 92043-003 Panel mounting brackets for 10P \$29.95



7216



10-P



Sport IV

Sport IV Portable Console With Telephone Dial Option

- Hybrid talkback for set-up
- Built in AC supply
- Low cost batteries
- Telephone dial option
- Three headphone outputs

The Sport IV is a sports/remote portable console. This four channel console has all the features found desirable for sports and other remote broadcasts. The Sport IV has four mixing microphone inputs, and full talkback capability using a hybrid transformer at the output. It has a fifth microphone input that feeds one side of the headphones only for an action spotter. It has three headphone jacks, for use by the announcers and action spotter. Channel four has a switch selectable auxiliary input so that pre-recorded interviews can be run from cassette tape, or carts can be aired directly from the stadium or other remote location. The electronic rotary dial option allows use of regular telephone lines and lowers the cost of long distance game coverage.

Both AC and battery power supplies are built in, and switching is automatic in case of power loss.

Program outputs are balanced, transformer isolated, 600 ohm level: +8dBm nominal, +15dBm max. The meter zero reference level is internally adjustable.

81944-002 Sport IV console \$729.50
 81933-000 Sport accessory case (18" x 12" x 5") . . \$99.95

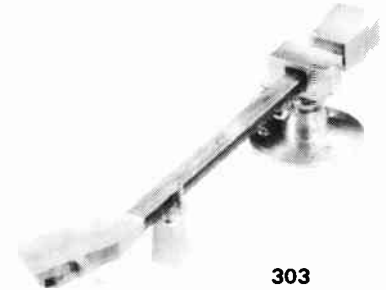
MICRO-TRAK CORP.

Tonearms/Cart Storage/Portable Audio Console

303 and 306 Tonearms

Tracking capabilities to a tenth of a gram, resonance below 10Hz, high compliance, rugged, dependable strength offered by an impregnated wood body and super smooth performance with jewel bearings make the 303 and 306 tonearms the best buy for the broadcaster today. 30,000 broadcast and professional users demonstrate how their rugged simplicity of design can give you the best possible performance. Specify 303 12" and 306 16" Professional Tone Arms for your studio.

- 75900-000 Model 303 12" Arm \$149.50
- 75971-000 Model 306 16" Arm 199.50



303

TT-72 Lazy Susan Cartridge Tape Rack

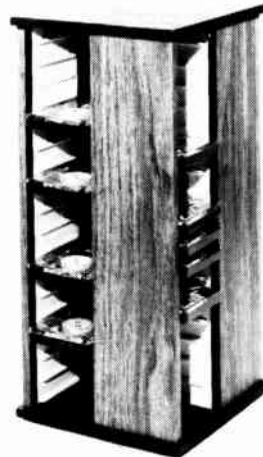
The TT-72 is an attractive and durable tape rack at a reasonable price. Designed to complement the Series L studio furniture line, the TT-72 provides a small, but substantial rotary tape rack for use at the console. Only 10 1/2" square and 22" high, the TT-72 packs in 72 of the most used spots for easy access by your DJs.

- 79001-000 TT-72 Cart Rack. \$89.50

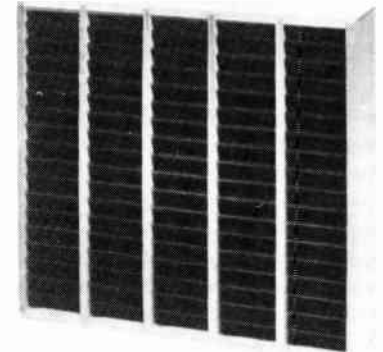
L-90 Wall or Console Cartridge Tape Rack

The most useful member of the Series L Cartridge Rack group is the L-90. The L-90 can be used as a wall mounted unit, stacked from floor to ceiling, mounted on the inside and outside of a closet door, or as a stand-alone unit at the console. Also with addition of simple 2 x 4 supports the L-90 can be mounted over the top of your turntables.

- 79015-000 L-90 wall mount. \$89.50



TT-72



L-90

The Ditty Desk

The Ditty Desk is for low cost audio production or remote broadcast use. It's designed to do powerful production or be on location at the latest happening in your station's area. The Ditty Desk can be equipped either the mono or stereo 6509 Console. The Ditty Desk comes equipped with high quality Micro-Trak consoles, tone arms, and Technics' SP-25 turntables. The formica covered housing is built to last and be beautiful for many years. Folding legs make it easy to carry and provide a sturdy basis for operations. Size: 32" H x 57" W x 24" D. Weight: 115 lbs. with all standard equipment.

- 83000-003 Audio Control Desk
w/6509-RS Console \$3795.00
- 83000-005 Audio Control Desk
w/6509-RM Console 3595.00
- 83000-006 Audio Control Desk
w/o console or turntable, blank top 459.50



Ditty Desk

NEW

PROFESSIONAL BULK DEGAUSSER FOR HIGH ENERGY TAPES

AUDIO • VIDEO • DIGITAL

The new Microtran Model HD-30 erases up to 1200 oersted video tapes with its powerful 3300 gauss field strength yet draws *only* 15 amps @ 115V 50/60 Hz.

Erases audio, video (including metal), computer data tape and magnetic film on reels, cartridges and cassettes (ideal for U-Matic). Also for demagnetizing tools and components.

SPECIFICATIONS

- Media:** Reels up to 17" diameter x 2" wide, cassettes and cartridges through D-1 size.
- Spindle:** 5/16" N.A.B. 3" hub adapter Model HD-11-AD available.
- Erasure:** To 60-90 dB below recorded level. Erases new high energy video tapes up to 1200 oersted.
- Field strength:** 3300 gauss.
- Power requirements:** 115V. 50/60 Hz 15 amps. 1600 watts. (Model HD-30-230 available on special order for 230V.)
- Duty cycle:** 10 minutes On, 10-20 minutes Off. Thermal overload cutoff with auto reset.
- Size:** 12" x 14" x 4 1/8" high.
- Weight:** 28 lbs. (Shipping weight 31 lbs.)
- Construction:** Steel case with phenolic face for heavy-duty professional use.
- Price:** Model HD-30 (115V degausser) \$595.00
Model HD-11-AD (N.A.B. hub adapter) \$12.50
Model HD-50 (foot switch) \$49.50
Model HD-30-230 (230V degausser) \$635.00



OPTIONAL FOOT SWITCH

Permits hands-free operation with faster and better control of demagnetizing. Momentary switch prevents burn outs. Plug-in connection — no wiring required. UL approved. 8' 3 - conductor cord. 20 Amp. switch. Low smooth styling with skid-proof base. Black wrinkle finish over aluminum casting.



MODEL HD-50
Size: 5 1/2" x 3 1/4" x 1 1/4" H.
Weight: 2 lbs.



MICROTRAN
company, inc.

145 E. Mineola Ave., P.O. Box 236, Valley Stream, N.Y. 11582 • 516-561-6050 • TWX: 510-225-8412 • FAX: 516-561-1117

MICROWAVE RADIO

Antenna

Omnipole™ Central Receive Antenna System

- 360° coverage, 50 mile range
- Allows rapid ENG sequencing — no manual steering
- 2.5dB noise figure, 22dBi gain LNA provides low noise reception and extended range
- Low wind load — lightweight, streamlined design
- Simplified installation — no moving parts
- Reliable, unmanned operation — remote control not required
- Lowest cost ENG antenna
- Weather resistant, lightning proof construction
- Low cost RF cable
- Beam tilt feature, optional
- Channel filter, optional
- 16dBi directional Omnipole antenna, optional
- 1.5dB noise figure LNA, optional

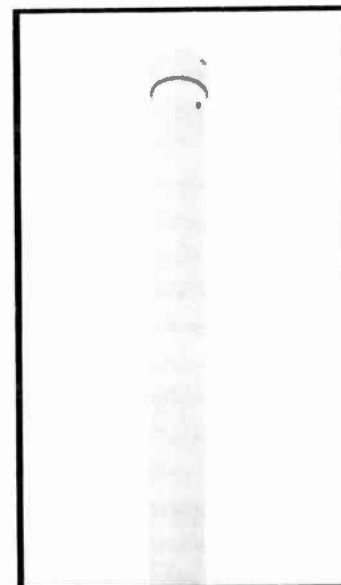
The Omnipole Central Receive Antenna System is a low cost alternative to the more expensive manually steerable, quad horn, or auto-tracking antenna systems in the 2GHz and 2.5GHz broadcast auxiliary service bands. It provides unmanned, 360° omnidirectional coverage at ranges up to and exceeding 50 miles. The Omnipole antenna system is ideally suited for small-market or ENG news bureau operations. It is also recommended for use as a back-up ENG antenna.

The Omnipole has a nominal 13dBi gain in a 360° azimuth pattern. Its vertical beam width is 6.5° with null fill and 0° beam tilt. Beam tilt is available on request. A band filter and 2.5dB noise figure, 22dB gain LNA are standard equipment with the Omnipole. A channel filter and high performance LNA's are optionally available. LNA DC power is via the RF cable using a DC block. Power supply included.

The lightweight, streamlined design of the Omnipole antenna features simplified installation, unmanned operation, and very low windloading. Choose from tower top or side mount models.

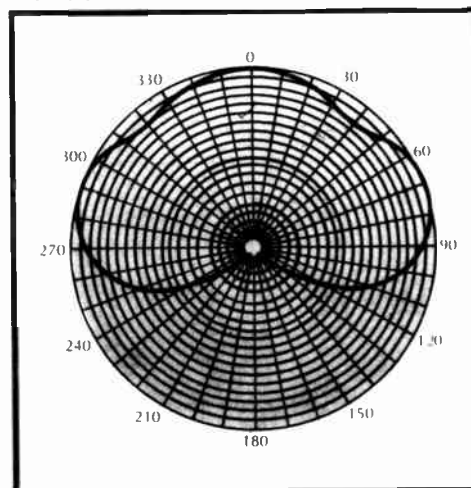
Specifications

Frequency Ranges	1.990 to 2.110GHz, 2.450 to 2.5GHz or 2.350 to 2.7GHz
Gain	
Standard	13dBi ± 1.5dB
Optional	16dBi (directional)
3dB Elevation Beamwidth	6.5°
Beam Tilt	0° (up to -3° is available upon request)
Polarization	
Standard	vertical
Optional	horizontal
VSWR	1.4:1 maximum
Length	4-1/2 ft. (139cm)
Diameter	3.5" (8.9cm) diameter radome
Weight	10 lbs. (4.5kg)
Mount	tower top or side mount (standard brackets supplied)
Junction Box	LNA and RF Filter enclosed in weatherproof box
LNA	
Noise Figure	2.5dB (1.5dB optional)
Gain	22dB (35dB optional)
DC Power	LNA powered through RF Cable 115/230VAC LNA Power Supply included
RF Filter	
Standard	Bandpass Filter
Optional	Channel Filter

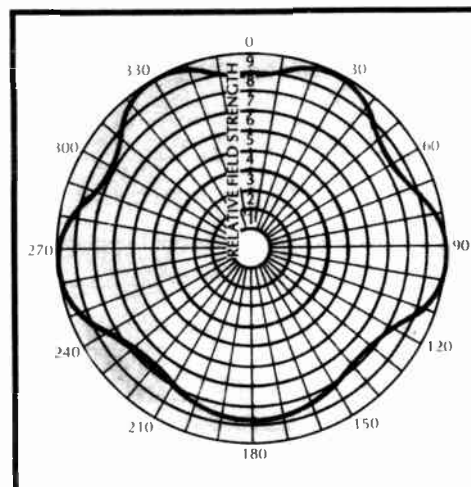


ROOFTOP MOUNTED OMNIPOLE™

HORIZONTAL PLANE RADIATION PATTERNS



DIRECTIONAL OMNIPOLE™ (OPTIONAL)



360° COVERAGE (OMNIDIRECTIONAL ± 1.5 dB MAXIMUM)

MICROWAVE RADIO

Antenna

"Prostar" 2A20 Transmit Antenna

- Broadband (2/2.5GHz and 6.5/7GHz) offset-fed, low sidelobe rugged antennas in either single or dual band configurations
- Low RF input—high RF output mast-mounted power amplifiers designed to meet current FCC regulations
- Self-contained broadband (2/2.5GHz) low noise amplifiers (LNA) integrated within the ProStar's feed
- Mast-mounted 7 or 13GHz block downconverters for microwave repeater applications
- Telescoping masts and motorized pan/tilt pedestals
- Self coil assemblies available for ProStar transmit/receive systems
- Low cost frequency agile transmitters and receivers for single or dual band operation
- Designed for all ENG operations

Microwave Radio Corporation offers a fully integrated complement of equipment for mast-mounted transmit/receive systems.

The basic van transmit system consists of a ProStar offset-fed antenna, mast-mounted power amplifier and self-contained portable transmitter. This concept allows the transmitter to be removed easily for independent tripod-mounted transmit applications. Operation is available in either the 2GHz, 2.5GHz, or 6.5/7GHz frequency bands.

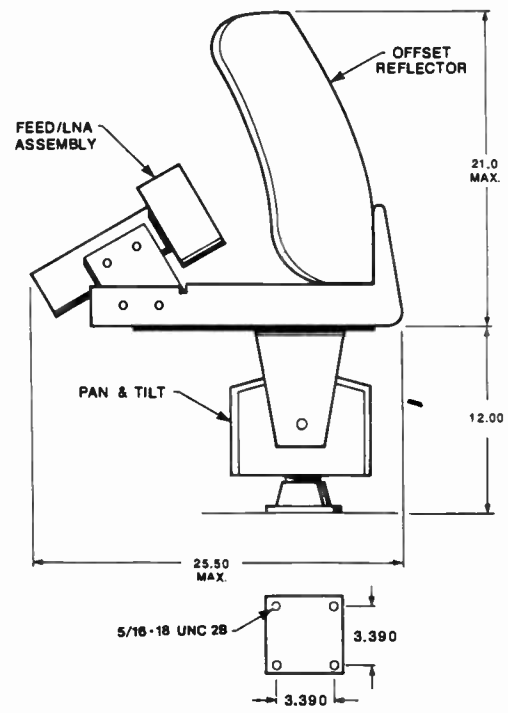
The ProStar PA200 or PA250 mast-mounted power amplifiers feature high (12W) and low (3W) RF power outputs and provide a status of proper RF power output from within the vehicle. For 7GHz operation, the ProStar PA700 is available for mast-mounted transmit applications requiring greater antenna RF input than would normally be supplied by the remotely located 7T2 portable transmitter. A combination rack-mounted power supply/portable transmitter support shelf comes standard with each power amplifier.

An optical low noise broadband (2/2.5GHz) amplifier (LNA) which is installed in the ProStar's feed allows for transmit or receive operation through the same antenna. A mast-mounted 7GHz and/or 13GHz block downconverter in conjunction with the MRC receiver provides additional frequency flexibility when designing van repeater systems at a very reasonable cost.



ProStar 2A20

REFLECTOR SIZE - 18.5X29.5 IN.



Mounting Pattern

Specifications

Frequency Band:

1.9-2.1GHz

Gain:

20dB

Size:

29.5" x 18.5"

Weight:

25 lbs.

Part Number

900310-1

900310-2

900310-3

900310-4

900310-9

900310-11

900310-13

Polarization

RH Circular

LH Circular

Vertical or horizontal

Quad polarization, remote switchable

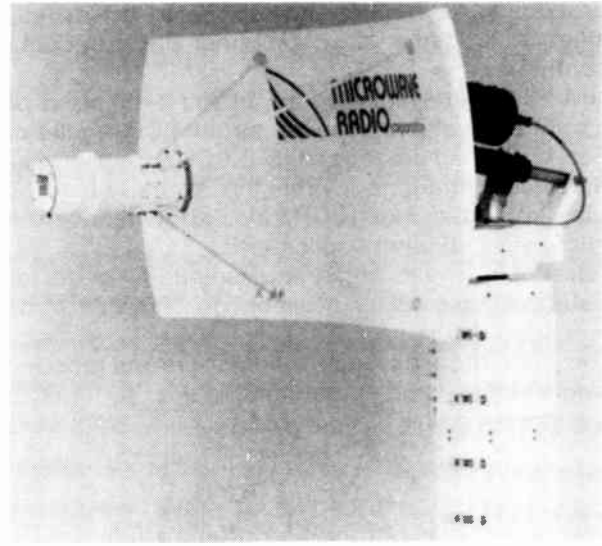
LH/RH, remote switchable

H/V, remote switchable

2 + 7, quad polarization



Miniscan 4' Reflector



Miniscan 2' x 4' Parabolic Reflector

Miniscan™ 2GHz and 7GHz Central Receive Antenna

- 2-2.5GHz broadband operation (2 and 7GHz dual band optional)
- Gain with 4' parabolic: 26dBi at 2GHz and 36dBi at 7GHz with 2' x 4' truncated: 24dBi at 2GHz and 34dBi at 7GHz
- Beamwidth: 4': 2GHz—7.7°; 7GHz—2.3° Beamwidth 2' x 4': 2GHz—7.7 x 15.4°; 7GHz—2.3 x 4.6°
- AZ—360° continuous rotation
- EL—4' and 2' x 4' + 20° to -25°
- Remotely selectable polarization, horizontal, vertical, left or right circular
- Withstands winds up to 125 mph, operational to 60 mph
- Weight: 155 lbs.
- Temperature: operating -30°C to +70°C
- Nonoperating -50°C to +85°C
- Power consumption: without heater 300W; with heater 1000W, with heated radome 2kW
- Dual band operation includes 7GHz in the same 22.5GHz feed, optional
- A 7GHz block converter which converts the 6.4 to 7.1GHz frequency band to 2-2.5GHz can be included, optional. (This permits 7GHz signals to be sent down the tower via 2GHz coaxial cable rather than 7GHz waveguide.)
- Dual rotary joints for transmit and receive operation, optional
- Heated and unheated radomes, optional
- Monopulse autotracking (single axis—azimuth only), optional
- NAVTRACK™—dual axis autotrack system (AZ/EL), described in AIRBORNE SYSTEMS

The Miniscan is a full featured antenna system which may be equipped with a 4' parabolic or a 2' x 4' truncated reflector. The feed and control system is identical to the Superscan. Wiring consists of a single control cable (Belden 9776 or equivalent) and an RF cable from the pedestal to the slave controller and the receiver respectively.

Primary power of 115VAC or 230VAC must be supplied to the pedestal. The standard Miniscan covers the frequency range of 2-2.5GHz. Optionally, 7GHz can be included in the same feed. Other frequency bands can be supplied.

Miniscan Receive System, Includes Slave Controller MRC-200

- 844146-1** Without LNA
- 844146-2** With 24dB Gain Bypassable LNA
- 844146-3** With 35dB Gain Bypassable LNA
- 844146-4** With 24dB Gain Bypassable LNA and 7GHz Block Downconverter
- 844146-5** With 35dB Gain Bypassable LNA and 7GHz Block Downconverter
- 844146-6** With 24dB Gain Bypassable LNA (2GHz) and 30dB Gain Bypassable LNA (7GHz) with Dual Rotary Joint
- 844146-7** With 35dB Gain Bypassable LNA (2GHz) and 30dB Gain Bypassable LNA (7GHz) with Dual Rotary Joint
- 843400-8** Control Cable

MICROWAVE RADIO

Airborne Systems/Van Antenna Systems

Airborne System

• NAVTRACK™, optional • Channel filter switching unit, optional • Loran-C sub-system, optional • High rejection/low loss channel filter, optional • Portable Skypod III™ gyro/antenna control system mounted in transit case, optional

Microwave Radio Corporation offers a complete system for airborne microwave operation in the 2-2.7GHz frequency band. The system includes the Skypod III helicopter mounted antenna system, receivers, transmitters and ground based tracking antenna systems. Any of the ground based systems may be interfaced with the Navtrack control system for completely automatic operation.

The Skypod III consists of three antennas, a downlook, an omni and a steerable 16dBi directional, all housed in a low profile aerodynamic pod. Any of the antennas can be selected via a control panel for receive or transmit operation. The directional antenna may be steered toward a ground based receive site manually. Once oriented, the antenna then receives direction from a gyro compass system which will maintain the bearing of the antenna.

Optionally, the airborne system can be interfaced with a Loran-C or Omega navigation system. This option will provide automatic acquisition and will also compensate for aircraft drift.

A second option, the Navtrack system transmits navigational coordinates from the airborne Loran-C or Omega system to the ground receive site. This enables the ground based receive site to automatically track the helicopter.

Specifications

Frequency Band GHz	Steerable	Omni	Downlook
Standard:	1.990-2.110 2.450-2.500	1.990-2.110 2.450-2.500	1.990-2.110 2.450-2.500
Optional:	2.300-2.700	2.300-2.700	2.300-2.700
Gain (dBi):	16dB	1.0dB	9dB
841956	Steerable Antenna		
841954	Steerable and Downlook Antenna		
841953	Steerable and Downlook with 2-Way Duplex Antenna Switching System		
841955	Steerable and Omni Antenna		
841952	Steerable and Omni with 2-Way Duplex Antenna Switching System		
841951	Steerable, Omni and Downlook with 3-Way Duplex Antenna Switching System		

Autotrack Options

844142	Loran-C Navigational System
844143	Navtrack NGU-2000 Ground Unit
844144	Navtrack NAU-1000 Airborne Unit
53983-2	2GHz Channel Filter
53983-1	2.5GHz Channel Filter
900035-1	CFU-100 Channel Filter Switching Unit

Van Antennas

2' x 4' Transmit Microscan System

The antenna gain, beamwidth, polarization and frequency coverage are identical to the Microscan 2' x 4' antenna as described in the antenna systems section.

2' x 4' Reflector, Feed and Brackets*

990501-G1	(2-2.5GHz)
990501-G2	(2-2.5GHz and 7GHz option)
843726	Motorized pan and tilt head
844028-1	Remote controller for pan and tilt head and polarization
844525-XX	Feed control cable

0.75m Transmit Microscan System

The antenna gain, beamwidth, polarization and frequency coverage are identical to the Microscan 0.75m antenna as described in the antenna systems section.

0.75m Reflector, Feed and Brackets*

844212-G1	2-2.5GHz
844212-G2	2-2.5GHz and 7GHz option
843726	Motorized pan and tilt head
844028-1	Remote controller for pan and tilt head and polarization
844525-XX	Feed control cable

Dual Disc Rod Transmit System

Disc rod antenna—select from the antenna configurations section.

843726	Motorized pan and tilt head
841922-23	Saddle mount
844028	Remote controller for pan and tilt head

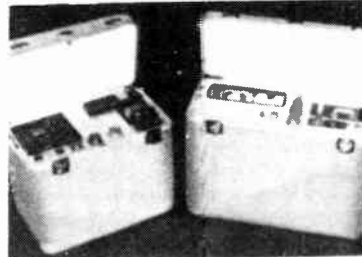
Self-Coil Cable

809980-XX	2MX
900025-XX	PA-200
900026-XX	2MX with Microscan antenna polarization control
900027-XX	PA-200 with Microscan antenna polarization control

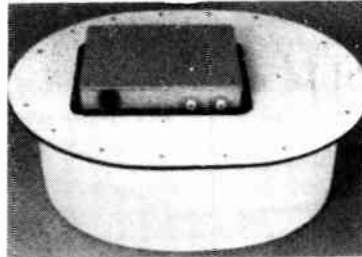
Helicopter with Skypod III



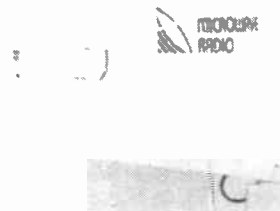
Portable Skypod III Control System



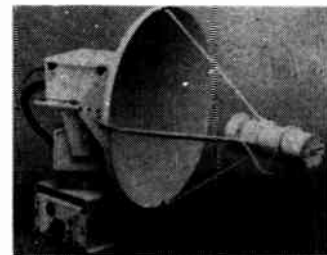
Skypod III



2' x 4' Microscan



Microscan with 0.75m Offset Reflector



Dual Disc Rod Antenna



Self-Coil Cable Junction Box, Optional

900028-1	2MX
900028-2	PA-200

89759-81 Male/Female Through Adaptor, Optional

*If this antenna is purchased separately, a rackmounted version of the Microscan antenna polarization and frequency band controller must be ordered (844724-1).

MICROWAVE RADIO

Antenna/Antenna Controllers

Superscan 2GHz and 7GHz Central Receive Antenna

- 2-2.5GHz broadband operation (2 and 7GHz dual band optional)
- Gain: 2GHz—29dBi; 7GHz—39dBi
- Beamwidth—2GHz—6.3°; 7GHz—1.7°
- 360° continuous rotation
- -20° to +25° elevation control
- Remote selectable polarization, horizontal, vertical, left or right circular
- Withstands winds up to 125 mph, operational to 60 mph
- Heated pedestal for cold weather operation
- Weight: 400 lbs.
- Temperatures: Operating -30°C to +70°C
Non-operating: -50°C to +85°C
- Power consumption: without heater 500W; with heater 1450W; with heated radome 3kW
- LNA bypass feature standard
- Autotrack steer rate: 10°/sec
- 4°/sec slow to 10° fast (adjustable) from master
- Tracking accuracy: ± 1.5° max.
- Dual band operation includes 7GHz in the same 2-2.5GHz feed, optional
- Optionally, a 7GHz block converter which converts the 6.4-7.1GHz frequency bank to 2-2.7GHz can be included. This permits 7GHz signals to be sent down the tower via 2GHz coaxial cable rather than 7GHz waveguide
- Dual rotary joints to transmit and receive operation or simultaneous operation in 2 and 7GHz band, optional
- Heated and unheated radomes or silo radome, optional
- Monopulse autotracking (single axis—azimuth only), optional
- Navtrack™—dual axis autotrack system (AZ/EL), optional

The Superscan antenna is designed for applications requiring maximum antenna gain. Heavy-duty construction and extensive surge protection make the Superscan extremely reliable. Full feature remote control is provided with the controllers. Tower wiring consists of a single control cable (Belden 9776 or equivalent) and an RF cable which connects the Superscan to the slave controller and the receiver respectively.

Primary power 115VAC or 230VAC must be supplied to the pedestal. The standard Superscan covers the frequency range of 2-2.5GHz. Other frequency bands can be supplied.

Superscan Receiver System, Includes MRC-200 Slave Controller

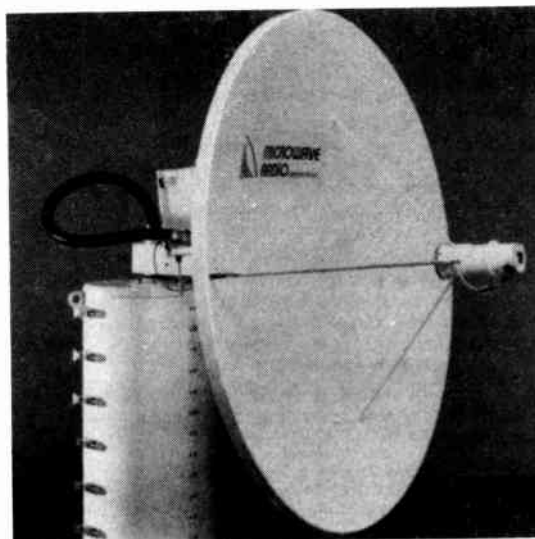
- 844145-1 Without LNA
- 844145-2 With 24dB Gain Bypassable LNA
- 844145-3 With 35dB Gain Bypassable LNA
- 844145-4 With 24dB Gain Bypassable LNA and 7GHz Block Downconverter
- 844145-5 With 35dB Gain Bypassable LNA and 7GHz Block Downconverter
- 844145-6 With 24dB Gain Bypassable LNA (2GHz) and 30dB Gain Bypassable LNA (7GHz) with Dual Rotary Joint
- 844145-7 With 35dB Gain Bypassable LNA (2GHz) and 30dB Gain Bypassable LNA (7GHz) with Dual Rotary Joint
- 843400-8 Control Cable

MRC-300 Master Controller, MRC-200 Slave Controller

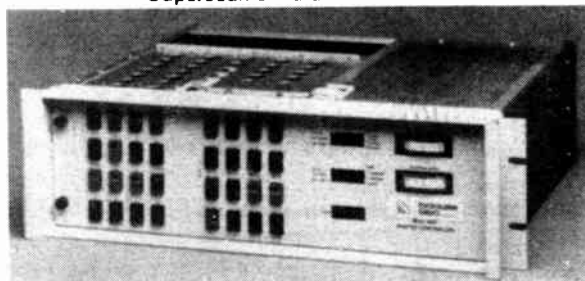
The microprocessor based Superscan, Miniscan II and Microscan Tracking Antenna Control system is comprised of an on-site Slave Controller unit and an optional Master Controller Unit for remote control capability via dedicated 3002 type telco line (2-wire or 4-wire) or optionally by means of external dial-up modems. The dial-up system is designed to work with any Hayes compatible modems at 1200 bps.

The Slave Controller provides all of the control and status reporting functions for antenna systems operation including automatic or manual tracking mode selection, antenna heading (azimuth and elevation), polarization, band selection, LNA bypass function and RF channel and offset. In addition, the Master Controller provides the capability to control up to 8 (optional) different ENG receive sites. The Master may be programmed for 8 memory preset positions per site in advance scheduling autotrack switching and steering. Also, 15 digital and 3 analog site management functions are available for user defined control and monitoring functions.

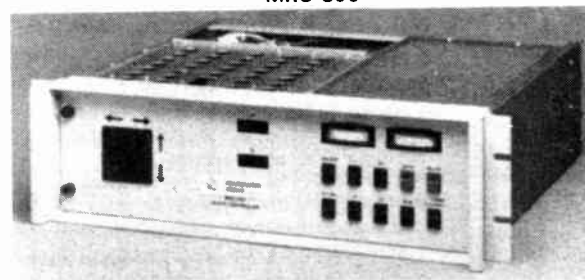
The Master will also provide complete control of the MRC Receiver including: channel, offset, band, audio subcarrier frequency, squelch functions and IF bandwidth select. Signal strength and squelch status are displayed on the Master.



Superscan 6' Parabolic Reflector



MRC-300



MRC-200

Controls and Indicators

MRC-300 Master Controller (P/N 843290-1)

Analog Meters: 2: signal strength and tracking error
Digital Displays: 3: azimuth, elevation and RF channel
Pushbutton

Switches: Provide control status of up to 8 different (optional) ENG receive sites: 8 memory preset positions per site AZ/EL

Control Functions: Local control indicator; auto/manual mode; azimuth (slew right/left-fast/slow); antenna polarization select; and 15 digital and 3 analog functions for user defined control and monitoring

MRC-200 Slave Controller (P/N 843280-1)

Analog Meters: 2: signal strength and tracking error
Digital Displays: 2: azimuth and elevation

Joystick

Azimuth: Slew right/left
Elevation: Up/down

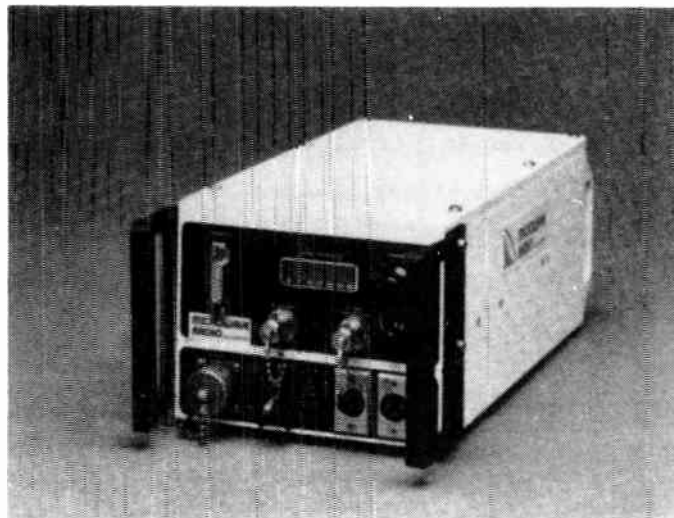
Pushbutton

Switches: Polarization: vertical, horizontal, right/left circular; automatic or manual mode; local or slave control; lamp test or communication lock; power on/off; LNA bypass; band 990503 dial-up modem, optional

Refer to Green Section for Addresses and Telephone Numbers.

MICROWAVE RADIO

Microwave Receivers



2MR

2MR™ Multiband Portable Receiver

- Remote control capability
- Built-in AC and DC power supply. Power input 110VAC (50-60Hz) or 220VAC (50-60Hz) or 11-32VDC, all included
- Twist lock adaptor (option) for quick disconnect disc rod antennas
- Size: 5" H x 6.5" W x 12" D
- Weight: 14.5 lbs.
- Dual synthesized audio demodulators, independently programmable standard subcarrier frequencies
- Low noise preamplifier standard
- Dual conversion frequency synthesized
- Superior adjacent channel rejection. Receives a weak desired signal in the presence of a strong adjacent channel signal
- Frequency coverage—2MR: 2-2.7GHz or 1.7-2GHz
2 + 7MR: 6.4-7.1GHz and 2-2.7GHz
Multiband MR: 12.7-13.25GHz and 6.4-7.1GHz and 2-2.7GHz

• Tracking RF filter

The 2MR is a dual conversion receiver which provides superior performance in crowded RF environments. Careful design and component selection enables the MR receiver to properly receive a weak desired signal in the presence of a strong undesired adjacent channel signals. Key design features include a tracking RF filter, high level mixers and an advanced frequency synthesizer. The MR multiband model provides coverage of other frequency bands in addition to the 2-2.7GHz band by means of block converters which are built into the receiver. Block converters are available for the 7GHz band and the 13GHz band. Either or both may be built into the MR multiband receiver.

The MR receiver is housed in a weather-resistant enclosure machined from an aluminum block. Covers and controls are gasketed to prevent water leakage.

- 841286-1** 2MR Receiver (2-2.7GHz)
842650-1 2 + 7MR Receiver (2-2.7GHz and 6.4-7.1GHz)
900001-1 MR Multiband (2-2.7GHz and 6.4-7.1GHz and 12.7-13.25GHz)

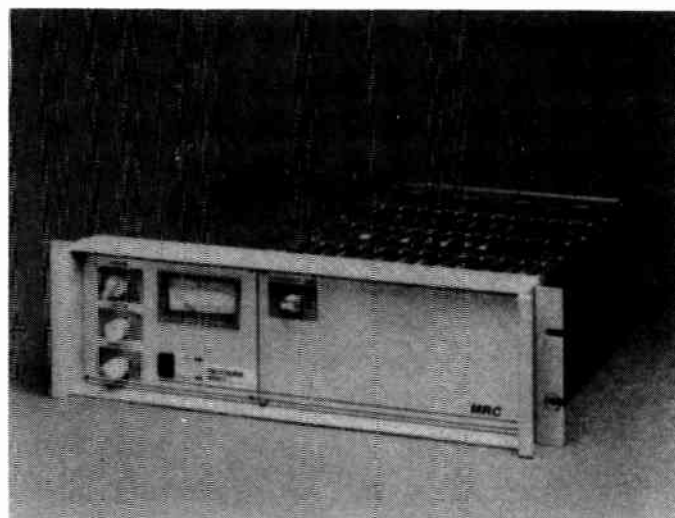
Specify two audio subcarrier frequencies.

Accessory

- 842221-1** Transit Case

MRC 2, 7 and 13GHz Central Receiver

- Dual conversion, frequency synthesized
- Superior adjacent channel rejection
- Tracking control capability



MRC

- Frequency coverage—2-2.7GHz or, with optional block converters, 6.4-7.1GHz and 12.7-13.25GHz
Optionally: 1.7-1.85GHz
- Designed for high RFI environment
- IF bandwidth selectable from front panel
- Selectable audio subcarrier frequencies optional
- 115/230VAC (50-60Hz)

The MRC is a dual conversion receiver which provides superior performance in crowded RF environments. Careful design and component selection enables the MR receiver to properly receive a weak desired signal in the presence of strong undesired adjacent channel signals. Key design features include a tracking RF filter, high level mixers and an advanced frequency synthesizer. The MRC provides coverage of other frequency bands in addition to the 2-2.7GHz band by means of optional block converters. The block converters may be mounted in one rack unit, 19" high enclosure or in a weather-resistant enclosure which may be mounted near the receiving antenna. The block converters translate the 7 or 13GHz frequency bands to the 2-2.7GHz band. This enables the use of coaxial cable rather than waveguide to interconnect 7 or 13GHz antennas to the rackmounted receiver.

The MRC is equipped with three IF filters—10MHz, 15MHz and 20MHz bandwidths. The desired filter may be selected by means of a front panel switch or via remote control. All functions of the MRC may be remote controlled, these include channel, offset, frequency band, IF filter bandwidth and squelch enable, disable. The MRC may also be equipped with an optional switchable dual audio demodulator which permits independent control of the subcarrier frequencies either by front panel control or by remote control.

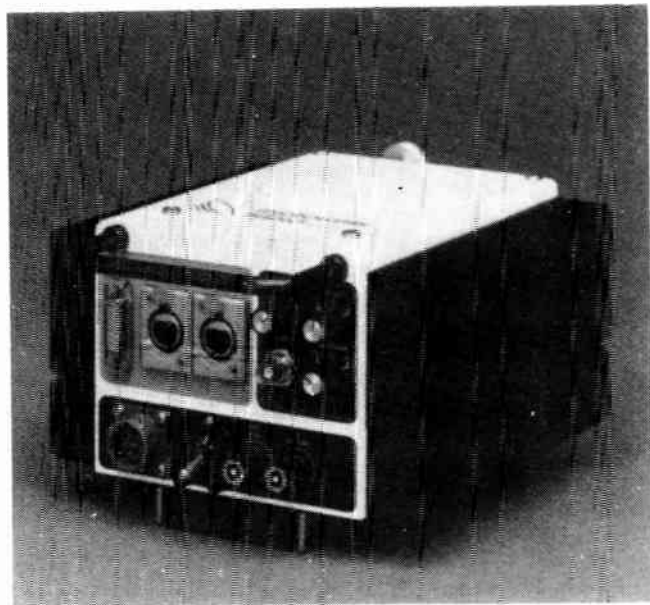
Remote control may be accomplished with the controller system or by the interbuilding controller which permits remote control of the MRC via cable interconnect of up to 1000'.

A microprocessor based receiver interface unit permits long distance remote control of the receiver functions over standard dial-up telephone lines.

- 842200-1** MRC Receiver (Specify 2 audio subcarrier frequencies)
842200-2 MRC Receiver with Switchable Audio Demodulators
843508-1 7GHz Block Converter, Rackmount
843508-3 13GHz Block Converter, Rackmount
843508-9 7GHz and 13GHz Block Converter, Rackmount
900003 7GHz Block Converter Weatherproof Enclosure
900004 13GHz Block Converter Weatherproof Enclosure
843738-1 Interbuilding Remote Control
990502 Receiver Interface Unit

MICROWAVE RADIO

Microwave Transmitters



Super 2MX



2MX

Super 2MX™ 2GHz Self-Contained Transmitter

- Video plus two audio subcarriers
- Frequency coverage 1.99-2.11GHz
- 21 RF channels, frequency synthesized
- Built-in AC and DC power supply Power input: 110AC (50-60Hz) or 220VAC (50-60Hz) or 11-32VDC. All included
- Dual audio program channels with independently selectable mic (-50dBm) or Line (0dBm) inputs. Mic input protected with an automatic peak activated gain control
- Video low pass filter standard, protects the audio channels from extraneous noise applied to the video input
- High/low power output, 12W/3W typical
- Remote control capability
- Standby mode permits instant RF transmission on frequency
- Twist loc adaptor (option) for quick disconnect disc rod antennas
- Size: 5.25" H x 8" W x 7.5" D
- Weight: 13 lbs.

The Super 2MX is a rugged, field proven, self-contained transmitter with hundreds in use worldwide. It is housed in a weather-resistant enclosure machined from a solid block of aluminum. Covers and controls are gasketed to prevent water leakage. The circuitry features hermetically sealed critical circuits, digital frequency synthesis and a stripline output amplifier which is protected against output load changes and temperature extremes. A universal power supply permits operation from a wide variety of power sources.

Super 2MX Self-Contained Transmitter
841732-1 Super 2MX Transit Case

2MX/2.5MX™**2GHz or 2.5GHz Remote Controlled Transmitter**

- Video plus two audio subcarriers
- Frequency Coverages — 2MX: 1.99-2.11GHz or 1.7-1.9GHz
 2.5MX: 2.3-2.7GHz

- Weather sealed RF head intended for outdoor installation
- Remote control unit permits full control capability
- Dual audio program channels with front panel selectable mic (-50dBm) or Line (0dBm) inputs. Microphone input protected with an automatic peak activated gain control
- Built-in DC power supply 11.5-32VDC. External AC supply optional
- High/low RF output power 12W/3W typical
- 21 RF channels frequency synthesized (2MX)
- 10 RF channels frequency synthesized (2.5MX)

The 2MX/2.5MX is intended for use in applications requiring a transmitter which can be permanently mounted outdoors and remotely controlled. Hundreds are in use on vans, where the RF head is mounted near the antenna on a mast or in airborne applications. The RF head may also be tripod mounted. The RF head is machined from a solid block of aluminum, sealed with gasketed covers and uses weather-proof connectors for inputs and outputs.

The same control unit is used for both the 2MX and the 2.5MX. It permits front panel control of RF channels, mic or line audio inputs and high/low RF output power. Indicators are provided for primary power and RF output power.

The RF head may be mounted on a heat dissipating surface or it must be used with the optional heat sink assembly. With the RF head mounted to the heat sink assembly, it may be used with a variety of antennas.

The 2MX, 21-channel transmitter and the 2.5MX 10-channel transmitter both include RF head, controller and 10' interconnect.

Accessories

- 841021-1** Power Supply 115VAC/28VDC Rackmount
- 840421-1** Heatsink for RF Head
- 842403-1** Transit Case for 2MX and 2.5MX
- 841021-2** Controller Rackmount Shelf
- 809979-20** 20' Interconnect

MICROWAVE RADIO

Microwave Transmitters/Receivers

Portable Microwave Transmitters

	SUPER 2MX	2MX	2.5MX	13FA	40MX
Frequency Range	1.990 to 2.110 GHz	1.99 to 2.110 GHz	2.3 to 2.7 GHz	12.95 to 13.25 GHz	38.6 to 40 GHz
RF Channels	21 Channels	21 Channels	10 Channels	10 Channels	28 Channels
Radio Capacity	NTSC, PAL or SECAM Video Plus 2 Audio Channels	NTSC, PAL or SECAM Video Plus 2 Audio Channels	NTSC, PAL or SECAM Video Plus 2 Audio Channels	NTSC, PAL or SECAM Video Plus 1 Audio Channels	NTSC, PAL or SECAM Video Plus 2 Audio Channels
RF Source	digital frequency synthesizer	digital frequency synthesizer	digital frequency synthesizer	digital frequency synthesizer	Gunn oscillator
Frequency Stability	± 0.005%	± 0.005%	± 0.005%	± 0.005%	± 0.05%
Video Deviation	8 MHz P-P	8 MHz P-P	8 MHz P-P	8 MHz P-P	12 MHz P-P
Signals Inputs, Video	1VP-P	1VP-P	1VP-P	1VP-P	1VP-P
Audio	Two 0 dBm, 600 ohm line or -50 dBm, 150 ohm MIC (selectable)	Two 0 dBm, 600 ohm line or -50 dBm, 150 ohm MIC (selectable)	Two 0 dBm, 600 ohm line or -50 dBm, 150 ohm MIC (selectable)	0, +9 or -18 dBm	Two 0 dBm, 600 ohm line or -50 dBm, 150 ohm MIC (selectable)
Subcarrier Frequencies	4.83, 5.8, 6.2, 6.8, or 7.5 MHz	4.83, 5.8, 6.2, 6.8, or 7.5 MHz	4.83, 5.8, 6.2, 6.8, or 7.5 MHz	4.83, 5.2, 5.8, 6.2, 7.5, 8.5 or 8.59 MHz	4.83, 6.9 or 7.5 MHz
Primary Power	11 to 32 Vdc or 115/230 Vac (50-60 Hz)	11.5 to 32 Vdc	11 to 32 Vdc	12 Vdc or 115/230 Vac	+11 to -15 Vdc
Dimensions	5.25 x 8 x 7.5" (13.3 x 20.4 x 19.6 cm)	RF Unit: 4.75 x 2.5 x 5.75" (12.1 x 6.0 x 14.1 cm) Control: 2.5 x 6.0 x 6.25" (6.0 x 15.2 x 15.9 cm)	RF Unit: 4.75 x 2.5 x 5.75" (12.1 x 6.0 x 14.1 cm) Control: 2.5 x 6.0 x 6.25" (6.0 x 15.2 x 15.9 cm)	5.5 x 7.0 x 13.5" (11.5 x 11.4 x 20.3 cm)	1.5 x 5.5 x 6.0" (3.8 x 14.5 x 15.2 cm)
Weight	13 lbs (5.9 kg)	RF Unit: 3.5 lbs (1.6 kg) Control: 2.4 lbs (1.1 kg)	RF Unit: 3.5 lbs (1.6 kg) Control: 2.4 lbs (1.1 kg)	18 lbs (8.1 kg)	Less than 3 lbs (1.4 kg)
Mating Receivers	2MR, 27MR, MRC	2MR, 27MR, MRC	2MR, 27MR, MRC	13FA, MRC (w/ 13 GHz Block Down-converter)	40MR

Portable Microwave Receivers

	SUPER 2MR	27MR MULTIBAND	13FA	40MR	MRC
Frequency Range	1.990 to 2.700 GHz	2.25-1.990 to 2.700 GHz 6.7-6.425 to 7.125 GHz	12.95 to 13.25 GHz	38.6 to 40.0 GHz	2.25-1.990 to 2.700 GHz 6.7-6.425 to 7.125 GHz 12-12.7 to 12.95 GHz 13-12.95 to 13.25 GHz
RF Channels	30 Channels	2.25 GHz: 30 Channels 6.7 GHz: 42 Channels	10 Channels	28 Channels	2.25-30 Channels 6.7-42 Channels 12-40 Channels 13-45 Channels
Radio Capacity	NTSC, PAL or SECAM Video Plus 2 Audio Channels	NTSC, PAL or SECAM Video Plus 2 Audio Channels	NTSC, PAL or SECAM Video Plus 2 Audio Channels	NTSC, PAL or SECAM Video Plus 2 Audio Channels	NTSC, PAL or SECAM Video Plus 2 Audio Channels
Noise Figure	2 dB typ., 2.5 dB max.	2.25: 2 dB typ., 2.5 dB max. 6.7: 3 dB typ., 4 dB max.	8 dB	9 dB	2.25: 2 dB typ., 2.5 dB max. 6.7: 3 dB typ., 4 dB max. 12/13: 3.5 dB typ., 4.5 dB
Receiver Threshold	-90 w/15 MHz IF -87 dBm w/20 MHz	2.25: -87 dBm 6.7: -86 dBm	-79 dBm	-75 dBm	2.25: -87 dBm 6.7: -86 dBm 12/13: -85 dBm
Local Oscillator	digital frequency synthesizer	digital frequency synthesizer	digital frequency synthesizer	Gunn oscillator w. AFC	digital frequency synthesizer
Frequency Stability	± 0.005%	± 0.005%	± 0.005%	± 0.005%	± 0.005%
IF Bandwidth (70 MHz)	15 MHz (10 or 20 MHz optional)	15 MHz (10 or 20 MHz optional)	30 MHz (20 MHz optional)	40 MHz (140 MHz IF)	10, 15, and 20 MHz (selectable)
Signal Outputs: Video	Two: 1VP-P	Two: 1VP-P	Two: 1VP-P	Two: 1VP-P	Two: 1VP-P
IF	-	-	-	-	+5 dBm
Audio	Two: 0 to +18 dBm, 600 ohm	Two: 0 to +18 dBm, 600 ohm	0, +9, or +18 dBm, 600 ohm	Two: 0 dBm, 600 ohm	Two: 0 to +16 dBm, 600 ohm
Subcarrier Frequencies	4.83, 5.8, 6.2, 6.8, 7.5, 8.065, 8.3 or 8.5 MHz (selectable)	4.83, 5.8, 6.2, 6.8, 7.5, 8.065, 8.3 or 8.5 MHz (selectable)	4.83, 5.8, 6.2, 6.8, 7.5, 8.3, or 8.59 MHz	4.83, 6.8, or 7.5 MHz	4.83, 5.2, 5.8, 6.2, 6.8, 7.02, 7.5, 8.065 or 8.3 MHz
Primary Power	+11.5 to +32 Vdc or 115/230 Vac (50-60 Hz)	+11.5 to +32 Vdc or 115/230 Vac	12 Vdc or 115/230 Vac (50-60 Hz)	11.5 to 32 Vdc or 115/230 Vac (50-60 Hz)	115/230 Vac (50-60 Hz)
Dimensions	5.0 x 6.5 x 12.0" (12.7 x 16.5 x 30.5 cm)	5.5 x 6.5 x 12.0" (14.0 x 16.5 x 30.5 cm)	5.5 x 7.0 x 13.5" (14.0 x 17.8 x 34.3 cm)	5.0 x 6.5 x 13.0" (12.7 x 17.8 x 34.3 cm)	5.25 x 19.0 x 15.4" (13.3 x 48.3 x 39.1 cm)
Weight	14.5 lbs. (6.6 kg)	22 lbs. (10 kg.)	18 lbs. (8.1 kg.)	16 lbs. (7.3 kg.)	25 lbs. (11.4 kg.)
Mating Transmitter	Super 2MX, 2MX, 2.5MX	Super 2MX, 2MX, Super 7MX	13FA	40MX	Super 2MX, 2MX, 2.5MX, Super 7MX*, 13FA*

*With optional Block Down-converter.

Refer to Green Section for Addresses and Telephone Numbers.

MICROWAVE RADIO

Microwave Transmitter

Prostar 2T2 Transmitter

- Low cost
- Self-contained, lightweight transmitter
- Full broadcast quality for domestic and international applications
- 21-channel synthesizer—rapid and precise channel selection
- Standby mode for instant RF transmission on frequency
- Internal power supply 12VDC, 115/230VAC operation
- Two audio program channels
- Standby
- Independently selectable microphone or line audio input—either channel
- Auto peak limiting on microphone input
- Rugged, weather-resistant construction
- Lightweight antenna, optional
- Quick-disconnect tripod antenna, optional
- Battery pack/charger, optional
- Transit case, optional

The low-cost 2T2 affordable portable ENG transmitter is a self-contained, frequency agile radio transmitter that offers a combination of performance, reliability, and functional features unmatched in the industry. This high-performance transmitter handles a color television channel and two audio program channels while producing a 2W output in the 2GHz frequency band. It was developed for broadcast and cable ENG portable applications that require high mobility and quick response. As a self-contained low cost system, it is feasible to install this unit on a semi-permanent or seasonal basis for re-occurring local events such as ball games and meetings.

Utilizing sophisticated, field-proven RF circuitry, the 2T2 features a 21-channel synthesizer for multi-channel flexibility. Frequency congestion, especially when other stations are in the scene of a widely-covered news event, is avoided by this high-stability synthesizer. A unique channel selection scheme provides rapid and precise channel selection capability. No elaborate tuning or adjustment procedures are needed. In the event of adjacent channel interference, the 2T2 can be quickly switched up or down one-half channel.

2T2 electronics are enclosed in a rugged, weather-resistant case designed to function reliably under the most adverse field conditions. All connectors, switches and indicators are weather-resistant and designed to withstand rugged use.

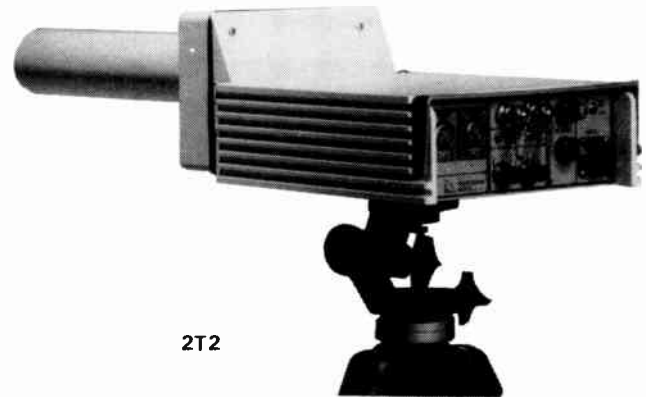
A unique advantage of the 2T2's transmitter is its ability to operate from AC or DC power sources without the need for modification or external inverters. The built-in AC/DC power supply allows operation from a 12VAC source or 115/230VAC sources.

Specifications**Frequency Range**

- Standard:** 1.99 to 2.110GHz
Optional: 2.3 to 2.7GHz

Channel Plan

- Standard:** 21 channel (7 basic channel with offset)
Optional: 10 channels with offset



2T2

Source:	Digital synthesizer
Frequency Stability:	$\pm 0.005\%$
Power Output:	2W min.
Standby Mode:	On-frequency transmission instantly
Video:	525/625 line
Input Level:	1V p-p for ± 4 MHz deviation, adj.
Input Impedance:	75 ohms
Pre-Emphasis:	Per CCIR Rec. 405
Return Loss:	26dB (10Hz to 5MHz)
S/N:	65dB min.
Line Audio:	0dBm, 600 ohms balanced
Microphone:	-50dBm, 150 ohms balanced
Deviation	
Produced:	75kHz peak at 1kHz TT
S/N	
Line Audio:	65dB
Microphone:	55dB
Harmonic	
Distortion	
Line Audio:	0.5% max.
Microphone:	1% max.
Pre-Emphasis	
Standard:	75 μ s
Optional:	50 μ s or flat
Subcarrier	
Frequencies	
Standard:	4.83, 5.8, 6.2, 6.8, 7.5, or 8.5 (specify two)
Optional:	Any CCIR subcarrier
Power:	Input Range—10.5 to 15VDC or 105/130VAC or 208 to 260VAC (30W, typ.)
Connectors	
Video:	Type BNC
Audio:	XLR (female)
RF Output:	Type N
Power:	Multiple pin. MS type
Controls:	All controls and connectors mounted on front, except RF connector
Size:	3" H x 7 1/2" W x 9 1/2" D
Weight:	< 10 lbs.

MICROWAVE RADIO*Microwave Transmitter/
Receiver Systems***40MX 40GHz Transmitter****40MR 40GHz Receiver**

- Frequency coverage: 38.6-40GHz, 28 channels
- Rugged, weather-resistant construction
- Lightweight miniature transmitter
- Power requirements—Transmitter: 11.5-14VDC
Receiver: 115VAC or 230VAC or 11-32VDC

The 40MX Transmitter and 40MR Receiver are capable of transmitting high quality video plus two audio channels reliably over short distances. Equipped with the horn antennas which are supplied with the system (one 15dBi, one 25dBi) a range of one mile can be achieved. A 1' parabolic antenna is optionally available for the receiver (39dBi) which will extend the range.

The 40MX Transmitter can be equipped with the optional "walk-around" antenna. This permits the transmitter to be used with an ENG camera for wireless operation at ranges up to 100 yds. with the 25dBi receive antenna.

842500-1 40TX/RX System 1 Includes:

- 842440-1** 40MX Transmitter
 - 841975-1** 40MX Receiver
 - 842536-120** TX DC Harness Assembly
 - 841915-1** 115VAC RX Power Cord
 - 842538-1** 40GHz TX Horn Antenna (15dBi)
 - 842535-1** 40GHz RX Horn Antenna (25dBi)
 - 842515-1** 40GHz System Transit Case
- System components may be ordered separately.

842500-2 40MX TX/RX System 2

Includes all components of System 1 except:

- 843800-1** Add 12" Parabolic Antenna
 - 842506-1** Change Transit Case to 842506-1
- Specify two audio subcarrier frequencies.

Accessory

- 843202-1** Walk-Around Antenna

13FA 13GHz, 10-Channel Transmitter and Receiver

- Self-contained multi-channel transmitter/receiver
- Transmits video plus one audio
- Built-in AC and DC power supplies 12VDC or 115/230VAC
- Weather-resistant construction
- Dual audio, optional

The 13FA is a 10-channel, 13GHz portable system covering any 220MHz band in the frequency range of 12.95-13.25GHz. This modular radio is housed in a weatherproof aluminum housing.

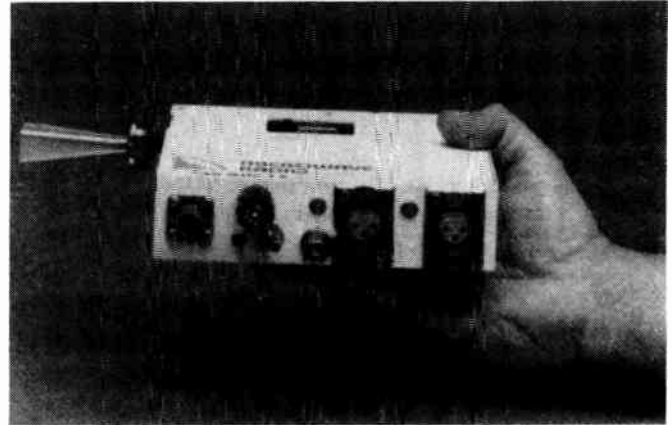
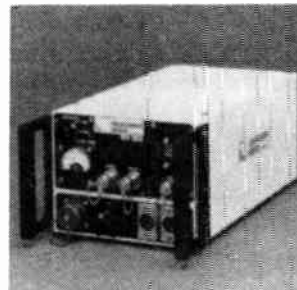
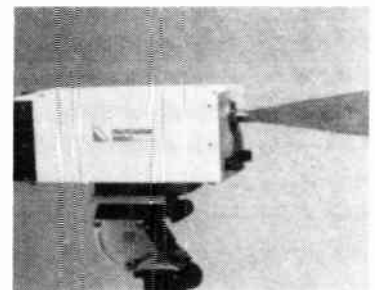
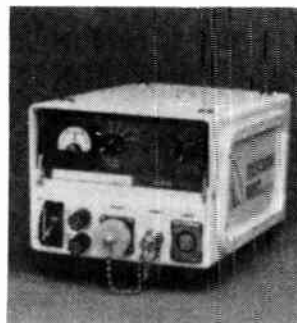
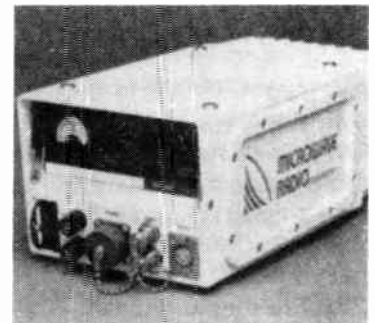
- 808100-1** 13FA Transmitter

- 808090-1** 13FA Receiver

Specify one audio channel and up to 10 RF channels.

Accessories

- 809634-10** TX Transit Case
- 809634-11** RX Transit Case

**40MX Transmitter with 15dBi Gain Horn Antenna****40MR****40MR Tripod Mounted
with Horn Antenna****13FA Transmitter****13FA Receiver**

MILLER FLUID HEADS (USA), INC.

Tripods/Accessories



331



301/302



285



290/292

331 Junior A Tripod With Column Lift

• 20 lb. capacity • Collapsed height 29" • Extended height 67" • Includes built-in spreader and reversible spike/pad feet
 331 w/flat base top \$174.00

301/302 Compact Tripod With Spreader

• 30 lb. capacity • Collapsed height 33" • Extended height 58" • Also available in mini size
 301 w/75mm bowl \$660.00
 302 w/100mm bowl 660.00

285 Midi Tripod With Spreader

• 50 lb. capacity • Collapsed height 35" • Extended height 61" • Also available in mini size
 285 w/100mm bowl \$780.00

320/321 Professional Series Tripod (Wood)

• 30 lb. capacity • Collapsed height 40" • Extended height 60" • Also available in medium and mini sizes (spreader optional)
 320 w/75mm bowl \$550.00
 321 w/100mm bowl 550.00

310/311 ENG Tripod With Spreader

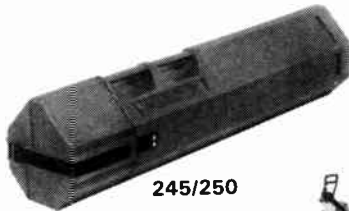
• 50 lb. capacity • Collapsed height 36" • Extended height 60"
 310 w/100mm bowl \$685.00
 311 w/75mm bowl 685.00

290/292 Maxi Tripod With Spreader

• 100 lb. capacity • Collapsed height 35" • Extended height 61" • Also available in mini size
 290 w/150mm bowl \$995.00
 292 w/Mitchell type flat base 995.00



217



245/250



365/367



229/238/239



281

Accessories

217 Column Lift Elevator

Provides up to 12" variable extension and ball leveling for above tripods, except 290/292. \$380.00

245 Tripak Case

Will hold all systems except System 80; diameter: 9", length: 42" \$250.00

250 Tripak Case

Will hold all systems plus dolly and System 80 without dolly; diameter: 11"; length: 44" \$295.00

272 Telescopic Handle

Fits all heads except Junior Head; diameter: 16mm; length: 17 1/2" - 29" \$100.00

365 Medium Duty Dolly (Formerly 209)

100 lb. capacity, 5" wheels \$525.00

367 Lightweight Dolly (Formerly 224)

30 lb. capacity, 2 3/4" wheels \$395.00

369 Caster Wheels

For Junior "A" tripod only \$49.95

229/238 Millmount

30 lb. capacity, 100mm bowl 229; 75mm bowl 238 \$490.00

239 Millmount

- 30 lb. capacity, 150mm bowl \$580.00
- 234 Spreader suit 320, 321 tripod 150.00
- 295 Monopod 175.00
- 254 Hi Hat, 75mm bowl 210.00
- 253 Hi Hat, 100mm bowl 210.00
- 255 Hi Hat, 150mm bowl 300.00
- 259 Mitchell flat base 300.00
- 235 Rubber feet (set) 55.00
- 281 Soft case, 9" diameter 115.00
- 361 75mm flat base adaptor suit 104 95.00
- 360 100mm flat base adaptor suit 114, 115, 116, 119 95.00
- 362 150mm flat base adaptor suit 150 198.00
- 363 Gitzo adaptor suit 114, 115, 116, 119 175.00

MILLER FLUID HEADS (USA), INC.

Tripods/Heads



System 10A



**System 20
"Special"**



**System 40
"ENG Special"**



System 80

System 10A Cat. 332

• Junior fluid head 101 • Junior A tripod with column lift 331 • Reversible spike/pad feet • Single handle 270
System 10A (10 lb. capacity) \$499.00

System 20 "Special" Cat. 340

• Miller 20 fluid head 104 • Featherlite tripod with spreader 305 • Reversible spike/pad legs • Single handle 271
System 20 "Special" (20 lb. capacity) \$1,325.00

System 40 "ENG Special" Cat. 352

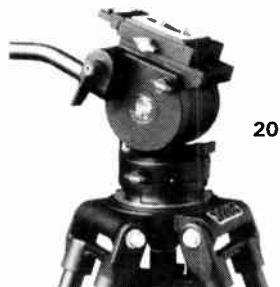
• Miller 50 fluid head 115 • Compact tripod with spreader 302 • Set of 3 rubber feet 235 • Single handle 271
System 40 "ENG Special" (50 lb. capacity) \$2,895.00

System 80 Cat. 355

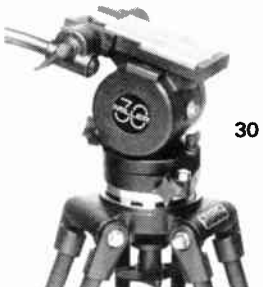
• Miller 80 fluid head 150 • Maxi tripod with spreader 290 • Set of 3 rubber feet 235 • Dual telescopic handles 274
System 80 (80 lb. capacity) \$5,645.00

Also Available:

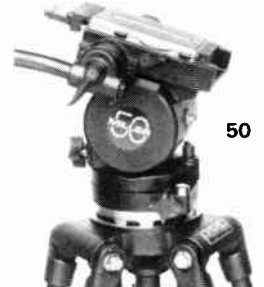
- System 10W Cat. 333** Includes Junior fluid head 101, Senior tripod 330, spreader, feet and handle (10 lb. capacity) \$ 690.00
- System 15 Cat. 335** Includes Senior F fluid head 102, Professional Series Tripod 320, feet, handles (20 lb. capacity) 1,495.00
- System 20 Cat. 338** Includes Miller 20 fluid head 104, compact tripod with spreader 301, rubber feet 235, two handles 271 (20 lb. capacity) 1,680.00
- System 25 Cat. 341** Includes Light Professional fluid head 106, Professional Series Tripod 321, spreader feet and handles (30 lb. capacity) . . 2,030.00
- System 30 Cat. 344** Includes Miller 30 fluid head 114, compact tripod with spreader 302, rubber feet 235, two handles 271 (30 lb. capacity) 2,805.00
- System 35 Cat. 347** Includes VG50 fluid head 118, ENG Tripod 310, spreader, feet, telescopic handles (50 lb. capacity) 2,580.00
- System 40 Cat. 350** Includes Miller 50 fluid head 119, midi tripod with spreader 285, rubber feet 235, two telescopic handles 272 (50 lb. capacity) 3,265.00



20



30



50



80

Miller 20 Fluid Head Cat. 104

• Capacity 20 lbs. • Features integrated counterbalance system • Sliding camera platform and integrated claw ball level **\$900.00**

Miller 30 Fluid Head Cat. 114

• Capacity 30 lbs. • Features integrated variable counterbalance system • Multi-step drag control and integrated claw ball level **\$2,025.00**

Miller 50 Fluid Head Cat. 119

• Capacity 50 lbs. • Features integrated variable counterbalance system • Multi-step drag control • Sliding camera platform and integrated claw ball level. **\$2,295.00**

Miller 80 Fluid Head Cat. 150

• Capacity 80 lbs. • Features integrated variable counterbalance system • Multi-step drag control • Sliding camera platform and integrated claw ball level. **\$4,650.00**

All Heads Supplied with One Handle

Also Available:

- Miller Junior Fluid Head Cat. 101** Capacity 10 lbs. Features independent, variable pan and tilt drag adjustment. Supplied with flat base (claw ball level available). **\$325.00**
- Senior F Fluid Head Cat. 102** Capacity 20 lbs. Features independent, variable pan and tilt drag adjustment and independent tilt lock. Supplied with flat base (claw ball level available) **\$710.00**
- Light Professional Fluid Head Cat. 106** Capacity 30 lbs. Features independent, variable pan and tilt drag adjustment and independent tilt lock. Supplied with flat base (claw ball level available) **\$1,095.00**
- VG50 Fluid Head Cat. 112** Capacity 50 lbs. Features independent, variable pan and tilt drag adjustment and independent tilt lock. Supplied with flat base (claw ball level available) **\$1,210.00**

MITEQ

Redundancy Switches/Video Exciters

1:1 Redundant Switchover Units

- Fully redundant power supplies
- Remote control/status
- Front panel monitoring of power supplies
- Local/auto/remote operation
- Uplink/downlink frequency bands
- Offline monitoring

The 1:1 Redundant Switchover unit is used with two converters, one on-line (Converter A) and the second in a standby mode (Converter B). A fault condition in the on-line Converter A, or an operator generated command, will switch the standby Converter B into the transmission path and remove Converter A from operation.

Therefore, the 1:1 Redundant Switchover unit ensures continuous operation allowing a fault to be repaired and/or routine maintenance of a converter without disruption of signal transmission.

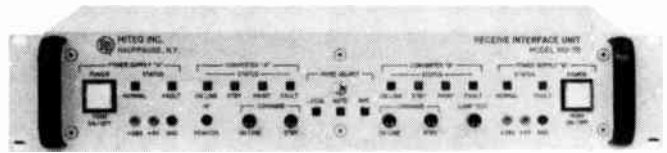
Modes of Operation

Local Mode—Local selection of operational converter is made by push buttons on the front panel. Automatic control is disabled in this mode.

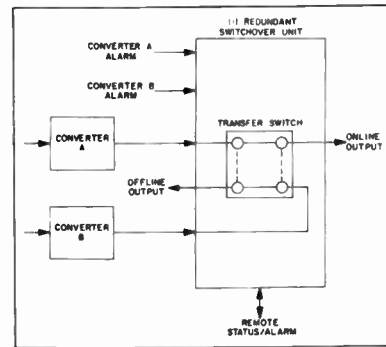
Auto Mode—In the Auto mode the switchover unit is activated by an on-line converter alarm. Front panel controls are disabled in this mode.

Remote Mode—In the Remote mode converter operation is selected by specified contact closure commands. Front panel controls and Auto switchover are disabled in this mode.

Remote/Auto Mode—In the Remote/Auto mode (a special case of Remote mode) the Auto switchover is enabled. Front panel controls and remote commands are disabled. However, the Auto mode may be disabled from the remote location, returning operation to Remote mode.



RIU-70



	Frequency	Insertion Loss dB (Max.)	Loss Flatness/ 40MHz dB (Max.)	Return Loss dB (Min.)	Isolation dB (Min.)
RIU-70	70 ± 20MHz	0.20	0.2pp	23	75
RIU-140	140 ± 40MHz	0.20	0.2pp	23	75
TIU-5964	5.925-6.425GHz	0.35	0.2pp	18	55
TIU-7984	7.9-8.4GHz	0.40	0.2pp	17	55
TIU-140145	14.0-14.5GHz	0.45	0.2pp	15	45

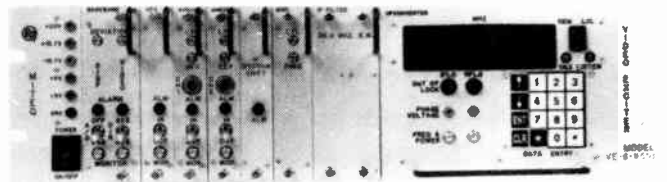
*For unit containing two transfer switches, for both uplink and downlink frequency bands, the model number is specified as follows: e.g. for 70 ± 20MHz and 14.0-14.5GHz bands—model number TIU-140145/RIU-70

Video Exciters

- For C-Band and Ku-Band Applications
- Data quality upconverter
- Gated AFC option
- 70MHz IF input accessible for dual purpose data/video applications
- RF power output options to +20dBm
- Up to three synthesized audio subcarriers
- Switchable IF filter/equalizer option
- Superb RF, video and audio performance
- Fully modular for ease of maintenance
- Excellent modulator linearity
- Baseband DC-coupled circuitry
- Compatible with NTSC, PAL, SECAM, and most scrambler and telex standards
- Front panel switch selection: 525/625 lines and THRU
- Extensive monitoring and alarms
- Internal/external frame synchronization capability option

If you contemplate using your video exciter also for present or future data transmissions, then Miteq's video exciter is the answer for your dual requirements.

The frequency stability and spectral purity of the local oscillators and frequency synthesizers used in conventional video exciters do not meet the requirements for data transmission. Miteq has solved the problem by designing the frequency sources in the upconverter with data quality phase noise performance.



VE-6-8510

Video Exciter	Output Frequency	Local Frequency Control Upconverter	Availability Local/Remote Control	Upconverter Phase Noise Characteristic
VEL-6-8506	C Band	Front Panel	Local Only	Video Quality
VEL-6-8516	5.925-6.425GHz	Thumbwheel Switch	Local Only	Video Quality
VEL-14-8507	Ku Band	Front Panel	Local Only	Video Quality
VEL-14-8517	14.0-14.5GHz	Thumbwheel Switch	Local Only	Video Quality
VE-6-8502	C Band	Front Panel	Local Only	Data Quality
VE-6-8512	5.925-6.425GHz	Thumbwheel Switch	Local Only	Data Quality
VE-14-8503	Ku Band	Front Panel	Local Only	Data Quality
VE-14-8513	14.0-14.5GHz	Thumbwheel Switch	Local Only	Data Quality
VEL-6-8504	C Band	Front Panel	Local/Remote	Video Quality
VEL-6-8514	5.925-6.425GHz	Keypad Data Entry	Local/Remote	Video Quality
VEL-14-8505	Ku Band	Front Panel	Local/Remote	Data Quality
VEL-14-8515	14.0-14.5GHz	Keypad Data Entry	Local/Remote	Data Quality
VE-6-8500	C Band	Front Panel	Local/Remote	Data Quality
VE-6-8510	5.925-6.425GHz	Keypad Data Entry	Local/Remote	Data Quality
VE-14-8501	Ku Band	Front Panel	Local/Remote	Data Quality
VE-14-8511	14.0-14.5GHz	Keypad Data Entry	Local/Remote	Data Quality

MODULATION SCIENCES, INC.

Broadcast Audio Processing

MYB-2 StereoMaxx Spatial Image Enlarger

MYB-2 StereoMaxx operates in the spatial domain, enhancing and enlarging the stereo image. The effect is compelling and dramatic without becoming overwhelming. StereoMaxx gives the station a "Big Sound" stereo image that adds new audio excitement to hi-fi stereos, auto radios and even portable "boom-boxes". The StereoMaxx spatial image enlarger is totally mono compatible and avoids the undesirable side-effects of other image enhancement techniques.

MYB-2 \$3195.00



MYB-2 StereoMaxx

CP-803 Composite Audio Processor

- Reduces amount of audio processing required
- No variable gain element, gives you more loudness without audible distortion
- Upgrade the quality of your signal, a brighter, more "open" sound

CP-803 Composite baseband processor for FM stereo. Automatically reduces filter overshoot present in every stereo generator or composite STL. Allows transmitter to be modulated with lower peak to average ratio. Restores "lost" modulation capability and loudness. Specify 120 or 240VAC. Includes rackmount.

CP-803 \$1095.00
Optional rackmount \$35.00



CP-803

Receiver



CLD-2500 System

CLD-2500 Composite Line Driver/Receiver System

The Wired STL™ system sends stereo composite baseband over long lengths of inexpensive transmission line. Made up of a driver and a receiver, the Wired STL can easily operate with 2500' of cable. Lengths as great as 10,000' are possible on special order. One driver can feed two separate runs of different lengths, each with its own receiver. The driver can also stand alone as a composite distribution amplifier to drive up to four separate coaxial lines.

Technically the CLD-2500 system consists of a high current, balanced, impedance matched driver that couples to twinax line. At the receiver end, the cable is terminated and an active circuit translates the balanced twinax circuit to a coax drive suitable for the short run to the exciter.

CLD-2500 \$1550.00



SCA-186

SCA-186 Sidekick SCA Generator/Audio Processor

- Excellent RF shielding
- Built-in transmitter tuning aid
- Stable over a wide temperature range
- Compatible with compander, data or telemetry systems
- Integral audio processing can be optimized for music and speech
- Peak holding deviation meter can eliminate need for a modulation monitor
- Quartz crystal controlled synthesizer can be programmed to any SCA frequency

SCA-186 also includes crystal-locked frequency synthesizer, built-in audio processor, and front panel deviation, gain reduction metering and a device to help minimize crosstalk-causing incidental AM modulation. Specify SCA operating frequency: 92 or 67kHz

SCA-186 \$2875.00

DSCA-189 "Data Sidekick"

- 4800bps data rate with measured bit error rate of < 1 in 1E7
- Operates synchronous or asynchronous
- RS-232/RS-422 standard input
- Automatic check of data before transmission (specify SCA frequency)

DSCA-189 \$4200.00

MOSELEY ASSOCIATES, INC.

Microprocessor Remote Control

MRC-1600 Microprocessor Remote Control System

The MRC-1600 offers flexibility and reliability in an economical package. The MRC-1600 provides 16 status channels, 16 telemetry channels, and 16 raise/lower relay-isolated command channels. Setup data is stored for up to ten years in Moseley Memory, at the Control Terminal, to ensure swift setup after a temporary power down. Plug-in modules allow the MRC-1600 to be used with almost any interconnection network, including 2 or 4 wire telephone line, subaudible, FM subcarrier or a combination of these.

Status inputs may be set to alarm on rising, falling, or rising and falling waveforms, or muted completely. Each telemetry channel can be calibrated in one of four modes: power, indirect power, linear, or millivolt. Upper and lower telemetry limits may be set or disabled independently. In operation, telemetry data is checked against these alarms. Data needed to bring telemetry back within limits is automatically displayed when an operator acknowledges an alarm.

The MRC-1600 has full control fail-safe features and maintains special channels to monitor data-link conditions and A/D ratios. A maintenance override mode continues to update status and telemetry data while locking out command signals from the Control Terminal. CRT and Logger options are available. The CRT gives the operator full control of the transmitter from the keyboard at the Control Terminal, and all necessary data in an easy to read, plain-English format. The Logger may be added to the CRT to provide a printed log of station operation.

Specifications**Type of System:**

- Microprocessor-based control terminal and remote terminal

Types of Memory Used:

- Programmable read-only memory for system firmware
- Random Access Memory for user-programmed functions

Moseley Memory:

- Retains data for ten years minimum, on electrically-alterable read-only memory (EAROM)
- Holds calibration factors, status and command assignments
- With CRT, or CRT and Logger options, stores CRT text and logger setups

System Configuration:

- One control terminal, one remote terminal per system

Command Lines:

- Two (one raise, one lower) per channel, momentary, total of 16 "raise", 16 "lower"
- Command response time: 400ms to implementation, nominal
- Form C relay (SPDT) output standard, up to 2A, 30VDC or 120VAC (non-inductive) per relay

Telemetry Channels:

- 16 channels, unbalanced input
- One-person digital calibration, via remote terminal keyboard
- Fully tolerance alarmed, one high and one low limit
- Linear, power-to-linear conversion, indirect power, millivolt calibration
- Full four-digit LED display with decimal point and polarity sign
- Resolution: one part in 4096
- Overall measurement accuracy: > 0.5%
- Response time: 500ms, nominal, with audible data
- Full-scale input level: 0.25V minimum, 1V minimum recommended, 4.5VDC maximum

Status Channels:

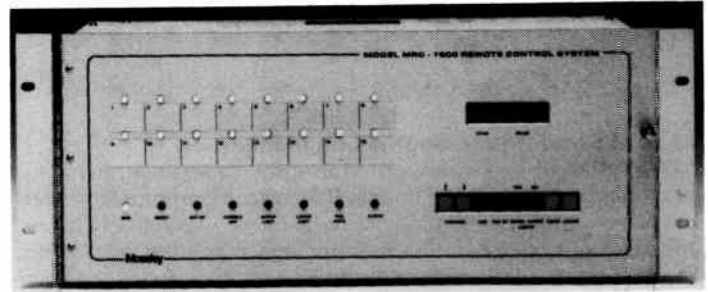
- 16 channels, each displayed by individual LED's on control terminal and remote terminal front panels
- User programmable N.O./N.C., momentary or latching, alarm on rising and/or falling waveform
- Status response time: 400ms, nominal, with audible data
- TTL-compatible input standard (+ 5VDC switched by external contacts)

Aural Alarms:

- Control and remote terminals, defeatable and remoteable

Fail-Safe:

- Control: complies with current FCC requirements for AM and FM radio station operation



MRC-1600

Maintenance Override:

- Remote terminal front-panel button
- Provides remote terminal "go home" relay closure, control terminal and remote terminal LED indication

Number of Data Interconnection Links:

- One

Data Transmissions:

- 8-bit ASCII plus parity
- 300 baud each direction standard
- 9.4 baud telemetry with subaudible telemetry option
- 2-way, simultaneous via FSK

Wire Interconnection:

- 2-wire or 4-wire, 600 ohm, balanced
- Series 3002 unconditioned data channel per Bell System Technical Reference Publication 41004 (FCC tariff No. 260) for 300 baud (standard)
- 2-way simultaneous
- Nominal send level: 0dBm; minimum receive level: -30dBm

Radio Interconnection:

- Single or duplex, internal subcarrier systems
- Available on standard frequencies between 26 and 185kHz
- Nominal send level: 1.5V p-p at 2.2K ohms
- Nominal receive level: 0.25V p-p at 2.2K ohms
- Specify frequency and exact radio link when ordering

Remote Terminal Connectors:

- Terminal strip connector for status, telemetry inputs, command outputs

Operating Temperature Range:

- 0°-50°C

Power Requirements:

- 120/240VAC, 50/60Hz, 30W typical (per terminal)

Physical Size:

- Control terminal: 7" H x 19" W x 8.5" D, depth less connectors
- Remote terminal: 7" H x 19" W x 9" D, depth less connectors

MRC-1600	\$4595.00
MRC-1600 Remote only	4075.00

Dial Access/Voice Response Option for MRC-1600

- Accessible through any DTMF telephone
- Digitally-synthesized voice reporting
- Passwords prohibit unauthorized control
- Dial access control lockout
- Automatic alarm reporting to 9 telephone numbers
- Immediate confirmation of control action
- Non-volatile memory
- RS-232C interface provided
- Unlimited vocabulary with text to speech algorithm

The MRC-1600 Dial Access Option connects a standard MRC-1600 Remote Control System to the public telephone network, providing cost-effective, multi-point monitoring and control of unattended equipment sites. To provide maximum flexibility, the Dial Access Option can be located at either the MRC-1600 Control or Remote Terminal. For applications requiring multiple command points, the MRC-1600 Remote Terminal with Dial Access Option will operate without a Control Terminal in a standalone configuration. (Factory installed) . . . \$1080.00
Retrofit Kit 1380.00

MOSELEY ASSOCIATES, INC.

Microprocessor Remote Control

MRC-2 Microprocessor Remote Control System

The MRC-2 controls and monitors as many as 99 remote sites, with multiple control terminal capability to let you delegate control from master to master as needed. Up to 255 status, 255 telemetry, and 255 command channels supervise your sites. Dual tolerance limits can be set to prevent a telemetry parameter from reaching critical levels. Choose from 6 modes in which to calibrate telemetry inputs, and set status inputs to initiate alarms or events on rising or falling waveforms, or both.

Control Options

Optional automatic loggers provide a printed record of system operation, and CRT terminals display your data in plain language. An optional ACU-1 Automatic Control Unit automates your operation by issuing programmable time and feedback actuated sequences of commands without operator assistance. Add Multiple Direct Command Multiple Status Display options for streamlined operator interface.

MRC-2 System

MRC-2 Microprocessor Remote Control System

With stand-alone remote terminal, consisting of one control terminal, one remote terminal. Remote terminal includes Data Acquisition/Command capability, precludes CRT, MDC, MSD capability for terminal. System is configured with 16 command lines (open collector electronic switching), 16 status channels (TTL/contact closure), and 16 analog telemetry channels, indicated as 16/16/16. System includes two sets of modems for dedicated main/backup wire interconnections. Shipping weight: 60 lbs. (27.3kg) \$12,850.00

ST-60 Semiconductor spares kit for MRC-2
microprocessor remote control 536.00

MRC-2 Microprocessor Remote Control System

With Data Acquisition Remote Terminal, consisting of one control terminal, one remote terminal, and one standard Data Acquisition/Command Unit (DACU-1). System is configured with 32 command lines (open collector electronic switching), 32 status channels (TTL/contact closure), and 32 analog telemetry channels, indicated as 32/32/32. System includes two sets of modems for dedicated main/backup wire interconnections. Shipping weight: 90 lbs. (40.9kg) \$17,995.00

ST-60 Semiconductor spares kit for MRC-2
microprocessor remote control 536.00

MRC-2 Control Terminal Only

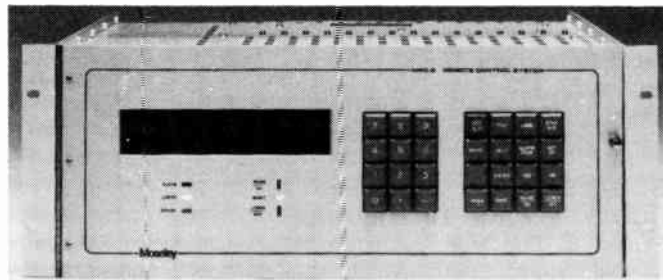
Up to two standard control terminals can be used with any single standard remote terminal. Up to four control terminals can be used with any single standard remote terminal by the use of additional modems. In standard configuration, system expansion of up to nine additional expansion/option modules is possible. Shipping weight: 30 lbs. (13.6kg) \$7,090.00

MRC-2 Stand-Alone Remote Terminal Only

Includes data acquisition/command capability, precludes CRT, MDC, MSD capability for terminal. Configured with 16 command lines (open collector electronic switching), 16 status channels (TTL/contact closure), and 16 analog telemetry channels, indicated as 16/16/16. Terminal includes two modems for dedicated main/backup wire interconnections. Shipping weight: 30 lbs. (13.6kg) \$7,980.00

MRC-2 Remote Terminal Only

Incorporates individual programmable site code for multiple remote terminals per systems. Requires use of one standard Data Acquisition/Command Unit, as listed below. Shipping weight: 30 lbs. (13.6kg) \$7,090.00



MRC-2

DACU-1 MRC-2 Standard Data Acquisition/Command Unit Only

One unit required for use with each MRC-2 remote terminal. Equipped as MRC-2 system above (32/32/32). Allows for system expansion of up to four additional expansion/option modules. Shipping weight: 30 lbs. (13.6kg) \$7,180.00

MRC-2 System Expansion

- DACU-1E MRC-2 Data Acquisition/Command Expansion Unit Only \$4,270.00
- MRC-2 Remote Terminal Command Expansion 415.00
- MRC-2 Remote Terminal Status Channel Expansion 415.00
- MRC-2 Remote Terminal Analog Telemetry Channel Expansion 625.00
- CEU-1 Communications Expansion Unit 5,995.00
- General Purpose Interface Bus (GPIB)
Used as standard interface in MRC-2 system and required for interfacing specific expansion/option features 605.00

MRC-2 Options

- CRT Terminal \$ 2,995.00
- CRT Terminal Less CRT 1,795.00
- Automatic Logging 2,995.00
- Automatic Logging Less Logger 1,795.00
- File Memory Expansion Module 695.00
- Optically Isolated Command Lines 210.00
- CIP-2 Relay Isolated Command Lines 495.00
- Relay for CIP-2 9.00
- BSP-1 Barrier Strip Interface Panel 195.00
- BSP-1 Expansion (per 16 lines or channels) 150.00
- Optically Isolated Status Channels (per 16 channels) 210.00
- Digital Telemetry Input 495.00
- Telemetry Failsafe Module 550.00
- Expansion Modem 695.00
- Wireless Operation (ordered w/MRC-2) 225.00
(ordered separately) 385.00
- MDC-2 Multiple Direct Command 2,495.00
- MDC-2E Multiple Direct Command Expansion 1,995.00
- MSD-1 Multiple Status Display 2,595.00
- MSD-1E Multiple Status Display Expansion 1,695.00
- Dial-Up Option (ordered with MRC-2) 890.00
(ordered separately) 1,030.00
- Personal Computer Interface 2,495.00
- Video Analyzer Interface 2,395.00
- PC control terminal interface allows interconnection of IBM-PC Compatible computer over RS-232 communications to an MRC-2 remote terminal. Includes firmware, software and interconnecting cable 2,495.00

MOSELEY ASSOCIATES, INC.

SCA Equipment/STL's

SCG-9 Stereo Generator

The Model SCG-9 Stereo Generator provides a composite stereo signal of the highest quality. Although this all solid-state generator is intended primarily as a companion to the Moseley Associates composite STL (a single link for stereo), it may be used with most direct FM exciters. The SCG-9 easily meets the requirements of section 73.322 of the FCC rules and regulations. A minimum of adjustments and rigid manufacturing tolerances promise excellent quality and dependable performance.

**SCG-8 Subcarrier Generator
SCD-8 Subcarrier Demodulator**

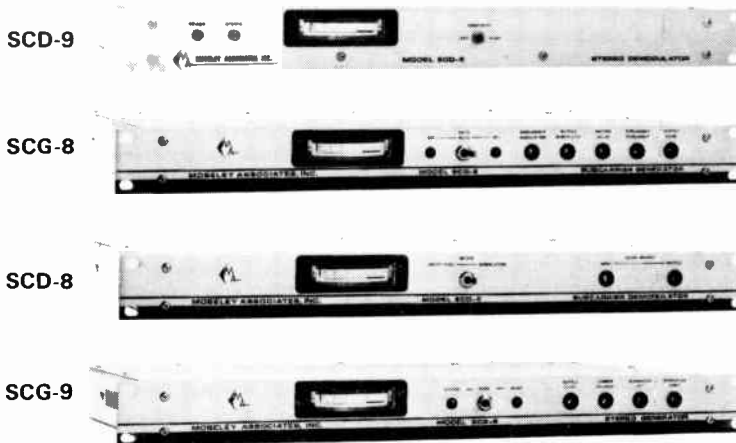
Series "8" Subcarrier System forms a revolutionary FM system providing superior performance. The Series "8" System consists of the Model SCG-8 Subcarrier Generator and Model SCD-8 Subcarrier Demodulator. These units may be individually used to meet specific requirements such as SCA service on an FM broadcast transmitter, or telemetry service. This system is ideally suited to aural studio transmitter link (STL) service. Providing a means of establishing a secondary program channel, the Series "8" System enables multi-plexing SCA program audio, provides for remote pickup link audio, or serves as an intercom on an STL. Command information from a remote control system can also be conveyed by the SCG-8 and SCD-8.

SCM-1 — Subcarrier Main Frame. Accommodates two subcarrier modules. System includes one generator or demodulator module. Specify generator or demodulator, subcarrier frequency (26-185kHz) and STL model when ordering for utility/control/telemetry service **\$895.00**

SCG-9A — FM Stereo Generator, includes power supply and peak-reading deviation meter **\$2095.00**

SCD-9 — FM Stereo Demodulator, includes power supply. Demodulates composite stereo signal into discrete left and right channels **\$1695.00**

Solid-State Multiplex Equipment For Stereo, SCA, and STL Applications



SCD-8 — Subcarrier Demodulator, with automatic muting and front-panel peak-deviation meter, including self-contained power supply. Available for operation at a specific frequency in the 26kHz to 185kHz spectrum. Specify operating frequency when ordering **\$995.00**

SCG-8 — Subcarrier Generator, with automatic muting and front panel peak-deviation meter, including self-contained power supply. Available for operation at a specific frequency in the 26kHz to 185kHz spectrum. Specify operating frequency when ordering **\$995.00**

Additional Subcarrier Generator for SCM-1 (26-185kHz) . . **350.00**

Additional Subcarrier Demodulator for SCM-1 (26-185kHz) **350.00**

AURAL STUDIO-TRANSMITTER LINK AND ASSOCIATED EQUIPMENT

PCL-606 and PCL-606/C (950MHz, 450MHz, 300MHz and 150MHz)

The Models PCL-606 and PCL-606/C Studio-Transmitter Links provide broadcasters and industrial users alike with the highest quality program interconnect currently available in equipment of this type.

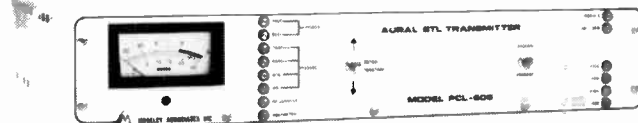
Designed for monaural audio service, the PCL-606 can be used in a dual configuration for stereo service. The PCL-606/C, composite stereo version, conveys composite stereo waveform with virtually no degradation.

PCL-606 STL Transmitter and Receiver with self-contained power supplies and crystals. Tuned and tested on operating frequency. Shipping weight 66 lbs./30.0kg

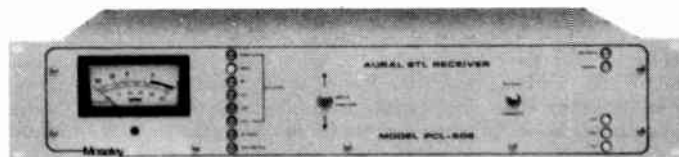
300-330MHz, 440-470MHz, 890-960MHz **\$ 10,490.00**
1.5GHz-1.71GHz* **13,890.00**

PCL-606/C Composite STL Transmitter and Receiver with self-contained power supplies and crystals. Tuned and tested on operating frequency. Transmits composite stereo waveform over single STL. Shipping weight 66 lbs./30.0kg.

300-330MHz, 440-470MHz, 890-960MHz **\$ 10,490.00**
1.5GHz-1.71GHz* **13,890.00**



PCL-606 Transmitter



PCL-606 Receiver

MOSELEY ASSOCIATES, INC.

Communications Link



CL-100

CL-100 Communications Link

- Telemetry or voice transmission
- Superior adjacent channel rejection
- AC/DC operation
- 1W or 10W options
- Data and voice versions
- Microphone (handheld) with push-to-talk cutting data circuit

Options

- ID with station license in code, separate power-fail message
- 10W transmitter output

The CL-100 Communications Link provides an alternative to expensive subcarriers and leased telephone lines for conveying control and telemetry data between the studio and transmitter locations.

The systems provide independent control and telemetry circuits, while freeing the STL or program subcarrier channels for other uses. Data transmission is extremely reliable, even over a path length of 50 miles (line of sight).

The CL-100 comes in Data and Voice versions. The Data version has increased audio bandwidth and controlled group delay characteristics to allow 9600 baud data rates. In highly congested RF environments, the improved selectivity and sensitivity of the Voice version can be used, providing data rates up to 4800 baud.

The system consists of a 1W or 10W transmitter and companion receiver in the 450-512MHz range and is type-accepted for user under parts 21, 74, and 90 by the FCC. Audio inputs are provided on the transmitter rear panel, with a microphone input for voice communication on the front panel. The CL-100 Receiver is supplied with audio outputs and internal or external speaker drive.

An optional MCW Identifier for transmitter identification and power-fail identification and optional provision for external transmitter battery for operation during power failure are available. When both are used, the ID module identifies the transmitter continuously, providing power failure indication. Antennas, transmission line, isocouplers and connector kits are available to complete a CL-100 installation.

Specifications

System	
Frequency Deviation	CL-100 Data: ± 1kHz
For Rated	
Specifications	CL-100 Voice: ± 3kHz

Frequency Response	CL-100 Data: ± 3dB, 20Hz to 3200Hz (-10dB at 3B25Hz)
	CL-100 Voice: ± 3dB, 20Hz to 3000Hz
Harmonic Distortion	CL-100 Data: 2% nominal
	CL-100 Voice: 5% nominal
S/N Ratio	CL-100 Data: > 45dB at 60µV (-71.2dBm)
	CL-100 Voice: > 12dB SINAD at 0.5µV (-112.9dBm)
	> 20dB SINAD at 1µV (-106.9dBm)
Carrier Frequencies	FCC Group P (CL-100 Data) N2 and 450-512MHz; specify exact operating frequency
Channel Spacing	CL-100 Data: USA: 10kHz, 12.5kHz; International: 20kHz
	CL-100 Voice: 20kHz; 25kHz
Transmitter Emission Designators	1.5kHz Deviation: 9K0F3E, 9K0FID
	5kHz Deviation: 16K0F3E, 16K0FID, 450MHz-470MHz, 470MHz-512MHz (crystal select operating frequencies)
Frequency Stability	0.00025% after 2 minutes
Input Levels	Line: -16dBm to + 7dBm, adjustable
	Microphone: -60dBm, adjustable
Input Impedance	Line: 600 ohm balanced
RF Output	Microphone: Hi-Z
RF Output Impedance	> 60dB below carrier at transmitter output
Spurious Output	50 ohms
Keying	> 60dB below carrier at transmitter output
Power Requirements	Rear panel RF carrier keying
	120/220VAC, 50/60Hz, 30W (60W with 10W RFA)
Dimensions	13.6V, 1.5A nominal (3.5A with 10W RFA)
	1W: 3.5" H x 19" W x 14" D
	10W: 3.5" H x 19" W x 16" D
Net Weight	1W: 19 lbs.
	10W: 21 lbs.
Receiver Frequency Range	450MHz-512MHz (crystal select operating frequency)
RF Input Connector	Female Type N
RF Input Impedance	50 ohms
Sensitivity	CL-100 Data: 45dB SNR (at 60µV (-71.2dBm))
	CL-100 Voice: 12dB SINAD at 0.5µV (-112.9dBm)
	20dB SINAD at 1µV (-106.9dBm)
Selectivity	CL-100 Data: -3dB bandwidth: ± 3kHz or greater; -40dB bandwidth: ± 12kHz or less; down approximately 30dB at adjacent group P carrier (± 10kHz)
	CL-100 Voice: -3dB bandwidth: ± 6kHz or greater; -80dB bandwidth: ± 20kHz or less
Line Outputs	0dB nominal, -16dBm to + 7dBm adjustable, balanced 600 ohm
Output Connectors	Terminal strip
Line Output Monitor	Front-panel speaker (level adjustable). Connections for external speaker available on terminal strip
Received Signal Level LED	Carrier-operated, adjustable; normally green SNR above 25dB. Open-collector output on rear for hot standby/remote control use
Power Requirements	120/220VAC, 50/60Hz, 15W nominal
Dimensions	3.5" H x 19.4" W x 14" D
Net Weight	17 lbs.

CL-100 Communications Link Transmitter and Receiver with self-contained power supplies and crystals. Tuned and tested on operating frequency. Nominal 1W transmitter output. Shipping weight 40 lbs./18kg.

450-512MHz\$3980.00

CL-100 Communications Link Transmitter and Receiver with self-contained power supplies and crystals. Tuned and tested on operating frequency. Nominal 10W transmitter output. Shipping weight 40 lbs./18kg.

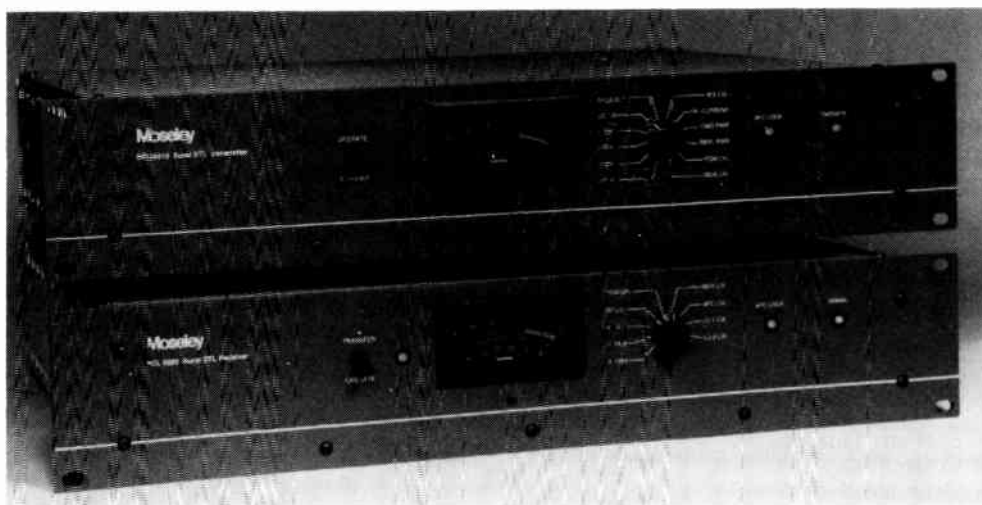
450-512MHz\$4980.00

Optional MCW Identifier Module installs internally to CL-100 Transmitter. Nominally transmits ID every 20 minutes. Specify call letters/ID when ordering.\$275.00

Optional Microphone KitN/C

Spare Semiconductor Kit

ST-188A for CL-100. Shipping weight 1 lb./450g.\$188.00



PCL 6000

PCL 6000 Series Studio-Transmitter Links

Monaural or composite operation is available from a single system. By selecting appropriate jumpers, a user can enable wideband composite stereo or 15kHz monaural basebands. Two PCL 6000 systems can be used in a dual discrete configuration to transmit right and left stereo programs with no measurable crosstalk. Receiver IF bandwidth can be factory or field set for channel spacing of 100kHz to 500kHz.

Both the PCL 6010 transmitter and PCL 6020 and 6030 receivers employ a synthesized reference oscillator to eliminate fixed-frequency crystals.

The physical module count on the PCL 6000 Series has been kept to a minimum for the highest MTBF without compromising operational or maintenance ease. All oscillators, up converters, and discriminator, audio sections can be individually isolated by appropriate jumpers for alignment or repair.

Since the PCL 6020 and PCL 6030 systems use a common PCL 6010 transmitter, the most important consideration depends on the 950MHz aural STL activity in your area. If, for example, you wanted to replace an older PCL-505/C, and have no adjacent channel interference, then the PCL 6020 System will offer superior performance.

PCL 6010 Transmitter

The PCL 6010 uses direct modulation techniques. A synthesized reference oscillator is used for FM generation. Conversion of the transmitter FM-modulated oscillator frequency to the final output frequency is done via an up converter mixer technique, instead of the usual frequency-multiplication of the modulated signal. An optional extended baseband is available for users conveying 67kHz and 92kHz FM SCA through baseband.

For long STL paths, an optional 15W transmitter power output is available. IF Repeater technology is also available for STL paths requiring a midpoint.

PCL 6020 Receiver

The dual conversion PCL 6020 Receiver uses an FM quadrature detector to provide maximum fidelity. Excellent selectivity characteristics ignore adjacent channels in your area. The receiver IF bandwidth can be set for channel spacing of 100kHz to 500kHz, depending on RF congestion and channel availability.

Built-in transfer circuitry allows automatic changeover to a standby receiver in the event of a detected malfunction.

The front-panel meter indicates true RF input level in microvolts, program output level, subcarrier level, oscillator levels, and supply voltages.

When used in conjunction with the optional composite stereo generator and built-in stereo decoder, the PCL 6020 System is an excellent choice for AM stereo.

PCL 6030 Receiver

The triple conversion PCL 6030 Receiver uses a digital pulse counting discriminator to provide extremely low distortion and low noise characteristics. Excellent selectivity characteristics ignore adjacent channels 20dB stronger than your received signal.

Front-panel meter allows the monitoring of several parameters, including RF input in microvolts, audio and subcarrier outputs, power supply and oscillator levels.

Built-in automatic changeover circuitry is included for hot standby operation. The receiver IF bandwidth can be set for channel spacing of 100kHz or 500kHz, depending on RF congestion and channel availability.

- PCL 6020 System** **\$7200.00**
- PCL 6030 System** **.8800.00**

PCL 6020 System Specifications

MONAURAL	SYSTEM	COMPOSITE
140-176 MHz, 200-240 MHz, 300-330 MHz, 440-470 MHz, 890-960 MHz. Specify exact operating frequency.	Frequency Range	140-176 MHz, 200-240 MHz, 300-330 MHz, 440-470 MHz, 890-960 MHz. Specify exact operating frequency.
Monophonic: ± 0.3 dB or better. 30 Hz-15 kHz	Frequency Response	Composite: ± 0.2 dB or better, 30 Hz to 53 kHz; ± 0.3 dB or better 30 kHz to 75 kHz.
0.2% or less. 30 Hz to 15 kHz, typically better than 0.15% at 1 kHz.	THD and IMD	Stereo demodulated: 0.2% or less, 30 Hz to 7.5 kHz, typically better than 0.15% at 1 kHz. Convolved stereo demodulation products: > 50 dB below the 400 Hz, 100% mod. ref. level from 7.5 kHz to 15 kHz.
Not applicable.	Stereo Separation	50 dB or better. 50 Hz to 15 kHz, typically 55 dB or better.
Not applicable.	Nonlinear Crosstalk Subchannel/Main Channel	50 dB or better.
72 dB SNR: 0.1 dB frequency response.	IF Repeater	72 dB SNR, 50 dB stereo separation: 0.1 dB frequency response.
72 dB or better, typically 75 dB below 100% modulation.	Signal-to-Noise Ratio	72 dB or better, typically 75 dB below 100% modulation, demodulated, de-emphasized left or right.
120/240 Vac, $\pm 10\%$, 50/60 Hz, 100 watts, 12/24 Vdc optional.	Power Source	120/240 Vac, $\pm 10\%$, 50/60 Hz, 100 watts, 12/24 Vdc optional.
19" (48.3 cm) wide; 3.5" (8.9 cm) high; TX 16" (40.6 cm) deep; RX 13.75" (34.9 cm) deep.	Dimensions	19" (48.3 cm) wide; 3.5" (8.9 cm) deep; TX 16" (40.6 cm) deep; RX 13.75" (34.9 cm) deep.
6010	TRANSMITTER	6010
7 watts maximum, 5 watts minimum. 15 watts maximum, 10 watts minimum.	RF Power Output 890-960 MHz 140-470 MHz	7 watts maximum, 5 watts minimum. 15 watts maximum, 10 watts minimum.
Type N female, 50 ohm.	RF Output Connector	Type N female, 50 ohm.
± 40 kHz: other deviation optional.	Deviation for 100% Modulation	± 50 kHz: other deviation optional.
Better than 0.00025%, 0°C to +50°C.	Frequency Stability	Better than 0.00025%, 0°C to +50°C.
More than 60 dB below carrier level.	Spurious and Harmonic Emission	More than 60 dB below carrier level.
One program and two subcarrier channels.	Modulation Capability	One program and two subcarrier channels.
Monophonic: +10 dBm, 600 ohms, balanced, floating, barrier strip screw input. Two multiplex inputs.	Modulation Inputs User-Switchable Monaural/Composite	Composite: 3.5 V p-p, 6 k ohms unbalanced, type BNC female connector. Two multiplex inputs.
6020	RECEIVER	6020
Type N female, 50 ohm.	RF Input Connector	Type N female, 50 ohm.
20 μ V or less required for 60 dB SNR.	Sensitivity	120 μ V or less required for 60 dB SNR left or right channel de-emphasized, demodulated
3 dB IF bandwidth, ± 90 kHz. 80 dB IF bandwidth, ± 1.2 MHz. 250 kHz channel spacing.	Selectivity 100-500 kHz Channel Spacing	3 dB IF bandwidth, ± 125 kHz. 80 dB IF bandwidth, ± 1.2 MHz. 500 kHz channel spacing.
An adjacent signal 10 dB higher than desired signal will degrade SNR by less than 3 dB.	Adjacent Channel Rejection	An adjacent signal 10 dB higher than desired signal will degrade SNR by less than 3 dB.
Monophonic: +10 dBm, 600 ohms, balanced, floating, barrier strip screw output. Two multiplex inputs.	Modulation Outputs User-Switchable Monaural/Composite	Composite: 3.5 V p-p, 200 ohms unbalanced, type BNC female connector. Two multiplex inputs.

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Refer to Green Section for Addresses and Telephone Numbers.

PCL 6030 System Specifications

MONAURAL	SYSTEM	COMPOSITE
300-330 MHz, 440-470 MHz, 890-960 MHz. <i>Specify exact operating frequency.</i>	Frequency Range	300-330 MHz, 440-470 MHz, 890-960 MHz. <i>Specify exact operating frequency.</i>
Monophonic: ± 0.3 dB or better, 30 Hz-15 kHz	Frequency Response	Composite: ± 0.2 dB or better, 30 Hz to 53 kHz; ± 0.3 dB or better 30 kHz to 75 kHz.
0.2% or less, 30 Hz to 15 kHz, typically better than 0.15% at 1 kHz.	THD and IMD	Stereo demodulated: 0.1% or less, 30 Hz to 7.5 kHz, typically better than 0.10% at 1 kHz. Convolved stereo demodulation products: > 50 dB below the 400 Hz, 100% mod. ref. level from 7.5 kHz to 15 kHz.
Not applicable.	Stereo Separation	51 dB or better, 50 Hz to 15 kHz, typically 55 dB or better.
Not applicable.	Nonlinear Crosstalk Subchannel/Main Channel	51 dB or better.
75 dB SNR; 0.1 dB frequency response.	IF Repeater	75 dB SNR, 50 dB stereo separation; 0.1 dB frequency response.
75 dB or better, typically 77 dB below 100% modulation.	Signal-to-Noise Ratio	75 dB or better, typically 77 dB below 100% modulation, demodulated, de-emphasized left or right.
120/240 Vac $\pm 10\%$, 50/60 Hz, 100 watts 12/24 Vdc optional.	Power Source	120/240 Vac, $\pm 10\%$, 50/60 Hz, 100 watts 12/24 Vdc optional.
19" (48.3 cm) wide; 3.5" (8.9 cm) high; TX 16" (40.6 cm) deep; RX 13.75" (34.9 cm) deep.	Dimensions	19" (48.3 cm) wide; 3.5" (8.9 cm) deep; TX 16" (40.6 cm) deep; RX 13.75" (34.9 cm) deep.
6010	TRANSMITTER	6010
7 watts, maximum, 5 watts minimum. 15 watts maximum, 10 watts minimum.	RF Power Output 890-960 MHz 300-470 MHz	7 watts maximum, 5 watts minimum. 15 watts maximum, 10 watts minimum.
Type N female, 50 ohm.	RF Output Connector	Type N female, 50 ohm.
± 40 kHz; other deviation optional.	Deviation for 100% Modulation	± 50 kHz; other deviation optional.
Better than 0.00025%, 0 C to +50 C.	Frequency Stability	Better than 0.00025%, 0 C to +50 C.
More than 60 dB below carrier level.	Spurious and Harmonic Emission	More than 60 dB below carrier level.
One program and two subcarrier channels.	Modulation Capability	One program and two subcarrier channels.
Monophonic: +10 dBm, 600 ohms, balanced, floating, barrier strip screw input. Two multiplex inputs.	Modulation Inputs User-Switchable Monaural/Composite	Composite: 3.5 V p-p, 6 k ohms unbalanced, type BNC female connector. Two multiplex inputs.
6030	RECEIVER	6030
Type N female, 50 ohm.	RF Input Connector	Type N female, 50 ohm.
20 μ V or less required for 60 dB SNR.	Sensitivity	100 μ V or less required for 60 dB SNR left or right channel de-emphasized, demodulated
3 dB IF bandwidth, ± 90 kHz. 80 dB IF bandwidth, ± 1.0 MHz. 250 kHz channel spacing.	Selectivity 100-500 kHz Channel Spacing	3 dB IF bandwidth, ± 100 kHz. 80 dB IF bandwidth, ± 1.0 MHz. 500 kHz channel spacing.
An adjacent signal 20 dB higher than desired signal will degrade SNR by less than 3 dB.	Adjacent Channel Rejection	An adjacent signal 20 dB higher than desired signal will degrade SNR by less than 3 dB.
Monophonic: +10 dBm, 600 ohms, balanced, floating, barrier strip screw output. Two multiplex inputs.	Modulation Outputs User-Switchable Monaural/Composite	Composite: 3.5 V p-p, 200 ohms unbalanced, type BNC female connector. Two multiplex inputs.

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Refer to Green Section for Addresses and Telephone Numbers.

MOSELEY ASSOCIATES, INC.

Audio Routing/Mixing System

ARS-256 Smart Switcher
Audio Routing/Mixing System

- Up to 256 Crosspoints Configured in Groups of 8 Inputs/Outputs
- 4 System Memories for Preset Matrices
- Multiple Source Summing Capability
- RS-232 Control Port
- Superior Audio Performance

The ARS-256 Audio Routing Switcher is an advanced audio routing/mixing system with a highly versatile control interface. This switcher will operate with, and/or slave to, most industry standard equipment for audio-follow-video or automation directed systems.

External control is possible through a number of standard or optional ports. The standard GPI, RS-232, and RS-422 ports provide outboard control interface capabilities for signal processing and post production requirements. Optional interfaces, for most popular routers, allow the addition of multilevel high-quality audio routing to a plant's existing switcher. Manual control panels interconnected via a party line control system permit the ARS-256 to be accessed from as many remote locations as desired.

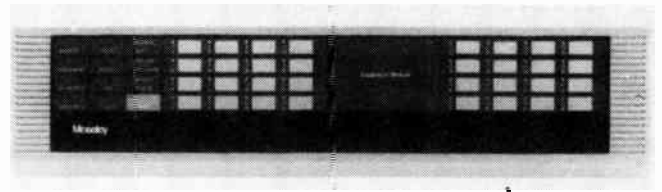
A single ARS-256 can contain up to 256 crosspoints in 3 rack units. Typical matrices can include 8 x 8, 16 x 8, 16 x 16, etc. in groups of eight. The system can be configured in multilevels, (i.e. stereo, SAP, time code, etc.) Units can be easily stacked and there is no limit to expansion.

As multichannel, multilevel protocol demands grow, the bank switchable CPU controller with 96K of memory has the power to meet the most demanding interface and performance requirements.

The Moseley party line control system enables the use of up to 32 remote control stations. Microprocessor-control provides instantaneous communications. A "take" command is executed at the next vertical interval allowing true real time use during production or post production. Standard controllers include relegendable X-Y crosspoint-oriented switch panels. The party line system has a matrix scratch pad allowing the user to set up an entire matrix and either store it off-line or "salvo" take it to the program at any time. Four system memories are provided to store complete matrix configurations.

The GPI port allows communications with such external device as a real time clock, an automation system, or an editor-synchronizer. For radio stations this means that network feeds can be switched with msec accuracy. Complex audio assignments can be preprogrammed and done instantly under editor control or synchronizer event control for production.

An RS-232 port provides a VDT approach to displaying and/or modifying current matrix configurations, as well as system diagnostics. All Smart Switcher systems feature a standard ASCII terminal interface, which provides the capabilities to communicate with commonly available computer terminals. The ASCII terminal interface allows you to preset the next matrix, setup and salvo the matrix at the right moment, check matrix status at any time, and change one or all of the input/output combinations individually or in groups. The RS-232 port will also allow more sophisticated software control via the use of microcomputers.



ARS-256

Specifications

Frequency Response:	± 0.2dB 10Hz-30Hz, ref 1kHz
Crosstalk:	-80dB, 15kHz worst-case crosstalk
Input/Output Isolation:	-80dB
Common Mode Rejection:	-80dB, 50-120Hz
Signal-to-Noise Ratio:	-100dB re. +24dBu
THD:	< .01% 20Hz-20kHz re. max. input. < .01% 20Hz-20kHz re + 8dBu* op. level
IMD (SMPTE):	< .005% re. max. input
Maximum Input Level:	+28dBu* balanced or unbalanced
Maximum Output Level:	+24dBu* balanced
Channel Gain/Loss:	± 3dB adjustable
Input Impedance:	> 20K ohms
Output Impedance:	< 100 ohms balanced
Minimum Load Impedance:	600 ohms
Dimensions:	5.25" H x 19" W x 18" D
Gross Weight:	45 lbs.
Power Requirements:	150W *0dBu = .775V

ARS-256 Audio Routing Switcher. Basic system equipped for 8 audio inputs, 8 audio outputs and 64 crosspoints. Each unit includes RS-232C, GPI and RS-422 control ports and four system memories for preset matrices. Shipping weight 40 lbs./18kg. **\$3725.00**

ARS-1024 Audio Routing Switcher. Basic system equipped for 16 audio inputs, 16 audio outputs and 256 crosspoints. Each unit includes RS-232, GPI and RS-422, with four system memories with preset matrices. **\$7960.00**

Expansion Assemblies

8 input, 8 output, 64 crosspoints	\$1075.00
8 input, 64 crosspoints	920.00
8 output, 64 crosspoints	920.00
64 crosspoints	815.00

Options

16 x 16 X-Y Front Panel Controller. Relegendable X-Y crosspoint-oriented switch panel. Shipping weight 10 lbs./4.5kg. **\$890.00**

16-Channel Expansion Unit for above X-Y front panel. Shipping weight 5 lbs./2.3kg. **\$115.00**

16 x 16 Desktop Wedge Controller Shipping Wt. 5 lbs./2.3kg. **785.00**

Rackmount Kit for X-Y Panel Controller. Includes hardware, 50' of cable, and power supply. Allows front-panel casting to be removed from an ARS-256 main frame. Shipping weight 5 lbs./2.3kg. **\$240.00**

Video Display Terminal (VDT) duplicates and allows control of X-Y matrices. Shipping weight 30 lbs./13.5kg. **935.00**

ACP-1 Audio Connection Panel provides convenient XLR interface connections for ARS products 19" rack panel. Configured with 8 audio inputs and 8 audio outputs. **490.00**

ACP-2 Audio Connection Panel used in conjunction with ACP-1. Configured with 8 audio inputs. **365.00**

ACP-3 Audio Connection Panel used in conjunction with ACP-1. Configured with 8 audio outputs. **365.00**

MOSELEY ASSOCIATES, INC.

Remote Programming System

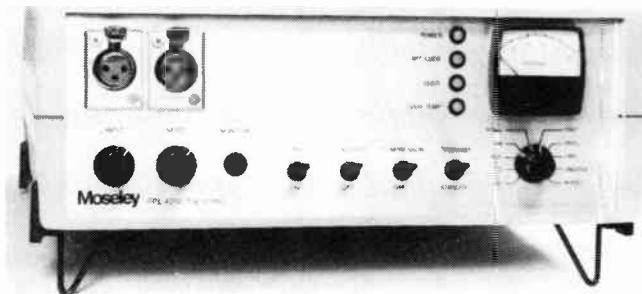
RPL 4000 System Remote Programming System

- Broadcast quality performance
- Audio bandwidths from 5-15kHz
- 25, 50, and 100kHz channels
- Encoding and decoding for repeaters
- Noise-reduction companding

RPL 4010 Transmitter

- Fully synthesized 450-456MHz
- RF output 20W maximum
- Two XLR microphone inputs, one switchable to line
- Subaudible encoder
- 120VAC or 12VDC
- Comprehensive metering
- Lightweight, less than 8 lbs.
- Optional DTMF decoder
- Optional variable deviation and channel selection

The RPL 4010 Transmitter is a portable Remote Programming Link. Fully synthesized and lightweight (less than 8 lbs.), it is ready-to-use in conjunction with your existing repeater and portable audio meters. Extensive metering on the front panel lets you operate with confidence.

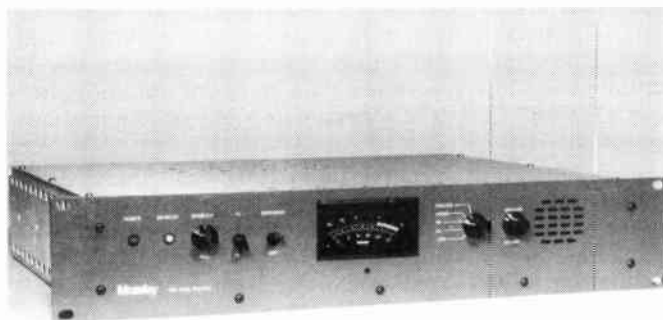


RPL-4010

RPL 4020 Receiver

- Excellent selectivity
- Excellent adjacent channel rejection
- Dual-frequency operation with remote select
- Subaudible decoder
- Low distortion
- Optional DTMF decoder
- Optional variable IF and channel selection

The RPL 4020 Receiver has channel rejection characteristics, which are essential in crowded UHF bands. An industry standard connector is provided for audio and control interface with existing equipment.



RPL-4020

RPL 4000 SystemPOR

*The Bill Daniels 1988-89
Illustrated
Trade References*

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Comprehensive
Library Of
Equipment
Trade References
Ever Published!**



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MOTOROLA COMM. & ELECTRONICS, INC.

AM Stereo

"C-Quam" AM Stereo

The name "C-Quam" is derived from the phrase Compatible Quadrature Modulation. This means that the system has the advantages of quadrature modulation for stereo transmission, and is compatible with the hundreds of millions of existing monaural AM radios. In fact, the C-Quam system simply takes the sum of left and right stereo channels (L+R) and directly amplitude modulates the broadcast signal. This is the precise signal that monaural radios were designed to receive.

To provide stereophonic information, angle modulation results from straightforward Quadrature Modulation followed by limiting. That is, the monophonic (L+R) provides in-phase modulation while (L-R) provides quadrature phase modulation. The limiter assures constant level exciter drive to the transmitter.

A separate signal, 25Hz pilot tone, is added to the quadrature difference (L-R) signal for indicating the presence of a received stereophonic C-Quam broadcast.

Existing AM broadcast transmitters may be adapted to C-Quam with relatively simple and inexpensive modifications.

Specifications:

The following performance is typical closed loop performance of the exciter operating into the monitor.

- Stereo Separation:** 35dB minimum from 20Hz to 7.5kHz
- Frequency Response:** L, R 20Hz to 15kHz \pm 1.5dB
- *Distortion,**
- Harmonic:** L=R Monaural 0.25% max. at 85% mod. L=R pure stereo 0.5% max. at 85% mod. **L, R single channel 1.0% max. at 70% mod.

Exciter

- RF Output:** Adjustable internally up to 5W into 50 ohms
- (L+R):** Adjustable under cover on front panel via 10 turn potentiometer up to +16dBm, 600 ohms balanced
- Stereo-Monaural:** Switched under cover on front panel. Switches L=R for monaural. Stereo, Monaural indicated by LED on front panel
- Audio Input:** Right 0dBm to +10dBm balanced 600 ohms, left 0dBm to +10dBm balanced 600 ohms, both inputs adjustable with factory installed pad per customer requirement
- Meter Functions:** (L+R)_o (L-R)_o Range -20dB to +3dB, dB = 100% modulation.
Right, Left: Meter functions switched at front panel between meters.
- Phase Equalization:** Internally adjustable phase equalization is provided to compensate for phase variations in the transmitter chain.



"C-Quam"

Sample Transmitter Output:

A sample transmitter output is provided on the rear. This contains all of the modulation aspects (L+R)_o, (L+R)_i, (L-R)_o. This is provided for diagnostics and comparison of transmitter characteristics vs. exciter characteristics.
Sample transmitter output 2V p-p into 50 ohms.

Monitor

RF Input: Frequency crystal controlled, Input level = 1V to 10V RMS, Impedance = 50 ohms.

Modulation Meters: Meter range 0 to 140% (-20dB to +3dB), Attenuator range 0 to -50dB in -10dB steps, accuracy at 100% modulation 400Hz \pm 2%, meters switchable to \pm left or (L+R), \pm right or (L-R).

Peak Modulation Indicators:

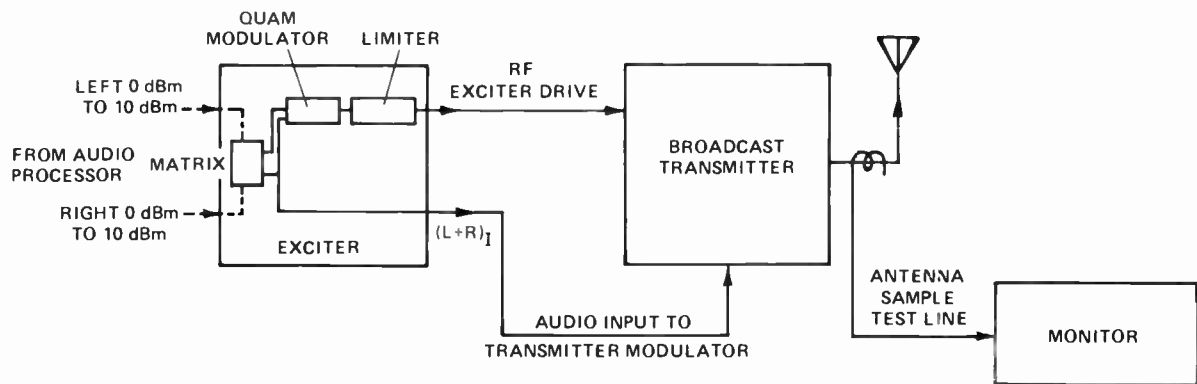
(L+R) group: -100% indicator internally set to flash when modulation exceeds -99%, +125% indicator internally set to flash when modulation exceeds +124%, peak indicator adjustable via thumb wheel switches from 30% to 150%. Modulation selectable via pushbutton switches + or - (L-R) group. Negative limit set internally to flash at 1.46 radians or 83.67°. (L-R) limit set internally to flash when modulation exceeds 99%. Peak flasher adjustable via thumb wheel switches for 30% to 125%

Output BNC Connectors on Rear:

Remote flashers (L+R), (L-R). Remote meters (L+R), (L-R). Left audio 600 ohms balanced and unbalanced, Right audio 600 ohms balanced and unbalanced, (L+R), (L-R), 25Hz pilot tone.

- 1400 Exciter (includes day/night card) \$ 6,000.00
- 1410 Modulation monitor 4,800.00
- "C-Quam" Exciter and Modulation Monitor (package) 11,000.00

SIMPLIFIED SYSTEM BLOCK DIAGRAM



* Actual measurements of stereo separation, frequency response and distortion are supplied with each exciter monitor pair.

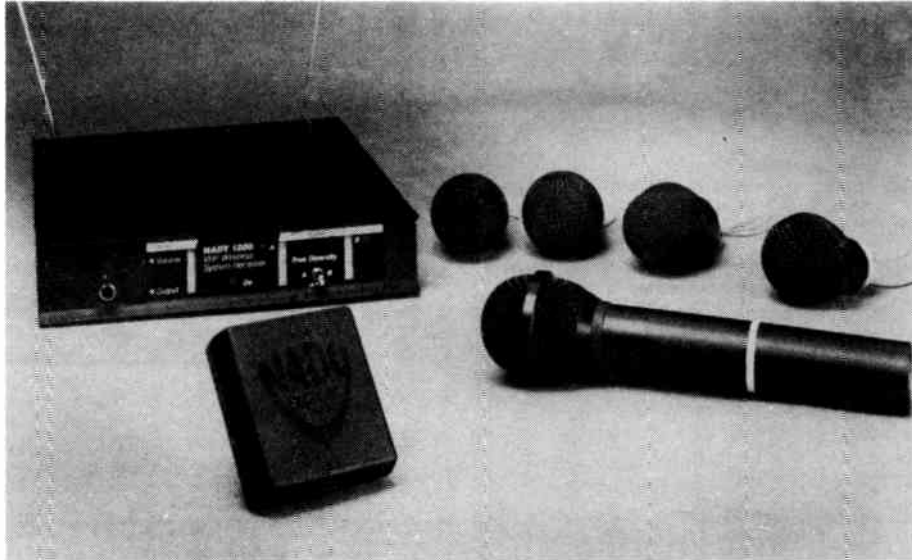
** This is equivalent of 150% modulation, 75% envelope modulation, simultaneous with 75% stereo information.

Refer to Green Section for Addresses and Telephone Numbers.

CATALOG OF OPEN-REEL REPRODUCER CALIBRATION TAPES

Tape Speed	Equalization Standard	Test Signals And Approximate Playing Time	Level/ (dB)	Reference Fluxivity/(n/Wb/m)	Catalog Number	Price
3.75 in/s 1/4" tape	NAB-1965 and IEC-1968	Multifrequency, 31.5Hz – 20kHz, 6 min.	0/-10	200	21F101-A	\$ 55.00
					21F201-A	55.00
7.5 in/s 1/4" tape	NAB-1965	Multifrequency, 31.5Hz – 20kHz, 6 min. Multifrequency, 31.5Hz – 20kHz, 6 min. Fast swept-frequency, 500Hz – 20kHz, 6 min. Slow swept-frequency, 20Hz – 20kHz, 6 min.	0/-10	200	21T104	55.00
			0/-10	250	21T204	55.00
			-10	200	23T136	55.00
			-10	200	24T104	55.00
			0	200	21J105	55.00
15 in/s 1/4" tape	NAB-1965	Multifrequency, 31.5Hz – 20kHz, 6 min. Multifrequency, 31.5Hz – 20kHz, 6 min. Fast swept-frequency, 500Hz – 20kHz, 6 min. Slow swept-frequency, 20Hz – 20kHz, 6 min.	0	250	21J205	55.00
			0	200	23J137	55.00
			0	200	24J105	55.00
			0	200	21L121	66.00
			0	250	21L221	66.00
30 in/s 1/4" tape	AES-1971	Multifrequency, 31.5Hz – 20kHz, 6 min. Multifrequency, 31.5Hz – 20kHz, 6 min. Fast swept-frequency, 500Hz – 20kHz, 6 min. Slow swept-frequency, 20Hz – 20kHz, 6 min.	0	200	23L138	66.00
			0	200	24L121	66.00
			0	200	31F156-A	115.00
			0	250	31F256-A	115.00
3.75 in/s 1/2" tape	NAB-1965	Multifrequency, 31.5Hz – 16kHz, 8 min. Multifrequency, 31.5Hz – 16kHz, 8 min.	0/-10	200	31T118	115.00
			0/-10	250	31T218	115.00
7.5 in/s 1/2" tape	NAB-1965	Multifrequency, 31.5Hz – 16kHz, 8 min. Multifrequency, 31.5Hz – 16kHz, 8 min. Fast swept-frequency, 500Hz – 20kHz, 8 min. Slow swept-frequency, 20Hz – 20kHz, 8 min.	-10	200	33T139	115.00
			-10	200	34T118	115.00
			0	200	31J119	115.00
			0	250	31J219	115.00
			0	200	33J140	115.00
15 in/s 1/2" tape	NAB-1965	Multifrequency, 31.5Hz – 16kHz, 8 min. Multifrequency, 31.5Hz – 16kHz, 8 min. Fast swept-frequency, 500Hz – 20kHz, 8 min. Slow swept-frequency, 20Hz – 20kHz, 8 min.	0	200	34J119	115.00
			0	200	31L120	140.00
			0	250	31L220	140.00
			0	200	33L141	140.00
			0	200	34L120	140.00
30 in/s 1/2" tape	AES-1971	Multifrequency, 31.5Hz – 16kHz, 8 min. Multifrequency, 31.5Hz – 16kHz, 8 min. Fast swept-frequency, 500Hz – 20kHz, 8 min. Slow swept-frequency, 20Hz – 20kHz, 8 min.	0	200	41F157-A	265.00
			0	250	41F257-A	265.00
			0	200	41T115	265.00
			0	250	41T215	265.00
3.75 in/s 1" tape	NAB-1965	Multifrequency, 31.5Hz – 16kHz, 10 min. Multifrequency, 31.5Hz – 16kHz, 10 min. Fast swept-frequency, 500Hz – 20kHz, 10 min. Slow swept-frequency, 20Hz – 20kHz, 10 min.	-10	200	43T142	265.00
			-10	200	44T115	265.00
			0	200	41J116	265.00
			0	250	41J216	265.00
			0	200	43J143	265.00
7.5 in/s 1" tape	NAB-1965	Multifrequency, 31.5Hz – 16kHz, 10 min. Multifrequency, 31.5Hz – 16kHz, 10 min. Fast swept-frequency, 500Hz – 20kHz, 10 min. Slow swept-frequency, 20Hz – 20kHz, 10 min.	0	200	44J116	265.00
			0	200	41L117	310.00
			0	250	41L217	310.00
			0	200	43L144	310.00
			0	200	44L117	310.00
15 in/s 1" tape	AES-1971	Multifrequency, 31.5Hz – 16kHz, 10 min. Multifrequency, 31.5Hz – 16kHz, 10 min. Fast swept-frequency, 500Hz – 20kHz, 10 min. Slow swept-frequency, 20Hz – 20kHz, 10 min.	0	200	51T112	510.00
			0	250	51T212	510.00
			-10	200	53T145	510.00
			-10	200	54T112	510.00
			0	200	51J113	510.00
30 in/s 1" tape	NAB-1965	Multifrequency, 31.5Hz – 16kHz, 15 min. Multifrequency, 31.5Hz – 16kHz, 15 min. Fast swept-frequency, 500Hz – 20kHz, 15 min. Slow swept-frequency, 20Hz – 20kHz, 15 min.	0	250	51J213	510.00
			0	200	53J146	510.00
			0	200	54J113	510.00
			0	200	51L114	570.00
			0	250	51L214	570.00
7.5 in/s 2" tape	NAB-1965	Multifrequency, 31.5Hz – 16kHz, 15 min. Multifrequency, 31.5Hz – 16kHz, 15 min. Fast swept-frequency, 500Hz – 20kHz, 15 min. Slow swept-frequency, 20Hz – 20kHz, 15 min.	0	200	53L147	570.00
			0	200	54L114	570.00
			0	200	51L114	570.00
			0	250	51L214	570.00
15 in/s 2" tape	NAB-1965	Multifrequency, 31.5Hz – 16kHz, 15 min. Multifrequency, 31.5Hz – 16kHz, 15 min. Fast swept-frequency, 500Hz – 20kHz, 15 min. Slow swept-frequency, 20Hz – 20kHz, 15 min.	0	200	53L147	570.00
			0	200	54L114	570.00
			0	200	51L114	570.00
			0	250	51L214	570.00
30 in/s 2" tape	AES-1971	Multifrequency, 31.5Hz – 16kHz, 15 min. Multifrequency, 31.5Hz – 16kHz, 15 min. Fast swept-frequency, 500Hz – 20kHz, 15 min. Slow swept-frequency, 20Hz – 20kHz, 15 min.	0	200	53L147	570.00
			0	200	54L114	570.00
			0	200	51L114	570.00
			0	250	51L214	570.00

Also available: White noise, pink noise, 3150Hz speed and flutter, and specials to your specifications. All items with IEC equalization. NAB cartridge reproduce calibration tapes.



1200

501 VR Portable VHF Wireless System

- Patented companding circuitry gives 120dB dynamic range for crisp, clear, noise-free operation
- Double-heterodyne receiver for over 100dB image and spurious rejection
- Choice of lightweight handheld, or miniature lavalier transmitter in a body-pack
- Internal power supply, with flexible external powering options

The 501 VR wireless system was specially designed for ENG/EFP applications. The system operates on VHF high-band frequencies, with five channels between 170 and 216MHz offered standard, and other frequencies available.

The 501 VR Receiver is housed in a lightweight metal case compact enough to fit into equipment pockets. The receiver's unique double-heterodyne design allows unmatched image and spurious rejection. This enables the system to be used with confidence in the most RF-polluted environments.

The receiver is internally powered by a 9V battery, or externally powered from any 12V to 35V power source. Controls and indicators include a switchable combination RF/battery level meter, and a combination On/Off/Headset Level control. An LED Peak Meter indicates audio overmodulation. Headphone output and audio output (mike level) are provided.

Overall System Performance

Frequency
Response: 25-20,000Hz ± 3dB
Dynamic Range: 120dB (max. SPL to A-weighted noise level)
Harmonic
Distortion: <.3%
RF Carrier
Frequencies: Five channels: A through E, between 170-216MHz
Frequency
Stability: ± 0.005% crystal controlled
Modulation: FM/ ± 15kHz
Operating Range: 200', adverse conditions, up to 1,500' line-of-sight

- 501 VR/LT Professional video camera wireless microphone system for ENG, EFP-lavalier **\$850.00**
- 501 VR/HT Professional video camera wireless microphone system for ENG, EFP-handheld **\$900.00**

1200 VHF Wireless System Preliminary Information

- True diversity for drop-out free performance
- Instrument, handheld and lavalier transmitters available
- Features completely redesigned handheld transmitter with user-switchable elements

Specifications

Overall System Performance

Frequency
Response: 25-20,000Hz ± 3dB
Dynamic Range: 120dB (max SPL to A-weighted noise level)
Harmonic
Distortion: <0.3%
RF Carrier
Frequencies: 151mHz to 216mHz, single channel
Frequency
Stability: > ± 0.005% crystal controlled
Modulation: FM ± 15kHz
Operating
Range: 200', adverse conditions, 1,500' line-of-sight

Systems Include Receiver and Transmitter

- 1200 GT System **\$1599.95**
- 1200 LT System **1599.95**
- 1200 HT System **1699.95**
- 1200 R Receiver Only **960.95**
- 1200 GT Instrument Transmitter Only **639.95**
- 1200 LT Lavalier Transmitter Only **639.95**
- 1200 HT Handheld Transmitter Only **679.95**

NAGRA MAGNETIC RECORDERS, INC.

Portable Studio Recorder

T-AUDIO TRANSPORTABLE STUDIO RECORDER

Tape Transport: Twin capstan open loop system ensuring very low wow and flutter and modulation noise.

Preset Calibrations: Direct access to four preadjusted recording calibrations in respect of speed, type of tape (bias) and standard.

Playback Speed: Selection of four playback speeds with respect to standard (CCIR, NAB, NAGRAMASTER).

Fast Copying facilities at 30 ips

Editing Standard: Manual with free spools, bidirectional hand pull, and built-in cutter. Optional: Servo controlled with automatic displacement of edit point to built-in cutter.

Remote Control: Detachable, individual control unit with full remote capabilities and access to all functions including counter by means of a 25-pin cannon connector.

Power Supply: AC/DC operation with very low power consumption.

Warning Display: Two levels of alarm: close to limits, out of limits for: power (internal DC voltage supply), phase lock (servo-control of capstan motor speeds) and interhead tape tension.

Matrix Display: For "record" and "output" modes.

Tape Counter: Time display, 5 digits (h.mm.ss.) bidirectional, 7 segment LED (8 digits for optional timecode: hh.mm.ss.frames). Time indication corresponding to selected speed. Accuracy better than 0.1% at all speeds including spooling mode. Zero locator and reset pushbutton.

Optical Clear tape and end of tape sensor.

Speed Variator: Variable playback speed $\pm 6\%$ and variable spooling speed 0 to 10 m/s in both directions.

Skip: 3 speeds in both directions by non-latching switches: nominal speed and 2X nominal speed with listen facilities; fast winding speed without listen.

Size: With 17" (180mm) reels and without control unit 238H x 400W x 335Dmm. With 11.8" (300mm) spools and without control unit 250H x 610W x 420Dmm. Control Unit: 50H x 400W x 110Dmm.

Power Supply: Mains adaptor or 11 to 14VDC.

Power Consumption: AC typ. 65VA max. 85VA. DC typ. 40W.

The T-Audio analog recorder is a microprocessor controlled twin capstan recorder utilizing 1/4" tape. Electronic real time counter with go to zero function incorporated in the detachable keyboard controller. Four possible tape speeds: 30, 15, 7 1/2 and 3 3/4 ips. Up to four changeable TACAL* circuits incorporating wide band predistortion circuitry.

Timecode Package

Ready to work — includes: Nagra T-Audio timecode version with two 2mm audio tracks and one 0.35mm center timecode track for 1/4" tape. Four tape speeds, electronic counter, four directly accessible recording calibrations, separate erase heads for audio and timecode signals. Fitted with double high speed timecode reader (simultaneous reading of tape signal and external source) and an internal timecode generator.

NTA. 3-TCS Two track main frame w/tc record/play electronics

4 TACAL-S Without wideband anti-distortion

1 TACA-TC-2 Keyboard

1 TASC Edit servo for TACA-TC-2

1 TA-RAM Connecting facilities for remote control and audio monitoring

1 TAIRS For standard RS-422 port

1 TASYN Internal time code synchronizer allowing the chasing of any SMPTE/EBU 80 time code signal up to 60 times the nominal recording speed

1 TAHSX High stability time base (1 ppm)

2 TASIM Circuit for playback through the record head

1 TAONP Neopilot playback head

1 TAPS Mains power supply

2 TPBC Cine type reel holders

2 TPNN NAB hubs \$19,950.00

NTA.3-TCR Same as above with external remote control interface according to RS-422 standards (38,400 baud rate) for connecting the Nagra NTA.3-TCS to an existing editing system. Note: When ordering, specify editor being used

..... \$22,450.00

Stereophonic Package

Ready to work — includes:

1 NTA-S Stereophonic mainframe (2.75mm)

1 TAPS Internal mains power supply with mains cable

1 TACA-S Complete servo editing controller with manual edit (detachable)

8 TACAL Record calibration circuits with predistortion (speed/tape type/standard)

1 TAIRS For standard RS-422 port

2 TPBC Cine type reel holders

2 TPNN NAB type reel holders \$17,950.00

B-888



T-Audio Accessories

TACO-3 Overbridge for TACO series of accessories
Available space is 3 standard rackmount units (5.25") \$440.00

TACO-5 Same as above. Available space is 5 standard rackmount units. (8.75") 460.00

TACO-7 Same as above with 7 units of space (12.25") 480.00

TACO-B1 Blank 1 unit panel (1.75") 15.00

TACO-D2 Monitor module for pilot or time code signals fitted with two meters; pilot or time code level plus phase deviation of resolver/synchronizer. Takes up 1 unit rackmount space (1.75") 427.00

TACO-D2R Pilot/time code monitoring option w/bi-phase interface 1,180.00

TACO-M1 Audio monitoring unit with two VU-meters for audio level display, two potentiometers per channel for input and output level adjustment, two speakers and two headphone outputs. Peak version available upon request. Takes up 3 units of rackmount space (5.25") 1,455.00

Options

TAHP Headphone and loudspeaker amplifier includes 2 monitoring speakers \$427.00

TACAL Additional recording calibration circuit, factory adjusted for any specified combination of speed/type of tape/standard. One per channel and per calibration. (Includes predistortion circuitry) 256.00

TARSA External remote control interface according to RS-422 standards (38,400 baud rate) for connecting the Nagra TA-TC to an existing editing system. Note: When ordering, specify editor being used 2,345.00

TAC-42.5 RS-422 cable 16.5' 103.00

TASIM Self-sync option allows simultaneous playback of one channel while recording on the other in sync 214.00

TAPCR High speed copying 214.00

TAIRS Internal remote control interface according to RS-232 standards for connecting the Nagra TA-TC to a computer 642.00

TAPFM Neopilot and FM (Nagrasync) resolver 342.00

TAONP Neopilot playback head (supplied) 342.00

Reel Holders

TPBC Cine type reel holder \$ 56.00

TPNN NAB hub holder 167.00

TPBA-2 AEG type reel holder 77.00

Monitor

DSM Field monitor and amplifier with selectable filters. Includes battery pack, AC mains cable and handle \$2,247.00

Carrying Accessories

TMU Roll-around console with storage compartment \$934.00

TA CASE ATA shipping case 330.00

TACH Set of carrying handles 171.00

Miscellaneous

TACR 10' high speed copy input/output cable with connectors \$ 34.00

Instruction/service manual 125.00

Nagra Swatch watch 35.00

Prices and Specifications Subject to Change Without Notice.

NAGRA MAGNETIC RECORDERS, INC.

Recorders

4.2L Standard Sync Recorder

Self-contained professional single-track tape recorder for the cinema, television and radio

Also available with QPAU-T mike preamps which are universal or QPM-3-5 for Sennheiser.

Three speed recorder: 15 1/2, 7 1/2 and 3 3/4 in/s, 1/4" tape. Full track with Neopilot synchronization system. High-pass filters, automatic level control, limiter and patented predistortion circuit.

Specifications

- Microphone inputs (with QPSE) 200 ohm, 0.2-43mV • Automatic level control range for 0dB 0.65 to 22mV, with an average distortion of h3 ≤ 0.3% at 1kHz
- Unbalanced line input, impedance 100K ohm, 0.37-120V • Mixer direct input, fixed level 560mV for 0dB, impedance 9K ohm • Pilot signal input, imp. 5K ohm, 0.5-25V • Line output at 0dB, 4.4V into 600 ohm or 560mV into 100K ohm at the Mixer connector • Pilot signal output 350mV, or 1V with QSLI • Loudspeaker amplifier 1W • Modulometer integration time 7.5ms • Performance obtained by recording, nominal level 0dB = 320nWb/m, maximum peak level (MPL) = +4dB
- Frequency response at -20dB: 15in/s 30Hz-20kHz ± 1.5dB; 7 1/2in/s 30Hz-15kHz ± 1.5dB, 3 3/4in/s 30Hz-8kHz ± 2dB • Signal-to-noise ratio at MPL, ASA A weighted, 7 1/2in/s: low-noise tape NAB 73dB CCIR 72dB standard tape NAB 70dB, CCIR 68dB • Distortion at MPL, CCIR h3 ≤ 0.4%, h2 ≤ 0.3%; NAB h3 ≤ 1.0%, h2 ≤ 0.4% • Speed stability at 15, 7 1/2 and 3 3/4 in/s: ± 0.1% • Wow and flutter, DIN 45 507 weighted p-p value, 15 in/s ± 0.05%, 7 1/2in/s ± 0.07%, 3 3/4in/s ± 0.12%

- Internal power supply: twelve 1.5V cells, D or R20 type, current drain by recording 240mA; battery life with Eveready 950 in continuous use 8 1/2h or 18h if used 2h every 24h • External power supply from mains with ATN2 • Permissible operating temperature between -4 and +160°F • Dimensions 13 1/8" x 9 1/2" x 4 1/2" • Weight with batteries and tape 15 lbs.

4.2L \$7970.00

Internal Modules — select one or two preamplifiers, add other modules before or after purchase (for IV and 4.2)

QPSE200	
XOYO	(Can be strapped for 50 ohms) General use \$ 232.00
QPM3-5	For Sennheiser "Static 5" MKH 105, 405, 415, 805 and 815 Neuman, type KM 73, 74 and 76 272.00
QPM6	High level input (for additional "line input") 144.00
Add ALC	For automatic mixing of speeches, meeting, interviews, but not for dramatic sound recording 320.00
Add QFM60	Camera speed and flicker indicator (50Hz units also available) 160.00
Add QSLI	Self resolver and sync playback 176.00
Add QGX60	Time sync generator eliminating cables when working w/crystal controlled camera (can be strapped for 50Hz) 304.00
QPAU-T	Universal microphone preamplifier for position one (1) only 320.00
QPU-T	Universal microphone preamplifier for position two (2) only. (Must be used with QPAU-T) 160.00

Accessories for Nagra III, IV, 4.2, S, SJ and E

ATN-3	Mains power supply w/cable (QCAA) (For IV, 4.2, S, SJ, LPS synchronizer and E) \$ 430.00
ATN-3C	Mains power supply w/built-in charger 602.00
BMT-3	3 mike mixer w/input transformer (For III, IV, 4.2 and E) 1,085.00
BS	External mike-line preamp (50 or 200 ohms dynamic) (for III, IV, 4.2, E) 353.00
MAG	Degausser for tape deck 110-117V mains (all recorders) 594.00
PAR	Charger for nickel cadmium batteries (Use w/ATN for III, IV, 4.2, S, SJ, E) 240.00
PPD	Multiple connector box for plugging into Nagra power pack connector. Required when both QSV-2 and ANT-2 are used with IV, 4.2, S, SJ, E 167.00
QCA	Remote start stop cable (For IV, 4.2, S, SJ) 39.00
QCL	In-line amp for SLO to IV or 4.2 304.00
QCP	Replacement pilot cable (for IV, 4.2, S, SJ) 27.00
QGB	10 1/2" reel adaptor (for 4.2, S, SJ) w/1 pr. QGBN adaptors 2,327.00
QGBA-2	Adaptor for using AEG type reel with QGB ea./75.00
QGBN	Adaptor for using NAB type reel with QGB ea./182.00
QPLE200	External preamp connected to dynamic 200 ohm mike and fed by preamp QPM3-5 249.00
QRAC	Tape cleaning blade (For 4.2, S, SJ and E) 56.00
QSV-2	Speed varier (for 4.2, S, SJ and E) 328.00
QTIM	Tape timer (for 4.2, S, SJ and E) 62.00
SLO	Resolving synchronizer (For III, IV, 4.2, SL, SJ) 3,246.00

Stereo Recorders IV-S

Self-contained professional stereophonic tape recorder for very high quality musical recordings



4.2L



DV-S

Three speed recorder: 15, 7 1/2 and 3 3/4 in/s, 1/4" tape. Two sound tracks and one Nagrasync pilot track. Equalization NAB, CCIR or Nagra-master. High-pass filters and anti-distortion circuit.

Specifications

- Input level for 0dB: 200 ohm dynamic microphone 0.28mV; capacitor microphone 1.4-4.2mV; line 7.8µA, current drive, impedance 5 or 10K ohm • Line output at 0dB, 1V into 5K ohm • Loudspeaker amplifier 1W • Modulometer integration time 10ms • Performance obtained by recording, nominal level 0dB = 510nWb/m, maximum peak level (MPL) = +4dB • Frequency response at -20dB: 15in/s 30Hz-20kHz ± 1dB, 7 1/2in/s 30Hz-15kHz ± 1dB; 3 3/4in/s 30Hz-10kHz ± 2dB • Signal-to-noise ratio at MPL, ASA A weighted, 15in/s Nagra-master 74dB, 15in/s NAB or CCIR 71dB, 7 1/2in/s NAB 71dB and CCIR 68dB
- Distortion at MPL, h3 ≤ 0.6%, h2 ≤ 0.3% • Crosstalk attenuation at 1kHz > 60dB, at 10kHz ≥ 50dB • Phase fluctuation ± 12° between tracks at 7 1/2in/s and 10kHz • Pilot track at 15 and 7 1/2in/s: Carrier frequency 13.5kHz; Maximum frequency deviation ± 45%; p-p input voltage 2V; Frequency response 0Hz to 4kHz -3dB, Signal-to-noise ratio 44dB • Speed stability at 15, 7 1/2 and 3 3/4 in/s: ± 0.1% • Wow and flutter, DIN 45 507 weighted p-p value, 15in/s ± 0.05%, 7 1/2in/s ± 0.07%, 3 3/4in/s ± 0.12%

- Internal power supply: twelve 1.5V cells, current drain by recording 250mA; battery life with Eveready 950 in continuous use 8 1/2h or 18h if used 2h every 24h • External power supply from mains with ATN2 • Permissible operating temperature between -4 and +160°F • Dimensions: 13 1/8" x 9 1/2" x 4 1/2" • Weight with batteries and tape: 15 lbs. 9 oz.

SD Non Sync	..... \$8,775.00
SL With Sync	..... 9,775.00
STC With Time Code	..... 10,895.00

Internal Module Accessories

QFMS-60	Camera speed indicator (SL, SJ) (50Hz units also available) \$232.00
QSGX-60	Time sync generator (SL, SJ) (50Hz units also available) 280.00

Accessories for Nagra STC, SL and SD

ATN-3C	Mains power supply w/built-in charger \$ 602.00
DSM	Field monitor and amplifier (QCAA, QHP, IBAT supplied) 2,247.00
QCLS	In-line amp to connect SLO (SL, SJ) 361.00
QCTC	Time code reset cable 5' to be used w/VPR-5 video recorder or Aaton time code camera. Fitted w/5-pin lemo connector at both ends 36.00
QCTCU	Time code reset cable 5' to be used with any other machine. Fitted w/5-pin lemo connector at one end and an interconnection box allowing the use of any plug at the other end 35.00
QGB	10 1/2" reel adaptor (for 4.2, S, SJ) with 1 pr. QGBN adaptors 2,327.00
QGBA-2	Adaptor for using AEG type reel w/QGB ea./75.00
QGBN	Adaptor for using NAB type reel w/QGB ea./182.00
QRAC	Tape cleaning blade (for 4.2, S, SJ and E) 56.00
QSCM	Cue microphone equipped with ALC and preamp (for SL, SJ) 377.00
QSET	Cover for 7" reels (for 4.2, S, SJ and E) 409.00
QSIATC	Optional internal time code interface allowing the setting of the Nagra STC from Aaton "Origin C" and vice versa (1 hr. installation charge) 401.00
QSIIP	Resolver interface for stereo time code 801.00
QSL	External synchronizer (for SL, SJ) 581.00
QSO-3	Converts the STC to 50/60Hz sync (as in the SL) 583.00
QSV-2	Speed varier (for 4.2, S, SJ and E) 328.00
QTIM	Tape timer (for 4.2, S, SJ and E) 62.00
SLO	Resolving synchronizer (for III, IV, 4.2, SL, SJ) 3,246.00
TCGR	SMPT/E/BU 80 time code reader/generator 30 and 25 frames per second version. Can be used as a master clock (± 2 ppm from -10 to +50°C). Fitted w/5 pin miniature lemo connector 2,006.00

Refer to Green Section for Addresses and Telephone Numbers.

NAGRA MAGNETIC RECORDERS, INC.

Recorders

SNN Miniature Full-Track Professional Tape Recorder

The SNN recorder, in spite of its diminutive size, produces exceptionally high quality recordings. It is much appreciated by reporters, who can record broadcast quality tapes and, at the same time, be more mobile. The SNN solves film-makers' synchronous sound recording problems: it can easily be concealed during filming and strict synchronization is guaranteed. Data can be recorded aboard propelled craft of all kinds, for scientific research.

Reels of narrow $1/8"$ (3.81mm) tape are used, and tape drive is by a slaved capstan motor. Rewind is manual using a small folding crank handle, but rapid thanks to an overdrive system.

$3\frac{3}{4}$ ips and $17/8$ ips (9.5cm/s and 4.75cm/s). The tape-deck is milled from one solid piece of metal and the case and lid are of drawn light metal alloy. All the electronic circuits are very highly developed and they include a voltage converter with variable ratio and an automatic level control. A special miniature omnidirectional capacitor microphone can be used and it is also possible to work with a conventional dynamic microphone. A small meter indicates the compression rate of the automatic level control; the battery voltage can also be checked on the meter by pressing a small button at the side of the recorder. Headphones can be connected at a small jack for monitoring the tape during recording.

Specifications

- Microphone input, source impedance ≥ 200 ohm, SNN 3 to $80\mu\text{A}$
- Line input, fixed level 160mV for nominal recording level, source impedance ≤ 500 ohm
- Playback at nominal level and 1kHz 630mV
- Performance obtained by recording at $3\frac{3}{4}$ ips with SNN: Frequency response on line input, SNN 60Hz-15kHz ± 2 dB, (playback equalization SNN $50\mu\text{s}$ and $3180\mu\text{s}$ • Signal-to-noise ratio at nominal level (250nWb/m), ASAA weighted, SNN > 62 dB • Third harmonic distortion at 400Hz and nominal level, SNN 1% • Erase efficiency 70dB
- Wow and flutter, DIN 45, 507 weighted RMS value, SNN 0.1%
- Recording time with 18μ tape, SNN 26 min., each track; with 12.5μ tape, SNN 38 min., each track
- Internal power supply: two 1.5V batteries or rechargeable cells; average battery life by non-stopping recording
- External power supply by ASN
- Consumption during recording 125mA
- Permissible operating temperature between -40° and $+158^\circ\text{F}$
- Dimensions: $5\frac{3}{4}" \times 4" \times 1"$
- Weight with batteries and tape 1.3 lbs.

SNN — $3\frac{3}{4}$ ips and $17/8$ ips Mono mini recorder. Includes 1-SCU output cable terminating in 2 banana plugs, 1-SCN transfer cable SNN to Nagra III, IV or 4.2 (accessory input), 2-Batteries, 4-TTA standard reel of tape, 2-TEA long playing reels of tape, 1-TYS empty reel, 1-SB storage case. \$4100.00

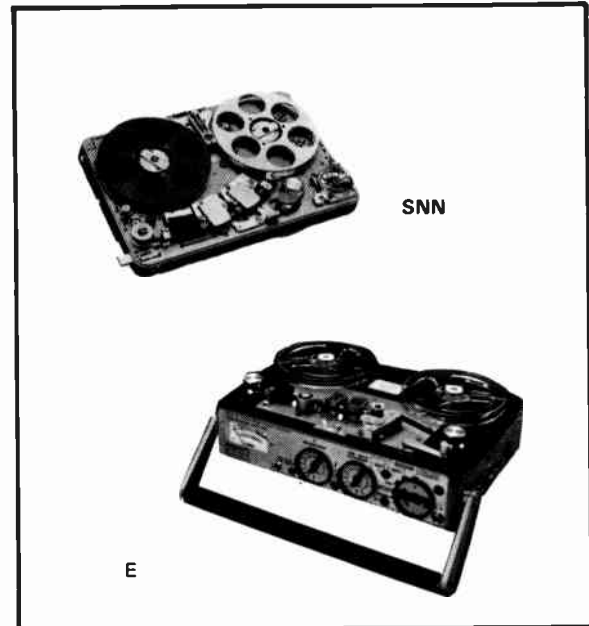
E Self-Contained Professional Tape Recorder, Mono

The E is a professional self-contained tape recorder essentially intended for broadcasting and especially designed to be easy to use, reliable, long lasting and reasonably priced.

Derived from the already well known, well tried and robust 4.2, the E has been designed to fulfill the following requirements: • Lightweight and robust • Possibility to use most of the Nagra 4.2 accessories • Single microphone input • One line input, with current and voltage input, easily convertible to a second microphone input with an external accessory • Separate record and playback heads • Tape deck and transport similar to that of the 4.2 • Servo controlled capstan motor

Specifications**General characteristics**

- Size: $12.4" \times 8.8" \times 4"$ (315 x 226 x 104mm)
- Weight with tape and batteries: 12.1 lbs. (5.5kg)
- Power supply: 12 "D" cells or rechargeable cells or ATN-2 main power supply
- Tape speed: $7\frac{1}{2}"$ - 19.05cm
- Reel size: 7" cover open, 5" cover closed
- Tape width: $1/4"$ (6.25mm)
- Equalization: NAB or CCIR
- Track format: mono, full track
- Headphone control: tape-direct

**Microphone input: one**

- Type of microphone input: dynamic 200 ohm 0.138mV/0dB; condenser T + 12V 2mV/0dB; T + 12V 4mV/0dB; can also be used as symmetrical line input, 2, 5mV/0dB

Line input

- Voltage line input source impedance $> 1\text{K}$ ohm: 0, 4V 150K ohm
- Current line input impedance 330 ohm: $3\mu\text{A}$

Line output

- Asymmetrical with output load ≥ 300 ohm: 0.94V for 320nWb/m 1.55V for 510nWb/m • Floating with 600 ohm load (option) 4.4V for 320nWb/m
- Mixing microphone and line input: Yes

Other characteristics

- Overall frequency response: 50-15,000Hz within ± 2 dB
- Signal-to-noise ratio: 62dB weighted
- Third harmonic distortion at 400Hz: $< 0.9\%$ at 0dB; $< 2\%$ at $+3$ dB
- Erase depth of a 1200Hz recorded signal: > 79 dB

Wow and Flutter

- $\pm 0.1\%$ (DIN 45507)
- Tape used for all above measurements: PER 525
- Reference oscillator 1kHz signal: 0 VU level = 8dB
- Reference oscillator used for tape calibration: 1kHz -12dB; 6.3kHz -12dB; 10kHz -12dB
- Autonomy in continuous use: 13h
- Permissible operating temperature: -20° to $+70^\circ\text{C}$; -55° to $+70^\circ\text{C}$ (opt.)
- Large reel adaptor: QGB
- Correction filter: Yes

EL

Synchronous recorder 1 speed at $7\frac{1}{2}$ ips with universal preamplifier, sync circuit including crystal generator and resolver with balanced line output (EFO) 4.4V. Includes 1 QHC carrying strap, 1 empty reel, 2 reel nuts, 1 QCP pilot cable \$5995.00

ED

Non-synchronous recorder, 1 speed at $7\frac{1}{2}$ ips, with internal universal preamplifier without balanced line output (EFO) 4.4V. Includes 1 QHC carrying strap, 1 empty reel, 2 reel nuts. \$4995.00

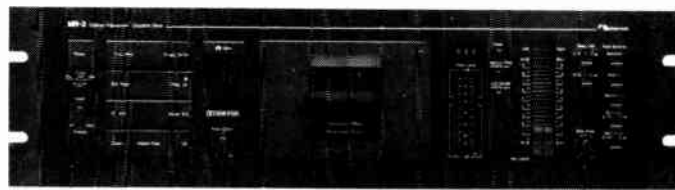
Note: No carrying handle (QHP) supplied with recorders.

NAKAMICHI U.S.A. CORP.

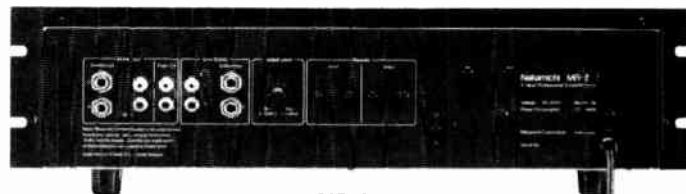
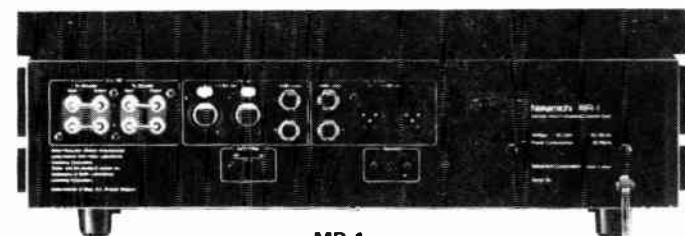
Cassette Decks



MR-1



MR-2



MR-1 Discrete Head Professional Cassette Deck

- Discrete 3-head recording system
- High-inertia direct-drive capstan motor with wide bandwidth FG servo
- 4 tracks/2-channel stereo
- Low-distortion direct-coupled electronics
- Balanced inputs: 1/4" front panel XLR rear panel
- Unbalanced inputs: 1/4" rear panel
- Line input selector switch
- Outputs: XLR rear panel (balanced), 1/4" rear panel (unbalanced)
- Self-contained Dolby® B and C noise reduction
- Provision for external noise reduction systems
- 16-segment linear scale (2dB steps) peak-responding meters
- Independent L/R record level controls
- 3-position tape selector
- 2-position equalization selector
- Defeatable MPX filter
- Defeatable subsonic filter
- One-touch record pause
- Record mute
- Tape monitor indicator
- Line output level control
- Headphone jack with independent headphone volume control
- Playback pitch control ($\pm 6\%$)
- 4-digit LED tape counter
- Memory stop
- Timer record/play
- Automatic slack-tape takeup
- Remote control (via optional RM-200)
- EIA rackmount adaptor with carrying handle

The MR-1 brings to the professional market a unique Asymmetrical Dual-Capstan Diffused-Resonance Transport so accurate that no pressure pad is required to maintain tape-to-head contact. The Discrete 3-head recording system provides perfectly accurate azimuth alignment, extended bandwidth and exceptional dynamic range, and custom electronics which have established a reputation for ultra low-noise/high-headroom performance.

The MR-1 is specifically designed to meet the needs of the professional market. Front-panel 1/4" balanced line input jacks simplify temporary connection of signal sources with the MR-1 while balanced XLR input and output jacks on the rear provide permanent connection. An input selector chooses between front and rear inputs. Quarter-inch rear-panel jacks provide unbalanced connection to the MR-1 with the unbalanced inputs given priority over the XLR inputs when a jack is inserted.

MR-1 \$995.00

Optional Accessories

SP-7	Stereo headphones	\$80.00
RM-5	Remote control for MR-1	45.00
DM-10	Head demagnetizer	38.50

MR-2 2-Head Professional Cassette Deck

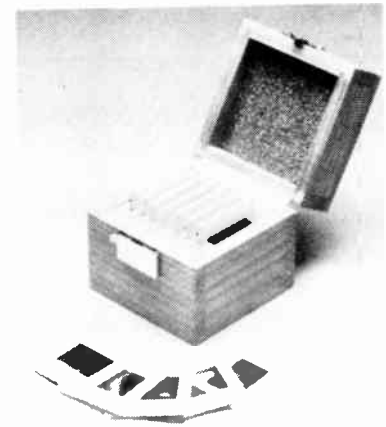
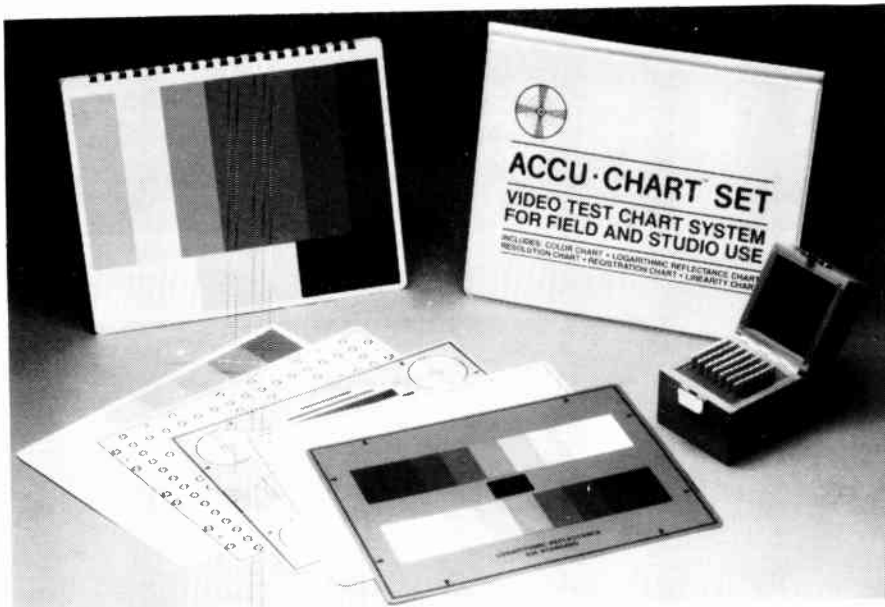
- 2-head performance that rivals a 3-head deck
- 4 tracks/2-channel stereo
- Microprocessor-controlled single-capstan "Silent-Mechanism" transport
- Hyperbolic-contour laminated-sandust record/play head
- Dual-gap ferrite-core erase head
- Low-distortion/low-noise recording and playback amplifiers
- Separate tape and equalization switches for Type-I, -II and -IV tape
- Ultra-stable balanced bias oscillator operating at 105kHz
- Bias tune control
- Dolby B and C noise reduction
- Defeatable MPX filter
- Independent left and right record-level controls
- Dual-speed (4 second/2 second) master fader
- 37dB peak-responding electronic level indicators
- Line output level control with -10dBV to +4dBm range
- RCA and 1/4" input/output connectors
- Wired remote input/output ports
- Copy-out jacks
- One-touch rec/pause
- 3-digit tape counter
- Memory stop
- Auto repeat
- Timer rec/play
- Pitch control
- 19" EIA standard rackmount package
- Headphone output with independent level control

The MR-2 proves that it's possible to design a budget-priced professional deck with sound quality that stands above the crowd. If you operate a professional or semi-professional recording studio, real-time tape-duplication facility, or need an affordable top-quality professional deck for commercial-sound use, look no further. The MR-2 has been created for you. It has the professional features you need, the sound quality you demand, and it's surprisingly affordable. The secret of its remarkable performance/price ratio is a design that concentrates on the four essentials: transport, heads, electronics and quality control.

MR-2 \$595.00

NALPAK VIDEO SALES, INC.

Test Charts/Slides



Accu-Chart

Accu-Slides

Accu-Chart™ Set

Video Test Chart System for Field and Studio use includes: Color Chart, Logarithmic Reflectance Chart, Resolution Chart, Registration Chart, Linearity Chart.

ACCU-2 Set of 5 charts with cover and pouch . . . \$117.50

Individual 9" x 12" Charts

Gray Scale Chart

Basic standard for setting light response characteristics of cameras. Essential for balancing R, G and B channels in 3-tube color cameras. Chart consists of 2 sets of 9 neutral gray patches on uniform gray background. Reflectances vary from 3% to 60% according to EIA Logarithmic (2) Law. Dead black (R 0.5%) patch establishes black level.

AC-GS Gray Scale \$34.95

Color Reference Chart

A subjective reference chart for checking color rendition. Consists of three primary (Red, Green, Blue) and three secondary (Yellow, Cyan, Magenta) plus 4 gray levels. In color bar format, but not intended for quantitative use. Use to evaluate overall system color reproduction by comparing transmitter image with original chart. Also for use as a field standard; record image of chart at beginning of each tape and adjust monitor on playback for proper color rendition.

AC-CR Color Reference. \$34.95

Linearity Chart

Standard EIA "Ball Chart" for adjustment of camera and monitor linearity. Use with electronically generated grating test pattern for quantitative measurements as specified in EIA RS-170

AC-LN Linearity \$21.95

Resolution Chart

For evaluation of frequency response of video systems. Adapted from EIA standard chart, includes resolution targets for 200 to 800 TV lines in center and at four cor-

ners. Also, test objects to detect ringing and streaking. Continuous neutral gray background for shading adjustments.

AC-RS Resolution. \$21.95

Registration Chart

Similar to EIA standard chart, used primarily for registration of 3-tube color cameras. Black square grid on white background includes 200-600 line resolution wedges and circular targets for evaluation of linearity.

AC-RG Registration. \$21.95

Mini-Charts

Includes: Color Reference, Registration and Logarithmic Reflectance Chart. All charts are 4 1/2" x 6" pattern size

MCS-1 \$59.95

Accu-Slides™

Provides the same accuracy for use with Telecine set-up and alignment as the standard Accu-Chart system. Accu-Slides are available in either a positive or negative image. They are mounted in a 2" x 2" glass protected format which is supplied with approved pin registered television mounts and anti-Newton ring optical glass. The Accu-Slideset consists of the same five test patterns as the Accu-Chart set and comes in a custom designed wooden box. Accu-Slides are also available individually.

Accu-Slides

Test Slides, available as positive or negative

AS-ST Set of 5 slides complete with wooden box \$88.00

Individual Slides

AS-RG Registration \$12.00

AS-RS Resolution 12.00

AS-LN Linearity 12.00

AS-CR Color Reference. 12.00

AS-GS Gray Scale 12.00

WB-1 Wooden Box, holds total of 7 slides 43.00

NALPAK VIDEO SALES, INC.

All Purpose Carts

TK-150 Travel Carrier

- Large 11 1/2" x 9 1/2" steel base
- Ideal for soft luggage
- Patented "one-motion" opening and closing feature
- Double telescopic self-locking rods
- Can be pushed or pulled when loaded
- Weighs 4 1/2 lbs., supports up to 150 lbs.
- Extended height 41", collapses to 18 5/8"
- Carry-aboard feature
- High quality 4" rubber wheels
- Elastic cords permanently attached
- Wheel guard for added protection
- Handsome carry case included

TK-150 \$ 83.50
 TK-154 with extra rear wheels 107.50

TK-300 Travel Carrier

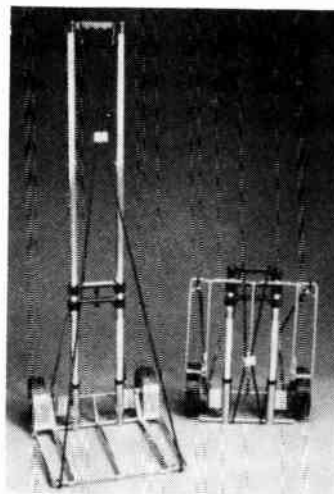
- Heavy-duty model for large loads
- Sturdy, double telescopic self-locking rods
- Large 12 1/2" x 16" steel base
- Patented "one motion" opening and closing feature
- Load can be pushed or pulled
- "Step Glide" feature for easy access over stairs and curbs
- Weighs only 12 lbs., supports up to 300 lbs.
- Extended height 49", collapses to 20 1/8"
- Fits easily under airline seat
- 6" ballbearing wheels with solid rubber tires
- Elastic cords permanently attached
- Wheel and Mud guard for added protection
- Optional zippered carrying case available

TK-300 \$ 121.75

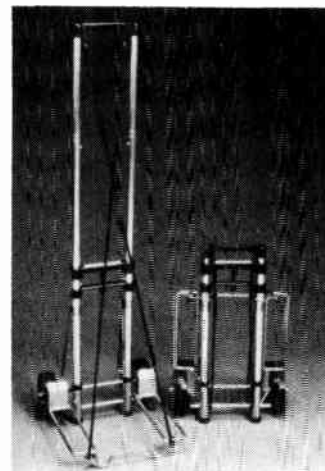
TK-400 Travel Carrier

- Big 300 lbs. load capacity
- Can be used as a 2 or 4 wheel cart—all weight is on the wheels, no load on the arms, just push or pull
- Patented design back-support swivel-bearing caster wheels for added stability
- Sturdy 6" pneumatic rubber rim front wheels
- Sturdy, double telescopic self-locking rods
- Large 12 1/2" x 16" steel base
- Patented "one-motion" opening and closing feature
- Back-support caster wheels easy to extend and close
- "Step-Slide" feature for easy access over stairs and curbs
- Mud guards for added protection
- Weighs only 17 lbs., and supports up to 300 lbs.
- Extended height 49" collapses to 20 1/8"
- Fits easily under an airline seat
- Elastic cords permanently attached
- Optional zippered carrying case available

TK-400 w/extra rear wheels \$ 133.50
 CB-100/200 carry bag 26.25



TK-300



TK-150



TK-400

TK-500 Production/Travel Carrier

- Upper removable platform 18" x 15" expands to 18" x 33" — 70 lb. capacity
- Lower platform with adjustable tilt—12 1/2" x 16"
- Total load capacity — 300 lbs.
- Sturdy 6" pneumatic rubber rim wheels
- Patented "one-motion" opening and closing feature
- "Step-slide" feature for easy access over stairs and curbs
- Mud guard for added protection
- Locking rear wheels
- Extended height 49" — collapses to 20 1/8"
- Elastic cords permanently attached
- Includes additional equipment straps
- Shipping weight fully assembled — 26 lbs.

Across town or across country the TK-500 will handle that special production job with ease.

Easily removable upper platform allows the TK-500 to be converted to a 300 lb. capacity luggage carrier and yet this beauty folds easily to fit under an airline seat.

TK-500 w/removable shelf \$248.00
 AC-500 accessory basket 34.50



Tripak™ Tubular Cases

- Tubular case design for tripods, light stands, gels, seamless paper
- Rotationally molded from cross-linkable polyethylene for extra corner strength
- Strong and durable for long term service
- Octagonal shape to prevent roll-around
- Each size provides over 5" of additional telescoping cap height
- Foam in base and lid to cushion against shock
- Shock, abrasion, dent, weather and temperature resistant
- Twin handles for instant balancing
- Custom colors, logos and/or interiors available
- Standard color: black

Standing seven strong the NVS line of rotationally molded tripod cases offers a model for every application from tripods to light stands and anything in between. Three heights in the 11" diameter from 23" to 49". Four heights in the 9" diameter from 26" to 52".

The handy 9" diameter 36" tall case which NVS refers to as "This one stands alone" is ideally suited for shipping light stands, gobo arms, etc. Constructed to the same specifications as its big and little brothers, the TP-0936 has twin molded handles, telescoping cap, improved buckle and webbed strap.

Model	Diameter	Interior Height	Price
TP-0926/TP-1B	9"	26"-31"	\$215.00
TP-0936	9"	36"-41"	220.00
TP-0942/TP-1R	9"	42"-47"	225.00
TP-0947/TP-1S	9"	47"-52"	230.00
TP-1123/TP-2B	11"	23"-28"	235.00
TP-1139/TP-2R	11"	39"-44"	250.00
TP-1144	11"	44"-49"	260.00

NEC AMERICA, INC.

Color Camera



SP-3A CCD COLOR CAMERA

- Horizontal Resolution/450 lines
- 2/3" CCD Solid-State Image Sensor
- Signal-to-noise more than 58dB
- NTSC Color Signal
- f/1.4 Prism Optics
- -20°C to +45°C Operating Temperature
- Head Weighs 6.71 lbs.
- Optional Built-In VTR

The SP-3A CCD color camera is designed to be used as an ENG stand-alone camera as well as in combined camera/recorder systems using on-board component VTRs for ENG applications. To enhance the versatility of the SP-3A camera, camera adaptor attachments are available to interface with external conventional portable VTRs, remote control unit and newly developed triax system.

The SP-1AD NTSC adaptor is used to generate composite video signal output for conventional VTR recording. Since the SP-1AD NTSC adaptor contains genlock and I/Q type encoder modules, it generates a burst signal and color frame pulse which meet both RS-170A standard as well as NTSC color signal requirements.

The SP-3AD II camera adaptor is used for EFP and studio camera applications in combination with RCU-3 remote control unit and 5" view finder. Gain, pedestal, iris, auto white/black, SC and horizontal phase, etc. can be controlled by the RCU-3 through a 41-pin camera cable. For chroma key and image processing applications, either R/G/B or Y/R-Y/B-Y component signals can be obtained from the RCU-3.

The SP-TRX triax adaptor extends EFP and field sports applications for the SP-3A camera in combination with TCU-3 triax control unit. In addition to the triax cable transmission, coaxial cable transmission, microwave link transmission and modem link transmission are available.

100% Solid-State

Instead of conventional pickup tubes, the SP-3A uses the Charge Coupled Device. By using three CCD chips, broadcast-quality output is obtained in an extremely reliable and lightweight system.

Free from Burn-In

The SP-3A is free from the burn-in, sticking and comet-tails which occur in conventional pickup tube cameras when high-intensity objects are viewed. CCD chips incorporated in the SP-3A are inherently resistant to blooming and smear.

550 Lines Resolution

Two CCD chips are used for the Green channel to provide high resolution and to reduce aliasing.

Stable and Accurate Registration

CCD chips are stable in operation. Disturbances like electrical circuit deviations or the earth's magnetism that can affect registration or cause geometric distortion in conventional tube cameras are totally ignored by the SP-3A.

Minimization of Aliasing Noise

A low-pass filter is inserted into the optical system to reduce "aliasing noise" without affecting resolution.

Image Sharpener Circuit

2H delay lines are built into a special image sharpener circuit to improve vertical resolution.

Optional Built-In VTR

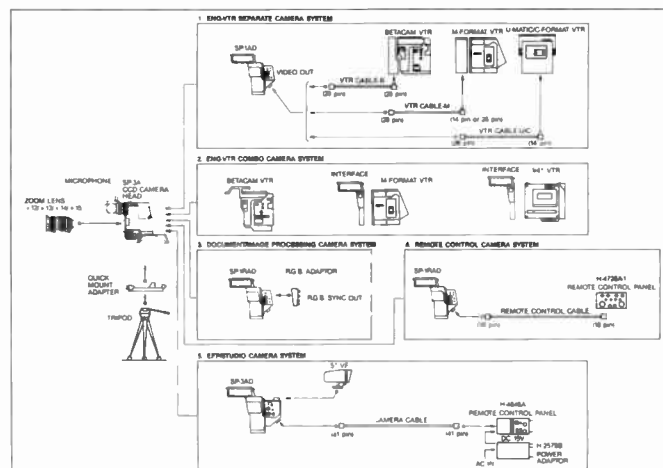
To provide the greatest ENG flexibility, an optional Beta or M2-format 1/2" or 8mm VTR can be attached to the back of the camera, creating a lightweight durable combined system.

Built-in Electronic Shutter

The SP3-A Three-Chip CCD camera has an Electronic Shutter featuring sixteen step-variable electronic-shutter speeds — from 1/60th through 1/2000th of a second. In contradistinction to mechanical shutters, CCD electronic shutter characteristics guarantee reliable, dependable and stable performance that is free from mechanical failure.

The SP-3A camera is ideally suited for a host of applications, including television coverage of competition sports, aerial shows and other fast-moving events, as well as graphics and scientific applications.

SYSTEM COMPOSITION



Prices and Specifications Subject to Change Without Notice.

B-895

NEC AMERICA, INC.**Digital Video Effects Systems****DVE System 100 Digital Video Effects System**

- Infinite compression • Compression split • 4, 9, 16 multi-freeze
- Automatic flip & tumble • Continuous posterization • Negative chrominance
- Forced monochrome • Variable cropping • Utility switcher control • 2 system control • Learn mode • Smooth moves • Frame freeze • Multi-freeze • Programming control • Battery back-up for memory
- Variable event transition time • 3 temporary memories
- Key tracking • Variable background • RS-170A specifications • Fine adjustment control • Expansion • Slide/slide split • Pushbutton pattern selection • Continuous mosaic tile • Negative luminance • Negative picture • Field tear • Variable aspect ratio • Built-in combiner
- A/B switching • Linear moves • Field freeze • Incremental freeze
- Random multi-freeze • 100 event on-board memory • 10 separate programs • Global program transition time • Off-line micro-floppy storage • Variable border • Digital shaft encoder • Low price • Image inversion control

The automatically centering joystick gives you accurate control over image positioning, aspect ratio, degree and position of image cropping, key gain and much more.

Use it to control saturation and hue of the on-board dynamic background and border generators. You can discretely control the Y & C output data to create posterization/solarization effects.

You have 100% digital control over compression size and continuous mosaic. The digital processing involved eliminates "cogging" or "stepping" movements. Your transitions will be very smooth.

Choose the major types of effects: compression, slides, mosaic/tile, splits, expansion, multi-freeze, tearing, and the optional chroma key tracking. In the multi-freeze mode, the DVE System 100 captures, freezes and displays 4, 9, or 16 images on a single screen. You may use the pattern select keyboard to control the pattern of those images appearing on the screen.

Each DVE System 100 can accept two video inputs so that if channel A is your normal source, channel B would automatically appear on the reverse side of the image as you manipulate it through flip/tumble mode.

The DVE System 100 features a built-in digital combiner so you can control two systems by a single control panel. When a second DVE System 100 is interconnected, these two buttons give you to activate the second unit and determine its priority on the screen (whether it is foreground or background).

If you have two DVE System 100s interconnected and being controlled by a single control panel, the CH 1 and CH 2 buttons determine which system is being manipulated. The systems may be used separately or simultaneously as you choose.

An exclusive feature of the DVE-100 is the learn mode which allows you to program the on-board memory by manipulating the image through an external device such as your production switcher. The DVE System 100 samples the incoming signal at a rate you select and stores the data on image manipulation into its memory. You can then edit the effects, play it back or store it on micro-floppy disk as you choose.

16 preset pattern effects are immediately available for live presentations or for use in a programmed sequence. This area also is used as the selection sequence touch-pad for multi-freeze effects in combinations of 4, 9 and 16 images.

Every effect parameter on the control panel can be loaded into the on-board memory registers. More than 100 events can be stored in the CMOS RAM registers. These events can be combined into up to 10 separate programs stored. You have complete control over the event-to-event transition time, duration of incremental freeze, the number of automatic flips or tumbles as well as total, or global, program transition time. The memory is battery protected so your programs are safe even when the power is off. Additionally, the on-board memory can be saved on micro-floppy disks for long term storage and to be loaded into the system in the future.

**DVE 10**

In addition to the programmable memory, you have three event registers (scratch pads) available. Each takes a "snapshot" of the screen when pushed, and when pushed again, will restore the original screen. This can be extremely useful in programming precisely repeating effects.

The 3.5" micro-floppy disk used with the DVE System 100 has 19 sectors, each of which can hold the full 100 + events of the on-board memory. You control which sector will be used to store events, or which sector will be loaded into the DVE System 100 for editing or playback. The capability and ease of operation of this feature gives you quick access to any project, sequence, spot, commercial, open, close, and so on, that you are producing.

If for any reason one of the two fans used to cool the main shelf of the DVE System 100 stops, this alarm will alert you so that you can prevent equipment damage due to overheating.

DVE System 10 Digital Video Effects System

The DVE System 10 offers all of the features of the DVE System 100 plus 3-dimensional control and perspective. The system allows you to determine the angle of rotation about an axis. You place the center of rotation practically anywhere you wish. The size of the image, the position of the image on any of the three axes and the amount of perspective to be added to the image are continuously adjustable and completely under your control. You can even create 3 or 6 sided cubes at the push of a single button and then manipulate the cube as you wish. The DVE System 10 also has the ability to output a command word during A/B switchover that can signal your switcher to switch video inputs so that you can use a number of video inputs during a single edit. This capability can really save you time and effort. Another built-in function of the system is external key masking so you can use a key signal to mask the incoming video into the DVE System 10.

Compression Effects Package Upgrade for DVE System 10

Optional hardware/software upgrade package for DVE System 10 enhances the capabilities of NEC's digital effects generator to create a whole new range of compression effects normally associated with opticals produced on film, rather than video.

Consists of a hardware modification, adding one new board and modifying other existing system components. Once modified, the upgraded hardware is activated by new software (Version 4.0 of the operating system). Just like the previous Transition Effects Package option, the Compression Effects are essentially two-dimensional effects that provide a 3-D simulation.

Activated through the "soft" keys select menu, the software provides three new capabilities that involve the ability to manipulate and move each individual line of video within the image area.

FS-18/FS-19 Frame Synchronizers

- **TBC Optional** TBC for both direct and heterodyne VTRs. Being able to correct either type of VTR with your frame synchronizer gives you unlimited flexibility. The TBC also includes automatic input detection circuitry to recognize either a direct or heterodyne VTR and properly compensate. No manual switching is needed
- **Freeze Optional** freeze function uses a three line digital comb filter for better frequency response and no loss of picture resolution
- **Four-Field Memory Optional** expanded memory lets the synchronizer process four fields simultaneously. The entire four field signal is processed at one time to prevent 140ns picture shifting. This is especially important when both input and reference video meet RS-170A specifications
- **Data Rotation** Built-in data rotation and memory analyzer allow for quick diagnosis of suspected problems. By substituting the most important information in the memory for the least important, the data rotation feature provides protection from memory failure. Some signal degradation may occur but not complete signal loss
- **Separated sync output** to your external input video switcher for vertical blanking switching
- For processing amplifier and mode switching a single coaxial remote control cable is used, thus simplifying installation. This is valuable when the FS-18 will be used in temporary or remote locations
- Four times subcarrier sampling and 8-bit (FS-18), 10-bit (FS-19) quantizing to provide a totally transparent output signal
- Built-in interface with AS-18 Audio Lip Synchronizer

Small and lightweight, they have an optional time base corrector so they are suitable for use in remote locations or in a mobile studio truck.

Their design allows you to purchase only the features you require. Options for time base correction, freeze frame, and four field color processing are available as simple, plug-in boards.

Specifications FS-18/FS-19**Performance**

Bandwidth:	± 0.5dB 5MHz Heterodyne 2.4MHz (luminance)
K-Factor:	1% (2T pulse) Heterodyne 4% (2T pulse) Vertical tilt 1% Horizontal tilt 1%
Linearity:	Differential phase 2° (FS-18), 1° (FS-19) Differential gain 2% (F18), 1% (FS-19)
S/N Ratio:	53dB p-p/rms (FS-18), 60dB p-p/rms (FS-19)
Operating Temp.:	0°C-45°C
Input Signals	
Video Input:	1V p-p composite, 75 ohm
Ref. Video Input (For Sync, SC):	1V p-p composite, 75 ohm loopthrough Sync 1 ~ 4V p-p, SC 0.5 ~ 2V p-p, 75 ohm loopthrough
RF/DOS Input:	RF 0.5V p-p ± 3dB/DOS TTL level
Head SW Pulse:	TTL level
Output Signals	
Video Output 1:	1V p-p composite or 0.7V p-p non-composite
Video Output 2:	1V p-p composite or 0.7V p-p non-composite
Separated Sync Output:	4V p-p
Advanced Sync Output:	4V p-p
SC Feed Back Output:	2V p-p
Mechanical	
Dimensions:	5.25" H x 19" W x 19" D
Weight:	44 lbs. (FS-18), 33 lbs. (FS-19)
Power Requirements:	90 ~ 132VAC, 170VA (with full options)

NEC



FS-19

AS-18 Digital Audio Synchronizer

- 2 audio channels, third audio channel capability is optional
- Audio delay time up to a maximum of one second per channel. With optional memory, delay can be increased to a maximum of four seconds per channel
- Can be used with any frame synchronizer, but when combined with the FS-18 no fine offset adjustment is required
- With optional controls up to three audio channels can be controlled independently
- In non-video applications such as radio broadcast programming the AS-18 can be used as an audio delay line with a delay capability of up to a maximum of 12 seconds. This can be useful for monitoring and modifying (spot erasing) live radio broadcasts

The AS-18 is designed to give complete flexibility in matching audio to video, or in providing audio delay. The standard model can delay the audio signal up to one second; with optional memory, the delay time is as long as four seconds. This AS-18 is a perfect complement to the FS-19 Frame Synchronizer since, when combined with this unit, it can provide automatic compensation for audio-to-video delay without the necessity for fine offset adjustment. But that's just the beginning; in fact, the AS-18 is ideal for virtually any audio delay or audio timing application.

Options

- Audio-2 card for third audio channel
- Additional memory to extend the maximum delay time of up to three channels from one second to four seconds
- Independent control of three audio channels
- Remote control panel

Specifications

Sampling Frequency:	48kHz
Quantizing:	16-bits
Audio Input Level: (Channels 1-3)	-20dBm/0dBm, 10K ohms bal.
Input Video (Channels 1-3):	1V p-p loopthrough
Reference Video (Channels 1-3):	1V p-p loopthrough
Input Frame Pulse (Channels 1-3):	TTL level
Reference Frame Pulse:	TTL level
Audio Output Level (Channels 1-3):	-20dBm/0dBm 600 ohms bal.
Frequency Response:	+0.5, -1.0dB, 20Hz ~ 20kHz
Dynamic Range:	> 90dB
Third Harmonic Distortion:	Below 0.05%
Delay Time:	Max. 1 sec. (standard) Max. 4 sec. (optional)
Delay Step:	Min. 1ms
Power Requirements:	90 ~ 132VAC {110VA}
Dimensions:	3.5" H x 19.0" W x 19.7" D
Weight:	Approx. 33 lbs

NEC AMERICA, INC.

Microwave Link



TVL-800-6F TRANSMITTER

TVL-800 SERIES ENG MICROWAVE LINK

The TVL-800 Series Microwave Link is unmatched for size, weight, power and noise characteristics. It makes use of NEC's decade-long experience in solid-state television equipment manufacture. It features advanced electronic components such as C-MOS and FET devices, and simplified circuit designs to reduce power requirements and enhance the performance.

FEATURES

- Compact size and lightweight
- High-power output: 1-watt standard, optional 5-watt power amplifier
- Frequency stability and easy selection of more than ten switchable channels in the 7 GHz band
- Double heterodyne method of modulation employs 800MHz band SAW oscillator at the 1st local stage of the transmitter and the 2nd local stage of the receiver
- Simplified circuitry employing C-MOS and FET devices for lower power consumption
- Adaptable for use as a 70MHz IF transmission system
- 2 audio channels, standard

SPECIFICATIONS

Frequency Range	6,875 ~ 7,125MHz (10 Basic channels)
Frequency Stability	$\pm 5 \times 10^{-5}$
Transmitter Output Power	+ 30dBm nominal
Receiver	
Noise Figure	4.5dB
IF	70MHz
Video (Per Hop, NTSC/PAL Color TV, Emphasis CCIR Weighting, -40dBm Receive Carrier)	
Level	1V p-p/75 ohms
Signal-to-Noise Ratio (Thermal)	10kHz ~ 5.0MHz, min. 60dB (p-p/RMS)
Signal-to-Noise Ratio (Hum)	50dB (p-p/p-p)
Frequency Response	50Hz ~ 5.0MHz, within ± 0.5 dB
Differential Gain	10-50-90% APL, less than 1%
Differential Phase	10-50-90% APL, less than 1°



TVL-800-6F RECEIVER

Audio

Transmitter Input	0dBm, 600 ohms, balanced (Note 1)
Subcarrier	7.5MHz, 8.59MHz (Note 2)
Modulation	FM 70kMz RMS
Receiver Output	0dBm, 600 ohms, balanced (Note 1)
System Frequency Response	50Hz ~ 12kHz, within ± 0.5 dB
Distortion	50Hz ~ 12kHz, less than 1%
Signal-to-Noise Ratio	Min. 60dB

Power Requirements

Input Range	115VAC ± 10 + or 230V ± 10 % (with AC power pack) + 13.8V ± 15 %
Battery	AC approx. 20VA DC approx. 18W
Power consumption	

Connectors

Video	BNC Type
Audio	XLR Type
IF	BNC Type

Antenna

Gain/VSWR	
0.3m	Min. 22dB/VSWR ≤ 1.5
0.5m	Min. 26.5dB/VSWR ≤ 2

Ambient Conditions

Temperature	
Specification	-10°C ~ +45°C
Operating	-20°C ~ +50°C
Relative Humidity	Up to 95% in normal temperature range

Physical Data

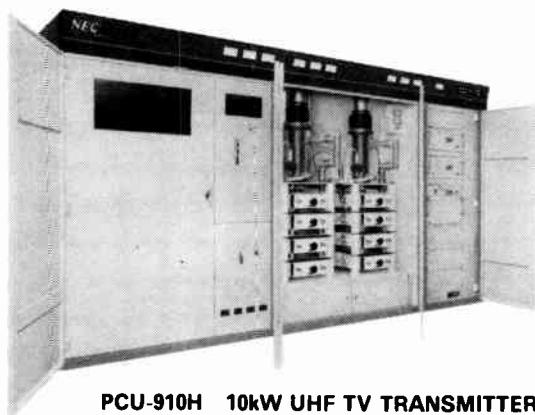
Dimensions	
Transmitter/Receiver	4.8"W x 3.6"H x 9.3"D (122 x 92 x 236mm)
Weight	
Transmitter	Approx. 1.8kg
Receiver	Approx. 2.2kg

Notes:

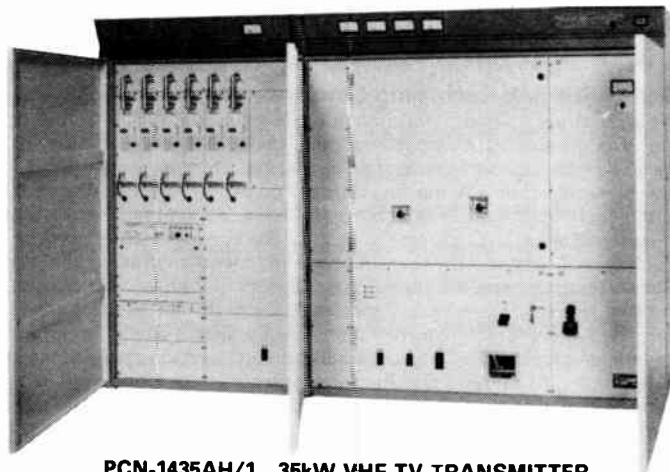
- 1) Other levels are applicable.
- 2) This subcarrier is used for 2-channel audio.

FREQUENCY AND CHANNEL NUMBER

TVL-800-6F		
6875 ~ 7125MHz	10CH	FCC Standard



PCU-910H 10kW UHF TV TRANSMITTER



PCN-1435AH/1 35kW VHF TV TRANSMITTER

PCU-900 SERIES UHF TELEVISION TRANSMITTERS

PCU-900 series provides high-performance exciter, wide-band klystron power amplifier, high reliability, stability with power ranges of up to 120kW and frequency coverage of 470 to 860MHz. Also, it meets all FCC and CCIR standards and provides excellent color transmission in either NTSC, PAL or SECAM standard.

With the recent hybrid IC technology and developed circuit techniques, the quantity of parts has been considerably reduced, resulting in longer MTBF.

Transmitter output deviation can be limited by a pedestal AGC circuit in which the output is sampled during blanking periods, detected to obtain the blanking level, fed back to the exciter, then compared with the reference voltage for controlling the exciter output. The transmitter maintains constant output.

Local frequency long term stability of 0.5×10^{-4} per year is available by the frequency synthesizer which is locked in the internal 10MHz crystal oscillator frequency. The synthesizer enables channel frequency to be changed easily.

SAW vestigial sideband filter uses LiTaO₃ (Lithium Tantalate) as the substrate, with which temperature stability of -18 ppm/ C can be obtained without oven.

Efficiency of the klystrons is typically 45% obtained by virtue of a unique linearity correcting circuit at the IF stage. These klystrons have frequency coverage of 470 to 860MHz.

Beam current of visual klystron is controlled by applying different voltages to the modulating anode or modulation electrode during sync portion and picture portion to reduce the effective power consumption on the collector.

The high-efficiency klystrons in cooperation with beam control greatly reduces the power consumption. Also, the type of klystrons used are readily available for rapid replacement if necessary.

The equipment has the provision to allow for dual sound broadcasting system. Design schedule of the transmitter is in conformity with IEC Publication No. 215.

PCU-900 SERIES

Type of Transmitter	Output Power (kw)		Power Consumption (kw)		Klystron	W (in)	D (in)	H (in)
	Visual	Aural	w/o pulser	with pulser				
PCU-910H	10	1	34~37	29~31	YK1223/K3270	150.0	47.2	78.7
PCU-920H	20	2	60~68	49~56	YK1233/K3271	150.0	47.2	78.7
PCU-930H	30	3	84~95	68~76	YK1233/K3271	185.0	47.2	78.7
PCU-960H	60	6	166~186	132~148	YK1265	244.1	47.2	78.7
PCU-912KS	120	12	321~360	254~284	YK1265	268.9	118.1	78.7

NOTE: These values are approximate figures.
These values depend on channel and system, not including external cooling equipment.

PCN-1400 SERIES VHF TELEVISION TRANSMITTERS

The PCN-1400 series provides high-performance exciter, high-power transistor power amplifier, high reliability, stability with power ranges of 1 to 35kW, and VHF channel frequency coverage from band I to band III. Also, it meets all FCC and CCIR standards and provides excellent color transmission in either NTSC, PAL or SECAM standard.

NEC's high-power and high-gain transistors with a minimum number of stages provide an output of 600 watts and cover the whole frequency range of whole band III.

Self protection is provided against thermal runaway of transistors caused by over input, instantaneous output short circuit, or excess temperature rise of cabinet.

Designed grid vacuum tube power amplifier uses a computer-aided design printed circuit board to assure broadband frequency coverage without any tuning.

Only one RF coaxial output provides simple equipment configuration.

PCN-1400 SERIES

Type of Transmitter	Visual Output Power	Power Consumption (kW)	W (in)	D (in)	H (in)
PCN-1401SH/1	1kw	3.8	31.9		
PCN-1402SH/1	2kw	6.9	41.3		
PCN-1405AH/1	5kw	14	63.0		
PCN-1410AH/1	10kw	24.7	63.0	39.4	74.8
PCN-1413AH/1	13kw	30	63.0		
PCN-1420AH/1	20kw	47	102.8		
PCN-1425AH/1	25kw	57	112.2		
PCN-1435AH/1	35kw	70	153.5		

A: Quantity of tube, 1 H: Band III
S: All solid state 1: Aural/visual rate, 1/10

NEOTEK CORP.

Recording Console

Elite Multitrack Recording Console

The elite offers contemporary multipurpose studios flexible architecture, a large number of input channels, bandwidth and isolation for digitally synthesized tracks, and noise and distortion superior to digital recorders. Signal flow in the elite is based on two separate audio paths within each input module which may be operated independently or in concert, allowing the operator to modify the console architecture for specific applications. These paths have independently selectable inputs and outputs and the filters, insert points, parametric equalizers, and auxiliary sends can be assigned to either path. The result is easily controlled power and flexibility which only the elite's dual channel approach can provide. The comprehensive master section provides logic mute groups, four-way solo functions, and complete monitoring, metering and slating facilities. The elite achieves superlative sonic performance with transformerless design and a new generation of non-op amp hybrid circuits.

The elite is available with frame widths of 28, 32, 36, 40, 48, 56 and 64 input module positions. Custom and partially filled frames are available. Metered Stereo Input Modules may be substituted for standard mike/line Input Modules.

Specifications

Bandwidth: 10Hz to 25kHz, full level .2dB
Distortion: Mike or line input to bus output .01%
Output: Balanced 26dBm
Noise: 1 channel to stereo master, 31 muted, fader-up -90dBu
 24 channels to stereo master 8 muted, faders up -82dBu

Crosstalk: Stereo L/R through mix pan -95dB
 Between multitrack buses -100dB
 Between fader and monitor channels -90dB
 To auxiliary buses -90dB
 Mute to stereo mix -95dB

Physical Dimensions: Height at meter bridge 40.8"
 Height at arm rest 29.0"
 Front to rear 43.5"
 Width, 32 input frame 80.3"
 Width, 40 input frame 94.5"
 Width, 48 input frame 110.3"
 Width, 56 input frame 128.0"
 Width, 64 input frame 143.2"

Complete console system includes:

- Oak hardwood frame with leg set, and integral left-side patch bay
- 28 forty-segment peak/VU high resolution metering system
- 1 pair moving coil VU metering system
- Input modules, effects return module, auxiliary/cue master module, stereo master module, and monitor/communications module
- ELCO 8016 multipin I/O connection system
- Rackmount power supply
- Installation and operation manuals
- Spare parts kit including service fixtures

Elite 328 console system, 28 input modules/frame . . . \$46,400.00
 Elite 332 console system, 32 input modules/frame . . . 51,500.00
 Elite 336 console system, 36 input modules/frame . . . 56,700.00
 Elite 340 console system, 40 input modules/frame . . . 62,500.00
 Elite 348 console system, 48 input modules/frame . . . 71,200.00
 Elite 356 console system, 56 input modules/frame . . . 80,400.00
 Elite 364 console system, 64 input modules/frame . . . 88,500.00

Options

Stereo input module substituted at input position 27 and up . . . \$155.00
 High resolution stereo LED meter for S.I.M. . . . 275.00
 Moving coil VU meter for mono output . . . 190.00
 High resolution bargraph phase meter . . . 300.00
 Mono output master fader . . . 150.00
 Mono Penny & Giles fader substituted for standard fader. . . . 75.00
 Stereo Penny & Giles fader substituted for standard fader . . . 135.00
 Additional installed 72 point auxiliary gear patchbay for row elite 328-336. . . . 845.00



Elite

Additional installed 80 point auxiliary gear patchbay row for elite 340 . . . \$ 925.00
 Additional installed 96 point auxiliary gear patchbay row for elite 348 . . . 1,150.00
 Additional installed 56 point auxiliary gear patchbay rows for elite 356. . . . 1,450.00
 Additional installed 56 and 72 point auxiliary gear patchbay rows for elite 364. . . . 1,550.00
 Unwired tape machine remote panel in fader bay with 5 illuminated switches. . . . 300.00
 Wired tape machine remote panel in fader bay with 5 illuminated switches. . . . 425.00
 Timer/auxiliary gear remote control panel in fader bay with 6 switches 180.00
 Relocate patchbay to console's right side 1,200.00
 Integral 19" right side desk area 900.00
 Integral 34" right side desk area 1,500.00
 8-Input stereo line selector module 235.00
 12-Input stereo line selector module with patchbay row and drivers. . . . 2,700.00
 Dual 8-input stereo line selector module 455.00
 12-input stereo select module wired to I/O connector 455.00
 Remove input module and fader, replace with blank panels. . . -750.00
 Remove stereo input module and fader, replace with blanks -650.00

Spares

Input module \$ 925.00
 Stereo line/input module 880.00
 Module blank panel 55.00
 Fader blank panel 40.00
 High resolution peak/VU LED bargraph meter. . . . 125.00
 Standard fader module 100.00
 Penny & Giles mono fader module 145.00
 Penny & Giles stereo fader module 210.00
 Power supply 1,000.00
 ELCO/EDAC 8016 120 pin mating connector and gold pins . . . 55.00

1. Other configurations are available (i.e. frame sizes, woodwork, auto-switchover power, etc.) Contact your dealer for pricing.
2. Automation and synchronizer interfaces are available on request.
3. Crating and freight charges are additional.

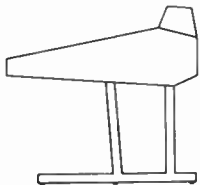
NEOTEK CORP.**Recording Console/Controller****elan Multitrack Recording Console**

The elan provides contemporary multipurpose recording studios with flexible signal flow architecture, bandwidth and isolation performance to handle multiple synthesizer tracks, and noise and distortion superior to digital recorders. Input modules feature microphone and line level inputs, four-band sweep equalizer, six auxiliary sends, assignment to 24 multitrack buses, and a high resolution bargraph meter. The elan affords a second input through each module, doubling the console's capacity to provide 72 inputs and 30 auxiliary buses in a 6' wide frame. The console's performance, flexibility, and capacity make it perfect for complex modern recording and MIDI virtual track mixdown.

The elan is available in frame formats accommodating 28 or 36 input module positions. Standard consoles feature gold ELCO multipin I/O connectors, leg set, and comprehensive patch bay using metal frame Bantam jacks. Fader module options provide logic mute groups with in-place solo, Neotek/JL Cooper MIDI mute automation, or factory installed Audio Kinetics or Digital Creations automation.

Specifications

Bandwidth:	20Hz to 20kHz, full level \pm .2dB
Distortion:	Mike or line input to stereo output .01%
Noise:	1 channel to stereo master, 27 muted -88dBu 24 channels to stereo master, 4 muted -80dBu
Crosstalk:	Stereo L/R through channel pan -94dB Between multitrack buses -96dB To auxiliary buses -92dB Mute to stereo mix -94dB

Physical Dimensions:

Height at meter bridge 39.3"
Height at arm rest 29.0"
Front to rear 38.8"
Width, 28 input frame 64.3"
Width, 36 input frame 76.9"

Complete Console System Includes:

- Oak hardwood frame with leg set, and integral left-side patch bay
- 26 Peak/VU bargraph meters • Input modules, fader modules and master/monitor module • ELCO 8016 multipin I/O connection system with mating connectors • Rackmount power supply • Installation and operation manuals • Spare parts kit and service fixtures

elan 228 console system, 28 input modules/frame \$31,150.00
elan 236 console system, 36 input modules/frame \$37,600.00

Options

Mono Penny & Giles fader substituted for standard fader . . .	\$ 75.00
Stereo Penny & Giles fader substituted for standard stereo fader	210.00
Unwired tape machine remote panel in fader bay with 5 illuminated switches	275.00
Wired tape machine remote panel in fader bay with 5 illuminated switches	350.00
Timer/auxiliary gear remote control panel in fader bay with 6 switches	130.00
Remove input module and replace with blank panels	480.00
Additional patchbay for aux. gear	845.00

Spares:

Input module	\$ 510.00
Standard fader module	85.00
Mute group logic module	130.00
Penny & Giles mute group logic fader module	205.00
Penny & Giles stereo fader module	210.00
Power supply	1,000.00
ELCO 8016 120-pin mating connector and gold pins	55.00

**MIDI Direct Microprocessor Controller**

Automation of a console's mute functions provides nearly all the benefits of traditional fader automation. When the comprehensive logic-controlled mute systems of Neotek consoles are combined with MIDI Direct, automation of mutes on the MIDI bus becomes simple, powerful, and affordable. Studios are now able to integrate their MIDI based synthesizer and editing systems with fully professional consoles that provide exceptional flexibility and sonic performance.

MIDI Direct provides read, write, and update of the mute functions on elite and elan consoles; this includes the mute group meters. The data for these commands is sent to the MIDI bus and is stored and replayed by any standard sequencer. The data rate is very low, so even the least expensive sequencer can store more than an album's worth of data in its random access memory. MIDI Direct makes your MIDI system think your console is a powerful musical instrument.

Complete MIDI System Includes:

- MIDI Direct microprocessor controller • Control panel with MIDI In/Out jacks • Installation and operation manuals

28 Input MIDI Direct system	\$2,650.00
32 Input MIDI Direct system	2,850.00
36 Input MIDI Direct system	3,050.00
40 Input MIDI Direct system	3,250.00
48 Input MIDI Direct system	3,650.00
56 Input MIDI Direct system	4,050.00
64 Input MIDI Direct system	4,450.00

Prices above are for systems installed in consoles prior to shipment.

All components mount entirely within the console.

For field retrofit of MIDI Direct, please contact the factory for details.

1. Other options are available (i.e.: flight case, woodwork, auto-switchover power, etc.) Contact your dealer for pricing.
2. Direct Digital Interface for isolated remote logic control off mutes available.
3. Crating and freight charges are additional.

Essence Series Multitrack Recording Console

The Essence series of Neotek consoles was designed specifically to increase the quality and productivity of multitrack effects layout, ADR, and Foley recording. Its audio performance and flexibility also suit it for uses in broadcast-oriented post production applications and in synthesizer sampling and assembly.

A group of 16, 24 or 32 monitor modules provide for monitoring with reference to the multitrack tape machine or an equivalent assembly of record/reproduce functions. A small number of input modules with high quality microphone preamplifiers and powerful parametric equalizers and filters handles input signals. These input modules pan to four mixing buses, the main stereo mix bus, and to another stereo bus which routes to all odd and even tracks of the multitrack recorder. A master section provides extensive monitoring, soloing, and logic control functions. The desk area in the frame includes space for a synchronizer keyboard as well as scripts and cue sheets. The system is completed by a metering section and a comprehensive patch bay.

Essence consoles directly accept various tally lines to facilitate harmonious operation with tape machines, machine synchronizers and computerized editors.

Input Module/Equalizer Functions

Essence input modules provide both microphone and line level inputs, each with wide range gain controls. The microphone preamp is a solid-state hybrid circuit which adds less than .5dB to the intrinsic noise of the microphone at its input. PAD switch makes it ideal for sources such as synthesizers and even consumer CD or R-DAT machines.

The equalizer is a powerful four-band state variable multimode parametric. It provides non-interacting peak/dip, narrow band, and shelving modes at continuously variable frequencies. Band centers from 20Hz to 20kHz are provided. The high-pass filter allows very selective removal of low frequencies which might be picked up by quality microphones and passed by the exceptionally wide bandwidth of the console. The low-pass filter allows removal of high frequency noise from older effects libraries, or adjusting the audio bandwidth for digitally recorded material.

Buses

Input modules also provide two auxiliary mix buses, each with pre/post and on/off switching. The main signal in the module is muted by a silent, ramped discrete FET circuit having very high isolation. Logic control of the mute allows assignment to three master groups, a local or ungrouped mode, a Solo Safe function for the in-place solo mode (also termed exclusive mute, or destructive solo), and control by other logic sources such as external GPI lines or an internal MIDI/SMPTE mute automation computer.

The main input module signal is routed from a 100mm linear fader and pan pot to mix buses 1, 2, 3 or 4. These are available in the patch bay, as are the direct outputs from input modules 5 and up. Input modules also assign to the main stereo Mix bus, which is typically used for monitoring and so also includes signals from the monitor modules. Each input module also pans to the Ready Bus. This bus goes, through a stereo insert in the patch bay and high current buffers, to every odd and even track of the multitrack recorder which has the Record Ready switch pressed on its corresponding monitor module.

Solo Modes

In-place solo is an exclusive mute; when this mode is enabled, all other signals into the bus will be muted except those whose Solo switches are pressed. Two master section switches enable the in-place solo action: In-Place Solo Enable/Monitors and In-Place Solo Enable/Inputs. The enabling refers to the location of the solo switch which will cause in-place solo; all monitor modules and all input modules will be affected unless they are individually switched to solo safe. If neither switch is latched, pressing a Solo switch will cause its module's pre-fader signal to be isolated in the monitoring or auxiliary mix.

Monitor Modules

The complement of monitor modules is grouped behind the input modules in a steeply inclined section of the frame. Standard Essence configurations provide 16, 24 or 32 monitor modules, reflecting the requirements of layout onto multitrack recorders. An additional monitor module can be provided as an easy means of controlling beeps.

Monitor modules have two Solo switches, allowing their signal to be soloed in two different mixes: the main stereo mix and the auxiliary foldback mixes.



The two send controls to auxiliary buses have an associated Solo switch, distinct from the module's Solo switch, which isolates soloed auxiliary sends in the auxiliary mix only. Like input modules, monitor modules are muted with a special logic controlled FET circuit. They also have assignment to the three master mute groups, a local mode, a Solo Safe function for the in-place solo mode, and may be controlled by other logic such as external GPI lines or an internal MIDI/SMPTE computer. Each monitor module has a switch and LED labeled Record Ready. When pressed, this switch arms the associated track of the multitrack recorder and applies signal from the ready bus to that track's input.

The ready bus has its own pair of high resolution Peak/VU bargraph meters, insert point in the patch bay, and high current balanced buffer amps. Essence accepts command lines directly and mutes the control room and studio speaker feeds (but not the talent headphone feed, which otherwise duplicates the studio speaker mix). The Essence allows a listen mode to be actuated automatically by a logic command line from the synchronizer or tape machine. In this mode, rewind noise from machines is automatically muted, but input modules with their Listen switch pressed are heard in the monitors as if they were soloed. An exterior logic port is provided to the listen mode so that talent on the stage can manually engage listen mode by a simple low voltage switch closure to ground.

Meter Bridge

The meter bridge area provides high-resolution LED meters which switch individually or simultaneously between peak and VU ballistics. Also in the meter bridge is a small loudspeaker. When the master section switch labeled Listen + Solo to Bridge Speaker is latched, those signals will appear in the meter bridge speaker and the control room monitor mix will then be unaffected. The Essence provides an optional overpress cue function for faders on input modules.

24 monitors, 4 input modules	..... \$21,690.00
24 monitors, 8 input modules	..... 25,450.00
32 monitors, 4 input modules	..... 29,690.00
32 monitors, 8 input modules	..... 33,450.00
Remove input module and meter, replace with blank panel	..... -700.00
Remove monitor module, replace with blank panel	..... -575.00

Options

MIDI direct, mute automation system	..... module/\$1,250.00 + 50.00
Direct Digital Interface (DDI)	..... module/60.00
Overpress cue on input modules, includes	
P & G fader	..... module/100.00 + 185.00
Additional monitor module, fully wired to	
I/O and bay	..... 950.00
12-Input stereo line select module with drivers	
and companion patch bay row	..... 2,700.00
Auxiliary patch bay, fully wired	..... 1,300.00
P & G fader on input module, substitute	..... 75.00
P & G fader on monitor module, substitute	..... 73.00
P & G stereo fader, substitute	..... 135.00
Add wired microswitch to P & G fader	..... 48.00

GEORG NEUMANN GMBH

Professional Condenser Microphones

KMF 4mt Condenser Microphone with Remote Amplifier

The KMF 4mt Microphone consists of an amplifier unit and a miniature condenser microphone capsule with impedance converter connected by a cable.

Specifications

• Acoustical operating principle: Pressure gradient transducer • Polar pattern: Cardioid • Frequency range: 40Hz to 20kHz • Sensitivity: 14mV/Pa • Source impedance: 150 ohms • Minimum load impedance: 750 ohms • S/N ratio according to DIN 45 590 (ref. level 1 Pa): 69dB • Equivalent noise (weighted noise level according to DIN 45 590): 25dB • A-weighted equivalent loudness level due to inherent noise (IEC 179): 17dB • Power supply (P48, DIN 45 596): 48V ± 4V Phantom-powering • Current consumption: 0.9mA • Minimum operating time on batteries: 10 hours • Required cable connector: A3F Switchcraft • Weight: 20g • Dimensions: 17mm in diam., 38mm long and 21mm in diam., 132mm long

KMF 4mt matte finish \$925.00

KMR 81 Condenser Microphone

The KMR 81 is a studio condenser microphone featuring excellent directional characteristics for its relatively compact dimensions and low weight. Supplied in matte or satin finish.

Applications

• Pickup from the stage with simultaneous audience, reinforcement feed • Ideal instrument/section isolation, e.g., in orchestra or bands • Outdoors news coverage or in a noisy environment • As a handheld microphone for vocalists • On the conference podium

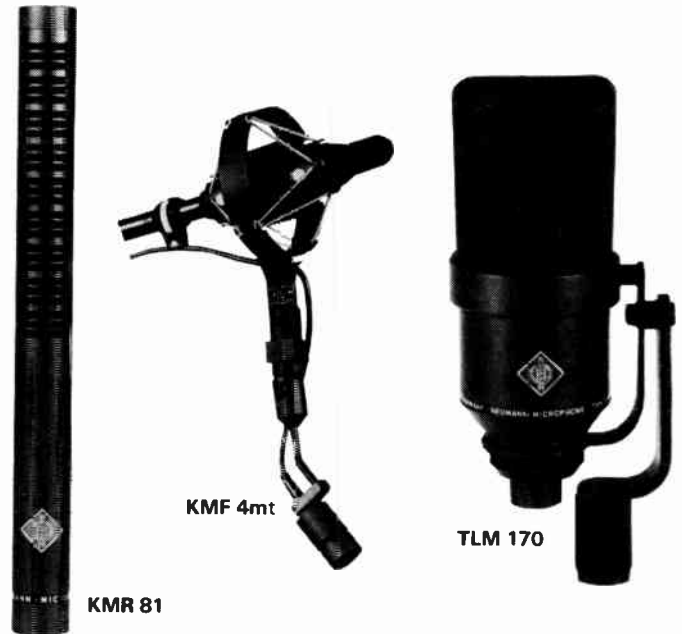
Specifications

• Acoustical operating principle: Pressure gradient-interference transducer • Polar pattern: Super-cardioid/lobe shaped • Frequency range: 40Hz to 18kHz • Sensitivity: 16mV/Pa • Source impedance: 150 ohms • Minimum load impedance: 750 ohms • S/N ratio according to DIN 45 590 (ref. level 1 Pa): 75dB • Equivalent noise (weighted noise level according to DIN 45 590): 19dB • A-weighted equivalent loudness level due to inherent noise (IEC 179): 12dB • Power supply (P 48, DIN 45 596): 48V ± 4V Phantom powering • Current consumption: 0.8mA • Minimum operating time on batteries: 10 hours • Required cable connector: A3F Switchcraft • Weight: 145g • Dimensions: 21mm diam., 226mm long

KMR 81 \$975.00

TLM 170 Condenser Microphone

The TLM 170 condenser microphone is the first transformerless microphone of the FET 80 series. The direct, balanced signal output was achieved through the use of an electronic circuit, while maintaining a high degree of interference freedom and low current consumption. It reduces the self-noise level of the microphone compared to similar types. Five directional characteristics may be selected: omni, wide cardioid, cardioid, hypercardioid and figure-8. Excessive output levels, caused by high sound pressure levels, may be reduced by a 10dB attenuation slide switch, while another switch rolls off frequencies below 100Hz to eliminate low frequency interference. This microphone may be operated from the usual 48V phantom powering circuits but will perform identically when operated from a 24V phantom source as well, without the need for switchover. The TLM 170 is equipped with a tiltable, elastically suspended mounting bracket, which isolates the microphone. Supplied in matte or satin finish.



Specifications

• Acoustical operating principle: Pressure gradient transducer • Polar pattern: Omni/wide angle cardioid/cardioid/hypercardioid/figure-8 • Frequency range: 40-18,000Hz • Sensitivity at 1kHz: 8mV/Pa ± 1dB • Source impedance: 100 ohms • Minimum load impedance: 750 ohms • Equivalent weighted selfnoise level: CCIR 468-1 26dB, DIN 45 405 22dB • S/N ratio according to DIN 45 590 (ref. level 1 Pa) 72dB • A-weighted equivalent loudness level due to inherent noise (ref. level 1 Pa, IEC 179, DIN 45 643) 14dB • Maximum SPL for 0.5% THD at 1kHz with pre-attenuation max. output voltage 140dB±200 Pa, 150dB±631 Pa, 1600mV • Total dynamic range of the microphone amplifier (Referred to IEC 179 weighted equivalent loudness level) 126dB • Phantom powering (P48, IEC 268-15 A, DIN 45 596) current consumption 48V ± 4V 2mA • Or phantom powering (P 24, IEC 268-15 A, DIN 45 596) current consumption 24V ± 4V 4mA • Required cable connector: A 3 F • Weight: 22 oz. (625g) • Dimensions: 2.4" (60mm in diam) 6" long (152mm)

TLM 170 \$1750.00

RSM 190S Condenser Stereo Microphone System

Stereo Shotgun condenser microphone system combines hypercardioid capsule with a short interference tube and a figure 8 capsule at right angles. MTX 190 active matrix amplifier provides either M-S or X-Y output and remotely switchable directional characteristics includes WSR 30 foam wind screen, KT 3 interconnect cable and AC 20 adaptor cable; supplied in matte finish and packaged in an aluminum carrying case.

Specifications

• Acoustical operating principle: Middle—pressure gradient interference transducer, Side—Pressure gradient transducer • Polar pattern: hyper-cardioid figure-8 • Frequency range: 40Hz-18kHz • Sensitivity, at 1kHz: 30mV/PA, ± 1dB • Side-signal, adjustable: -9, -6, -3, 0, +3, +6dB • Source impedance: 50 ohm • Minimum load impedance: 1000 ohm • Max SPL for 0.5% THD at 1kHz: 132dB, +79PA • Max. output: 2450mV • Power supply, P48, DIN 45 596: 48V, ± 4V • Current consumption: 2 x 1.8mA • Required cable connectors: 2 x (3AF) Switchcraft • Weight, RSM 190: 270g • Dimensions, RSM 190: Ø 30mm x 212mm • Dimensions, MTX 190: 145 x 80 x 37mm • Dimensions, carrying case: 480 x 380 x 140mm
1PA = 10 µBAR
0dB = 20µPa

RSM 190S \$2445.00

GEORG NEUMANN GMBH

Professional Condenser Microphones

KMR 82 Condenser Microphone

The KMR 82 is highly overload-proof and has a remarkably low noise level. Its current consumption of 0.7mA, its light weight of 250g and its insensitivity to wind noise and handling noise make it also ideally suited for on-the-spot reporting. For outdoor use an additional protection from wind is recommendable. For this purpose an expanded polyurethane windscreens WS 82 is available, which doubles as soft padding when the microphone is in its leather carrying case (the WS 82 and the leather carrying case are standard accessories of the microphone).

Specifications

- A-weighted equivalent loudness level due to inherent noise (IEC 179): 12dB • Max. SPL for 0.5% THD at 1kHz: 128dB • Max. output: 1050mV • Power supply (P 48, DIN 45 596): 48V ± 4V phantom powering • Current consumption: 0.7mA • Minimum operating time on batteries: 10 hours • Required cable connector: A3F Switchcraft • Weight: 250g • Dimensions: 395mm long, 21mm in diameter • Acoustical operating principle: Pressure gradient-interference transducer • Polar pattern: Lobe shaped (shotgun) • Frequency range: 40Hz-20kHz • Sensitivity: 21mV/Pa • Source impedance: 150 ohm • Minimum load impedance: 1000 ohm • S/N ratio according to DIN 45 590 (ref. level 1Pa): 75dB • Equivalent noise (weighted noise level according to DIN 45 590): 19dB

KMR 82\$1080.00



KMR 82



KMS 84



U 89



U 87Ai

KMS 84 Condenser Microphone

The KMS 84 soloist condenser microphone. An acoustical filter in front of the condenser capsule and the use of an overload-proof operational amplifier prevent overloads caused by the sub-audio parts of sibilants and explosives. At the same time, the individual speech characteristics of the vocalist are transmitted with the brightness typical of condenser microphones.

Specifications

- Polar pattern: Cardioid • Frequency range: 40-18,000Hz • Sensitivity: 5mV/Pa ± 1dB • Source impedance: 150 ohms • Minimum load impedance: 1000 ohms • S/N ratio according to DIN 45 590 (ref. level 1 Pa): 69dB • Max. SPL for 0.5% THD at 1kHz: 138dB • Power supply (P48, DIN 45 596): Phantom powering

KMS 84\$1140.00

U 89 Condenser Microphone

The U 89 microphone, similar in shape but smaller than the U 87 is a studio microphone with switchable directional patterns. Its grille houses dual-membrane capsule with a particularly linear frequency response for all polar patterns. In order to protect the capsule from mechanical shock transmission it is elastically suspended. A rotary switch beneath the grille permits selection of one of 5 directional patterns. This makes the U 89 highly adaptable to both large instruments and wide sound sources and makes it suitable for distant pick-ups as well.

Specifications

- Polar pattern: Omni/wide-angle cardioid/cardioid/hyper-cardioid/figure-8 • Frequency range: 40-18,000Hz • Sensitivity: 8mV/Pa ± 1dB • Source impedance: 150 ohms • Minimum load impedance: 1000 ohms • S/N ratio according to DIN 45590 (ref. level 1 Pa): 70dB • Max. SPL for 0.5% THD at 1kHz: 134dB, with sensitivity reduction: 140dB • Power supply: 48 ± 4V • (P 48, DIN 45 596): Phantom-powering

U 89\$1700.00

Options

- U 89Z** w. EA 89 elastic suspension replacing SG 389\$165.00
- U 89S** w. IC 4/25 elegant swivel-ended cable.\$86.00

U 87 Ai Condenser Microphone

The U 87 Ai condenser microphone is a studio microphone with excellent pick-up characteristics, a number of special features, and a most attractive outward form. It is well suited for a wide variety of applications in recording, broadcasting, television and motion picture studios. The capsule features two polyester foil membranes which are gold vapor deposited. Beneath the grille protecting the capsule are 3 separate switches for the selection of the directional pattern, frequency response and pressure sensitivity. The microphone can therefore be especially recommended for close range use without a resulting unnaturally harsh sound.

Specifications

- Sensitivity at 1kHz — 20/28/22mV/Pa (omni/cardioid/figure-8) — ± 1dB • S/N ratio (according to 1 Pa, DIN 45590) — 72/75/73dB • Equivalent noise (DIN 45590) — 22/19/21dB • A-weighted equivalent loudness level due to inherent noise (DIN 45634, IEC 179) — 15/12/14dB • Max. SPL at 1kHz for 0.5% THD (cardioid) — 117dB 14Pa — with sensitivity reduction — 127dB 45Pa • Max. output voltage — 390mV • Power supply — (P 48, IEC 268-15A) — 0.8mA

U 87Ai 3-Pattern switchable studio condenser mike, incl. SG 367 swivel, WS 87 windscreens and IC 3/25 cable\$1875.00

Options

- U 87Z** w. Z 48 elastic suspension repl. SG 367.\$165.00
- U 87S** w. IC 4/25 elegant swivel-ended cable.\$86.00



KM 83



KM 84



KM 85

KM 84 Condenser Microphone

The KM 84 miniature microphone has a cardioid directional pattern and is outstanding because of its nearly frequency-independent directivity. Its capsule works according to the pressure-gradient transducer principle and features an acoustical delay network.

Specifications

- Polar pattern: Cardioid • Frequency range: 40-20,000Hz • Sensitivity: 10mV/Pa ± 1dB • Source impedance: 200 ohms, switchable to 150 ohms and 50 ohms • Minimum load impedance: 1000 ohms/250 ohms • S/N ratio according to DIN 45 590 (ref. level 1 Pa): 70dB • Max. SPL for 0.5% THD at 1kHz: 120dB, with sensitivity reduction: 130dB • Power supply: 48V 4V, (P 48, DIN 45 596): Phantom-powering

KM 84\$485.00

KK 83, 84, 85 Microphone Capsules

Microphone capsules for KM83, KM84, KM85 may be quickly converted to any other directional characteristic by installing the appropriate screw-in condenser capsule.

KK 83, 84, 85\$285.00

KM 83 Condenser Microphone

The KM 83 miniature condenser microphone is a pressure transducer with gold sputtered polyester membrane and omni-directional pattern. The self-resonance of its membrane lies in the high frequency domain. The frequency response of the KM 83 is linear except for a desirable slight rise at the high frequency end.

Specifications

- Polar pattern: Omni • Frequency range: 40-20,000Hz
- Sensitivity: 7mV/Pa ± 1dB • Source impedance: 200 ohms, switchable to 150 ohms and 50 ohms • Minimum load impedance: 1000 ohms/250 ohms • S/N ratio according to DIN 45 590 (ref. level 1 Pa): 67dB • Max. SPL for 0.5% THD at 1kHz: 120dB, with sensitivity reduction: 130dB • Power supply: 48V 4V, (P 48, DIN 45 596): Phantom-powering

KM 83\$485.00

KM 85 Condenser Microphone

The KM 85 miniature microphone has a cardioid directional pattern and is a special version of the KM 84 with its virtually frequency-independent directivity. In addition, the KM 85 intentionally attenuates more distant low-frequency sounds such as undesirable sound from sources nearby as well as wind noise (12dB at 50Hz), while close-up sound sources will be recorded with linear frequency response.

Specifications

- Polar pattern: Cardioid • Frequency range: 40-20,000Hz • Sensitivity: 9mV/Pa ± 1dB • Source impedance: 200 ohms, switchable to 150 ohms and 50 ohms • Minimum load impedance: 1000 ohms/250 ohms • S/N ratio according to DIN 45 590 (ref. level 1 Pa): 69dB • Max. SPL for 0.5% THD at 1kHz: 120dB, with sensitivity reduction: 130dB • Power supply: 48V ± 4V, (P 48, DIN 45 596): Phantom-powering

KM 85\$485.00

GEORG NEUMANN GMBH

*Professional Condenser Microphones/
Accessories*



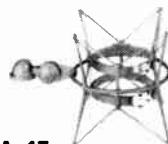
EA 21



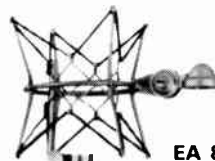
Z 48



Z 26



EA 47



EA 89



USM 69



SM 69 fet

SM 69 fet Stereo Condenser Microphone

The SM 69 fet stereo condenser microphone is a studio microphone for high quality stereo recordings. The microphone head houses two completely separate condenser elements, mounted one above the other. The SM 69 fet also contains two completely separate microphone preamps.

The upper capsule may be rotated against the lower one through an arc of 270 degrees. The directional patterns of both systems may be selected by remote control independently of one another.

Specifications:

- Polar Pattern: Omni/cardioid/figure-8 and intermediary patterns
- Frequency range: 40-16,000Hz • Sensitivity: 19mV/Pa ± 1dB
- Source impedance: 200 ohms, switchable to 150 ohms and 50 ohms
- Minimum load impedance: 1000 ohms/250 ohms • S/N ratio according to DIN 45,590 (ref. level 1 Pa) -74dB • Max. SPL for 0.5% THD at 1kHz-123dB • Power supply (P 48, DIN 45,596): 48V ± 4V phantom powering

- SM 69 fet \$3840.00
- Option
- NS 69 AC power supply to replace CU 48 120.00

USM 69 Stereo Condenser Microphone

Same as above but direct dual pattern switches located on the microphone itself, eliminating need for CU 48 box

- USM 69 \$3490.00

KU 81 Stereo Condenser Microphone

Fritz II dummy binaural system, includes mikes, AC supply and cables (battery supply available at extra cost). Stereo compatible.

- KU 81 \$3990.00

Transformers

- Z 240 Matrixing transformer pair for use with M-S stereo mikes (sum + difference). \$835.00
- BV40135 Plug-in isolation transformer Lo-Z/Hi-Z (1:15) 50.00

Suspensions:

(all equipped with 5/8-27 thread)

- EA 21 Elastic suspension for KM 83/4/5/86/88 and KMS 84 \$105.00
- EA 2124 Elastic suspension w. adjustable inside diameter 135.00
- EA 30a Elastic suspension for SM 69 fet & USM 69 225.00
- EA 30b Elastic suspension for RSM 190, dark matte finish 225.00
- EA 47 Elastic suspension for U 47 fet 225.00
- EA 82 Elastic suspension for KMR 82 225.00
- EA 89 Elastic suspension for U 89 225.00
- EA 170 Elastic suspension for TLM 170 225.00
- Z 48 Elastic suspension for U 87 225.00
- MNV 8 mt Auditorium cable hanger for KMF 4mt 25.00
- MNV 21 Auditorium cable hanger for KM series only 18.00
- MNV 87 Auditorium cable hanger for larger mikes 49.00



Wind and Pop Screens

- WS 17 Acoustic foam wind and pop screen for KMF 4mt \$ 10.00
- KMS Pop proof metal grille for KMS 84, specify satin, nickel, red, yellow, green, blue or gray 89.00
- WJ 81 "Furry" high wind sock for WK 81 190.00
- WJ 82 "Furry" high wind sock for WK 82 190.00
- WJ 84 "Furry" high wind sock for WK 84 190.00
- WSH 81 High wind sock for WS 81 58.00
- WSH 82 High wind sock for WS 82 58.00
- WK 81 Large plastic blimp for KMR 81, needs EA 82 325.00
- WK 82 Large plastic blimp for KMR 82, needs EA 82 325.00
- WNS 21 Acoustic foam pop screen replacement for KM 83/84/85/88, 3" diameter ball, charcoal gray 8.00
- WS 17 Acoustic foam wind and pop screen for KMF 4mt 10.00
- WS 21 Acoustic foam wind screen for KM 83/84/85/88, 3" diameter ball, charcoal gray 10.00
- WS 47 Acoustic foam wind and pop screen for U 47 (tube) and U 47 fet 28.00
- WS 69 Acoustic foam wind and pop screen for SM 69 fet/QM 69 28.00
- WS 81 Acoustic foam wind and pop screen for KMR 81 22.00
- WS 82 Acoustic foam wind and pop screen for KMR 82 28.00
- WS 86 Acoustic foam wind and pop screen for KM 86 28.00
- WS 87 Acoustic foam wind and pop screen for U 87, specify red, yellow, green, blue or gray 22.00
- WS 89 Acoustic foam wind and pop screen for U 89 22.00

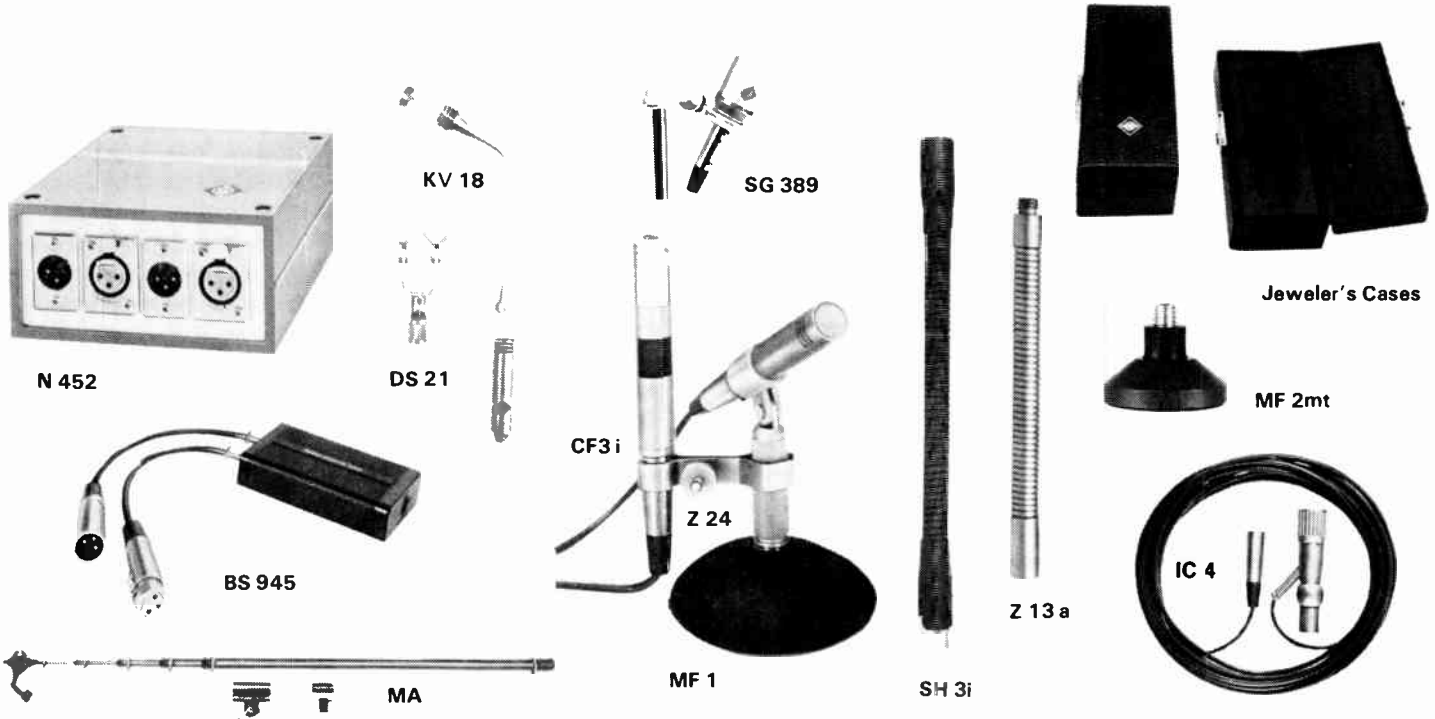
Microphone Extensions

Manufactured using Gotham 3-conductor, double reusen layer shielded, extremely supple cable with Switchcraft Q-G connectors. These cables are supplied with all Neuman microphones. Ideal for all studio and remote purposes. Available in: (1) brown, (2) red, (4) yellow, (5) green, (6) blue, (8) gray and (9) white.

- IC 3/10* Add color number 0 to 9; 10' extension cable . . . \$20.00
- IC 3/25* Add color number 0 to 9; 25' extension cable . . . 25.00
- IC 3/50* Add color number 0 to 9; 50' extension cable . . . 35.00
- IC 3/100* Add color number 0 to 9; 100' extension cable . . . 60.00

GEORG NEUMANN GMBH

Microphone Accessories



Power Supplies

- AG 82** Active handle for KMR 82 (9V battery not included) **\$610.00**
- BS 48** Battery phantom power supply (9V battery) **265.00**
- BS 48-2** Dual version of above with XLR 5-pin connectors **265.00**
- CU 48** Remote pattern controller and phantom converter for SM 69 fet (included in SM 69 fet system price) **265.00**
- N 48** 117VAC phantom power supply with XLR connectors **265.00**
- N 48-2** Dual version of above with XLR connectors **265.00**
- N 448A** 117VAC plug-in card, 48VDC/100mA phantom power (40 mikes) **470.00**
- GW 2448A** 24VDC plug-in card, central phantom supply **390.00**
- 6.8k** 1% precision resistors for phantom powering . . .pr./1.00
- NS 69** Option: AC power supply to replace CU 48 when phantom powered mike inputs are not available. .120.00
- NS 69** Same as above item if purchased separately **680.00**

Stands, Booms and Mounts

- (All equipped with 5/8"-27 thread)
- MFS 3** Gooseneck stand, internally wired with 25" cable with Switchcraft Q-G connectors; extends to 7' **\$560.00**
 - DS 8mt** Special "U" bracket dual KMF mike mount **110.00**
 - DS 21** Special "U" bracket dual KM mike mount **82.00**
 - H 82** Mike holder for KMR 82 (non-elastic) **56.00**
 - HG 82** Wooden handgrip for KMR 82 **98.00**
 - Z 26** Rubber vibration decoupler for all mikes **70.00**
 - STV** Table stand extender post **44.00**
 - MF 2mt** Table stand with elastic mounting for KMF 4mt **65.00**
 - TF 221C** Podium mount for KMF 4mt **105.00**

Swivels

- (All equipped with 5/8"-27 thread)
- MKV** Fast disconnect swivel mount for KMS 84 but applicable to any KM series mike **\$20.00**
 - SG 8/1mt** Swivel mount for extension of KMF 4mt **69.00**

- SG 8/2mt** Swivel mount for extension of KMF 4 mt **\$69.00**
- SG 8/3mt** Swivel mount for extension of KMF 4mt **69.00**
- SG 82mt** Swivel for KMR 82, use with H 82 or EA 82 **68.00**
- SG 367** Swivel mount for U 87 only **60.00**
- SG 389** Swivel mount for U 89 only **60.00**

Signaling Lights

- CF 3 i** Studio signaling light system **\$295.00**
- CF 35** Studio signaling light with answerback PB **340.00**
- Z 24** Bracket to hold mike stands **65.00**

Cables

- IC 4/25** 25' swivel mount cable for U 87 and U 89 **\$160.00**
- IC 5/25** 25' extension cable for USM 69 (5 conductor) **65.00**
- IC 5/03** 1' extension cable for BS 48-2 to MTX 190 **25.00**
- IC 6/25** 25' swivel cable for USM 69 (5 conductor) **175.00**
- KT 3** 16' (5m) extension cable for RSM 190 **58.00**
- KT 4** 16' (5m) swivel mount for RSM 190 **160.00**
- LC 1/2.5** 8' (2.5m) extension cable for KMF 4mt **68.00**
- LC 1/5** 16' (5m) extension cable for KMF 4mt **72.00**
- SC 1/33** 33' extension cable for SM 69 fet (12 conductor) **250.00**
- SC 1/66** 66' extension cable for SM 69 fet (12 conductor) **315.00**
- SC 1/100** 100' extension cable for SM 69 fet (12 conductor) **385.00**
- SC 6/33** 33' swivel cable for SM 69 fet (12 conductor) **380.00**

Capsules Extension Tubes

- For KM 83 i, KM 84 i, KM 85 i
- Straight: KV 40, 16" **\$420.00**
 - Angled: KV 18, 8" long **420.00**
 - KV 38, angled 16" long **420.00**
 - KV 58, angled 24" long **420.00**

Jeweler's Cases

- Type I** Jeweler's case for SM/USM, QM 69, KMR 81 and KMR 82 **\$100.00**
- Type II** Jeweler's case for U 47 fet and TLM 170 **140.00**
- Type III** Jeweler's case for all other mikes **75.00**

NOVA SYSTEMS, INC.

Time Base Correctors/ Frame Synchronizer

NOVA Series Digital Time Base Correctors

All NOVA time base correctors give you optimum performance for a wide variety of applications using 3/4" and 1/2" video tape recorders. Each of the 1 3/4" high extruded aluminum packages includes the following features:

- Presets for the front panel controls
- Digital, full color dropout compensation (DOC)
- Twenty times forward and reverse shuttle operation
- A test mode which applies a color bar signal to the video output
- Black burst output from a built-in sync generator for locking up SEG's, character generators, etc.
- Remote control capability that provides all front panel controls except power on/off and phasing controls found behind the adjusting slot. Dimensions: 3 1/2" H x 8 1/2" W x 4" D
- 8-bit, 4X subcarrier sampling for maximum transparency
- Perfect RS170A relationship regardless of reference SCH
- Digital clamp for the most stable performance
- Low power consumption for long, trouble-free operation

NOVA 620

Full Frame of Memory

Offers full frame of video storage to instantly freeze a field or frame for special effects. Time base correct even non-capstan servo type VTRs. Also includes a comb filter for maximum picture quality.

NOVA 620\$4990.00

NOVA 620S Full Frame S-VHS TBC

Same as 620 with S-VHS input processing

NOVA 620S\$5490.00

NOVA 511

32 Line Memory

Offers 32 line memory and heterodyne or direct operation. Designed for time base correcting both 3/4" and 1/2" capstan servo VTR's. Also includes a comb filter to heighten picture quality.

NOVA 511\$3990.00

NOVA 700 Time Base Corrector

- 32 line video memory for twice the "window" of conventional time base correctors
- Fifteen times forward and reverse shuttle operation
- Heterodyne picture processing
- 8-bit, 4X subcarrier sampling for maximum transparency
- Perfect RS 170A output with digitally generated SCH
- Digital processing amplifier and clamp for stable, repeatable operation
- Low power consumption for long, trouble-free operation

NOVA 700\$2890.00

NOVA 700S Time Base Corrector

Same as 700 with S-VHS input processing.

NOVA 700S\$3390.00

Optional Accessories

"S" Option Factory Upgrade

620 to 620S\$750.00

700 to 700S750.00

Remote control — specify TBC model

(Not available for NOVA 700)

(3 1/2" H x 8 1/2" W)\$700.00

Filler panel for remote control

(rackmount configuration)75.00

Rack ears for remote control24.00

Cable for remote control

10'70.00

25'90.00

50'120.00

Rack slide kit75.00



NOVA 511



NOVA 620



NOVA 620S



NOVA 700



NOVA Sync

NOVA Sync Frame Synchronizer

- Full bandwidth, broadcast quality signal processing
 - 8 bit, 4x sub-carrier sampling for maximum transparency
 - A/B video inputs plus synchronous alternate input
 - Auto default to black, color bars or alternate input
 - Select—input video, black color bars or alternate input
 - Auto Gain Control (AGC) for recovery to proper video level
 - Full processing amplifier with presets—video, chroma, hue and set-up
 - Compact, one rack unit high
 - Remote feeds to master control and production switchers
 - Satellite downlinks from network feeds, SNG vehicles, teleconferencing, weather satellites and scientific reconnaissance
 - Microwaved video from ENG locations and off-site facilities
 - Studio sources for easy backtiming and accurate system phasing
 - Commercial insertion sources for broadcast and cable TV automation
- NOVA Sync\$4490.00

O'CONNOR ENGINEERING LABS

Camera Support Systems

Regular Support Systems

System 30

Model 30 fluid head with one handle, Model 55M claw ball metal tripod with spreader and spike guards **\$2225.00**

Same as above, except substituting Model 55W claw ball wooden tripod **2170.00**

O'Connor molded system case for above (08143) **.215.00†**

Anvil "ATA" case for above (00985) **.360.00†**

System 50

Model 50 fluid head with two handles, Model 55M claw ball metal tripod with spreader and spike guards **\$3455.00**

Same as above except substituting Model 55W wooden tripod **3360.00**

O'Connor molded system case for above (08143) **.215.00**

Anvil "ATA" case for above (00985) **.360.00**

System 100

Model 100 fluid head with side loading platform and two handles, Model 55M claw ball metal tripod with spreader and spike guards **\$4860.00**

Anvilite tripod case and Anvil "ATA" fluid head case for above (100C-094 and 55-019) **505.00†**

Heavy Duty Support Systems

System 105

Model 100 fluid head with side loading platform and two handles, super claw ball or Mitchell 155M metal tripod, with Model 54 spreader **\$5360.00**

Same as above except with super claw or Mitchell 155W-B wooden tripod, with Model 54 spreader **5470.00**

System 105HD

Model 105HD fluid head with side loading platform and two handles, super claw ball or Mitchell 155M metal tripod, with Model 54 spreader **\$5870.00**

Same as above except with super claw or Mitchell 155W-B wooden tripod, with Model 54 spreader **5470.00**

System 155

Model 155 fluid head with side loading platform and two handles, 155M Mitchell metal tripod, with Model 54 spreader **\$7370.00**

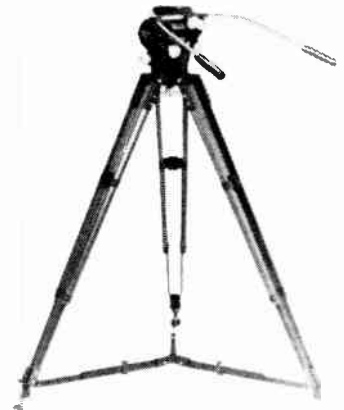
Same as above except with super claw base 155W-B wooden tripod, with Model 54 spreader **6970.00**

Beta-Cam Tripod Bracket

- Heavy-duty one piece base plate
- SMPTE standard base plate hole pattern (³/₈"-16 thread on 1" center) to fit all professional fluid camera heads
- Positive twist lock permits quick camera attachment and release
- Black anodized aluminum and stainless steel construction
- Mates with System 50 for Sony Beta-Cam with or without the recorder **.350.00**



System 30



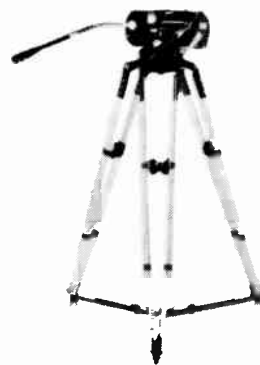
System 50



System 100



System 105



System 105HD



System 155



Beta-Cam Tripod Bracket

†Price applies if purchased with Camera Support System.

O'CONNOR ENGINEERING LABS

Heads/Tripods/Pedestal

Fluid Camera Heads

Model 30B Fluid Camera Heads

Fluid Head with quick release adjustable camera platform and Claw Ball/Pro Jr. Base with tiedown all assembly, one 10" handle, and counterbalance adjustment wrench \$1395.00
 Extra Handle (1/2" x 15") 75.00
 Anvil "ATA" case for above (30B-066) 265.00 †

Model 50D Fluid Camera Heads

Fluid Head with 150" lb. counterbalance spring, quick release adjustable camera platform and Claw Ball/Pro Jr. Base with tiedown assembly, one 15" handle \$2575.00
 Extra Handle (1/2" x 15") 75.00
 Anvil "ATA" case for above (50D-130) 265.00 †

Model 100C Fluid Camera Heads

Fluid Head with 500" lb. counterbalance spring, Mitchell base with tiedown assembly, side loading or fixed platform and one 15" handle \$3985.00
 Extra Handle (5/8" x 15") 100.00
 Extended Handle (3/4" x 26") in place of 15" handle add 40.00
 Anvil "ATA" case for above (100C-094) 365.00 †

Model 100-HD Fluid Camera Heads

Fluid Head with 800 or 1000" lb. counterbalance spring, Mitchell base with tiedown side loading platform and one extendable handle \$4495.00
 Extra Handle (5/8" x 15") 100.00
 Extended Handle (3/4" x 26") in place of 15" handle add 40.00
 Anvil "ATA" case for above 365.00

Model 150B Fluid Camera Heads

Fluid Camera Head with 1000" lb. counterbalance spring, Mitchell base with tiedown assembly, side loading platform and one 15" handle \$5995.00
 Mitchell to Super Claw Ball Adaptor with tiedown 275.00
 Extra Handle (15") 100.00
 Extended Handle (3/4" x 26") in place of 15" handle add 40.00
 Anvil "ATA" case (150B-110) 460.00 †

Tripods

Model 35 Quick Release Tripod—Multi-Ball

• Multi-Ball top casting fits all fluid camera heads with 100mm ball, 150mm ball and O'Connor Claw-ball • Rated at 60 lb. capacity, the 35 Tripod is set up by simply lifting the top release ring, the feet instantly extend and lock with a slip-proof mechanism • Folds to a compact 34" and weighs approximately 7 lbs. \$550.00

Model 55M-C Tripods—Claw Ball

Claw Ball Metal Tripod Complete: (regular tripod, spreader and spike guards) \$875.00
 Claw Ball Metal Tripod only:
 Regular (24" to 60") 675.00
 Baby (16" to 24") 655.00

Model 55W-C Tripods—Claw Ball

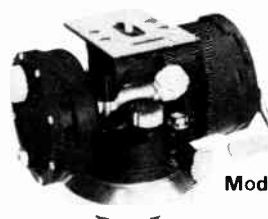
Claw Ball Wooden Tripod Complete: (regular tripod, spreader and spike guards) \$775.00
 Claw Ball Wooden Tripod only:
 Regular (24" to 60") 575.00
 Baby (16" to 24") 565.00

Model 155M Tripods—Super Claw Ball or Mitchell

Super Claw Ball or Mitchell Metal Tripod Complete: (regular tripod, Model 54 spreader) \$1275.00
 Super Claw Ball or Mitchell Tripod only:
 Regular (36" to 65") 1095.00
 Baby (22" to 38") 1085.00

Model 155W Tripods—Super Claw Ball or Mitchell

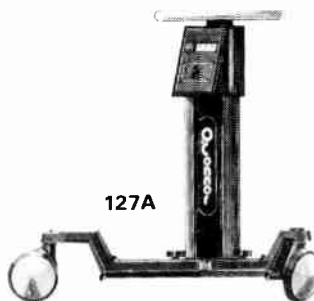
Super Claw Ball Wooden Tripod (Please specify Super Claw Ball or Mitchell top casting)
 Regular (38" to 67") \$875.00
 Baby (22" to 38") 865.00



Model 100C



Model 55M-B, Regular and Baby



127A

127A Aeroped Pedestal

• Full floating column pedestal for small broadcast and industrial studios • Pneumatic column can support up to 120 lbs. of camera, prompter, and fluid head yet floats its 22" of travel with a very light touch on the 16" diameter column ring • 3-way selector valve located on the control panel permits quick adjustment of the column pressure for perfect balance • Self-contained air reservoir • Cast aluminum base is over 40" in diameter, for stability but can pass through a 29" wide doorway \$7995.00

Hi Hats

Model 45

Claw Ball Hi Hat (5 1/2" height) \$175.00

Model 145

Super Claw Ball Hi Hat (6" height) \$235.00

Model 53 Tripod Dolly

Tripod Dolly with 6" diameter wheels; choice of:
 Regular (43" diameter) \$1295.00
 Wide Stance (48" diameter) 1295.00

Model 54 Tripod Spreader

Spreader, internal adjustable with locking pins \$180.00

Molded Cases—For Systems and Tripods

Fits Systems 30 and 50 or Model 55 Metal (08143) \$225.00 †
 Fits Model 55 Baby (08144) 215.00
 Fits System 30 and 50, wooden (08174) 230.00 †
 Fits Model 155 Regular (08170) 250.00
 Fits Model 155 Baby (08169) 235.00

Soft Pak Systems Case

Soft carrying case for any System 30 or 50. Made of 1000 denier Cordura with foam padding, inside pockets, handles, and shoulder strap \$875.00 †

Model 51 Claw Ball/Column Adaptor

Claw Ball to Round Column Adaptor (Please specify 1 3/4", 1 7/8", or 2") \$260.00

Model 21 Video Monitor Side Mount

A Universal Side Mount Plate for mounting any monitor beside a video camera, with 2 3/8-16 screws \$185.00

† Price applies if purchased with system or tripod.

O'CONNOR ENGINEERING LABS

Adaptors and Components

TRIPOD COMPONENTS

- 00896 Retractable spike guards (set of 3) \$ 31.50
- 08119 Spare stainless steel spike and nut. 4.75
- 08120 Spreader lock pins ea./6.00
- 55B-021 Tripod foot, with spreader attachment. 9.00
- 61A Lift-Lok column—adds 16" to any tripod with an O'Connor top casting 225.00

ADAPTORS

To mate base of Fluid Head to top casting of tripod.

- 151-001 Claw ball to Mitchell, with tie-down. \$325.00
- 155-024 Super claw ball to Mitchell, with tie-down 500.00
- 08111 Mitchell to Arri 35, with tie-down 349.00
- 100C-060 Mitchell to super claw ball, with tie-down. 275.00
- 00823 Pro Jr./Flat to Mitchell, with tie-down 235.00
- 50D-062 Pro Jr./Flat to Arri 16 170.00
- 00843 Pro Jr./Flat to claw ball with tie-down 180.00

FLUID HEAD COMPONENTS

Camera Platforms (handles not included)

For Model 30

- 30B-057 Lisand adjustable quick release platform assembly, with camera plate and screw (3/8"-16") \$360.00
- 30B-067 O'Connor adjustable quick release platform assembly, with camera plate with screw (3/8"-16") 360.00

For Model 50

- 50D-123 O'Connor adjustable quick release platform assembly, with camera plate and screw (3/8"-16") \$360.00
- 50D-095 Lisand adjustable quick release platform assembly, with camera plate and screw (3/8"-16") 360.00
- 50D-131 O'Connor side loading adjustable quick release platform assembly, with camera plate and screw (3/8"-16") 395.00

For Model 100 or 100-HD

- 100C-074 Fixed camera platform with fixed camera screw \$450.00
- 100C-087 O'Connor side loading adjustable quick release platform with camera plate and two screws (3/8"-16") 775.00

For Model 150

- 150B-109 O'Connor side loading adjustable quick release platform with removable side loading camera mounting plate and two screws (3/8"-16") \$775.00

Handles

- 08094 Standard handle for Model 50 (1/2" diameter, 15" length). \$ 75.00
- 08095 Standard handle for Model 100 or 150 (5/8" diameter, 15" length) 100.00
- 08122 Extended handle for video for Models 100 or 150 (3/4" diameter, 26" length). 140.00

Camera Mounting Plates with Screws

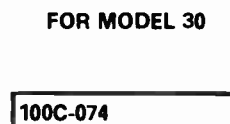
- 08065 Lisand type for Models 30 or 50 \$ 60.00
- 08066 Cine 60 type for Models 30 or 50 60.00
- 08219 Combination side mounting and O'Connor type for models 30 or 50 60.00
- 08107 Side mounting type for Models 100 or 150. 150.00
- 08106 3/8"-16" replacement screw 5.00
- 00841 1/4"-20" replacement screw 5.00



30B-057



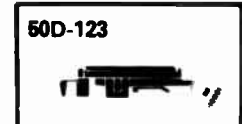
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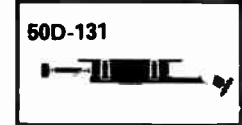
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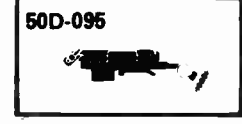
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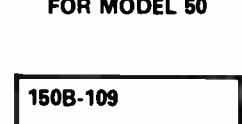
50D-123



50D-131



50D-095



150B-109

FOR MODEL 30

FOR MODEL 50

FOR MODEL 100

FOR MODEL 150



61A

Bases (tie-down assembly is included)

- 08068 Pro Jr./flat base for Models 30 or 50 \$130.00
- 100C-096 Pro Jr. base for Model 100 155.00
- 08067 Claw ball/Pro Jr. base for Models 30 or 50 135.00
- 50D-060 Arri 16 ball base for Models 30 or 50 250.00
- 08121 Arri 35 ball base for Models 30 or 50 290.00
- 50D-128 Mitchell base for Model 50 250.00
- 100C-090 Mitchell base for Model 100 250.00
- 100C-092 Super claw ball base for Model 100 250.00
- 08108 Flat base for Models 30 or 50 75.00
- 100C-095 Arri 35 ball base for Model 100 290.00

Replacement Tie-Down Assemblies

- 08102 Pro Jr./flat base or Pro Jr./flat to Arri 16 adaptor. \$30.00
- 08070 Claw ball/Pro Jr. base. 55.00
- 08071 Pro Jr./flat to claw ball adaptor 70.00
- 08110 Pro Jr./flat to Mitchell adaptor or Mitchell base 50.00
- 08112 Arri 35 ball base. 95.00
- 08073 Super claw base or Mitchell to super claw ball adaptor 65.00
- 08113 Mitchell to Arri 35 adaptor 95.00

ORBAN ASSOCIATES, INC.

TV Stereo Generators/Cards



8185A

8185A Television Stereo Generator

All the features of the original 8182A/SG plus:

- Digital baseband encoder
- Works with any audio processor
- Easier to install and operate
- Built-in Bessel null calibration tone
- Improved built-in peak-indicating meter for input, circuit, and output levels
- Better protection from aliasing

- Group delay equalization of low-pass filters to minimize overshoots
- Improved subchannel noise reduction encoder

The 8185A second-generation Stereo Generator improves on the 8182A/SG's performance, and adds several features designed to make installation, operation, and maintenance more convenient. The 8185A will work with any audio processor, not just with the Orban 8182A as was the case with the 8182A/SG.

The earlier 8182A/SG far exceeds BTSC requirements, delivers unimpeachable subjective audio quality, and uses high-performance low-pass filters to achieve excellent high-frequency response and the industry's best aliasing rejection. The 8185A Stereo Generator adds a digital baseband encoder, group equalization, and upgraded noise reduction circuitry for better overall performance and better measured specifications.

8185A includes group-delay corrected low-pass filters, dbx noise reduction encoder, Hadamard Transform Stereo Baseband Generator, Bessel null set-up tone, monitoring circuit with dbx noise reduction decoder, connection for separate SAP Generator, slots for optional 8185A/PRO Channel Generator plug-in cards. 115/230V, 50/60Hz. **\$6295.00**



8182A

8182A/SAP Optimod TV SAP Generator

8182A/SAP is a high-performance audio processor and BTSC-standard Second Audio Program Generator for TV multi-channel sound. Orban's generator was designed from the ground up for SAP—it's not a rehash of an FM SCA generator. Accordingly, it includes the built-in audio quality appropriate to the first-class broadcast service that SAP was intended to be.

The audio processing in the 8182A/SAP is essentially a single channel of Optimod TV processing, but with 10kHz band limiting. This processing provides full interband-referenced multi-band compression to prevent bass energy from modulating the midrange, and a CBS Automatic Loudness Controller.

- Meets all BTSC standards for SAP generators
- Includes Orban's optimization of CBS Automatic Loudness Controller
- Embeds Orban's patented distortion-canceled clipper and frequency-contoured side-chain overshoot compensator within the required dbx noise reduction encoder to achieve very efficient peak control, superior occupied bandwidth control, and better signal-to-noise ratio
- Output can drive 75 ohms, allowing stand-alone use or with Orban 8182A/SG Stereo Generator
- Comprehensive metering
- Full remote control of SAP on/off and Loudness Controller on/off
- Split configuration available using 8182A/ST Studio Chassis Accessory, to make most operating controls available at the studio, and to protect STL and maximize signal-to-noise ratio

8182A/SAP **\$4995.00**
ACC-021 dbx Monitor Card **.595.00**

8182A/PRO and 8185A/PRO Channel Generator Cards

The PRO Channel Generator Cards plug into the 8182A/SG or 8185A TV Stereo Generator chassis to generate the PRO Channel signal for communications or data.

One card provides audio and data signal processing and bandpass filtering, while the other card accurately generates the 102kHz subcarrier.

- Switchable speech or data processing circuitry
- 7th order Cauer phase-corrected 3kHz lowpass filter prevents interference to other parts of the baseband
- Speech processing carefully tailored for maximum intelligibility, and highest RMS modulation to cut through noise. Incorporates

compression, frequency contouring network, BTSC-standard pre-emphasis, and the patented Orban Clipper/Overshoot Corrector System

- Data processing mode offers flat frequency and phase response to 3kHz to prevent inter-symbol interference while protecting the baseband from interference. Usable for high-band FSK
- Remote control of subcarrier on/off
- LED to indicate 100% modulation (3kHz deviation) for easy alignment of data drive level. In speech mode, deviation is automatically limited to 3kHz by compression clipping and overshoot compensation circuitry

8182A/PRO **\$995.00**
8185/PRO **.995.00**

ORBAN ASSOCIATES, INC.

Broadcast Audio Processing Systems

OPTIMOD-AM

9100B/1 Optimod-AM Audio Processing System (Mono)

Complete audio processing for AM broadcast. Includes broadband AGC, NRSC-standard and alternative pre-emphasis, six-band limiter with distortion-canceled clipper, switchable NRSC 10kHz filter, jumperable 5kHz low-pass filter, transmitter equalizer for two transmitters day/night. One ACC-023 NRSC Monitor Rolloff Filter supplied. Field convertible to stereo. 115V/230V, 50-60Hz . . . \$4395.00

9100B/2 Optimod-AM Audio Processing System (Stereo for C-QUAM or Kahn)

As 9100B/1 above, equipped for stereo operation. Uses sum and difference control of processing to assure maximum loudness on mono receivers. Switchable features include L and R 75% negative peak limiter as recommended by Motorola for C-QUAM, adjustable stereo enhancer that increases L-R, 200Hz high-pass filter for telemetry or LF SCA. Two ACC-023 NRSC Monitor Rolloff Filters supplied. 115V/230V, 50-60Hz . . . \$5995.00

AM Accessories

ACC-023 NRSC Monitor Rolloff Filter (one per channel)

Approximates typical receiver rolloff when monitoring from modulation monitors and wideband receivers. Includes rolloff to the NRSC standard 75 μ s de-emphasis. Included in all 9100B/1, 9100B/2 and several Stereo Upgrade Kits. . . . \$50.00

Upgrade Kits For Optimod-AM Systems

RET-033 Alternate Pre-Emphasis Module Retrofit Kit

For 9100A/1 and 9100A/2 prior to S/N 700000. (Supplied standard on later units). Provides socket for field-selectable alternative pre-emphasis curves. Includes one Transition PCB Assembly, one each Green, Yellow, Red Pre-Emphasis Module. Two RET-033 kits required for stereo . . . \$50.00

RET-041 NRSC Pre-Emphasis/Filter Retrofit Kit (Mono)

For 9100A/1. Provides NRSC-standard pre-emphasis and 10kHz low-pass filter, and jumperable 5kHz low-pass filter (other filter frequencies available on special order). Filters can be preset or switched to follow day/night switching. Includes one #1F10 NRSC Mono Filter Card, one NRSC Blue Pre-Emphasis Module, one set NRSC monitor de-emphasis resistor and capacitor. (RET-033 must first be installed in units prior to S/N 700000.) . . . \$295.00

RET-042 NRSC Pre-Emphasis/Filter Retrofit Kit (Stereo)

For 9100A/2 and 9100A/2C. Provides switchable NRSC-standard pre-emphasis and 10kHz low-pass filter, jumperable 5kHz low-pass filter (other filter frequencies available on special order), L and R 75% negative peak limiter as recommended by Motorola for C-QUAM, adjustable stereo enhancer that increases L-R, 200Hz high-pass filter for telemetry or LF SCA. Filters can be preset or switched to follow day/night switching. Includes one #1S10 NRSC Stereo Filter Card, two NRSC Blue Pre-Emphasis Modules, two sets NRSC monitor de-emphasis resistor and capacitor. (Two RET-033 must first be installed in units prior to S/N 700000.) . . . \$495.00

RET-043A Stereo Upgrade Retrofit Kit

Upgrades 9100A/1 to 9100B/2 (Stereo for C-Quam or Kahn). Adds stereo NRSC-standard pre-emphasis and low-pass filter. Includes Cards #1S10, #5, #9, #10, two NRSC Blue Pre-Emphasis Modules, two ACC-023 NRSC Monitor Rolloff Filters . . . \$1950.00

RET-043B Stereo Upgrade Retrofit Kit

Upgrades 9100B/1 to 9100B/2 (Stereo for C-QUAM or Kahn). Includes cards #1S10 to replace #1F10, cards #5, #9, #10, and one additional ACC-023 NRSC Monitor Rolloff Filter. . . . \$1895.00

RET-044 NRSC Pre-Emphasis/Filter Retrofit Kit

For 9000A and 9000A/1. Provides NRSC-standard pre-emphasis and 10kHz low-pass filter, and jumperable 5kHz low-pass filter (other filter frequencies available on special order). Includes one #1F10 NRSC Mono Filter Card, modification parts to install filter card and pre-emphasis, one set NRSC monitor de-emphasis resistor and capacitor. (Requires considerable rework of existing cards and backplane.) . . . \$395.00

OPTIMOD-FM AUDIO PROCESSING/STEREO

8100A/1 GENERATOR SYSTEM

Dual-band stereo compressor, high frequency limiter, smart clippers, stereo generator. 115/230V, 50-60Hz. 75 μ s standard; order OPT-11 for 50 μ s installed (no charge) . . . \$4995.00

8100A/ST Studio Chassis

Separates 8100A and 8100A/1 Audio Processing into two chassis to locate compressors at studio. Controls average levels into STL or phone lines, and optimizes signal-to-noise ratio. 115V/230V, 50-60Hz. . . . \$895.00



9100B

8100A
8100A/XT2

8182A

8100A/XT2 Six-Band Limiter

Accessory to 8100A/1. Provides aggressive multiband processing where bright, loud, "highly-processed" audio is desired that jumps out of auto and table radios. Especially suited for CHR formats. (May sound overly processed to home hi-fi enthusiasts.) . . . \$2075.00

FM Accessories

ACC-22 Lowpass Filter Card

Accessory to 8100A/1. Used to provide 25dB more protection to 67kHz SCA than provided by standard 8100A/1. Will also increase average modulation capability by about 0.5dB. Installs in 8100A or 8100A/1. Usable with XT Six-Band Limiter . . . \$595.00

RET-27 8100A Retrofit Kit To Accept XT2

Used to upgrade 8100A to 8100A/1, to accept 8100A/XT2 Six-Band Limiter. Includes replacement circuit card, prewired connector assembly . . . \$395.00

ATE-3F Interface Panel for Harris TE-1 or TE-3 Exciter . . . \$75.00

RCA-1 Shorting Connector for RCA BTE-15 Exciter . . . \$10.00

Note: For Continental 510R-1, Collins 310Z-2 and 310Z-1 exciters, obtain interface from Continental. Most other direct-FM exciters with broadband inputs do not require special interface.

OPTIMOD-TV

8182A Optimod-TV Audio Processing System

Audio processing optimized for television. Includes two-band stereo compressor, CBS Automatic Loudness Controller, high frequency limiter, Hilbert-Transform Clippers. 115V/230V, 50-60Hz. 75 μ s standard; order OPT-18 for 50 μ s installed (no charge) . . . \$4995.00

8182A/ST Studio Chassis for 8182A

Separates 8182A Optimod-TV Audio Processing into two chassis to locate compressors and CBS Automatic Loudness Controller at studio. Controls average levels into STL or phone lines, and optimizes signal-to-noise ratio. 115V/230V, 50-60Hz . . . \$895.00

RET-037 8180A Connector To Accept 8182A/SG

Field retrofit to add interface and stereo matrix circuitry to connect to 8182A/SG for BTSC TV stereo. (RET-025, below, is preferred to RET-037). . . . \$65.00

Factory Conversions

RET-025 8180A To 8182A Optimod-TV Conversion

Adds Hilbert-Transform Clipper, CBS Automatic Loudness Controller, stereo matrix circuitry, and interface connector. Requires return of unit to factory for modification and alignment—allow approximately three weeks after receipt. Loaner Optimod-TV provided for rental charge of \$100.00 plus shipping, as available . . . \$995.00

RET-026 8180A/ST To 8182A/ST Studio Chassis Conversion

Requires return of unit to factory for modification and alignment—allow approximately three weeks after receipt. Loaner Studio Chassis provided for rental charge of \$50.00 plus shipping, as available. . . . \$295.00

1118/1 Spring Reverberation (2 Channel)

• Dual-channel spring reverb with six springs/channel for smoothness and natural sound • "Floating threshold" limiter attenuates "spring twang" and protects against overload • Shelving bass and quasi-parametric mid-range EQ • Unbalanced input accepts line-level or semi-pro (-10dB) gear • Transformer-balanced main output; unbalanced "mixed" output allows use "in-line" without external mixers • Compact, rugged, and reliable
1118/1\$899.00



222A

222A Stereo Spatial Enhancer

• Proprietary, patent-pending technique detects and enhances psychoacoustic directional cues which are present in all stereo program material • Increases brightness, impact, and definition of music • Front-panel enhancement and width limit controls allow tailoring of processing to user requirements • No increase in FM multipath distortion, no unnatural exaggeration of reverberation, and no increase in sensitivity to vertical tracing distortion in disc playback • Full mono compatibility • Complements any broadcast audio processor without changing the station's "sound" • Easy-to-read LED bargraph displays indicate status and degree of enhancement • Stereo inputs and outputs

Designed to be inserted in the program line at the studio prior to processing, the 222A dynamically changes the amplitude and phase content of the program material to increase apparent width, depth, and transient definition. It does not add "musical distortion". Intelligent gating makes the unit immune to small errors in channel balance, prevents over-enhancement, and avoids the "mushy," homogenized sound that has so often been the result with earlier techniques.

The 222A does not increase multipath distortion, exaggerate reverberation, or increase sensitivity of vertical tracing distortion in disc playback.
222A\$995.00



245F

245F Stereo Synthesizer

Creates a pseudo-stereo effect from mono original. Left and right channels sum back to original mono for total compatibility in disc cutting and FM stereo broadcast. Doesn't affect the frequency balance of the mono original. Easy to use; only three operating controls. Unbalanced line level input and outputs.

245F\$399.00

Accessories

RET-19 Balanced output transformers (2) for both outputs\$32.00



275A

275A Automatic Stereo Synthesizer

The 275A is a system approach to solving unique TV broadcasting problems. It includes four essential features in a single space, 19" rackmount package: • Two modes of stereo synthesis (wide and narrow) • Automatic mono and single-channel recognition • Automatic polarity correction • Single-ended noise reduction

The 275A is a natural companion to Orban's TV stereo system (consisting of the 8182A Audio Processor, the 8182A/SG Stereo Generator, 8182A/SAP Second Audio Program Generator, and the 8182A Pro Channel Generator) but will work with any system.
275A\$1895.00

Accessories

275/RC Remote Control\$295.00

412A/414A Compressor/Limiters

Wide-range attack time, release time, and ratio controls permit extremely natural processing or special effects. Threshold control with 20dB range allows user to determine the level at which gain reduction first occurs, without changing below threshold gain. Ideal for sound reinforcement applications. User controls interact to simplify and speed set-up. Front panel output attenuator control with output clip LED to indicate line amplifier clipping. Illuminated, true peak-reading gain reduction meter is accurate and more readable than LED displays. Gain reduction overload lamp warns of control circuit overload. Mono unit (412A) requires only one rack space.

412A (1-channel)\$425.00

414A (2-channel) Stereo unit requiring 2 rack spaces and featuring stereo coupling switch\$799.99

Accessories

RET-28A XLR type connectors for input and output (for 412A) ...\$12.00

RET-288 XLR type connectors for inputs and outputs (for 414A) ...\$24.00

422A/424A

**Gated Compressor/Limiter De-essers
 "The Studio Optimod"**

Production AGC device which achieves high average loudness without undesirable artifacts. Separate compressor/limiter and de-esser control loops, with program-controlled parameters. Defeatable gate with adjustable threshold freeze gain. Adjustable attack time, release time, and compression ratio. Independent de-esser similar to the 526A De-esser. Low distortion operation. 25dB gain reduction. >25dB de-ess gain reduction in addition to 25dB compressor/limiter gain reduction. True peak-reading output level meter. True peak-reading gain reduction meter. Selectable linear or exponential release time characteristics. 19" rackmount package. Extensive RFI suppression. Balanced input and output and 115/230V, 50/60Hz power supply standard.

422A (1-channel)\$629.00

424A (2-channel) Available in mono/stereo; channels can be strapped or used independently\$989.00

Accessories

RET-15 XLR type connectors for input and output\$24.00

RET-14 XLR type connectors for input and output\$12.00

464A "Co-operator" Gated Stereo

Leveler/Compressor/HF Limiter/Peak Clipper

• 4 stage level control selectable on front panel • Defeatable "silence gate" prevents noise rush-up, holes, pumping, and breathing once the signal level falls below a preset threshold (during pauses or low-level program material) • Six switchable HF limiter curves (25 to 150µs) match the HF limiting to the medium or device being protected and optimize control of excessive sibilance • Defeatable clipper follows the HF limiter, so the unit can be used for absolute peak protection • Switch-selectable gain compression recovery rate. Hard knee recovery (at a constant rate) is best for single tracks and live-voice. The Soft knee recovery rate provides more subtle gain-riding for mixed program material • Faster "compression" function can be switched-in • Switchable for stereo-tracking or independent 2-channel operation • Least-used controls are concealed behind a security panel • Two LED bargraphs per channel simultaneously display gain reduction and peak output level • Output level meter can be calibrated to match the overload point of the device being driven • Balanced, floating inputs and outputs are EMI-suppressed • 25dB gain reduction range is achieved with a low-distortion, Class-A VCA • Two channels in a 1 3/4" rackmount package • Hard-wired bypass switch included

464A\$1195.00

ORBAN ASSOCIATES, INC.

Audio Processing

536A Dynamic Sibilance Controller (2-channel)

2-Channel De-esser. Replaces 516EC 3-channel unit. This model contains two independent channels with active-balanced input and output, with output transformer option. Inaudible de-essing over a 15dB input range. Simple set-up and operation. Improved noise and distortion performance

536A \$539.00

Accessories

RET-22 XLR type connectors for inputs and outputs \$24.00

RET-23 Balanced output transformers (2) for both outputs. \$32.00

642B Parametric Equalizer/Notch Filter

• 4-band, dual-channel parametric equalizer. Each section offers overlapping tuning with a 25:1 frequency range; + 16dB boost/-40dB cut in each band • "Q" variable from 0.29 to 5.0 • "Constant-Q" design enables use of equalizer as a true infinite-depth notch filter; ± 10% vernier frequency control on each band facilitates precise tuning of notches • Tunable 18dB/octave high-pass filter and 12dB/octave "Automatic Sliding Besselworth" low-pass filter provide maximum flexibility while preserving musicality • Front-panel Cascade switch permits use as either a two-channel 4-band, or one-channel 8-band equalizer • In/out switches on each band and on each channel simplify comparison of EQ settings with flat • 12dB make-up gain is available • Overload indicator warns of overload anywhere in equalizer • Noise and distortion specs > 16-bit digital • Active balanced inputs and outputs with optional output transformer • Main signal path is free of coupling capacitors

642B \$ 995.00

642B/SP Parametric equalizer/notch filter (2 ch) (16 lb.) (LMF/LMF/HMF/HMF x 2) 1.045.00

642B/SPX Parametric equalizer/notch filter (2 ch) (16 lb.) (LF/LMF/HMF/HF;LMF/LMF/HMF/HMF) 1.045.00

RET-049 XLR connectors for all inputs and outputs. (2 lb.) \$24.00

RET-051 Balanced output transformer for both outputs. (2 lb.) \$32.00

672A/674A Graphic Parametric Equalizers

The 672A/674A are quasi-parametric equalizers with continuous control over center frequency, bandwidth, and amount of peak or dip. Convenient graphic-style EQ controls provide reciprocal EQ in eight bands. Additional 12dB/octave highpass and lowpass filters tune continuously over 100:1 frequency range. Additional lowpass output permits use as equalizer cascaded with electronic crossover. Gain control; overload lamp; in/out switches for equalizer and each filter. Line level balanced input; unbalanced outputs can be balanced with optional transformer(s)

672A \$689.00

RET-006 Balanced output transformer. Order one per output. (2 lb.) \$16.00

RET-021 XLR connectors for input and both outputs. (2 lb.) \$18.00

674A 2-channel version of the 672A with HP/LP filters, barrier strip terminals \$1299.00

ACC-003 Plexiglas security cover for filter section controls. (2 lb.) \$9.00

RET-007 Balanced output transformers (2) for main outputs. (2 lb.) \$32.00

RET-008 Balanced output transformers (4) for both outputs. (2 lb.) \$64.00

RET-010 TRS phone jacks for inputs and all outputs. (2 lb.) \$13.00

RET-012 XLR connectors for inputs and all outputs. (2 lb.) \$30.00

764B Programmable Parametric Equalizer

• 4-band, dual-channel parametric equalizer. Each section offers overlapping tuning having a 25:1 frequency range; + 16dB boost/-40dB cut in each band • Bandwidth variable from 5 to 0.1 octaves ("Q": 0.3 to 15) • Proven Orban "Constant-Q" design enables use of equalizer as a true notch filter • Tunable 18dB/octave high-pass filter and 12dB/octave "Automatic Sliding Besselworth" low-pass filter provide maximum flexibility while preserving musicality • 99 non-volatile memory registers for instantaneous storage and accurate recall of complete control setups, including input gain • Digital displays show current settings of control parameters • High-quality, no-compromise audio path having no VCA's • Up to 14 two-channel slave units can be addressed by the master unit. Each pair of channels can be ganged to track in stereo or can be programmed independently • MIDI-and RS-232 controllable. Port for remote control.

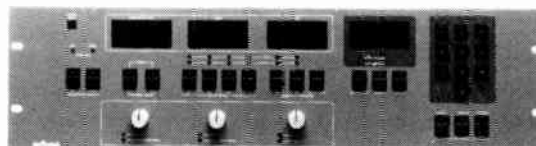
764B \$POR



536A



642B



764B



787A

787A Programmable Mike Processor

• Standard Line-level input with optional Jensen transformer mike preamp and 48V phantom power • 3-band parametric equalizer with variable frequency, bandwidth, and boost/cut for precision control • Smooth compressor delivers maximum presence and "punch" while maintaining consistent levels • Full-function de-esser helps control excessive sibilance • Noise gate attenuates noise by up to 25dB; compressor gate prevents rush-ups during pauses (front-panel control selects noise or compressor gate) • Effects send-and-return with programmable return level simplifies integration of external reverb or "psychoacoustic exciter" • Store, Recall, and Compare buttons provide instantaneous access to 99 user-programmed control setups • Digital display shows current settings of control parameters • Easy-to-read bargraph displays show output and gain reduction levels • Memory protected by internal back-up battery • Security code locks programming controls to prevent tampering • Built-in control connectors for remote control and MIDI and RS-232 interfaces • Provision for second-channel slave unit for dual-mono or stereo operation (787A/SL)

Three-band parametric equalizer, compressor, de-esser, noise gate, and compressor gate integrated in a compact, powerful system. Stores up to 99 different control setups in memory for instant recall. Designed for mike processing and voice recording, but versatile enough for many other production uses.

787A \$1995.00

787A/SL Second Channel slave for 787A \$995.00

RET-045 Midi Interface Options \$95.00

RET-046 Jensen transformer/Mic preamp (order one for each 787A and 787A/SL channel) \$195.00

RET-050 RS-232 Interface Option \$95.00

ACC-024 Basic remote control accessory TBA

Security Covers

This acrylic security cover attaches easily to any Orban product. Fits most other EIA-standard rackmount panels. Available in four sizes and in three colors. Acrylic may be painted to achieve other effects. Three sets of screws are supplied for three levels of security. Any other 10-32 x 1/2" screw may be used.

Model	Panel Height	Suffix (xx) For Color	Price
ACC-11xx	1 3/4" (1 unit)	CL-Clear Transparent	\$43.00
ACC-12xx	3 1/2" (2 unit)	BL-Blue Transparent	45.00
ACC-13xx	5 1/4" (3 unit)	WH-Opaque White	47.00
ACC-14xx	7" (4 unit)		49.00

OTARI CORP.

Audio Recorders

MX-5050B-II

Compact Professional Recorder

The MX-5050B-II features: Switchable +4 or -10dB levels, DC Servo Capstan Motor, Hr., Min., Sec., Tape Counter, Front panel alignments for optimum performance, overdubbing and many more useful production features. Additional benefits of the MX-5050B-II are three speeds, selectable 1/2 or 1/4 track reproduce, full edit capability including splicing block, noise free inserts, XLR connectors, NAB/IEC EQ switching and the unique 3-position re-record level switch. Frequency response is 25Hz-22kHz ± 2dB, with an S/N ratio of 72dB, (15 ips) mike inputs, mike/line switching, remote.

MX-5050B-II Two-channel half-track recorder/reproducer with quarter-track reproducer capability. DC-servo capstan. Three speeds in speed pairs of 15/7.5 or 7.5/3.75 ips, field selectable. Transformerless balanced output. Vinyl covered wood cabinet.

MX-5050B-II \$2995.00

MX-5050B-IIIF One-channel full-track recorder/reproducer with two-channel half-track reproduce capability. Otherwise identical to MX-5050B-II

MX-5050B-IIIF \$3395.00



MX-5050BQ-II

MX-5050BQ-II

Four Channel Compact Professional Recorder

The 1/4", four channel version of the MX-5050B-II is for those applications where utmost reliability, flexible interface (+4 or -10 levels), and premium performance is required. Whether your four channel recording requirement is fixed or portable, the MX-5050BQ-II is an ideal machine for small studios, broadcast stations, educational or A/V facilities and serious home recordists. Supports CB-116 auto locator.

MX-5050-BQ-II Four channel, quarter-track, quarter-inch tape recorder/reproducer. 15/7.5 ips. DC-servo capstan system. +4 or -10 levels, microprocessor control, and dynamic braking.

MX-5050-BQ-II \$4095.00

MX-5050

Mark III/2 1/4" Two Channel Professional Recorder

The Mark III/2 has BII features plus separate transport and electronics for convenient tabletop console or floor console, and microprocessor controlled transport functions. It has completely accessible front and rear electronics adjustments, and record punch-in and punch-out without clicks or pops.

MX-5050 Mark III/2 Two channel, quarter-inch tape recorder/reproducer. 15/7.5 ips. DC-servo capstan system. Transformerless balanced output. Tabletop console.

MX-5050 Mark III/2 \$3695.00

MX-5050

Mark III/4 1/2" Four Channel Recorder

The Otari MX-5050 Mark III/4 is a compact, tabletop console recorder in the 1/2" four channel format. A Proprietary Microprocessor governs tape handling including dynamic braking, motion sensing and transport logic. Additionally, a separate microprocessor controls a real-time electronic counter that features an LED real-time display and zero-return. The capstan is under servo control and speeds are switchable between 15 and 7 1/2 ips. The true, three head design machine also has a ± 7% variable speed control, selective reproduce for overdubbing, a built-in dual frequency test oscillator and a full complement of electronics adjustments for rapid test and setup. The MX-5050 Mark III/4 is capable of interface to tape controllers and time code synchronizers. A transport remote control (Model CB-102) is available +4/-10 switchable I/O.

MX-5050 Mark III/4 Four channel, half-inch tape recorder/reproducer 15/7.5 ips. DC-servo capstan system. +4 or -10 levels, micro processor control and dynamic braking. Tabletop console.

MX-5050 Mark III/4 \$5595.00

MX-5050

Mark III/8 1/2" Eight Channel Recorder

The Otari MX-5050 Mark III/8 is a compact, tabletop console recorder in the 1/2" eight channel format. A Proprietary Microprocessor governs tape handling including dynamic braking, motion sensing and transport logic. Additionally, a separate microprocessor controls a real-time electronic counter that features an LED real-time display and zero-return. The capstan is under servo control and speeds are switchable between 15 and 7 1/2 ips. The true, three head design machine also has a ± 7% variable speed control, selective reproduce for overdubbing, a built-in dual frequency test oscillator and easy-access rear panel calibration adjustments for rapid test and setup. The MX-5050 Mark III/8 is capable of interface to tape controllers and video synchronizers and is compatible with all dbx* noise reduction products. Two optional remote controls are available: Model CB-114 which handles transport functions or Model CB-110 Session Controller which has transport controls, channel switching, and remote electronic time display. +4/-10 switchable I/O.

MX-5050 Mark III/8 Eight channel, half-inch tape recorder/reproducer. 15/7.5 ips +4 or -10 levels, microprocessor control, dynamic braking, full function remote (optional)

MX-5050 Mark III/8 \$4995.00

Options

- CB-102** Remote transport control for MX-5050 series except MKIII-8. Includes record, play, stop, rewind, fast forward, and record indicator. . . . \$ 180.00
- CB-114** Remote transport control for MKIII-8 180.00
- CB-110** Remote session controller for MKIII-8. Includes transport controls, channel status switching, tape timer readout, and zero return . . . 950.00
- CB-116** Full function auto locator for MKIII-8, MKIII-4, and MKIII-2 transports. Six memories with one stroke or keyboard store and search commands 1299.00
- FC-2B** Flight case for 5050-BII and BQII \$385.00
- RK-2B** Rackmount kit for MX-5050B-II and BQ-II 60.00
- RK-32** Rackmount kit for MX-5050-MKIII/2. 90.00
- RK-34** Rackmount kit for MX-5050-MKIII/4. 90.00
- ZA-52L** Metal roll-around floor stand (unassembled)
ZA-52L (22) B-II and BQ-II models; ZA-52L (32) MKIII-2 and MKIII-4 models; ZA-52L (38) MKIII-8 model. 350.00

Prices and Specifications Subject to Change Without Notice.

OTARI CORP.

1/4" Recorder



MX-55-N

Preliminary**MX-55-N 1/4" Compact Recorder**

- DC capstan, servo-controlled
- Variable speed, $\pm 20\%$
- Speed select in pairs: 15/7.5 or 7.5/3.75 ips
- Reel size compensation control
- Plug-in four head design for easy access
- Reel size capability: 11.8" (maximum)
- Integral tape splicing block
- Microprocessor controlled real time counter with search-zero, search-cue, 3-point cue memory, and repeat
- Dump edit mode
- Standard recording level selectable (185/250/370 or 250/320/514 nWb/M)
- Front panel record setup adjustable
- XLR input/output and microphone connectors
- Lighted VU meter with peak reading indicators
- Rugged diecast deckplate and side panels
- Available 19" rackmount
- Noise-free punch in/out
- Built-in test oscillator (100Hz, 1kHz and 10kHz)
- Active-balanced in/output
- Equalization IEC/NAB switchable
- Rotary encoder enabling 0.01% steps for pitch
- Cue control with monitor loudspeaker
- Selective reproduce (SYNC) for overdubbing
- Optional transformer available
- Optional fader control function

The MX-55 series is designed for use in recording studios and audio post-production like the preceding MX-5050 models. This series uses 1/4" tape at user-selectable speed pairs of 15/7.5 ips or 7.5/3.75 ips, and is available in six versions. These are: full track, twin track NAB or DIN stereo, twin track with center-track time code, 4 track, and twin-track in a desktop "overbridge" design. The extra reproduce head provides flexible performance of 1/4 track reproduce. The transport features a DC quartz PLL capstan motor and a 7-digit tape timer featuring a 4-memory "mini-locator". Transport controls are arranged for easy, efficient editing and mastering. Front panel access is provided for record alignment, and a built-in oscillator provides 100Hz, 1kHz and 10kHz test tones.

Specifications

Transport	
Transport Control:	Variable within $\pm 20\%$
Wow and Flutter:	15 ips: $< \pm 0.06\%$ (peak weighted, DIN 45507)
	7.5 ips: $< \pm 0.08\%$ (IEC Pnb,386)
	3.75 ips: $< \pm 0.12\%$

Rewind Time:	< 100 seconds for 2500' (762m)			
Transport Controls:	F.Fwd, Rwd, Stop, Play, Rec., Edit, Cue, Speed, Reel Size			
Electronics Input:	Line: Transformerless, active balanced, > 10K ohms (20Hz to 20kHz) Level: +4dBm, -16dBm switchable/adjustable Max. Input: +30dBm Mike: Active balanced; input impedance: 10K ohms; minimum level: -70dBm			
Output:	Line: Transformerless, active balanced, > 200 ohms source impedance Level: Switchable level +4dBm or -16dBm Max. Level: +26dBm (balanced load) +2dBm (unbalanced load)			
Equalization:	NAB or IEC switchable. Recording equalization is adjustable on the front panel			
S/N Ratio:	Unweighted	15 ips	7.5 ips	3.75 ips
	(track width 2mm):			
	NAB	69dB	71dB	64dB
	IEC	72dB	68dB	64dB
	(track width 2.75mm):			
	NAB	70dB	72dB	65dB
	IEC	73dB	69dB	65dB
	(Track Width 6mm):			
	NAB	73dB	75dB	68dB
	IEC	76dB	72dB	68dB
	Measured with respect to a record level for 15/7.5 ips at 1.040nWb/m and for 3.75 ips at 740nWb/m. (30Hz to 18kHz audio filter used)			
Crosstalk:	> 55dBm at 1kHz on adjacent tracks. (2mm track width)			
Frequency Response:	(Overall record reproduce)			
	15 ips: 30 to 22,000Hz ± 2 dB			
	7.5 ips: 20 to 18,000Hz ± 2 dB			
	3.75 ips: 20 to 10,000Hz ± 2 dB			
Distortion:	< 0.3% (at 15 ips, 1kHz, 250nWb/m, record/reproduce Ampex #456)			
Physical				
Power Requirements:	100/117/220/240V, $\pm 10\%$, 50/60Hz single phase AC, 110W (at Record/Reproduce Ampex #456)			
Operating Environment:	41°F to 104°F (5°C to 45°C) 20 to 80% RH			
Storage Environment:	-4°F to 113°F (-20°C to 45°C), 10 to 80% RH			
Weight:	67 lbs. (approx. 30kg)			
MX-55-N	1/4" 2-channel recorder			\$3895.00
MX-55-NM	1/4" 2-channel recorder with meter bridge console			.4995.00
MX-55-TM	1/4" 2-channel recorder with center track time code			.5995.00

Refer to Green Section for Addresses and Telephone Numbers.

B-917

OTARI CORP.

Cartridge/Reel Recorder/Reproducers



CTM-10

**CTM-10 Series
Cartridge Recorder/Reproducers**

• Sum/difference matrix encoder • Front panel azimuth adjustment with phase comparator • Front panel indicators for: capstan servo lock, vari-speed, cart insertion error, jammed tape, primary, secondary and tertiary cue tone sense, matrix mode and azimuth alignment • LED tape timer display • Cue track record/erase • Headphone jack • Splice finder on record/play decks • 9600Hz external capstan control • ± 6% vari-speed control • Input level "SRL" presets • VU Meters with peak reading LEDs on record electronics, peak reading LED arrays on playback decks • Stop and FFW audio output mutes, user-defeatable • Tone generators for cues and tests: 150Hz sine for secondary cue, LF EQ; 1kHz sine for primary cue, ref. level; 1kHz square for phase compensation alignment; 8kHz sine for tertiary cue, bias or EQ alignment; 16kHz sine for azimuth or EQ alignment • Adjustable low frequency EQ • Test input jack • Record mode vari-speed lockout • Tape speed may be user-converted to 15, 7.5 or 3.75 ips (internal jumpers)

The series consists of three models: the CTM-10S stereo record/play deck, the CTM-10M mono record/play deck, and the CTM-10 mono + stereo playback deck, to which recording capability is a simple retrofit. Three CTM-10 series decks may be rackmounted side-by-side (5 1/4" H). The record electronics unit, housed in a separate chassis, is the same size.

The CTM-10 record electronics unit incorporates Dolby HX-Pro* bias optimization circuitry which increases the high frequency dynamic headroom, flattening out the maximum output level (MOL) curve to yield performance at 7.5 ips which is equivalent to non-HX performance at 15 ips; (likewise 7.5 ips performance at 3.75 ips). HX-Pro is not noise reduction, and needs no decoding.

*HX-Pro is a trademark of the Dolby Licensing Corp.

CTM-10	Mono/stereo play.	\$2,195.00
CTM-10-M	Mono rec./play*	2,445.00
CTM-10-S	Stereo rec./play*	2,695.00
CTM-10-R	Record electronics	1,350.00

* Requires CTM-10-R for record function

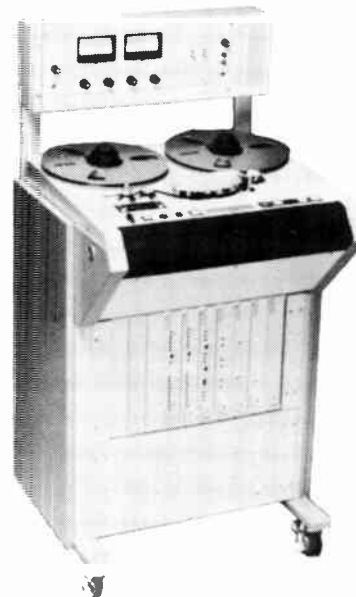
Accessories

ZA-5AT	Rackmount assembly with slide-out drawer feature	\$500.00
RK-CTM	Shelf type rackmount	98.00
PB-7KDA	Extension PCB for record electronics control PCB	99.00
PB-7KEA	Extension PCB for transport control PCB	101.00
PB-7KFA	Extension PCB for transport power supply	54.00
MAXTRAX R	Record and reproduce heads for MAXTRAX R format	275.00
Log Mode	Input/output cables for cue track for log mode	24.00

ARS-1000-DC 2-Channel, Half-Track Reproducer

1/4" two-channel, half-track reproducer with 25Hz tone sensor, end-of-message and cuetone relays with adjustable delay (100 ms to 15 s), 7.5/3.75 ips speeds, 19" rackmount. Designed for automated broadcast systems and other high-reliability reproduce only applications. 15/7.5 ips available on special order. 15.72" H x 21.3" W x 7.56" D—45 lbs. approx.

ARS-1000-DC	\$2,115.00
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MTR-10-C

MTR-10/12 Series II 2/4-Channel Mastering/Production Recorder/Reproducers

• Microprocessor controlled • 2 and 4 track formats in 1/4" and 1/2" tape sizes • Overbridge configuration standard with low-profile meter-under kit available (optional) • Audio, transport and power supply circuit boards in a modular configuration • MTR-10-4 4-channel model is easily converted to 1/4" operation with change of plug-in head assembly and transport conversion kit • Easy access to all circuit boards and adjustments • Easy interface to video editing systems, controllers or tape synchronizers • All transport functions, tally-backs, 9600Hz (I/O), and tach available on one multipin connector • 3 choices of optional remote controls available

All MTR-10/12 series models include selectable headphone amp, cue speaker, precision edit block, three speeds, two master bias presets, back timing, zero return, tape speed display (% or ips), two reel hold downs, operation and maintenance manual, take up reel, noise reduction and synchronizer interface mating connectors.

MTR-10-C	1/4" two-channel recorder in overbridge cabinet	\$9,295.00
MTR-10-CT	1/4" two-channel recorder with center-track time code	12,095.00
MTR-10-I	1/2" four-channel recorder	12,550.00
MTR-12-C	1/4" two-channel recorder—12.5" reel size	10,455.00
MTR-12-CT	1/4" two-channel recorder with center-track time code	12,995.00
MTR-12-I	1/2" four-channel recorder—12.5" reel size	13,525.00
MTR-12-ILX	1/2" four channel low-speed special duplicator master maker with extended performance. 3.75/7.5/15 ips only	14,050.00

Note: Low-speed versions (3.75/7.5/15 ips) can be ordered by adding an "L" to the above catalog numbers.

Accessories

ZA-55H	IEC center track time code retrofit kit for MTR-10/12	\$2,495.00
OT-1M-2	2-channel gapless punch in/out for MTR-10/12	500.00
OT-1M-4	4-channel gapless punch in/out for MTR-10/12	800.00
EC-401	Universal resolver unit	3,495.00
PB-76X	Extender card, audio and transport cards	186.00

OTARI CORP.

Master Recorders

MX-70 Series 1" Multi-Channel Recorder

The MX-70 is a multi-channel mastering recorder for audio post production and recording studios. The MX-70 features a microprocessor-controlled constant-tension transport, noiseless and gapless insert recording capability at any speed, a full function remote control, exceptional audio electronics, and is designed for easy interfacing to any SMPTE/EBU time code-based synchronizer, editor or machine controller. The series includes 1" 8-channel, 1" 8 prewired for 16-channel, and 1" 16-channel models. All versions may be converted to 1/2" 8-channel format with an optional conversion kit.

Proprietary microprocessors govern tape transport, dynamic braking and motion sensing, real time counter, return-to-zero, and return-to-cue functions. Tape speed is user-convertible between 30/15 and 15/7.5 ips speed pairs with $\pm 20\%$ variable speed control.

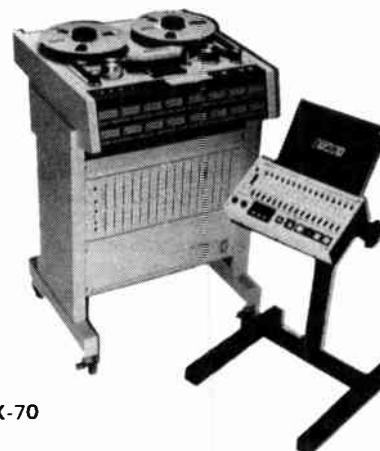
Editing features include record punch-in/punch-out bias ramp and timing for noiseless, gapless insert recording, a spot erase mode, a dump edit mode, and a splice block.

MX-70-16 1" 16-track recorder; includes remote transport/session controller CB-117. 30/15 ips or 15/7.5 ips field convertible. Electronically balanced I/O +4 or -10dB operating level \$21,650.00

MX-70-8/16 As above with 1" 8-track head assembly; prewired for 16-track. Expandable with upgrade kit. 16 VU meters, 16 connectors, 16-track wiring harness and motherboard \$18,650.00

MX-70-8 As above with 1" 8-track head assembly. 8 VU meters, 8 connectors, dedicated 8-track wiring harness and motherboard \$17,200.00

All machines include: 1) full function remote (CB-117-16-track, CB-117-8/16-track, CB-118-8-track); 2) splicing block; 3) seamless noise-free punch in/out; 4) spot erase; 5) adjustable record phase compensation; 6) maintenance/operation manual



MX-70

Accessories

- CB-119** 8-memory locator with one button store and locate capability, repeat shuttle, auto rewind, and transport controls \$1,495.00
- CB-120** 99-memory locator with auto-punch in/out, rehearsal mode, head and tail guard points, pre-roll, repeat shuttle, search zero, search start, search event time, and transport control 2,595.00
- CB-120B** Same as CB-120 with time code reader and generator and parallel transport interface 2,595.00
- ZA-70** Remote autolocator stand with casters 293.00
- PB-7BLA** Service extender board 195.00

MX-80 Series 2" Multi-Channel Recorder

The MX-80 is a 2" multi-channel mastering tape recorder for use in audio post production and recording studios. Like the MTR-90 and the MX-70, the MX-80 features a microprocessor controlled constant-tension transport, noiseless and gapless record punch-in/punch-out capability at any speed, a full function remote session controller, and external control connectors to interface easily to any SMPTE/EBU time code based synchronizer, editor or machine controller.

Three configurations of the MX-80 are available: 2" 32-track, a cost-effective dedicated 2" 24-track, and a 2" 24-track prewired for 32 tracks.

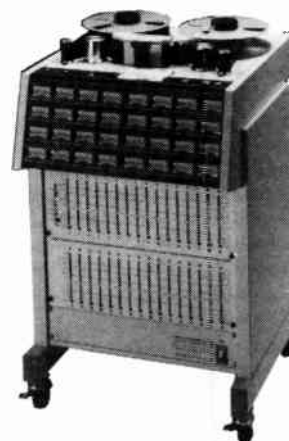
Each MX-80 features tape speeds which are user convertible between 30/15 and 15/7.5 ips speed pairs. Audio post-production users will appreciate that at 7.5 ips, an entire hour of continuous recording can be put on a single 10.5" reel.

The MX-80 record circuitry incorporates Dolby HX-Pro bias optimization circuitry. HX-Pro increases the MX-80's high frequency dynamic headroom, flattening out the maximum output level (MOL) curve to yield performance at 15 ips which is equivalent to non-HX performance at 30 ips; and likewise 15 ips performance at 7.5 ips. Please note that HX-Pro is not noise reduction, and needs no decoding.

MX-80-32 2" 32-track recorder. \$39,150.00

MX-80-24/32 2" 24-track prewired to expand to 32 channels 34,500.00

MX-80-24 2" 24-track recorder dedicated. 33,850.00



MX-80

Accessories

- CB-119** 8 memory locator with one button store and locate capability, repeat shuttle, auto rewind, and transport controls \$1,495.00
- CB-120** 99 memory locator with auto-punch in/out, rehearsal mode, head and tail guard points, pre-roll, repeat shuttle, search zero, search start, search event time, and transport control 2,595.00

MTR-90/100 Series 16, 24 Channel Master Multi-track Recorder

- Optimal Tape Guidance System — a pinchroller — less PLL capstan, two 1/2 HP D.C. reel motors, and integral tape guidance headblock assembly
- Adjustable record phase compensation
- Transformerless I/O with high current, direct-coupled outputs (isolation transformers optional)
- Spot erase, bidirectional cue, and elapsed time indicators
- Integral splicing block and flip-up flush mounted transportation handles
- Easy access tilting deckplate accommodates up to 14" reels with automatic reel size sensing
- ± 20% vari-speed control with ips and percentage readout
- 5 digit real time indicator
- Serial I/O interface (RS-232)
- Designed for easy interface to any SMPTE based video editor, tape machine controller or synchronizer
- Spare channel of audio electronics
- Electronic inserts and transport ballistics have been optimized for post production applications

MTR-90-24/24 2" 24 Track Recorder Includes remote transport/session controller (CB-113), 30/15 ips tape speeds, electronically balanced I/O with high current direct coupled outputs . . . \$52,950.00

MTR-90-16/24 As above with 16 Track Assembly, 16 channels of electronics, 24 track wiring harness and motherboard, 24 VU meters, 24 channels of connectors . . . \$49,975.00

Accessories

- CB-115 Ten-memory locator . . . \$2995.00
- ZA-52J Stand for locator and remote . . . 235.00
- EC-101 Chase synchronizer module option . . . 3295.00
- CB-121 Remote control for offsets and display of synchronizer . . . 495.00

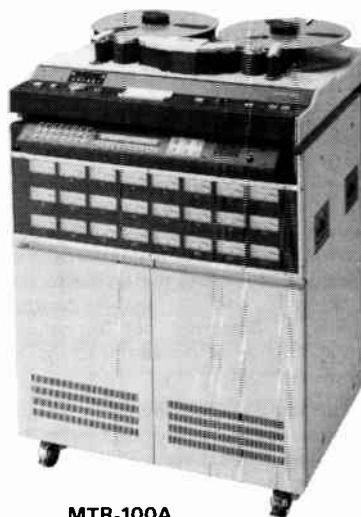
MTR-100A Analog Multi-Track Tape Recorder

- Available three speeds: 30/15/7.5 ips
- Audio automatic alignment functions in less than 240 seconds
- Pre-settable winding speed from 2 to 472 ips
- Tape end detect system
- Reliable tape transport mechanism. Easy for maintenance by installing mechanical parts of the upper side of the top panel
- Built-in mini-autolocator includes these functions: selectable indications of timer/time code frame/tape speeds ips/cm/sec., search zero, search cue points, search last play start point, shuttle function, drop frame display function, reverse play/erase and record, library wind mode
- ± 50% vari speed control
- Improved frequency response by mounting head-amplifier and SEL/REP head amplifier under the head assembly
- Transport control switch order (available in three variations)
- Wide range of optional accessories including parallel and serial interface
- Easily interfaced with broadcast and recording studio equipment

MTR-100A . . . \$59,950.00

DTR-900 Digital Audio Tape Recorder

- Pinch rollerless transport
- Electrical and tape compatibility with other PD format tape machines
- CRC (cyclical redundancy check) and RSC (Reed-Solomon code) error detection and correction circuits
- Two auxiliary data channels for storing console automation data, subcode data, or additional audio
- Two analog audio tracks for audible reference when cut/splice editing, or for storage of other clock or synchronization data
- A dedicated track for SMPTE/EBU time code data
- Gapless, seamless punch-in and punch-out circuitry which is quick, silent, and switchable between 5 and 10ms



MTR-100A



DTR-900

- Data output clocking in the PD format may be derived from any digital channel, eliminating the need for a dedicated control track
- Sampling rate switchable between 48kHz and 44.1kHz
- ± 10% vari-speed control
- Easy interface to SMPTE/EBU time code based synchronizer and editing systems through parallel or serial (RS-232 or RS-422) control ports
- EC-100 series chase synchronizer available
- Resolves to any common time base reference for easy interface to video and film systems
- Built-in SMPTE/EBU time code generator/reader
- Standard 18 element-per channel peak-reading meters
- Active balanced line inputs and outputs
- Standard pre-emphasis control system
- Digital overdubbing and "ping-pong" recording capabilities
- 100 cue-memory autolocator/session controller, featuring automated punch-in/punch-out and time code autolocation
- User-assignable transport control switches

DTR-900-16/32 Digital 16/32 . . . \$151,950.00
DTR-900-24/32 Digital 24/32 . . . 167,900.00
DTR-900-32 Digital 32 . . . 189,000.00

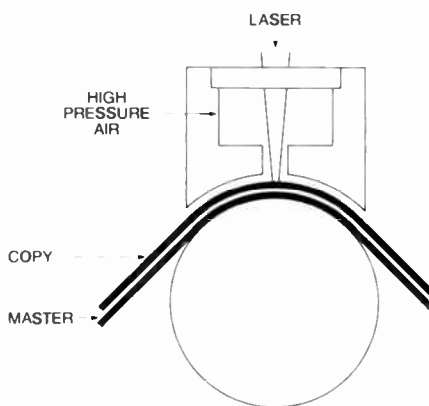
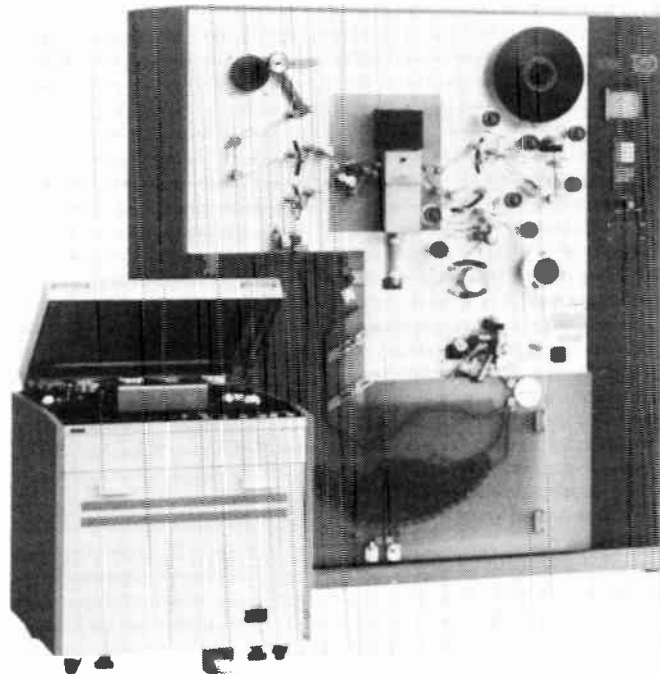
OTARI CORP.

Video Duplicator

T-700 High Speed Video Duplicator

- 250W Nd-YAG single crystal laser uses a Krypton gas pump lamp which is simple and inexpensive to replace
- Simple, one operator control requires little technical training
- Eliminates wasted tape caused by inappropriate length, preloaded cassettes
- Higher productivity per square foot of production space means reduced overhead
- Automated loading and splicing of master tape eases the burden on the operator and facilitates faster master tape changeovers
- Automatic system shutoff when the amount of blank tape that is remaining is not enough to complete a whole program
- Integral tape cleaning system collects loose oxide particles from the tape
- Comprehensive error diagnostics displayed on the CRT screen to allow easy recovery from error conditions
- All electronics assemblies, circuit boards, and cabinet panels are easily removed for repair or replacement, greatly reducing downtime
- Mirror-master recorder available for VHS (NTSC or PAL)

The T-700 combines advanced tape transport technology and the Thermal Magnetic Duplication (TMD™) process for a laser-based pancake-type duplicator utilizing a high-speed tape handling bin loop.



During the laser heating process and subsequent cooling period, excellent short wavelength transfer is effected by the intimate contact accomplished by the print wheel and capstan drive system.

The TMD technology was developed for video duplication by E. I. DuPont de Nemours and Company. The process relies on the low Curie temperature (the temperature at which a magnetic particle loses its magnetic properties) of chromium dioxide (CrO₂). The tape is heated by an infrared laser while the copy tape is in contact with a

specially made mirror master of the video program material. As the two tapes emerge from the heating zone and the CrO₂ particles cool, they orient themselves into an exact mirror image of the master tape.

The T-700's pancake-type, continuous-loop design will produce tapes several times faster than other high speed designs that utilize "master tape shuttle systems" that require the duplication process to stop for master tape rewind after each copy. This continuous-loop approach also allows statistical quality control techniques to be used, compared to the time-consuming batch techniques necessary with real-time duplication.

To provide full operator control, an informative display shows all pertinent system performance parameters such as speed and tension levels, in addition to displaying all production data such as program length, piece counts, copy and master tape serial number.

Specifications

- Dimensions:** 77" H x 66.1" W x 34.9" D
- Weight:** 2000 lbs.
- AC Power:** 480V, 3 phase, 50/60Hz at 20A per phase
- Air:** 100 psig of clean, dry air at 13cfm maximum flow

T-700POR

OTARI CORP.

Universal Resolver/Time Code Reader



EC-401

EC-401 Universal Resolver

Common Features

- **Widelok™:** A proprietary wide frequency range, constant phase circuit which maintains accurate phase lock (resolve) over $\pm 30\%$ frequency range
- **Internal timebase generator:** A crystal controlled oscillator providing a stable 50.000, 59.940, or 60.000Hz output, selectable from the front panel. This output is also available to control other equipment
- **Editor interface:** Provides comprehensive control over resolver operation, includes BUMP and SLIP control inputs, time base outputs, and serial time code data output
- **SLIP controls:** Allow inaudible retard and advance slewing by fields, and 0 to 3% front panel SLIP speed adjustment. Includes indicator
- **BUMP adjustment:** Allows tape retard or advance while the resolver is being bypassed; 0 to 30%
- **PHASE adjustment:** Allows the phase relationship between the control and reference signals to be continuously varied over one pilot cycle
- **NORMAL ballistics mode:** High correction gain mode for use with most field tapes. Widelok provides phase lock over $\pm 30\%$ speed range and follows any variations or discontinuities in pilot signal
- **AUTO ballistics mode:** Automatic gain switching for minimizing audible wow and flutter on certain "problem" tapes, provides "loose-lock" to smooth over most discontinuities
- **GAIN trim** optimizes performance for capstan motor characteristics
- **Memory reference logic** (used in both ballistics modes): Maintains reference to last known valid speed, when valid tape signal is lost
- **Variable Speed Oscillator:** For special effects, accommodation of off-speed tapes, and for rough correction of sync point
- **VALID pilot window detector:** Provides LED confirmation that a valid pilot signal of -20dB or higher, and between 40 and 80Hz, is present
- **Speed indicators:** Green and amber LEDs confirm "locked" or "above/below speed" conditions
- **Sonic alarm:** Signals a non-standard record condition, or loss of lock in AUTO mode
- **Input select:** Front panel switchable tape input levels of LINE (0dBm), or HEAD (75dBm)

- **Video loop-through:** Allows "daisy chaining" of video signal; with switchable 75 ohm termination
- **Time code reader** reads and displays SMPTE/EBU time code from 0.1 to 15 times play speed (at 15 ips). The reader includes 59.94Hz output, HOLD button, and drop frame indicator
- **Universal output** controls virtually all capstan servo configurations: 9600Hz referenced; up to ± 10 VDC potential, and 50/60Hz synchronous (through an external MDA for older machines)

The EC-401 Universal Resolver is a multi-purpose speed controller for audio tape machines used in film and video interface applications. The EC-401 utilizes Widelok to lock a tape machine's speed control track to an external or internal timebase reference.

The tape machine control track may be a Mono (biphase) or FM Pilot signal, SMPTE/EBU time code, or any signal in the 40 to 80Hz range. External reference inputs to the system may be SMPTE/EBU time code, a composite video signal, AC mains, or any 40 to 80Hz TTL level signal. An internal reference of 50.000, 59.940, or 60.000Hz, generated from a crystal-controlled oscillator, may also be selected as a reference signal.

Interchangeable plug-in modules are available for the tape input section of the EC-401 offering a choice of Mono Pilot record/playback, FM Pilot record/playback, or combination Mono/FM playback-only. Corresponding head assemblies are available for Otari MTR 10/12 Series tape machines. The Otari FM Pilot Head assembly will also play back SMPTE/EBU center channel time code (offset compensation may be required for your application).

EC-401 **\$3495.00**

- *Patent pending
- **Mono Pilot is compatible with NeoPilot; FM Pilot is compatible with NagraSync. NeoPilot and NagraSync are trademarks of Nagra/Kudelski Magnetic Recorders, Inc.

EC-201 Portable Time Code Reader

- **Wide reading range:** 1/20 to 60x play speed (input code quality dependent)
- **Active balanced, XLR, +4dBm** inputs and outputs
- **Reshaped time code output:** to help clean up "problem" time code
- **Auto-Off circuit** to save battery current while the input is inactive. The display time before blanking is adjustable between 1 and 15 seconds. The auto-off feature may also be switched out for continuous display
- **CMOS construction** allows up to 60 hour continuous use on one set of four "AA" batteries; over 120 hours on standby
- **User bits display** with full hexadecimal capability
- **Hold button** to "freeze" the display for edit logging
- **Input range:** -10 to +10dBm nominal
- **Equalization adjustment** on front panel optimizes the EC-201's phase response for widest reading range, relative to the tape machine's reproduce circuits
- **9VAC adaptor** included

The EC-201 is a compact, high performance SMPTE/EBU Time code reader designed as an accessory to any audio or video tape recorder. Its small size, light weight and battery/AC operation allow it to be used in both studio and field production, as well as for trouble shooting time code based equipment.

EC-201 **\$495.00**



EC-201



PACO

KDI20A

Dememorizer/Charger

***Simplifies recharging of NiCad Batteries
with Built-in Discharger, which eliminates memory.***

Dememorizes/Charges
4 Batteries at a time
PACO DP-11 (Sony NP-1)
or
PACO DP-1240 (Sony BP-90)

**EASY, FAST
EFFICIENT**



PACO

ELECTRONICS U.S.A., INC.

World Trade Center • 350 So. Figueroa St., Suite 364 • Los Angeles, CA 90071 • Tel: (213) 617-9323 • FAX: (213) 687-3524 • TLX: 756923

PACO ELECTRONICS USA, INC.

Battery Chargers/Packs

KD-11 Portable Quick Battery Charger

• Charge 4 batteries consecutively • Charge 2 DP-1240 batteries consecutively by using the selector switch • Any available channel outlet may be used for charging • Initiates a trickle charge after the quick charge is completed • Operation without switching to 100VAC ~ 240VAC, 50-60Hz

Specifications**Quick Charging**

Current: 1.6A

Trickle Charging

Current: 50mA

Automatic Switching:

To 50mA trickle charge after completion of quick charge. Detection automatic after voltage drops

Input Voltage:

100V ~ 240V \pm 10% 65VA (worldwide input without voltage switching operation)

Charging Times:

DP-11: 1 hr.; DP-1240:3 hrs.

Quick Charging**Display:**

The red LED illuminates during quick charge and the green LED illuminates during trickle charge. (The same LED changes from red to green)

Overall Dimensions:

65H x 140W x 250Dmm (without rubber pads and handle)

Weight:

Approx. 1.9kg (without AC cord)

KD-11 \$750.00

KD-220 Portable Quick Battery Charger

• Simultaneous quick charging of two battery packs • Compact and lightweight by adoption of switching regulator • Operation without switching to 100 ~ 240VAC 50/60Hz • Applicable to three types of batteries (NP-1, DP-1240 and DP-2460) • Functions for quick and normal charging as well as matching for overdischarged batteries • Protection from abnormal overcharge of batteries by action of total timer (protective timer) when detection of completion of quick charging fails due to malfunction of batteries • Complete charging is assured by automatic switching to trickle charge after completion of quick or normal charge • Independent emergency operation owing to two built-in independent power supplies

Specifications**Operating Condition**

Temperature: 0 to 35°C (32 to 95°F)

Humidity: Up to 90% RH

Input Power:

100 ~ 240VAC \pm 10% 50/60Hz (worldwide input without voltage switching operation)

Power Consumption:

130VA (100VAC), 165VA (240VAC)

Overall Dimensions:

2 1/2" H x 5 1/2" W x 9 4/5" D (without rubber pad and handle)

Weight:

Approx. 4.6 lbs. (with AC cord)

KD-220 \$750.00

KD-240 Portable Quick Battery Charger

• Charger for DP-1240 can charge 4 batteries consecutively • Compact and lightweight by adoption of switching regulator • Any available channel outlet may be used for charging • Initiates a trickle charge after the quick charge is completed • Operation without switching to 100VAC ~ 240V 50/60Hz

Specifications**Quick Charging Current:**

1.7A

Trickle Charging

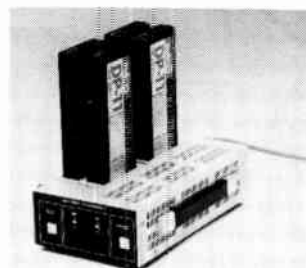
Current: 70mA

Automatic Switching:

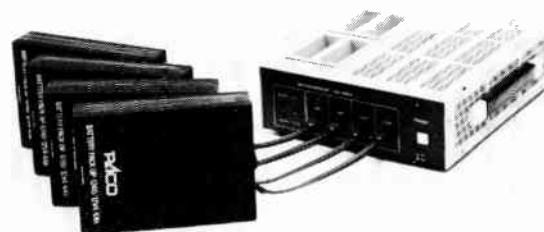
To 70mA trickle charge after completion of quick charge. Detection is automatic after the voltage drops

Input Voltage:

100V ~ 240V \pm 10% 65VA (worldwide input without voltage switching operation)



DP-11



KD-240

Charging Time:

DP-1240: 2.5 hrs.

Quick Charging Display:

The red LED illuminates during quick charge and the green LED illuminates during trickle charge. (The same LED changes from red to green.)

Overall Dimensions:

65H x 140W x 250Dmm (without rubber pads and handle)

Weight:

Approx. 1.8kg (without AC cord)

KD-240 \$650.00

DP-11 Professional NiCad Battery Pack

• 13.2V pack adopted to minimize the common memory problems of the NiCad battery packs • A built-in thermal protector guards the battery. When a short-circuit occurs, the thermal protector engages and the malfunction is isolated. It is not necessary to replace the fuse. Because of the automatic return system • The high power cells enable 1.7AH (0.2C discharge rate) • Full/EMP indicator for usage log (manual operation) • This is the direct replacement for Sony NP-1

Specifications**Voltage:**

13.2V

Capacity:

1.7AH (0.2 C discharge rate)

Protection Network:

Thermal protector engages at 75°C (167°F) \pm 5°C (9°F)

External Dimensions:

2.8" H x 7.2" W x .98" D (71 x 184 x 25mm)

Weight:

1.3 lbs. (580g)

DP-11 \$150.00

DP-1240 NiCad Battery Pack

• High capacity of 4.4AH (C/5-rate) is attained by adopting the high output type cell • Each cell is carefully selected for best performance • A built-in thermal protector guards the battery. When a short-circuit occurs, the thermal protector engages and the malfunction is isolated. It is not necessary to replace the fuse because of the automatic return system • The exterior is composed of a durable fiber-reinforced plastic • This is the direct replacement for Sony BP-90 and is 200g (0.44 lb.) lighter

Specifications**Voltage:**

12V

Capacity:

4.4AH (C/5-rate)

Protection Network:

Thermal protector is built-in. Off at 75°C (167°F) \pm 5°C (41°F)

External Dimensions:

6 11/16" H x 4 13/16" W x 1 1/2" D (170 x 123 x 37mm)

Weight:

3.3 lbs. (1.50kg)

DP-1240 \$230.00

PALTEX CORP.

Editing Systems/System Interfaces

EDDi™ Non-Linear Editor

- Filmstyle off-line • Real-time preview • Master scene log • Working scene log • Clip and mark bins • 4000 cuts per project • 150 project store • Dynamic scene control

EDDi is a laser disc or VHS video tape based non-linear editor that uses a filmstyle approach to 'off-line' editing. Frame numbers or time code are never displayed on the screen, all references to source material are visual or by user defined 'named' labels. With a minimum configuration of four laser discs or eight VHS players it is possible to perform previews of most scenes in real-time. To support real-time viewing of material, EDDi allows the mounting of multiple copies of the same material.

EDDi **.POR**

Abner A/B Roll Editor

- Individual control of VTR transports • SMPTE/EBU time code readers (optional) • A/B roll and sync roll modes • Insert and assembly editing modes • Split video and audio edits • Frame accurate VTR servoing (time code mode) • Animation editing • One button extend edit • Auto/manual take control for GPI trigger • Multi-event memory storage • On-the-fly, still frame or numeric entry mark with trim capability • Printer/PC output (RS232C) • System Diagnostics • Advanced microcomputer technology

The Abner is a low cost A/B roll micro-processor based video editing system using either SMPTE/EBU time code or control track and is available in a 19" rack/deskmount or slim line tabletop configuration.

Operating Configuration with Servo Routine

- JVC-8200, 8250, 7700, 8600, 8800, 600, 850, 900, S-710
- Panasonic-AG6500, AG-7500 • Sony-Type 5 series, BVU 800, 820, 850, 870, BVW10, BVW15, BVW40

Without Servo Routine

- JVC-6400 • Panasonic-8500, 9600, 9240, AU700 • Sony-SLO-383

- Abner/TC **\$6600.00**
- Interface Cables **300.00**
- Sony Type 5 Cable **600.00**

AR-2000 Auto Ramp Generator

The AR-2000 is a single rack unit device that provides the JVC KM-2000U Video Switcher with an auto-transition capability for dissolves and wipes taking up to 299 frames.

This will allow a video tape editor, the Paltex Abner for example, to trigger the KM-2000U with a General Purpose Interface (GPI) command during an A/B roll edit sequence.

The AR-2000 interfaces with the KM-2000U through the switcher control panel and can be field retrofitted to any existing unit without any major modifications.

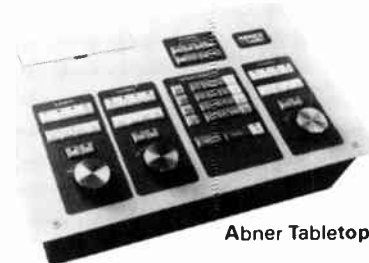
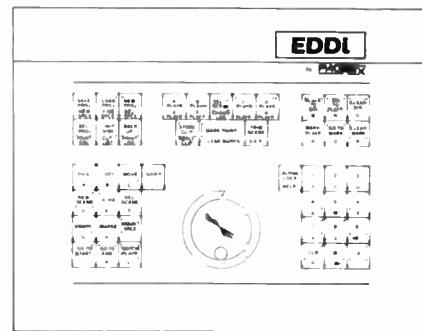
AR-2000 **\$1200.00**

SID Parallel VTR to RS422 Serial Interface

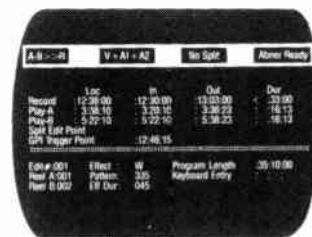
The SID unit provides various parallel remote VTRs the capability to be integrated with editing systems using RS422 serial interfaces, the E-Series from Paltex for example.

SID establishes communication with the editor interface and converts the serial data stream into the discrete parallel commands required by the VTR. SID reverses the process and passes back to the serial interface, all VTR acknowledgements.

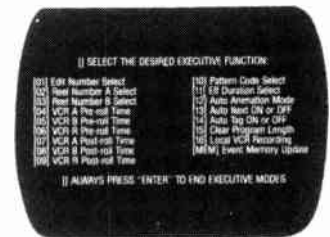
SID will also add Time Code to the RS422 serial line via its built-in time code reader.



Abner Tablettop



Abner Main Display



Abner Executive Menu

Using the latest micro-processor technology, SID provides rotary switch selection of multiple parallel VTRs including: KR-M800U, BR-S810U, BR-8600, PR-8800, VO-5850, VPR-2B, AG-6500, and AG-7500.

SID together with a suitable parallel cable will convert any of these to RS422 without any software changes. There is also a version that will work with the HR-200 and TT-7000.

The unit comes complete with a 9-pin serial cable and customer specified VTR cable.

- SID **\$1300.00**
- SID for 1" VTRs **1600.00**

R-SID Serial VTR to Parallel Control System

The R-SID unit allows various RS422 serial VTRs to interface with the Abner Editing System.

R-SID communicates with the serial VTR and converts the data into the parallel structure needed by Abner. At the same time R-SID reverses the process and provides the VTR with serial data from Abner commands.

Using the latest micro-processor technology, R-SID identifies all machine types with one set of software, thereby allowing it to be plugged into numerous styles of VTR without modification.

R-SID will communicate with the following: BVU-950, BVU-800 Series, BVH-Series, BVW/SP-Series, AU-650, KRM-860, CR-850, PR-900.

The unit comes complete with a 9-pin serial cable, multi-pin Abner cable and external low voltage power supply.

R-SID **\$800.00**

PALTEX CORP.

Editing Systems

E-Series Videotape Editing Systems

The Paltex concept allows you to expand and enhance the system as your needs grow, from the Elite to the Esprit Plus while maintaining system compatibility. This in turn allows staff to freely move between edit rooms of varying power without problem.

With different versions to choose from, you now have the proven benefits of Paltex Editing at a price that fits any budget.

Elite

- Up to 6 VTR interfaces, any mix 1", 3/4", 1/2"
- 3 machine edit, keyboard assignable
- 3 SFC's per event in EDL
- 3 user definable keys
- 250 event non-volatile EDL memory
- Assignable record/play capability
- Switcher register recall
- Delayed effects with A1/A2 splits
- EDL text edit, clean, block and sort routines
- Full page EDL display
- Sequential auto assemble
- Time code phase auto adjust
- Event match of EDL
- Rotary Varascan™ shuttle control
- Jog keys, ± one field
- A/V sync frame bump
- Effects rehearse facility
- Auto source selection
- Scratch pad memory
- Help and switcher set-up help

Elan

Includes Elite features, plus:

- Up to 12 VTR interfaces, any mix 1", 3/4", 1/2"
- 4 machine edit, keyboard assignable
- 5 SFCs per event in EDL
- 5 user definable keys
- 326 event non-volatile EDL memory
- Insert A1, A2, A3, A4
- Lookahead cue mode
- Speedscan™ programmable speed
- Freezescan™ programmable freeze
- Animation assembly
- Checkerboard and sync roll auto assembly
- Active ListTrac™ of EDL
- Auto list match of EDL
- Recall of sync roll effects from EDL
- Split screen EDL display
- Comments only event search
- Slow play with speed set
- Delayed start of source VTRs
- User key text with edit capability

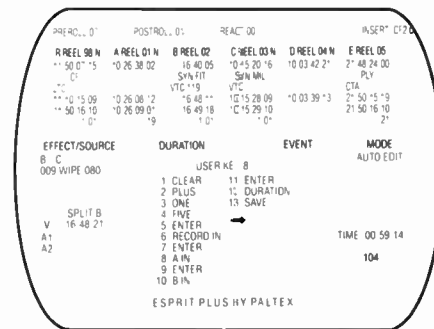
ES/P

Includes Elite features, plus:

- Up to 12 VTR interfaces, any mix 1", 3/4", 1/2"
- 4 machine edit, keyboard assignable
- 5 SFCs per event in EDL
- 3 user definable keys
- 998 event non-volatile EDL memory
- Backtrac™ "off-line" software
- Checkerboard auto assembly
- Active ListTrac™ of EDL
- Auto list match of EDL
- Recall of sync roll effects from EDL
- Programmable split screen EDL display
- Comments only event search
- User key store



Esprit Plus



ESPRIT PLUS DISPLAY WITH USER KEY SET-UP TEXT

ES/D

Includes Elite and Elan features, plus:

- Up to 12 VTR interfaces, any mix 1", 3/4", 1/2"
- 6 machine edit, keyboard assignable
- 10 SFCs per event in EDL
- 10 user definable keys
- 500 event non-volatile EDL memory
- Multi-record up to 6 machines
- Slave play and slave record facility
- Slave off-sets automatically listed in EDL
- Switcher memory data stored with EDL
- Auto data store and manual store capability
- M/E map data re-assignment
- Total learn-mode speed control in EDL
- Mid-interval learn and freeze
- FIT™ expansion and compression
- Programmable split screen EDL display
- All extra sources in EDL with recall
- FFWD and RWD speed set

Esprit Plus

Includes Elite, Elan and ES/D features, plus:

- Up to 16 VTR interfaces, any mix 1", 3/4", 1/2"
- 8 machine edit, keyboard assignable
- 10 SFCs per event in EDL
- 10 user definable keys
- 700 event non-volatile EDL memory
- Audio Console 'ESAM' interface

Elite	\$ 13,600.00
Elan	18,000.00
ES/P	22,000.00
ES/D	27,200.00
Esprit Plus	37,600.00

PALTEX CORP.

Editing System Comparison Chart

E-Series Videotape Editing System Comparisons

FEATURE						FEATURE					
	ELITE 3 OF 6	ELAM 4 OF 12	ESP 4 OF 12	ESD 6 OF 12	ESPRIT PLUS 6 OF 16		ELITE 3 OF 6	ELAM 4 OF 12	ESP 4 OF 12	ESD 6 OF 12	ESPRIT PLUS 6 OF 16
Maximum Number of Control Ports	14	20	20	20	25	Comments in EDL	✓	✓	✓	✓	✓
Maximum Number of Serial VTRs	6	12	12	12	16	Comments Keyboard	○	○	○	✓	✓
Maximum Number of VTRs in One Edit	3	4	4	6	8	Comments Only Events Search	x	✓	✓	✓	✓
RS422 VTR Interface	✓	✓	✓	✓	✓	Sequential Auto Assembly	✓	✓	✓	✓	✓
RS422 to Parallel VTR Interface (SID)	○	○	○	○	○	Animation Assembly	✓	✓	x	✓	✓
RS422 Switcher Interface	✓	✓	✓	✓	✓	Continuous Roll Auto Assembly	x	✓	x	✓	✓
Audio Console Serial Port	✓	✓	✓	✓	✓	Checkerboard Auto Assembly	x	✓	✓	✓	✓
Audio ESAM Software	○	○	○	○	✓	Lookahead Cue Auto Assembly	x	✓	x	✓	✓
Digital Effects Serial Port	✓	✓	✓	✓	✓	Record VTR Re-assignment	✓	✓	✓	✓	✓
Digital Effects Control Software	○	○	○	○	○	Multi-Record	x	x	x	✓	✓
Character Generator Serial Port	✓	✓	✓	✓	✓	Slave Play and Slave Record	x	x	x	✓	✓
Character Generator Control Software	○	○	○	○	○	Full Screen EDL Display	✓	✓	✓	✓	✓
Play Deck Preview Switcher Port	✓	✓	✓	✓	✓	3 Line Split Screen Display	x	✓	✓	✓	✓
Disk Drive I/O Port	✓	✓	✓	✓	✓	Programmable Split Screen	x	✓	✓	✓	✓
RS232C Printer Port	✓	✓	✓	✓	✓	HELP Instruction Display	✓	✓	✓	✓	✓
SFC Communications Port	✓	✓	✓	✓	✓	Scratch Pad Memorys	3	5	5	5	5
SFC Interface	✓	✓	✓	✓	✓	Manual Speed Control During Edit	✓	✓	✓	✓	✓
SFC Relay Closures	10	10	10	10	10	Programmable FREEZESCAN™	x	✓	x	✓	✓
SFC TTL Logic Triggers	10	10	10	20	20	Programmable SPEEDSCAN™	x	✓	x	✓	✓
SFCs per Event in EDL	3	5	5	10	10	Total Learn Speed Control	x	x	x	✓	✓
Switcher Register Recall	✓	✓	✓	✓	✓	Expansion and Compression (FIT)	x	x	x	✓	✓
Switcher Memory Data Store	x	x	x	✓	✓	Slow Play with Speed Set	x	✓	x	✓	✓
Switcher X-Point Re-assignment	✓	✓	✓	✓	✓	FFWD and RWD Speed Set	x	x	x	✓	✓
Switcher and SFC Effects Rehearse	✓	✓	✓	✓	✓	Delayed Source VTR Roll	x	✓	x	✓	✓
Switcher Delayed Effects with Splits	✓	✓	✓	✓	✓	Time Code Phase Auto Adjustment	✓	✓	✓	✓	✓
Switcher and Peripheral HELP Display	✓	✓	✓	✓	✓	LTC/CTR Select per VTR	✓	✓	✓	✓	✓
User Definable Keys	3	5	3	10	10	VITC Readers	○	○	○	○	○
User Key Data Disk Store	✓	✓	✓	✓	✓	Auto C/F Adjust 4 and 8 Field	✓	✓	✓	✓	✓
User Key Text and Edit	x	✓	x	✓	✓	Auto Trim and Auto Exchange	✓	✓	✓	✓	✓
EDL Memory Average Number of Lines	600	800	2400	1200	1700	Auto Source Select	✓	✓	✓	✓	✓
Non-volatile Memory	✓	✓	✓	✓	✓	AV Sync Frame Bump	✓	✓	✓	✓	✓
Paltex and Other EDL Formats	✓	✓	✓	✓	✓	± One Field Jog	✓	✓	✓	✓	✓
EDL Text Edit	✓	✓	✓	✓	✓	Print CRT Display	x	✓	✓	✓	✓
EDL Clean-up	✓	✓	✓	✓	✓	BACKTRAC™ Off-Line Software	x	x	✓	x	x
EDL Sort Routine	✓	✓	✓	✓	✓	E/E Previewing	✓	✓	✓	✓	✓
EDL Block Moves	✓	✓	✓	✓	✓	RS232 Preview Switcher	○	○	○	○	○
EDL Event Match	✓	✓	✓	✓	✓	Parallel Switcher Interface	○	○	○	x	x
Active ListTrac™ of EDL	x	✓	✓	✓	✓	Diagnostics	✓	✓	✓	✓	✓
Auto List Match of EDL	x	✓	✓	✓	✓	System Expansion	✓	✓	✓	✓	✓
Sync Roll Effects in EDL	x	✓	✓	✓	✓	Multiple 16 Bit Processors	✓	✓	✓	✓	✓
Extra Sources Recalled from EDL	x	✓	✓	✓	✓	EDL-DOS PC Software	○	✓	✓	✓	✓

KEY: ✓ STANDARD, ○ OPTION, x NOT AVAILABLE

PANASONIC BROADCAST SYSTEMS CO.

CCD Camera/Recorder/Adaptor

AK-400 3-CCD Color Video Camera

- Frame interline transfer CCD image sensor (RGB) 574H x 499V pick-up element
- f/1.4 prism with quartz filter
- Dual concentric filter wheels
- Variable speed electronic shutter (1/125, 1/250, 1/500, 1/1000 sec.)
- 2000 lux (at f/5.6) high sensitivity
- High signal-to-noise ratio of 60dB
- 650 TV lines resolution
- 0.05% all zones registration
- Dynamic highlight compression
- 6dB black stretch (0-25%)
- Iris override $\pm 1/2$ f-stop
- Gain select: 0, +9, +18dB
- Automatic modes: auto black, auto white (A, B preset), pulse cancel
- 3 channel RGB linear color matrix
- RGB shading correction: white H/V, black H/V, extender
- Lens extender red/blue gain, master pedestal
- 2H vertical aperture correction
- Zebra level indicator



AK-400
(Docked to AU-400)

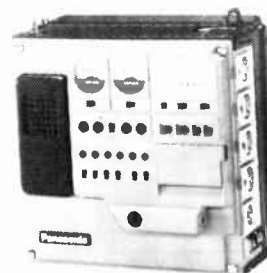
- Viewfinder character display: audio level, f-stop, filter-position, gain, auto, matrix, on/off, DC supply, shutter, lens extender, black stretch
- Viewfinder LED indicator: rec tally, VTR warning, auto, shutter, high gain, lens extender, black stretch, battery warning, tape remain

AK-400 Standard Configuration:

AK-400H camera head, AK-VF410 1.5" viewfinder, AK-Q470 tripod mounting adaptor, AKY-1044 shoulder strap

AU-400 Camera Recorder

- High picture quality, with 1" VTR performance, due to component analog CTCM recording and metal particle tape
- Compact, lightweight, rugged construction
- Dust and moisture resistant design and construction
- 20-minute recording with small 1/2" cassette. No adaptor is required to use the small cassette directly in other M-II VTRs
- Because of the dual video and audio heads, confidence video and audio can be checked on the built-in camera viewfinder and speaker during recording
- Playback can be monitored with the camera viewfinder or a B/W monitor via the video output connector
- Auto backspace editing is accurate within 3 ± 2 frames
- Built-in SMPTE time code generator (VITC/LTC) with separately addressable user bits
- Comes with external time code input
- Four audio channels: FM audio (CH3/CH4) and linear audio (CH1/CH2)
- Dolby C noise reduction circuitry for linear audio channels



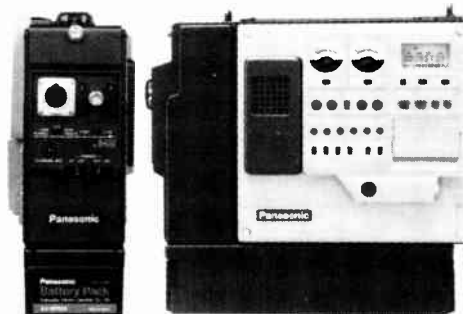
AU-400

- Convenient in-the-camera viewfinder displays status, and provides an audible warning from the speaker should a problem occur
- Audio can be monitored on the side-mounted speaker
- Incorrect operation is prevented by the Inhibit switch

AU-S400 VTR Adaptor

- Selectable NTSC, Y/C, PR/PB input
- 26-pin camera connector input
- NTSC video BNC input
- Microphone level control for adjustment of input level from the camera microphone
- Tape indicator displays remaining time in 5-minute steps
- Battery compartment accepts two AU-BP220 Battery Packs

This VTR adaptor increases the range of applications of the AU-400, making it a stand-alone M-II portable recorder. It can be connected to a component or composite type ENG camera system.



AU-S400 (Docked to AU-400)

Accessories:

- AU-BP220** Rechargeable 2.2 AH 12VDC NiCad battery pack for the AU-400, AU-S400 and AU-500
- AU-BP402** Rechargeable 4 AH 12VDC NiCad battery pack for the AU-500
- AU-M400** AU-M400 camera-base mounted battery holder for the AU-BP220

- AU-B420** Battery charger for the AU-BP220 (1 hr. charge time) and AU-BP402 (2 hr. charge time)
- AU-B110** AC adaptor, supplies 12VDC at 10A for the AU-400, AU-S400, AU-500 and AU-505 via 4-pin XLR connector
- AU-B50** AC adaptor, supplies DC power for the AU-505
- AU-H400** Soft case for the AU-400/SU-400 combination

PANASONIC BROADCAST SYSTEMS CO.**Portable VTR/Player/
Time Base Corrector****MII****AU-500 Portable Recorder/Player**

- High picture quality provides 1" VTR performance due to component analog CTCM recording and metal particle tape
- 90-minute recording/playback using standard 1/2" cassettes. A small cassette provides 20-minute recording/playback without requiring an adaptor
- Confidence playback of color video and audio is possible. Video can be monitored in the camera viewfinder and at the video output; audio can be monitored at the audio monitor output
- SMPTE time code generator (VITC/LTC) and reader (LTC)
- Time code data can be superimposed on the video output
- Four audio channels: 2 FM audio (CH3/CH4) and 2 linear audio (CH1/CH2)
- Built-in Dolby C noise reduction circuitry for linear audio
- Built-in RS-422 9-pin serial interface
- Field color playback, including a simplified DOC circuit, allows field viewing
- SC In and Sync In terminals for TBC connection
- Five times normal speed search, reverse and forward
- Audio dubbing on longitudinal tracks CH1/CH2
- Warning indicators (Dew, Servo, Tape End, Clog, Battery, Slack) inform the operator of VTR status
- Built-in RF modulator (CH3/CH4) for TV set monitoring
- Camera input (26-pin) can be switched among component, Y/C, and composite

**AU-500**

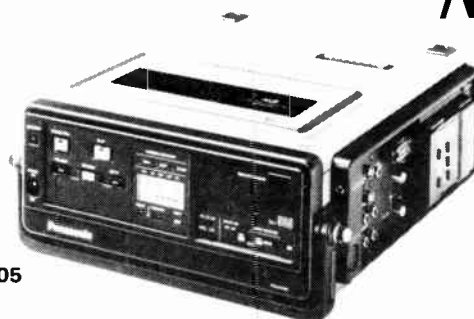
- One AU-BP402 or two AU-BP220 Battery Packs can be used

Accessories

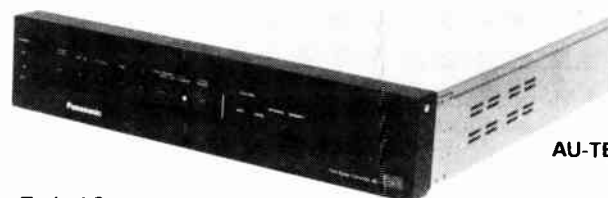
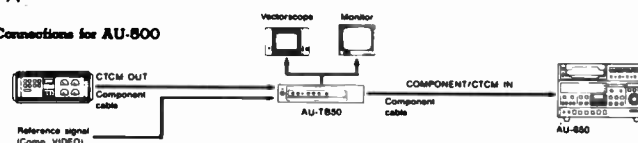
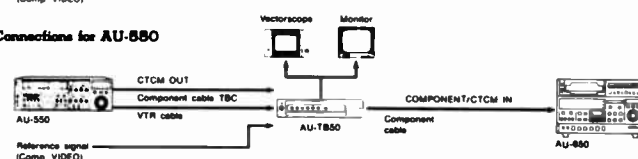
- AU-BP220** Rechargeable battery pack, NiCad, 12VDC, 2.2AH, 1.5 lbs.
- AU-BP402** Rechargeable battery pack, NiCad, 12VDC, 4AH, 3.08 lbs.
- AU-B420** Battery charger for the AU-BP220 and AU-B420
- AU-B110** AC adaptor, supplies DC power
- AU-H500** Soft case for AU-500

AU-505 Field Player

- High quality picture based on M-II component analog format
- Compact, lightweight, and easy-to-carry player
- 90-minute playback on standard 1/2" cassette, or 20-minute playback using the small cassette, without the need for an adaptor
- Four audio channels: 2 FM audio (CH3/CH4) and 2 linear audio (CH3/CH4)
- Dolby C noise reduction for linear audio (CH1/CH2)
- Built-in RF modulator (CH3/CH4) for playback
- 8-pin EIA-J connector for easy connection to a video monitor
- Wireless remote control with on-board storage space
- Built-in time code reader (LTC/UB)
- 8-digit LCD tape counter
- 2-way power supply (battery: one AU-BP402 or two AU-BP220. AC requires AU-B50 adaptor)

**AU-505****AU-TB50 Time Base Corrector**

- Special component time base corrector is an optional companion for the AU-500 and AU-550 VTRs
- Correction window of 32H for three component baseband signals
- With the AU-550, broadcast quality reproduction with no guard band noise, is possible from (1x) normal speed in reverse to twice normal speed forward (+2x)
- S/N deterioration due to bandwidth and noise from digital conversion is minimized by 8-bit, 13.5MHz sampling
- Color framing editing
- Playback is synchronized with the reference signal up to ± 5 times normal speed; up to ± 16 times in monochrome
- Built-in digital 1H line component (Y, PR, PB) dropout compensation circuit
- Vertical blanking may be any line between 10H and 21H
- Internal sync generator may be synchronized externally
- Front panel video level, chroma level, set up, hue, sub-carrier phase, and sync phase controls
- Remote level and phase control is possible with the optional AU-ER65 Encoder Remote Control accessory

**AU-TB50****Typical Connections****• Connections for AU-500****• Connections for AU-550**

Refer to Green Section for Addresses and Telephone Numbers.

B-929

PANASONIC BROADCAST SYSTEMS CO.**Edit Recorder/Controller/
Audio Mixer****MII****AU-550 Field Edit Recorder with Auto Tracking**

- High-quality picture, with 1" VTR performance, is made possible by component analog CTCM recording and the use of metal tape
- Standard-sized 1/2" metal tape cassettes permit more than 90 minutes of recording and playback, and small, 20-minute cassettes can be used without an adaptor
- Auto-Tracking allows noiseless playback at from -1 to +2 times normal speed, plus instant start from still frame (when used with the optional AU-TB50 Time Base Corrector)
- Confidence playback of video and audio (CH1/CH2) can be monitored during recording
- Built-in SMPTE time code generator and reader (VITC/LTC)
- Stable playback with viewable color at 5x normal speed, forward or reverse, is possible with the optional companion TBC (AU-TB50)
- Field color playback is possible through monitor or TV
- High FF and REW speed permits full rewinding of a 90-minute cassette in less than 6 minutes
- Two FM audio tracks (CH3/CH4) and two longitudinal tracks (CH1/CH2) provide a total of 4 audio channels, or two stereo pairs
- Built-in Dolby-C noise reduction on the longitudinal tracks
- Individual/combo editing is possible in video, FM, audio CH1/CH2, and time code modes



AU-550

- Picture search at ± 16 times normal speed, for quick program access and review
- Fine adjustment of capstan speed, up to $\pm 7\%$, is possible with Tape Speed Override (TSO) via the Trim button
- Preroll is presettable to 3, 5, 7, to 10 seconds
- Built-in RS-422 9-pin serial control interface
- AC or DC powered
- Built-in sync generator
- Tape speed override (TSO) allows a manual $\pm 20\%$ adjustment of playback phase differences between the two VTRs in 0.5% to 1.0% steps
- 19" rackmountable

AU-A50 Field Edit Controller

- Compact, lightweight, and designed for speed and mobility
- Rugged construction, sturdy enough for field work
- One-event memory for two-machine control and editing
- 8-digit LCD display shows present tape position, as well as Edit In/Out points (TC or CTL)
- Built-in RS-422 9-pin serial interface
- One-knob search operation. Once selected, the Jog, Variable, or Shuttle modes can be controlled by turning the Jog knob on either the player or the recorder
- Preview, Review, Go To, Auto-Edit, and Trim functions are all provided
- Built-in color bar and black burst generator with composite output
- Audio split editing



AU-A50

AU-MX50 Field Audio Mixer

- Compact and lightweight for easy mobility
- Rugged construction for tough field work
- 6x4 matrix audio mixer with linear faders
- Input levels of -60dB, -20dB, 0dB, +4dB, and +8dB, selectable
- Built-in audio equalizer for each output channel
- Four VU meters monitor output levels
- Built-in 400Hz or 1kHz tone generator
- Audio monitor output on the front panel
- Headphone terminal



AU-MX50

M-II 1/2" Metal Particle Tape Cassettes

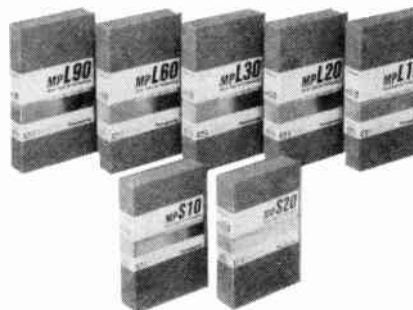
- The use of pure iron particles boosts the magnetic characteristics far above conventional cobalt ferric oxide tape
- This high-density formulation of ultra-fine metal particles also boasts a -10dB improvement over conventional tape in the carrier-to-noise ratio

Standard Cassettes

AU-MPL 90; 95 minutes
 60; 65 minutes
 30; 35 minutes
 20; 23 minutes
 10; 12 minutes

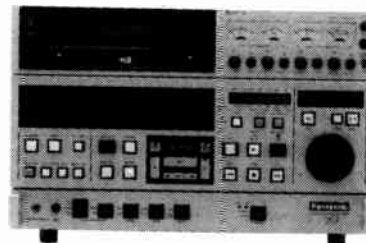
Small Cassettes

AU-MPS 20; 23 minutes
 10; 12 minutes

**MII**

PANASONIC BROADCAST SYSTEMS CO.**Component Players/Recorder/
Players****Preliminary****AU-640 Editing Studio Recorder/Player**

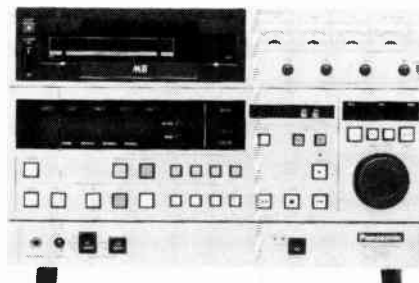
- High picture quality, due to component analog Chrominance Time-Compressed Multiplexing (CTCM), provides 1" VTR performance
- 90-minute recording and playback with standard-sized 1/2" cassette. A small, 20-minute cassette may also be used, without an adaptor
- Confidence playback of video and audio (CH1/CH2) is possible during recording. For real-time monitoring
- Built-in digital component TBC with 32-line correction
- Built-in SMPTE time code generator/reader (VITC/LTC)
- Four audio channels: 2 FM audio (CH3/CH4) and 2 linear audio (CH1/CH2)
- Built-in Dolby-C noise reduction for linear audio channels
- Large, 32 character, two line alphanumeric display on detachable panel
- Maximum of 32X normal speed forward and reverse search and jog are possible
- Full range of assemble and insert editing for video/FM audio (CH3/4), linear audio (CH1/2) and time code. Convenient functions like Preview, Review, Go-To, Trim and Auto Tag provide maximum versatility for studio editing tasks
- Audio edit points can be set separately from video edit points (split editing)
- Color framing in a 4-field sequence prevents H-shift that occurs at editing points. This function assures optimum picture quality in editing and is especially effective for production work such as animation

**AU-620**

- Vertical interval subcarrier control to prevent phase differences and preserve resolution during conversion from composite to component or vice versa
- Tape speed override (TSO) permits manual adjustment of playback speed differences between the AU-620 and a second VTR in ranges of $\pm 6.25\%$ or $\pm 12.25\%$
- Waveform, encoder, and TBC remote controls
- Audio mix output
- Built-in RS-422A 9-pin serial interface and 50-pin parallel interface
- 19" rackmount

MII**Preliminary****AU-630 Studio Player with Auto Tracking**

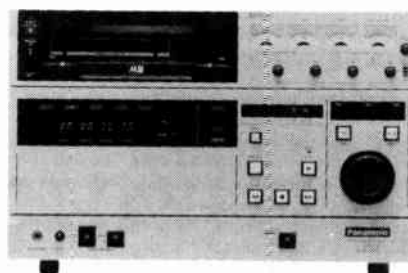
- Auto Tracking (AT) allows noiseless playback from -1X to +2X normal speed plus instant starts from still frames making the AU-630 ideal for broadcast use
- Slow-motion speed can be preset to 1/2, 1/8, 1/16 or 1/32 second for smooth transfer from normal speed playback with no disruption
- High picture quality provides 1" VTR performance due to component analog CTCM recording and metal particle tape
- 90-minute playback time with standard 1/2" cassette
- A small 20 minute videocassette can also be used without an adaptor
- When playing back tapes containing a color frame pulse, the AU-630 will control color framing in a 4-field sequence to prevent H-shift at edit points
- Adaptive Edge Comb Filter delivers outstanding vertical resolution in slow/still AT modes
- With the Variable Memory Playback, changes in tape speed and direction can be recorded in memory for freely selectable tape intervals when playing tapes recorded in the variable (AT) mode at -1X to +2X normal speed
- Tape Speed Override (TSO) permits manual adjustment of playback speed differences between the AU-630 and a second VTR in ranges of $\pm 6.25\%$ and $\pm 12.25\%$
- Program playback speed can be adjusted from 80-120% of normal in 0.1% steps, allowing time compression or expansion
- Up to 4 cue points can be registered with the Multi-Cue Button
- Waveform, encoder, and TBC remote controls

**AU-630**

- Audio mix output
- Built-in TBC with a 32H p-p correction capability
- Four audio channels: FM audio (CH3/CH4) and linear audio (CH1/CH2) with VU meter for each channel
- Built-in Dolby-C noise reduction circuitry for linear audio channels
- Built-in SMPTE time code reader (VITC/LTC)
- 8-digit display shows time code data, drop/non-drop frame mode of VITC/LTC and warning indications
- Maximum 32X shuttle search in forward and reverse with monochrome picture
- Built-in RS-422A 9-pin serial interface and 50-pin parallel interface
- 19" rackmountable

MII**AU-620 Studio Player**

- High picture quality provides 1" VTR performance due to component analog CTCM recording and metal particle tape
- 90-minute playback time with standard 1/2" cassette
- Built-in TBC with a 32H p-p correction capability
- Remote control of an externally connected TBC is possible
- Four audio channels: FM audio (CH3/CH4) and linear audio (CH1/CH2)
- Built-in Dolby-C noise reduction circuitry for linear audio
- Built-in SMPTE time code reader (VITC/LTC)
- 8-digit display shows time code data, drop/non-drop frame mode of VITC/LTC and warning indications
- Maximum 32X shuttle search in forward and reverse with monochrome picture. Viewable color video can be monitored up to 4X normal speed, forward and reverse, with frame by frame jog control
- Time code can be superimposed on the monitor

**AU-640**

- Built-in RS-422A 9-pin serial interface and 50-pin parallel interface
- Component/composite output is possible
- TSO allows adjustment of playback speed within $\pm 7\%$ for synchronization with other sources
- 19" rackmountable

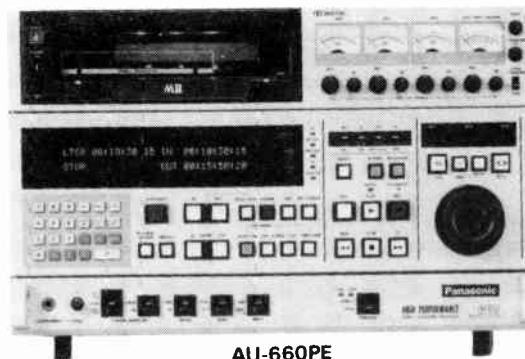
MII

PANASONIC BROADCAST SYSTEMS CO.

Component Recorder/Players

AU-660PE Editing Studio Recorder/Player with Automatic Tracking

- 23-key editing control panel on detachable panel
- Auto tracking (AT) allows noiseless playback from -1X to +2X normal speed plus still frames
- In the variable (AT) mode, the operating conditions (tape direction and speed change) within the range extending from normal speed in reverse (-1X) to twice normal speed (+2X) can be memorized and played back (Variable Memory Playback)
- 2 built-in demodulators make possible "on-the-fly-editing" with instantaneous switching from auto tracking heads to the record/playback heads without picture distortion at the change-over
- Machine-to-machine synchronization and sync roll via simple connections
- When editing with a second VTR, the field select function allows you to select odd or even fields to match the fields of both VTRs
- Individual record inhibit for video, linear audio channels and time code
- Automatic standard/non-standard selection function automatically detects whether the input signal or the signal from the tape is standard (conforming to RS-170A) or non-standard and automatically selects the same signal type for recording or playback
- Independent black burst output for correct color framing, editing and genlock purposes
- High picture quality, due to component analog Chrominance Time-Compressed Multiplexing (CTCM), provides 1" VTR performance
- 90-minute recording and playback with standard-sized 1/2" cassette. A small, 20-minute cassette may also be used, without an adaptor
- Confidence playback of video and audio (CH1/CH2) is possible during recording for real-time monitoring



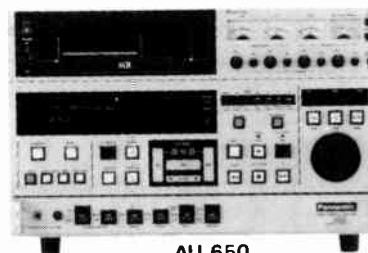
AU-660PE

- Built-in digital component TBC with 32-line correction
- Built-in SMPTE time code generator/reader (VITC/LTC)
- Four audio channels: 2 FM audio (CH3/CH4) and 2 linear audio (CH1/CH2)
- Built-in Dolby-C noise reduction for linear audio channels
- Large, 32 character, two line alphanumeric display
- Maximum of 32x normal speed forward and reverse search and jog are possible
- Full range of assemble and insert editing for video/FM audio (CH3/4), linear audio (CH1/2) and time code. Convenient functions like preview, review, Go-To, trim and auto tag provide maximum versatility for studio editing tasks
- Tape speed override (TSO) permits manual adjustment of playback speed differences between the AU-460 and a second VTR up to 15% of normal speed
- Program playback speed can be adjusted from 80-120% of normal in 0.1% steps, allowing time compression or expansion
- Built-in RS-422A 9-pin serial interface and 50-pin parallel interface
- 19" rackmountable

MII

AU-650 Studio Recorder/Player

- High picture quality, due to component analog Chrominance Time-Compressed Multiplexing (CTCM), provides 1" VTR performance
- 90-minute recording and playback with standard-sized 1/2" cassette. A small, 20-minute cassette may also be used, without an adaptor
- Auto-tracking provides broadcasting pictures in still and slow motion, from normal speed reverse to twice normal speed forward, in 56 steps
- Confidence playback of video and audio (CH1/CH2) is possible during recording. Automatic editing of video, audio (CH1/CH2, CH3/CH4) and time code is possible
- Built-in digital component TBC with 32-line correction
- Built-in SMPTE time code generator/reader (VITC/LTC)
- Four audio channels: FM audio (CH3/CH4) and linear audio (CH1/CH2)
- Built-in Dolby-C noise reduction circuitry for linear audio (CH1/CH2)
- Large, 32 character, two line alphanumeric display
- Maximum of 32x normal speed forward and reverse search and jog are possible
- Presettable smooth-action slow motion
- TSO (tape speed override) allows adjustment of playback speed within $\pm 7\%$



AU-650

- Time code data can be superimposed on one video output
- Built-in RS-422 9-pin serial interface and 50-pin parallel interface
- Waveform remote and encoder remote for system integration
- S.C. H-phase adjustment for proper NTSC signal output
- 19" rackmount, requiring only 6 rack units
- Tilttable operation panel may be removed and remoted

MII

Preliminary AU-X80 Editing Studio Recorder/Player

- High picture quality, due to component analog CTCM, provides 1" VTR performance
- 90-minute recording and playback with standard-sized 1/2" cassette. A small, 20-minute cassette may also be used, without an adaptor
- The AU-X80 is equipped with a 12-pin multi-connector for CTCM/component input-output switching to give it both MII-to-MII and component editing capabilities
- A 7-pin connector outputs the luminance (Y) and chrominance (C) signals separately for editing/dubbing onto S-VHS system VTRs with minimal degradation
- For both insert and assemble editing, the video, audio 1 and audio 2 tracks can be selected independently and in any combination. The use of an external edit controller makes possible automatic editing, including single event editing by setting the in and out points, as well as Preview
- Quick and precise edit point setting with 17-step Jog and Shuttle dial
- 2 linear audio tracks with Dolby-C noise reduction
- Independent level meters for audio 1, audio 2 and video/tracking
- Digital time counter
- Auto head cleaning system
- Tilttable operation panel in 7 steps up to 90°
- 19" rackmountable

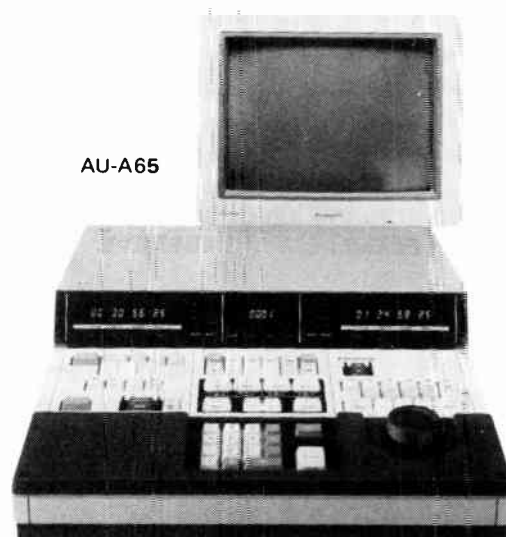


AU-X80

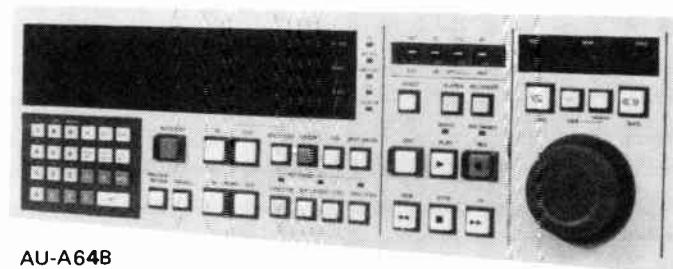
MII

PANASONIC BROADCAST SYSTEMS CO.**Edit Controllers/Accessories****AU-A65 Editing Controller**

- Optional AU-SW65 connects up to 4 VTRs via RS-422A
- Connection to optional CRT monitor • Editing using time code is frame-accurate • Maximum 250-event memory • Interface adaptor provides multi-format (3/4", 1", S-VHS) VTR compatibility
- Selectable CTL, LTC, VITC • Variable memory editing (VME)
- Audio split editing • First edit recording allows reference signal to be recorded onto blank tape prior to assemble editing • Color framing
- Shuttle from still up to 32 times normal playback in both forward and reverse. Jog and Slow Motion are possible from -1X to +2X normal speed • A/B roll transitions enable cut and dissolve (0 to 999 frames) • Errors are indicated by an audible alarm and error message display • V-V-V (preview), V-B-V, and B-V-B review editing are possible • Internal back-up battery protects data in EDL memory • 15-pin GPI port • Interface adaptor permits storage/retrieval of editing data onto/from 5" floppy disks • 36-pin parallel port allows printer connection • Editing points can be set with the Mark In/Out button • Preroll is presettable to 3, 5, 7, or 10 seconds

**AU-A64B Production Edit Panel**

- Programmable time code with 23 key control on the VTR front panel along with RS-422 source control • Variable speed memory playback allows memory storage of a variable playback sequence and recall on cue • 10 cue point memory for multiple cue recall
- Edit duration time displayed independently for video and audio edits • Audio split editing • Audio spot erase of audio CH1 or CH2 with preset in- and out-points • Search at up to 32X normal playback in both forward and reverse. Variable speed is possible from -1 to +2 times normal speed in 56 steps. Jog is also possible for frame-by-frame tape movement • Preview, Review, Go-To, Cue, and selectable preroll assist editing process • Manual tape speed override allows adjustment of capstan speed by $\pm 6.25\%$ and $\pm 1.25\%$ • 32 character 2 line display shows time code, operation mode, tape speed, edit-in and -out data, key pad entry and error messages • Rec inhibit for video, audio (CH1/CH2), or time code
- Multifunction LED display indicates color framing, SCH, etc.

MII**M-II System Options, Accessories****AU-WR65 Waveform Remote Control Unit**

- Controller for connecting four units, including AU-660PE, AU-650 and AU-620, and sending the signal from the selected VTR to the waveform monitor • Waveform remote function for up to four VTRs: Input, RF, Y/PR/PB, Encoder Out

AU-ER65 Encoder Remote Control Unit

- Controller for remote control of the encoder blocks of AU-660PE, AU-650, AU-620 and AU-TB50B • Encoder remote function: Video Level, Setup, C Level, Hue, System Subcarrier Phase (Fine/Coarse), Video Phase • On-air indication

AU-SW65 Audio Video Switcher

For switching and transmitting the 3-system component, composite, and audio L&R input signal.

- 3-input selection for component, composite, audio L&R signal
- Built-in fade (dissolve) function • A/B roll selection function
- Transition set, up to 999 frames • Interface with AU-A65

AU-IA35 Transcoder

- This unit converts M format signals to the MII format • Transcodes from Y, I, Q to Y, PR, PB

AU-A620 Remote Control Panel Case

- Case will mount on the front panel of the AU-660PE, AU-650 and AU-620 for use as a remote controller • Connection to the VTR via 20-pin cable

AU-A630 Remote Control Panel Case

- Case will mount on the front panel of the AU-660PE, AU-650 and AU-620 for use as a remote controller • Connection to the VTR via 20-pin cable

AU-A640 Remote Control Panel Case

- Case will mount on the front panel of the AU-660PE, AU-650 and AU-620 for use as a remote controller • Connection to the VTR via 15-pin cable • With 15-pin cable connection, extension of up to 33' (10m) is possible

AU-A650 Remote Control Panel Case

- Case will mount on the front panel of the AU-660PE, AU-650 and AU-620 for use as a remote controller • Designed for serial control (with 9-pin cable) using the RS-422A connector • With 9-pin serial cable connection, extension is possible for up to 3,300' (1,000m)

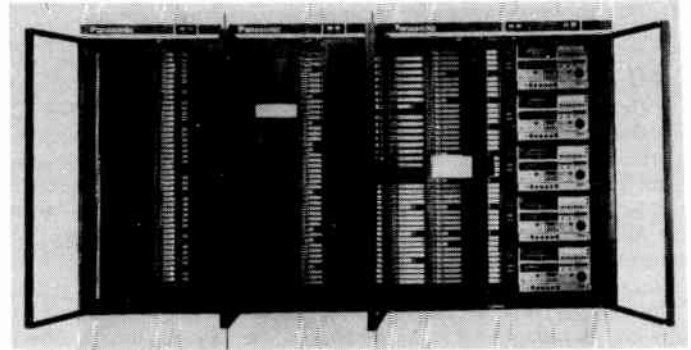
PANASONIC BROADCAST SYSTEMS CO. Broadcast Cart Systems/Color Monitors

M.A.R.C. II 100/400/800/1200 Automated Cart Systems

The M.A.R.C. II playback/recording systems automatically select the proper MII cassette from an expandable library for news, spots, I.D.s, or programs; in fact, for any program element. Randomly intermixed large and small cassettes may be used. The basic system handles 123 cassettes and expands to a total system capacity of almost 1,200 cassettes. This flexibility enables complete broadcast automation.

Mechanical System

- M.A.R.C. II can consist of 5 VTRs, two robots with three manipulators, and an expandable modular storage system. This storage system can be expanded from 472 to 1,176 cassettes
- With the full complement of five VTRs, minimum event time with continuous playback can be as short as 10 seconds. Even with the full complement of 1,176 cassettes, this event time is only 10 to 15 seconds, while still allowing up to 90 minutes per cassette
- The expanded systems have redundant protection with dual robots and three manipulators
- The cassette input/output (I/O) station can be used while the system is operating
- The M.A.R.C. II sequential output switcher has video and audio outputs for Program (A), Preview (B), Test, and Monitor
- SMPTE type RS-422 VTR control is used throughout the system
- Advanced automation technology makes the robot manipulator outstandingly reliable
- Self-diagnostic functions inform the operator of system status, errors or malfunctions
- System VTR maintenance may be performed from the rear while the robot is in operation



M.A.R.C. II/800



Operational System

- The M.A.R.C. II systems can accept one-event per cassette or multi-events per cassettes
- Bar codes are used to identify the cassettes. The bar code reader, built into the manipulator, checks each cassette as it is loaded
- 100,000 elements can be held in the database. In addition, the system can be coupled to the database of an external host computer
- The playlist is updated in real time, and can be edited. A list of required cassettes is printed out in advance
- Auto protect function lends on-air playback added security by running a synchronized back-up copy of the programs. The back-up VTR records program sequence as a single continuous event, then runs it in sync with the programs as they are broadcast
- Automatic recording of network feed for time-shifted broadcasting
- Component/composite inputs allow multi-source editing by connection with external VTRs, and a variety of combinations between the system's 5 VTRs
- Cassettes are purged in accordance with user selectable criteria

BT-M1310Y 13" S-Video/Component Analog Color Monitor

- > 560 lines of horizontal resolution
- 0.39mm dot pitch and in-line gun CRT
- A/B split, pulse cross, and underscan
- Preset selector for contrast, brightness, chroma, phase and aperture
- Blue only display
- Switch selectable: AFC fast/slow, comb/trap filter, RGB cutoff, color/ auto/mono mode internal/external sync
- BNC connector with automatic termination
- Manual degaussing
- Front access white-balance adjustment
- Tally light
- A, B, or RGB selectors with loopthrough; VTR selector
- S-Video input with loopthrough
- Optional component input (R-Y, B-Y, Y)
- 19" EIA rackmountable, metal cabinet
- Commercial U.L. listing

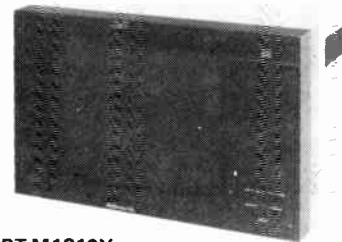
Standard Accessories

- AC power cord
- Rackmount handles
- Service and operations manual

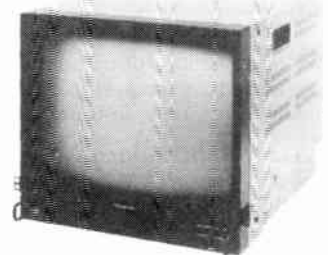
BT-M1310Y \$1895.00

BT-D1910Y 19" S-Video/Component Analog Color Monitor

All the features of the BT-M1310Y except for a 0.55mm dot pitch.
BT-D1910Y \$2195.00



BT-M1310Y



BT-D1910Y

PERROTT ENGINEERING LABS, INC.

Batteries/Battery Belts

212/213/214 NiCad Camera Battery Packs

- Complete flexibility with a choice of battery mounts
- Hand selected premium quality NiCad cells
- Impact resistant all metal case
- "14, "13" and "12" are available at no extra cost with built-in charger. Order as "C" Series (as 214C, etc.)

Specifications

	Available Watts	Volts	Amp Hours	Hours*
212	48.0	12.0	4.0	2.0
213	52.8	13.2	4.0	2.5
214	57.6	14.4	4.0	2.3

Weight: 4.75 lbs. (14.4V); 4.50 lbs. (13.2V); 4.25 lbs. (12.0V)

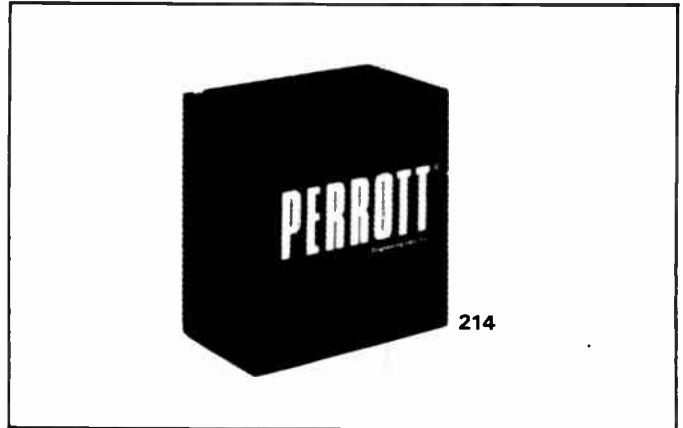
Size: 5" x 3" x 4" (14.4V, 13.2V, 12.0V)

Connectors: Mates with a choice of standard battery mounts

Minicharger®: Use PE-8200, PE-8204 ("C" series has our built-in charger)

212	\$490.00
213	500.00
214	.510.00

*Camera run time is estimated using 23W.



PE-90 NiCad VTR Battery

- Direct replacement for Sony BP-90 VTR battery
- Can even run your camera*
- Top quality fast-charge NiCad cells
- High impact molded case—completely sealed
- Moderate price
- 100% quality control inspected, electronically and manually

Specifications

Volts (nominal): 12.0

Capacity & Typical Running Time:

Available Watts	Amp Hours	Hours**
48	4.0	4.0

Weight: 3.5 lbs.

Size: 4 3/4" x 6 1/2" x 1 7/16"

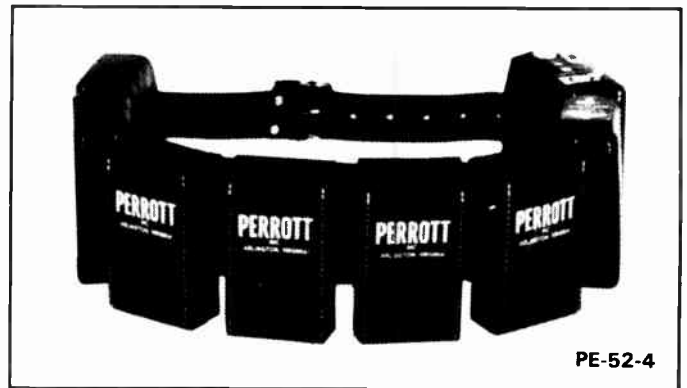
Connectors: Authentic Sony pigtail connectors

Minicharger: Use PE-38, PE-8200 or PE-8204

PE-90	\$220.00
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*When used with the convenient Perrott 9037 battery carrier, will power camera and camera/recorder combinations

**Running time is estimated using Sony BVU-50 VTR



PE-52-4 NiCad Dual Output Belt

- Four hour charger built right in
- Runs 30V light with 4AH of power—or runs camera with 8AH of power
- Powers your Perrott Lite® 90 minutes
- Top quality fast-charge NiCad cells
- Full grain cowhide leather pouches and strap
- Half-inch spacing between pouches for flexibility and comfort
- 100% quality control inspected, both electronically and manually
- Powers Betacam camera/recorder combination

Specifications

Available Watts	Amp Hours	Hours
(14.4V Camera) 115.2	8.0	5.0
(14.4V 75W light) 115.2	8.0	1.5
(30V 250W light) 115.2	4.0	.4

Weight: 11.0 lbs.

Size: Pouches: 28 1/2" x 2" x 4 1/4"

Belt: Adjustable

Connectors: 5-pin XLR for 14.4V, 8AH

PE-52-4*	\$815.00
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PE-54-4* Shoulder Model	755.00
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*With built-in 4 hour charger

NP-1/NP-1A NiCad Batteries

- Authentic original equipment
- Can be charged in about one hour
- Circuit breaker and thermostat protected
- Off-the-shelf delivery
- Top quality fast charge NiCad cells

Specifications

Volts (nominal): 12.0

Capacity & Typical Running Time:

Available Watts	Amp Hours	Hours
(BVP-1/BVU-1) 18	1.5	.8
(BVP-3/BVU-1) 18	1.5	.5
(Thomson) MC-611 18	1.5	.8
(Thomson) MC-613 18	1.5	.5

Also runs: Sony VO6800 (2-NP-Is), SL2000 Recorder/Player, Nisus N-3A (2-NP-Is), Leader LVM58-63A Monitor.

Weight: 1.5 lbs.

Size: 7 1/4" x 1" x 2 7/8"

Connectors: Spring contacts

Charger: Use with Sony/Thomson charger

NP-1 (1.5AH)	\$64.75
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NP-1A (1.7AH)	73.50
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Minichargers®

PE-38	Single 12.0V (overnight)	\$ 157.00
NP-1	(overnight)	235.00
PE 8200	Single 12.0V to 30.0V (2 hr. fast charger)	700.00
PE 8204	(4 port) 12.0V to 30.0V (2 hr. fast charger)	1285.00
PE 868	(BP90-8 port) 12.0V (overnight)	795.00
PE 383	Single 12.0V to 14.4V (overnight)	199.00
PE 441	(4 port) NP-1 and NP-1A discharger/charger (overnight)	425.00

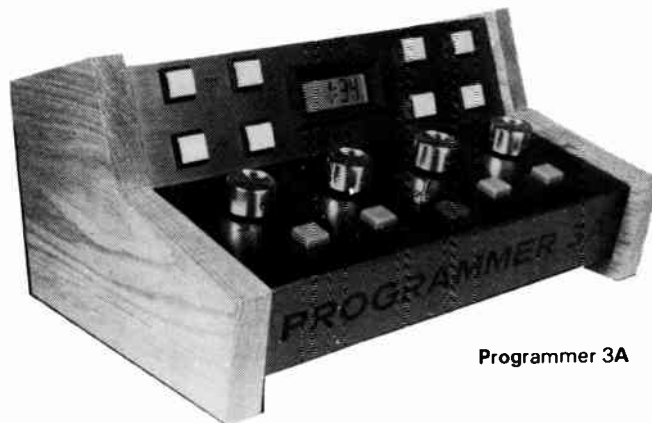
NB Series NiCad Battery Belts

NB1	12.0V/4AH	\$415.00
NB2	12.0V/7AH	550.00
NB3	13.2V/4AH	440.00
NB4	13.2V/7AH	565.00
NB5	14.4V/4AH	465.00
NB6	14.4V/7AH	580.00

Programmer 3A "Live Assist Controller"

The Programmer 3A allows stations to take advantage of music formats which have been recorded on reel to reel tape for automation systems. Up to four reel to reel tape decks can be controlled by the Programmer 3A.

- **Audio:** Conductive plastic stereo level controls resistively sum audio from each source. Opto-isolators silently gate audio on and off for each source as it is used. Outputs can be wired mono or stereo directly to program and cue buses of a studio console, eliminating the need for additional console inputs
- **Memory:** A memory circuit allows the operator to select the music deck he will play next by touching the "next play" button for that deck. That button and the "common next play" button will light. The system then stands ready. When the operator has finished running his commercials, weather, etc., he pushes the common play button and the selected deck starts. He does not have to remember which deck is next, the Programmer 3A does it for him
- **Auto:** The auto "One-step" switch allows the Programmer 3A to segue to the next preset deck automatically
- **Timer:** The minutes/seconds timer resets to zero and starts counting up each time a deck is started. This allows the announcer to talk over an instrumental intro on a song right up to the vocal portion
- **Logic:** White lights tell the operator which deck is playing and amber lights tell the operator when a 25Hz cue tone is coming across during the last second of a song. The operator can start speaking with confidence when he sees the amber light knowing, for certain, that the song is ending
- **Dimensions:** 57/8" H x 11 1/4" W x 9 1/4" D with rear connectors
- **Power:** 24VDC at 200MA maximum is required to run the Programmer 3A Controller. This power is available from the tape decks it is controlling. An optional power supply is available for systems with tape decks that do not have 24VDC available



Programmer 3A

- **Compatibility:** The Programmer 3A is directly compatible with Otari ARS-1000DC and Revox PR99 playback only decks. It is also compatible with ITC 750 and 770 playback decks using the ITC 25Hz tone detector and a 25Hz filter. Any reel to reel tape deck can be interfaced using a 25Hz tone detector and notch filter from M.W. Persons and Associates

Programmer 3A Controller	\$990.00
SP-1 Recommended Spare Parts Kit	69.00
Standard Cabling Kit (Four 50' cables).	92.00
Odd Length Cabling (Cables are #22 6 conductor and one shielded pair)	ft./cable .46
Auto Sequence Option.	250.00
Dual Mode/Auto Sequence Option	300.00
Slave Option (2 programmer 3A units connected together for eight source inputs).	250.00

*The Bill Daniels 1988-89
Illustrated
Trade References*

**The Most
Comprehensive
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Equipment
Trade References
Ever Published!**



Professional Audio & Commercial and Industrial Sound (2 vol.)	\$195.00
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Closed Circuit Video & Antenna Systems Equipment.	\$ 69.50
Audio-Visual Instruction & Presentation Equipment	\$ 95.00
Security & Loss Prevention Equipment & Devices (2 vol.)	\$195.00

ORDER NOW! *Plus Handling & Shipping
Call 1-800-255-6038

PESA AMERICA, INC.**Character Generators/Color Monitors****CG-4722 Character Generator**

- Up to 8 resident fonts held in RAM (optionally 2 of these can be in EPROM)
- Internal memory holds 15 pages for instant access
- User friendly edit channel
- Color palette with 121 different "true" colors
- Each disc has capacity of 128 pages or 8 fonts
- Camera input for font and log composition
- Integral encoder and DSK
- Dual channel version
- Integral real time clock/up-down event timer
- Optional time code reader for automatic subtitling
- System consists of: keyboard, data management unit including two 3 1/2" double density disc drives, and rackmount mainframe, 2RU high

The CG-4722 is a character generator based on the CG-4721 series of equipment. It incorporates features and capabilities normally found only on expensive character generators.

The system contains a built-in genlocking SPG which requires only a reference video signal for system timing purposes; for training applications no external signals are required. A built-in NTSC or PAL encoder with DSK is included as standard. Various versions of keyboard layouts are available for international users. The system can be fully controlled with one monitor from the edit channel which displays the output of the character generator, or DSK preview, together with superimposed information concerning the character generator operating state. This equipment is ideal as a professional titling system for use in broadcast television, video production, graphics, cable television, business and education.

Optionally, a time code reader for automatic subtitling and a second channel address keyboard are available.

Preliminary**CG-4711 Character Generator**

The CG-4711 is a low cost character generator, based on the best selling CG-4722, designed specifically for broadcasters, production/facility houses and other users working to full broadcast standards.

The CG-4711 offers the same easy to use operating system as the CG-4722 and discs can be freely exchanged between the two models of character generators.

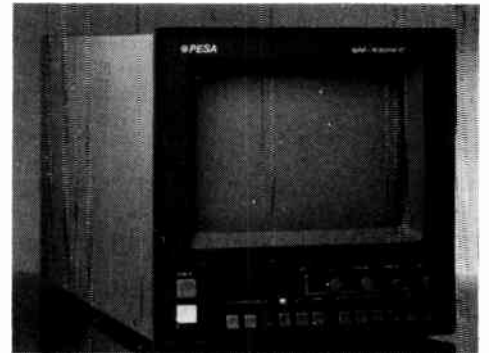
The standard unit comes complete with: down stream keyer, NTSC or PAL encoder, genlockable SPG, 4 font RAM, 15 page "Scratch Pad" memory, and clock/up-down timer

Options

- Second 3.5" disc drive
- Non-volatile font memory
- RGB/YUV outputs

Differences Between CG-4711 and CG-4722

- No font/logo composer on CG-4711
- No second channel capability on CG-4711
- No remote address keyboard on CG-4711
- No RS232 interface for external computer/printer
- No time code reader for automatic subtitling

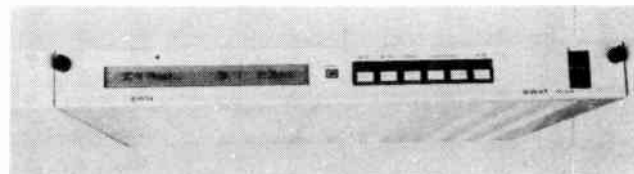
**CG-4722****BM-4309****BM-4300 Series Color Monitors**

- High resolution CRT
- PAL and NTSC versions
- Two encoded signal inputs
- Selectable internal/external sync
- Delay: H, V, H + V (pulse cross)
- Normal/underscan
- Preset controls for hue (NTSC only), chroma, brightness and contrast
- Individual gun cuts for R, G, B
- Selectable horizontal time constant (VTR)
- Automatic and manual degaussing
- Notch/comb filters — NTSC, notch filter — PAL
- Remote control (optional)
- Front panel tally light

The BM-4300 series of color monitors have been designed to meet the demanding requirements of broadcast, production and industrial users. They combine high reliability, ease of maintenance and superior picture quality with energy efficient circuits for low power consumption.

The modular design and ruggedized construction of these monitors make them particularly suitable for OB and other mobile applications. PIL (Precision in line) CRTs are employed with a dot matrix shadow mask. These tubes have computer matched yokes which simplify convergence and eliminate troublesome registration adjustments while retaining broadcast quality resolution. CRT phosphors are available to meet EBU and USA standards.

The monitors are available in 9", 14" and 20" sizes in cabinet form with 19" rackmount kits available as options. The rackmount kit for the 9" version accepts 2 monitors side-by-side or one monitor together with a waveform monitor or vectorscope using an adaptor panel. Optional remote control panels are available for each of the sizes.



SWAT Plus ASC-4652-C

SWAT ASC-4652-C**Sync Watcher Analyzer and Timer**

- Two different modes of operation: Watcher or Timer
- Complete analysis of the sync and blanking parameters of a video signal
- EIA and CCIR versions — choice of PROMS for different TV standards
- Displays results on B/W monitor or its own 40 character LCD panel
- Alarm indications on out of tolerance parameters
- Either of two video inputs may be selected for analysis
- Manual or automatic selection of parameters for test
- RS232 port interfaces to wide selection of printers to provide hard copies of measurement results
- Self-calibrating

The SWAT ASC-4652-C is a microprocessor controlled instrument developed with state-of-the-art technology and designed to monitor a number of sync and blanking parameters of a video signal and check them against a pre-set list of limits. Each parameter is displayed on an integral 40 character LCD panel or the complete set of results may be viewed on a monitor for evaluation and study. Parameters that previously could not be examined accurately on conventional test equipment such as vectorscopes, waveform and picture monitors can be analyzed precisely with the SWAT, thus avoiding the many errors common during editing and quality control of video signals.

The SWAT ASC-4652-C operates in two ways to monitor and record activity within a video environment in its Watcher mode and in a Timer function.

Watcher Mode Parameters measured are:

- Sync amplitude
- Horizontal sync width
- Number of vertical sync pulses
- Equalizer width
- Vertical pulse width
- Front porch width
- Horizontal blanking width
- Vertical blanking width
- Burst amplitude
- Number of cycles in burst
- Burst position (PAL)/Breezeway (NTSC)
- SC/H phase to within 2°
- Sc frequency error to within 0.2Hz
- Line detection of vertical interval information

Additional Information displayed on Monitor:

- Video fail
- No interlace
- No burst
- Burst blanking
- SC/H unlock
- Unbalanced burst
- INV R-Y phase (PAL only)
- Vertical blanking
- No V sync

The SWAT continuously monitors video signals, makes selected standard measurements, compares them against defined limits and provides an alarm message whenever these are exceeded.

Alarm Indications:

- LED on the front panel
- Indication on integral LCD panel
- Inverse video on monitor screen to indicate parameters outside tolerance. The word Alarm is also printed at the top of the monitor screen
- Closing contacts on internal relay to trigger external alarms

The ASC-4652-C is RS232C compatible and may be interfaced with various printers for a complete printout of the measurement results.

Timer Mode

In its Timer mode of operation, the instrument can be used to measure the precise difference in horizontal delay and subcarrier phase between input signals A and B.

The presentation in this case would consist of:

- Reference video (A or B)
- H lock or unlock
- V lock or unlock
- 4 field lock or unlock (PAL only)
- PAL lock or unlock (PAL only)
- SC lock or unlock
- H delay in nS
- SC phase in degrees
- Provide an alarm whenever any parameter is outside tolerance

Preliminary**SWAT Plus SW-2000**

Greater flexibility in the use of the SWAT Plus is now available with the introduction of the user programmable version. This version allows the user, on an individual parameter basis, to:

- Switch the measurement on or off-line
- Turn the parameter alarm on or off
- Alter the "standard" value of the parameter
- Alter the tolerance of the parameter

In addition, the NTSC user can select amplitude measurement results to be displayed in mV or IRE units.

Programming of the unit is carried out immediately after switching the equipment on when the user is given the option, by use of the front panel keys, of reprogramming the parameters or commencing measurements using the last set of parameters entered into memory. If, after a short while, no key is pressed the unit automatically enters the measurement mode. Reprogramming is carried out using the front panel keys which assume different functions in this mode and are used in conjunction with an interactive line on the monitor display. Whenever a change to a parameter has been entered, this change is held in memory until a further modification is made by the user — this information is held in memory even with the power switched off. At any time, the user may revert to the "standard" set of parameters (CCIR/PAL-B or RS-170A/NTSC) appropriate to his system simply by pressing the reset button while in the programming mode.

SIM-4000 Intercom System

- Microprocessor controlled system
- Front panel programmability
- System expandability
- Momentary latching front panel switch operation
- Transformer-balanced audio external lines
- Full 4 wire operation
- Convenient interface to external equipment
- Non volatile user memory
- External headset connection
- Each station is self-contained
- Two auxiliary external audio lines
- Full range high quality audio with AGC
- Headset or speaker/mike (hands free) operation
- RS-232 access to microprocessor to map crosspoints
- LEDs indicate switch status
- Custom software available
- Broad range of options/accessories available

The SIM-4000 has been designed to provide high quality, flexible and reliable communication systems for TV studios, TV stations and O.B. Vans.

Two standard package configurations are available: the SIM-4016, 16 x 16 matrix, and the SIM-4032, 32 x 32 matrix. Several comprehensive systems can be interconnected to build a communications network.

An array of standard and optionally available accessories supply a comprehensive system for any custom need. These features may be combined at the time the intercom is ordered or field installed at a later date.

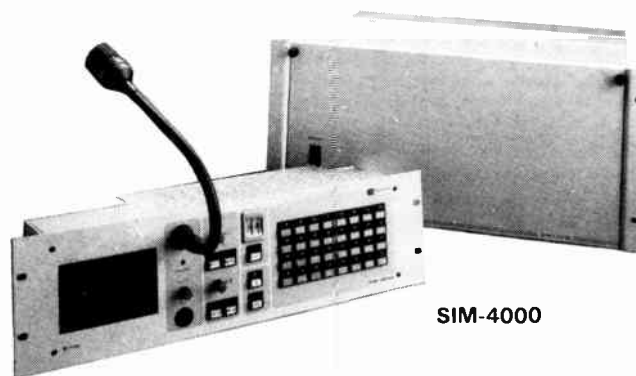
Preliminary**SIM-8000 Series Talkback System**

- Flexible microprocessor controlled system
- Easy system expandability by adding further systems in new areas
- Momentary latching front panel switch operation
- Transformer balanced external audio lines
- Full four wire operation
- Convenient interface to external equipment
- External headset connection
- Each terminal self-contained
- High performance audio specification
- Headset or speaker/mike (hands free) operation
- 2 color LEDs indicate switch status

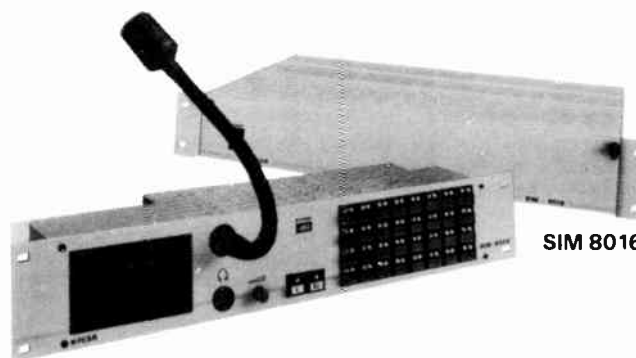
The SIM-8000 Series of talkback units have been designed specifically to implement, simply, high quality and reliable communications between members of a production team in a broadcast station.

Quite frequently the talkback requirements within a television studio complex can present a difficult and intricate problem for system designers, and complications of differing operational practices between various broadcasters usually results in an expensive solution. Total flexibility is the hallmark of the PESA SIM-8000 series, enabling the precise requirements of broadcasters and other users to be met economically using two standard matrix configurations that can be programmed, under software control, to exact needs, be it a small system or a large station complex.

While the product range is designed, using state-of-the-art components and microprocessor technology, to meet the demanding requirements of broadcast television and production facilities, the SIM-8000 is equally suitable for many other applications including stage, broadcast radio, recording studios and outside broadcast vehicles.



SIM-4000



SIM 8016

RIS-8032 Terminal

Preliminary**TB8000 Talkback System**

The TB8000 Talkback System is a second generation product derived from the very successful SIM4000 range. The TB8000 series now includes switching matrices of 16 x 16, 32 x 32 and 64 x 64. By the use of component surface mounting techniques these matrices are half the size of their SIM4000 equivalents given an increase in packing density by a factor of four. In addition to the obvious benefits this provides to the customer in reduced rack space required, it also brings an economic advantage in the "cost per cross point" of the system.

Experience gained in customer discussions and SIM4000 installations suggested that the concept of distributed hardware and software control should be retained in the product in order to retain the economic flexibility of a customer configurable matrix mapping. However, the need was suggested to extend the number and size of the talkback panels available. In the TB8000 half rack width, TB panels are now available with a number of "add on" key panels enabling a customer to have enhanced flexibility in positioning the panels in desks and again have a more cost effective solution than the previously available integrated panels.

PINNACLE SYSTEMS, INC.

Digital Video Effects/Graphics

3000E Graphic Design WorkStation—Includes Video WorkStation chassis; the Pinnacle Painter full-color 32-bit paint system; the Pinnacle Sculptor 3D modeling system; vector based anti-aliased multiple font package; digitizing tablet; pen with cancel button; keyboard; paint memory; 3D memory; 95M byte hard disk drive; AGP-3 accelerated central processor with accelerated floating point processor; Video WorkStation integration software. . . . \$39,950.00

3000E Series Options

3000-40 Animation Option—Animation and machine control package including motion scripting; lighting choreography; real-time wireframe preview; in-betweening; trajectory calculations; serial VTR control; 3000E Series software integration package for animation, 3D, and paint. . . . \$9,995.00

3000-20 FreezeFile™ Option—Adds FreezeFile capability to 3000 Series WorkStation. Standard system stores more than 150 frames or 300 fields. . . . \$5,450.00

3000-10 Digital Effects Option—Adds real-time digital effects and montage capability to 3000 WorkStation (requires 2000 Series control panel). . . . \$12,950.00

2000 Series Control Panel with 25' cable . . . \$4,500.00

ETB-4 Extended Texture Buffer Memory—Adds four additional texture buffer memory locations for use in texture mapping 3D models. For series 2030, 2033, 2040 and 3000E only. . . . \$2,995.00

2010 Video WorkStation with Software-Based Digital Effects—Includes Video WorkStation chassis; control panel; effects system software; montage frame buffer; key processing channel; and 25' control cable. . . . \$23,500.00

2020 WorkStation with FreezeFile—2010 plus a single channel still store. Standard system stores more than 150 frames or 300 fields. Stills can be stored and recalled randomly and can be arranged in a stack or sequence play list. Digital effects and transitions between stills or between stills and live video are possible using 2020 software. . . . \$32,800.00

2020-2 WorkStation with Preview Channel—2020 with the preview channel output frame buffer and integration software. Output is full bandwidth RGB or monochrome, frame or field. . . . \$39,900.00

2030 WorkStation with Paint—2020-2 plus Pinnacle Painter full-color 32-bit paint software; digitizing tablet; pen with cancel button; keyboard; extended paint memory package; vector based anti-aliased multiple font package; 2030 software and component digital video integration package for paint, FreezeFile and effects. . . . \$49,200.00

2033 WorkStation with 3D Modeling—2030 plus Pinnacle 32-bit Sculptor 3D modeling; lighting; texture mapping software package; 8 additional bitstream fonts; floating point processor; extended 3D memory package, 2033 software and component digital video integration package for 3D, paint, FreezeFile and effects. . . . \$57,950.00

2040 WorkStation with 3D Animation—2033 plus frame-by-frame animation and VTR control including motion scripting; lighting choreography; real time wire-frame preview; in-betweening; trajectory calculations; serial VTR control; and 2040 series software and component digital video integration package for animation, 3D modeling, paint, FreezeFile, and effects. . . . \$67,850.00

AGP-3 Accelerated Graphics Processor—Acceleration option decreases 3D modeling and rendering time by more than 200%. For 2000 Series and 3000. Included with 3000E. . . . \$4,995.00

SV-1000 Super V-1000 Desktop Video WorkStation—Includes system unit; control panel with joystick; 25' control cable. Standard features include variable smooth placement; cropping; borders; pushes and pulls; wipes; cuts; posterize; tint; negative; horizontal and vertical invert; and GPI in and out. . . . \$13,900.00

SV-1000E Super V-1000 Desktop Video WorkStation with Enhanced Digital Effects—SV-1000 plus enhanced effects package with variable smooth compression; field strobe; variable mosaics; limited sequencing and picture path acceleration. . . . \$15,995.00

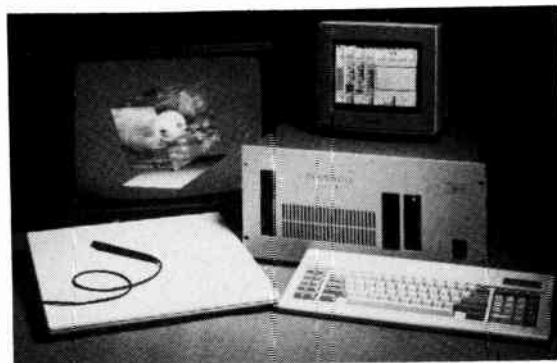
"S" Option Super V-1000 Still Store*—Still Store option adds the ability to randomly store, recall, and manipulate up to 100 stills with extremely fast access time. Stills are stored on internal Winchester disk drive. Option may be ordered as SV-1000S or SV-1000ES models. . . . \$3,995.00

"AT" Option Super V-1000 WorkStation AT*—IBM-AT hardware and software compatible video workstation. Includes 20M byte hard disk and controller, AT-style keyboard; color graphics display adaptor with color and monochrome output; and IBM DOS 3.3. Not needed for "S" option. . . . \$1,000.00

K1000-S WorkStation Still Store Upgrade Kit—Upgrade kit to field convert SV-1000 or SV-1000E to the "S" version. . . . \$4,995.00

K1000-AT WorkStation AT Upgrade Kit—Field convert SV-1000 or SV-1000E into IBM-AT compatible computer, including 20M byte hard disk and controller; AT-style keyboard; color graphics display adaptor with color and monochrome output; IBM DOS 3.3.4. . . . \$1,395.00

K1000-E Enhanced Digital Effects Kit—Upgrade SV-1000 to SV-1000-E. . . . \$2,990.00



2040 Video WorkStation™

PRIZM Option for the Video WorkStation—Adds complete Z-axis manipulations including rotation, perspective and the ability to integrate all other 2000 or 3000 series WorkStation functions. . . . \$29,400.00

CEO PRIZM Option—Curved effects option adds the ability to bend and warp real time images. Adds such effects as page turns and fish eye. . . . \$4,995.00

Linear Key Channel PRIZM Option—8-bit, full bandwidth . . . \$12,500.00

CAO Component Analog I/O Option*—For Betacam and MII compatibility. For 2000 or 3000 Series Video WorkStation. . . . \$950.00

Y/C Composite Switchable I/O Option*—For 2000/3000 series. . . . \$495.00

DSK21 Component Analog Background Keyer—Downstream keyer to be used with Video WorkStations equipped with CAO or Y/C option. Gives component systems live video background capability. . . . \$795.00

SX21 A/B Composite/Component Routing Switcher—Video WorkStation controlled or manual routing switcher for composite, component analog video (Betacam, Betacam SP, MII, S-VHS). . . . \$895.00

DC-2000/DC-200C/DC-2000Y/C Dual Channel Digital Effects Combiner and Software—Two channel system requires two 2000/3000 Series Video WorkStations. Unique dual channel system when used in conjunction with montage memories and built-in background keyer, gives 5 active layers of video. . . . \$ 995.00

DC-2000 Dual channel digital effects combiner and software . . . \$ 995.00

DC-200C Component version . . . 1,695.00

DC-2000Y/C S-VHS version . . . 1,695.00

TD-60 Digital Cartridge Tape Backup System—Backs up to 120 NTSC (72 PAL) still frames; 240 NTSC (144 PAL) still fields on a single removable cartridge. Will also back up Painter and Sculptor images, animation files and sequences. . . . \$2,950.00

Additional TC-50 Tape Cartridges. . . . 50.00

OD-800 Digital Optical Disk Drive—800M byte write-once (WORM) optical disk drive. Archives up to 1600 NTSC (967 PAL) still frames; 3200 NTSC (1934 PAL) still fields on a single removable optical cartridge. Can record and play Freeze-Files directly from the OD-800. Will also back-up Painter and Sculptor images, animation files and sequences. . . . \$8,900.00

Additional OC-800 Optical Cartridges . . . 290.00

HD-200 200M Byte Hard Disk Option*—Doubles storage capacity of standard disk drive. Recommended for the 3000, 2030, 2033 and 2040. . . . \$2,900.00

BE-150 Buffered Extension Cable for WorkStation AT Option—Used to place keyboard and RGB color monitor up to 150' away from system unit. . . . \$500.00

HCO Hard Copy Input/Output Interface—Supports a host of hard copy devices for graphics output including film recorders, laser printers, thermal printers and ink jet printers. Supports high resolution scanners. Can print out pixel or vector based images. Sculptor images can be output in high resolution up to 4000 x 4000 pixels. . . . \$2,900.00

CMM-9 9" Color RGB Menu Monitor (includes 6' cable) . . . \$695.00

KCA Component Analog Input/Output Kit—For existing composite system. . . . \$5,100.00

KYC Switchable Y/C-Composite Upgrade Kit. . . . \$3,800.00

KHD200 200M Byte Disk Drive Upgrade Kit . . . \$5,500.00

K2020 Upgrade Kit for 2010—To a 2020. . . . \$9,800.00

K2020-2 Preview Channel Upgrade Kit for 2020—To a 2020-2. . . . \$7,700.00

K2030 Paint Upgrade Kit for 2020-2—To a 2030. . . . \$10,400.00

K2033 3D Modeling Upgrade Kit for 2030—To a 2033. . . . \$9,500.00

K2040 Animation Upgrade Kit for 2033—To a 2040. . . . \$10,750.00

KAGP3 Accelerated Graphics Processor Kit. . . . \$7,500.00

*Option must be specified at time of order.

Prices and Specifications Subject to Change Without Notice.

PRC/PLASTIC REEL CORP. OF AMERICA

Video Reels/Cases

Video Tape Reels/Cases

Plio-Magic's quality of endurance gives you precision reels that last and last for long-term dollar savings. There's a reel for all types of tape systems: 1" and 2" video tape reels with NAB centers. For shipping, transporting or storage, Plio-Magic® custom designed cases are available for video tape reels and cassettes. All offer the unparalleled protection of PRC's super tough material assuring dust resistant, safe protection for your valuable programs. We maintain large inventories in four centralized locations, assuring you of products when your requirements dictate.

Video Tape Reels

Anti-Static Video Tape Reels and Boxes

Number	Description	Less Than Ctn.	1 to 25 Ctns.	26 Ctns.	Ctn. Qty.
14661	6 1/2" x 1" (12 min)	\$2.53	\$1.40	\$1.25	48
14681	8" x 1" (30 min)	2.85	1.65	1.50	48
14655	5" x 2" (5 min)	1.01	.62	.49	60
14665	6 1/2" x 2" (10 min)	2.24	1.45	1.05	48
14680	8" x 2" (20 min)	3.02	1.76	1.56	24

Video Tape Reel Boxes Only

3956104	6 1/2" x 1"	\$.55	\$.48	\$.46	48
3958104	8" x 1"	.64	.56	.53	48
3955504	5" x 2"	.48	.43	.40	60
3956504	6 1/2" x 2"	.60	.53	.50	48
3958004	8" x 2"	.67	.59	.56	24

Standard Color: Reels-natural; Boxes-white

Videocassette Storage Cases

38213 Beta Only		38214 VHS Universal (Holds VHS or Beta)	
Quantity	Price	Quantity	Price
25,000 and up	\$.45	25,000 and up	\$.42
10,000-24,999	.49	10,000-24,999	.46
2,500-9,999	.53	2,500-9,999	.49
500-2,499	.56	500-2,499	.54
100-499	.59	100-499	.60
1-99	1.40	1-99	1.45

Prices listed are for 1/3 standard window, black only. All other colors, please add \$.02. Standard colors: Black, blue, brown, red, white and gray. Ctn. Qty.-100 pieces.

VHS Universal Full Window (38224) or Clear (38234)

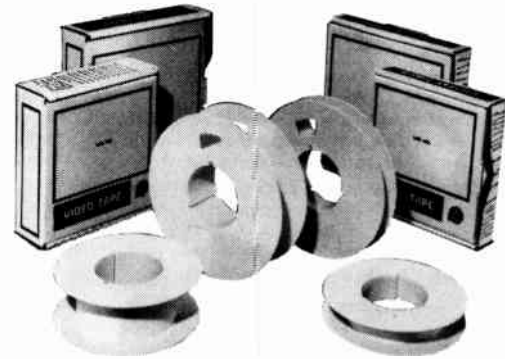
Quantity	Price	Also available:
25,000 and up	\$.44	Clear Bar Code Reader Case-same prices
10,000-24,999	.49	Clear Bar Code Reader Case with back pocket for rental contract, etc., please add \$.03 to clear prices.
2,500-9,999	.54	Clear case with full window wrap-around, please add \$.05 to clear prices.
500-2,499	.59	
100-499	.64	
1-99	1.50	

Prices listed above are for black and clear only. Please add \$.02 for white. Standard colors: Black, white and clear. Ctn. Qty.-100 pieces

3/4" U-Matic 38215

Quantity	Price	Also available:
25,000 and up	\$.79	3/4" with full window wrap-around in clear or black, please add \$.25 to above prices.
10,000-24,999	.84	
2,500-9,999	.89	
500-2,499	.94	
50-499	.99	
1-49	1.70	

Prices listed above are for 1/3 standard window, black only. All other colors, please add \$.05. Standard colors: Black, blue, brown and white. Ctn. Qty.-50 pieces



Videocassette Slip Sleeves*

Plastic Slip Sleeves

Number	Description	250-500	750-1500	1750 & Up	Ctn. Qty.
38515	3/4" U-Matic	\$1.08	\$1.02	\$.98	250
38514	1/2" VHS	.60	.58	.52	250
38513	1/2" Beta	.60	.58	.52	250

Cardboard Slip Sleeves

39514	1/2" VHS	\$.39	\$.37	\$.35	250
39513	1/2" Beta	.39	.37	.35	250

Standard Color: Black

* Carton Quantities Only

Video Vaults™

Videocassette Shipping Cases-Plastic

Number	Description	1-19	20-199	200 & Up	Ctn. Qty.
38805	3/4" U-Matic Bulk	\$5.90	\$3.99	\$3.66	20
38802	1/2" Beta-Bulk	5.90	3.99	3.66	20
38801	1/2" VHS Bulk	5.90	3.99	3.66	20
38803	1/2" Beta in Plastic Box	5.90	3.99	3.66	20
38800	1/2" VHS in Plastic Box	5.90	3.99	3.66	20
38701	8mm Kodak Cassettes*	5.90	3.99	3.66	20

Inserts Only:

39602	1/2" Beta Cassette	\$2.00	\$2.00	\$2.00	-
39601	1/2" VHS Cassette	2.00	2.00	2.00	-

Standard Color: Beige, red, blue

* Holds either 1 or 2

Corrugated Videocassette Mailers*

Number	Description	100-200	300-400	500 & Up	Ctn. Qty.
39415	3/4" U-Matic	\$.37	\$.33	\$.29	100
39414	1/2" VHS/Beta	.23	.22	.18	100

* White only; shipped flat.

Multiple Cassette Shipping Case For:

Number	Description	Less Than Ctn.	1-4 Ctns.	5-9 Ctns.	10 Ctns. & Up	Std. Ctn.
32702	2-3/4" U-Matic	\$18.00	\$16.25	\$15.95	\$15.95	9
327xx	3 to 10-3/4" U-Matic	49.50	47.00	47.00	47.00	4
328xx	2 to 4-1/2" VHS or Beta	18.00	16.75	16.25	15.95	11
328xx	5 to 10-1/2" VHS or Beta	49.50	47.00	47.00	47.00	4

Standard Color: Beige

BRABURY/PORTA-PATTERN, INC.

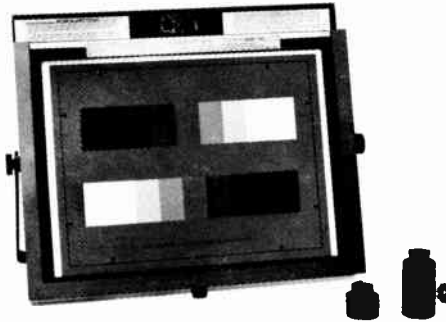
Test Charts

Test Chart System

The PORTA-PATTERN Test Chart System is a convenient, portable 9" x 12" chart package for studio or field use. The system has been designed to offer maximum versatility and protection for the test charts, thus providing faster, easier camera set-up and alignment.

The lightweight, self-standing aluminum Chart Holder provides three-point positional alignment. A spirit level is an integral part of the unit's design for horizontal alignment accuracy. Optional Microphone and Light Stand Mounting Adaptors allow the system to be stand mounted with the same alignment capabilities.

The system contains one each Resolution, Linearity, Registration and Logarithmic Reflectance Charts. The charts are mounted in recessed, high-impact plastic frames for chart surface protection. Each chart frame is color coded for ease of location in the holder. Charts are placed in order of usage. After use the front chart can be reversed so all chart surfaces are protected.



001-10*	Four Chart System with no adaptors	\$330.00
001-11*	Four Chart System with microphone stand adaptor	345.00
001-12*	Four Chart System with light stand adaptor	355.00
001-13*	Four Chart System with mike and light stand adaptors	375.00
001-15	Microphone stand adaptor	35.00
001-16	Light stand adaptor	40.00
001-17	Aluminum frame assembly, complete w/o adaptors	205.00
001-50	Dual system carrying case	85.00
001-51	Single Chart carrying case	60.00
001-24*	Resolution Chart	80.00
001-25*	Linearity (Ball) Chart	80.00
001-26*	Registration Chart	80.00
001-27*	Nine-Step Log Chip Chart	100.00
001-28	Production Slate	60.00
001-29	Blank plastic chart frame	50.00
001-30	BBC Zone Plate Chart, 525 line	155.00
001-31	BBC Zone Plate Chart, 625 line	155.00
001-32	Multi-Burst Chart	80.00
001-33	Window Chart	80.00
001-34	Chess Board Chart	80.00
001-35	Reverse Registration Chart	80.00
001-36	BBC #61P Flesh Tone Reference Chart	155.00
001-37	Pulse Bar Chart	160.00
001-38	CCIR Linearity (Ball) Chart	80.00
001-39	Auto-Registration Chart	80.00
001-40	Lens Focus Chart	80.00
001-42	Line Resolution Chart	80.00
001-43	Full-Field Color Bar Chart	145.00
001-44	Eleven-Step Log Chip Chart	110.00
001-45	Depth of Modulation Chart (Rev. 1984)	75.00
001-46	RCA P-200 Resolution Chart	85.00
001-47	RCA P-300 Resolution Chart	85.00
001-48	BBC #62 High Saturation Color Bar Chart	180.00
001-49	Lens Back Focus Chart	80.00

(*Includes Charts indicated)



014-10	EFP Three Chart System with three Black and White Geometric Test Patterns, including case	\$240.00
014-11	EFP Three Chart System with two Black and White Geometric and one Nine-Step Log Chip Chart, including case	270.00
014-12	EFP Three Chart System with one Black and White Geometric, one Log Chip and one of either Color Bar, BBC #61P Flesh Tone or Pulse Bar Chart, including case	300.00

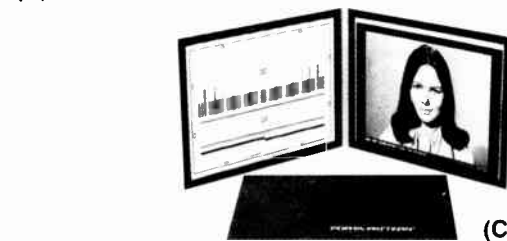
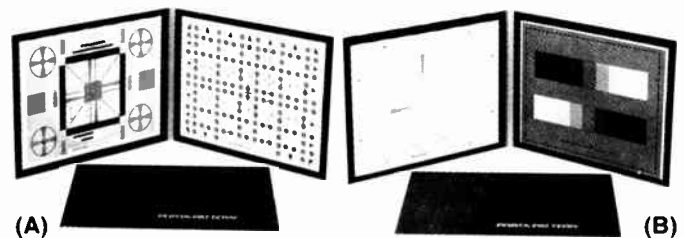
DUOCHART™ Systems

The PORTA-PATTERN DUOCHART System is a lightweight, durable portable video test chart package in the convenient PORTA-PATTERN 9" x 12" image size. Each chart is recess-mounted on lightweight, heavy-duty expanded PVC Foamex™ and hinged to fold face-to-face when not in use. Black Velcro™ provides a light and dirt seal when the system is closed. Each system includes a black vinyl case for carrying and storage. There are three DUOCHART systems to provide the right information for the required set-up and evaluation.

(A) Resolution/Linearity. This system contains the standard Resolution and Linearity Charts. The Resolution Image is designed as a standard reference for measuring and evaluating overall camera resolution as well as testing for camera streaking, ringing, interlace and aspect ratio. The Linearity image is designed for measuring and adjusting scan linearity. The image is a matrix of circles that provide reference when combined with the proper electronically generated grafting signal.

(B) Registration/Log Grey Scale. This system contains the standard Registration and Log Grey Scale Charts. The Registration Image is designed for adjustment of scan timing (registration) in multiple tube color cameras. The Log Grey Scale contains two rows of nine paint chips each, providing the range of reflectance from TV white (60%) to TV black (3%), scaled in increments to approximate the transfer characteristics of the color picture tube.

(C) Multi-Burst/Flesh Tone Reference. This system contains the Multi-Burst Chart and the BBC #61P Color Flesh Tone Chart. The Multi-Burst Image is a dual range grouping of bursts. The full scan range is from 1MHz to 8MHz in 1MHz steps. The half scan range is from 0.5MHz to 4MHz in 0.5MHz steps. The bursts are spaced by a solid black bar for separation of burst information on a waveform monitor. The BBC #61P Color Flesh Tone Image has been developed to provide a standard color reference for matching and evaluating cameras after normal color balance is achieved. The image is manufactured in close cooperation with the Research Department of the BBC with advanced electronic color separation to assure spectral characteristics and long lasting chromaticity.



020-10	Resolution/Linearity	\$135.00
020-11	Registration/Nine-Step Log Grey Scale	165.00
020-12	Multi-Burst/BBC #61P Flesh Tone Reference	195.00

Electronic Field Production (EFP) Three Chart System

In order to provide a greater range of available test patterns in a package better adapted to the portability of EFP camera systems, PORTA-PATTERN has developed a Three Chart System which will accept any combination of three charts presently available in the PORTA-PATTERN catalog.

The system consists of three protective plastic frames, similar to those used for all individual PORTA-PATTERN Test Charts, uniquely hinged end-to-end which allows the frames to be folded upon themselves, thus providing complete surface protection for all three charts and, when closed, takes up no more space than a single PORTA-PATTERN Test Chart.

The entire system is held closed by a Velcro™ closure system and a vinyl coated nylon case is included to provide a complete Three Chart System in a package 15"H x 18"W x 1 1/2" thick.

BRABURY/PORTA-PATTERN, INC.

Test Charts

ENG Two Chart System

The PORTA-PATTERN ENG Chart System has been designed to provide basic alignment, registration, color balance and Auto-White balance information for fast electronic news gathering or field camera set-up.

The system consists of a Registration Chart and a specially designed Color Balance Chart, mounted on durable white acrylic. The two acrylic frames are hinged together, and the charts are folded face-to-face when not in use. Black Velcro™ provides a light and dirt seal when the system is closed, and the white acrylic has a non-reflective surface for Auto-White balance use.

- 008-10 ENG Portable Two-Chart System, Registration and Color Balance, including Carrying Case **\$190.00**

Test Slides and Test Slide Systems

The PORTA-PATTERN Test Slides and Slide System provide the same accuracy and convenience for Color and Black and White Telecine set-up and alignment as the industry standard PORTA-PATTERN Test Charts. These slides are available in either a 2" x 2" glass protected format, for use with slide projectors, or a 3 1/4" x 4" field lens format for use with large image Telecine systems.

- 002-10P* Test Slide System, Positive, 8 Slides with Hardwood Case **\$180.00**
- 002-10N* Test Slide System, Negative, 8 Slides with Hardwood Case **180.00**
- 002-20 Hardwood Slide Case, 10 Slide Capacity **65.00**
- 002-24P* Resolution Slide, Positive **15.00**
- 002-24N Resolution Slide, Negative **15.00**
- 002-25P* Linearity (Ball) Slide, Positive **15.00**
- 002-25N Linearity (Ball) Slide, Negative **15.00**
- 002-26P* Registration Slide, Positive **15.00**
- 002-26N Registration Slide, Negative **15.00**
- 002-27 Nine-Step Log Grey Scale Slide **135.00**
- 002-32P* Multi-Burst Slide, Positive **15.00**
- 002-32N Multi-Burst Slide, Negative **15.00**
- 002-33* Window Slide **15.00**
- 002-34P* Chess Board Slide, Positive **15.00**
- 002-34N Chess Board Slide, Negative **15.00**
- 002-36* BBC #61P Type Flesh Tone Reference Slide **70.00**
- 002-38P CCIR Linearity (Ball) Slide, Positive **15.00**
- 002-38N CCIR Linearity (Ball) Slide, Negative **15.00**
- 002-41P Depth of Modulation Slide, Positive **15.00**
- 002-41N Depth of Modulation Slide, Negative **15.00**
- 002-43* Full-Field Color Bar Slide **70.00**

(*Includes Slides as Shown)

16mm and 35mm Alignment Films

- 005-10 16mm Black and White Chess Board Alignment Film, 50' **\$130.00**
- 005-12 16mm BBC #61P Type Flesh Tone Reference Film Loop, 10' **100.00**
- 005-20 35mm B & W Chess Board Aspect Ratio Transfer Alignment Film, 100' **395.00**

Spherical Transparency Illuminators

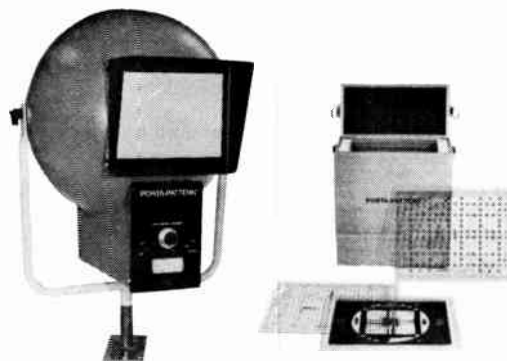
The PORTA-PATTERN Spherical Transparency Illuminator provides a laboratory-type test standard in a practical, video-oriented test package. It is a unique approach to 8" x 10" format transparency illumination for testing, set-up and evaluation of color television camera systems.

A wide range of ultra-stable color temperatures and illumination levels are easily achieved by the use of two front panel controls. The modified 20" integrating sphere produces a flat illumination field throughout a cone angle of greater than 20 degrees without any additional adjustments.

The light source is a low-voltage, regulated DC controlled quartz iodine lamp that assures a constant color temperature independent of AC line variations. This light source illuminates the interior of the sphere which is coated with high efficiency Eastman BaSO₄ sphere coating.

The illumination level is varied by adjusting the light source position inside the sphere, employing the principle of the inverse square law. A precision lamp position assembly, controlled by a numerically calibrated vernier knob, enables the selection of established illumination levels without the use of a light meter.

The PORTA-PATTERN Spherical Transparency Illuminator mounts on any light stand that will accept a 1 1/8" stud. The unit includes a yoke, hood, spare lamp, transparency holder and 10' power cord.



- 010-10 Spherical Transparency Illuminator, spare lamp, 117V, 60Hz **\$2960.00**
- 010-11 Same as above, 230V, 50Hz **2960.00**
- 010-60 Vinyl coated nylon fitted dust cover **145.00**
- 010-75 Test bench mount **65.00**
- 010-99 12V, 50W replacement lamp for 010-10, 010-11 **17.50**

8" x 10" Illuminator Transparencies

The PORTA-PATTERN 8" x 10" Transparencies represent advanced state-of-the-art technology using emulsioned high-impact acrylic. The geometric images are direct reading to the camera. There is no glass between the camera lens and the image to cause distortion or light loss. The elimination of the normal "sandwich" type of construction prevents buckling of the image surface and moisture collection.

This all acrylic construction eliminates the danger and high cost of breakage under normal operating conditions. Neither image emulsion nor acrylic base is subject to heat distortion or damage under usual operating conditions.

Highest quality photographic reproduction insures accurate resolution and maximum and minimum density stability. Dimensional stability and resolving power are in excess of 0.010 percent. All geometric image transparencies include tube scan information to aid in camera set-up. Geometric images are available in standard positive image transparencies or negative image transparencies for lower average picture level.

- 006-20 Hardwood Transparency Case, 10 Transparency Capacity **\$150.00**
- 006-24P Resolution Transparency, Positive **170.00**
- 006-24N Resolution Transparency, Negative **172.50**
- 006-25P Linearity (Ball) Transparency, Positive **170.00**
- 006-25N Linearity (Ball) Transparency, Negative **172.50**
- 006-26P Registration Transparency, Positive **170.00**
- 006-26N Registration Transparency, Negative **172.50**
- 006-27 Nine-Step Log Grey Scale, Transparency **250.00**
- 006-30P BBC Zone Plate Transparency, 525 Line, Positive **170.00**
- 006-31P BBC Zone Plate Transparency, 625 Line, Positive **170.00**
- 006-32P Multi-Burst Transparency, Positive **170.00**
- 006-32N Multi-Burst Transparency, Negative **172.50**
- 006-33P Window Transparency, Positive **170.00**
- 006-33N Window Transparency, Negative **172.50**
- 006-34P Chess Board Transparency, Positive **170.00**
- 006-34N Chess Board Transparency, Negative **150.00**
- 006-36 BBC #61P Type Flesh Tone Reference Transparency **195.00**
- 006-37P Pulse Bar Camera Transparency, Positive **180.00**
- 006-37N Pulse Bar Camera Transparency, Negative **187.50**
- 006-38P CCIR Linearity (Ball) Transparency, Positive **170.00**
- 006-38N CCIR Linearity (Ball) Transparency, Negative **172.50**
- 006-39P Auto-Registration Transparency, Positive **170.00**
- 006-39N Auto-Registration Transparency, Negative **172.50**
- 006-42P Line Resolution Transparency, Positive **170.00**
- 006-42N Line Resolution Transparency, Negative **172.50**
- 006-43 Full-Field Color Bar Transparency **190.00**
- 006-44 Eleven-Step Log Grey Scale Transparency **285.00**
- 006-45P Depth of Modulation Transparency, (Rev. 1984), Positive **170.00**
- 006-45N Depth of Modulation Transparency, (Rev. 1984), negative **172.50**
- 006-46P RCA P-200 Resolution Transparency **180.00**
- 006-47P RCA P-300 Resolution Transparency **180.00**
- 006-49P Lens Back Focus Transparency, Positive **170.00**
- 006-49N Lens Back Focus Transparency, Negative **172.50**

Prices and Specifications Subject to Change Without Notice.

POTOMAC INSTRUMENTS, INC.

Antenna Monitors/Remote Control System

Antenna Monitors

AM-19 (204)

• Accurate • Field proven reliability • Pushbutton operation • Remote monitoring • Up to 12 towers, DA-3

AM-19D (210)

• AM-19 (204) features plus • Numeric readout • Phase resolution 0.1° • Ratio resolution 0.1% Modular construction • Ratios to 199.9%

Antenna Monitors

No. of Towers	*AM-19 (204)	*AM-19D (210)	**PM-19
2	\$4,365.00	\$4,775.00	\$ 5,875.00
3	4,365.00	4,775.00	5,875.00
4	4,590.00	5,000.00	6,305.00
5	4,815.00	5,225.00	6,735.00
6	5,040.00	5,450.00	7,165.00
7	5,265.00	5,675.00	7,595.00
8	5,490.00	5,900.00	8,025.00
9	5,715.00	6,125.00	8,455.00
10	5,940.00	6,350.00	8,885.00
11	6,165.00	6,575.00	9,315.00
12	6,390.00	6,800.00	9,745.00

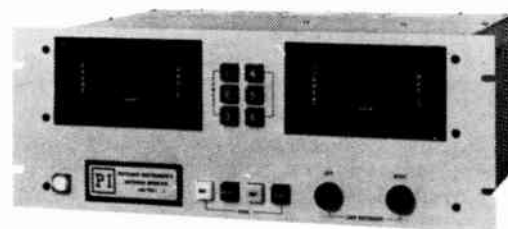
*Prices shown are for single (DA-1) or dual (DA-2) patterns. For three patterns (DA-3) monitors add \$100.00.

**For PM-19 Precision Monitor System: Add cost of PMA-19 to either AM-19 (204) or AM-19D (210).

When ordering specify: Number of towers in the antenna array, number of patterns employed, reference tower number for each pattern, sampling line impedance and 117 or 230VAC operation.



AM-19 (204)



AM-19D (210)

PMA-19 Precision Monitor Adaptor

• Current deviation mode • Ultimate precision • Up to 12 towers, DA-3

The PMA-19 Precision Monitor Adaptor is used in conjunction with either AM-19 (204) or AM-19D (210) monitors. This unit is required, for the most part, in very critical arrays. The current deviation mode provides a third measured parameter which displays directly the deviation of the current ratio from the licensed ratio. P.O.R.

RMP-19 (204) Analog Remote Metering Panel

This panel contains meters which duplicate those of the AM-19 (204) for direct display of phase angle and current ratio. A switching relay is provided to conserve the required number of remote control channels. \$725.00

Ancillary Equipment (Antenna Monitors)

RSA-19 Remote Switching Adaptor for Interface to Remote Control System. \$725.00

ECP-19 Extension Control Panel. May be used with RMP-19 (204) or RMP-19D (210) 525.00

RC 16 + Automatic Remote Control System

Includes SU-16 Studio Unit (16 channels). This unit contains the master controller and time clock. It sends commands to the transmitter unit and receives data from it. It is pre-programmed for each station according to user specifications. It provides manual or automatic surveillance and control at the option of the operator. Front panel indicators provide channel number, telemetry data, time, and status indications.

Includes TU-16 Transmitter Unit (16 channels). This unit accepts analog telemetry and status inputs and provides relay closure control outputs. It receives its instructions from the studio unit and operates the relays to control each function. Individual telemetry adjustments are provided for one person calibration under local control.

RC 16 + \$5,300.00

Options

- XTU/XSU Channel Expansion Units set/\$2,075.00
- ALU Automatic Logging Unit. 1,995.00
- VDU Video Display Unit 1,025.00
- Telephone Interface Option 600.00
- Subcarrier Modem Option 500.00



RC 16 +

POTOMAC INSTRUMENTS, INC.

Transmission Equipment

SMR-11 Synthesizer Monitor Receiver

- Ultra low distortion AM monitor receiver • Covers 530kHz to 1.700MHz frequency range • Crystal controlled frequency synthesized local oscillator • 12kHz to 28kHz IF bandwidth (switch selectable) • Adjacent channel notch filter • Internal speakers • External balanced and unbalanced audio outputs • Loss of modulation alarm • Loss of carrier alarm • Signal strength/peak modulation metering • Adaptable to AM stereo reception • 230VAC option

Sensitivity and selectivity in the SMR-11 are consistent with the current state of the art and are dictated by the design constraints of the primary objective.

Receiver pre-selection and bandwidth are key design parameters. Because of the constant bandwidth, tuned L/C pre-selector and four pole ceramic IF filter, the SMR-11 exceeds most out-of-band rejection characteristics in other AM receivers.

The SMR-11 also contains switch selectable 10kHz (9kHz in Europe and Australia) notch filters. These filters are provided to eliminate the "beat note" that exists between the desired station and any first adjacent channel signal. The notch filter may be switched in or out at the user's option.

ANT-11 Antenna

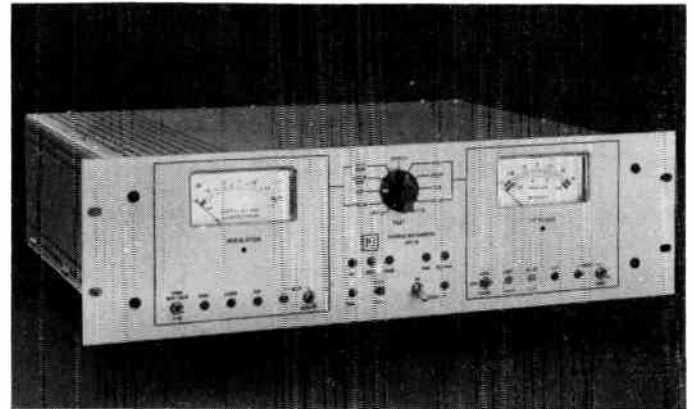
The ANT-11 is a tunable, constant bandwidth, ferrite rod antenna housed in a Faraday shielded enclosure containing an internal pre-amplifier. The primary advantages afforded by this antenna are: directivity, immunity to man-made electric fields (fluorescent lights, electric motors, etc.), and the ability to be placed at a remote point while connected by a single coaxial cable.

The CQUAM® stereo version is essentially the same instrument exhibiting the following stereo specifications.

Specifications

Bandwidth and Selectivity (typical):	12kHz BW: -3dB at ± 6.5kHz; -60dB at ± 11kHz
Detector:	L + R: active envelope detector L-R: Motorola CQUAM IC decoder
Audio Output:	5W into 4 ohms, each channel, continuous sine wave at 0.4% THD Left and right channel 600Ω balanced outputs, -2dBm into 600Ω load for 50% left-only or right-only modulation
Notch Filter:	Located in left and right outputs, switchable, 40dB depth at 10kHz or 9kHz
Audio Frequency Response:	12kHz BW: 0.5dB maximum variation 60Hz to 3.5kHz; -3dB at 35Hz and 12kHz 24kHz BW: 0.5dB maximum variation 60Hz to 7.5kHz; -3dB at 35Hz and 12kHz
Total Harmonic Distortion (Typical 24kHz BW at 600 ohms Output):	0.2% at 1kHz, 1% at 55Hz and 4.5kHz; for 50% left-only or right-only modulation
Intermodulation Distortion (200Hz and 2500Hz; 4:1 ratio):	1.0% typical at 50% left-only or right-only modulation
Separation (24kHz BW):	> 30dB, 60Hz to 5kHz
S/N Ratio (24kHz BW):	50dB typical maximum for 50% Left-only or right-only modulation

SMR-11R	Rackmount version (requires 3 1/2" of vertical space in a standard 19" equipment rack) includes two internal speakers—less antenna. . . \$1900.00
SMR-11R (S)	Above rackmount version includes CQUAM AM stereo demodulator2400.00
SMR-11D	Desk model mounted in natural finish maple cabinet (4 1/2" H x 20" W x 12 1/2" D) less antenna1975.00
SMR-11D (S)	Above desk model version includes CQUAM AM stereo demodulator2475.00



MPC-11

PA-11 External RF pre-amplifier for whip antenna or long wire antenna applications \$250.00

Options

- ANT-11** Remote, tuneable ferrite rod antenna with internal, low noise pre-amplifier—recommended for most SMR-11 applications \$700.00
- WP-11** Fiberglass weatherproof housing for ANT-1175.00

MPC-11 Modulation and Power Controller

- Modulation and power control • Front panel metering and outputs for auto logging • Accommodates up to 3 separate power levels and/or antenna patterns for both main and ALT/AUX transmitters • Carrier shift compensation • Self diagnostics and fail safe operation • Open collector status alarm outputs • Remote control and ATS compatible interface • Simple installation

The MPC-11 Modulation and Power Controller continuously monitors transmitter modulation and power levels and, if either parameter varies beyond user set tolerances, it automatically adjusts these levels as necessary to maintain operation within the desired limits. Various safeguards are provided to prevent over control or unnecessary transmitter adjustments.

An RF sample is derived from a toroidal sampling transformer at the transmitter side of the antenna common point meter, level detected and demodulated by internal detectors, and processed by separate circuits for modulation control and power control. The MPC-11 is designed to accommodate up to three different antenna patterns and/or power levels, each separately for a main and/or alternate/auxiliary transmitter.

Specifications

Alarm Outputs:	Over power: over modulation Under power: under modulation Power out: modulation out Power control alert: modulation control alert All are transistor switches to ground, normally closed (100mA maximum from 50V maximum positive supply), open for alarm
Power Requirements:	105-130VAC, 50-60Hz, 20VA
Operating Temperature Range:	32°F (0°C) to 113°F (45°C)
Storage Temperature Range:	-20°F (-29°C) to 140°F (60°C) with battery installed
Dimensions:	19" rack panel, 5 1/4" H x 15" D

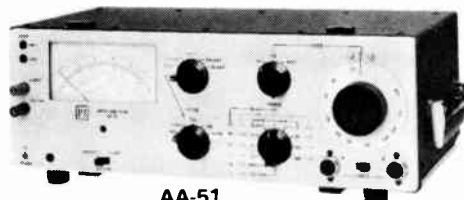
MPC-11 P.O.R.

CQUAM is a registered trademark of Motorola, Inc.

Refer to Green Section for Addresses and Telephone Numbers.

POTOMAC INSTRUMENTS, INC.

Audio Instrumentation



AA-51

AA-51 Audio Analyzer

The AA-51 Audio Analyzer is an automatic multi-purpose test instrument designed to accurately measure total harmonic distortion, intermodulation distortion, wow and flutter, frequency response, signal-to-noise ratio, RMS voltage level, stereo phasing, and a differential gain (ratio) of signals in the audio frequency spectrum. There are no "Set Level" or "Balance" controls. Input signals between 0.1VRMS and 50VRMS are automatically leveled to the proper reference for distortion measurements. Out-of-range lights are provided for indicating that input levels are within the usable 40dB range.

For total harmonic distortion (THD) measurements, automatic nulling is accomplished via internal feedback circuitry. The operator merely coarse-tunes the input frequency, switches the function switch to THD and reads the meter. Accurate harmonic distortion measurements at various discrete frequencies and different power levels can be made much faster than with conventional distortion analyzers.

Intermodulation distortion measurements are performed with equal simplicity. Utilizing the SMPTE standard modulation signal provided by the AG-51 generator, the AA-51 displays percent IM for input levels between 0.1VRMS and 50VRMS. Again, measurements are automatic—no level or balance adjustments are required. With the function switch in the IM position, variations in intermodulation distortion may be observed over a wide dynamic range—automatically. This feature makes the AA-51 a very useful test instrument for troubleshooting audio systems.

Signal + Noise/Noise ratio measurements are made with the function switch in the "Noise" position. In this mode, the voltmeter bandwidth is restricted to 20kHz. S + N/N measurements are accomplished by reading the difference in audio output level between reference signal corresponding to 100% modulation and the residual noise of an unmodulated signal. Accurate frequency response measurements are facilitated by a wideband voltmeter which exhibits a flat response (± 0.1 dB) from 20Hz to 200kHz. Input level range is from 1mV to 100V full scale. The average responding meter is calibrated to the RMS value of a sine wave.

Incidental frequency modulation termed "Wow and Flutter" is usually associated with record and playback equipment such as tape decks, cart machines and turntables. The AA-51 measures weighted peak flutter as specified by IEEE standard 193. Wow and flutter measurements are automatic. Test signals may be derived from a prerecorded standard test tape or record or from the 3.15kHz signal provided by the AG-51.

Stereo signals and mono signals derived from a stereo source are often degraded by phase errors and differential gain variation between Left and Right channels of a given audio system. The AA-51 contains both Phase and Ratio measuring circuitry which enables the operator to evaluate these characteristics quickly and accurately throughout the complete audio spectrum and over a wide dynamic range. Phase angle is displayed with a zero center scale indication and full scale sensitivity of either $\pm 54^\circ$ or $\pm 180^\circ$ as determined by a front panel switch. The ratio meter is also a zero center scale device with ± 6 dB full scale deflection.

The Phase and Ratio measurement features of the AA-51 are particularly useful for line equalization measurements, azimuth alignment of stereo tape heads, and troubleshooting of audio consoles, amplifiers and networks.

AA-51 Audio Instrumentation

RFI shielded, stereo inputs, 117VAC (230VAC optional) \$2550.00

THD Meter: 0.1% to 100%, 20Hz to 20kHz, automatic set level and balance Included

Intermodulation Distortion Meter: 0.1% to 100% 60Hz and 7kHz composite (other frequencies optional), automatic set level Included

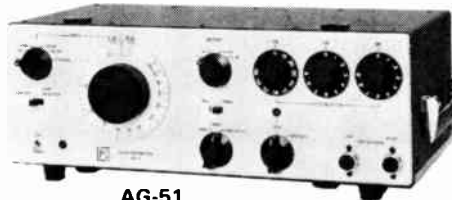
AC Voltmeter: 5Hz to 500kHz, 1mV to 100V Included

S + N/N Meter: 20Hz to 20kHz Included

Phase Meter: $\pm 180^\circ$, 20Hz, to 20kHz Included

Wow and Flutter Meter: 0.01% to 1% peak weighted, automatic set level Included

Ratio Meter: ± 6 dB, 20Hz to 20kHz Included



AG-51

AG-51 Audio Generator

The AG-51 Audio Generator contains a low distortion 20Hz to 200kHz sine wave generator, an SMPTE standard intermodulation signal generator and a fixed frequency sine wave generator at 3.15kHz for wow and flutter tests. Signal outputs are simultaneously available at levels of up to +18dBm (equivalent sine wave power for complex signals) at separate Left and Right output connectors. Outputs may be switch-selected for Left only, Right only, Left and Right in phase (L + R), and Left and Right in phase opposition (L-R). Front panel switches enable the operator to select fully balanced or unbalanced outputs at impedance levels of 150 ohms or 600 ohms. A dynamic range of 99.9dB in 0.1dB steps utilizing a combination of 10dB, 1.0dB and 0.1dB precision attenuators is provided. Attenuator dials display output level directly in dBm in the 150 ohm source impedance configuration. Automatic output leveling circuitry with a built-in self-test feature provides a constant output level thereby eliminating the need for output metering.

AG-51 Audio Instrumentation

Audio Generator: RFI shielded, transformerless stereo outputs, balanced and unbalanced, 600 ohms and 150 ohms, automatic signal leveling with self test feature. 117VAC (230VAC option) \$2025.00

Stereo Matrix Switch: L, R, L + R, L - R Included

Precision Attenuators: 10dB, 1.0dB, 0.1dB steps Included

Low Distortion Sine Wave Generator: 20Hz to 200kHz Included

Composite Intermodulation Test Generator: 60Hz and 7kHz at 4:1 (other frequencies optional) Included

3.15kHz SMPTE Wow and Flutter Frequency Standard Included

AT-51

Audio Test System: Includes AA-51 Analyzer and AG-51 Generator at single purchase price \$3975.00

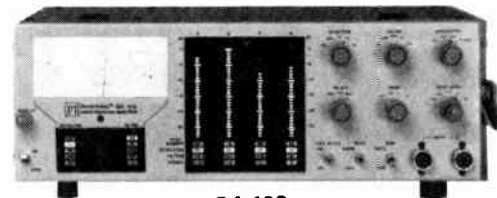
Audio Test Accessories

TC-51 Fiberglass reinforced Transport Case, houses both AA-51 and AG-51, dimensions 21" x 19" x 14" \$375.00

DX-51 Low Distortion AM Detector \$235.00

IX-51 Balanced to Unbalanced Audio Transformer with switch selectable line termination of 600 ohms, 150 ohms or open circuit \$230.00

RK-51 19" Rackmounting Kit for AA-51 or AG-51 (2 kits required for complete AT-51 system) \$75.00



QA-100

QA-100 QuantAural Audio Program Analyzer

- Measures audio processing
- Evaluates station sound
- Analyzes competitive stations

Your own ears will always be the best judge of sound. But now there is an instrument designed especially for professional broadcast programmers and engineers to assist in program sound analysis. Here's what you can do with the QuantAural QA-100 Audio Program Analyzer:

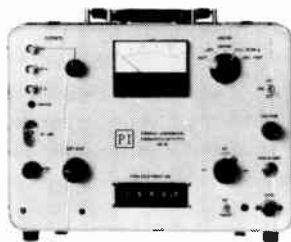
Take audio from any source: receiver, tape recorder, modulation monitor, production studio output, audio processing equipment; and measure: Maximum peak level (FCC limits this value), Overall audio processing effectiveness (average level), Tightness of sound, processing control (peak density), Tonal balance and consistency (4 band real time analyzer), Stereo image width (L - R to L + R ratio), Preemphasis (4 band real time analyzer), "Punch" (special "aural intensity" measurement)

This device is a must for any highly competitive radio station. It provides important technical information about any audio signal which can suggest adjustments in equipment, operations and audio processing for that special sound you want to achieve.

QA-100 \$3500.00

POTOMAC INSTRUMENTS, INC.

RF Generator/Detector



SD-31

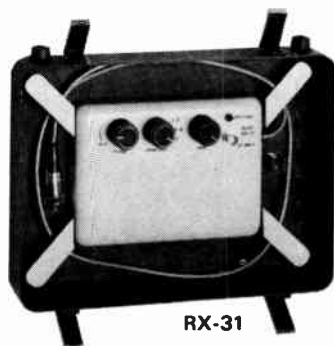
SD-31 Synthesizer/Detector

• Designed for antenna impedance measurements with RF bridges in the presence of strong interference • High-level oscillator compatible with general radio 1606 series, 916 series, and Delta OIB-1 impedance bridges • Frequency crystal controlled, variable in 500Hz steps from 100.0kHz to 1999.5kHz • Versatile—can be used as an RF signal generator for troubleshooting antenna systems; as a variable frequency oscillator for antenna site survey; or other applications requiring a precise frequency source • Special coherent detector circuit rejects interfering signals experienced during antenna measurements • Receiver for detector can be external or optional built-in RX-31 receiver • Powered by rechargeable batteries • Self-contained portable package

The SD-31 Synthesizer-Detector is a high-output signal generator of precisely known frequency combined with a sensitive, selective detector for RF bridge measurements of AM antenna impedance. Packaged in a single lightweight battery-powered unit, the SD-31 complements bridges such as the General Radio 1606, 916, and the Delta OIB-1.

A frequency synthesizer determines the generator frequency, which can be adjusted in 0.5kHz steps by means of a front-panel switch from 100.0kHz to 199.5kHz. Frequency accuracy is the same as that of the internal crystal reference oscillator. A front panel fine-frequency control varies the frequency up to $\pm .01\%$. The generator can drive a wide range of load impedance at levels up to 20VRMS. It also has a variable low-level output suitable for driving a counter or for receiver frequency calibration.

SD-31 \$2425.00



RX-31

RX-31 Receiver Option

The RX-31 is designed specifically as an RF interface between an impedance bridge and the SD-31 Coherent Detector. Conveniently mounted in the protective cover of the SD-31, the RX-31 is a

single conversion super heterodyne receiver which derives its local oscillator signal and power supply voltage from the SD-31. Receiver circuitry is packaged in an aperture-free, drawn aluminum enclosure which provides excellent RF shielding. IF selectivity is provided by active bandpass filter which can limit receiver bandwidth to 100Hz.

RF Filter

Manually tuned in 3 bands: 0.1-0.3MHz
0.3-0.8MHz
0.8-2.0MHz
RX-31 \$675.00

Accessories

HS-11 Headset \$ 25.00
GR

Adaptor Adapts general radio type 874 connector to BNC jack \$40.00

UHF

Adaptor Adapts large UHF jack to BNC jack (for Delta OIB1) \$38.00

FL-31

Two Pole Tuneable Band Pass Filter 0.5MHz to 1.7MHz (provides attenuation for strong adjacent channel signals resulting from RF Bridge feed through) \$600.00

Test

Cable RG223 Double Shielded Coaxial Cable cut to 5' length with UG88 (BNC male) connectors on both ends \$17.00

MCC-31 Deluxe wood carrying case \$125.00



FIM-21

Field Strength Meters

FIM-21, FIM-22, FIM-41

• 6 position (20dB per step) attenuator • High Q double-tuned RF input for maximum image rejection • Multi-pole hybrid IF filter with shape factor (6dB to 60dB) of 2.2:1 • Fully temperature compensated circuitry plus voltage regulation for long term stability • Four-inch, mirrored scale, taut-band meter with internal lighting • Front panel speaker with weather-treated cone or headphone output • RF coaxial input for measuring terminal voltage between 10 μ V and 10V • Mechanical "vernier" is integral part of receiver tuning control • Differential comparison circuit for balancing oscillator and receiver output for precise calibration • Capable of signal ratio measurements (including harmonics) to -80dB

FIM-21, FIM-22 and FIM-41 represent a new generation of precision instruments for direct measurement of electromagnetic fields in the 200kHz to 5.0MHz frequency spectrum. These units are intended for portable field use and include a laboratory quality receiver, integral shielded loop antenna, precision attenuator, in-

ternal calibration source, and voltage regulated battery power supply.

FIM-21 Covers AM broadcast spectrum only (535, to 1605kHz). Utilizes 6 "D" batteries (not included) . . . \$2450.00

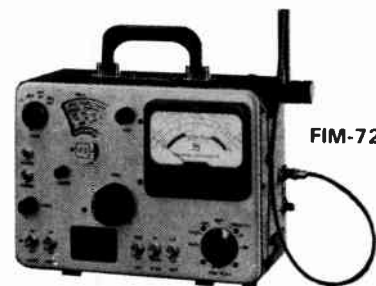
FIM-22 Covers 200 to 550kHz frequency spectrum. Utilizes 6 "D" batteries (not included) . . . \$2850.00

FIM-41 Covers 540kHz to 5MHz frequency spectrum in two bands. Utilizes 6 "D" batteries (not included) . . . \$2800.00

FIM-71

• Accurate—direct reading—volts or dB • 45MHz to 225MHz—continuous tuning • Peak or averaging detector (switch selectable) • Wide or narrow IF bandwidth (switch selectable) • 20dB or 60dB meter range (switch selectable) • AM or FM demodulator (switch selectable) • Calibrated dipole antenna, mounted on case for near-ground measurements or removable for TASO measurements • 140dB measurement range (1 μ V to 10V) • 4 $\frac{1}{2}$ " , mirrored scale, taut-band meter • Front panel speaker • Recorder output • Rugged, portable package • Calibrated signal generator, 45MHz to 225MHz • Battery or external power • Use as signal source/selective voltmeter for insertion loss measurements of filters, etc. • Measures FM harmonics to -80dB.

FIM-71 Utilizes 10 "D" batteries (not included) . . . \$4500.00



FIM-72

FIM-72 Same as 71 but 470MHz to 960MHz continuous tuning • Calibrated generator 470MHz to 960MHz

FIM-72 Utilizes 10 "D" batteries . . . \$6250.00

Accessories

HS-11 Headset for all models . . . \$ 25.00
MCC-21 Deluxe wood carrying case for FIM-21, FIM-22, FIM-41 . . . \$125.00

MCC-71 Deluxe wood carrying case for FIM-71 . . . \$125.00

Unipod Telescoping stand for FIM-21, FIM-22, FIM-41 . . . \$60.00

ANT-71 Antenna elements and balun (spare) for FIM-71 . . . \$475.00

ANT-72 Antenna elements and balun (spare) for FIM-72 . . . \$475.00

AC72 117VAC adaptor for FIM-71, FIM-72 . . . \$75.00

RO-71 Phone plug with internal potentiometer for adjustable record output . . . \$30.00

8P-71 Rechargeable battery pack for FIM-71, FIM-72 . . . \$95.00

8C-71 Battery charger for FIM-71, FIM-72 . . . \$215.00

8K-71 Rechargeable battery kit includes BP-71 and BC-71 for FIM-71, FIM-72 . . . \$535.00

PRIME IMAGE, INC.

*Time Base Correctors/
Frame Synchronizers*

TBC + /TBC•Sync + Time Base Correctors

- True color lock — full reverse, 5X forward, stop scan and slow motion
- Full 16 line, 8 bit system
- Compatible with dynamic tracking VTRs
- Front panel set up adjustments
- RF and TTL dropout correction
- Advanced vertical steering
- Genlock — stand alone operation
- Corrected output meets full RS-170A specs
- Super efficient construction; constructed of steel
- Incorporate a unique air intake and cooling system
- Occupies only 1 3/4" vertical rack space
- Weighs only 16 lbs. (TBC +) and 18 lbs. (TBC•Sync +)
- Requires only 50-55W

Plus — Digital Effects

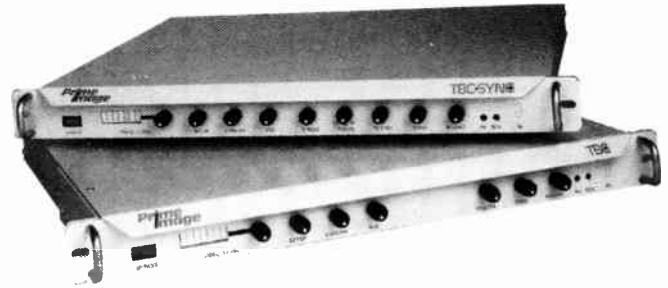
Standard operator selectable, in channel digital effects for variable mosaic, posterization, and sepia tone enhancement of the video image. These effects may be used individually or in any combination and are adjustable over the full picture level range.

TBC•Sync +

Incorporates all of the features of the TBC +, plus provides for full frame or field synchronization between synchronous and asynchronous sources. TBC•Sync + also provides for non-V locked recorders to be edited or mixed with camera or recorder inputs.

DUB•TBC + Dub Mode Time Base Corrector

The DUB•TBC + provides up to twelve generations of clearer, crisper video tape copies for all commonly used dub mode video tape recorders having Y/C688 or R-Y/B-Y type capabilities. The DUB•TBC + removes time base error and avoids degradation due to excessive signal processing — avoids up to four major encoding-decoding degrading processing steps for each generation of copying.



Specifications

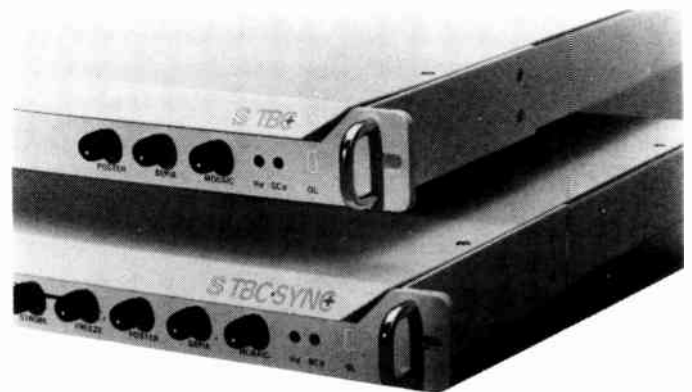
Video In:	1V p-p, 75 ohms, BNC
Genlock In:	High impedance, looping, 2 BNCs
DOC In:	RF or TTL, 100mV min., BNC
Vertical Sync In:	Composite sync, 300mV min., BNC
Video Out 1:	1V p-p, 75 ohms, BNC (bypassable)
Video Out 2:	1V p-p, 75 ohms, BNC (monitor output)
Advance Sync Out:	1V p-p, 75 ohms, BNC (not required for TBC•Sync +)
Bandwidth:	4.2MHz
S/N Ratio:	58dB
Differential Phase:	1.5°
Differential Gain:	1.5%
K Factor:	3%

100-000 TBC + with digital effects	\$5,555.00
150-000 TBC + without digital effects	3,990.00
160-000 DUB•TBC + without digital effects	5,200.00
165-000 DUB•TBC + with digital effects	6,200.00
200-000 TBC•Sync + with digital effects	8,888.00
250-000 TBC•Sync + with limited digital effects	6,666.00
Upgrade TBC + without digital effects	
to full TBC + with digital effects	1,850.00
Upgrade TBC•Sync + without digital effects	
to full TBC•Sync + with digital effects	2,500.00
Optional dynamic tracking connector for	
Sony BVU820 type VTR	100.00
Optional additional maintenance or operating	
manual	100.00

S TBC + /S TBC•Sync + S-VHS Time Base Correctors

- True component processing
- Y/C (S-video) inputs and outputs
- Composite inputs and outputs
- Transcoding between Y/C to composite and composite to Y/C
- Compatible with Dynamic Tracking VCRs
- 8-bit chrominance and luminance sampling
- Corrected outputs conform to EIA RS-170A
- Genlock
- In addition to common features, S TBC + with effects 100-000S has posterize, sepia and mosaic capabilities
- In addition to common features, S TBC•Sync + with limited effects 250-000S is a full frame synchronizer with freeze frame (frame, field 1 or field 2), strobe and hot switch input capabilities
- In addition to common features, S TBC•Sync + with full effects 200-000S is a full frame synchronizer with freeze frame (frame, field 1 or field 2), strobe, posterize, sepia, mosaic and hot switch input

150-000S S TBC + without effects	\$3,990.00
100-000S S TBC + with limited effects	5,555.00
250-000S S TBC•Sync + with limited effects	6,666.00
200-000S S TBC•Sync + with full effects	8,888.00



QEI CORP.

**FM Transmitters/Monitor/
Generator/Exciters**

675T150/675T300/675T500

FM Transmitters

• 100% solid-state circuit • Power output adjustable from 100 to 150W (675T150) • Power output adjustable from 150 to 300W (675T300) • VSWR protected • Programmable phase locked loop frequency synthesizer

675	FM exciter	\$ 2,795.00
675T150	150W FM transmitter	6,635.00
675T150/03	150W FM transmitter with 695 exciter	9,135.00
675T300	300W FM transmitter	7,935.00
675T300/03	300W FM transmitter with 695 exciter	10,435.00
675T500	500W FM transmitter	9,590.00
675T500/03	500W FM transmitter with 695 exciter	12,090.00
675T500A	500W FM amplifier	6,795.00
675T500MP	Meter and remote function panel	245.00

1kW FM Transmitter

• All solid-state • Low distortion exciter • Operational in one second • Remote control (studio) included • "Automod" automatic modulation control • Automatic power control • Solid-state relay control logic • Factory computer fault analysis by telephone • Microprocessor based diagnostics • Full remote control operation • Low-pass filter and directional coupler mounted inside the cabinet

FMQ-1000	Basic 1kW solid-state FM transmitter with 675 exciter	\$16,990.00
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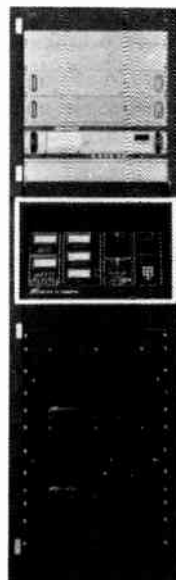
3.5kW/5kW/10kW FM Transmitters

• One tube, a grounded grid 3CX3000A7 for trouble-free stable operation • No conventional plate blocker • Transmitter status at a glance • Studio remote control unit included • "Automod" automatic modulation control • Automatic power control • Factory computer fault analysis by telephone • Microprocessor-based diagnostics • Full remote control operation • Low-pass filter and directional coupler mounted inside the cabinet

FMQ-1000	Basic 1kW solid-state FM transmitter with 675 exciter	\$16,990.00
FMQ-3500	Basic 3.5kW single tube FM transmitter with 675 exciter	20,990.00
FMQ-5000	Basic 5kW single tube FM transmitter with 675 exciter	22,990.00
FMQ-10000	Basic 10kW single tube FM transmitter with 675 exciter	28,990.00
FMQ-15000	Basic 15kW single tube FM transmitter with 675 exciter	35,990.00
FMQ-20000	Basic 20kW single tube FM transmitter with 675 exciter	44,990.00
FMQ-30000	Basic 30kW FM transmitter with 675 exciter	48,990.00
FMQ-55000	Basic 55kW FM transmitter with 675 exciter	99,495.00

Options

Option/01	Micro-processor based wire connected remote control system, fault diagnostics, memory, 695 exciter	\$5,000.00
Option/02	Micro-processor based STL connected remote control system, fault diagnostics, memory, SCA encoder/decoder for unlink and downlink, 695 exciter	5,500.00
Option/03	Replace model 675 exciter with model 695 exciter in transmitters 1kW and above	2,500.00
Option/04	Four extra remote control channels for user defined purpose. (Requires /01 or /02 option)	495.00
Option/05	Delete exciter from FMQ series transmitters. Subtract \$1,195.00 and add /05 to model number	



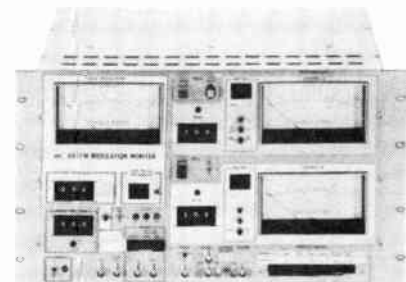
FMQ Series Transmitter



772F



695



691

- Option/06** Terminal control package — provides password protected control of transmitter through a computer terminal. Includes auto-answer/auto-dial modem (Requires /01 or /02 option) **\$ 595.00**
- FMQSPS** Single phase power supply option **4,995.00**

695 FM Exciter

• Low distortion, < .025% independent of temperature • "Automod" automatic modulation control • Modulation metering and peak counter built in • Broadband design eliminates adjustments and tuning • Micro-physics virtually eliminated • 5 to 20W output • Synthesized phase-locked loop design, 100kHz steps • Convection cooled, no fan or blower • Extensive metering, annunciator panel and bargraph modulation display • Spectrum display output permits Bessel-Null calibration of modulation monitoring • Very low noise

695	FM Exciter	\$5,295.00
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691 Tunable Stereo Modulation and FM Test Set

• Complete proof-of-performance instrument for mono, stereo, and SCA measurements • Converts a standard X-Y oscilloscope into a spectrum analyzer • Off-the-air or direct transmitter connection • Will accept up to 50W of RF input with a suitable termination • Peak flashers adjustable from 1% to 199% with 100% peak counting digitally displayed

691	FM Modulation monitor/test set	\$5,295.00
691/01	FM modulation monitor/test set with SCA	6,295.00
691/02	FM modulation monitor/test set with dual SCA	6,695.00

772F Stereo Generator

• 100% solid-state • Remote mono-stereo switching • Optional phase equalized input filters available • 3 1/2" of rack space

772F	Stereo generator with filters	\$1,695.00
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Refer to Green Section for Addresses and Telephone Numbers.

QSI SYSTEMS, INC.

Colorbar Generator/Video Source Identifiers

CB-2440 SMPTE Colorbar Generator/Video Source Identifier

• SMPTE colorbar pattern • Genlockable • Automatic switchover to internal synchronization upon loss of genlock signal • 24 character ID • 40 separate IDs in memory with minimum 72 hours battery back-up • ID inserted in VBI of input program video • Switchable 1kHz stereo test tone, locked out in live mode • 2 blackburst outputs and 1 isolated colorbar output • LED status indicators for genlock, ID programming and tone generators • 1 rack unit high

Specifications

Colorbar Output: 1V p-p, blanking at 0VDC, 75 ohm source terminated
Pattern: SMPTE
Pulse Widths: Within RS-170 specifications
Subcarrier Frequency: 3.579545MHz ± 10Hz from 10° to 50°C ambient, front panel adjustable
Vector Accuracy: Within 1.5°
Blackburst Outputs: 2, 75 ohm source terminated, blanking at 0VDC
Pulse Widths: Within RS-170 specifications
Subcarrier Phase: Adjustable ± 30° to match colorbars
Genlock Input: Front panel switchable
H Phase: 75 ohm terminated, composite video
Subcarrier Phase: Front panel adjustable ± 1µs minimum
Indicator: Front panel adjustable over 360° range
Audio Tones: Red LED
Indicators: Left and right 1000Hz tones 600ohm balanced, transformer isolated, individually switchable from front panel
Tone Levels: Red LEDs
Inputs: Internal jumper selection of 0, 4, or BdB attenuation on each tone, adjustable to +10dB, factory set at +BdB
Identifier Input: L and R balanced, relay switched to outputs with BARS/LIVE switch in LIVE mode
Display Length: 24 characters maximum
IDs in Memory: 40 maximum
Display Modes: Two, active area over internal colorbars, and vertical interval over external video, selected with BARS/LIVE switch



CB-2440

Character Display – Active area: ASCII 64 character, 7 x 9 matrix, full surround black background
Display Size: Vertically and horizontally adjustable within the active area
Character Matte: Internally adjustable from 60 to 110 IRE. Factory set at 78 IRE
Character Display – Vertical Interval: ASCII 64 character, 5 x 7 matrix insert horizontally adjustable, vertically fixed at 7 lines with adjustable start selection
Character Matte: Internally adjustable from 30 to 70 IRE. Factory set at 45 IRE
Output: Selection between colorbars or external video with the BARS/LIVE switch 75 ohm source terminated, 1V p-p nominal
Differential Gain: < 0.5%
Differential Phase: < 0.5°
Frequency Response: ± 0.5dB, to BMHz
Tilt and Overshoot: < 1%
Hum and Noise: -60dB below 1V p-p
Mechanical Video Connectors: BNC
Audio Connectors: Output—3 pin male XLR, input—3 pin female XLR
Size: 3/4" H x 19" W x 16" D
Weight: 9.5 lbs.
Power: 117VAC ± 15%, 50/60Hz, 22VA
CB-2440 \$3495.00

2400 Satellite Video Identifier

• No decoder required • Convenient, quick change numerics • Locking toggle switch for mode selection • Front panel numeric readouts • Excellent video transparency • Only one rack unit high

Specifications

Display Size and Position: In Active Area
 7 x 9 matrix, 18 lines per field, positionable within the active area
Video Input: 1V p-p nominal, 75 ohm internal termination
Video Output: Unity gain, 75 ohm source terminated
Differential Phase: < 0.5°
Differential Gain: < 0.5%
Frequency Response: ± 0.5dB to BMHz
Tilt and Overshoot: < 1%
Hum and Noise: -60dB below 1V p-p
In All Modes
 24 characters in a 10 numeric, 12 alphanumeric and 2 numeric format
Character Programming: Numeric: 3 front panel touch buttons. Alphanumeric: one internal switch bank per character.
Automatic Bypassing: Direct relay bypassing from video input to video output on power loss
Front Panel Controls: Locking toggle switch for Active Area/Vertical Interval. Touch buttons for Cursor, Count and Access.
Front Panel Displays: 10 digit numeric LEDs for Telephone Number, 2 digit numeric LEDs for Code
Internal User Controls: 2 16-position rotary switches (Fine and Coarse) for vertical positioning. 12 6 bit Dip switches for alphanumeric character programming.
Power: 117VAC, 50/60Hz, 13VA. Rear panel mounted power switch and fuseholder
Mechanical: Size 1 3/4" H x 19" W x 12" D, rack mountable
2400 Satellite Video Identifier \$1995.00



2400

QSI SYSTEMS, INC.

Switcher/Identifier/Color Bar Generator

SW-402 Mini-Production Switcher

- One rack-unit high • Four video inputs • Two switchable buses • Dissolve between buses • Two program and two preview outputs • Tally contacts (dry closure)

The SW-402 is a four input, two output mini-production switcher with a simple dissolve feature between the two selected signals. Designed originally to augment the QSI AF-1000 autophasing blackburst generator, the SW-402 can easily be integrated into other systems. The SW-402 is a compact, easy to operate, mini-production switcher—ideal where space and dollars are limited.

Specifications

- Inputs:** 1V p-p composite, internal termination, BNC
- Outputs:** 1V p-p, adjustable, two preview, two program, BNC
- Dissolve:** Between buses
- Power:** 115VAC ± 10%, 230VAC optional
- Size:** 1 3/4" H x 19" W x 12" D
- Tally:** Dry contacts on program bus, 9-pin connector, supplied

- Frequency Response:** ± 0.5dB to 8MHz
- Differential Gain:** < 0.5%
- Differential Phase:** < 0.5°
- Switching:** Vertical interval
- Sync Source:** Video or black on input #1
- Weight:** Net weight: 6 lbs.

SW-402 \$1895.00



SW-402



PSF-777

PSF-777 Color Bar Generator

- 1kHz audio test tone output • Can be powered by most common camera/VTR—11VDC to 15VDC batteries • Internally selectable for either flashing ID or constant display

PSF-777 is a battery operated split-field colorbar generator with 8 character user programmable video identification in the black block of the split-field bar pattern.

The PSF-777 is perfect for the remote engineer when testing temporary microwave links or long cable runs.

Specifications

- Video Output (with 8 character ID):** 1V p-p, 75 ohm source terminated
- Pattern:** Split-field NTSC bars
- Pulses:** Within RS170 specifications
- Subcarrier:** 3.579545MHz ± 10Hz, 0-50°C
- Vector Accuracy:** Within 1.5°
- Audio Output:** Video bypass with power switch off
Front panel switchable (transformer isolated)
-56dB, 150 ohm balanced; 0dB, +4dB +8dB at 600 ohm balanced
- Tone:** 1kHz Sinewave; distortion < 3%
- Power:** 11VDC to 15VDC, 120mA
- External Controls:** Power switch; LED indicates power on and low battery (flashing); and 4 position audio level switch

Mechanical:

- Video Connector:** 2 BNC for video in/out
- Audio Connector:** XLR
- Power Connector:** 2.1mm coaxial power jack
- Size:** 3" H x 4.6" W x 8.6" L
- Weight:** 3.5 lbs. (less battery)

Optional transistor battery pack (2) with 115VAC power adaptor.

PSF-777 \$1295.00

PSF-BAT Battery board option for PSF-777 \$89.95



Vertical Interval ID



PCID-864

PCID-864 Portable (ENG) Camera Identifier

- 8 characters • Reduces the risk of airing your competitors' signal
- Labels the unit instantly (in the field if desirable) to identify every EJ camera and VTR you have in use—a real time-saver in identifying signal sources
- Identifies live news feeds from each helicopter or van when you have more than one crew sending to a steerable antenna
- Battery (not included) • Provides at least 32 hours of continuous operation
- ID is internally selectable for active picture area or VBI display
- Weighs 12 oz. with battery • Also has external DC input connector
- Clips on camera operator's belt or pocket • 8" H x 4" W x 1 1/2" D
- 9VDC

PCID-864 \$595.00

Q-TV

Prompters

Mini-Q II Prompter

- Hi-efficiency optical reading surface for easy-to-read copy
- Copy reading surface: 9 1/2" x 9 5/8"
- 7 lines of text in reading area for "complete thought" preview
- Shadow-free lighting illuminated by two 50W hi-intensity lamps
- Script capacity: 30'
- No special paper required. Uses standard 8 1/2" wide bond paper
- The compact miniaturized motor is "sound-take" silent
- Miniature variable speed hand control measures 4 1/2" x 1" with 25' cable
- Universal camera mount
- Solid-state circuitry
- Power: 12V battery-pack belt, 5A; or AC to DC power converter
- Weight: 9 lbs. less mount

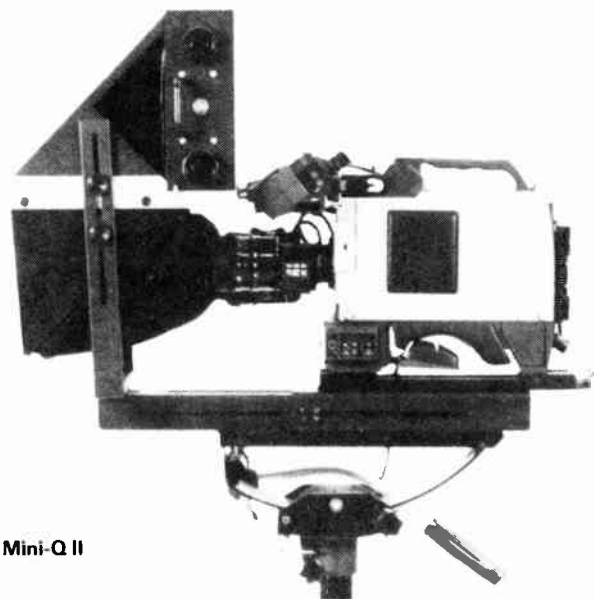
Mini-Q II Prompter System includes:

- 1 Mini-Q II Prompter
- 1 Hand Control with 25' Ext. Cable
- 1 Camera Mount
- 1 Power Cable (unterminated)
- 1 Equipment Case
- 1 Instruction Manual

Mini-Q II Prompter \$2985.00

Optional Accessories

DC Power Supply \$150.00
 Prompter Paper, lined, 300' Roll 26.50



Mini-Q II

MVP-9 Mini Video Prompter

- Meets the requirements of the small professional studio
- Simple to operate
- Compact and realistically priced
- Variable speed forward/reverse script drive
- Vidicon pick-up camera
- Can be located in the control room or studio floor
- Houses a lightweight 9" prompter monitor and over-the-lens beam-splitter
- Readable from distances up to 8-10'
- Mounts with adjustable bracket onto the camera pan and tilt head

MVP-9 System includes:

- 1 VPS-100 Console Transport
- 1 Vidicon Camera with lens
- 1 9" Prompter Monitor with eye-line
- 1 Remote Hand Control
- 1 Prompter Camera Mount
- 1 Instruction Manual

MVP-9 \$3950.00



MVP-9

Q-TV

Prompter Systems

**VPS-100 Console Transport/
VPS-300 Convey or Transport
Prompter Systems**

The VPS-100 and VPS-300 prompting systems offer the broadcast industry and its allied fields a versatile, efficient and rapid method for providing prompter copy through a video signal.

Prompter copy is prepared on standard 8 1/2" x 11" single sheets of paper using any manual or electric typewriter. The prompter script is conveniently fed through the aperture of the VPS-100 by means of taping the individual sheets into a continuous roll; or by placing the individual sheets of copy on the conveyor belt of the VPS-300.

Prompter copy is scanned by the Vidicon camera and transmitted to one or more prompter/monitor readouts mounted on or off camera. The prompter script appears as clearly defined copy. Both units are equipped with a remote hand control for easy operator control.

When used with the VPS Eye-Line, prompter copy is superimposed directly over the taking lens of the television camera for direct "eye-to-eye" contact with the viewing audience. The high brilliance image is clearly visible to the speaker but in no way detectable by the camera lens.

One VPS-100 Prompter System

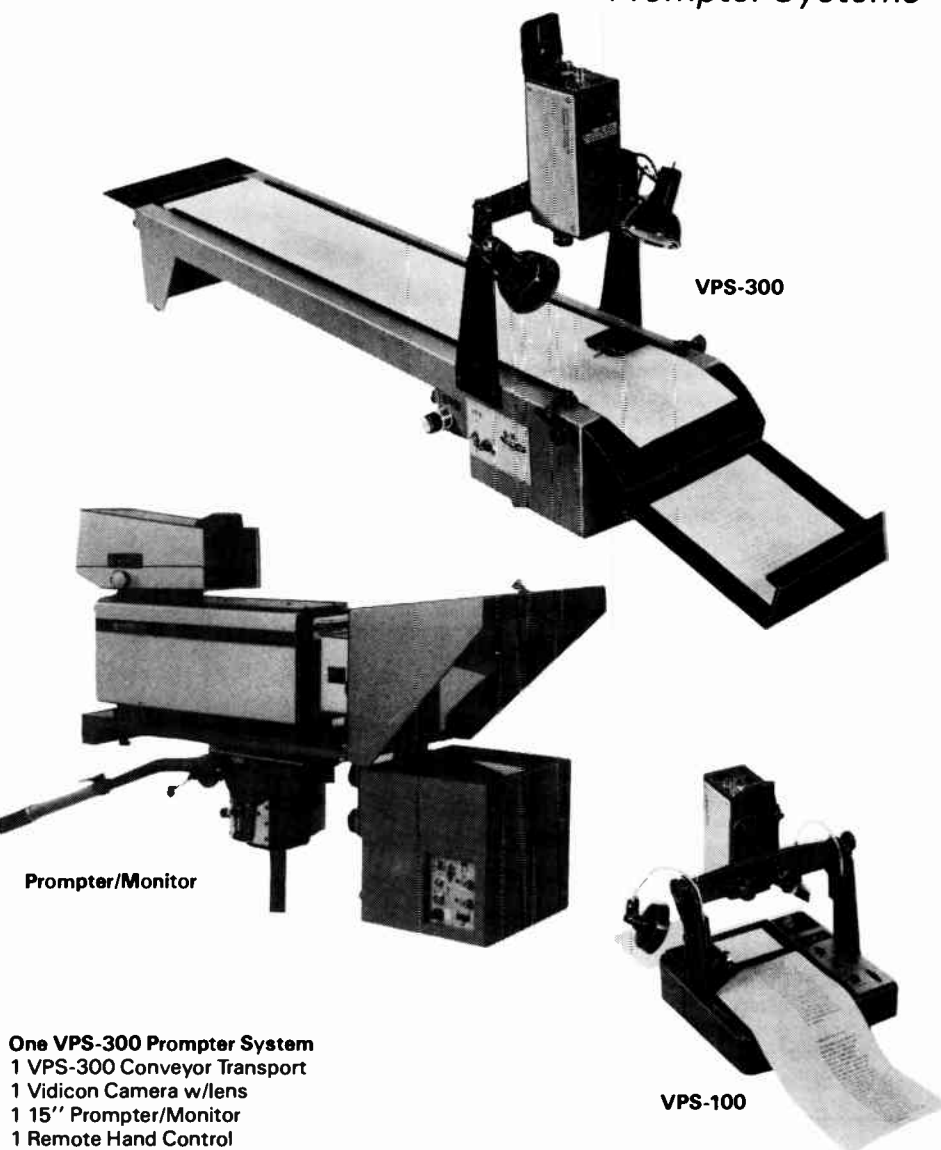
- 1 VPS-100 Console Transport
- 1 Vidicon Camera w/lens
- 1 15" Prompter/Monitor
- 1 Remote Hand Control
- 1 25' Coaxial Cable
- 1 Prompter Camera Mount
- 1 Camera Balancing Assembly
- 1 VPS Eye-Line
- 1 Instructional Manual **\$4750.00**

Two VPS-100 Prompter System

- 1 VPS-100 Console Transport
- 1 Vidicon Camera w/lens
- 2 15" Prompter/Monitor
- 1 Remote Hand Control
- 2 25' Coaxial Cable
- 2 Prompter Camera Mount
- 2 Camera Balancing Assembly
- 2 VPS Eye-Line
- 1 Instruction Manual **\$6500.00**

Three VPS-100 Prompter System

- 1 VPS-100 Console Transport
- 1 Vidicon Camera w/lens
- 3 15" Prompter/Monitor
- 1 Remote Hand Control
- 3 25' Coaxial Cable
- 3 Prompter Camera Mount
- 3 Camera Balancing Assembly
- 3 VPS Eye-Line
- 1 Instruction Manual **\$8250.00**



One VPS-300 Prompter System

- 1 VPS-300 Conveyor Transport
- 1 Vidicon Camera w/lens
- 1 15" Prompter/Monitor
- 1 Remote Hand Control
- 1 25' Coaxial Cable
- 1 Prompter Camera Mount
- 1 Camera Balancing Assembly
- 1 VPS Eye-Line
- 1 Instruction Manual **\$5350.00**

Two VPS-300 Prompter System

- 1 VPS-300 Conveyor Transport
- 1 Vidicon Camera w/lens
- 2 15" Prompter/Monitor
- 1 Remote Hand Control
- 2 25' Coaxial Cable
- 2 Prompter Camera Mount
- 2 Camera Balancing Assembly
- 2 VPS Eye-Line
- 1 Instruction Manual **\$7100.00**

Three VPS-300 Prompter System

- 1 VPS-300 Conveyor Transport
- 1 Vidicon Camera w/lens
- 3 15" Prompter/Monitor
- 1 Remote Hand Control
- 3 25' Coaxial Cable
- 3 Prompter Camera Mount
- 3 Camera Balancing Assembly
- 3 VPS Eye-Line
- 1 Instruction Manual **\$8850.00**

Videoprompter Equipment w/Monitor for On-Camera Prompting

- 1 15" Prompter Monitor
- 1 Prompter Camera Mount
- 1 Camera Balancing Assembly
- 1 VPS Eye-Line **\$1910.00**

VPS Equipment w/o Monitor for On-Camera Prompting

- 1 Prompter Camera Mount
- 1 Camera Balancing Assembly
- 1 VPS Eye-Line **\$1135.00**

Roll-Away Stand Unit

- 1 Heavy-duty Elevated Tripod Stand w/ Casters
- 1 Stand Monitor Mount
- 1 VPS Eye-Line **\$1860.00**

Display Monitor

- 1 15" Hi-Resolution Prompter Monitor (B & W) **\$775.00**
- 1 13" Hi-Resolution Prompter Monitor (Color*)
- *Color applicable to computer prompting only **\$850.00**

QCP Mark I Computerprompter Program

• IBM PC, XT, and AT compatibility • True variable-speed, bi-directional, smooth scrolling • Four fonts: two full upper- and lower-case fonts as well as two all uppercase fonts • Proportional spacing—for the most easy-to-read prompter copy • Comprehensive Word Processor for text creation and last-minute changes. Highlights: Automatic Wrap, dynamic Insert and Delete Modes, Transfer Text, Search-for Text, and more • Compatibility with any PC-DOS ASCII file. Use your own word processor and QCP Mark I will prompt the text by employing its unique "Convert" mode. Additionally, Convert enables you to prompt any ASCII file sent via telephone lines and other transmission schemes • Easy-to-understand menu of special functions, displaying such choices as: Character Size, All Upper-Or-Lower-Case, Eight Character and Background Colors, Position of Speaker Arrow, and more • Unlimited use of Special Markers to pinpoint specific areas of text to jump to • Text Underlining and Coloration to highlight any section of script • Large selection of international characters. The QCP Mark I is multilingual, allowing you to prompt such languages as Spanish, French, German, Italian and Portuguese • Printing in three convenient formats. Also, with a single keystroke, the program will automatically paginate your text so that pages end only between sentences • Compatibility with both Floppy and Hard Disk Drive systems. Once "booted up," the entire QCP Mark I is loaded in and you may remove the program disk • Thorough PC-DOS Disk Functions, available without having to leave the program. They include: Format and Copy Disk, Copy, Erase and Rename File

QCP Mark I is an innovative computerprompter program offering multipurpose applications. It fully answers today's prompting requirements, be it in news, public speaking, commercials, or corporate television.

The QCP Mark I Computerprompter program allows you to compose a prompter text on an IBM compatible computer. Crisp, clean letters are displayed on a monochrome or color prompter monitor giving a speaker exceptional legibility of prompter text.

**QCP Mark I includes:**

- 1 QCP Mark I Computerprompter Program
- 1 Limited Backup Program
- 1 Composite Video Board
- 1 Variable Speed Script Control
- 1 Instruction Manual \$4975.00

VPS-500 II Computerprompter™

• Word processing • Clear, crisp copy • Quick access to all copy • Memory up to 1 hour, 45 minutes • Optional printer for hard copy • Smooth scrolling • Variable speed control • Various colors, underlining • Positive or negative display

The VPS-500 II is a fully self-contained program, written entirely in super fast machine code. It sets up, automatically, in 25 seconds flat. Everything you'll need to do your work is stored right inside the computer.

You don't even have to know what a computer looks like to operate the VPS-500 II.

It takes a minimum amount of instruction to learn. So even the first time you use it, you can be prompting quickly and confidently.

The VPS-500 II creates, edits, saves, erases, and prompts to an astounding 1 hour and 45 minutes.

What's more, it can assemble as much as 32 separate text files for prompting. Plus keep you informed of where they are with an easy-to-read run order list.

You can also highlight points and separate speakers with 10 color combinations and a handy underlining feature.

The VPS-500 II can provide you with immediate hard copy printouts of your prompter text, complete with emphasis and underlining indications. And, in 3 convenient styles: Prompt, Script, Draft.

**VPS-500 II includes:**

- 1 Computerprompter Keyboard
- 1 Disk Drive
- 1 VPS-500 II Computer Software
- 1 Variable Speed Script Control
- 1 Interconnecting Cable
- 1 Manual
- 1 Equipment Case \$4200.00

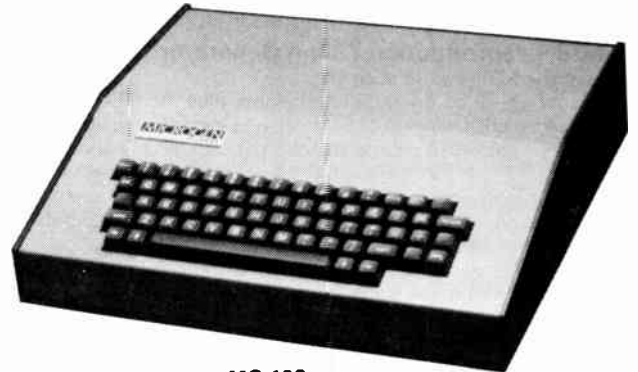
QUANTA CORP.

Teleproduction Titlers

Microgen™ MG-100 Teleproduction Titler

- 2 sets of proportioned characters designed specifically for television graphics, and selectable by row
- 49-Page RAM with battery back-up
- Self-contained chassis
- NTSC or PAL
- Sync color lock
- Automatic page sequencing
- Full range of editing and display functions
- Roll and crawl at 9 speeds
- Complete system flexibility — upstream or downstream
- 256 color palette capability for row by row colorizing of characters or background
- Dual channel capability
- RS-232 Data I/O Port optional
- 100ns horizontal resolution
- Dimensions: 4¹/₄" H x 15³/₄" W x 14³/₄" D

MG-100-S	Single channel	\$2295.00
MG-100-S/RS	Single channel, RS-232 data I/O port	2795.00
MG-100-D	Dual-channel	2995.00
MG-100-D/RS	Dual-channel RS-232 data I/O Port	3495.00



MG-100

Microgen MG-100/PLUS Teleproduction Titler

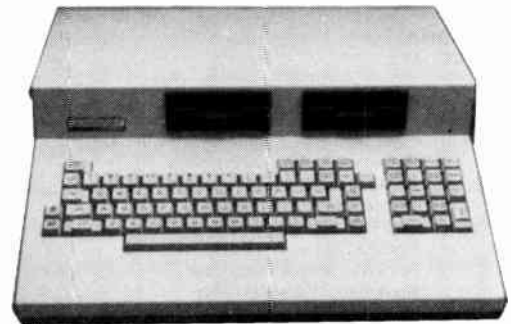
- 50ns horizontal resolution
- Self-contained chassis
- NTSC or PAL
- Sync/color lock
- Four face styles, upper and lower case:
 - Helvetica Medium with border,
 - Rockwell Bold with border,
 - Souvenir Light with border,
 - Serpentine Bold with shadow
- 49-page RAM with battery back-up
- Automatic page sequencing

- Full range of editing and display functions
- Roll and crawl at 9 speeds
- Complete system flexibility — upstream or downstream
- 256 color palette capability for row by row colorizing of characters or background
- Dual channel capability
- RS-232 data I/O Port optional
- Dimensions: 4¹/₄" H x 15³/₄" W x 14³/₄" D

MG-100/PLUS-S	Single-channel	\$2995.00
MG-100/PLUS-S/RS	Single-channel RS-232 Data I/O Port	\$3495.00
MG-100/PLUS-D	Dual-channel	\$3995.00
MG-100/PLUS-D/RS	Dual-channel, RS-232 Data I/O Port	\$4495.00

QCG-304 Teleproduction Titling Generator

- Instant sizing — 8 to 64 scan line heights plus incremental extend/condense for face styles — keyboard accessed
- 512 colors — easy RGB palette selection of background and character colors
- True proportional spacing — upper and lower case, four styles
- 48 sizes per face
- 55ns horizontal resolution
- Edge selection — full surround border, 8 colors row selectable per page
- Easy edit — real time composition and editing capability — Quanta's exclusive text editing package
- Roll — 260 rows, 9 speeds plus pause, edit in roll compose, roll to fixed title
- Crawl — 260 rows, 9 speeds plus pause, edit in crawl compose
- Automatic page sequencing — random or sequential, date/time generator for real time sequences — dwell time selectable 1/4 to 99 seconds per page
- Manual page sequencing — random or sequential, forward or reverse, 0 second dwell time
- Built-in 3¹/₂" Disk Drive — 400 pages — second drive optional
- Built-in full terminal complement — sync/genlock RS170, NTSC or PAL Encoder full studio timing
- Graphic blocks/graphic separators — variable size and color
- Real time clock and date generator
- Full battery back-up
- RS-232 Data I/O Port — optional



QCG-304

QCG-304/SD	Single disk drive	\$4995.00
QCG-304/DD	Dual disk drive	5490.00

Options

DD-304	Second disk drive — customer installed	\$ 495.00
RS232/304	RS232 data I/O port — factory installed. Plus shipping both ways (page transfer only) . . . . .	.500.00
OM-304	Operating manual . . . . .	.50.00
FD-3.5	10-pack of 3 ¹ / ₂ " diskettes	150.00
LCK-304	Language conversion kit . . . . .	.500.00

Fully self-contained, the QCG-304 provides for either stand alone operation or may be integrated into a full television production studio. The proportionally spaced type face styles provide over 40 resident fonts per face style instantly on-line with Quanta's exclusive instant sizing.

NOTE: The QCG-304 Series is available with French, French QWERTY, German-Nordic or Spanish-Portuguese keyboards. Contact your dealer for pricing and delivery.

QUANTA CORP.

Teleproduction Titlers

QCG-38 Teleproduction Titling Generator

- Resolution of 25ns at 32 scan lines
- Instant sizing—8 to 64 scan line heights plus incremental extend/condense for both resident face styles—keyboard accessed
- 512 colors—easy RGB palette selection of background and character colors
- True proportional spacing—upper and lower case, two faces
- Edge selection—full surround border, 8 colors row selectable per page
- Easy edit—real time composition and editing capability—Quanta's exclusive text editing package
- Roll—260 rows, 9 speeds plus pause, edit in roll compose, roll to fixed title
- Crawl—260 rows, 9 speeds plus pause, edit in crawl compose
- Automatic page sequencing—random or sequential, date/time generator for real time sequences—dwell time selectable 1/4 to 99 seconds per page
- Manual page sequencing—random or sequential, forward or reverse, 0 second dwell time
- Built-in 3 1/2" Disk Drive—400 pages—second drive optional
- Built-in full terminal complement—sync/genlock RS170, NTSC or PAL Encoder full studio timing
- Graphic blocks/graphic separators—variable size and color
- Real time clock and date generator
- Full battery back-up
- RS-232 Data I/O Port—optional



QCG-38

The QCG-38 is a real time professional teleproduction titling system for use in broadcast or non-broadcast applications.

Fully self-contained, the QCG-38 provides for either stand alone operation or may be integrated into a full television production studio. The proportionally spaced type face styles provide over 40 resident fonts per face style instantly on-line with Quanta's exclusive instant sizing. Ease of operation, real time functions and dependability make the QCG-38 a versatile, multi-feature low-cost character generator.

Specifications**PERFORMANCE****Horizontal**

Resolution: 18ns at 16 scan lines

Resident Type**Faces:**

Eight face styles, upper and lower case
 Helvetica medium with border
 Serifa with border
 Cooper Black with border
 Bolt Bold with shadow
 Optima Bold with border
 Rockwell Bold with shadow
 Bookman Bold with border
 Helvetica Bold with border (caps only)
 Graphic symbols

Faces proportionally spaced with upper and lower case. 48 sizes per face with 8 to 64 scan line heights plus widths of normal, condensed and extended

Color:

512 colors for colorizing characters by row or page and backgrounds by row or page. Maximum 34 colors per page (13 each characters and backgrounds, 8 each edges—available simultaneously)

Character**Edge:**

Full surround border, 8 colors per page selected by row. See-through characters through edge selection/background selection

Editing**Functions:**

Cursor up, down, right, left, home; line feed; return; key repeat; erase row, page; center row, page; justify row or page—right or left; move up, down; insert/delete character, word, row; variable size graphic separators; variable size graphic blocks; scan line pair adjustment of top or bottom leading, or both (row tuck); caps lock; 4 columnar tab settings per page; color palette selection of RGB colors

Memory: Single 3 1/2" disk; 400 pages (max. 40 characters per row, 13 rows per page). Second disk available (optional)

Display**Functions:**

Flash by character; recall page by number; recall next page, prior page; matte characters in/out of Program output; sequential or random page sequencing; real time clock and date generator displayable any size, color or location on page

Dynamic**Functions:**

Automatic or real time sequencing of any combination of pages; dwell time, 1/4-99 sec., selectable by page. Roll 260 rows max.; crawl 260 rows max.; position on any row, any size/color and mix with static text as required. Roll/crawl at 9 speeds plus stop with programmed speed changes imbedded in message or manual keyboard adjustment. All dynamic displays may be one time or continuous

ELECTRICAL**Battery****Back-Up:**

System has NiCad battery for RAM and real time clock. Automatic program restoration including dynamic displays after power failure

Video**Standards:**

Built-in RS170 Sync Generator with Genlock. Built-in NTSC or PAL encoder. Subcarrier phase and horizontal phase adjustment accessible from rear panel. Upstream or downstream operation. Chromalock plus regeneration of sync for proper genlock to non-time base corrected signals

Inputs:**Outputs:**

1 composite video in, looping
 2 program, 1V p-p composite at 75 ohms
 1 edit, 1V p-p composite at 75 ohms
 1 key, 1V p-p composite monochrome at 75 ohms

Data I/O**Ports:**

RS-232 (optional)

ELECTRICAL**Power****Requirements:**

105-110/210-270VAC, 4B/70Hz

MECHANICAL**Dimensions:**

4 5/8" H x 17 1/2" W x 17 1/2" D

Color:

Almond and Black

QCG-38/SD Single disk drive \$7495.00
 QCG-38/DD Dual disk drives 7990.00

Note: The QCG-3B series is available with French, French QWERTY, German-Nordic, or Spanish-Portuguese keyboards.

QUANTA CORP.

Teleproduction Titlers

QCG-400

Teleproduction Graphics and Titling Generator

- 7 resident type faces — 56 fonts on-line
- Upper and lower case
- Fine or bold border
- 30 topical graphics display symbols
- Instant sizing — true proportional spacing
- 128 colors — each page is palette assignable
- Built-in 3 1/2" high density disk drive (400 pages) — second drive optional
- Built-in full terminal complement — sync/genlock and NTSC or PAL-I encoder — full studio timing adjustments standard
- 224-row RAM with battery back-up — dynamic displays and automatic sequencing
- Patented NANOLOG™ character smooth and fill refinement — high resolution average rise time
- Four-quadrant positionable drop shadow
- LED front-panel operator prompting
- RS-232 data I/O port option

The QCG-400 Teleproduction Graphics and Titling Generator is designed for real time, easy operation in a wide variety of titling applications.

Incorporating the Easy Edit and quick, versatile composition features which have made Quanta the preferred standard of mid-range character generators world-wide, the QCG-400 is a modern, low-profile, ultra-portable self-contained unit.

Specifications

Performance

Resident Faces:	7 faces at 6 vertical sizes each (from 8 to 64 lines high) Face #1 Helvetica Medium proportional upper and lower case Face #2 Bolt Bold, caps non-proportional, lower case proportional Face #3 Serifa, proportional upper and lower case Face #4 Cooper Black, proportional upper and lower case Face #5 Helvetica Medium Italic, proportional upper and lower case Face #6 Grotesque 9, proportional upper and lower case Face #7 Upper Case: Helvetica Bold (all caps) proportional Lower Case: 30 selected symbols
Graphic Symbols:	Weather, sports, transportation, medical, communications, miscellaneous
Face Selection:	By character, maximum of two faces can be mixed on a row. All 7 faces may be used on a page
Character Color:	Select any of 16 pre-defined palettes of 8 colors each. Palette is stored with page. Character color by word
Background Selection:	Select either of 2 pre-defined palettes of 8 colors each or external video. Palette is stored with page. Background color by row
Edge Styles:	Selectable by row: fine border, bold border, 4-quadrant drop shadow positionable
Edge Luminance:	Eight levels black to white, stored with page
Page Size:	16 rows (max.) 32 characters on a row available with Grotesque 9
System Parameters:	Stored within a block: tabs, memory protect, roll/crawl pointers and speeds, shadow quadrants, status line size, user-defined center of screen, last selected face description, flash speed
Roll Message Length:	224 rows
Crawl Message Length:	6,110 characters
Roll Speed:	9 plus pause (start and re-start). Programmable roll to stop function provided
Crawl Speed:	4 plus pause (start and re-start)
Roll/Crawl Display Areas:	Blanking to blanking. Crawl displays can include static text area
Character Flash:	By word. Flash speeds: 2
Special Display Elements:	Graphic separators, graphic blocks, underline accents, special symbols (optional on international language versions)



Clock Displays:	Real time clock (hours, minutes) or event timer (minutes, seconds)
Tab Positions:	8 columnar tabs with vertical tabbing
Editing Functions:	Insert row or character; delete row or character; center row or page; justify row or page left or right; row move left or right; reduce top leading; reduce intercharacter spacing (selected characters); erase row or page; capture character attributes: Get, save or exchange row or page. Applicable editing functions operate right of the cursor on a row or from the cursor to end of page
Resident Memory	224 rows (RAM) with battery back-up for non-volatile retention. Battery will last in excess of 24 hours
Automatic Sequencing:	Full 14-page resident memory
Disk Memory:	400 pages plus 2 blocks per disk
Page Access:	Random or sequential
Disk Access Time:	Page: average .4 sec: max. 1.2 sec. Block: average .6 sec: max. 1.5 sec.
Electrical Television Standards:	Built-in RS-170 sync generator with genlock. Built-in NTSC or PAL encoder. Genlock/Color lock; built-in 360° subcarrier; horizontal drive phase adjustable ± 1.5 usec. on back panel
Stand-Alone Operation:	Yes
Input:	One, external video in, looping
Edit Output:	One, 1.0V p-p composite at 75 ohms
Program Output:	Two, 1.0V p-p composite at 75 ohms
Key Output:	One, character plus edge, 1.0V p-p composite at 75 ohms
Power: (PC Card Selectable):	117VAC, 60Hz, 150W max. 220VAC, 50Hz, 150W max.
Data I/O Port:	One, RS-232 Optional
Mechanical Dimensions:	Self-contained chassis: 5" H x 18" W x 17 1/2" D
Ventilation:	Filtered, forced-air cooled
Color:	Dark brown and almond
QCG-400/SD	Single disk drive \$6595.00
QCG-400/DD	Dual disk drives 7090.00
QCG-400/RM/SD	Rackmount chassis with single disk drive built-in and remote keyboard 8995.00
QCG-400/RM/DD	As above but with dual disk drives 9490.00
Options	
DD-400	Second 3 1/2" disk drive for QCG-400 units customer installed \$ 495.00
RS-232/400	RS-232 Data I/O port for QCG 400 units factory installed 500.00
KBD-400	Remote keyboard for "daisy-chain" operation with QCG-400 rackmount chassis 1995.00
	Operating manual 50.00
OM-400	Service and maintenance manual 150.00
SMM-400	10-pack of 3 1/2" diskettes 150.00
FD-3.5	Language conversion kit 1000.00
LCK-400	
	Note: QCG-400/SD or QCG-400/DD also available with French, French QWERTY, German-Nordic or Spanish-Portuguese keyboards.

**QCG-500 Professional
Teleproduction Graphics and Titling System**

- Rackmount electronics chassis
- Single scanline FONT-FLEX™ instant sizing in single scan line increments
- 16.7 million color palette
- Styles at 64 and 32 scanlines
- Color menu allows positive color matching and key-in of RGB values
- Rackmount kit and slides
- Easy edit
- Built-in sync/genlock and encoder
- Full studio timing for simple system integration
- Base resolution of 29ns
- Single 3 1/2" disk drive
- Optional second disk drive
- 28 face library disk
- Remote keyboard
- NTSC or PAL

The QCG-500 is a fully disk loadable, broadcast quality character generator and graphics system designed for cost effective teleproduction titling and text efficiency.

A powerful software intensive system, the QCG-500 offers real time speed and convenience. No slow, time consuming menu selections are required — all functions are immediately accessible from the keyboard and happen as the operator commands them.

A low profile remote keyboard accesses the rackmounted electronics with built-in 3 1/2" disk. The entire electronics chassis requires only 7" of vertical rack space. Big system features provide a degree of professional flexibility never before attainable in the QCG-500 price range. Disk compatibility with the Q8 Teleproduction Graphics System also makes the QCG-500 an ideal remote unit or addition to an existing Q8 graphics production facility.

Graphics enhancement accessories provide for a full paint system and digital effects, all conveniently controlled from the QCG-500 tri-level keyboard permitting interaction between text, paint or effects operations.

Specifications

Disk Loadable:	Program, faces, pages
Rackmount:	Chassis includes electronics, single drive, power supply
Number of Keyboards:	One standard
Disk:	Single 3 1/2" double density, double sided; second drive optional
Pages per Disk:	600 maximum
Power Requirements:	150W power supply; 110/120VAC switchable
Stand-Alone Operation:	Yes
Encoder:	Built-in, NTSC RS-170 or PAL
Genlock/Colorlock:	Built-in, horizontal and subcarrier phase adjustments
Phasing:	External, 360° subcarrier, horizontal drive ± 1.5µs
System Integration:	Keyboard selectable upstream/downstream, or jumper selectable
Edit Output:	One, 1.0V p-p composite at 75 ohms
Program Output:	Two, 1.0V p-p composite at 75 ohms
Key Output:	One, character + edge or full page, 1.0V p-p composite at 75 ohms
Sync Output:	4.0V p-p composite
External Video Input:	One, looping



QCG-500

Options	2nd 3 1/2" disk drive
Electronic Video Paint:	Yes, addressed by QCG-500 keyboard
Digital Video Effects:	Yes, addressed by QCG-500 keyboard
Camera Capture Digitizer:	Yes, addressed by QCG-500 keyboard
QCG-500/SD	Single disk drive \$11,995.00
QCG-500/DD	Dual disk drives 12,490.00
QCG-500/SD/PVW/ENC-RGB	Single drive with preview and encoder 16,995.00
QCG-500/DD/PVW/ENC-RGB	Dual drives with preview and encoder 17,490.00
QCG-500/SD/RGB	Single drive with RGB/NTSC encoder 13,995.00
QCG-500/DD/RGB	Dual drives with RGB/NTSC encoder 14,490.00
DD-20/500IN	Optional 20M byte hard disk 2,495.00

Options

DD-20/500	20M byte Hard Disk, includes: 3 1/2" Rackmount Chassis, Power Supply, Host Adaptor, Controller Board (not available with RS232-500 or clock option) \$3,995.00
QCC-1/500	Camera Capture Font/Logo Compose (Card mounts in chassis) 495.00
DD-500	3 1/2" Disk Drive Expansion Kit (Customer Installed) 495.00
RS232-500	RS232 Data I/O and Protocol, includes: 2 Port: Serial I/O Boards (unavailable with DD-20) 795.00
KB-500	Keyboard, English (Multiple keyboards require external switch, customer supplied) 1,995.00
FD-3.5	10-Pack of 3 1/2" Diskettes 150.00
PVW-500	Preview update kit, includes: Rackmount chassis with Frame Grab Board, NTSC Encoder, Interface Board, Power Supply, Ribbon Cable, Software, Rackmount Kit with Slides (No simultaneous preview and program of dynamic displays such as roll and crawl) \$5,495.00
RGB-500	RGB Encoder Update Kit, includes: Power Supply, Word/Word Board (exchange) Palette RAM Board (exchange), Rear Panel RGB/NTSC Encoder, One 3/4" Rackmount Chassis Rackmount Kit with Slides \$2,995.00
QST-500	Automated Subtitling System via Time-code Input. Includes: Plug-in Time Code Reader Board, Audio Connector, Software and Manual. Indicate language and standard. Dual Disks are required. (Not available with RS232 or clock options.) \$1,495.00
OM-500	Operating Manual 50.00
SMM-500	Service and Maintenance Manual 300.00

QUANTA CORP.*Teleproduction Titlers***Q8 Teleproduction Titler**

• Rackmount electronic chassis • **FONT-FLEX™**: Exclusive Instant Sizing, Instant Extend/Condense, Instant Italics—Left or Right • 16 Million Colors: Interactive Menu Selection, Positive Color Matching, Characters/Backgrounds/Edges • Automatic Page Sequencing: Program up to 800 pages for automatic display • Automatic Keystroke Sequencing: Build animated or special editing sequences assigned to single keystrokes • Pop-On Animation: Sophisticated keystroke sequencing—reveal characters, words or rows at selected frame rates programmable • Easy Edit: Expanded text manipulation—real • Selectable Edge Styles & Colors • "Unlimited" Roll: Total disk (400 time in any composition mode • Character "Tuck" • Vertical Row "Tuck" • Type Faces Disk Loadable • Fade/Matte/Key • Built-In Sync/Genlock with Full Studio Timing • Built-In Color Encoder plus RGB Outputs • 26ns Base Resolution • Floppy disk chassis with dual 8" Disk Drives—Standard: 800 pages combined capacity • RS-232 Data I/O Port • Multiple Keyboard Operation: Up to 5 • Dual Channel Version: 2 independent or interactive channels—Program/Preview; A/B Mix • Expanded Dual 5-Megabyte Memory Option: Removable media memory—greatly increases system access speed and page storage capacity • NTSC/RGB (PAL available)

Q8 is a broadcast teleproduction graphics and titling system, microprocessor driven, incorporating high technology circuitry and the simplicity of real time operation. Employing quality components and user-oriented design considerations, Q8 provides a complete complement of video typography, graphics display, character generator effects and animation, text handling and composition functions.

Q-8S Single Channel System, NTSC, Includes:

Single-channel chassis, 117VAC/60Hz \pm 10% with sync/color lock, NTSC color encoder, RGB output, RS-232 data I/O port
System software (license required)

- 1 floppy disk chassis—dual 8" disk drives
- 1 keyboard—English, 117VAC power supply, 25' cable
- QCC-1 camera capture font/logo compose—PC card
- 2 Rackmount kits with slides
- 28 Face library diskette—all styles at 64 and 32 scanlines
- 2 Maintenance extender boards
- 1 5-Pack 8" floppy diskettes
- 1 Operating manual
- 1 Operator training diskette
- 1 Service and maintenance manual

Single-Channel System \$23,995.00

Q-8D Dual-Channel System, NTSC, includes:

2 Single-channel chassis, 117VAC/60Hz \pm 10% with sync/color lock, NTSC color encoder, RGB output, RS-232 data I/O port
System software (license required)

- 1 Floppy disk chassis—dual 8" disk drives
- 2 Keyboards—English, 117VAC power supply, 25' cable
- QCC-1 Camera capture font/logo compose—PC card
- 3 Rackmount kits with slides
- 28 Face library diskette—All styles at 64 and 32 scanlines
- 4 Maintenance extender boards
- 1 5-Pack 8" floppy diskettes
- 1 Operating manual
- 2 Operator training diskettes
- 1 Service and maintenance manual

Dual-Channel System \$34,995.00

Options**DD-20/8 20M byte Fixed Disk Add-on, Includes:**

3 1/2" Rackmount Chassis, 20M byte Fixed Disk, Power Supply, Host Adaptor, Controller Board \$ 3,995.00

QST-Q8 Automated Subtitling System via Time-code Input. Includes: Plug-in Time Code Reader Board, Audio Connector, Software, and Manual. Indicate Language and Standard. (Dual channel units require subtitle display via time-code in one channel only.) \$1,495.00

EN-10 Keyboard, English, 117VAC Power Supply, 25' Cable. \$4,995.00

**Q8 Quantafont**

- RKB-8 Recall Keyboard with Editor Interface. \$2,495.00**
- SCA-8 Second Channel Upgrade (Q-8S to Q-8D), NTSC, RGB, 117VAC/60Hz \pm 10%, Includes:**
 - 1 Single-Channel Chassis, 1 Rackmount Kit with Slides, 1 117VAC Power Supply, 2 Maintenance Extender Boards, Connecting Cables, 1 Operating Manual, Supply, 25' Cable \$19,995.00
- QCC-1/8 Camera Capture Font/Logo Compose (PC Card Mount in Q-8 Electronics Chassis). \$2,995.00**
- KC-8 Keyboard Cable Extension Kit**
 - 50' Cable with Connectors \$45.00
 - 75' Cable with Connectors \$55.00
 - 100' Cable with Connectors \$65.00

Accessories

- FD-10 10-Pack 8" Floppy Diskettes. \$ 225.00**
- FLD-8 Face Library Diskette (All face styles at 64 and 32 scanlines) \$1,000.00**
- FS-8 Single Face Style \$100.00**
- INT-8 International Language Conversion Kit, Includes:** System Software, International Face Library at 64 scanlines (Face Styles as Above), Operations Manual Addendum with International Keyboard Layouts \$995.00

SPECIFY: French AZERTY, French QWERTY, German-Nordic, or Spanish-Portuguese

Note: Q-8S or Q-8D also available with French, French QWERTY, German-Nordic or Spanish-Portuguese keyboards. Contact Quanta for pricing and delivery.

FONT-FLEX is a trademark of Quanta.

QUANTA CORP.

Character Generators

Delta 1 Text Generator

- Anti-aliased characters for an apparent resolution of 4.6ns
- Fast character rendering during text entry
- Real-time operation with rendered fonts
- Text entry at any angle
- Subscan rolls (smooth motion)
- Texture mapping of characters, borders, shadows, and backgrounds
- Font and attribute selection, character by character as you type
- Rotation character by character for "rainbow" effects
- Rotatable grids for multiple typing surfaces
- Dozens of online fonts
- Unlimited colors for character, borders, shadows and backgrounds
- Variable blurs for softening characters, borders and shadows
- Shear (italicize) any type face from the keyboard
- Size any type face by height or width
- Hundreds of variable shadow positions and border widths
- International character sets with accents
- Easy composition
- Automatic character kerning
- Page and keystroke sequencing
- Dynamic functions roll and crawl in any speed, slow reveal, and flash
- Dynamic wrap of frame buffers
- On-air functions geared especially for live broadcasting
- Adjustable "intercharacter" spacing
- 40 selection keys for storing user-defined attributes
- 32-bit microprocessor
- Hard disk, standard
- Disk loadable fonts, menu text, and setups
- Custom engraved keyboard
- 5M byte of video RAM on-board
- 4M bytes of program memory
- RGB or Y, R-Y, B-Y outputs
- Pages stored to floppy or hard disk
- NTSC, PAL and PAL-M compatible
- High-capacity hard disk drive
- Standalone hardware
- Unlimited characters per row
- Unlimited rows per page



Delta 1

- Image files (texture, background) compatible with Quantapaint 32
- Software controlled horizontal and subcarrier phase adjustment
- Real-time clock
- Dual frame buffers for preview/air and multi-level effects
- Dynamic digital compositing (mixing)
- High-speed proprietary accelerating processor (Bit Blitter)
- Math co-processor for fast rendering
- Downstream video linear keyer
- Rackmount electronics chassis
- 4 bit status buffer, dual: 32 bit frame buffers
- Digital/analog video compositor
- Single 3 1/2" floppy disk drive
- Linear Downstream keyer/fader
- 20M byte hard disk
- System software, 5 master typeface styles
- Sync/genlock/encoder, provides RGB and encoded outputs
- NTSC (PAL available)

Delta 1 \$35,995.00

Orion Character Generator

- 16 levels of anti-aliasing, 256 levels of transparency
- Effective resolution of 5nsec
- Typographic-quality characters
- 5 standard anti-aliased face styles in 8 sizes each
- Up to 32 resident fonts, all anti-aliased
- Real-time operation
- Next-page buffering
- On-screen status information for fast and easy composition
- Font cache (automatic font load)
- Automatic kerning between fonts
- 16 million colors
- Color spreads for background, character, or edge
- International character sets with accents
- Selectable edge types
- Automatic page sequences
- Reveal by character, word, or row
- Keyboard character animation
- Vertical wipe
- Fade
- Visible, adjustable safe-title and tab indicators
- Display clock with up/down timer
- Character overlap (overstrike)
- 700 pages of storage per diskette
- ROM-based operating system, 2 1/2M byte internal memory
- Broadcast quality sync generator/encoder/keyer
- Provides RGB and encoded outputs
- Linear downstream keying for anti-aliased text



Orion

- 68000 microprocessor
- Proprietary hardware, including customized ASICs
- Single 3 1/2" floppy disk drive in electronics chassis
- NTSC (PAL available)

ORI-SD Single disk drive \$14,995.00
ORI-DD Dual disk drive 15,595.00
ORI-HD ORI-SD with 20M byte hard disk and SCSI inter-
 face 18,750.00

QUANTA CORP.

Electronic Video Paint Systems

QVP-100/QVP-200 Series

Quantapaint™ Electronic Paint Systems

• 640 x 486 NTSC (768 x 576 PAL-I) pixel resolution • Pixel-keying • 16.7 million available colors • RGB camera capture, a unique "undo" function allowing the artist to erase his/her last operation • Text mode with five font selection • Seven levels of zoom for picture magnification • Offers NTSC, composite downstream keying, simultaneous RGB out, graphics chassis, bit pad and stylus • Optional business graphics and animation software • Pop-up menu • Sixteen predefined brushes or patterns • Windows and slide shows • Drawing tools • Painting and display effects • Quantapaint QVP-200 is exactly like the QVP-100 but includes an IBM XT-compatible computer • Complete stand-alone system • Computer comes with a floppy disk controller, realtime clock chip, IBM-PC XT-compatible BIOS, video display card, 640K, and 1M byte of above board RAM

- QVP-100** Computer Required*
Rackmount chassis with encoder, composite keying, and graphics card, sync/genlock/NTSC/RGB (PAL available), bit pad and stylus, rackmount kit with slides, Quantapaint software with RGB camera capture \$ 9,995.00
- QVP-115** QVP-100 with business graphics software 11,495.00
- QVP-120** QVP-100 with animation software and animation machine controller. Specify VTR: BVH 2000 Betacam™ Series, BVU-800, BVW-15/40, VPR3, VPR6, and VPR-80. (Requires VTR with time code reader) 13,495.00
- QVP-125** QVP-100 with business graphics and animation software with animation machine controller. Specify VTR: same as QVP-120 above. (Requires VTR with time code reader) . . 14,995.00

QVP-200 Series

- QVP-200** QVP-100 with 100% IBM™ XT-compatible computer with: One 5 1/4" floppy drive (360K per diskette), monochrome green screen with swivel base, two RS-232 serial ports and one parallel port, 640K RAM and Intel above board RAM, 8088-2 microprocessor and keyboard . \$13,995.00
- QVP-210** QVP-200 with 30M byte hard disk 15,995.00
- QVP-215** QVP-210 with business graphics 17,495.00
- QVP-220** QVP-210 with animation software and animation machine controller. Specify VTR: BVH 2000 Betacam series, BVU-800, BVW-15/40, VPR3, VPR6, and VPR-80. (Requires VTR with time code reader) 19,495.00
- QVP-225** QVP-210 with business graphics and animation software with animation machine controller. Specify VTR: BVH-2000, BVW-15/40, Betacam series, BVU-800, VPR3, VPR6, VPR-80 20,995.00

*Minimum requirements for your computer to work with Quantapaint QVP-100

8MHz processor, 100% IBM compatible, 640K bytes of RAM, Intel above board with 1M byte of RAM, one 5 1/4" floppy disk drive, One 20M byte hard disk and controller, keyboard, CRT display screen (monochrome) and controller, available slot for Quantapaint interface board, Com1 serial port available for bit pad, Com2 serial port available for animation control or character generator interface options, LPT1 parallel port available for ink jet printer option, DOS version 3.1 or later

QVP-2502

Quantapaint Electronic Paint System

• Basic automatic drawing functions with individual enhancements • Dynamic painting functions • Illustration aids • Palette of 16.7 million colors may be called upon to create individual page palettes of 256 colors each

- QVP-2502** Rackmount chassis with microcomputer, graphics card, above board RAM, sync/genlock/encoder/NTSC (PAL available), RGB 256 color digitizer (camera capture), Quantapaint II software, computer monitor, business graphics software, 2-D animation software, rackmount kit with slides, 3 1/2" floppy disk drive, 30M byte hard disk, bit pad and stylus, operator manual, keyboard \$24,995.00



Quantapaint 32

Quantapaint 32 Electronic Paint Systems QVP-3000

• Complete stand-alone system • Powered by Texas Instruments' 34010 dedicated 32-bit graphics processor that runs at a clock rate of 49MHz • System includes 4M bytes of onboard CMOS video RAM, a single floppy disk drive, and a graphics tablet with stylus, control keyboard and status monitor • 720 x 486 NTSC (720 x 576 PAL) broadcast-quality resolution and a total of 16.7 million colors • Outputs include RGB and, with the optional encoder, NTSC or PAL • 32-bits per pixel allows every pixel on the screen to be a different color, each with a transparency level from invisible to opaque—256 increments in all • All painting, drawing, and special effects can be selected from the graphics tablet and executed with the tip of the stylus from the on-screen, pop-up menu • Fourteen natural drawing tools • Variety of electronic brushes ranging from 1 pixel in diameter up to 50 pixels • Numerous "tricks" effects • Screen clear command • Quick save function • Paint mixing palette • Penstroke animation

- QVP-3000** Rackmount Electronics Chassis with: 32-bit graphics board with flash digitizer, Quantapaint 32 software with full-color camera capture and text rendering, 80286 microprocessor, 1M byte RAM, RGB video in/out, single 3 1/2" floppy disk drive, 720K, single 30M byte hard disk, 2 RS-232 serial ports, 1 parallel port, 5 typeface styles with accents, software enable module, DOS version 3.3, computer monitor, monochrome, bit pad and stylus, keyboard \$24,995.00
- QVP-3002** QVP-3000 with 160M byte high-speed hard disk 27,995.00
(Replacing the 30M byte disk in chassis)
- QVP-32-ENCI** Optional plug-in sync/genlock encoder 1,195.00
- QVP-3300 3D** Rackmount electronics chassis with: 32-bit graphics board with flash digitizer, 80386 microprocessor, math co-processor, above board RAM, Quantapaint 32 software with full-color camera capture and text rendering, Topas-32 three dimensional modeling and animation software, RGB video in/out, 3 1/2" floppy disk drive, 720K, single 30M byte hard disk, 2 RS-232 serial ports, 1 parallel port, 5 typeface styles with accents, DOS version 3.3, software enable module, computer monitor, monochrome, keyboard, bit pad and stylus (requires QVP32-AMC for single frame recording to tape). \$48,500.00
- QVP-3302** QVP-3300 with 160M byte high speed hard disk 51,500.00
(Replacing 30M byte disk in chassis)
- QVP-32-ENCI** Optional plug-in sync/genlock encoder 1,195.00

Refer to Green Section for Addresses and Telephone Numbers.

QUANTA CORP.**Graphics System****Artista™ Graphics System**

• Full color graphics system providing full-color paint, typographic quality, anti-aliased fonts, 3D modeling, and animation capabilities in a single system • Extraordinary effects with extraordinary painting tools—airbrush, full-color flash camera capture, stencil, wash, cut and paste, etc. • Flash digitizer for instant full-color camera capture • Five multi-colored and anti-aliased fonts are standard with 3D edges or drop shadows • Business graphics—easy generation of colorful, dramatic charts and graphs • Color selection—16.7 million available, pop-up color palette with on-screen color mixing or select, and user-defined spectra • User-definable brushes and brush effects; brush types are anti-aliased, transparent, neon, chrome, movie, dither, and pastel • Tools—pixel precise positioning; magnification; user-defined boxes, rectangles, circles, and ellipses; rubber-band connect; and image archiving on storage media • Full-shaded backgrounds; horizontal, vertical, up/down slope, and automatic tile backgrounds • Stencil cutting by drawing or text, reverse stenciling, color-selectable and opacity controllable stencils • Cut and paste—X and Y perspective, proportional enlargement and reduction, simple stamp, rotations, ellipsoid/elliptical paste, and filtering • Area fills—boundary fill of an area defined by interior or boundary color, transparent fill • Cut and paste with transparency—move, rotate, resize any section of the screen • Powerful 2D animation tool allows the artist to cut out up to 20 sections of a picture, rotate them separately in 2¹/₂D space, and describe a separate path for each to follow. Completed animations are single-frame recorded to a video tape recorder via an optional Quanta machine controller • Powerful 3D modeling and animation • All of three dimensional space is available to position objects, cameras, or lights • 13-inch high rack-mountable chassis • Two 5¹/₄" floppy disk drives • 190M byte hard disk, 32M byte cartridge tape streamer for hard disk backup and archiving • 24-bits-per-pixel with eight additional bits for transparency and stencils • Resolution of 756 pixels by 486 lines in NTSC (740 x 577 PAL) • Two separate frame buffers (genlocked RGB, NTSC, or PAL) • High-performance 16.7MHz 68020 CPU with a 68881 fast math coprocessor provides increased processing speed • Display terminal, bit pad, stylus, and keyboard combine strong ergonomic features with high-performance functions • Terminal features a 14-inch nonglare screen, a fast screen refresh rate, and tilt-and-swivel capability • All paint, text, 3D, and animation functions are displayed on the terminal menu and easily accessed by the stylus on the bit pad or from the keyboard • Eight "hot" buttons reside on the bit pad for instant access to frequently-used functions

Artista Specifications

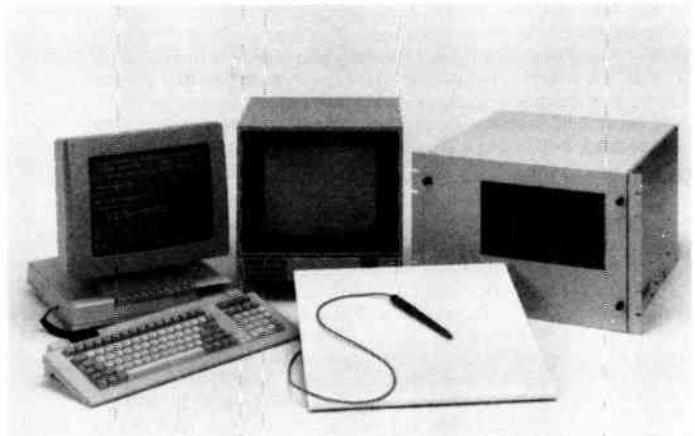
Processor:	68020
RAM:	4M bytes
Serial Interface:	RS-232
Floppy Disk Storage:	2-390K bytes
Hard Disk Storage:	190M bytes
Tape Streamer:	32M bytes, unformatted
Power:	Operated from 110/220V, 50/60 cycle
Power Consumption:	500W
Dimensions:	12 ¹ / ₄ " H x 19" W x 20 ³ / ₄ " D
Weight:	65 lbs.
Mounting:	For rackmounting
Operating Environment:	10-40° C

Video Outputs:

- Green—7V (no sync) • Blue—7V (no sync) • Red 7V (no sync)
- Sync—2V • Key pulse—2V • Video one—1V p-p • Video two—1V p-p
- Subcarrier—1V p-p • PAL flag—1V p-p

Video Inputs:

- Green—7V (no sync) • Blue—7V (no sync) • Red—7V (no sync)
- Sync—4V • Video one—1V p-p • Video two—1V p-p



Artista

Keyboard and Display Specifications

Power Requirements: 115VAC (+ 10%,-15%), 0.5A, 60Hz, 230VAC (+ 10%,-15%), 0.25A, 50Hz, 55W nominal

Dimensions:	
Display:	14.5" H x 13.5" W x 13.5" D
Keyboard:	1.5" H x 19" W x 7.5" D
Weight:	
Display:	19.4 lbs.
Keyboard:	2 lbs.

ART-5000 Includes:**Rackmount Electronics Chassis with:**

- Microcomputer • 4M bytes RAM • Graphics board • Flash digitizer
- Composite NTSC (PAL available) • Decoder NTSC (PAL available) for rolling video capture

Artista Software includes:

- Complete 32 bit paint tools and functions • Instant full-color camera capture • Five anti-aliased typeface styles • Texture mapping • 2D cut-out animation • 3D modeling • 3D animation with Hierarchical motion • Two 5¹/₄" floppy disks • One 190M byte hard drive • One 32M byte tape streamer • Sync/Genlock encoder, NTSC (PAL available), RGB • Green screen • Black box RS-422 to RS-232 interface • Keyboard • Bit pad with stylus

ART-5000\$77,500.00

Options**ART-AMC**

Animation machine control interface for single frame recording to tape, specify VTR: BVH-2000, Betacam™ Series, BVU-800, VPR-3, VPR-6, VPR-80 (requires VTR with Time Code Reader)

ART-AMC\$1,995.00

QUANTEL

Video Effects Systems

Mirage™ — Three-Dimensional TV Images In Motion

The Mirage system brings to reality that which has never been done before in realtime: the concept of forming live television pictures into three-dimensional shapes and moving them in three-dimensional space. Effects are accomplished with live video or during post-production in the edit suite. Mirage will process any shape that can be conceived including globes, cylinders and cones. Using Mirage's Floating Viewpoint Control, the user can take the viewer's eye not only around the image but through it as well. The Morph shape generator allows creative people without computer programming experience to form their own custom shapes.

Encore™ — Multi-Dimensional Images

Second only to Mirage in its video manipulation capabilities, Encore also provides three-dimensional perspective with Floating Viewpoint Control, plus compression, expansion, flips, rotation, mosaic, posterization and more. Its integral combiner lets the user connect 14 units for multi-channel operation. And using Mirage as an Encore channel, the system will produce free-form manipulation of flat pictures including such effects as an Encore picture flying down a Mirage cylinder.

Paintbox® — The Ultimate TV Graphics System

Quantel's Paintbox is a complete electronic graphics and design system that has become the world standard. Paintbox provides the user with all the facilities that are available in a conventional graphics studio—electronically. Working with a simple touch tablet and pressure-sensitive stylus, pictures are displayed in front of the artist on a TV screen. Live video may be captured and designers have complete freedom to create or change images in real-time in whatever art medium they select, ranging from oils, water color, chalk, pencil and crayon to air brush. Paintbox animates, produces TV's finest typography, and perspective may be added as an option. Instant access to thousands of pictures is available through Quantel's Central Lending Library in addition to its own library storage capabilities.

Cypher Graphics Generator

Much more than just a perfect caption generator with print-quality type faces and logos, Cypher also has the manipulative power of Encore available for each and every character. Cypher can generate any character from an enormous resource of type faces. With Floating Viewpoint Control, Cypher users can orchestrate the movement of the caption or its individual characters with the utmost ease. Each visible character can be modified separately or together in size position, rotation or perspective. Each color in a caption can be different, multi-colored, and even animated to produce unusual color changes and effects. Traditional typographic capabilities such as kerning, letter spacing, word spacing, text justification and line spacing are designed into the Cypher system, as well as rolls and crawls.

Harry-Digital CEL Recorder

Harry, is a digital cel recorder for use with Paintbox digital art/graphics system.

Harry allows cel animation, video retouching, matte work, and video rotoscoping to be performed directly from a Paintbox touch tablet.

This capability eliminates the need for complicated frame-by-frame editing sessions with video tape recorders. Harry can do it easier, faster, and in digital form.

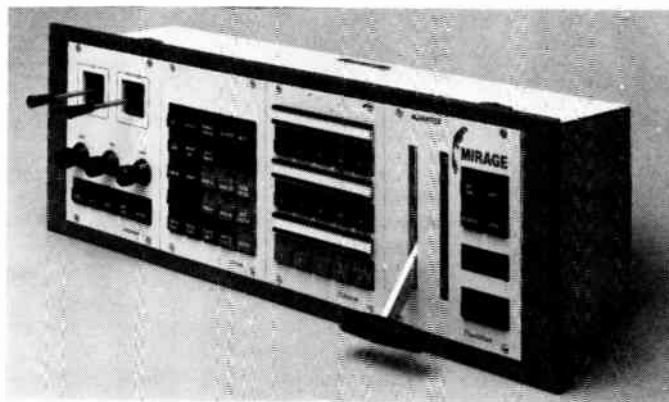
Harry is a real time random access record/replay system fully integrated with the Paintbox. Cels can be prepared one at a time on the Paintbox and then automatically stored in Harry. Capacity is 2,700 cels.

During rehearsal or sequence build-up, Harry can replay at any speed. Any cel can be edited or repeated for twinning purposes. Cels can be replayed at normal video frame rates for program output.

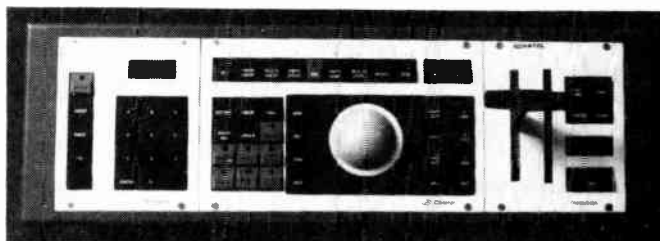
Harry can also record approximately 90 seconds of live video which can then be retouched one frame or field at a time. The modified video can be edited and replayed in real time.

Complex matte preparation and rotoscoping can likewise be performed frame-by-frame from a live source returning to a live replay.

All these functions can be done easily using the Paintbox menu. No additional control panels are required. Like the Paintbox, Harry has been designed to be used by artists and graphics designers.



Mirage



Viewpoint Control Panel



Paintbox System

Options for Harry

Rainbow bringing several important enhancements together in a single package. Included are: Color Grading, Color Changing, Track and Trail, Differencing and Averaging.

Dynamic Rounding This feature allows the combining of digitally generated pictures without the intrusion of annoying interference artifacts.

Paradoxically, the totally pure, noise-free nature of digital pictures generates noise when two such pictures are added together—an inherent problem with the digital standard. The option package eliminates this problem, taking the Harry one step beyond the digital standard.

Audio Scratch Track This feature gives Harry a 60 second random access internal audio scratch track facility (optionally 120 seconds), allowing operators to make perfectly timed cuts against audio—frequently the controlling factor in an editing job.

Operating System Refinements Are:

- Non-additive Mixing—neatly complementing Harry's existing additive mixing capabilities
- Enhanced clip library management system for easier and faster access to stored clips; these are now organized alphabetically and a keyword search facility has been added
- Library for storing keyer set-ups—invaluable in complex multi-generation edits

QUANTEL*Video Effects Systems***DLS 6030 Digital Library System**

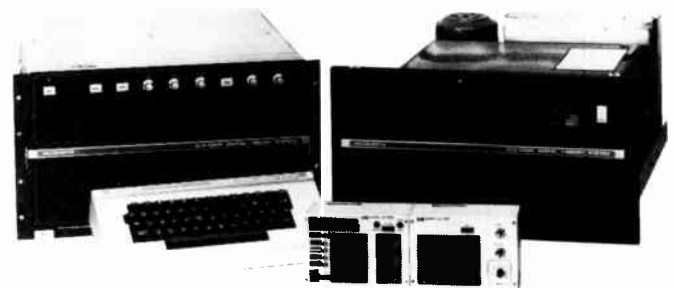
- Small size, compact electronics
- Up to 6400 stills storage capacity
- Standard SMD interface built in
- Powerful, user-friendly control
- Digitally-linkable capability
- Store digitally on standard video tape
- Digital production effects possible

With unprecedented capabilities for recording, accessing and presenting pictures, sophisticated disk storage, digital production effects, and limitless off-line digital storage on standard videotape, the DLS-6030 can meet your most demanding requirements. Now and far into the future.

Storage can be either field or frame to give you the flexibility you need for pictures and captions.

The DLS 6030 accepts asynchronous input so you can capture pictures from incoming remotes.

Picture grab lets you capture stills from live video in rapid succession, then later edit them to select those you want to store permanently.

**DLS 6030**

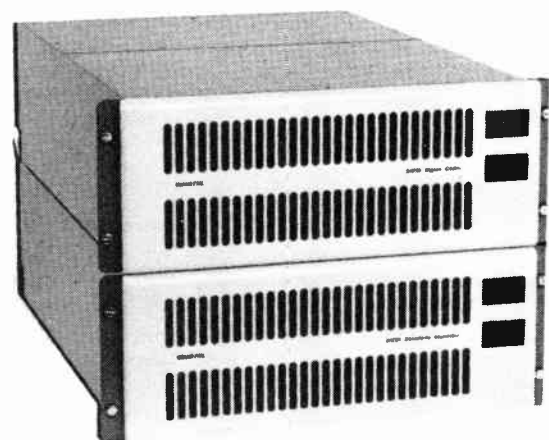
You can also erase individual pictures from the disk at any time without affecting pictures stored on adjacent tracks. Special "write protect" features are included to prevent accidental erasure.

Since all picture information remains in digital form, complete fidelity is maintained without generation loss—even if you use small ENG-type recorders. An elegant digital innovation from the digital video people.

DSC 4800 Satin TV Standards Converter

- Freeze
- Noise reduction
- Component input and output
- 4:2:2 component digital input/output
- Auto input standard select
- Overscan
- Internal test signals
- Remote control
- Engineering set-up
- Laser frame
- Image enhancement
- Revert
- Single wire reference

Satin is an advanced bidirectional broadcast quality TV standards converter. Besides handling PAL and NTSC signals, other color standards can be processed via the component RGB input and output. Picture quality is excellent. This is achieved because Satin is completely digital—with the digital decoder and coder contained in the Codec and the line and field conversion taking place in the standards converter unit. The result is a superb technical performance which is maintained year in and year out. Satin is ready now for the digital studio. Video processing is SMPTE 4:2:2 component digital format in accordance with the CCIR.601 international standard. Satin also features a digital interface conforming to the international standard—a further building block in the realization of the all-digital studio.

**DSC 4800 (Satin)**

QUANTUM AUDIO LABS, INC.**Broadcast/Production Consoles****Series 22 Broadcast/Production Modular Consoles****General**

- Mainframes accommodating 8, 14, 20 or 28 inputs
- Modular construction, right down to the connector panels
- Four output program buses (2 stereo pairs)
- Bus outputs transformer balanced and floating
- Stereo program/audition masters
- Rackmounted power supply
- Built-in talk-back/slating system (Provisions for external talk-back)
- Control room and studio monitor switching
- Control room headphone and cue speaker amps included
- Connector for external talk-back mike
- Built-in oscillator 30Hz, 100Hz, 1kHz, 10kHz
- (2) bus-assignable echo returns
- "On-Air" light logic from any channel "on" button

Input Modules

- Mike inputs transformer balanced and floating
- Line inputs differentially balanced (Not 2201)
- Peak overload indicators on mike preamps
- Remote start logic for cart and tape machines
- Individual Mike/Line A/B switching
- Pan-pot and balance controls
- Prefader audio cue circuit
- Phase inverting switch
- Penny and Giles, 4" (long throw), conductive plastic linear attenuators
- Input level trim vernier controls (20dB range)
- (2) Auxiliary feeds: Echo and Foldback
- 3-band equalizer with In/Out switch
- 100Hz high-pass filter

Specifications**GENERAL**

Frequency Response:	20Hz to 20,000Hz \pm 1dB (re 1kHz)
Equiv. Input Noise:	\leq -127dBm (20Hz to 20,000Hz)
Output S/N Ratio:	\geq 80dB
Output Distortion:	\leq 0.1% THD up to +24dBm; (30Hz to 20kHz)
Slew Rate:	\geq 10V/ μ s
Power Requirement:	100-120/200-240VAC (switchable); 50/60Hz
Power Consumption:	22/8 1VA; 22/14 1.3VA; 22/20 2VA
Channel Separation:	Main outputs: 80dB at 1kHz; Input to Input: below noise level
Overall Gain:	103dB typical

INPUTS

Mike Inputs:	Transformer balanced and floating; Full 200 ohm nominal impedance sources; (actual input impedance 1200 ohms broadband). -60dB nominal input level; 20dB gain vernier
Line Inputs:	Differentially balanced; Actual input impedance \geq 15K ohms; Nominal input level: +4dB, Acceptable level range: -20dB to +30dB
Echo Return Inputs:	Differentially balanced; Nominal level: +4dB; Input impedance: \geq 15K ohms

EQUALIZERS

2201 Mono Modules:	Low: 50Hz shelving or 200Hz peaking; \pm 12dB Presence: 1500Hz or 3000Hz; \pm 12dB High: 6kHz peaking or 12kHz shelving; \pm 12dB
2202 Stereo Modules:	Low: 100Hz shelving; \pm 12dB Presence: 1kHz; \pm 12dB High: 10kHz shelving; \pm 12dB
High Pass Filter:	12dB/octave slope (-3dB point at 100Hz)

OUTPUTS

Main end	Transformer balanced and floating; +8dBm
Aux. Outputs:	Nominal level (strappable for other nominal levels) +24dBm max.
Monitor Outputs:	Control room and studio: unbalanced; 0dB nominal; 15 ohm source impedance; +22dBm max.
HS end Cue Speaker:	5W, 8 ohm self-contained amplifier
Optional Outputs:	Direct mono/stereo output from each input; Differentially balanced; +24dBm max.

**CONNECTORS**

All inputs: Female Q-G (XL) type; ("B" inputs of 2202 stereo modules: ribbon connector). All bus outputs, foldback, echo send: male Q-G (XL) type; Monitor, HS, cue facilities: Barrier strip on power supply. Direct mono/stereo outputs (optional: ribbon connectors. Auxiliary inputs 2210 (option): ribbons connectors. Start contacts and "On Air" light logic: ribbon connectors.

Main Frames: (4-output Series 22)

22/08	8-input main-frame-no input modules	\$3900.00
22/14	12-input main frame-no input modules	4700.00
22/22	22-input main frame-no input modules (8 + 14)	6600.00

Module Prices

2201-A	As above but without EQ	\$375.00
2202	Stereo line input module with 3-freq. EQ.	475.00
2202-A	As above but without EQ	425.00

Available Accessories

01	Blank panel for unused position	\$ 15.00
02	Transformer balancing installed (e.g. inputs)	75.00
03	Mono output option-metered	350.00
04A	Digital clock/timer with edge panel controls	200.00
05	Spare parts kit	500.00
06	Service extender card	100.00
07	Instruction and service manual (spare)	35.00
08	Phantom Powering:	
	08-1 22/08 input mainframe	300.00
	08-2 22/14 input mainframe	350.00
	08-3 22/22 input mainframe	420.00
09	Direct output preparation-Per console:	
	09-1 22/08 console	125.00
	09-2 22/14 console	150.00
	09-3 22/22 console	180.00
10	Direct output per channel of input mode	60.00
11	2210 4-line auxiliary input switch assembly	200.00
12	Additional 2210 assemblies	155.00
13	5.4m (18') interconnecting cable set (two) (replacing standard 2.7m (9') set)	25.00
14	Audition VU meters follow	100.00
	Control Room monitor selector switch	
15	Audition stereo P and G linear fader (with 2205-B Monitor Module)	350.00
16	4 P and G program/audition submaster faders (two each on two panels)	500.00

QUICKSET INTERNATIONAL, INC.

Light Weight Tripods/Trolley/Heads/Dolly

**QuickSet Husky
(Wt. Capacity 17 lbs.)**

Tripods, Counterbalance Spring Heads
 Load Capacity17 lbs. (7.7kg)
 Maximum Height . . .57"-72" (144.8-182.9cm)
 Minimum Height . . .23"-31" (58.4-78.7cm)
 (dependent on model)
 Column Height16" (40.6cm)
 Tilt Angle60° up, 90° down
 Pan Rotation360°
 Weight7 lbs. (3.2kg)

QKTH-1
 Lightweight all aluminum tripod. Spring loaded counterbalance head, safety elevator column, all black finish. 2-section tubular legs.

QKTH-3
 Same as QKTH-1 with 3-section tubular legs.

QKTH-7
 Same as QKTH-1 but with strut supports.

QKTH-9
 Trolley, Same as QKTH-1 but with single length leg with struts and detachable wheels.

Photographic Tripods
 Load Capacity17 lbs. (7.7kg)
 Maximum Height . . .72"-90" (182.9-228.6cm)
 Minimum Height . . .30"-31" (76.2-78.7cm)
 (dependent on model)
 Column Height16" (40.6cm)
 Tilt Angle60° up, 90° down
 Pan Rotation360°
 Side Tilt40° up, 105° down
 Weight7.5-8.25 lbs. (3.4-3.75kg)

QKTH-17
 Lightweight aluminum tripod. 3-section elevator column and 3-dimensional pan, tilt and side tilt head.

QKTH-21
 Same as QKTH-17 but with 4 section tubular legs.

QKTH-30 Fluid Head Tripod System Head
 Capacity3-12 lbs. (1.3-5.5kg)
 Pan Rotation360°
 Tilt Angle60° up, 90° down
 BasePermanently Affixed to Column
 Handle14" with Custom Grip Mounting . . .Quick-On/Off Plate with Safety Lock, 3^{3/4}" x 2^{1/2}" with 1/4"-20 screw. 3 Balancing Locations
 ControlsPan-Combined Brake and Drag, Tilt-Brake
 FinishBlack

Tripod
 Capacity17 lbs. (7.7kg)
 Max. Height69"
 Leg Type2 Section
 MountingManual Lift Column
 FinishBlack

Total Unit
 Maximum Height72"
 Minimum Height26"
 Weight6^{1/4} lbs. (2.8kg)

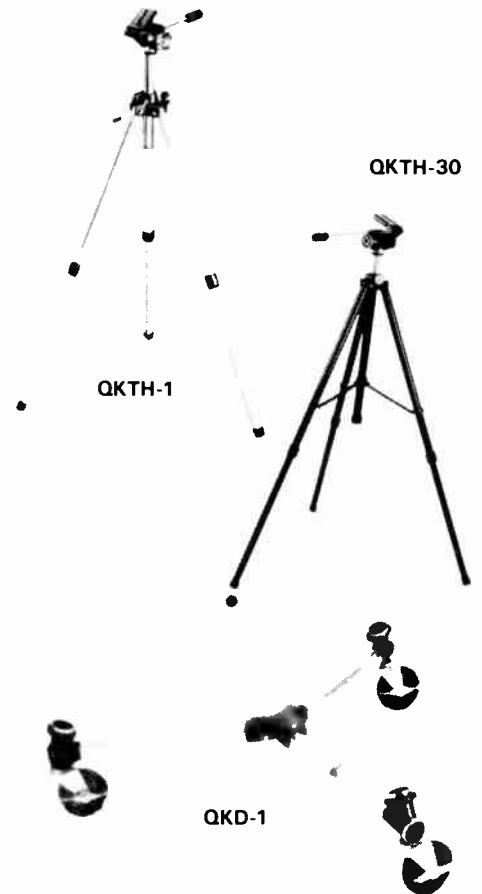
QKTH-9 Trolley-Counterbalance Spring Head
 Load Capacity20 lbs. (9.1kg)
 Maximum Height58" (148.6cm)
 Minimum Height43^{1/4}" (110.2cm)
 Column Height16" (40.6cm)
 Tilt Angle60° up, 90° down
 Pan Rotation360°
 Wheel Circle38" (96.5cm)
 Weight9^{1/4} lbs. (4.2kg)

QKT-11 Tripod
 Load Capacity17 lbs. (7.7kg)
 Maximum Height57" (144.8cm)
 Minimum Height23" (58.4cm)
 Weight7 lbs. (3.2kg)

QKT-11
 Same as QKT-11, but without head.

QKD Dollies
 Load Capacity50 lbs. (22.7kg)
 Wheel Size . . .3 or 4" x 3/4" (10.2 x 1.9cm)
 Wheel Circle35" (88.9cm)
 Folds to4" x 6" x 19"
 (10.2 x 15.2 x 48.3cm)
 Weight8 lbs. (3.6kg)

QKD-1
 For Husky tripods only, 4" wheels



Tripods and Trolleys

(All include Spring Loaded Counterbalance Heads, Wt. Capacity 17 lbs.)

QKTH-1	Tripod, 2 Section Legs, Safety Elevator Column (Max. Ht. 57")	\$205.00
QKTH-3	Tripod, 3 Section Legs, Safety Elevator Column (Max. Ht. 72")	215.00
QKTH-7	Tripod, 2 Section Legs, Struts, Safety Elevator Column (Max. Ht. 57")	230.00
QKTH-9	Trolley, Struts, Safety Elevator column, 3" Wheels (Max. Ht. 58")	280.00

Photographic Systems

(All include 3-Dimensional Pan, Tilt and Side Tilt Head)

QKTH-17	Photographic Tripod, 3 Section Legs, Elevator Column (Max. Ht. 72")	\$240.00
QKTH-21	Photographic Tripod, 4 Section Legs, Elevator Column (Max. Ht. 90")	290.00

Fluid Head Tripod Systems and Trolley

QKTH-23	Tripod, 2 Section Legs, Manual Lift Column (Max. Ht. 57")	\$180.00
QKTH-25	Tripod, 2 Section Legs, Struts, Safety Elevator Column (Max. Ht. 57")	240.00
QKTH-26	Tripod, 3 Section Legs, Manual Lift Column (Max. Ht. 72")	190.00
QKTH-27	Tripod, 3 Section Legs, Safety Elevator Column (Max. Ht. 72")	225.00
QKTH-28	Tripod, 3 Section Legs, Struts, Safety Elevator Column (Max. Ht. 72")	250.00
QKTH-29	Trolley, Struts, Safety Elevator Column, 3" Wheels (Max. Ht. 58")	290.00
QKTH-30	Tripod, 2 Section Legs, Struts, Manual Lift Column (Max. Ht. 72")	170.00
QKTH-31	Tripod, 2 Section Legs, Struts, Safety Elevator Column (Max. Ht. 72")	240.00

Tripod Only

QKT-11	Tripod, 2 Section Legs	\$135.00
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Dolly

QKD-1	Dolly, 4" Wheels (for Husky only)	\$105.00
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QUICKSET INTERNATIONAL, INC.

*Medium Weight Tripods/Pedestals/
Columns/Heads/Dollies*

**QuickSet Samson
(Wt. Capacity 70 lbs.)**

QST-1 ENG/EFP Tripod

Load Capacity 70 lbs. (31.8kg)
Maximum Height 58" (147.3cm)
Minimum Height 32" (81.3cm)
Weight 9 lbs. (4.1kg)

QST-1

Strong, lightweight tripod, struts, extendable legs. Without elevator column.

QST-3 Tripod With Elevator

Load Capacity 40 lbs. (18.2kg)
Maximum Height 76" (193cm)
Minimum Height 34" (86.4cm)
Weight 10 lbs. (4.5kg)

QST-3

Strong, easily portable tripod with geared elevator center column.

QST-5

³/₄ size version of QST-3
Maximum Height 55" (139.7cm)
Minimum Height 21" (53.3cm)

QST-9 Trolley

Load Capacity 40 lbs. (18.2kg)
Maximum Height 54" (137.2cm)
Minimum Height 36" (91.4cm)
Column Height 18" (45.7cm)
Wheel Circle 34" (86.4cm)
Weight 13 lbs. (5.9kg)

QST-9

Trolley, tubular, single section legs with wheels permanently attached. Geared elevator column.

QSP-1 Mobile Pedestal

Load Capacity 40 lbs. (18.2kg)
Maximum Height 55" (139.7cm)
Minimum Height 37" (94cm)
Wheel Circle 28" (71.1cm)
Weight 23 lbs. (10.5kg)

QSP-1

Mobile pedestal has geared elevator column housed within 4" diameter vertical tube. Three radiating arms, at the base, house 4" wheels.

QSC-1 Stationary Column

(includes Side Arm and Head)
Load Capacity 15 lbs. (6.8kg)
Maximum Height 30" (76.2cm)
Minimum Height 37" (94cm)
Horizontal Reach 10" (25.4cm)
Weight 8 lbs. (3.6kg)

QSC-3 Safety Elevator Column Unit

Load Capacity 25 lbs. (11.4kg)
Maximum Height 24" (60.9cm)
Minimum Height 6" (15.2cm)
Weight 6 lbs. (2.7kg)

QSC-3

Geared elevator column with mounting flange.

QSD-1 Dolly

Load Capacity 50 lbs. (22.7kg)
Wheel Size 4" x ³/₄" (10.2 x 1.9cm)
Wheel Circle 42" (106.7cm)
Folds to 6 1/2" x 7 1/2" x 21 1/2"
(16.5 x 19.0 x 54.6cm)
Weight 9 lbs. (4.1kg)

Video Friction Head

Load Capacity 25-35 lbs. (11.4-15.9kg)
Tilt Angle 45° up, 90° down
Pan Rotation 360°
Dimensions 5 1/2" x 6 1/2" x 6 1/2"
(14.1 x 16.6 x 16.6cm)
Weight 2 1/2 lbs. (1kg)
Mountings 1/4 x 20 camera screw

QSH-4

Standard Counterbalance Spring (25 lb. cap.)

QSH-3

Heavy-Duty Counterbalance Spring (35 lb. cap.)

³/₈ x 16 mounting screw available on special order.

QSH-6 CAM Head

Load Capacity 40 lbs. (18.1kg)
Tilt Angle 30° up, 40° down
Pan Rotation 360°
Dimensions 8 1/2" x 6 1/2" x 4 1/2"
(21.6 x 16.6 x 11.5cm)
Mountings 1/4 x 20 camera screw

³/₈ x 16 mounting screw available on special order.

QSH-9 Photographic Geared Still Head

Load Capacity 25 lbs. (11.4kg)
Tilt Angle 45° up, 90° down, ± 15° side
Pan Rotation 360°
Dimensions 8 1/2" x 6 1/2" x 6"
(21.6 x 16.5 x 15.2cm)
Weight 2 1/2 lbs. (1.1kg)

QSH-11 Geared Movie Head

Load Capacity 25 lbs. (11.4kg)
Tilt Angle 45° up, 90° down
Pan Rotation 360°
Dimensions 6" x 6 1/2" x 7 1/2"
(15.2 x 16.5 x 19cm)
Weight 2 lbs. (1kg)

Tripods, Pedestals, Trolley and Columns

QST-1	ENG/EFP Tripod (Use with QSH-27 or QSH-19 only) (Wt. Cap. 70 lbs.) (Max. Ht. 58")	\$371.00
QST-3	Tripod, Safety Elevator Column (Wt. Cap. 40 lbs.) (Max. Ht. 76")	419.00
QST-5	Tripod, ³ / ₄ Size, Compact Safety Elevator Column (Wt. Cap. 40 lbs.) (Max. Ht. 55")	413.00
QST-9	Trolley, Safety Elevator Column (Wt. Cap. 40 lbs.) (Max. Ht. 54")	461.00
QSP-1	Mobile Pedestal, Safety Elevator Column (Wt. Cap. 40 lbs.) (Max. Ht. 55")	689.00
QSC-1	Stationary Column Unit (Incl. Side Arm and Panhead) (Wt. Cap. 15 lbs.) (Max. Ht. 30")	323.00
QSC-3	Safety Elevator Column Unit for bench or cart mount (Wt. Cap. 25 lbs.) (Max. Ht. 24")	244.00

Heads-Video, Cam and Gear Type

QSH-4	Video Friction Head w/Counterbalance Spring (Wt. Cap. 25 lbs.)	\$196.00
QSH-3	Video Friction Head w/Heavy-Duty Counterbalance Spring (Wt. Cap. 35 lbs.)	207.00
QSH-6	Cam Head (Wt. Cap. 40 lbs.)	519.00
QSH-9	Photographic Geared Still Head (Wt. Cap. 25 lbs.)	382.00
QSH-11	Geared Movie Head (Wt. Cap. 25 lbs.)	355.00

Fluid Heads

QSH-15	"Mini" (Wt. Cap. 10 lbs.) For tripods with Samson columns	\$ 461.00
QSH-17	"Junior" (Wt. Cap. 30 lbs.) For tripods with Samson columns	869.00
QSH-19	"Junior" (Wt. Cap. 30 lbs.) For QST-1 Tripod	853.00
QSH-25	"Super-Hydro" (Wt. Cap. 50 lbs.) For tripods with Samson columns	1102.00
QSH-27	"Super-Hydro" (Wt. Cap. 50 lbs.) For QST-1 Tripod	1081.00

Dolly and Accessories

QSD-1	Dolly for QST-1 and QST-3 tripods	\$175.00
QSM-1	Second Control Arm for Video, Cam and Fluid Heads	51.00

QSH-6



QSH-15 Mini Fluid Head

Load Capacity 10 lbs. (4.5kg)
Tilt Angle ± 90°
Pan Rotation 360°
Dimensions 4" x 5" x 6"
(10.2 x 12.7 x 15.2cm)
Base For Samson Column
Weight 4.5 lbs. (2.0kg)

Junior Fluid Heads

Load Capacity 30 lbs. (13.6kg)
Tilt Angle ± 85°
Pan Rotation 360°
Dimensions 4" x 6" x 6"
(10.2 x 15.2 x 15.2cm)
Weight 7.0 lbs. (3.2kg)

QSH-17

For Tripods w/Samson Columns

QSH-19

For QST-1 Tripod

Super-Hydro Fluid Head

Load Capacity 50 lbs. (22.6kg)
Tilt Angle ± 80°
Pan Rotation 360°
Dimensions 6 3/4" x 6" x 7"
(17.1 x 15.2 x 17.8cm)
Weight 10 3/4 lbs. (4.9kg)

QSH-25

For Tripods w/Samson Columns

QSH-27

For QST-1 Tripod

QUICKSET INTERNATIONAL, INC.

Medium Weight Tripods/Heads/Dollies

QuickSet Rainbow

(Wt. Capacity 100 lbs.)

QRT-1 Tripod

Load Capacity100 lbs. (45.4kg)
 Maximum Height61" (154.9cm)
 Minimum Height32" (81.3cm)
 Weight9.7 lbs. (4.4kg)

QRT-1P Platinum **QRT-1E** Emerald
QRT-1B Blue **QRT-1K** Black
QRT-1V Violet **QRT-1S** Silver
QRT-1R Red **QRT-1C** Custom
QRT-1G Gold

QRT-1x*

Sturdy aluminum and composite tripod with spreaders, retractable spike tips, calibrated expandable leg. Working height of 32" to 61". Available in colors.

*x represents color code

QRH-1 Pro 1000 Fluid Head

Load Capacity20 lbs. (9.0kg)
 Tilt Angle65° up, 90° down
 Pan Rotation360°
 Dimensions4 1/2" x 5" x 5 1/2"
 (11.4 x 15.2 x 13.9cm)
 Base75mm claw ball
 Weight6 lbs. (2.7kg)

QRH-2 Pro 2000 Fluid Head

Load Capacity35 lbs. (15.9kg)
 Tilt Angle± 45°
 Pan Rotation360°
 Dimensions6" x 4 1/2" x 6"
 (15.2 x 11.4 x 15.2cm)
 Base100mm claw ball
 Weight11 lbs. (5.0kg)

QRH-3 Fluid Head 10

Load Capacity10 lbs. (4.5kg)
 Tilt Angle± 90°
 Pan Rotation360°
 Dimensions4" x 5" x 6"
 (11.4 x 12.7 x 15.2cm)
 Base100mm claw ball
 Weight4.5 lbs. (2.0kg)

QRH-6 Cam Head

Load Capacity10-40 lbs. (4.5-18kg)
 Tilt Angle30° up, 40° down
 Pan Rotation360°
 Dimensions4" x 6 3/4" x 4"
 (10 x 17 x 10cm)
 BaseColumn Mount
 Weight5 lbs. (2.3kg)

QRH-7 Camfluid Pro Head

Load Capacity5-50 lbs. (2.3-22.7kg)
 Tilt Angle± 45°
 Pan Rotation360°
 Dimensions5" x 5" x 7 1/2"
 (2.7 x 12.7 x 19.0cm)
 Base100mm ball
 Weight11 lbs. (5kg)

QRH-15 Fluid Head 30

Load Capacity30 lbs. (13.6kg)
 Tilt Angle± 85°
 Pan Rotation360°
 Dimensions4" x 6" x 6"
 (10.2 x 15.2 x 15.2cm)
 Base178mm ball
 Weight7 lbs. (3.2kg)

QCH-23 Fluid Head 50

Load Capacity50 lbs. (22.6kg)
 Tilt Angle± 80°
 Pan Rotation360°
 Dimensions6 3/4" x 6" x 7"
 (17.1 x 15.2 x 17.8cm)
 Base178mm ball
 Weight10 3/4 lbs. (4.9kg)

QRC-1 Safety Elevator

Column Assembly
 Load Capacity35 lbs. (15.9kg)
 Maximum Height23" (5.8cm)
 Minimum Height5" (12.7cm)
 Weight7 lbs. (3.9kg)

QRD-1 Dolly

Load Capacity100 lbs. (22.7kg)
 Wheel Size4" x 3/4" (10.2 x 1.9cm)
 Wheel Circle43" (109cm)
 Folds to9" x 8 1/2" x 25 3/4"
 (22.9 x 21.6 x 65cm)
 Weight10 lbs. (4.5kg)

QRD-1

Lightweight dolly with carrying handle. 4" wheels.

Tripods (Max. Ht. 61" , 178mm base)

QRT-1P Platinum **QRT-1B** Blue
QRT-1V Violet **QRT-1R** Red
QRT-1G Gold **QRT-1E** Emerald
QRT-1K Black **QRT-1S** Silver

QRT-1 (All above colors) \$295.00
QRT-1C Custom POR

Heads

QRH-1 Pro 1000 Fluid Head-75mm ball \$ 494.00
QRH-2 Pro 2000 Fluid Head-100mm ball 1750.00
QRH-3 Fluid Head 10-100mm ball 635.00
QRH-15 Fluid Head 30-178mm ball 835.00
QRH-23 Fluid Head 50-178mm ball 1060.00
QRH-6 Cam Head (For Elevator Column) 295.00
QRH-7 Cam/Fluid Pro Head-100mm ball POR

Systems

Consists of: Rainbow Tripod with Pro 1000 Head and 75mm adaptor

QRTH-1P Platinum **QRTH-1B** Blue
QRTH-1V Violet **QRTH-1R** Red
QRTH-1G Gold **QRTH-1E** Emerald
QRTH-1K Black **QRTH-1S** Silver
QRTH-1 (All above colors) \$750.00
QRTH-1C Custom POR

Dolly and Accessories

QRD-1 Dolly \$179.00
QRM-1 Adjustable Spreader 9"-15" 40.00
QRM-2 Adjustable Spreader 17"-30" 48.00
QRM-3 Carrying Strap 18.00
QRM-5 Carrying Case POR
QRC-1 Safety Elevator Column Assembly, Use w/Samson Heads. (Max. Ht. 23" extra) 336.00
24081 75mm Ball Base Adaptor for Tripod 5.00
24080 100mm Ball Base Adaptor for Tripod 5.00
24083 Adaptor for QRH-1 Head to Safety Elevator Column 44.00
24084 Adaptor for QRH-6 to Tripod 50.00



Prices and Specifications Subject to Change Without Notice.

QUICKSET INTERNATIONAL, INC.

*Heavy Weight Tripods/Pedestals
Columns/Heads/Dollies*

QuickSet Hercules

(Wt. Capacity 150 lbs.)

QHT-1 Tripod With Elevator

Load Capacity150 lbs. (68.2kg)
Maximum Height73" (185.4cm)
Minimum Height33" (83.8cm)
Weight19 lbs. (8.6kg)

QHT-3

³/₄ size version of QHT-1

Maximum Height55" (139.7cm)
Minimum Height26" (66.0cm)

QHT-1

Strong, heavy-duty tripod with geared center column.

QHT-3

Same as QHT-1, but in ³/₄ size where lower operating height is required.

QHP-1 Mobile Pedestal

Load Capacity80 lbs. (36.4kg)
Maximum Height56" (142.3cm)
Minimum Height38" (96.5cm)
Weight35 lbs. (15.9kg)
Wheel Circle34" (86.4cm)

QHP-1

Heavy-duty mobile pedestal. Geared elevator column housed within a 6" diameter vertical tube. Three radiating arms, at the base, hold double lock 4" wheels.

QHH-3 Instrument Geared Head

Load Capacity15-50 lbs. (6.8-22.7kg) *
Tilt Angle45° up, 90° down
Pan Rotation360°
Dimensions7" x 6" x 6³/₄"
(17.8 x 15.2 x 17.1cm)

Weight7 lbs. (3.2kg)

*Choice of counterbalance spring

QHH-5 Cam Head

Load Capacity80 lbs. (36.3kg)
Tilt Angle35° up, 45° down
Pan Rotation360°
Dimensions5" x 9" x 10"
(12.7 x 22.9 x 25.4cm)

Weight21 lbs. (9.5kg)

QHH-7 Cam Head

Load Capacity140 lbs. (63.3kg)
Tilt Angle± 50
Pan Rotation360°
Dimensions8¹/₂" x 9¹/₂" x 9¹/₂"
(21.6 x 24.1 x 24.1cm)

Weight25¹/₂ lbs. (11.6kg)

QHH-11 Instrument Geared Head, Calibrated

Same as QHH-3 with calibrations and verniers.

Calibrations: Azimuth in 1° (0°-360°) w/ Verniers; Elevation in 1° (+90° to -45°) w/ Verniers; Verniers at 15 minutes

QHD-1 Dolly

Load Capacity500 lbs. (226.8kg)
Wheel Size4" x 1" (10.2 x 2.5cm)
Wheel Circle45" (114.3cm)
Folds to7" x 13" x 28"
(17.8 x 33.0 x 71.1cm)

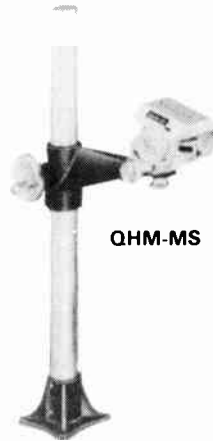
Weight17 lbs. (7.7kg)



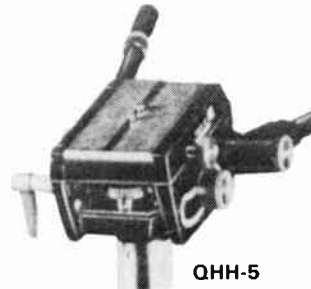
QHT-1



QHP-1



QHM-MS



QHH-5



QHD-1

QHD-1

Dolly with 4" wheels

QHD-7

Dolly with 8" wheels and cable guards.

QHM-MS Microscope Stand

Load Capacity25 lbs. (11.4kg)
Horizontal Reach12" (30.5cm)
Maximum Height31" (78.7cm)
Minimum Height13" (33cm)
Weight10 lbs. (4.5kg)

Mounted on Base (Optional) QHM-MB

Tripods, Pedestals, and Columns

- QHT-1 Tripod, Safety Elevator Column (Wt. Cap. 150 lbs.) (Max. Ht. 73") \$ 827.00
- QHT-3 Tripod, ³/₄ Size, Safety Elevator Column (Wt. Cap. 150 lbs.) (Max. Ht. 44") \$ 811.00
- QHP-1 Mobile Pedestal, Safety Elevator Column (Wt. Cap. 80 lbs.) (Max. Ht. 56") \$ 1044.00

Heads

- QHH-3 Instrument Geared Head (Wt. Cap. 50 lbs.) \$ 735.00
- QHH-11 Instrument Geared Head, Calibrated, Verniers on Pan and Tilt (Wt. Cap. 50 lbs.) \$ 1670.00
- QHH-5 Cam Head (Wt. Cap. 80 lbs.) \$ 869.00
- QHH-7 Cam Head (Wt. Cap. 140 lbs.) \$ 1360.00

Dollies

- QHD-1 Dolly, 4" Wheels (Use with QHT-1 Tripod) \$ 477.00
- QHD-3 Dolly, 4" Wheels (use with QHT-3 Tripod) \$ 477.00
- QHD-7 Dolly, 8" Wheels, Cable Guards (Use with QHT-1 Tripod) \$ 1199.00

Microscope Stand

- QHM-MS Microscope Stand with Pan/Tilt Head (Wt. Cap. 25 lbs.) \$ 424.00
- QHM-MB Base for Microscope Stand \$ 111.00

Accessories

- QHM-2 Second Control Arm for QHH-5, 7 Cam Heads \$ 74.00
- QHM-WP Wedge Plate and Adaptor Assy, for QHH-5, 7 Heads \$ 400.00
- QHM-ST Spike Tips (Set of 3) \$ 106.00
- QHM-HH Hi-Hat \$ 159.00
- QHM-3 "Quick-On" Instrument Mount (Wt. Cap. 60 lbs.) \$ 201.00

Refer to Green Section for Addresses and Telephone Numbers.

QUICKSET INTERNATIONAL, INC.

Heavyweight Tripods/Pedestals/Columns/ Heads/Dollies/Adaptor Chart

QuickSet Gibraltar

(Wt. Capacity 400 lbs.)

QGT-3 Heavy-Duty Field/Studio Tripod

Load Capacity: 400 lbs. (181.8kg)
Max. Height: 41 1/2" (108cm)
Min. Height: 25 9/16" (64.8cm)
Weight: 24 lbs. (10.9kg)

QGT-3 Heavy-duty crutch leg type tripod without separate elevating column mechanism 3" diameter swivel foot plate. (QGM-ST spike tips available)

QGT-5 Tripod with Elevator

Load Capacity: 200 lbs. (90.7kg)
Max. Height: 85" (215.9cm)
Min. Height: 42" (106.7cm)
Weight: 42 lbs. (19.1kg)

QGT-7 — 3/4 Size Version of QGT-5

Max. Height: 65" (165.1cm)
Min. Height: 30" (76.2cm)

QGT-5 Heavy-duty capacity tripod featuring extendable legs and geared elevator column

QGT-7 Same as QGT-5 but in 3/4 size for lower operating height

QGP-1 Mobile Pedestal

Load Capacity: 200 lbs. (90.7kg)
Max. Height: 60" (152.4cm)
Min. Height: 42" (106.7cm)
Weight: 96 lbs. (43.5kg)
Wheel Circle: 38" (96.5cm)

QGP-1 Heavy-duty mobile pedestal. Geared elevator column is housed within 8" diameter vertical tube. Radiating arms at the base house 8" wheels with cable guards

QGP-3 Counterbalance Studio Pedestal

Load Capacity: 150 lbs. (68.2kg)
Max. Height: 54" (137.2cm)
Min. Height: 36" (91.4cm)
Doorway Width: 32" (81.3cm)
Steering Wheel Dia.: 24" (60.9cm)

Weight: 250 lbs. (113.3kg)

QGP-3 Studio pedestal, counterbalanced for loads to 150 lbs.

QGH-3 Instrument Geared Head

Load Capacity: 55-200 lbs. (22.7-90.0kg)
Tilt Angle: 53° up, 67° down
Pan Rotation: 360°
Dimensions: 10" x 10" x 12" (25.4 x 25.4 x 30.5cm)

Weight: 18 lbs. (8.2kg)

QGH-5 Cam Head

Load Capacity: 375 lbs. (170.5kg)
Tilt Angle: ± 50°
Pan Rotation: 360°
Dimensions: 13" x 11" x 10" (33 x 28 x 25cm)
Weight: 46 lbs. (20.9kg)

Specify type of camera, lens and teleprompter for Cam designation.

QGH-9 Instrument Geared Head Calibrated

Same as QGH-3 with calibrations and verniers.

QHD-1 Dolly

Load Capacity: 500 lbs. (226.8kg)
Wheel Size: 4" x 1" (10.2x2.5cm)
Wheel Circle: 45" (114.3cm)
Folds to: 7" x 13" x 28" (17.8 x 33.0 x 71.1cm)
Weight: 17 lbs. (7.7kg)

QHD-1 Dolly

With 4" double lock wheels

QHD-7 Same as above with 8" wheels and cable guards



QGT-5



QGP-1

TRIPODS, PEDESTALS, AND COLUMNS

QGT-3	Heavy-duty Field/Studio Tripod, Round Foot Pad (Wt. Cap. 400 lbs.) (Max. Ht. 42")	\$ 995.00
QGT-5	Tripod, Safety Elevator Column (Wt. Cap. 200 lbs.) (Max. Ht. 85")	1535.00
QGT-7	Tripod, 3/4 size, Safety Elevator Column (Wt. Cap. 200 lbs.) (Max. Ht. 65")	1530.00
QGP-1	Mobile Pedestal, Safety Elevator Column (Wt. Cap. 200 lbs.) (Max. Ht. 60")	3800.00
QGP-3	Counterbalance Studio Pedestal (Wt. Cap. 150 lbs.) (Max. Ht. 54")	5845.00

HEADS—CAM, GEAR AND INSTRUMENT TYPE

QGH-3	Instrument Geared Head (Wt. Cap. 200 lbs.)	\$ 1505.00
QGH-5	Cam Head, Heavy-duty (Wt. Cap. 375 lbs.) (inc. Wedge Plate and Adaptor)	3760.00
QGH-9	Instrument Geared Head, Calibrated with Verniers on Pan and Tilt (Wt. Cap. 200 lbs.)	2751.00

DOLLIES

QHD-1	Dolly, 4" Wheels (Use with QGT-3 and 7)	\$ 477.00
QHD-7	Dolly, 8" Wheels with Cable Guards (Use with QGT-3 and 7)	1199.00

ACCESSORIES

QGM-ST	Spike Tips (Set of 3)	\$ 159.00
65840	Adaptor for QGH-5 Cam Head to QGT-3 Tripod	147.00
65850	Adaptor for QGH-3 or 9 Heads to QGT-3 Tripod	143.00

* Adaptor is needed for QGH-3, 5, or 9 Head.

Adaptor Chart

To Adapt To:	Samson or Rainbow Col.	Hercules	Gibraltar	Rainbow
Rainbow Pro 1000 Head (QRH-1)	24083 \$30	NA	NA	24081 \$5
Rainbow Pro 2000 Head (QRH-2)	75715 \$75	NA	NA	24080 \$5
Rainbow Cam Head (QRH-6)	STD	75760 \$60	NA	24084 \$50
Rainbow Cam/Fluid Head (QRH-7)	NA	NA	NA	24080 \$5
Rainbow 88 Fluid Head (QRH-15)	75705 \$50	NA	NA	STD
Rainbow 88 Fluid Head (QRH-23)	75705 \$50	NA	NA	STD
Samson Heads (QSH-1,3,5,9,11)	STD	75760 \$60	NA	24084 \$50
Hercules Heads (QHH-3,5,7,11)	75750 \$60	STD	69010 \$30	24060 \$105
Gibraltar Cam Head (QGH-5)	NA	NA	65840* \$145	NA
Gibraltar Geared Heads (QGH-3,9)	NA	69020 \$35	65850* \$135	NA
Pro Jr. Base Heads	75450 \$105	55410 \$70	NA	STD
Mitchell Base Heads	NA	55861 \$105	65810 \$115	NA
Transit Adaptor (ASA 3.5" x 8 thread)	75910 \$60	55901 \$65	65910 \$60	NA
75mm Claw 8all Head	NA	NA	NA	24081 \$5
100mm Claw 8all Head	NA	NA	NA	24081 \$5

* For Gibraltar tripods without columns; STD on Gibraltar column tripods

Refer to Green Section for Addresses and Telephone Numbers.

RACAL/TELEVISION EQUIPMENT ASSOCIATES, INC.

Headsets/Headphones



Single Earphone Astrolite



Double Earphone Astrolite with ventilated cushions accommodate eyeglass frames

Astrolite MK II Series Headsets/Headphones

The Astrolite MK II Series is a comprehensive range of communication and high fidelity headsets and headphones combining comfort and performance.

Astrolite features deep, soft earpads that are available in two versions: The standard noise-reducing cushion, and the ventilated (notched) cushion (provides air circulation and allows the user to hear ambient sound). In addition, all headsets are supplied with a soft padded headband. Astrolite headsets may be provided with a single earphone or with double earphones, and the double earphones can be independently wired. The choice of microphone types are: Carbon, noise-canceling carbon, electret, noise-canceling electret, dynamic, and noise-canceling dynamic. Mike level to carbon level amplifiers are available, and are located inside the earshell. The boom arm rotates either for left or right side use and has tension adjustment. Astrolite headsets are robust, reliable, and ideally suited for commercial applications which require comfort and the ability to withstand rough usage.

Applications: Astrolites are used around the world in many public and commercial areas of industry, but are especially suitable in the broadcasting and aviation fields. The single phone Astrolite is popular with users who need one ear free for telephone or intercom applications.

For Intercom Systems

Microphone Type	Carbon Systems	
	Single Earphone	Double Earphone
Carbon	2655-CS4 \$179.00	2635-CS6 \$229.00
Noise-Canceling Carbon	2654-CS4 \$199.00	2634-CS6 \$249.00
Noise-Canceling Electret with Carbon Amplifier	2657-CS4 \$339.00	2637-CS6 \$389.00
Dynamic Systems		
Moving Coil	2656-G2 \$159.00	2636-G2 \$199.00
Noise-Canceling Moving Coil	2651-G2 \$229.00	2631-G2 \$269.00
For Broadcast (Sportscaster) Systems		
Dynamic	2656-G1 (LS 136B) \$189.00	2636-G1 (LS 436B) \$229.00
Noise-Canceling Electret	2657-G1 \$269.00	2637-G1 \$299.00

Astrolite Accessories

Part No. 19405

Pair of ventilated ear cushions which eliminate ear perspiration, accommodate eyeglass frames, and permit user to hear ambient sound without removing the headset...especially good for use in broadcast booth to communicate with spotters, engineers, and other commentatorspr./\$14.00

Part No. 19408

Pair anti-perspiration covers for use with standard cushions to absorb perspirationpr./10.00

Part No. 104382

Strain relief cable clamp to attach headset cable to shirt or coat which will eliminate weight of cable from headset.29.00

Part No. 2701/28

Cough switch (spring-loaded, clickless switch to kill microphone for Sportscaster application) installed on main cable and supplied with clothing clip.55.00

Part No. 2678/80

Windscreen cover for moving coil type microphone .3.00

Part No. 8601/1

Windscreen cover for electret type microphones (supplied standard) extra as spare3.00

RACAL/TELEVISION EQUIPMENT ASSOCIATES, INC.

Headsets/Headphones

Minilite Lightweight Headset/Headphone

- Sturdy nylon headband or substitute your eyeglass frame
- Quality dynamic microphone
- Earphone pivot
- Adjustable acoustic microphone tube
- Soft funnel-like earpiece—removable
- Double sided available
- Sound collector

The Minilite is a super lightweight headset with minimum head contact and no physical ear contact. The receiver earpiece is mounted on a swivel joint and is fully adjustable in all directions so that nothing must touch the inner ear as the soft, funnel-like molding directs sound into the ear.

The microphone is acoustically coupled by means of a slim, flexible plastic tube which adjusts for optimum performances.

Overall, the Minilite is an excellent headset for use over extended periods of time. It is durable and parts are easily replaced.

- Minilite 6751** For dynamic intercom
Magnetic type \$229.00
- Minilite 6751-CS4** For carbon intercom
Amplified magnetic type. 349.00

Freedom-1 Lightweight Headset/Headphone

- Unobtrusive
- Excellent stability
- Ultra lightweight
- Noise canceling
- Hygienic
- Attractive design

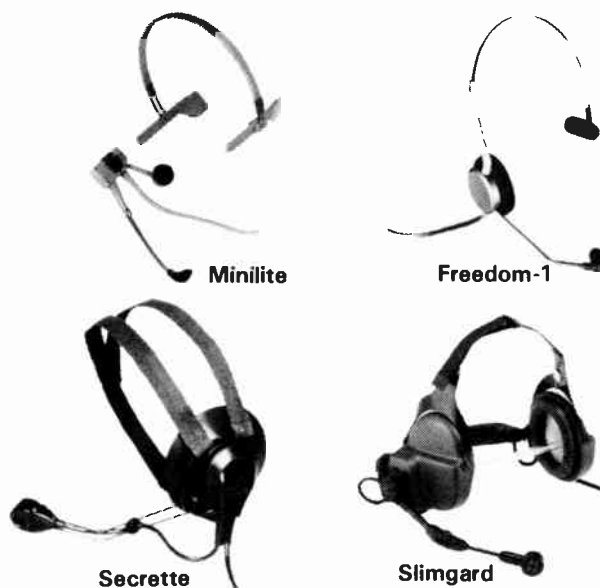
The Freedom-1 has a cushioned, flat surface receiver with a fully adjustable headband. It combines comfort with technical excellence and is geometrically designed to achieve maximum stability without the user experiencing any noticeable pressure on the head.

The noise-canceling electret microphone (which reduces background noise and eliminates outside interference) has a carbon level equivalent amplifier inside the earphone. The rugged miniature microphone is easily adjustable for the user's convenience. With an approximate weight of only 2 ozs. and maximum stability maintained at all angles, the user will hardly notice the presence of Freedom-1 when it is worn.

- Freedom-1 4000-CS4** \$299.00
- Freedom-1 4000-310** Without switch and coiled cord—Terminated plug PJ051B 229.00
- Freedom-1 4000 TEL**—Terminated modular telephone plug 229.00

Secrette Secure Headset/Headphone

- Comfortable canvas headband
- Straps secure with hook and loop fastener—quick and easy to fit
- One-piece rubber molding encloses quality earphone
- Noise canceling magnetic or carbon microphones



Secrette meets the needs of those requiring a headset which is lightweight, comfortable, single-sided, and very secure.

Originally designed for combat infantrymen, this headset will not dislodge in use—a plus for working with handheld cameras, etc. A webbing headband is attached to a light cradle around the earpiece and secured around the user's head.

Secrette is sufficiently compact to be rolled up and carried in a pocket, and the low profile of the earpiece allows the user to wear a hardhat, parka, or skicap.

- Secrette 5352** For dynamic intercom
Noise-canceling magnetic type \$179.00
- Secrette 5354-CS4** For carbon intercom
Noise-canceling carbon type 219.00

Slimgard Noise Exclusion Headset/Headphone

- Comfortable, adjustable headstrap
- Thin earshell fits under hardhat
- Comfortable foam filled earpads
- Sturdy adjustable boom arm available on either earshell
- Choice of noise-canceling microphones
- Adjustable neckband secures headset for maximum attenuation and minimum pressure

Slimgard is a lightweight, comfortable headset with ambient noise exclusion to provide communication in noisy conditions. This exclusion protects the user against hearing damage as well.










The headset is designed to fit under most safety helmets, hats and caps, and its slim profile makes it less obtrusive and unsightly than other high-noise type headsets. It is ideal for use with handheld cameras. Its ruggedness surpasses the competition.

The benefits offered by Slimgard—lightweight, noise exclusion, minimal maintenance, flexible design—make it a versatile headset for use in applications such as air traffic reporter, pilot, television camera operators covering sports and music, and other high-noise industries.

- Slimgard 3631-G2** Noise-canceling dynamic type . . . \$369.00
- Slimgard 3637-CS6** Noise-canceling amplified carbon level. 479.00
- Slimgard 3637-G1** Traffic reporter's headset 419.00

Prices and Specifications Subject to Change Without Notice.

SPECIFICATIONS FOR RACAL HEADSETS

MICROPHONES:						
	TYPE	SENSITIVITY	FREQUENCY RANGE	IMPEDANCE ohms	NOISE CANCELATION	COMMENTS
	Noise-canceling moving coil (Dynamic)	Approx. 2mV (loaded) for close loud speech	200 to 8000Hz	200 ohms	Approx. 23dB at 100Hz reducing to zero at 1.5 to 2kHz	Response designed for maximum intelligibility
	Noise-canceling carbon tropicalized	Approx. 60mV (loaded) for close loud speech with a supply of 50mA	300 to 4000Hz	40-100 ohms	17dB effective	Clip-in mounting
	Miniature carbon	Approx. 200mV (loaded) for close speech	300 to 4000Hz	30 ohms		Identical to carbon mike element used in WE 52 type headsets
	Moving coil (Dynamic)	Approx. 3mV (loaded) for close speech	50 to 15,000Hz	500 ohms		Most sensitive at midrange
	Electret	Approx. 1mV (loaded in 300 ohms) for close loud speech	100 to 10,000Hz	3.5K ohms Designed to be insensitive to load impedance.		Equally sensitive (flat) throughout range Omni-directional
	Noise-canceling Electret	Approx. 1mV (loaded in 300 ohms) for close speech	100 to 10,000Hz	3.5K ohms Designed to be insensitive to load impedance	Approx. 25dB at 100Hz reverting to a pressure operation above 2 to 3kHz	Equally sensitive (flat) throughout range. Positioning critical due to noise cancellation
	Minilite Magnetic	-85dB per 0.1 N/M ² open circuit	200 to 4000Hz	300 ohms		Response designed for maximum intelligibility
	Secrette Noise-canceling Magnetic	-85dB re 1 Volt/0.1a PA at 1000 Hz	300 to 3500Hz	50 ohms	35dB at 100Hz reducing to 0 at 3200 Hz	Response designed for maximum intelligibility
	Freedom-1 Noise-canceling Electret	-12dB + 2.5 re 1 V/PA with 100 ohm load	300 to 4000Hz	50 ohms	Approx. 25dB at 100Hz reverting to a pressure operation above 2 to 3kHz	Response designed for maximum intelligibility

EARPHONES:			
TYPE	SENSITIVITY	FREQUENCY RANGE	IMPEDANCE — ohms
ASTROLITE	0.1mW will produce a comfortable listening level of 90dB SPL (for complete headphone).	50 to 15,000Hz with standard earpads. Low frequency responses will be reduced with ventilated earpads.	200 ohms special order 300 and 6000 ohms
SUREGARD	91dB Re 2x10 ⁻⁵ Pa/lmW	100-6000Hz	300 ohms optional 5 ohm system
SLIMGARD	-88dB Re 2x10 ⁻⁵ Pa/V	100-6000Hz	200 ohms
SECRETTE	115dB Re 2x10 ⁻⁵ Pa/mW at 1kHz	100-5000Hz	300 ohms
MINILITE	115dB SPL/lmW	100-3500Hz	600 ohms special order 300 ohms
FREEDOM-1	123dB Re 2x10 ⁻⁵ Pa/IV	300-3400Hz	150 ohms

AMPLIFIERS:
<p>FOR MINILITE: Carbon Level Amplifier "R" Current Drain 7 mA Minimum terminal voltage 8V Polarity Reversing Diodes Maximum excitation 24V behind 470 ohms gain adjustable up to 44dB Design output 160mV into 150 ohms Signal to noise 60dB Response 250 to 4000Hz</p>
<p>FOR ELECTRET: Integral Amplifier PT No. 16551 for direct carbon replacement with electret microphone Output 250mV (100 load) for supply voltages greater than 12V, amplitude is reduced at lower supply voltages) A pre-set gain control gives an adjustment range of 30dB Supply Voltage 3 to 28V DC (either polarity) Current consumption 10mA (approximately) Frequency response 300 to 5000Hz Noise better than 60dB into 100 (300-4000Hz)</p>
<p>FOR FREEDOM -1: Output 250mV for 100 ohm load Terminal voltage 5V at 10mA to 10V at 100mA for 100 ohm load (equivalent to 6V-20V) Line current consumption 10mA maximum Frequency response 300 to 4kHz (effective approximate) Noise better than -60dB into 100 ohms (300-4000Hz)</p>

Cables:	
BROADCAST TYPE:	Coil cord, 10' extended, shielded microphone wires. A 3' tangent end, a bifurcation (splitter) at plug end to provide separate cable end for microphone plug and phone plug; plugs not included. (Also available with optional 6' straight cable with bifurcation.)
DYNAMIC SYSTEMS:	Astrolite and Slimgard Series: Coil cord, 10' extended, has shielded microphone wires, optional microphone switch (add \$30.00), no plug included. Minilite and Secrette Series: 6' straight cable, shielded microphone wires, optional microphone switch (add \$30.00), no plug included.
CARBON SYSTEMS:	Coil cord, 10' extended (or optional 20' extended, add \$10.00), has a 3-position microphone switch (with belf clip) and plug PJ051B for single phone (or monaural double phone). The double phone -- independently wired -- has plug 414.

2.0 Meter Antenna System

- True parabolic reflector surface
- Matched high performance Laux/Seavey feedhorn
- Galvanized reflector surface and mount
- Powder coated finish
- Infinite declination adjustments
- Bronze bearings
- Certified for 120 mph wind load
- Range tested and certified at 37.6dB gain

The 2.0 antenna system is small, only 6.5' in diameter, yet it outperforms many 8' antennas. The combination of military tolerances, additional surface area and the Laux/Seavey feedhorn provides nearly 2dB more gain than a standard 6' antenna.

2.8 Meter Antenna System

- True parabolic reflector surface
- Matched high performance Laux/Seavey feedhorn
- Galvanized reflector surface and mount
- Powder coated finish
- Infinite declination adjustments
- Bronze bearings
- Certified for 120 mph wind load
- Range tested and certified at 40.1dB gain

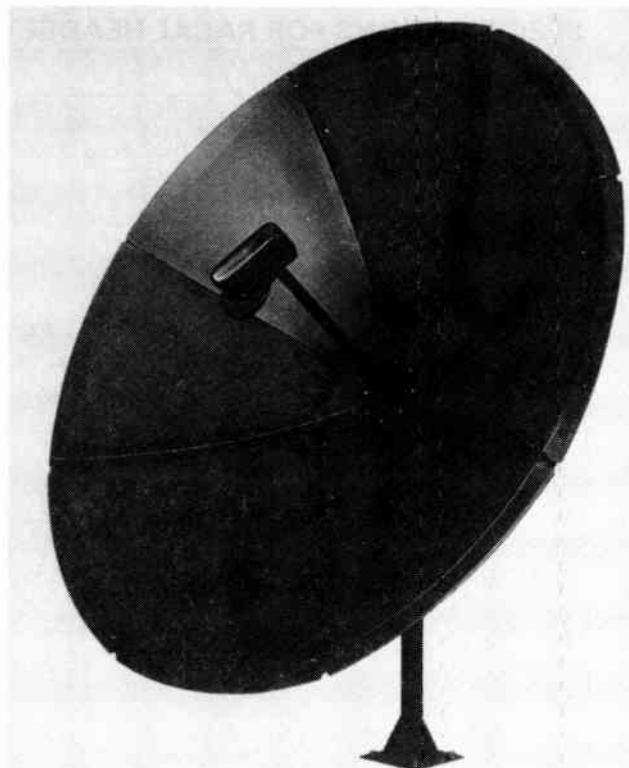
2.8 Meter PERF Antenna System

- True parabolic reflector surface
- Matched high performance Laux/Seavey feedhorn
- Galvanized reflector surface and mount
- Powder coated finish
- Infinite declination adjustments
- Bronze bearings
- Certified for 120 mph wind load
- Range tested and certified at 40.1dB gain
- C and Ku-compatible .125 perforation pattern

The 2.8 PERF antenna system provides the same high performance as the 2.8 solid antenna with the added benefit of see-through petal design that blends into any surrounding.

9.0 Meter Antenna System

- True parabolic reflector surface
- Matched high performance Laux/Seavey feedhorn
- Galvanized reflector surface and mount
- Powder coated finish
- Infinite declination adjustments
- Bronze bearings
- Certified for 120 mph wind load
- Range tested and certified at 40.1dB gain



9.0 Meter PERF Antenna System

- True parabolic reflector surface
- Matched high performance Laux/Seavey feedhorn
- Galvanized reflector surface and mount
- Powder coated finish
- Infinite declination adjustments
- Bronze bearings
- Certified for 120 mph wind load
- Fixed declination adjustments
- Range tested and certified at 40.1dB gain
- C and Ku-compatible .125' perforation pattern

The 9.0 PERF antenna system provides the same high performance as the 9.0 solid antenna with the added benefit of see-through petal design that blends into any surrounding.

Specifications:	2.0	2.8	2.8 PERF	9.0	9.0 PERF
Integrated					
C-band Gain (dB):	37.6	40.1	40.1	40.1	40.1
3dB Beamwidth:	2.45°	1.8°	1.8°	1.8°	1.8°
2° Compatible:	yes	yes	yes	yes	yes
Integrated					
Ku-band Gain:	45.3°	48.4°	48.4°	48.4°	48.4°
Focal Diameter Ratio:	.3	.3	.3	.3	.3

RADIATION SYSTEMS, INC.

Satellite Antennas

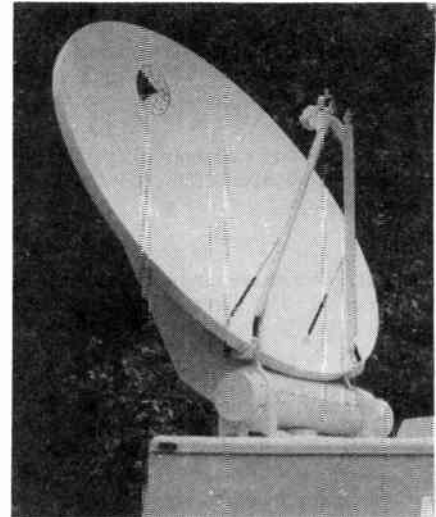
240KV 2.4 Meter Satellite News Vehicle (SNV) Antenna

The 240KV 2.4 meter antenna is a high performance Ku-Band antenna designed specifically for SNV applications. Besides meeting the FCC 2° spacing requirements, its aero-dynamic design with cycloidal drives makes it the ideal SNV antenna. The complete package mounts above the roof line resulting in cost effective installation and efficient use of vehicle space. The state-of-the-art design results in excellent beam pointing along with easy, safe stowing and deployment.

Superior RF performance and extreme ruggedness is achieved through the monocoque construction consisting of 16 front and rear skins reinforced with radial ribs. The panel skins are formed from high strength 6061-T6 aluminum sheets using the exclusive AccuShape* process, assuring extremely accurate contouring and long-life durable structure. The reflector assembly is attached to a structural spine that also acts as a weatherproof electronics enclosure for the LNA, waveguide switch and HPA.

The corrugated feed horn provides excellent illumination characteristics at the 14.0-14.5GHz transmit frequency band. The secondary patterns meet the FCC transmit pattern envelope required for 2° satellite spacing. The feed horn also provides excellent on-axis and off-axis cross-polarization specifications yielding 35dB and 30dB respectively.

The feed is connected to a broad band orthomode transducer providing rectangular WR-75 waveguide ports which operate across the 11.7-12.2GHz receive and 14.0-14.5GHz transmit bands. Each orthogonal port can be used in either a transmit or receive mode which allows easy verification of cross-polarization discrimination via waveguide switch actuation. By adding a diplexer and filter to either or both ports, the feed system can be easily configured initially or upgraded later to 3-port or 4-port operation.



The feed horn, OMT, and polarization drive components are located at the antenna focal point. The assembly is held in position by two hinged rigid legs which support cables and waveguide, and dual gas cylinder struts which extend into position as the reflector is deployed.

Gain(Midband) R/T ¹	Receive	Transmit
4-Port ²	47.4dBi	48.8dBi

¹Referenced at rear of reflector and includes waveguide loss.

²Referenced at rear of reflector and includes waveguide and diplexer losses.

500CS(C-Band) and 500KS(Ku-Band) 5.0 Meter Satellite Earth Station Antennas

The 500CS and 500KS are designed for use with video, message and data networks. They meet FCC radiation pattern requirements for operation at 2° satellite spacing. They also meet current Intelsat and Eutelsat radiation pattern specifications.

Superior RF performance is achieved through the use of twenty-four precision AccuShape* reflector panels and a prime focus feed. The high-strength aluminum reflector panels are supported by an identical number of lightweight trusses. All panels are completely interchangeable. A mounting plate interfaces the trusses to the mount. No alignment or testing of the reflector during installation is necessary.

The feed is a corrugated ground plane aperture which yields very circular symmetric illumination characteristics. Additionally, the design provides excellent cross polarization isolation performance. The standard Ku-Band feed is capable of dual receive or receive/transmit output configurations. Optional diplexer assemblies can convert this feed to a 3-port (2-Rx, 1-Tx) or 4-port (2-Rx, 2-Tx) configuration. The feed is supported by a quadrapod spar configuration for optimum secondary pattern control.

The galvanized steel mount employs a straightforward elevation-over-azimuth geometry to allow easy pointing to any visible satellite within the orbital arc. A margin of safety has been built into the design to ensure antenna support under adverse environmental conditions. The mount's stiff, rugged construction provides the pointing accuracy needed for either C-Band or Ku-Band operation.

The tripod mount design allows for easy installation on three concrete piers. Each pier is typically 18" diameter and 8' deep. Only about two cubic yards of concrete are needed. The antenna is sensitive to foundation heading due to its ability to be pointed 360° in azimuth.



Frequency	C-Band Models 500CS (with Linear Receive/ Transmit Feed)		Ku-Band Models 500KS (With Linear Receive/ Transmit Feed)		
	Receive	Transmit	Receive ¹	Receive ¹	Transmit
	3.7-4.2GHz	5.925-6.425GHz	10.95-11.2GHz	11.7-12.2GHz	14.0-14.5GHz
Gain (Midband)	44.2dBi	48.0dBi	52.9dBi	53.6dBi	55.0dBi

¹Choose one receive band. Other bands and special wideband feeds are available.

*AccuShape is a precision metal contouring process proprietary to Radiation Systems, Inc.

Prices and Specifications Subject to Change Without Notice.

RADIATION SYSTEMS, INC.**Satellite Antennas****C-Band Satellite Earth Station Antennas**

- 551CF 5.5 Meter
- 700CH 7.0 Meter
- 920CS 9.2 Meter

These antennas are designed for economical, high performance video, message and data communications. They meet the Intelsat Standard F-1 performance specification.

The antennas employ precision AccuShape* reflector panels and dual shaped Cassegrain optics. The feeds have corrugated horns for high cross-polarization isolation levels.

Twenty-four high-strength aluminum panels provide the durability needed to withstand rough handling and a wide range of environmental conditions. The panels are mounted to radial members which attach to a central hub. No alignment or testing of panels during installation is necessary. The hub also provides a weather resistant enclosure for protection of low noise amplifiers and other electronic components.

The elevation-over-azimuth mount consists of an upper elevation trunion rotating on a heavy-duty ball bearing and supported by a tubular steel kingpost. The mount is available in both manual and motorized versions. Manual elevation and azimuth positioning is accomplished with threaded rod assemblies. Pointing angles are read from dial indicators on the mount.

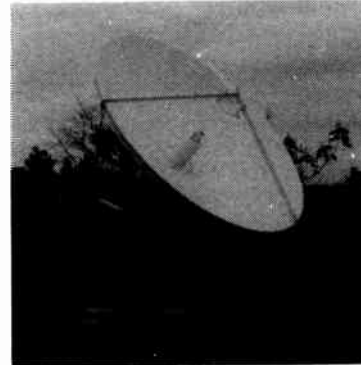
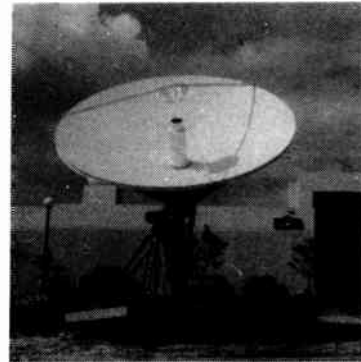
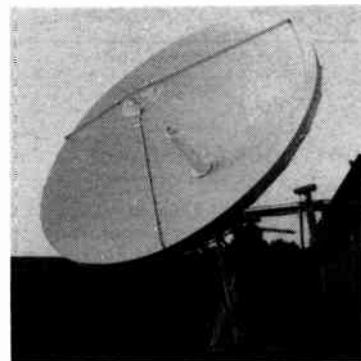
Interface to a foundation or rooftop platform is via a circular symmetrical eight-hole flange on the bottom of the kingpost. Foundation heading is not a critical factor due to the unique kingpost design which allows unrestricted 360° azimuth positioning during installation. Once the desired azimuth operational sector is determined, the azimuth drive unit is secured and the position is calibrated. The azimuth operational sector is 45° for the manual drive and 120° for the motorized version. This sector can be shifted at any time without special tools.

Optional motorized jackscrew actuators are used for the elevation and azimuth axes and a polarization drive unit rotates the feed. These drive options can be easily added to a manual antenna in the field.

The optional Series 4000 microprocessor-based programmable control system is capable of positioning the antenna to within .02° accuracy. In the manual mode, it allows an operator to run or jog each axis while monitoring the position on a panel display. In the automatic mode, it can store up to 40 satellite positions and automatically direct the antenna to any position according to a preprogrammed schedule. Options are available for program track and for controlling other earth station components.

An economical 3-axis jog controller, the 4050, is also available.

	Receive Frequency (Midband)	Receive Gain	Transmit Frequency	Transmit Gain
551CF	3.7-4.2GHz	45.3dBi	5.925-6.425GHz	49.2dBi
700CH	3.7-4.2GHz	47.6dBi	5.925-6.425GHz	50.3dBi
920CS	3.7-4.2GHz	50.1dBi	5.925-6.425GHz	53.6dBi

**551CF****700CH****920CS****Options**

- Motorized drives with programmable 3-axis (elevation, azimuth, polarization) controller
- 180° azimuth travel in two 90° sectors
- 145° azimuth travel in overlapping 110° and 90° sectors
- De-icing systems
- Feeds with the following polarizations:

Receive Only

Single linear
Dual linear
Dual circular

Receive/Transmit

Orthogonal linear
Circular
Coplanar linear
3-port linear frequency reuse
4-port frequency reuse (linear or circular)

- Work platform and ladder
- Lightning arrestors
- Hub fans, light and duplex AC outlet

*AccuShape is a precision metal contouring process proprietary to Radiation Systems, Inc.

RADIATION SYSTEMS, INC.**Antennas****1100CS/1100KS****11.3 Meter Satellite Earth Station Antenna**

- Qualified for 2° satellite spacing
- Outstanding sidelobe performance
- High gain
- 180° azimuth capability ensures coverage of future 55°-143° orbital arc
- Large, weather resistant hub for mounting electronics

The Model 1100CS (C-Band) and 1100KS (Ku-Band) earth station antennas are engineered for high gain and low sidelobes to meet the demanding requirements of high capacity satellite communications. Their high performance radiation patterns allow easier frequency clearance in areas congested with terrestrial microwave routes and enable them to operate with satellites spaced 2° apart. They are recommended in applications for quality domestic transmission and reception of video, voice, message and data. The Model 1100CS is also suitable for international Intelsat B stations.

Options

- Motorized drives with manual or programmable controllers
- Work platform and ladder
- 180° azimuth travel in two 90° sectors
- 145° azimuth travel in overlapping 110° and 90° sectors
- Deicing systems. Manual and automatic versions for feed and subreflector, half reflector and full reflector
- Feeds with the following polarizations:

Receive Only	Receive/Transmit
Single linear	Orthogonal linear
Dual linear	Circular
Dual circular	Coplanar linear
	3-port linear frequency reuse
	4-port frequency reuse (linear or circular)

- Lightning arrestors
- Hub fans, light and duplex AC outlet

700CS/700KS**7 Meter Satellite Earth Station Antenna**

- High performance RF patterns
- Qualified for 2° satellite spacing
- Programmable control system
- Protection and maintenance of LNA's afforded by extra large hub
- Stiff, rugged mount for accurate pointing

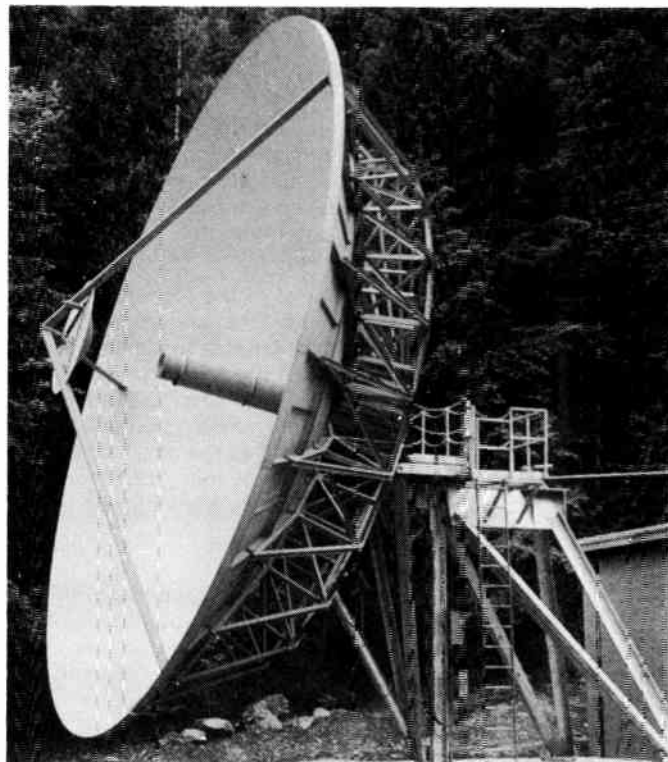
The 700CS (C-Band) and 700KS (Ku-Band) 7-meter antennas are designed for high performance video, message and data applications. These antennas meet the new FCC requirements for 2° satellite spacing.

Options

- Motorized drives with programmable 3-axis (elevation, azimuth, polarization) controller
- 180° azimuth travel in two 90° sectors
- 145° azimuth travel in overlapping 110° and 90° sectors
- Deicing systems
- Feeds with the following polarizations:

Receive Only	Receive/Transmit
Single linear	Orthogonal linear
Dual linear	Circular
Dual circular	Coplanar linear
	3-port linear frequency reuse
	4-port frequency reuse (linear or circular)

- Work platform and ladder
- Lightning arrestors
- Hub fans, light and duplex AC outlet

**1100CS/1100KS****551CF/551KS****5.5 Meter Satellite Earth Station Antenna**

- Ku-Band model qualified for 2° satellite spacing
- Rugged kingpost mount has 360° azimuth travel
- Easy to install on rooftop or ground foundation
- Large hub for protection and maintenance of electronics
- Optional motorized drives

The 551CF (C-Band) and 551KS (Ku-Band) antennas are designed for economical, high performance video, message and data communications. The 551CF meets the Intelsat Standard F-1 performance specification. The Model 551KS meets the FCC requirements for 2° satellite spacing and the Intelsat Standard E-2 performance specification.

Options

- Feed blower for Ku-Band feed
- Motorized drives with 3-axis (elevation, azimuth, polarization) programmable or jog controls
- Deicing systems
- Feeds with the following polarizations:

Receive Only	Receive/Transmit
Single linear	Orthogonal linear
Dual linear	Circular
Dual circular	3-port linear frequency reuse
	4-port frequency reuse (linear or circular)

- Lightning arrestors
- Hub fans, light and duplex AC outlet
- Low temperature protection for motorized drives

RADIATION SYSTEMS, INC.**Antenna Control Systems****4050 Antenna Control System**

- Economical, reliable antenna positioning control system
- Independent control of azimuth, elevation, and polarization axes
- Up to 1000' of remote capability
- Easy to operate

The 4050 Antenna Control System is designed to be a low-cost, 3-axis control system used in applications requiring antennas ranging in diameter from 5.0 meters up to 11.3 meters. The system includes the 4050 Antenna Control Unit, the 4051 Contactor Unit, position sensing potentiometers, motor drive limit switches, and associated cables.

The 4050 allows the operator control of the azimuth, elevation, and polarization axes individually, or simultaneously, via front panel toggle switches. The angular position is displayed by a panel meter located on the front of the control unit. Selection of the axis readout is controlled by rotating a selector switch located on the front panel to display the position data for azimuth, elevation or polarization. A range of 0°-350° is provided for azimuth, 0°-90° for elevation and $\pm 120^\circ$ for polarization. A calibration circuit for each axis is located inside the 19" wide rackmounted chassis.

4051 Contactor Unit

The 4051 interfaces with three drive motors, the motor drive limit switch outputs and data potentiometers by means of a multiple pair cable that connects to the contactor box. AC reversing relays located inside the contactor box are used to control the voltage applied to each drive motor.

Series 4000 Antenna Control System

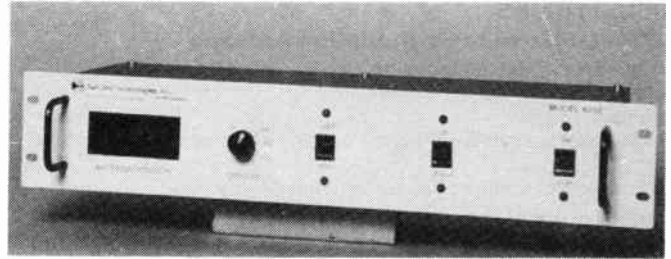
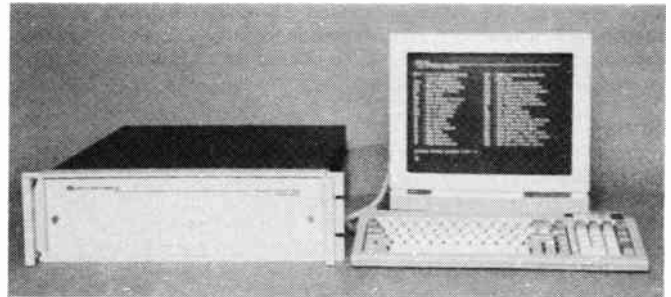
- Stores and accesses up to 40 satellite positions
- Modern microprocessor-based design
- Simple to operate with prompt/response command and data entry
- Allows automatic repositioning per a preprogrammed schedule
- Remote control capability through RS-232C interface port

The Series 4000 microprocessor-based antenna control system is designed for use with SatCom Technologies' 5.0 meter through 11.3 meter diameter satellite earth station antennas. The system consists of the 4010A Antenna Control Unit; the 4020A Local Control and Contactor Unit; 4030 Optical Position Encoders; video terminal and control cable. By precisely controlling azimuth, elevation and polarization drives, the system can position the antenna within .02° accuracy.

4010A Antenna Control Unit

The 4010A is a microprocessor-based programmable controller which allows manual and automatic positioning of the antenna. It is housed in a standard 19" wide rackmounted chassis and is connected to the 4020A Local Control and Contactor Unit via up to 2000' of control cable. Precision optical encoders on each antenna axis ensure accurate and reliable position monitoring.

Operator interface to the 4010A is via the video terminal which provides full alphanumeric capability. Antenna commands are selected with simple abbreviations. A menu page is available listing all commands for review, or alternatively, they may be displayed and grouped into functional categories. All commands (motive or data entry) are presented in prompt/response format, guiding the operator to the desired result.

**4050****4010A**

In the manual mode, the 4010A allows run or jog of each axis. In the automatic mode, several types of operation are available. The operator can enter satellite longitude and the 4010A will automatically compute the proper azimuth, elevation and polarization angles. It will then activate all axes of the antenna until the position is attained, and store the position data in memory. To access any satellite position previously stored, the operator can review a list which identifies each satellite by name and number. Alternately, he can bypass the list and directly access a specific satellite by its number. Finally, the operator may enter a schedule of up to 100 entries consisting of satellite, date and time, and the controller will automatically reposition the antenna per the schedule. Battery back-up is included to retain data and clock during power outages.

The 4010A includes an RS-232C serial data interface port which allows remote monitor and control of the antenna. Options are available to include remote selection of receiver channels, indication of signal strength and control of other system functions.

4020A Local Control and Contactor Unit

The 4020A includes motor starters, reversing contactors and overload protection for each drive motor. The components are mounted in a NEMA 4 enclosure suitable for mounting on the antenna kingpost. All wiring and components are per the National Electric Code.

Local control of each axis is provided by switches mounted on an interlocking door inside the enclosure. A power switch on this door must be deactivated manually before gaining access to the high voltage components.

Options

- Remote monitor and control of receivers and other system equipment
- Program track
- Protection against transients and lightning induced surges

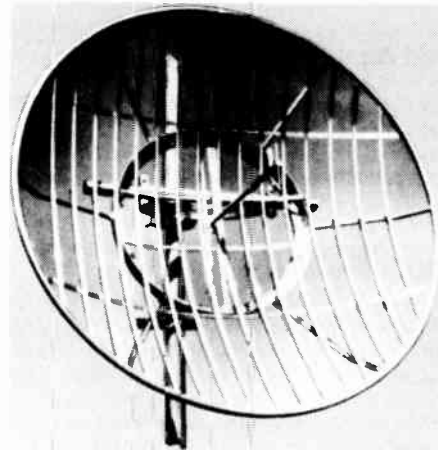
RADIATION SYSTEMS, INC.**Antennas****Microwave Grid Parabolic Antennas**

- Meet or exceed all existing F.C.C. requirements
- Lightweight, yet extremely strong. Electrical characteristics equal to comparable diameter solid parabolic reflectors
- Cross polarization discrimination response exceeds 40dB
- Wind loading characteristics only 25 to 40% of comparable size solid parabolas
- De-icing available on all models
- Nesting design for shipping ease and economy
- Survival: 125 mph with 1" of ice

Mark Antennas Division offers a variety of sizes of heliarc welded aluminum multi-element grid parabolas for point-to-point relay operation in the 335 to 2700MHz frequency range. The patented (U.S. No. 2,850,735; Canada No. 545,296) grid of construction is lightweight, yet extremely strong. One of the outstanding advantages of the grid antenna is that it has wind loading characteristics of only 25 to 40% of comparable size solid parabolas.

Heated grid parabolas come with completely installed de-icing equipment. The lead jacketed heater cable is securely mounted to the back side of each grid element and terminated in a weather-proof cast aluminum enclosure. The thermostat is preset to activate when the temperature drops to the ice forming range. De-icing power is applied only between 25 and 35°F.

Standard termination of all parabolas in the 335 to 2700MHz range is 7/8" EIA swivel flange or "N" female. (Please specify).



The grid parabola is made of heavy walled, aluminum pipe heliarc welded for superior strength and rigidity. Feeds are constructed of heavy brass components protected against oxidation. The radiator's active element is protected by a durable Teflon (335-960MHz) or Plexiglass (1400-2700MHz) feed housing which assures long life with trouble free operation, with up to 10 psi pressurization.

VSWR is 1.3:1 or better on all antennas listed. Low VSWR to 1.06:1 is also available. When ordering, please specify size, exact operating band, pressurized or non-pressurized, heated or non-heated. 7/8" EIA swivel flange supplied on non-pressurized feeds, with "N" female termination as an option.

Specifications 890-960MHz

Diameter	Model Number	Gain-dBi Midband	Half Power B/W	F/B Ratio	Max. VSWR		Windthrust 100 MPH
					STD	LOW	
4'	P-9A48G	18.9	19.8°	28	1.3	*	180
6'	P-9A72G	22.0	11.0°	28	1.3	*	300
8'	P-9A96G	25.0	9.3°	29	1.3	*	500
10'	P-9A120G	26.8	7.6°	30	1.3	*	700
12'	P-9A144G	28.5	6.1°	31	1.3	*	950
15'	P-9A180G	30.0	5.2°	32	1.3	*	1700

890-960MHz Pressurized

Mount to 1.9" - 3.5" Pipe			Mount to 4 1/2" Pipe	
4'	P-9A48G-1	\$ 890.00	P-9A48G-2	\$ 990.00
6'	P-9A72G-1	1,110.00	P-9A72G-2	1,310.00
8'	P-9A96G-1	1,760.00	P-9A96G-2	1,980.00
10'	P-9A120G-1	2,450.00	P-9A120G-2	2,590.00
12'	—	—	P-9A144G-2	4,340.00
15'	—	—	P-9A180G-2	10,515.00

890-960MHz Non-Pressurized

Mount to 1.9" - 3.5" Pipe			Mount to 4 1/2" Pipe	
4'	P-9A48GN-1	\$ 900.00	P-9A48GN-2	\$ 1,000.00
6'	P-9A72GN-1	1,125.00	P-9A72GN-2	1,325.00
8'	P-9A96GN-1	1,775.00	P-9A96GN-2	2,000.00
10'	P-9A120GN-1	2,460.00	P-9A120GN-2	2,600.00
12'	—	—	P-9A144GN-2	4,350.00
15'	—	—	P-9A180GN-2	10,525.00

For Heated Grid Antennas Add "/HC" After Model Number. Add the Following to Price:

	Under 1000MHz	Over 1000MHz
4'	\$ 700.00	\$ 800.00
6'	825.00	1,025.00
8'	1,175.00	1,575.00
10'	1,400.00	1,750.00
12'	-	2,800.00
15'	-	3,425.00

*Low VSWR Application—
Additional for Spot Frequency

RADIATION SYSTEMS, INC.

Antennas

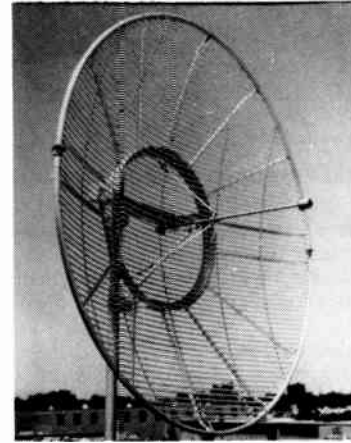
Microwave Grid Parabolic Antennas

- Meet or exceed all existing FCC requirements
- Lightweight, yet extremely strong. Electrical characteristics equal to comparable diameter solid parabolic reflectors
- Cross polarization discrimination response exceeds 40dB
- Wind loading characteristics only 25 to 40% of comparable size solid parabolas
- De-icing available on all models
- Nesting design for shipping ease and economy
- Survival: 125 mph with 1" of ice

Mark Antennas Division offers a variety of sizes of heli-arc welded aluminum multi-element grid parabolas for point-to-point relay operation in the 335 to 2700MHz frequency range. The patented (U.S. No. 2,850,735; Canada No. 545,296) grid of construction is lightweight, yet extremely strong. One of the outstanding advantages of the grid antenna is that it has wind loading characteristics of only 25 to 40% of comparable size solid parabolas.

Heated grid parabolas come with completely installed de-icing equipment. The lead jacketed heater cable is securely mounted to the back side of each grid element and terminated in a weather-proof cast aluminum enclosure. The thermostat is preset to activate when the temperature drops to the ice forming range. De-icing power is applied only between 25 and 35°F.

Standard termination of all parabolas in the 335 to 2700MHz range is 7/8" EIA swivel flange or "N" female. (Please specify.)



The grid parabola is made of heavy walled, aluminum pipe heli-arc welded for superior strength and rigidity. Feeds are constructed of heavy brass components protected against oxidation. The radiator's active element is protected by a durable Teflon (335-960MHz) or Plexiglass (1400-2700MHz) feed housing which assures long life with trouble-free operation, with up to 10 psi pressurization.

VSWR is 1.3:1 or better on all antennas listed. Low VSWR to 1.06:1 is also available. When ordering, please specify size, exact operating band, pressurized or non-pressurized, heated or non-heated. 7/8" EIA swivel flange supplied on non-pressurized feeds, with "N" female termination as an option.

Model Number	Diameter	U.S. FCC Cat.	Low	Gain-dBi Mid	High	Half Power B/W	F/B Ratio	Windthrust 100MPH	Price
450-470MHz									
P-5A48G	4'	—	12.8	13.1	13.3	37.0°	25	180	\$ 990.00
P-5A72G	6'	—	17.7	17.0	17.2	23.0°	25	300	1,310.00
P-5A96G	8'	—	18.6	18.9	19.1	18.1°	26	500	1,980.00
P-5A120G	10'	—	21.2	21.5	21.7	13.0°	27	700	2,590.00
P-5A144G	12'	—	21.9	22.2	22.4	12.5°	28	950	4,340.00
P-5A180G	15'	—	24.6	24.9	25.1	9.0°	29	1700	10,515.00
470-890MHz									
P-6A48G	4'	—	13.0	16.2	18.5	25.0°	25	180	990.00
P-6A72G	6'	—	16.5	19.7	22.0	16.6°	27	300	1,310.00
P-6A96G	8'	—	19.0	22.2	24.5	12.5°	28	500	1,980.00
P-6A120G	10'	—	21.0	24.2	26.5	10.0°	29	700	2,590.00
P-6A144G	12'	—	22.5	25.8	28.0	8.6°	30	950	4,340.00
P-6A180G	15'	—	24.5	27.7	30.0	6.7°	31	1700	10,515.00
1900-2300MHz									
P-22A48G	4'	B	25.8	26.2	26.8	8.0°	32	250	1,055.00
P-22A72G	6'	B	28.9	29.5	30.1	5.4°	36	500	1,650.00
P-22A96G	8'	A	31.4	32.0	32.6	4.1°	39	800	2,550.00
P-22A120G	10'	A	33.2	34.1	34.7	3.2°	44	1300	3,350.00
P-22A144G	12'	A	35.0	35.5	36.1	2.7°	45	1500	5,200.00
P-22A180G	15'	A	36.7	37.5	38.1	2.2°	47	2700	11,765.00
2300-2500MHz									
P-24A48G	4'	B	26.8	27.5	27.7	6.7°	36	250	1,055.00
P-24A72G	6'	B	30.1	30.6	31.1	4.8°	36	500	1,650.00
P-24A96G	8'	A	32.6	33.1	33.6	3.6°	39	800	2,550.00
P-24A120G	10'	A	34.7	35.1	35.6	2.8°	43	1300	3,350.00
P-24A144G	12'	A	36.1	36.8	37.3	2.4°	46	1500	5,200.00
P-24A180G	15'	A	38.1	38.6	39.1	1.9°	48	2700	11,765.00
2500-2700MHz									
P-25A48G	4'	B	27.7	28.0	28.2	6.6°	33	250	1,055.00
P-25A72G	6'	B	31.1	31.4	31.6	4.4°	36	500	1,650.00
P-25A96G	8'	A	33.6	33.9	34.1	3.3°	39	800	2,550.00
P-25A120G	10'	A	35.6	35.8	36.0	2.7°	44	1300	3,350.00
P-25A144G	12'	A	37.3	37.4	37.6	2.2°	46	1500	5,200.00
P-25A180G	15'	A	39.1	39.3	39.5	1.8°	47	2700	11,765.00

RADIATION SYSTEMS, INC.

Antennas

Mini Grid and Short Haul Cylindrical Antennas

- Point-to-point communication
- TV translator/transmitter
- Telemetry
- Off the air UHF pickup

The Mini Grid and Short Haul antennas provide low cost installations for satellite telemetry, TV translator and point-to-point communications.

These antennas offer a new Heliarc-welded aluminum multi-element grid parabolic section antenna for point-to-point communication in the 335-960MHz frequency range.

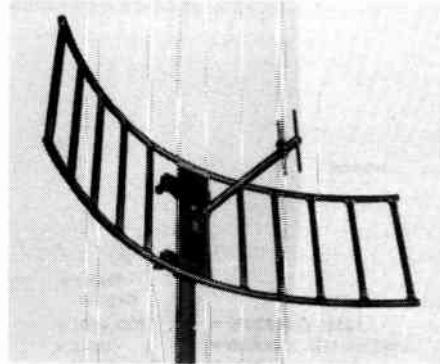
The unique grid construction is patterned after the patented grid design used on all Mark full-sized grid parabolas.

Feed components are constructed of heavily plated solid brass, and the active element of the radiator is protected by a durable Teflon feed housing to assure long life with trouble-free non-pressurized operation.

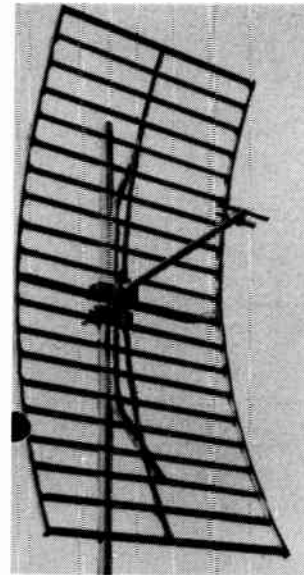
Standard input termination is a type "N" female (UG-58) coaxial connector.

Simplified mounting utilizes universal clamps for quick, easy installation to round members up to 3 1/2" diameter.

Please specify exact operating frequency (maximum bandwidth is 20MHz).



MG-944GN



SH5A72GN

MG-9A44GN Mini-Grid

Specifications

Electrical

Frequency:	890-960MHz
Bandwidth:	Max. 20MHz
Gain at 950MHz:	13.5dBi
Max. Minor Lobe Ratio:	15dB
Impedance:	50 ohm
VSWR:	1.3:1 max. across band
Horiz. Beam Width:	18 max. (1/2 power)
F/B Ratio:	23dB
Max. Power:	100W
Termination:	"N" female (UG-58)

Mechanical

Weight	
Net:	7 lbs.
Domestic Pack:	12 lbs.
Export Pack:	31 lbs.

Dimensions

Width:	44"
Height:	13 1/2"
Depth (incl. feed & mounting):	17"

Wind Survival: 150 mph

Wind,

Operational:	100 mph (w/1/2" radial ice)
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MG-9A44GN\$425.00

SH5A72GN Short Haul Antenna Specifications

Electrical:	350-675MHz
Gain:	Min. 15.0dBi at 460MHz
Max. Minor Lobe Ratio:	15dB
Impedance:	50 ohm
VSWR:	1.3:1 max. 20MHz bandwidth; 1.1:1 spot frequency

Horiz. Beam

Width:	Max. 19° at 460MHz (1/2 power)
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F/B Ratio:	21dB
Max. Power:	300W
Termination:	"N" female (UG-58)

Mechanical

Weight:	30 lbs.
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Dimensions

Width:	72"
Height:	36"
Depth (incl. feed and mounting):	36"

Wind Survival: 150 mph

Wind,

Operational:	100 mph (with 1" radial ice)
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SH5A72GN\$690.00

SH6A72GN Short Haul Antenna Specifications

Electrical	
Frequency:	675-960MHz
Gain:	Min. 19dBi at 890MHz
Max. Minor Lobe Ratio:	15dB
Impedance:	50 ohm
VSWR:	1.3:1 max. 20MHz bandwidth; 1.1:1 spot frequency

Horiz. Beam

Width:	Max. 13° at 890MHz
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F/B Ratio:	20dB
Max. Power:	300W
Termination:	"N" female (UG-58)

Mechanical

Weight:	30 lbs.
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Dimensions

Width:	72"
Height:	36"
Depth (incl. feed and mounting):	36"

Wind Survival: 150 mph

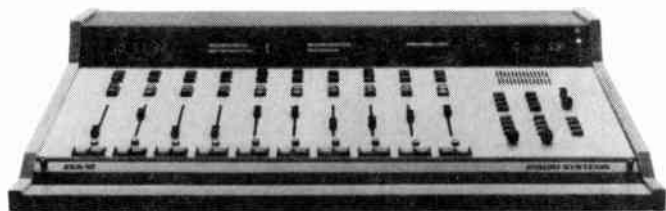
Wind,

Operational:	100 mph (with 1" radial ice)
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SH6A72GN\$690.00

RADIO SYSTEMS, INC.

Broadcast Console/Audio Equipment



ESA-10

ESA-10 Broadcast Console

Standard Features

- Thirty Inputs into Ten Linear Faders
- Two Stereo Outputs, Each with Mono Mixdown
- Time of Day Clock
- Digital Timer
- Three Stereo LED Meters

Performance Features

- Ten Remote Start Circuits
- Three Monitor Sends
- Three Muting Circuits
- Three Way Programmable Cue Circuitry
- Internal Cue Amp and Speaker
- Simultaneous Program and Audition Sends
- Two, Four Position Auxiliary Switchers

The ESA-10 offers every standard console operating function. Total flexibility is obtained by allowing user programming of all operator functions and, by providing the widest range of interface with other control room equipment. Special control abilities, make this console the most flexible board in its class. The audio quality and dependable performance combine to make the Radio System ESA-10 the choice in broadcast consoles.

ESA-10 \$9,950.00



DA-8/16

DA-8/16 Distribution Amplifiers

Total isolation: The DA-16 provides 8 stereo or 16 mono, independent audio outputs from one input. The DA-8 provides 8 mono outputs. Each output is completely isolated and has an individual level control. A single feed can be routed to multiple locations of varying level requirements and impedance, protecting the integrity of the signal quality through every output.

Studio agile: Bridging inputs allow these DA's to be connected to a program feed with no line loading. A typical studio application is to connect the DA in parallel with the console air output for distribution of the program signal to other feeds.

Transparent audio: Ultra-low noise levels, fast transient response and low distortion insure that the signals at the output of the DA are an exact image of the input. Only one type, high quality op-amp integrated circuit is utilized for all input and output amplification.

Intelligent packaging: Level controls are accessible, yet tamper resistant, through front panel access holes. All connections are made on convenient, full sized, rear panel barrier strips.

The entire DA occupies only one unit (1³/₄") of rack space.

DA-8— 1 x 8 \$345.00
DA-16— 2 x 16 425.00



TM-2

TM-2 Studio Timer

This easy to operate studio timer counts time up in one second intervals. Six bright, 5/8" high, seven-segment, LED digits display times up to 24:59:59.

Front panel pushbuttons allow operator control of timer functions. "Reset" returns the display to 00.00.00 when in either the run or stop modes. "Start" initiates or continues the count and "Stop" holds the display reading constant. These functions are all remotable through rear panel connections.

Last-event timing can be accomplished by connecting the studio timer to external source equipment through rear panel remote reset terminals. Each terminal is isolated and capacitively coupled so that machines will not interact and the timer will reset (and, if in the run mode, begin to count again) from either a pulsed or holding connection. This reset function can be activated by ground or positive voltage connections.

TM-2 \$175.00
TM-2R w/Remote starts 195.00



PA-1

PA-1 Phono Pre-Amplifier

Real RFI immunity: Input and output RF suppression and ground-plane circuit technology block RF interference, eliminating the need to resort to distortion-prone audio transformers.

Quiet performance: It is hard to tell that the PA-1 is on until you place the stylus on the record. A combination of discrete and integrated circuit components in the input stage yield low noise specifications. Crosstalk between channels is also so low that the PA-1 makes the perfect dual pre-amp for two channel, mono use.

Responsive design: Uniformly high-speed circuitry, with response up to the MHz range, insures the unit's capability to reproduce even the fastest music peaks. Second stage equalization buffers the cartridge for loading changes and provides broadband high input overload protection. Slew induced distortion, transient intermodulation, and input clipping are virtually non-existent.

PA-1 \$295.00

RADIO SYSTEMS, INC.

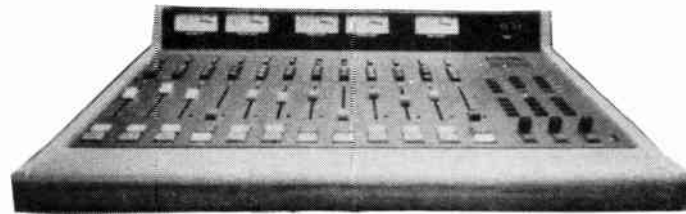
Audio Consoles/LED Meter and Microphone Preamp System

RS-6/12/18 Consoles

• Differentially balanced input instrumentation amplifiers • Input gain set jumpers and selectable input attenuators, nominal input levels from -60dBm to +10dBm. Max. input level +22dBm • Active balanced line outputs, adjustable 0dBm to +10dBm, max. output +22dBm • Headphone output 1VRMS, 10VRMS max. 600 ohm headphone .05% typical, .1% max. distortion • Monitor sends: 1VRMS nominal, 10VRMS max. 330 ohm unbalanced • Cue input: 2WRMS

Specifications

Impedance: +20K ohm or jumper selected
Headroom: 22dBm at any level
Line Outputs
Impedance: 100 ohm balanced
Distortion: .02% nominal, .05% max., 20Hz to 20kHz, PGM, Aud., and Mono outputs
S/N Ratio: Line: 88dB (or better)
 Mike: 74dB (or better)
Dimensions: 6-Channel—20³/₄" H x 27" W x 9" L
 12-Channel—32³/₄" H x 27" W x 9" L
 18-Channel—44³/₄" H x 27" W x 9" L



KC-1000 SRP

	RS-6	RS-12	RS-18
Console	\$3995.00	\$5995.00	\$7995.00
Copy Stand	195.00	225.00	255.00
Punch-Block Harness	750.00	1250.00	1850.00

System Options

DA Card	\$ 195.00
Squawk Box Card (with 4-position switcher)	225.00
Squawk Box Speaker—Wall Mount or Tabletop	55.00
4-Channel External Input Switcher	225.00
Dual Relay Box	95.00
Talent Control Center—with Timer	895.00

DM-1 Stereo LED Meter

- Packaged for stand alone use
- Tri-colored and switchable for peak level or VU indication
- One double sized segment lights and holds to display audio peaks
- Internal, independent level sets are provided for left, right and peak-hold channels
- Available in counter top box or rackmounted in groups of 1, 2, 3 or 5 meters

Dimensions

1¹/₄" H x 4¹/₂" W — bezel size
 2³/₄" H x 6" W x 5" D — required panel space (for custom mounting)
 2³/₄" H x 6" W x 5" D — tabletop box
 3¹/₂" H x 19" W (2 rack units) — 1, 2, 3, meter rackmounts
 7" H x 19" W (4 rack units) — 5 meter rackmounts
DM-1 \$ 475.00



DM-1

DM-1B Without box for custom mounting	\$ 465.00
DM-1R Single meter rackmount	495.00
DM-2R Dual meter rackmount	960.00
DM-3R Three meter rackmount	1425.00
DM-5R Five meter rackmount	2355.00

Microphone Preamp and DCX Circuit Boards/Power Supplies and Cabinets

"DCX" stands for "DC eXternal." It's a unique system of circuit boards, power supplies, and cabinets which are all supplied separately. Combine them to make custom products—each ideally suited to your requirements.

All circuit boards are the same size for easy installation in any DCX cabinet. These boards can be "buddied up" for dual usage — Dissimilar DCX circuit boards can be combined in the same cabinet. Match any DCX circuit card with the internal power supply board. The independent ±18V, regulated 36W power supply will power multiple units — With this much flexibility, you are free to design your own products which fit your application exactly.

Circuit cards	\$69.00
DC-PS181 Internal power supply	\$ 89.00
DC-PS36X External power supply	99.00
DC-CBU Universal box cabinet	39.00
DC-RK7 Single rackmount cabinet	39.00
DC-RK2 Dual rackmount cabinet	49.00
DC-5MA 5 mic pre-amp	325.00

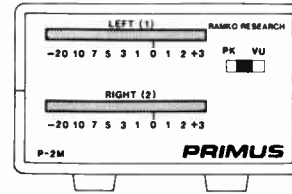
DCX Circuitboard	Model Number	Input Imp (in ohms)	Max. Output Level	THD (Note 1)	Signal/Noise (Note 2)	Channel Separation	Power Consumption (Note 3)	Configuration
5 Mic Pre-amp	DC-5MA	150	+26 dbm	D2%	-97 db	>97 db	7 watts	5 ch.
Phono Pre-amp	DC-PA	47K	+22 dbm	D5%	-70 db	>70 db	2.5 watts	dual/stereo
Line Amp	DC-LA/F DC-LA/S	47K	+25 dbm	D2%	-80 db	>80 db	2.5 watts	dual/stereo
Mic Pre-amp	DC-MA	150	+25 dbm	D3%	-80 db	>80 db	2.5 watts	dual
Headphone	DC-HP	20K	1/2 watt (10 v RMS high Z)	D1%	-90 db	>90 db	6.5 watts	2 ch., stereo
Power Amp	DC-PW	20K	12 watts	D2%	-80 db	—	18 watts	mono
Oscillator	DC-O5	—	+24 dbm	D5%	—	—	1.5 watts	one channel
Synchronizers	DC-TTS DC-TAS	—	—	—	—	—	self powered 1 watt	single

NOTE 1: THD is measured at maximum output before clipping into 600 ohms (8 ohms for the power and headphone amps).
 NOTE 2: Signal to noise measured A weighted, input terminated (where applicable), relative to maximum output. Noise is degraded by approximately 6 db with use of internal power supply.
 NOTE 3: Add power consumption of boards to determine the total number which can be utilized with a common power supply. Internal supply provides 18 watts. External supply provides 36 watts.

xLSCM2 Preamplifier

- Turntable preamp
- Precision performance
- Stereo and mono outputs
- Balanced stereo and balanced combined stereo (mono) outputs
- 0.008% distortion
- ± 0.25dB response
- -90dB S/N
- + 24dBm max. out
- Tabletop or single (R1) and dual (R2) 1³/₄" rackmount

xLSCM2 \$154.00



P-SSM2

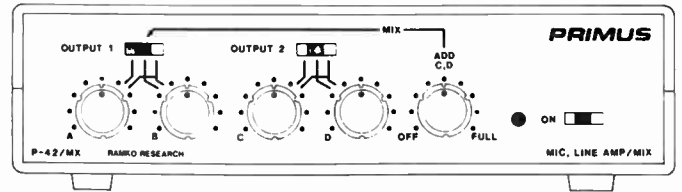
P-SSM1/P-SSM2 Mono Solid-State Meters with Power Supply Switchable Peak/VU

The Primus P-SSM1 and P-SSM2 solid-state meters provide you with both of your favorite ballistics, peak and VU. Front-panel selectable and calibrated to ANSI C165 "VU" and the German DIN 45406 Peak Reading specifications.

- Self-contained power supply
- Single or dual meter versions
- Individual level calibrated
- May be used with balanced or unbalanced sources
- Very compact 2" H x 3" W x 7¹/₂" D tabletop case
- Up to 5 units may be rackmounted on a standard 19" x 1³/₄" panel

P-SSM1 Primus Mono Play only \$115.00

P-SSM2 Stereo or Dual Mono 175.00



P-42/MX

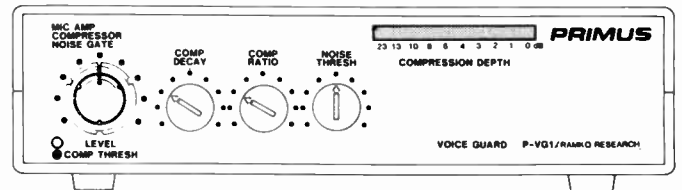
P-21/P-42/P-42MX Mono/Stereo Mike/Line Amplifiers and Mixers

The Primus P-21, P-42, and P-42MX are three different versions of mike and line amplifiers that will fulfill any requirements for amplifying, line matching, buffering, and mixing. The P-21 is a straightforward 2-in 1-out mike/line amp. The P-42 is a dual 2-in 1-out mike/line amp. And the P-42MX features the added benefit of being able to mix all four channels into the #1 output. All inputs are mike through line-level gain selectable.

- XLR-type mike input connector
- Quick-disconnect line input and output connectors
- Switch-selectable mixing feature
- Highest quality conductive plastic pots
- May be used with the Primus P-M1 or P-M2 meters for a mini-mixing setup
- All inputs gain selectable from mike-level through high-level

Specifications

Output: Balanced 600 ohm, + 26dBm max.
Inputs: Balanced bridging to + 25dBm in
Distortion: .008% at 1kHz and + 3dBm out
Response: + 0, -1dB; 10Hz-20kHz
S/N Ratio: Mike level; -67dB at + 8dBm out. Line level; -85dB at + 8dBm
Dimensions: Tabletop/bracket mount 2" H x 7" W x 7¹/₂" D. Single or dual rackmounts available 1³/₄" H x 19" W x 7¹/₂" D
Mains: 117VAC, 230VAC, 50/60Hz
 P-21 Mike/line amp (2-in 1-out) \$189.00
 P-42 Mike/line amp (4-in 2-out) 249.00
 P-42MX Mike/line amp (4-in 2-out) with mixing 295.00



P-VG1

P-VG1 Single Channel Compressor

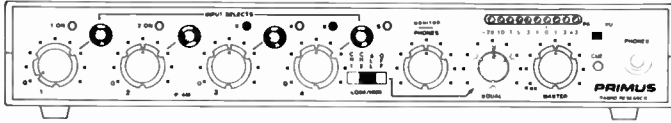
Mike Amplifier, Compressor, and Noise Gate with Compression Ratio Adjust and Metering, and Completely Adjustable Thresholds, the Primus Voice-Guard features balanced inputs/outputs and, as shown, assures complete control over compression depth, background noise base, and decay times. Available in either single or dual mixing versions.

- Adjustable compression ratio
- Adjustable, instantaneous attack, noise threshold
- Compression depth metering
- Adjustable compression threshold
- Highest quality conductive plastic pots
- XLR-type input/output connectors

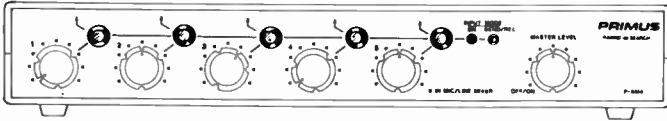
P-VG1 \$289.00

RAMKO RESEARCH, INC.

Audio Mixers/Distribution and Power Amplifiers



P-4M



P-5MX

P-4M/P-4S

Four Channel Mixer with 6 Inputs

- All inputs are mic/line selectable
- Highest quality conductive plastic pots
- Cueing on all channels
- 4 Channels and 6 inputs
- Switch-selectable VU or peak reading meter ballistics
- XLR-type input/output connectors
- Switch-selectable muting
- Balanced inputs/outputs
- Hi-Lo equalization, selectable for channel 1, 2, or all
- Phones and monitor outputs
- Mono and stereo versions available
- Tabletop/bracket mount or 19" rack panels available

The Primus P-4M Audio Mixer has all of the features you would expect to find in a much larger studio console, but comes in a compact 13/4" H x 11 1/2" W package. Ideal for news rooms, small production facilities, churches, remotes, etc. No other mixer will give you as much performance in this size package. And by adding the P-5MX (Extender), a full eleven inputs may be realized.

P-4M 4 Channel, 6 Input Mixer \$634.00
P-4S Same as P-4M but stereo, 4 input 889.00

P-8S/16M

Audio Distribution Amplifier; 1 x 8 Stereo

- 2" H x 17" W tabletop/bracket or 13/4" H x 19" W rackmount
- Independent, dual-regulated power supplies
- Optional pushbutton selected output metering and phones monitor
- Meter selectable for VU or peak ballistics
- Individual recessed front-panel level controls
- Pot/knob option
- Response flat to 100kHz

The Primus P-8S/16M is a dual one-by-eight Distribution Amplifier with the same high performance featured in the P-3S/6M DA. In addition, these units have dual-regulated power supplies and may be ordered with individual pushbutton selectable output metering and phones monitor. This versatile unit can be used either as an eight-channel stereo DA or as a 16-out mono DA.

P-8S/16M Tabletop \$360.00

P-5MX

Mic/Line Mixer and P-4M Extender

- Highest quality conductive plastic pots
- 5 Channels mic thru line level
- Each channel has switch-selectable send/receive
- Send signal amplified and buffered
- XLR-type input/output connectors
- Balanced inputs/outputs

The Primus P-5MX is a 5-channel mic/line mixer with pushbutton selectable send/receive. In addition, this unit may be plugged into the P-4M to provide 5 additional channels.

P-5MX 5 Channel Mic Mixer \$514.00



xL2



P-3S/6M



P-8S/16M

P-3S/6M

Audio Distribution Amplifier; 1 x 3 Stereo

- Response through 100kHz
- Practically unmeasurable distortion
- Tabletop/bracket; single- or dual-rackmounting
- Input gain select
- XLR-type input and quick-disconnect output connectors
- Individual recessed front-panel level controls
- Pot/knob options

The Primus P-3S/6M is a dual one-by-three audio DA with enough punch to drive any load that might be encountered. Even 8 ohm headphones. In addition, you'll find the specs surpass even the most demanding requirements including SMPTE time code. Gain select allows inputs to operate anywhere from mic through high levels.

P-3S/6M Tabletop \$245.00

xL2 Power Amplifier

2W of professional power

- Dual outputs/music-on-hold, speaker, headphones amp

In the studio or the field. Drives 8/4 ohm loads, balanced 500/600 ohm lines, and up to 25 headsets. Tabletop/bracket mount or 1 to 5 unit rack mount.

xL2 2W, music-on-hold, and power amplifier \$99.00

xL20/xL40 Power Amplifiers

Four basic studio quality amplifiers cover the range of 20W to 100W while the inexpensive plug-in modules take care of the rest of your requirements. And, upgrades and modifications couldn't be easier...in the field or in your facilities. Simply remove two screws, remove the cover, and plug in the desired module.

xL20 Basic 20W power amp with 4/18 ohms output . . . \$149.00
xL20P Above amplifier with addition of 70V line out 169.00
xL40 Basic 40W power amp with 4/8 ohms output 225.00
xL40P Above amplifier with addition of 70V line out 310.00

Options

M1 Mike and Telco line input plug-in amplifiers with level controls and adjustable line level "ducking" \$24.00
EQ1 System bass and treble controls with output indicators 16.00
SM1 System module containing M1 and EQ1 35.00
R1 Single rackmount for all xL series amplifiers 15.00
R2 Dual rackmount for all xL series amplifiers 15.00
R3 Triple rackmount for xL2, xL/mm and xL/mm2 series only 15.00
R4 Four rackmount for xL2 and xL/mm 1 only 15.00
R5 Five rackmount for xL2 only 15.00

Refer to Green Section for Addresses and Telephone Numbers.

RAMKO RESEARCH, INC.

Cart Machines/Mixer/Distribution System

PhaseMaster™ Cart Machines

- PS-1**
PhaseMaster Stereo Play only. Three cue tones \$2845.00
 - RPS-1**
PhaseMaster Stereo Record/Play. Three cue tones and digital timer \$4400.00
- Both Above: 5 1/4" H x 8 5/8" W x 14 3/4" D



PS-1



RPS-1

Consoles and Accessories

- DC38-5M**
Audio console, dual channel, 5 mixer, 4 inputs per mixer, (mono), 20 inputs total. Lighted status indicators, up to 5 million operations on mixers and switches \$3172.00
- DC38-5S**
Same as DC38-5M but stereo with mono output. 3 meters: left, right, and mono/phase \$4024.00
- DC38-8M**
Same as DC38-5M but 8 mixers. 32 inputs (mono) \$4110.00
- DC38-8S**
Same as DC38-5S but 8 mixers. 32 inputs (stereo). \$5968.00
- DC38-10M**
Same as DC38-5M but 10 mixers. 40 inputs (mono) \$4763.00

- DC38-10S**
Same as DC38-5S but 10 mixers. 40 inputs (stereo) \$6489.00
- LC-2**
2-channel remote control accessory for audio consoles \$179.00
- LC-4**
Same as above but 4-channel \$350.00

Clocks/Timers

- DC-38CT**
Optional built-in digital clock-timer (6-digit) for DC-38 series consoles. Clock runs continuously, display switched between clock and timer functions. Line frequency accuracy \$249.00

PM-42 "Sidekick"

Field Portable Mixer with Intercom

With the PRIMUS "SideKick" you'll pack all the mixing power necessary for even the toughest situations and your own two way intercom system built-in.

Four channels (2 with switchable AB or phantom power); cue on all channels; runs on standard 9V alkalines or the optional NiCad/charger pack (internal); slate and line tones; gain select on all inputs via external switches and internal plug-in resistors. All of this in a lightweight, compact 2 1/2 lb. package.

- SideKick** \$520.00
- NiCads and Charger (optional)** \$52.00
- Padded Carrying Case (optional)** \$49.00

xL6M1

- 6 input (mike/line) with phones monitor, master level control and expansion capabilities • Dual XLR and phone jack connectors on each input (mike/line) and barrier strip outputs • High impedance balanced in and low impedance balanced out • 10Hz-30kHz, ± 1dB response; 0.008% distortion; + 24dB max. out; -90dB S/N, line/-67dB S/N, mike • Tabletop or single (R1) 1 3/4" rackmount
- xL6M1** \$190.00



PM-42

xL6M1A

- Same as xL6M1 but with output metering and phantom power at all mike inputs
- xL6M1A** \$225.00

xL6M1B

- Includes all the features of the xL6M1 and xL6M1A above and has the added benefits of voice gating (adjustable sensitivity) on all inputs and programmable input precedence gating
- xL6M1B** \$295.00

RS-1616 Routing/Amplifying/Distribution System

The PRIMUS RS-1616 is an audio through data routing/amplifying system with user friendly controls (local front panel, remote 4-bit binary, common 3-wire serial, or standard RS-232 personal computer control).

The system can be configured from as little as 8 mono/4 stereo in by 2 out, to as large as 128 mono/64 stereo in by 64 out, with each main frame capable of handling up to 16 mono/8 stereo (or combinations thereof) and 16 out. Up to 32 main frames may be looped together and controlled with a single control system. Additionally, all individual functions such as: stereo or mono operation, gain, output levels, and bandwidth are field changeable in minutes.

Amplify/Route/Distribute

The RS-1616 can match all of your various signal sources to your required line level without extra amplifiers or attenuators. With a combination of individual input gain selection and trim adjustment, the RS-1616 can accept balanced or unbalanced inputs from mic thru line level, with a maximum in of + 27dBm (18V peak). The gain range available is -14dB to + 60dB with a dynamic range of 117dB at unity gain.



RS-1616

- The RS-1616 can handle audio, SMPTE, Time Code, DC, Ultrasonics, modems, or any other signals through 100kHz. With the inputs strapped for DC, RS-232 computer signals, to 9600 baud, may be routed or simultaneously distributed to as many places as desired without loading or degradation of the original signal. P.O.R.
- 16 x 16 mono with front panel control, single mainframe . . . \$3244.00
 - Configurable 8-in, 2-out; 128 x 64 P.O.R

RAMSA/PANASONIC INDUSTRIAL COMPANY**Audio Mixing Consoles****WR-8428 Post Production/Recording Console**

• 28 x 4 x 2 x 2 x 4 x 1 • Video and broadcast post production • Multi-core input plugs (RS-232) • Capable of connecting a second 24-track recorder • 28 input channels • Modular design • Furnishes total of ten mixing bus lines; four group, two master, and two echo buses • Group and master lines can be monitored in stereo • User can set up separate program and audition stereo monitoring modes • Each module contains 100mm stroke input fader and three-band equalizer • Variety of modules to choose from

WR-8428 Base Mainframe includes these standard modules: WU-8113 x 2 (Master Output); WU-8114 (Monitor Output); WU-8115 (Talk-Back/Oscillator) and WU-8085 (Power Supply)

WR-8428 \$8,180.00

WU-Z300

Mixer stand side bars for WR-8428 (requires WU-Z316) \$369.00

WU-Z316

Mixer stand cross bar for WR-8428 (requires WU-Z300) 148.00

WR-8616 Post Production/Recording Console

• 16 x 4 x 2 x 1 • Left and right stereo outputs, XFMR balanced • Phantom mike power, at each input 48V • Meets broadcast configuration standards • Remote start-stop control for cart machines, turntables, etc. • Extensive metering facilities, 8 Gan-Graph 6 VU meters • Modular construction • Variety of modules to choose from

WR-8616 Base mainframe includes 4 standard modules: WV-8103 x 2 (Master Output); WV-8104 (Monitor Output); WV-8105 (Talkback/Oscillator) and WV-8083 (Power Supply)

WR-8616 \$5,530.00

WU-Z300

Mixer stand side bars for WR-8616 (requires WU-Z316) \$369.00

WU-Z316

Mixer stand cross bar for WR-8616 (requires WU-Z300) 148.00

WR-T820B Recording Console

• Extensive metering capabilities • 20 inputs and is capable of 8- and 16-track recording • Ability to simultaneously mix incoming signals w/tape playback signals during overdubbing • Pushbutton selection of electronically balanced mike, line or unbalanced tape signals • 48V Phantom power switchable for each channel • Mono-solo monitoring on output signals • Built-in talkback oscillator

WR-T820 \$8,500.00

WU-Z200

Mixer stand side bars for WR-T820B (requires WU-Z220) \$233.00

WU-Z220

Mixer stand cross bar for WR-T820B (requires WU-Z200) 83.00

WR-8210A Recording Console

• 10 inputs, 4 group outputs designed for versatile multitrack recording applications • 48V Phantom power • Left and right stereo outputs and 10 tape recorder sub-mix inputs • 4 LED peak reading meters • Direct outputs and access points on inputs are included • Stereo effects returns, group outputs and monitor controls are simple to operate • Sub-in section can be used for tape or echo monitoring during recording and overdubbing

WR-8210A \$2,500.00

WR-8112/WR-8118**Sound Reinforcement/Recording Consoles**

• PA mixer use with up to 18 microphone and line signal inputs • 48V Phantom power • Pushbutton tape input accommodation easily handles multi-channel recording, overdubbing and mixdown • 3 band equalization section on each input for high, mid-range and low frequencies • Diverse metering capabilities with 12-point LED bargraph meters • Sweepable peak-dip mid-range controls • Lightweight, compact design • 4 group, 2 master and 1 mono master outputs

WR-8112 12 x 4 x 2 x 1 \$2,900.00

WR-8118 18 x 4 x 2 x 1 3,900.00



WR-8428

WR-S208/WR-S212/WR-S216**Stereo Mixing Consoles**

• 2 channels on each console have stereo inputs on both line and phono/recorder inputs • With the exception of the two inputs, all inputs are mono, electronically balanced mike/line inputs • Each model offers three send circuits; a pre-fader monitor foldback circuit; a post-fader effect send and a switchable pre/post-fader send for foldback monitoring of effects • 48V phantom power • Peak indicators • Solo buttons allow monitoring each channel individually • 60mm faders standard on input channels

WR-S208 (2 stereo, 6 mono mike/line inputs) \$1,600.00

WR-S212 (2 stereo, 10 mono mike/line inputs) 2,200.00

WR-S216 (2 stereo, 14 mono mike/line inputs) 2,700.00

WR-Q208 Rackmount adaptor for WR-S208 85.00

WR-S840 House/Stage Mixing Console

• Extensive RF protection • Matsushita Resistive Plastic (MRP) faders and input attenuators • Module design allows for variety of configurations • Each input features 4-band EQ, variable HP filter, phantom power, PFL, channel-on switch, more • Standard 40 input, 8 bus configuration includes five standard modules: WU-S84 group output module (X8), WU-S85 Master Output Module (X2), WU-S86 Effect Return Module (X2), WU-S87 Monitor Module (X1), WU-S88 Talk-Back/Oscillator Module (X1) and the WU-PS80 Power Supply • Other modules to choose from

WR-S840 (Standard configuration) \$13,900.00

WR-133 Portable 8 Input/2 Output Audio Mixer

• High quality performance characteristics—extended frequency response, wide dynamic range and noise-free performance • Switchable remote broadcasts, recording or sound reinforcement modes • Can be connected to cue to echo effect unit through pre-mix outputs, and to echo effect unit through from echo and to echo • Peak-level LED indicators • Two VU meters • Frequency response: 20Hz to 20,000Hz • Rugged construction designed to withstand rough handling

WR-133 \$1,200.00

WR-Q51 Rackmount adaptor 85.00

WR-M10 Compact Audio Mixer

• 4 mono input circuits • 6 stereo input circuits • 2 stereo phono input circuits • I/O connector panel can be moved to the rear, top, or bottom surface • Rackmount angle fittings allow installation flexibility • Can be mounted on a standard 19" EIA rack or a wall surface • Can also be flush-mounted in the wall or on a tabletop • Main output frequency response (with output transformer): 30Hz to 20kHz, +0.5dB, -2dB • THD: 0.3% max. (+18dB output, 50Hz to 15kHz, main output)

WR-M10 \$900.00

RAMSA/PANASONIC INDUSTRIAL COMPANY Amplifiers/Speakers/Microphones



WP-9220

WP-9055/WP-9110/WP-9220/WP-9440

Power Amplifiers

• Balanced inputs • Precision input attenuators • Built-in and remote status monitoring • Multiple amplifier protection systems • Stereo/mono/bridge • Frequency Response: 20Hz-2kHz (± 0.5 dB) • High slew rate • Controlled rise time • No transient intermodulation distortion • Dual voltage design

WP-9055	2 x 50W (8 ohms) 1.75" rack space	\$ 590.00
WP-9110	2 x 100W (8 ohms) 3.5" rack space	840.00
WP-9220	2 x 200W (8 ohms) 5.25" rack space	1090.00
WP-9440	2 x 400W (8 ohms) 5.25" rack space	2090.00

WS-A 10 Compact Speaker

• Heat resistant voice coil • Built-in magnetic shield • Built-in thermal protection circuit • Heavy-duty construction • Multiple mounting possibilities • Input terminals • Power capacity: 80W • Sensitivity: 88dB (1W/1m) • Amplitude response: 80Hz to 16kHz (-10dB) • White or black finish

Applications for the WS-A10 include small-speaker monitoring in recording studios, on-stage keyboard and personal monitoring, distributed music systems, audio for video monitoring and many others.

WS-A10	\$120.00
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WS-A70-K Compact Monitor Speaker

• Easy to set up • Maximum input power: 160W • Momentary peak input: 400W • Auto gain control built-in • Constant-directional Twin Bessel Horn (120° x 120°) • Anti-magnetic design • 8" Woofer • Heat resistant voice coil

WS-A70-K	\$240.00
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WS-A80 Compact Speaker

• Two-way loudspeaker • 8" Low frequency driver for extended low frequency response, high efficiency and low distortion • Consistent and reliable under conditions of very high input power • Constant directivity Twin Bessel Horn • Thermal protection circuit • Heavy-duty construction • Multiple mounting possibilities • Input terminals • Power capacity: 80W • Crossover frequency: 2.5kHz

The WS-A80 features extended amplitude response, uniform coverage and high output capability. Housed in a virtually indestructible molded cabinet for portable service that incorporates multiple mounting provisions, the WS-A80 is an ideal system for the working musician. Applications for the WS-A80 include on-stage monitoring, vocal PA reinforcement, distributed music systems, high-quality playback.

WS-A80	\$280.00
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WS-A200/WS-240 Compact Speaker System

• Maximum input power: 250W • Constant-directional Twin Bessel Horn (60° x 40°) • Frequency range: 70 to 20,000Hz • One-piece molded plastic enclosures • Unique stacking structure

The Twin Bessel Horn features accurate control of horizontal and vertical directivity. The improved design of the open end horn reduces reflection and adds greater uniformity in regard to sound direction. This horn offers flexibility adaptability to the use of the speaker in either the horizontal or vertical direction.

The WS-A240/WS-SP2 Subwoofer System extends the low frequency response to create greater impact in the bass frequencies.

WS-A200	\$560.00
WS-A240 Compact subwoofer system (12" driver)	450.00
WS-SP2 Subwoofer processor (required for WS-A240)	210.00

WS-A200



WS-A10



WM-S2



WM-S1

WM-S1/WM-S2/WM-S5/WM-S10 Miniature Condenser Microphones

• Four miniature condenser microphones specifically designed to replace the bulky microphones that have become the industry standard • Application for application, these tiny powerhouses easily match the performance of larger microphones, and in blind listening tests have been chosen by some of the world's leading professionals as superior to presently available microphones

WM-S1	High SPL mini-condenser (Phantom power only)	\$ 199.00
WM-S2	Mini-condenser mike (Batteries or phantom power operation)	160.00
WM-S5	High SPL mini-condenser mike (Phantom power only)	270.00
WM-S10	Headset mini-condenser mike (Batteries or phantom power operation)	210.00
WM-Q01	Telescoping mini-boom (for WM-S1, WM-S2 and WM-S5)	55.00

RANGERTONE RESEARCH, INC.

*Film-To-Video Multiplexers/
Telecine Projectors*

2000 Series Film-To-Video Multiplexers

Rangertone manufactures a complete line of film-to-video optical multiplexer systems. The unique optical system allows multiformat film overlays as well as 35mm direct program dissolves.

2000 SeriesPOR

TC-240 35mm Telecine Projector

- Designed for use as a 35mm motion picture projector capable of projecting into a video system
- Available in either NTSC or PAL format. The NTSC model incorporates a special design 3-2 Geneva movement
- By utilizing different options, the projector can be used as a studio, broadcast or film chain projector

TC-240 \$29,950.00

SC10S 16mm Telecine Projector

- Synchronous motor
- 5 bladed shutter
- Line output
- Audio, remote socket and light diffuser for television use
- Automatic threading known as "circloading" allows the operator to thread the projector automatically while allowing removal of the film, simply and quickly without rewinding
- 250W quartz halogen lamp
- Built-in loudspeaker
- 20W audio amplifier
- Automatic loop restorer
- 16 tooth sprocket drive

SC10S \$2,985.00

SC211S 16mm Telecine Slot-Load Projector

- Synchronous motor
- 5 bladed shutter
- Audio line output
- Light diffuser for TV transfer

SC211S \$2,325.00

SC212S 16mm Telecine Slot-Load Projector

- For silent film speed

SC212S \$2,790.00

TV-518 Super/Regular 8mm Silent Telecine Projector

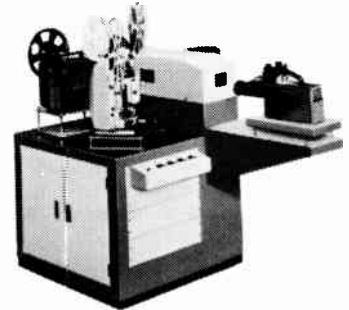
- Variable speed motor with interchangeable shutter modules

TV-518 \$1,875.00

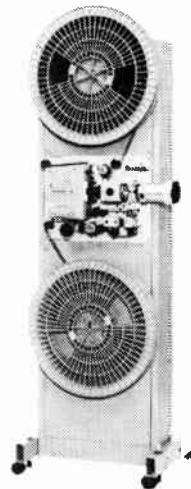
4116 TV conversion lens with adaptors 695.00

6150 8mm telecine projector stand with video camera mounting bracket 515.00

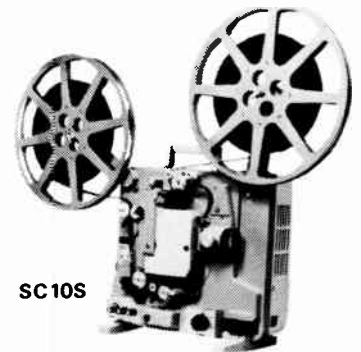
4119 Interchangeable shutter module for TV-518 (specify desired film speed when ordering) 395.00



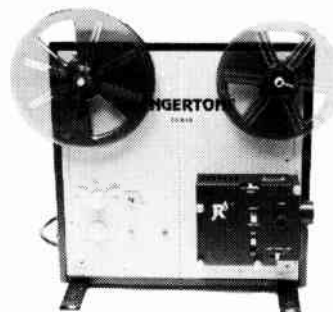
Series 2000 Multiplexer



TC-240



SC10S



TV-518

Broadcast Quality Headphones and Mikes with Extended Range Performance

"Broadcast Quality" headphones provide acoustic performance desirable in (but not limited to) broadcast, recording, industry, and special music education. The basic headphone main frame is identical to the C/C3 Series. Broadcast quality headphones have a transducer and ear cushion design which together form a small anechoic type chamber into which the user's ear fits. The result is that the entire clamping pressure of the headphone is distributed across the large area of the ear cushions, that rest against the head, nothing rests against the ear, so fatigue over long listening periods is reduced. Specifications of the type BQ Series Headphone include a frequency response from 20Hz to 20kHz; Sensitivity: 100dB re .0002 μ bar for 1mW input at 1kHz; Harmonic Distortion: Less than 0.3% at 90dB SPL; Color: Two tone brown. Any mike boom or condenser mike boom can be attached to the BQ Series Headphone. Use only condenser mikes for "on the air" sportscasting, etc. Add the cost of the desired mike to the cost of the model headset selected.

- BQ3-Monaural Headphone 8 ohms impedance \$64.95
- BQ3H Same as BQ3, but in impedances of 150, 600, and 2K ohms 72.55
- BQ-Stereo Headphone 8 ohms per channel 79.95
- BQH Same as stereo Type BQ, except in impedances of 150, 600, or 2K ohms per channel . . 89.50

BQ2—Single Ear Headphone—Used extensively in broadcasting, this single ear headset is super comfortable. Headband construction distributes the entire weight of the headphones across the top of the user's head. Any of the mike booms or the condenser mike can be attached. (Use only the condenser for "on the air" broadcasting). Available in 8, 150, 600, or 2K ohms . . . \$61.95

Condenser Microphone Boom Attachments—For sports broadcasting, studio, and recording applications. A condenser type product for professional use shows remarkable damping characteristics by use of a feather weight diaphragm of only a few microns thickness. A condenser mike is of special interest in broadcasting, but it is also an excellent choice anywhere superior performance is essential, i.e., recording, special education, industry, etc. Electret condenser mike booms can be ordered attached to any BQ Series headphone. Price includes the condenser mike, FET mike amplifier, externally replaceable battery supply, and a power on/off switch which also doubles as a "cough-off" switch. Specifications include a frequency response, virtually flat, from 20Hz to 20kHz; Impedance: 600 ohms; Sensitivity: -63dB (0dB-1V/ μ bar at 1kHz), signal-to-noise ratio: Over 40dB (A curve at 1kHz). Headsets supplied with condenser mikes come equipped with a 4 or 6 conductor shielded tinsel cord 5 1/2' long unterminated. (6-wire for stereo).

- ET-1—Electret Condenser Microphone Boom Attachment—Omni-directional design. Usually used in studio and/or recording applications. Excellent low frequency response. \$74.95
- ET-2—Same as above, but cardioid noise cancelling design. Substantially reduces crowd noise 89.50

Sports/Studio Broadcasting Headphone/Mike

SB/2—Single Ear "On-The-Air" Headphone/Mike—Noise cancelling electret condenser mike, ET-2, is mounted on a rotating boom having a flexible gooseneck designed for optimum talk adjustment. Boom can be rotated away from in front of the user's face and the mike will mute at the top of its rotation. The mike is powered by 1.5V battery which has a life in excess of 1 year even if the on/off switch is never used. The on/off switch will also act as a "cough-off" switch. Output impedance of the electret mike is 1K ohms. Specify headphone impedance, i.e., 8, 600, 2K or 10K ohms. Supplied with 6' shielded cord terminated in a 4-pin XLR connector. (Add \$15.00 for 6' retractile cord). \$210.00

SB—Double Ear Broadcaster's Headphone/Mike—Same as above, but a double ear model useable in high noise areas. 6' long five conductor cord is terminated in a 5-pin XLR. Headphone can be operated monaural, stereo, or binaural. Specify impedance desired. (Add \$24.00 or 6' retractile cord). \$265.00

SB-700/2—Ultra Lightweight Single Ear Broadcaster's Headphone/Mike—Weighing only slightly more than an ounce, this product is manufactured with "open air" type dynamic transducers having a free field sensitivity of 110dB at 1kHz for 10mW input; electret condenser, noise cancelling, mike has a frequency response of 30 to 20kHz; Mike sensitivity: -67dB at 1kHz; Mike windscreen is furnished. A 1.5V battery powers the electret mike and is easily replaced from inside the XLR plug without disassembly. Typically the mike battery has a 6 month life if never turned off. Using the push-to-talk switch, which turns the battery off when not in use, the battery can last a year or longer. PTT switch also has a "lock-on" feature. Specify headphone impedance when ordering 32, 600, 2K ohms. \$199.95

SB-777—Same as above, but a double ear model. Terminated in a 5-pin XLR connector so that the headphone can be operated monaural, binaural, or stereo 249.95



R-COLUMBIA PRODUCTS CO., INC.

Headphones/Mikes

UL-85—Ultra Lightweight Headphone/Microphone—Weighing only 1 ounce, this headphone/mike offers basic comfort and performance for intercom, camera, telephone, and broadcasting work. Designed to hang comfortably and operate from either ear, this headphone/mike features dynamic headphone transducer, and ultra miniature electret condenser microphone. Mike has a frequency response from 20 to 20kHz, and a nominal output impedance of 600 ohms. The UL-85 is terminated in a 3.5mm 3-circuit plug. Specify headphone impedance when ordering . . . \$129.95

ULH-85—Headband version of UL-85 headphone/mike. Unit can be worn on user's left or right side 139.95

UL-85/M—Same as UL-85, except that this model features "controlled magnetic" transducer instead of a dynamic type. Frequency response of the UL-85/M is 100 to 5kHz; Nominal impedance is 1.5K ohms; Nominal DCR is 200 ohms; Sensitivity is 114dB re .0002μbar for 1mW input measured in a NBS 9A coupler. Will operate into almost any telephone or voice communication circuit \$129.95

ULH-85/M—Headband version of UL-85/M 139.95

TV Camera Operator's Headphones

52/T—Single Ear Camera Operator's Headphone—Circumaural foam-filled vinyl ear cushions plus padded headband for comfort. Supplied with "dynamic" transducers that replace HC3 and HC4 magnetic types, and a N-1 type carbon mike element. 6' tinselized cord is wired to a PJ-051 3-ckrt 1/4" phone plug as follows: Ring and sleeve to headset; Tip and sleeve to mike. Wiring can easily be changed if necessary. (Add \$16.00 for 8' retractile cord) \$ 96.50

52/TT—Same as above, but Double ear type. (Add \$16.00 for 8' retractile cord) 145.00

32PO52—Inline Push-To-Talk Switch—An accessory for TV camera intercom systems. Installed on cord 2 1/2' from headphone so that user can hold in hand while operating, or unit can be clipped to user's belt. Double acting—either push-to-talk, or lock-on/lock-off. (Add to price of headphone selected) \$49.95

52/TA—Amplified Camera Operator's Headphone—The 52/TA has 2 integrated circuit amplifiers, a built-in 9V battery supply, and a dynamic mike. One I.C. amplifies the sound from existing headphones, while the 2nd amplifies and matches the dynamic mike to the carbon mike circuit. Up to 5 times the output level of carbon mikes is available. Volume and level controls are provided for both headset and mike. A PJ-051 plug is wired the same as described for 52/T, and is easily changed at the plug. For Sony, Panasonic, Philips, JVC, Hitachi, etc. \$175.00

52/TA/8C—Same as above, but with 8' retractile cord 191.00

52/TAA—Same as 52/TA, except that this double ear model is especially useful where high ambience is present 250.00

52/TAA/8C—Same as above, but with 8' retractile cord 266.00

ET-2—Noise Cancelling Microphone—Can be added to 52/TA or 52/TAA to quiet surrounding ambience. Add to price of model selected \$89.50

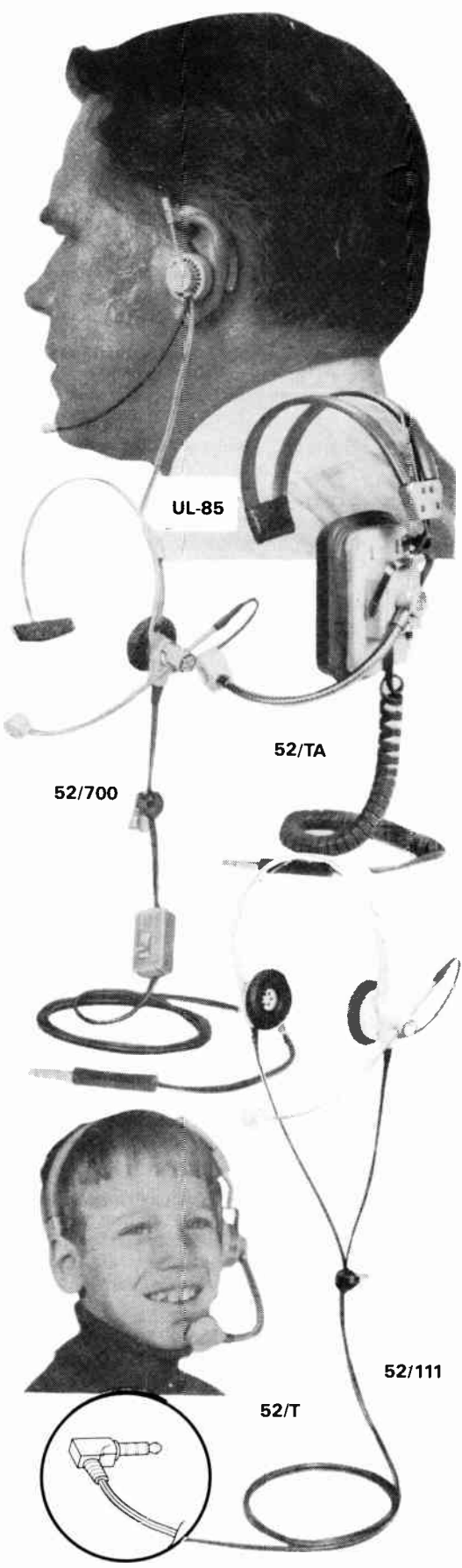
Rotating Mike Boom Attachment with Mike Mute Switch—Allows 52/TA and 52/TAA to be used with mike on user's left or right side. Mike mutes when it is rotated overhead. Add to model selected \$29.50

52/700—Amplified Ultra-Lightweight Cameraman's Headphone—Headphone/mike, weighing slightly more than 1 ounce that works directly into the carbon mike circuit of a TV camera. In-line PTT switch clips to user's belt and has a "lock-on" feature. Cord is terminated in a standard PJ-051 plug \$249.50

52/777—Same as above, but double ear model 295.00

52/100—Sony Replacement Camera Operator's Headphone/Mike—4-circuit mini-plug, by Sony. Headphone impedance is 45 ohms; Sensitivity is 108dB/mW; Frequency response: 20 to 10kHz. Dynamic noise cancelling mike has an impedance of 600 ohm; Sensitivity: -86dB (0dB=1V/μbar) In-line PTT switch has lock-on/lock-off feature and can be clipped to the user's belt \$199.95

52/111—Same as above, but double ear model 250.00



R-COLUMBIA PRODUCTS CO., INC.

Headphones

Telephones, Telephone Headphones

6058/T—ENG/IFB/"Hands-Free" Telephone—A complete electronic tone dialing telephone which operates from any modular telephone jack. Dimensions: 4 1/2" x 2 1/2" x 1". Unit can be clipped to user's belt. Requires UL-85/M, ULH-85/M or ULH-700/M "hands-free" telephone operation. Features for ENG/IFB use: Mike mute switch, 3 mike inputs, 3 headphone outputs. Ringer circuit alerts user to incoming calls **\$149.95**

6058/P—Same as above, but tone dialing (10ppm). For use in areas where pulse dialing is not available. **\$139.95**

6058/PT—Same as 6058/T but with switchable tone or pulse operation **199.00**

UL-85/M—1 Ounce Telephone Headphone/Mike—Clips over user's ear. Can be worn on left or right side. Controlled magnetic transducer and electret condenser mike have tailored speech response. For use with 6058 Series telephones **\$129.95**

UL-85/2M—Listen Only Headphone—Only 3/4 oz. for Series 6058 telephones **\$ 49.95**

ULH-85/M—Same as UL-85/M but with headband **139.95**

ULH-700/M—Deluxe Ultra-Lightweight Telephone Headphone/Mike—Single ear style weighing slightly more than 1 oz. Custom tailored in terms of cord length, plug, magnetic transducer, leather ear cushion, etc. for operation with 6058 Series telephones **\$179.95**

ULH-777/M—Same as ULH-700/M, but double ear model **220.00**

52/Taret—Amplified Telephone Headphone/Mike for High Noise Environments—2 ear model with noise cancelling microphone. Headset has integrated circuit amp which boosts the volume level of 6058. Rotating mike boom mutes when it is rotated to the overhead position and allows user to choose left or right side for mike. Control adjusts volume of call being received. Full size circumaural ear cushions attenuate surrounding ambience. **\$266.00**

52/Taret/2—Same as above, but single ear model. **195.00**

20X047—Alligator Clip Cord Assembly—Permits 6058 series telephones to operate from any standard carbon mic type of telephone simply by unscrewing transmitter cap and connecting clips to exposed terminals **\$39.50**

52/TM—"Hands-Free" TeleHeadphone"—Un-plug the cord from the handset of any modular telephone and plug it into 52/TM for "Hands-Free" telephone operation. Transducer and mike are compatible with Western Electric and Bell Telephones. A control is provided to regulate the volume of incoming calls. Single ear model **\$150.00**

52/TMM—Same as above, but double ear type. Gives user isolation from surrounding ambience **195.00**

ET-2—Noise Cancelling Microphone—Can be added to 52/TM or 52/TMM. Add to price of model selected. **\$89.50**

PBX-86—1 Ounce TeleHeadphone Enhancement—Same telephone operation as the 52/TM, but uses UL-85/M. Measures 1 3/4" x 3" x 1" and clips to user's belt. UL-85/M headphone mic. plugs into the top relieving the heavy pull from the telephone cord which is plugged into the bottom. A control is provided to regulate volume. (UL-85/M priced separately) **\$99.75**

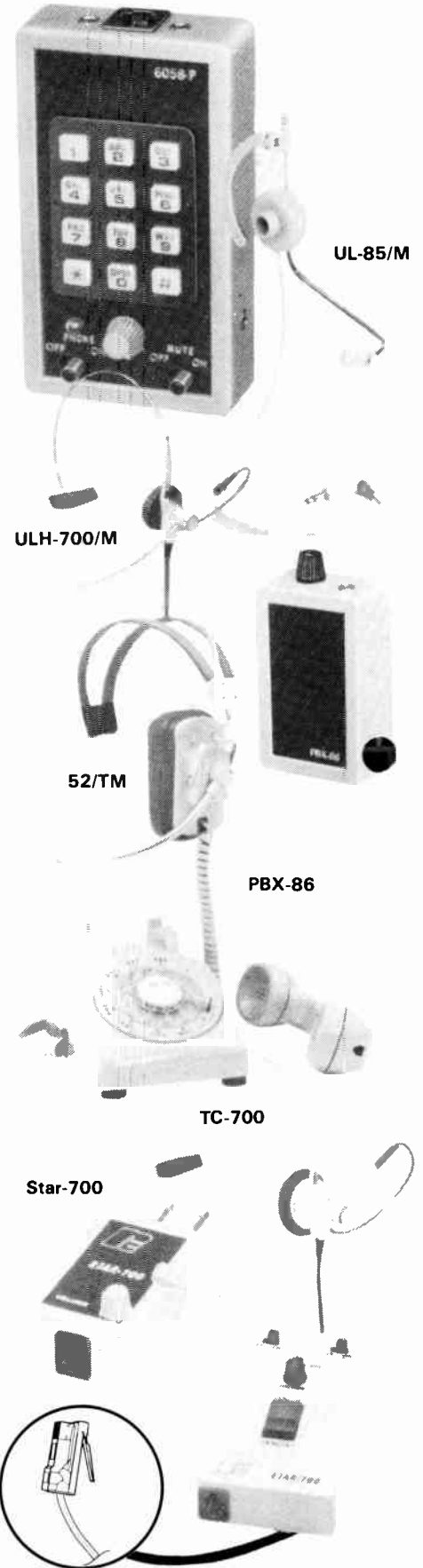
375X047—Plantronics Adaptor Cord—Converts PBX-86 or 52/TM for use with telephones that have been jack equipped for use with PJ-325 plug **\$39.95**

TC-700—Telephone/Communication Headset—Ultra-lightweight, heavy-duty headphone/mike, for use with PBX, ACD, or jack equipped telephones when plugged into enhancements like ATAR-700 or ETAR-700. Features include a noise cancelling electret condenser mike, adjustable mike boom, soft leather ear cushions (foam optional), speech tailored magnetic transducers, million flex-life tinsel cordage. The cord is terminated in a modular telephone jack allowing several users to have their own private headset which can be plugged into a common enhancement. (Add \$10.00 for 10' retractile cord). **\$197.00**

TC-777—Same as above, but double ear model **220.00**

Star-700—PBX/ACD Enhancement—Has 2 solid-state amplifiers which derive their power from the PBX or ACD equipment via a PJ-327 type plug. The Star-700 unit will also operate with jack equipped telephones. Modular jack accepts TC-700 headphone/mike. (Add \$10.00 for mike mute switch) **\$135.00**

ETAR-700—Electronic Telephone Enhancement—User installable. Converts newer types of electronic telephones for use with a headphone/mike. A 9V battery is used to operate the integral amplifiers. LED indicator signals when battery is low. A mike mute switch is provided along with a control to adjust the volume of incoming calls. Modular jack accepts TC-700 headphone/mike. **\$149.95**



R-COLUMBIA PRODUCTS CO., INC.

Intercom Headphones

**Self Powered Intercom Headphones
For Theater, TV, Sports, Industry, Etc.**

T4/IC—2-Way Intercom on a Single Wire—Each headphone has a built-in integrated circuit amplifier, volume control, 9V battery supply, and attached dynamic microphone boom. They provide 2-way duplex intercommunication on a single wire such as ordinary lamp cord. Headphones can be separated by distances of up to 1,500', and up to 10 units can be operated together. A separate program source can be mixed with intercom without additional circuitry or attachments. Ideal for football teams (pro, college, and high school), TV/Radio broadcasters, theaters, industry. Double ear model **\$175.00**

T4/IC-2—Same as above, but single ear model. **188.00**

T4/ICE—Same as Model T4/IC, but equipped with a better noise rejecting microphone. The dynamic mike will improve performance in extremely noisy environments, like that found in small aircraft or heavy industry. **250.00**

T4/ICE-2—Same as above, but single ear model. **261.00**

Rotating Mike Boom Attachment with Mike Mute Switch—Indicate this feature by adding an "R" to the model desired, i.e., T4/ICR, T4/ICR-2, TP/ICR, TP/ICR-2, T4/ICER, 52/TAR, etc. This feature cannot be added to carbon mike type headphones such as the 52/T. Add to the cost of model specified. **\$29.50**

T4/IC-HH—Hard Hat Intercom Headphones—Identical headphone as T4/IC, except that custom-made mounting is provided for an ANSI approved hard hat. Special spring loaded yoke posts allow easy and convenient fit to different size heads. Hard hat models can be operated in any proportion with standard T4/IC's. Price includes hard hat **\$275.00**

T4/ICE-HH—Same as T4/IC-HH, but with noise cancelling condenser microphone . . . **357.00**

T4/85—Ultra-Lightweight Headphone Intercom Station—Same as T4/IC with the electronics and battery supply built into a belt pack which allows the use of special purpose headphones like the ultra-lightweight 85/700 **\$149.95**

T4/85X—Same as above, but a 3-position switch has been added which acts as a mike mute PTT switch with lock-on feature **199.95**

85-700—Deluxe Ultra-Lightweight Headphone/Mike—Single ear style weighing slightly more than 1 ounce. Headphone is custom tailored to operate with belt pack T4/85 **\$159.95**

85/777—Same as above but double ear model. **199.95**

85/900—Helmet/Hard Hat Headphone/Mike—Industrial grade headphone/mike manufactured for full compatibility with any style military/safety helmet and/or protective clothing . . **\$199.95**

TP/IC—AC Line Powered Intercom Headphone—The identical headphone as the T4/IC, except that this headphone is part of a system powered by a 120VAC Main Station/Power Supply eliminating the need for batteries. TP/IC headphone does not have a cord. Interconnect cables, terminated in standard "Modular" type telephone plugs, are inserted directly into headphone and power supply for instant hook-up **\$175.00**

TP/IC-2—Same as above, but single ear type **\$188.00**

TP/ICE—Same as TP/IC, but equipped with noise cancelling condenser microphone . . **250.00**

TP/ICE-2—Same as above, but single ear model **261.00**

MS/PW-1—Main Station/Power Supply—Single channel operation for up to 10 TP/IC intercom headphones at distances of up to 1,500'. Simply plug ICC Series cables into TP/IC headphones and MS/PW-1 for instant hook-up (120V operation) **\$250.00**

MS/PW-2—2-Channel Main Station/Power Supply—Same as MS/PW-1 but two separate intercom systems can be operated from the same supply. Switch joins both channels to create a single larger intercom system which can be monitored by one or both "director's" headphone **475.00**

ICC-100—Interconnect Cable—100' length of ultra-lightweight and flexible cable, terminated on both ends with 4-pin modular phone plugs. Includes heavy-duty plastic reel for storage . . **\$54.00**

ICC-50—Same as above, but 50' length **39.00**

BP-2—Belt Pack Kit—Sturdy plastic housing with belt clip and 2 modular jacks. Plug long connecting cable into the bottom and 3' connecting cable (provided) between headphone and BP-2 **24.95**

CS-1—Modular Cable Splicer **9.95**

CS-2—Modular Cable Splitter **19.95**

CS-3—Duplex Adaptor—Converts receptacles at MS/PW from one line to two **19.95**

System 10—Starter System Package—Additional stations can be added by purchasing additional TP/IC headphones and interconnect cables. Consists of 2 each TP/IC headphones, BP-2 belt packs, ICC-100 cables, and quantity one MS/PW-1 Main Station/Power Supply (120V) System **\$650.00**



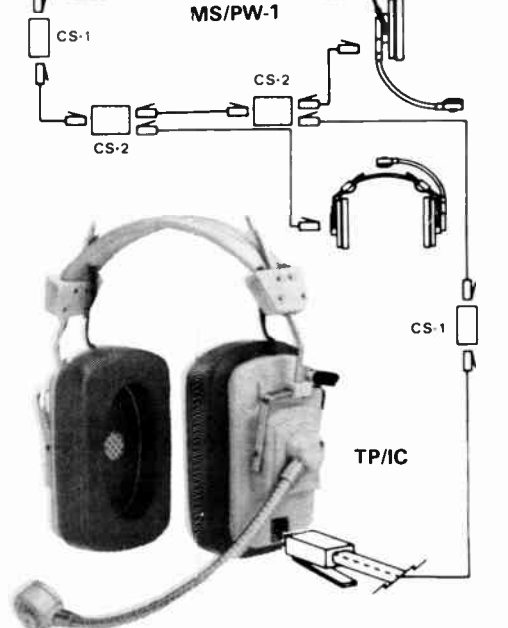
T4/IC



T4/IC-HH



MS/PW-1



TP/IC

R-COLUMBIA PRODUCTS CO., INC.

Wireless Intercom Headphones

Professional Quality 2-Channel FM Wireless Intercom Headphones

TR-50/PRO/S—Professional 2-Channel FM Wireless Intercom Headphone—Same as TR-50, with the addition of flexible and insulated rubber duckie antennas, switchable 2-channel operation (including crystals), a dual conversation receiver featuring monolithic crystal filters for improved adjacent channel rejection, "Com-Lock" circuitry which prevents 2 transmitters from being operational at the same time. All accessories and attachments available for the TR-50 can be added to the TR-50/PRO Series. TR-50/PRO/S operates simplex, i.e., push-to-talk
\$497.00

TR-50/PRO/S2—2-Channel FM Wireless Intercom Headphone—Same as TR-50/PRO/S except 1 ear configuration. Consists of a Transmitter mounted into a single ear headphone/mike with receiver unit clipped to user's belt\$555.00

TR-50/PRO/V—Voice Actuated FM Wireless Intercom Headphone—"Hands-Free" version of the TR-50/PRO/S. User can select either PTT or VOX operation. In the VOX mode, a level control can be adjusted to compensate for background noise. Com-Lock circuit prevents loss of communication if 2 users try to speak at once. The VOX has a fast switching time.\$597.00

TR-50/PRO/V2—Single Ear 2-Channel Voice Actuated FM Wireless Intercom Headphone—Same as TR-50/PRO/V but in a single ear style. Consists of a transmitter mounted into a single ear headphone/mike with receiver clipped to user's belt\$657.00

TR-50/PRO/V285—Ultra-Lightweight Headphone Voice Actuated 2-Channel Professional FM Wireless Intercom—Same performance as TR-50/PRO/V2, except that this model has been configured to operate with a 1 ounce headphone/mike. Both TX and RX are built into a belt pack which can be worn from the shoulder with the strap provided. (Add \$ 140.00 for 1 ounce UL-85 headphone/mike)\$595.00

TR-50/PRO/D—Full Duplex Wireless Intercom Headphone—Users can speak and listen "hands-free" simultaneously. Only 2 headphones can be involved in "hands-free" full duplex intercom. In the "full duplex" mode, both transmitters transmit continuously resulting in a short TX battery life (3-4 hours)\$550.00

Selectable 5-Channel Profesional Series FM Wireless Intercom Headphone—Any model, except full duplex TR-50/PRO/D, can be ordered with the ability to operate on any one of the 5 available channels simply by switch selection. To order this configuration, change the model number 50, to 55, i.e., TR-55/PRO/S, TR-55/PRO/V, TR-55/PRO/V2, etc. Add to the price of model selected\$100.00

TR-72—High Powered Intercom Headphone—A 400mW version of TR-50/PRO/S with a range up to 1 mile. This model requires an FCC license for operation. Operates in the 72MHz "Manufacturer's Radio Service Band." BP-72 NiCad battery belt pack is required to accommodate higher TX power\$695.00

PRO Series Wireless Intercom Accessories

ET-2—Noise Cancelling Microphone—Broadcast quality electret microphone used for sports broadcasting work by TV and radio stations. Add to price of unit being specified\$89.50

Hard Hat Accessory—All double ear models of Professional Series of wireless headphones can be "hard-hat" configured. (Requires a different headphone suspension system). Order as TR-50/PRO/S/HH, TR-50/PRO/V/HH, etc. Add to price of model selected. (Included is ANSI approved hard hat)\$90.00

49P003/R—PRO Receive Crystals—Specify channels A, B, C, D or E\$18.95

49P003/T—PRO Transmit Crystals—Specify channels A through E\$24.75

BP-72—NiCad Battery Pack—Clips to user's belt. Measures approximately 2" x 4" x 1"\$75.00

CH-72—Battery Charger—For BP-72 battery pack\$30.00

BOP50—Carrying Case—Custom made to transport and protect four TR-50 or TR-50/PRO headphones with accessories. Molded of tough ABS plastic. The inside is filled with foam which has custom pockets that exactly fit the contours of the headphone and accessories\$185.00



RFL Series

Fixed Microwave Transmission System

- Low noise dual down conversion receivers
- High power output. Up to 12W at 2GHz with GaAs FET technology for excellent reliability. (BiPolar below 2.7GHz)
- Receivers have LNAs built in for excellent dynamic range and noise figure performance
- Up to 4 integral audio channels if required
- Comprehensive fault diagnostics with LED alarm panel and metering facility
- AC or DC primary power supplies
- Unique chassis design with hinged front panel for easy access
- Modular construction provides ease of maintenance
- Single channel or duplexed/diplexed multi-channel system configurations available
- Hot-standby changeover option and frequency diversity systems protect against equipment failure and fading
- Full range of installation accessories

The RFL Series of modern, solid-state fixed links offers economical and reliable transmission of color video signals with up to four associated program channels in all TV frequency bands from 1.7 to 13.7GHz. The transmit terminals feature high output power and, when used in conjunction with our low noise figure receivers, long path lengths can be easily achieved.

Although generally intended for STL/TSL applications, the excellent linearity characteristics and high performance of the RFL Series makes it equally suitable as a low cost multi-hop system.

The RFL Series offers an extensive range of options allowing it to be used in two-way, dual and repeater configurations and can supply options to complete the system package including antennas, waveguides, pressurizing equipment and fully automatic changeover shelves.

General Specifications:

Monitoring

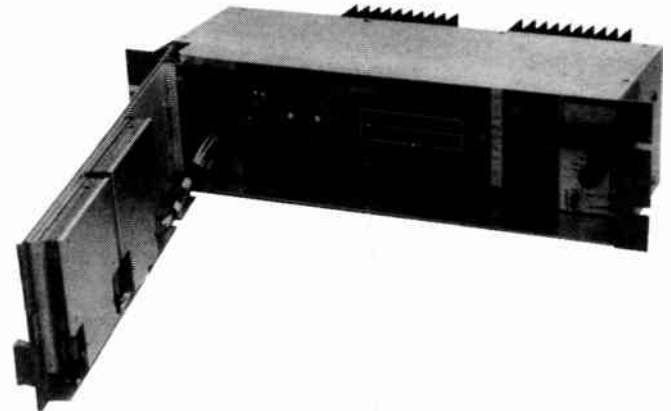
- Meter Panel:** Output power/receive level, video level, synthesizer phase volts plus all system voltages
- Diagnostics:** Front panel summary alarm LED plus integral alarms for all system voltages, each audio subcarrier presence, synthesizer phase lock, AGC, etc.

Power Requirements

Voltage Input: Choice of AC from 110 to 240V ± 10% 50 or 60Hz with optional 12 or 24VDC negative earth supply

RFL Series Models:

Transmitters	RFL-205B	RFL-255B	RFL-705B	RFL-1305B
Receivers	RFL-204B	RFL-254B	RFL-704B	RFL-1304B
Frequency Bands	*1.70- 1.99- *2.11- 1.99GHz 2.11GHz 2.3GHz	*2.30- 2.45- *2.50- 2.45GHz 2.50GHz 2.65GHz	*6.50- 6.875- *7.125- 6.875GHz 7.125GHz 7.4GHz	*12.25- 12.7- *13.25- 12.7GHz 13.25GHz 13.7GHz
Nominal O/P	12.0W	10.0W	1.0W	0.25W
Receiver N.F.	3.0dB	3.5dB	4.0dB	5.0dB



Environmental To

- Specification:** + 25 to + 115 deg. F
- Safe Use:** -5 to + 125 deg. F
- Storage:** -25 to + 140 deg. F
- Humidity:** 95% long term
- Altitude:** 10,000 ft.

Mechanical Description

- Transmitter and Receiver:** Direct 19" rackmounting with hinged door for access. Width: 19" Height: 5.25" Depth: 6" Weight: 15 lbs.

Accessories

- Additional Audios:** Up to 4 integral as required
- Automatic Changeover:** Independent 19" rackmounting unit
- Installation Components:** Full range available

ROSS VIDEO LTD.

Production Switchers

RVS210A/RVS216A Video Production Switchers

Features Common to Both Models:

- Three bus Multi-Level Effects (MLE) system permits manipulation of foregrounds, backgrounds and titles without ever locking up the switcher and the Transition Preview system enables you to see every effect or wipe before you take it, even with the switcher on the air
- Program/Preset buses permit simple flip/flop operation using the cut button. Transition controls include cut button, wipe or dissolve using fader handle or auto transition
- Three completely independent auto transition units, programmable from 1 to 999 frames
- Key bus permits source selection for chroma keys, video keys and matte keys
- MLE keyer features video or matte fill, internal, external or split-screen key, optional RGB chroma key, key invert, key mask using pattern generator
- Three independent matte generators for wipe borders, title matte and background
- Key input from key bus, an external source or a character generator; key fill from internal video, character generator or the independent DSK matte generator
- Key invert and key mask using pattern generator
- Downstream keyer transition can be tied to the effects system
- In normal operation, the MLE keyer and Downstream keyer "remember" key and softness levels, fill source, borders etc. for each source
- Independent frame rate auto transition for fade-to-black with preview system that shows next program output after fade-to-black is completed
- Linear keying for compatibility with anti-aliasing character generators
- Standard general purpose interface to each of the three auto transitions or a fourth line which permits selection of any one of the three
- Video Input: 1V p-p, composite, bridging
- Pulse Input: 1-8V p-p, 75 ohms, bridging; 1 sync, 1 blanking, 1 burst flag (PAL only)
- Video Outputs: 1V p-p, 75 ohms, 2 program, 2 preview, 1 blank
- Frequency response: ± 0.1 dB to 5.5MHz; +0.1 to -1.0dB to 8MHz

RVS210A Video Production Switcher

- Twelve wipe patterns with modifiers: hard or soft edges, hard or soft bordered edges, pattern aspect ratio, pattern reverse, rate-controlled pattern positioner
- Independent control of both wipe and split screen border widths and soft edge
- Cut or dissolve titles in or out manually or with independent frame rate auto transition
- Learn Key feature permits computerized editor to initiate wipe or dissolve to multiple keys
- Control panel measures 14.5" x 17.6" x 7" deep. Can be mounted on desk or in rack space using optional adaptors. Rackmounting requires 8 rack units. Rack frame requires 3 rack units 5 1/4" and is 18.25" deep
- Differential phase: $\leq 0.7^\circ$ (10-90% APL)
- Differential gain: $\leq 0.7\%$ (10-90% APL)

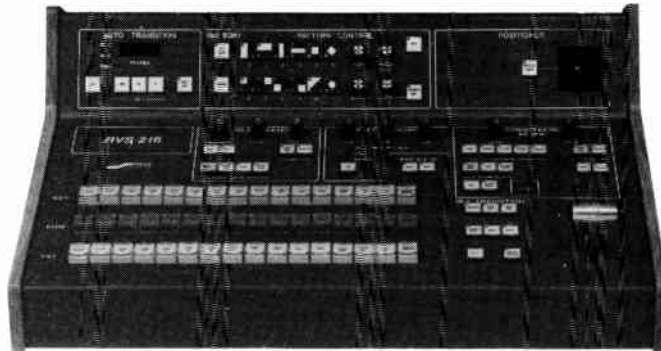
210A-10 Video Production Switcher (10 inputs) including your choice of: 2 meter control cable (210A-302) or 10 meter control cable (210A-310) and technical manual. \$10,950.00

Options

- 210A-115** RGB chroma keyer \$ 800.00
- 210A-135** Pulse regenerator 1,000.00
- 210A-140** Linear key border generator 1,500.00
- 210A-230** Twelve event memory system. 1,200.00
- 210A-231** Serial interface adaptor 1,200.00

210A-136 Feature Package Number 1 Includes:

- Function Button—This feature brings a wide range of operational modes, additional production facilities and aids to easier operation and ability to wipe to DSK.
- 210A-136** \$1,200.00



RVS-216A

210A-137 Feature Package Number 2 Includes:

- 12 additional wipes • Two extra DSK border shadow modes
- 210A-137** \$900.00
- 210A-250** Spares kit 450.00
- 210A-330** Control cable, 30 meters 175.00
- 210A-400** Rackmount adaptor for control panel 100.00
- 210A-410** In-desk mounting adaptor for control panel 150.00

Note: Feature package 2 may only be purchased in conjunction with feature package 1, building upon the items offered by package 1.

RVS216A Video Production Switcher

- 24 wipe patterns with modifiers: hard or soft edges, hard or soft bordered edges, pattern aspect ratio, pattern reverse, rate-controlled pattern positioner. One of the patterns is user programmable
- Wipe limit determines maximum size of wipe pattern at full limit of fader movement
- Non-sync inhibit detects non-synchronous sources and inhibits keys, wipes or dissolves and substitutes a cut at the end of the transition. Non-sync LEDs indicate the presence of a non-synchronous source
- Pulse processor provides consistent color framing of synchronous signals by means of sync and burst reinsertion
- Cut, dissolve, or wipe titles in or out manually or with independent frame rate auto transition
- Linear keyer
- Function button allows the user to select many alternate modes of switcher operation, useful operator aids and diagnostic routines
- Control panel measures 14.5" x 22.25" x 7.5" deep
- Rack frame requires 3 rack units (5.25") and is 18.25" deep
- Differential phase: $\leq 0.5^\circ$ (10-90% APL)
- Differential gain: $\leq 0.5\%$ (10-90% APL)

216A-16 Video production switcher (16 inputs) including your choice of: 2 meter control cable (216A-302) or 10 meter control cable (216A-310) and technical manual. \$15,450.00

Options

- 216A-115** RGB chroma keyer \$ 800.00
- 216A-110** Encoded and RGB chroma keyer 3,100.00
- 216A-140** Linear key border generator 1,500.00
- 216A-135** Pulse regenerator 1,000.00
- 216A-230** 12 event memory system. 1,200.00
- 216A-231** Serial interface adaptor 1,200.00
- 216A-250** Spares kit 450.00
- 216A-330** Control cable, 30 meters. 175.00
- 216A-410** In-desk mounting adaptor for control panel 225.00

Note: Switcher price includes one each of operation and installation manual

ROSS VIDEO LTD.**Production Switchers****RVS-504/505 Series Video Production Switchers**

• Clean panel layout only 46" long • Most simple transitions are made between Background bus (B) and Background Preset bus (B PST) • B bus is always the On-Air Bus • When B PST source is transferred to the On-Air B Bus at the end of a transition, the B source is automatically transferred to the B PST bus • Foreground source is selected on the F bus and the processing mode is selected in the Foreground group of MLE controls • Mode selections include RGB and Encoded Chroma Keys, Non-Additive Mix, Split Screen, Spotlight, PST Key and Matte Key • Each MLE Title Keyer is a complete Downstream Keyer with 4 input sources. Three inputs can be wired from primary crosspoints and tally is supplied • The Transition Control Group...Dissolve, Wipe and Take buttons are located adjacent to the Fader • HOLD buttons, conveniently located in the control group for each MLE level, allow directing a transition to any or all levels • Available with 16, 20 and 24 inputs, and in NTSC, PAL and PAL-M standards

504A-16	Video Production Switcher (16 inputs)	\$36,850.00
504A-20	Video Production Switcher (20 inputs)	38,505.00
	Extra control cable for basic switcher	per ft./8.40
505A-16	Video Production Switcher (16 inputs)	40,719.00
505A-20	Video Production Switcher (20 inputs)	42,790.00
505A-24	Video Production Switcher (24 inputs)	45,054.00
	Extra control cable for basic switcher	per ft./8.40

Options**Encore Memory System**

504-220	Encore (freestanding)	\$7,857.00
504-220A	Encore with extension tub to match switcher tub	8,634.00
504-220B	Encore with cassette storage	8,683.00
504-220C	Encore with cassette and extension tub	9,550.00
504-224	Extra control cable for Encore	per ft./1.40
505-220	Encore (free standing)	7,857.00
505-220A	Encore with extension tub to match switcher tub	8,634.00
505-220B	Encore with cassette storage	8,683.00
505-220C	Encore with cassette and extension tub	9,550.00
505-224	Extra control cable for Encore	per ft./1.40

Quad Split

• Quad Split does not tie up any switcher bus, and virtually gives you 4 extra buses free • Each quadrant has access to any 9 predetermined primary inputs • Includes diagonal, offset and conventional quad patterns • Has its own border color generator • Lets you preset the next source for each quadrant...then do a vertical internal take of the entire scene

505-160	Quad Split Screen	\$3,596.00
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RVS 514 Series Video Production Switchers

• Designed for any small studio, edit suite or van • Operational convenience of the PGM PST style of switcher offers added power to a fully integrated MLE system • Complex multilevel effects are immediately accessible via wipe, dissolve or cut transitions • See the next event on the preview monitor as you compose it • Logical controls allow any effect to be achieved easily • Patented Transition Preview System • Most simple transitions are made between the PGM bus and the PST bus • PGM bus is always the On-Air bus • When the PST source is transferred to the On-Air bus at the end of a transition, the PGM source is automatically transferred to the PST bus • Foreground source is selected on the F bus and the processing mode is selected in the Foreground group of MLE controls. Mode selections include RGB and Encoded Chroma Keys, Non-Additive Mix, Split Screen, Spotlight, PST Key and Matte Key • Complete Downstream Keyer with a 4-input source selector...the 5th bus of the switcher • The Transition Control Group...Dissolve, Wipe and Take buttons are located adjacent to the Fader • Conveniently located HOLD buttons allow directing a transition to any or all levels • One rack frame only 7" (4 RU's) also contains all optional accessories and 2 aux buses • Additional frame is required to accommodate 6 more aux buses • Switcher panel width is 28" (12

**RVS-514**

inputs or 34" (20 inputs) and 18" deep • Available with 12 or 20 inputs, and in NTSC, PAL and PAL-M standards

514A-12	Video production switcher (12 inputs)	\$29,652.00
514A-20	Video production switcher (20 inputs)	31,801.00
	Extra control cable for basic switcher (per ft.)	8.40

RVS 524 Series Switchers

• Designed for any small studio, editing suite or mobile van • Manipulate up to four video signals with just one fader handle • Permits changing the background picture either separately or in combination with the foreground and title sources...or dissolving or wiping behind a chroma key...all without locking up the switcher • Most simple transitions are made between the PGM bus and the PST bus, using the familiar flip/flop mode of operation • PGM bus is always the on-air bus. When the PST source is transferred to the on-air bus at the end of a transition, the former PGM source is automatically transferred to the PST bus.

• The foreground source is selected on the F bus and the processing mode is selected in the foreground group of MLE controls. Mode selections include RGB and encoded chroma key, split screen, PST key and matte key • MLE title keyer is a complete Downstream Keyer with a 4 input source selector...the 5th bus of the switcher • A variety of patterns and effects can be created with the 18 basic patterns (Inner Pattern Group), Pattern Modulation, Horizontal and Vertical Multipliers, Joystick positioner and optional Rotary and Spin wipes • Each pattern, chosen with the rotary selector, can have colored and soft edge borders • Push-pull switch on the aspect ratio control knob is used to round corners on the box wipe patterns • Horizontal and vertical multipliers multiply the pattern a number of times horizontally or vertically or both • Joystick can change the number of multiple patterns appearing on the screen, as well as positioning a pattern • Colored and soft edge borders are standard • One rack frame only 7" high (4 RU's) houses all electronics and optional equipment, plus two aux buses. An additional frame is required to accommodate six more aux buses • Switcher panel width is 22" (12 inputs) or 28" (20 inputs) and 16.65" deep

Options**Rotary/Spin Wipe**

• Nine standard rotary wipe patterns are available with colored and soft borders • Spin: A full excursion of the fader handle spins some patterns 360° and simultaneously reduces their size until they vanish • Spin Preset: The angular position of a pattern can be set manually

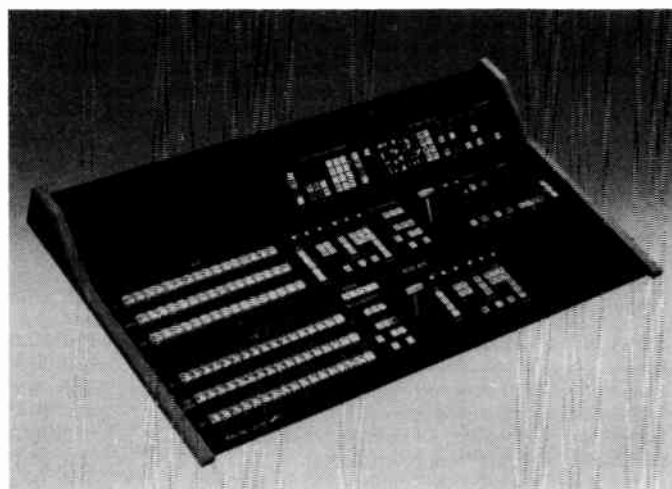
524B-12	Video production switcher, 12 inputs	\$23,756.00
524B-20	Video production switcher, 20 inputs	25,690.00
	Extra control cable for basic switcher	per ft./8.40

ROSS VIDEO LTD.**Production Switcher****RVS416 Production Switcher**

- Two 4 bus Multi-Level Effects (MLE) systems permit manipulation of eight sources simultaneously in foregrounds, backgrounds and keys without ever locking up the switcher; the Transition Preview system enables the operator to see every effect or wipe before taking it, even with the switcher on the air
- Program/Preset buses permit simple flip/flop operation using the cut button. Transition controls include cut button, wipe or dissolve using the fader handle or auto transition
- Six separate matte generators provide color for wipe borders, title matte and background
- Expanded GPI interface function means that any editor with GPI has access to all auto transition starts as well as several of the switcher memory modes
- The Modify button, unique to Ross Video, allows the user to select many alternate modes of operation and to access useful operator aids and diagnostic routines from the control panel without the need for a separate configuration device
- Video output pulse processor has sync and burst replacement to provide consistent color framing of synchronous signals by means of sync and burst re-insertion
- Preset black permits a two stage transition starting with the present source followed by a fade-to-black, then to the next source selected on the preset bus
- Five independent auto transition units, programmable from 1 to 999 frames
- Master fade-to-black includes independent frame rate auto transition for fade-to-black, with preview system that shows next program output after fade is completed
- Non-sync inhibit detects non-synchronous sources and inhibits keys, wipes or dissolves, and substitutes a cut at the end of the transition. Non-sync LEDs indicate the presence of a non-synchronous source. This feature can be overridden
- Two independent pattern generators controlled by pushbutton selector
- Wipe limit is available to stop the auto transition of any pattern at a pre-determined size
- Keyer 1 features video or matte fill, internal, external or split screen key, optional RGB and encoded chroma key, key invert and key mask
- Keyer 2 features video or matte fill, internal, external or character generator key, optional border controls and independent auto transition and cut buttons for additions without leaving the MLE control group
- Key over enables selection of key 1 over key 2 or key 2 over key 1 within each of the MLE systems
- Key memory permits key 1 and key 2 to "remember" key and softness levels, fill source, borders, mask parameters, etc. for each source on the keyer

Options

- **Editor Serial Interface.** The editor can control MLE 1, MLE 2 or both MLEs at the same time via the dual serial port, using RS 232 or 422 computer interface
- **Event Memory.** Storage and recall of 50 complete switcher setups including key levels, patterns, matte levels, transition rates, etc. Assignment switches permit storage of information from either or both MLE systems
- **Linear Key Border Generators.** Provides an extremely high quality key border, outperforming other border generators; offers good resolution on small letters and virtually eliminates the jaggedness on inclined edges that is common to most border generators
- **RGB/Encoded Chroma Keys.** Single RGB keys available for both MLE systems. Encoded chroma key available for MLE 1 offers flexibility of keying from videotape or from any encoded video signal. Plug-in boards ensure simple field installation without video input timing complications

**RVS 416**

- **Rotary, Star Wipe and Pointer Generators.** Rotary wipe patterns, including the clock wipe, are available with colorized and hard or soft borders. Many of the usual patterns can be made to spin and the rotation can be tied to the rate of fader movement or can be continuous at a fixed rate. The five point star can also spin and the pointer can be rotated and positioned
- **Matrix Wipe Generators.** A variety of matrix wipe patterns causes the wipe to take place from one scene to another with a mosaic effect. The wipe can take place in a random, spiral or zig-zag pattern or in variations of these. Several mosaic tile sizes are used, resulting in patterns having a total of 64, 256 or 1024 tiles
- **Pulse Regenerator.** No external drive pulses are needed. All required pulses are produced by locking to an incoming color black reference

A2416-010 Video production switcher, operator, technical and installation manuals, extender boards, connector kit, mask generator (MLE 1), mask generator (MLE 2), 10m cable **\$32,950.00**

System Options

A3000-086	25m control cable	\$ 250.00
A3000-165	50m control cable	320.00
A3000-330	100m control cable	500.00
A2216-047	Pulse regenerator	1,000.00
2416-142-11	Memory system	1,800.00
2416-142-12	Dual serial interface	1,800.00
A2416-291	Extra technical manual	200.00
A2416-292	Extra operator's manual	35.00
A2416-293	Extra installation manual	35.00
A2416-250	Spare parts kit	850.00

MLE 1 Options

A2210-044	RGB chroma keyer	\$ 800.00
A2216-143	Linear border generator	1,500.00
A2216-048	Matrix wipe generator	1,300.00
A2416-050	Rotary wipe generator	2,200.00

MLE 2 Options

A2210-044	RGB chroma keyer	\$ 800.00
A2216-044	Encoded/RGB chroma keyer	3,100.00
A2216-143	Linear border generator	1,500.00
A2216-048	Matrix wipe generator	1,300.00
A2416-050	Rotary wipe generator	2,200.00

ROSS VIDEO LTD.

Production Switchers

RVS-508 Video Projection Switcher

- 20 or 24 inputs, as selected, includes Color Black and Color Background • 2 Multi-Level Effects (MLE) Systems, each with 3 buses (foreground, background and background preset), foreground keyer, title keyer, 31 pattern wipe generator, and patented transition preview system • Foreground keyer has 9 inputs, including self key, matte key, non-additive mix, external, split screen, spotlight, and preset/key bus, plus optional RGB/ultra key and encoded chroma keyers • Title keyer has 4 input source selector, including preset/key bus for self key, color outline/matte fill generator, and analog border generator. Borders may be white or black • Wipe pattern positioner can preset wipe location and modulate vertical edges with adjustable frequency and amplitude. Modulation can be used in the locked or free-run mode • Wipe aspect ratio is adjustable and box or corner wipes may have their corners rounded. Wipe patterns may be multiplied horizontally, vertically, or both • Program and preset buses • Master fade-to-black handle • Color generator for color background pushbuttons, MLE-1 Wipe/Border, and MLE-1 Matte Fill • Non-synchronous input inhibit automatically performs cut at end of fader travel when dissolves or wipes between non-sync inputs would cause unwanted picture disturbances • Choice of colored or white bus pushbuttons • Wipe limits are adjustable • Masking available on foreground keyer • 2 heavy-duty power supplies • 25' interconnect cables between control panel and electronics mainframe • Oak panels on ends and top • Extender board • Special tool kit • Spare parts kit • Technical manual

508B-20 Video production switcher (20 inputs) . . . \$69,857.00

508B-24 Video production switcher (24 inputs) . . . 73,465.00

Extra control cable for basic switcher (per ft.) . . . 14.00

RVS 517 Series Switchers

- 12 or 20 inputs • Designed for any post-production, van or studio installation • Wide range of optional equipment enables the 517 to meet most production requirements • Operational convenience of the PGM/PST style of switcher offers the added power of two fully integrated MLE systems • Logical controls allow any effect to be achieved easily with a minimum of confusion. For example: preset a title by the push of only a single button, then move the fader handle to put it on-air • Complicated transitions that include up to four sources can be seen on the preview monitor and adjusted without disturbing the on-air output of the effects system • After previewing a wipe or dissolve, switching off TRANS P/V automatically returns the monitor to the next scene preview mode, regardless of which limit the fader is at • Most simple transitions are made between the PGM bus and the PST bus. At the end of a transition, the PST source selection is transferred to the PGM bus and the PGM source is automatically transferred to the PST bus • MLE title keyer is a complete downstream keyer with a four-input source selector • The Transition Control Group—dissolve, wipe and take buttons are located adjacent to the fader handle • Conveniently located HOLD buttons permit directing a transition to any or all levels • The Preview (or next scene) monitor always shows what change will take place in the next transition • Adjusting key levels, effects, borders or colors is simplified and there are no surprises because the next



RVS508

- scene is always in sight on the preview monitor • A wide variety of patterns and effects can be created with the 30 basic patterns, pattern modulation, horizontal and vertical multipliers, joystick positioner and optional rotary/spin wipes and matrix wipes • Equipped with two pattern generators which are independently controlled by an assignable pushbutton pattern selector • Selector has 30 pattern keys, an assign key and a shift key. The most commonly used patterns may be selected directly • When the SHIFT key is turned on, 30 different patterns may be selected, thereby providing a total of 60 patterns from the selector panel • 17 1/2" of rack space required for the 517 electronics package, including all options. Control panel 34" -38" wide and 26" high, depending on number of inputs

517A-12 Video production switcher (12 inputs) . . . \$51,744.00

517A-20 Video production switcher (20 inputs) . . . 55,524.00

Extra control cable for basic switcher (per ft.) . . . 12.72

Option

Ultra Key

- Keying with any color • Superior hue discrimination • Production flexibility • Ease of operation • Continuous remote control of hue adjustment—you can key with any color • Completely integrated into the MLE system, meaning that you use it like an ordinary chroma key unit without the limitations and restrictions imposed by add-on units • Change foreground or background sources separately or in combination with each other or with titles • Permits the use of two or more chroma key cameras with selection right on the switcher control panel, including automatic key follow of the foreground bus video selection • Optional multi-camera selector is available • No distortion of colors in the keyed scene. That means you can make transitions to and from chroma key situations without the distracting hue shifts on the keyed-in subject • Separate "traveling matte" output may be recorded for subsequent post-production to eliminate problems of encoded keying • Two remote controlled adjustments—hue selection and null control. With the use of the null control, you can eliminate blue edging or blue tint

Ultra Key . . . \$3,780.00

RTS SYSTEMS, INC.

Programmable Master Station Intercom

SERIES 800

802 Master Station

The 802 Master Station is a sophisticated microprocessor-assisted intercommunications control station capable of providing 22 independent signal paths operating in up to six separate modes. It offers an array of features including intercom, squawk, IFB/SA, station-isolate and signaling. An intelligent combination of hardware and software programmability allows the user to conveniently structure an individualized operating format. The 802 does not require space consuming central electronics, yet it features a sensible front panel layout, unique momentary/latching action buttons, individual channel listen level controls, and stereo headset source assignment.

Microprocessor-Assisted

The 802 utilizes a powerful Z80 type microprocessor to control the selection and operation of multiple functions and capabilities. For example, front panel switch functions may be user programmed to meet changing needs and requirements, or electronic switching circuitry may be instantly reprogrammed. In fact, almost all circuitry and functions may be programmed for specific conditions. This refined firmware package offers immense capabilities via the standard EPROM. In addition, special firmware can be created for unique applications.

Smart Features

Each 802 can operate independently and may be employed as a single unit or used in multiples, depending on the application. A wide range of functions is incorporated into a single, compact rackmount package. Standard and optional features may be combined to configure each station to user specifications. These features include 2-wire conference-line intercom with separate talk/listen switching, one-way announce/page functions, IFB (program interrupt), squawk address (dedicated-line intercom), station-isolate (video-iso), program monitoring and multi-source audio selection for mono or stereo headset. Six programmable, non-committed relays can be activated by any one or combination of front panel switches.

Programmable signaling circuitry (call lights) may be incorporated as an option for use in conference-line or dedicated-line operations. These call lights may be augmented by a chime signal. A memory circuit holds the flashing call signal for a predetermined time or until answered.

Each individual channel of the 802 can operate in either a 2- or 4-wire balanced line mode making it easy to couple to external equipment such as other intercom systems, radiotelephones, telephone circuits and communications lines. Flexible design allows ample system accessibility through 19 circuit access ports.

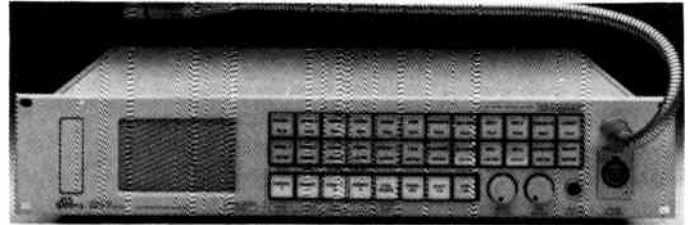
The 802 is completely self-contained, requiring no external electronics or other ancillary equipment.

Applications

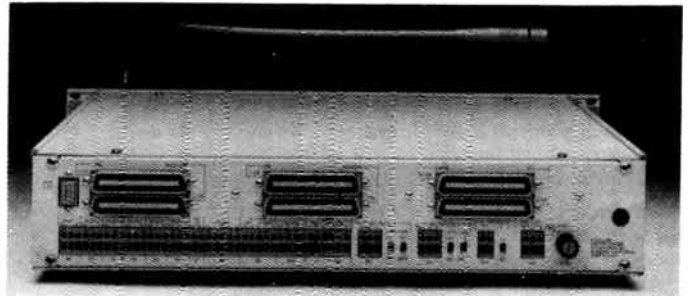
The 802 is powerful and versatile enough for every intercommunications application. In the entertainment industry, teleproduction, broadcast and theater users appreciate the sensible controls, quick set-up, and programmability. The 802's adaptability, non-volatile user memory, and presets are perfect for industrial applications such as high level security operations, oil production communications, large scale research teams, aerospace command centers and airport control towers.

All front panel switches have dual level illumination and large easy-to-read interchangeable legends. The switches also feature a unique momentary/latching action; the microprocessor continually senses the position of each switch and determines whether to make a temporary or permanent latch. As a result, every switch can operate in either a momentary or latching mode.

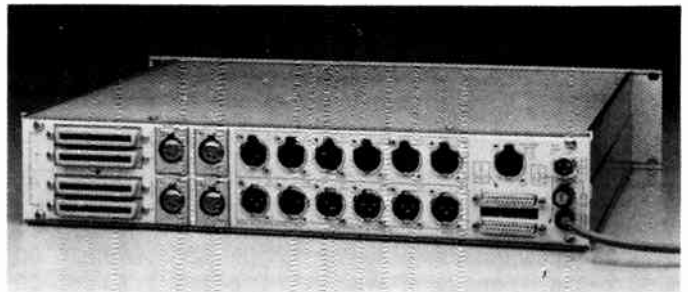
Infrequently used controls are placed on a hidden, yet easily accessible front panel pullout adjustment board. These controls include listen assignment switches for the stereo headset and loudspeaker, trim pots for individual channel listen levels, headset and panel microphone gains, and switch illumination intensity. The 802 is compatible with dynamic and carbon microphone headsets as well as "plantronics" type mini headsets. A front panel mounted gooseneck microphone may be used in conjunction with the loudspeaker for headset-free operation.



802



802 Rear Panel



862 Rear Panel

862 System Interconnect may be used to interface to other intercom systems such as the TW Intercom System.

802	Master Station/Communications Control Center	\$5395.00
862	System Interconnect for 802/I/O to other equipment	1638.00

Options

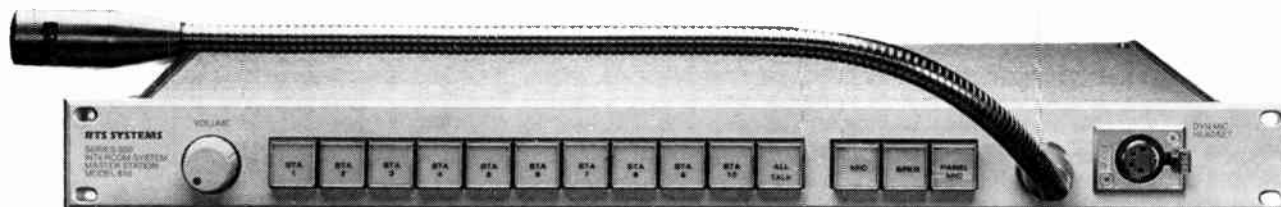
802-A1	Option Base	\$ 270.00
802-B3	Talk, Channels 7-12	435.00
802-C2	4-Wire Receive, Channels 1-6	215.00
802-C3	4-Wire Receive, Channels 7-12	215.00
802-D2	Call Signal, Channels 1-6	280.00
802-D3	Call Signal, Channels 7-12	280.00
802-E1	Chime Signal	95.00
802-F1	Squawk/Dedicated Address, 6 Channels	525.00
802-F5	Squawk/Dedicated Address, Additional 4 Channels	510.00
802-G1	IFB/4001 Emulate	225.00
802-G5	IFB/4002 Emulate	170.00
802-H1	ISO/VCP6A Emulate	135.00
802-H5	ISO/VCP12A Emulate	105.00
802-FS	Master Station Field Spare Parts Kit	1275.00
802-DS	Master Station Depot Spare Parts Kit	1500.00
EPROMS	Master Station Updated Software	246.00

Note: Option A1 is required for options D, E, F, G, H. Option E1 requires options B3, D2 or D3. Option F5 requires option F1.

When ordering combinations of more than two of the following options, please consult your dealer for feasibility and pricing: B3, F1, F5, G1, G5, H5.

RTS SYSTEMS, INC.

Intercom System



MATRIX/CONFERENCE-LINE INTERCOMMUNICATIONS

810 MASTER STATION

The 810 Master Station is a multi-purpose intercom station designed for use in professional applications. Featuring four different modes of operation, the 810 is capable of satisfying a wide variety of intercommunication requirements.

The 810 is compatible with other Series 800 products. All intercom lines are balanced line-level, and operate in a full-duplex mode. Interconnection to TW intercom circuits is also possible through ancillary equipment.

A group of 11 pushbuttons serve as the selection switches. The first 10 buttons may be latching or momentary-action and directly access the intercom lines. A momentary-action All Talk pushbutton enables each station to talk simultaneously to all the intercom lines.

All front-panel pushbuttons are illuminated at a low level for easy identification in darkened environments; when engaged or tallied, they become brightly lit.

The 810 can be ordered in 4 versions to accommodate specific operational requirements in a variety of system arrangements. The 10 selection pushbuttons take on different functions in each version of the 810.

Squawk System

The 810 can be used to create a 10 x 10 point-to-point squawk system. Any one of the 10 user stations can talk to any other station or combination of stations. Communication is dedicated to each respective station and the receiving station will automatically hear all incoming messages.

A station can talk to multiple stations simultaneously by depressing any combination of buttons. Depressing the All Talk button will page all stations simultaneously.

In a typical operation, any station can talk directly to any other station by depressing its respective pushbutton. There is one momentary pushbutton for each station.

Matrix Intercom System

The 810-AA can be used as a user station within a 10 x 10 matrix intercom system. Any one of the 10 stations can talk to any other station or combination of stations. All 10 pushbuttons are latching action for maintained and dedicated communications to other stations. The receiving station will automatically hear all incoming messages.

Each latching-action pushbutton will illuminate when engaged, indicating switch status.

10-Channel Conference Line Intercom System

The 810-CL can be used as a user station within a 10-channel conference line intercom system. All pushbuttons are latching action to allow continuous communication on any channel or combination of channels.

5-Channel Conference Line Intercom System

The 810-5CTL can be used within a 5-channel conference line intercom system. All pushbuttons are latching action to allow continuous communication on any channel or combination of channels. Each channel has a separate talk and listen pushbutton; this allows any combination of listening and talking to selected channels.

Interconnection

Interconnection to the 810 is straightforward using standard 50-pin microribbon connectors. A rear panel, multi-pin, molex connector provides access to various circuit ports essential for coupling to other intercom equipment.

810	Master Station/10 Channel Squawk System Station	\$1727.00
810-AA	10 Channel Matrix System Station	1800.00
810-CL	10 Channel Conference Line Station	1827.00
810-5CTL	5 Channel Talk/Listen Conference Line Station	1827.00
-M	20" Gooseneck Panel Microphone	140.00
865	Central Matrix/Required for 810 Squawk System	1047.00
4012	50-pin x 12 (3-pin XLR type connectors) System Interconnect.	549.00

927 Reference Tone Generator

The 927 is designed for use in making master and/or duplicate audio or video tapes. Operating in a stereo mode, it offers a significant improvement in record/playback quality assurance since a broad spectrum of frequencies can be placed at the head end of the tape rather than a single tone. In addition to discrete tones, white noise, pink noise, noise reduction tones, and stereo channel I.D. are available.

The 927 can also be used for test applications such as telephone lines, satellite and microwave links, professional audio studios, and semi and fully automated test benches.

927 \$1195.00

MSA-325 Modular Loudspeaker

A full range loudspeaker that fits conveniently into a standard 19" EIA rack. It is a single rack unit in height by one half rack unit in width allowing it to be used singly or in tandem pairs. Maximum handling power is 10W.

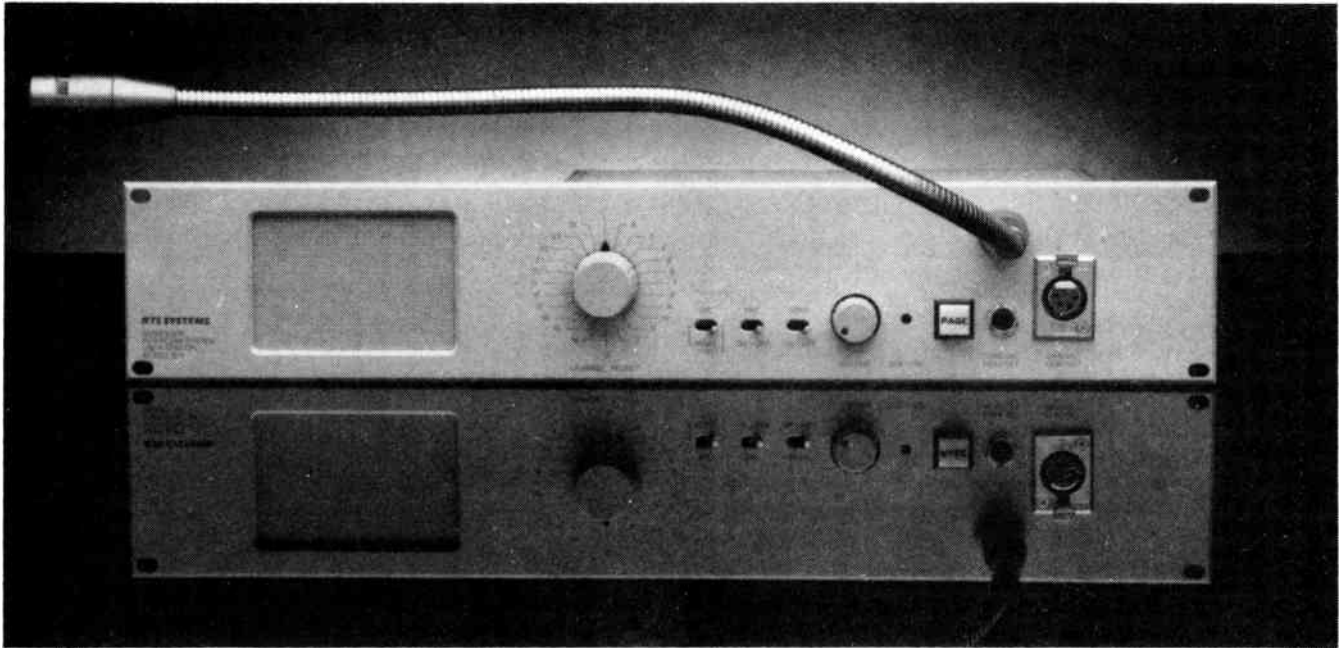
It is designed to be used with 810 Master Station but may be used for any monitoring application.

The MSA-325 is the lowest profile full range loudspeaker and enclosure available today. Considering it is only 1³/₄" high, it puts out an amazing amount of sound.

MSA-325 \$140.00

RTS SYSTEMS, INC.

Intercom System



824 TWENTY-FOUR CHANNEL INTERCOM STATION

The 824 Rackmount Speaker Station is a 24 channel intercom user station designed to work within a Series 800 component intercommunication system. Mounted in a standard EIA equipment rack, it is particularly suited for applications that require a simultaneous "open-listening" mode of operation with a panel microphone and loudspeaker as well as a private mode of operation with a headset or a handset.

In the hands-free open-listening mode (both the loudspeaker and panel microphone turned on), acoustic feedback is suppressed by adjustment of a front panel sidetone (balance) control. This control cancels the originating microphone signal in the local loudspeaker.

In the private operating mode, almost any headset or handset can be used while the loudspeaker is turned off. This mode may be expanded by using the loudspeaker for monitoring and the headset or handset for conversation.

Practical operating features include rotary switch selection of any one of 24 channels; a Page pushbutton switch to allow any one station to address all other stations independently of the selected channel or volume setting; a panel microphone/speaker select switch; microphone on-off latching-action switch, a speaker on-off switch and a full range volume control. A dynamic microphone headset connector, and carbon microphone headset connector accept almost any type

of headset—including Plantronics telephone-type headsets.

User oriented features include a microphone limiter circuit for equalizing levels, a powerful loudspeaker/headphone amplifier and silent channel select switching.

The 824 may be connected in a system of up to 100 user stations. All stations are bridging and do not affect the line. There are no central electronics, switching, or interconnect; all select switching and amplification is done at each station. All lines are balanced and without voltage (dry). They operate in a two-wire, full-duplex mode. A local AC power supply provides power to each 824. Line interconnection is accomplished via standard 50-conductor 25-pair cable. Line interconnection and distribution may be run in parallel or series or a combination of both. (4025A, a 1 x 4 splitter and 4022, a 1 x 2 splitter, can be used for cable routing and distribution.)

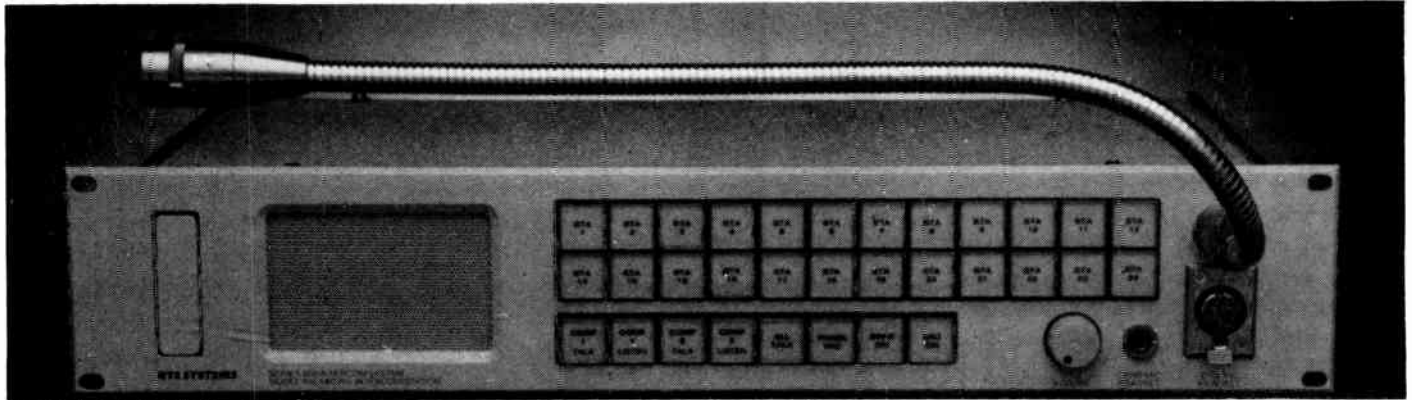
The 824 system may be employed in a medium to large facility where multiple station, multi-channel intercom is required. Up to 24 separate conversations may take place simultaneously with any combination of stations; any station may select any channel.

The 824 may be interconnected to other RTS System's intercommunication and pro-audio products. Interfacing can be accomplished via 4024 Connecting Block, 862 System Interconnect, or custom made devices.

824 \$1217.00

RTS SYSTEMS, INC.

Intercom System



848A

848A Programmable Matrix Intercom System

The Model 848A Programmable Matrix Intercom Station is the main component of a "distributed summing bus" matrix intercom system. In a point-to-point system arrangement, each station can talk to any one or combination of other stations.

A quantity of two stations can be used to create a 2x2 minimum size system, while a quantity of 24 stations make up a 24x24 maximum size system. The latter system can support 12 separate and independent conversations. Most typically, however, each station would be in communication with a number of other stations designated by that given station's operational needs.

In addition to 24 regular talk buses each station has an All Talk bus for system paging and two TW intercom conference-line circuits for direct connection to standard RTS systems intercoms.

The 848A is augmented with a powerful computer which provides a series of new functional capabilities and operational enhancements.

Programming features include electronic momentary/latching switch action, latch disable, instant mike-on, calling station tallies, received call stacking, auto-stacking answer-back, forced crosspoints, crosspoint inhibit, auto return talk, crosspoint grouping, and busy line lock out.

A dedicated-line matrix intercom system can be used wherever point-to-point intercommunications are required. Typically, applications employ a number of persons who need to carry on private conversations with specific individuals or groups of individuals. The ability to set up and alter (in real time) each station for a group of specific "talk-to" destinations helps to maintain a continuity in the exchange of information between individuals working in other areas, on other channels, on the same 848A system—without interference from persons not involved.

In addition to the private conversations, party-line conversations can take place simultaneously on the two conference-line circuits. This mixing of communication modes can effectively augment the total intercommunication capability. A group of sub-mix level controls located on a front panel pull-out adjustment board allows each user to adjust the mix of input sources to suit his individual needs.

Applications include television and radio broadcast operations, teleproduction studios and mobile units, theme park operations, schools and training centers, and a variety of industrial and commercial operations.

This system is a 24x24 Matrix Intercommunication System. Operating in a 4-wire, full-duplex mode, all communication paths are distributed to each station, thus the term "distributed summing bus." This concept eliminates the need for central matrix switching electronics—all station select switching is done directly at each station.

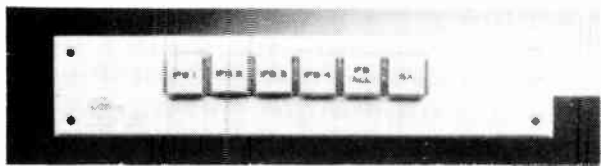
Each talk path is dedicated to a send/receive bus. In a typical operating example, the user selects the station he wishes to talk to by pushing that respective pushbutton. The selected receiving station will automatically hear the sending station. The receiving station may respond to the sending station by simply pressing the respective pushbutton. When the communication is completed, each station can switch off that circuit. Another mode would be to leave the circuit switched up and turn off the mike switch. This would be especially useful when a number of circuits are switched on but the user wishes not to be heard for a moment. An All Talk switch allows any station to talk to all other stations simultaneously.

Each station is augmented with two TV intercom conference line circuits. This capability has been included to allow each station to connect to standard TW intercom system lines. In this manner the matrix-based intercom may be directly connected to satellite conference line systems as required. Conference-line channels 1 and 2 are accessible on individual front panel talk and listen switches. These circuits, of course, can be used simultaneously with point-to-point matrix operation.

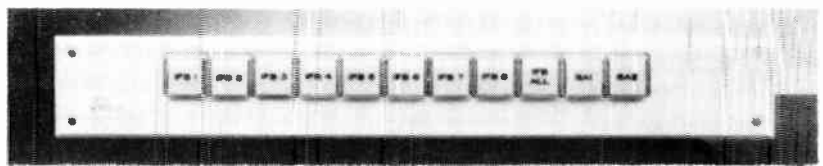
All stations are self-contained and do not require external electronics, central power supply, or central matrix switching.

The system operates on balanced lines, making it impervious to external interference and interline crosstalk while maintaining excellent frequency response and voice clarity over long distances.

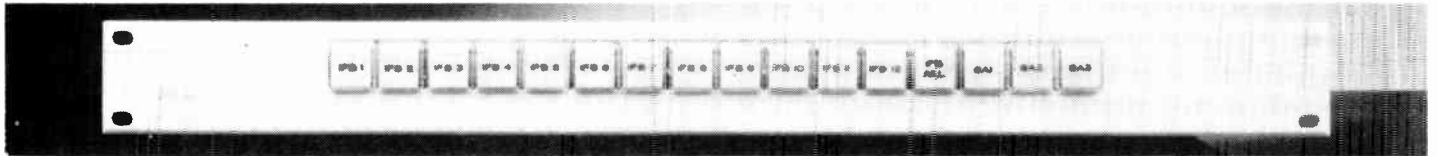
848A	User station/24-channel matrix line . . .	\$2500.00
4025A	1x4 25-pair 50-pin passive switcher . . . . .	.89.00
DC848	Data concentrator.	1200.00



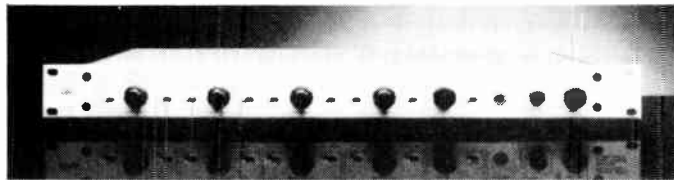
4001



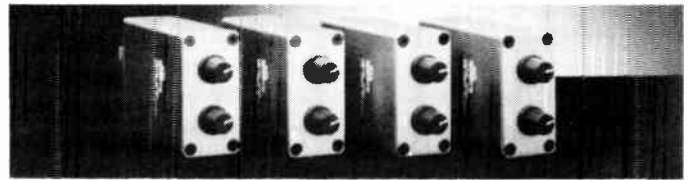
4002



4003



4010



4020

SERIES 4000 IFB SYSTEM

A one-way communications system, created especially to meet critical requirements in the television broadcast industry. This program-interrupt system is used primarily for cueing on-air talent. It is based on a modular building-block concept that allows the user to configure a system sized to meet his requirements. Main system components consist of control stations, user stations, and central electronics. A system may grow to four 4003 Control Stations, three 4010 Central Electronics, and twelve or more 4020 User Stations. A brief operational description of an IFB System: The talent is receiving a program feed through the IFB System components. The director pushes a button on his control station which interrupts the program feed and permits the talent to receive a message from the director's microphone. Two or more talent positions may be interrupted independently or all together.

The Series 4000 IFB System control stations are designed to provide the necessary switching commands and voice signal origination that ultimately becomes the part of the composite IFB signals to the talent user stations. Each station provides a given number of switch functions according to its model number. (All switches are illuminated momentary pushbuttons with two brightness levels.) The 4001 has six switches: IFB-1 thru IFB-4, IFB ALL, and SA (studio announce). The 4002 has eleven switches: IFB-1 thru IFB-8, IFB ALL, SA-1, and SA-2. Model 4003, with sixteen switches, provides IFB-1 thru IFB-12, IFB ALL, SA-1, SA-2 and SA-3.

Each control station model may be ordered with a high-quality gooseneck microphone permanently attached to the top panel. (An "M" suffix is added to the model number: 4001M, 4002M and 4003M). Should an existing microphone be more suitable for operations, the "M" suffix model need not be ordered. A terminal-strip connection on the control station microphone preamplifier circuit board accepts a microphone- or line-level signal from the existing microphone. Any convenient nearby microphone may be used, i.e., an intercom headset microphone, a paging microphone, audio-slate microphone, etc.

The Model 4010 central electronics unit contains all the necessary control functions and electronics to provide the active link between Models 4001, 4002, or 4003 control stations and Model 4020 user stations. It performs the silent electronic switching between program and voice, assigns the program channels to the appropriate outputs, sets the program/voice level mix to the talent, and supplies two channels of composite audio, combined with a DC voltage, to the Model 4020 user stations. In addition, it provides convenient front panel monitoring facilities for set-up and testing.

The Model 4025A Splitter Assembly is designed for applications involving 50-pin microribbon connectors. There are five high-quality connectors wired in a parallel pin-to-pin configuration with flat ribbon cable, one male connector and four female connectors.

The Model 4020 user station, a small "belt pack" package, allows the user to receive audio signals as designated by the central electronics unit and the control stations. It is the electronics package typically used by talent personnel, such as newscasters, sportscasters, musicians, etc.

Each 4020 contains the necessary electronics to provide a stereo audio signal to the user. Two power amplifiers rated at 1/2 watt each are capable of driving almost any set of headphones, earphones, or even small loudspeakers.

Since each 4020 is bridging to the line, up to three stations can be paralleled across a single output of the 4010 central electronics unit.

A flat ribbon cable may be ordered by adding an "F" suffix on the model number, e.g. 4015-5F. A standard vinyl sheath round cable with stranded wire may be ordered by adding an "L" suffix on the model number, e.g. 4015-5L. Cable assemblies may be ordered in the following standard lengths (in feet): 5, 15, 25, 50, 75, 100, 150.

The Model 4025A Splitter Assembly is designed for applications involving 50-pin microribbon connectors. There are five high-quality connectors wired in a parallel pin-to-pin configuration with flat ribbon cable, one male connector and four female connectors.

The 4025A is a completely passive device and may be used as a splitter, with one input and four outputs, or as a combiner, with four inputs and one output.

The Model 4015 Cable Assembly is a pre-wired double ended connector/cable assembly with 50-pin microribbon connectors that are wired pin-to-pin. The assembly is available in two types: ribbon cable for light-duty interior use and round cable for exterior use.

4001	4 IFB, 1 SA Control Station	\$ 565.00
4002	8 IFB, 2 SA Control Station	724.00
4003	12 IFB, 3 SA Control Station	935.00
-M	20" Gooseneck Panel Microphone	140.00
4010	Central Electronic, 4 IFB, 1 SA.	1800.00
4012	System Interconnect (For 802/810 Master Stations)	549.00
4020	Talent Electronics/Portable User Station	240.00
4022	1 x 2 Splitter Assembly	38.00
4001-RMA	Rackmount Adaptor for 4001 or VCP6A.	93.00
4002-RMA	Rackmount Adaptor for 4002	93.00
4024	Connecting Block.	58.00
4025A	1 x 4 25-pair 50-pin Passive Splitter.	89.00

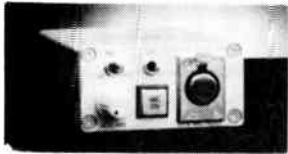
RTS SYSTEMS, INC.

TW Intercom System

TW Intercom System

- Over 25 different components and accessories
- Operates in full duplex mode, simultaneous talk and listen, to and from each user station

- Up to 75 user stations can be employed
- Phase III circuitry permits 12V power operation, multi-channel selection, 10 mile range, and balanced line operation



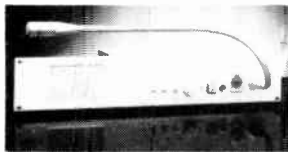
BP300 Belt Pack User Station
Lightweight user station provides two channel operation. May be used in portable, semi-portable, and fixed position applications. \$292.00
BP300L w/call light 364.00



BP320 Belt Pack Stereo User Station
Portable user station designed for personnel requiring stereo operation between two channels. Typically, a split-feed dual headphone headset is used. \$505.00
BP320L w/call light 577.00



RM300 Rackmount User Station
Designed to mount in one unit of standard rack space. Provides same features as the BP300. \$360.00
RM300L w/call light 450.00



RMS300 Rackmount User Station
Allows for "hands-free" operation with panel microphone and speaker or headset/handset operation for private listening. \$699.00
RMS300L w/call light 795.00



SPK300 Portable Speaker User Station
Can operate in an open-listening mode with a speaker and push-to-talk microphone or privately with a headset or a handset. \$575.00
SPK300L w/call light 650.00



CM300 Console Mount User Station
Designed to be secured in a desktop or console top. Identical in features to the BP300 and RM300. \$360.00
CM300L w/call light 429.00

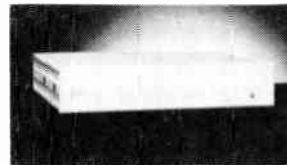


WMS300 Wall Mount Speaker Station
Designed to fit into a standard 4-gang electrical box. Augments headset/handset operation with a loudspeaker for monitoring the line. \$510.00



LH267 Headset
Single headphone, dynamic mike, 6' cord w/A4M conn. \$70.00

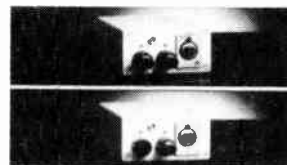
LH268 Headset
Dual headphone, dynamic mike, 6' cord w/A4M conn. \$87.00



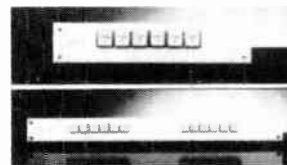
PS8 Power Supply
A single PS8 (two-channels) can power: 12 user stations w/o call lights, 7 speaker stations w/o call lights, 7 user stations with call lights, 5 speaker stations with call lights, or a combination of above. \$437.00



PS31 Power Supply
A single PS31 can power approximately 30 user stations on any combination of 3 powered output channels. A program audio input can be added to any one of the three channels. \$1175.00



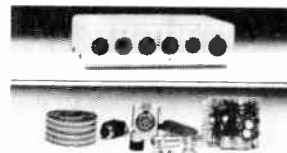
TW1222, TW1224, System Interfaces
Designed to provide the best possible coupling between the TW Intercom system and other types of intercom and communications systems.
TW1222 \$558.00
TW1224 488.00



VCP6A, VCP12A, VIE306 Station ISO
Provides the necessary control, switching and interface functions for private communications between any of 3 control stations and 6 user stations.
VCP6A \$ 949.00
VCP12A 1595.00
VIE306 3087.00



SAP1626 Source Assignment
Multiple switch assembly assigns any one of 12 intercom channels and/or 3 program audio channels to 26 separate intercom 2 channel user stations. \$2949.00



TW5W Splitter
A completely passive 1 x 5 connector splitter assembly. \$99.00



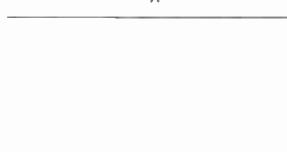
CPK62 Circuit Card Kit
Small-size user station plug-in circuit card. External controls and connectors are provided. \$217.00



DT108 Headset
Single headphone (50 ohms), dynamic mike, 6' cord w/A4M conn. . . \$210.00



DT109 Headset
Dual headphone (50 ohms), dynamic mike, 6' cord w/A4M conn. . \$240.00



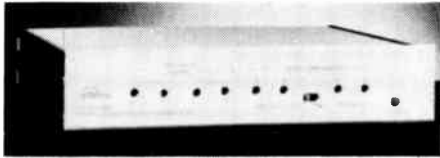
51103XD Headset
Single headphone, dynamic mike, 6' coil cord w/A4M conn. \$145.00

51303XD Headset
Dual headphone, dynamic mike, 6' coil cord w/A4M conn. \$160.00

RTS SYSTEMS, INC.

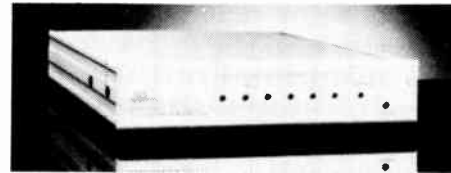
Professional Audio Products

Series 400 Professional Audio Products



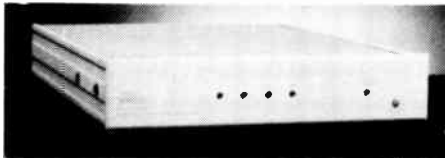
405 Professional Phono Preamplifier

High performance two-channel preamplifier designed for critical use in disc mastering, broadcast stations and commercial installations. It features adjustable cartridge termination, switchable rumble filter, and two output formats. **\$437.00**



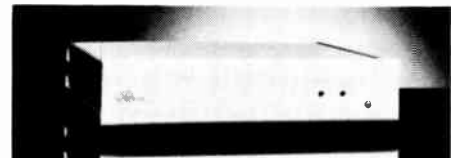
416 Distribution Amplifier

Expanded version of the 424 with six outputs. Both units provide outstanding performance specifications and feature individual output level controls, a master gain control, and 33dB of gain adjustment. . . **\$631.00**



424 Distribution Amplifier

High performance 1 x 4 audio distribution amplifier with balanced input and four individually amplified transformer balanced outputs. **\$453.00**



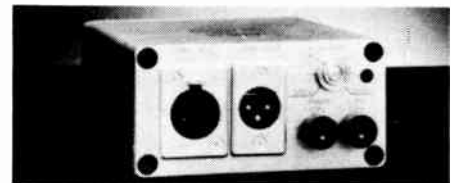
444 Dual Two-Channel Buffer Amplifier

Designed to couple consumer, semi-pro, and industrial equipment with professional systems, the 444 provides the necessary electronic interface between +4dBm Lo-Z balanced circuits and -10dBV Hi-Z unbalanced circuits. **\$368.00**



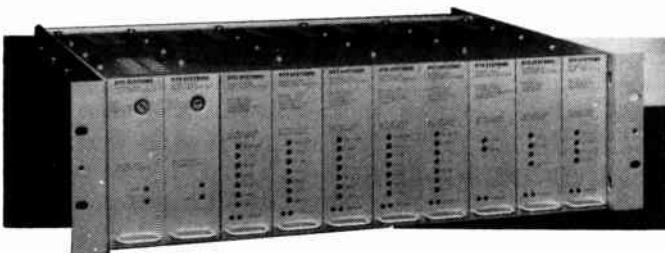
465 Microphone Preamplifier

Single-channel, high performance wideband preamplifier with transformer balanced input and output, this unit features a switchable limiter, switchable phantom mic power, and adjustable gain. . . . **\$477.00**



1400 In-Line Microphone Preamplifier

Battery powered high performance microphone preamplifier that features impression specifications, a switchable limiter circuit, and adjustable gain; all packaged in a durable compact housing. **\$264.00**



Series 2500 Amplifier System

Consists of a series of high performance audio amplifiers and other associated circuitry items that are designed to be part of a versatile card frame system. Up to eight plug-in circuit cards and two power supplies can fit into the three rack unit frame.

Specifications common to 2500 Amplifiers are: +28dBm into 600 ohm loads from 30Hz to 20kHz all outputs driven; +32dBV maximum input level; SNR > 100dB; input CMRR typ 75dB at 50Hz; 4µsec rise time; maximum phase shift +22.5° at 20Hz, -22.5° at 20kHz; output source impedances of 80 ohms or less.

2501 Card Frame Assembly

Consists of the basic card cage housing and related components: rear rackmount supports, strain relief bars, front cover, and interconnect housings and crimp terminals. **\$575.00**

2503 Extender Card Assembly

Designed to allow any one of the 2500 amplifier circuit cards to extend out from the card frame for servicing or adjustment **\$180.00**

2505 Power Supply Assembly

A ± 26V at 4A unregulated power supply mounted on a bent metal frame. It is expressly designed to fit into the 2500 card frame. Two 2505 power supplies for each card frame are recommended for backup power **\$383.00**

2510 1 x 6 Audio Distribution Amplifier

Consists of a single differential balanced input and six individually amplified transformer balanced outs. **\$520.00**

2512 Stereo 1 x 6 Audio Distribution Amplifier

Can be used as a single 1 x 12 or a dual 1 x 6 distribution amplifier. Optional remote gain VCA circuitry is available. **\$455.00**

2514 Quad Line Amplifier

Can be used as four discrete amplifiers or two stereo pairs. Optional remote gain VCA circuitry is available. **\$513.00**

2516 Quad Buffer Amplifier

Primarily designed to interface unbalanced -10dBV IHF level equipment + 4/ + 8dBm professional equipment. **\$520.00**

2522 Universal Relay Card

Comprises ten individual DPDT relays with buffered logic inputs. **\$272.00**

2524 Universal Dual Summing Amplifier

Consists of a pair of six input, one output summing amplifiers with balanced input/output circuitry. **TBA**

2528 Dual Microphone Preamplifier

Features phantom power, variable gain, balanced inputs and outputs, and very low noise. **TBA**

2540 Mix-Minus Matrix

A 24 input by 8 output monitoring device used to delete one of 24 inputs from each combined output for 8 different output groups. . **TBA**

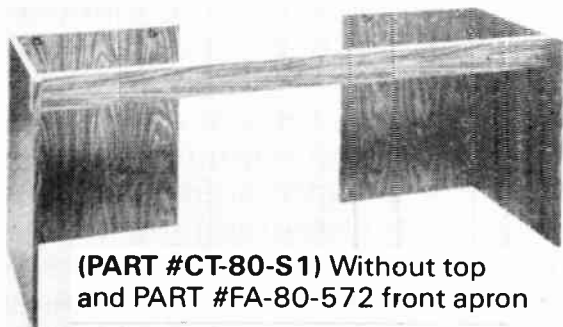
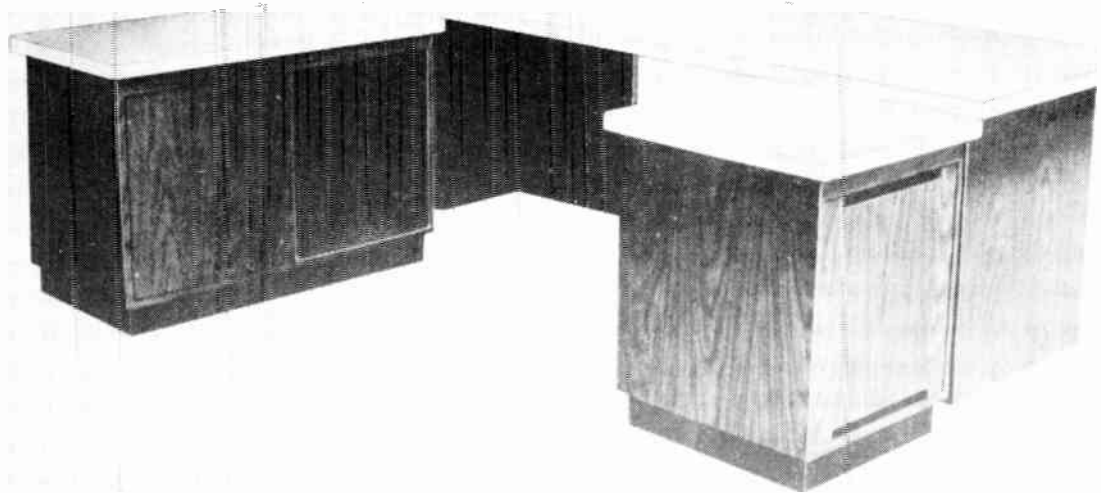
2542 Switcher

A single 16 input by 1 output or dual 8 input by 1 output remotely controlled audio switching network. **TBA**

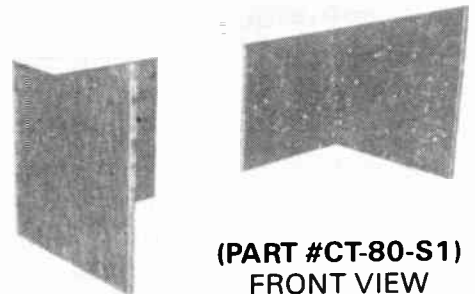
RUSLANG CORP.

*Modular Production Studio On-Air
Console/Turntable Pedestals*

S-SERIES



(PART #CT-80-S1) Without top and PART #FA-80-572 front apron



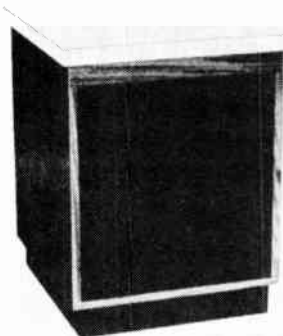
(PART #CT-80-S1) FRONT VIEW

Console Table (PART #CT-80-S1)

- Top: Full 1 1/2" thick up to 32" x 96"
Other sizes available
- Panel base: Four panels 24" x 29" high become a sturdy console table when assembled

Optional (PART #VS-80-S4)

- Vanity Shield: 12" wide x 42"
Available between panel bases (not shown)

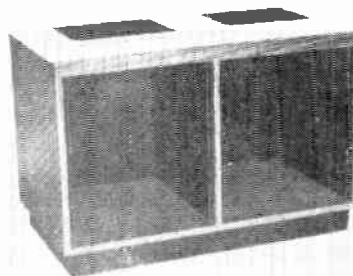


Single Pedestal (PART #SP-80-S2)

- 22" x 24" x 29" high
- 21" front rack space
- With standard EIA tapped rails
- Liftoff back panels
- Levelers

Optional (PART #BP-80-S21)

- 19" x 21" blank panels available for front



Double Pedestal (PART #DP-80-S3)

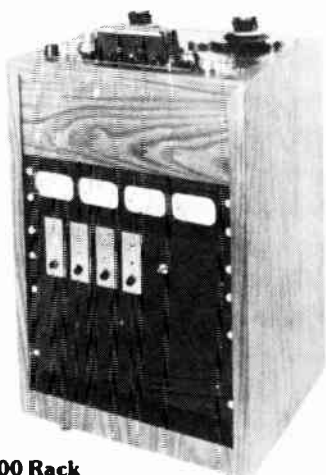
- 24" x 42" x 29" high
- Two 21" front rack spaces
- With standard EIA tapped rails
- Liftoff back panels
- Levelers

"S" SERIES

	Part Number
Console Table and Base Panels	CT-80-S1
Single Pedestal Cabinet	SP-80-S2
Double Pedestal Cabinet	DP-80-S3
Vanity Shield	VS-80-S4
Blank Front Panels	BP-80-S21
Front Apron	FA-80-S72

RUSLANG CORP.

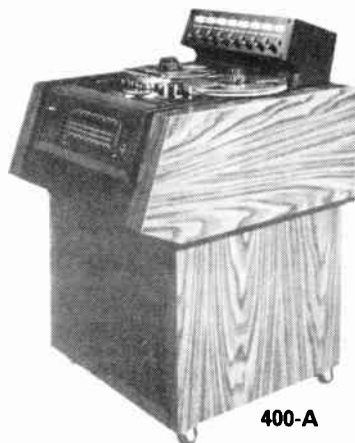
Tape Transport Consoles



RL200 Rack

For tape transports in two sizes, 18" and 24". 18" accepts tape transport up to 15 3/4" high, 24" up to 21" high. Standard includes casters, all rack mount rails and 7" blank front panel. Optional colors.

Part Number
RL200 — 18"
RL200C — 24"



400-A

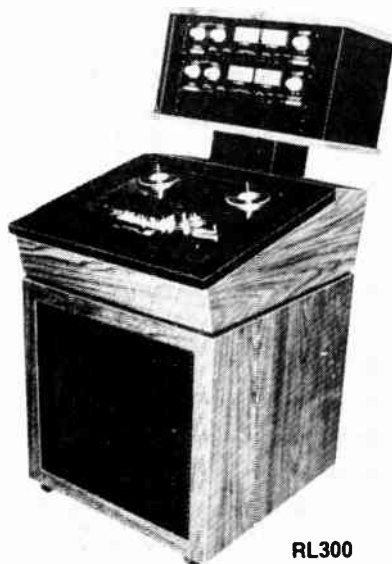


400-B

Console is shipped knocked down for easy, economical shipping. 10 bolts are used for assembly. Space-saver size is 22 3/4" wide; 33 3/4" high (variable on request); 27 1/2" front to rear. Can be locked in desired position without complicated hardware. Machine is dropped in place using feet to locate position and prevent movement. There is adequate cable accessibility allowed. Equipped with rollaround casters. Lower section has standard 19" opening front and rear, plus a shelf with back as standard equipment.

OPTIONAL: With additional rack rail and modifications, other equipment can be installed in front and rear of lower section. Console can be used for other rack mounted equipment. With fillers in top section removed, opening becomes standard 19". Rack rails can be added to mount other equipment. With rear riser assembly, a Ruslang over-bridge system can be added for additional overhead rack space. Console is laminated with standard Ruslang walnut and black trim; other colors optional.

Part Number
RL400-A
RL400-B



RL300

RL300 Table Top Console

RL300—Accepts tape transport 19" x up to 15 3/4" high-rack space overbridge. Transport lifts up for service. Primarily used as a table top installation.

A rack base called RL350 is available to make a roll-around console with 19 1/4" rack space directly below transport. Takes up 23 1/2" x 24" floor space. Casters included.

Overbridge Rack Space Height	11" or 13" Depth Front To Back
3 1/2"	
5 1/4"	
7"	
8 3/4"	
10 1/2"	
12 1/4"	
14"	



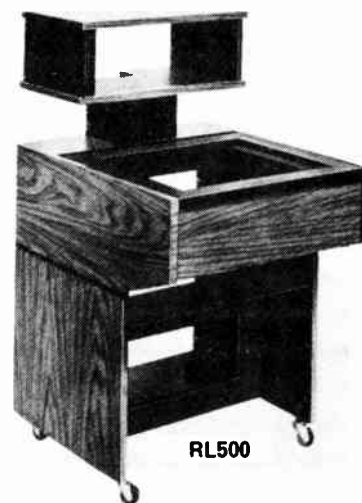
RL600

RL600 Tape Transport Console

RL600—Accepts tape transport 19" x 21" high standard or 21 1/8" high by request, plus other RL500 features. Optional overbridge can be added to RL600 with special riser.

RL500 Tape Transport Console

RL500—Accepts tape transport 19" x up to 15 3/4" high (17 1/8" high on special order). Transport tilts down in front for ease of operation; lifts up for service. Front directly under transport lifts off after loosening four mounting screws. Casters are included. The overbridge can accommodate any size required from 3 1/2" high to 11" deep to 36" x 19" depth (we have supplied).



RL500

11" or 13" Depth Front To Back Overbridge Rack Space Height

3 1/2"
5 1/4"
7"
8 3/4"
10 1/2"
12 1/4"
14"
15 3/4"
17 1/2"
19 1/4"
21"
22 3/4"
24 1/2"

16 1/2" Depth Front To Back Overbridge Rack Space Height

3 1/2"
5 1/4"
7"
8 3/4"
10 1/2"
12 1/4"
14"
15 3/4"
17 1/2"
19 1/4"
21"
22 3/4"
24 1/2"

RUSSCO ELECTRONICS, INC.

Mixer/Amps/Preamps

505 Studio/Master 5-Channel Audio Mixer

• 5 mixing channels, 4 channels with built-in preamps • Each preamp can be quickly modified to accept microphone, phono or high level signals • 5th mixer channel accepts 5 balanced, high level input lines, each selected with long-life, pushbutton switches • Studio/Master features pushbutton on-air switches with LED indicator lights • Cues on any channel and has a 3 1/2" true VU meter • Built-in 25W monitor amplifier provides power to your external speaker • Built-in headphone amplifier with stereo headphone jack allows you to use a monitor headset of high or low impedance • Built-in amplifier features FET muting • Cue amplifier drives a built-in 3" cue speaker • Allen-Bradley Mod Pots for quiet, trouble-free performance • Available as a rackmount model (505R) fitting in a 5 1/4" x 19" rack space, or as blue-gray, maroon, and black table model (505).

505 Desk type 5 channel unit—includes 25W built-in monitor amp \$1616.00
 505-S Desk top stereo unit—no monitor amp is included 2365.00

Note: Any stereo power amp may be used with the 505 stereo console as a monitor MP, but the 225 was especially designed for this purpose.

MA-225 Audio Power Amplifiers

• All purpose audio amplifier • Dual channel 25WRMS each • Excellent channel separation allows use as two monaural amplifiers • All solid-state • Epoxy glass circuit board • Low distortion—excellent frequency response • Fused output lines • Integrated circuit input stages • Accessory amplifier to the 505-S Console Mixer • Accessibility through the panel to change channel level preset controls
 MA-225 \$325.00

MA-325 Stereo Audio Power Amplifier

• Dual channel 25W RMS into 8 ohms • Distortion: < .3% THD at 25W output • Frequency response: ±.5dB 15Hz-25kHz • Hum and noise: <80dB below 25W • Channel separation > 60dB 20Hz - 20kHz • Input Z: 10K ohm unbalanced • Front panel peak indicators • RCA plug input jacks • Barrier strip output connector • 1 3/4" rackmount enclosure
 MA-325 \$449.00

2418 (Mono)/4428 (Stereo) Multi-Mate Distribution Amplifiers

• Multi-Mate gives you simplified routing of multiple audio signals • Instant flexibility without modifications or options; either stereo or mono with the same unit • Basic 2418 offers you 2 inputs with 4 stereo outputs or 8 monaural channels total • Larger capacity 4428 doubles those channels to 16 maximum • You may use either model balanced or unbalanced with no internal changes • Each individual output is separately screwdriver adjustable • Multi-Mate amps are RF proofed • We supply a spare internal IC • Desk top units are small with an antique silver no-mar finish • Anodized rackmount panel optional
 2418 Mono or Stereo/1 in 8 out or 2 in 8 out \$347.00
 4428 Mono or Stereo/1, 2, or 4 in with 16 out 530.00

2816 Audio Distribution Amplifier

• Total of 16 outputs fed by two balanced line inputs that can be fed by a single audio source or separated and fed by two audio sources • Features two sections of 8 outputs each • Each section is fed by a single balanced line • Amplifier may be used for stereo distribution or two separate mono sources • Level of each distributed audio line can be adjusted independently from the others with no interaction between the lines • Accidental feed on the line will not go back to the source • The 2816 does not use an audio transformer which often imposes limits on the audio signal • Amp delivers +18dBm into a 600 ohm line
 2816 Either 1 or 2 lines in with 16 lines out. Rackmount only \$470.00

MLD-22 Microphone/Line Driver Multi-Purpose Preamp

• Dual channel unit capable of driving a 600 ohm line to a maximum level of +18dBm • Used as a line to line booster amplifier, high impedance output equipment such as a tape recorder can be fed into this unit to feed a telephone line • The MLD/22 can be used as an unattended piece of remote equipment or as a stereo preamp • It can combine both mike or line channels into a single line out • Features gain levels that are adjustable • Use it for balanced or unbalanced operation • Self-powered, solid-state rugged and economical
 MLD-22 \$247.00



Studio/Master 505



2418



2816

Fidelity-Pro and Fidelity-Master Professional Phono Pre-Amps

• Pre-amps include integrated circuits, self-contained power supplies, industrial rated components and a custom-made "easy-access" enclosure • Mono or stereo versions available with balanced or unbalanced output • The Fidelity-Master series offers straight RIAA equalization • The Fidelity-Pro units feature switchable high and low frequency filters • The balanced output models include highest quality transformers for true line isolation • Two integrated circuits per channel give you peaks to +18dBm on 600 ohm line • All models are self-powered

FMMU	Fidelity Master-Mono output unbalanced 600 ohms	\$169.00
FMMB	Fidelity Master-Mono output balanced 600 ohms	202.00
FMSU	Fidelity Master-Stereo output unbalanced 600 ohms	262.00
FMSB	Fidelity Master-Stereo output balanced 600 ohms	324.50
FPMU	Fidelity Pro Mono output unbalanced 600 ohms	189.00
FPMB	Fidelity Pro Mono output balanced 600 ohms	225.00
FPSU	Fidelity Pro Stereo output unbalanced 600 ohms	282.00
FPSB	Fidelity Pro Stereo output balanced 600 ohms	339.00

Phono-Mate Professional Phono Pre-Amps

• Full solid-state circuitry • Lots of headroom at +16dBm • Straight RIAA equalization • RF proofed against outside interference from AM or FM stations • Mono or stereo versions available with balanced or unbalanced output • The balanced output models include highest quality transformers for true line isolation • "Easy-access" aluminum cases for easy servicing • Requires separate power supply—one power supply will serve up to 4 preamps

Phono-Mate Pre-Amps were designed for use with outside power supply. The Phono-Mate is supplied with connector cables for use with any outside source of DC power between 27 and 39V.

1-U	Mono preamp, unbalanced output 600 ohm output impedance.	\$109.00
1-B	Mono preamp, balanced output 600 ohm output impedance.	125.00
2-U	Stereo preamp, unbalanced output 600 ohm impedance.	163.00
2-B	Stereo preamp, balanced output 600 ohm output impedance.	195.00
PMPS	Phono Mate power supply	74.00

Refer to Green Section for Addresses and Telephone Numbers.

RUSSCO ELECTRONICS, INC.

Turntables

Cue-Master Turntable

• The unit is powered by a heavy-duty step-shaft synchronous motor (also available for 50 cycle operation) • Drive system is by a neoprene idler wheel transmitter power direct from the stepped capstan on the motor shaft to the inside platter rim • 3 speeds—33, 45, 78rpm • Acceleration is extremely fast, average results are 1/16 revolution of platter at 33rpm, 1/10 revolution at 45, 1/2 revolution at 78 • Oilite bronze bearings throughout for longer maintenance free service • Chassis adaptable to any 12" tonearm • Wow and flutter, less than 3/10 of 1% • Rumble (both vertical and lateral) -36dB down from standard NAB level • Standard color is blue-gray with maroon felt platter cover • Deluxe Mark V finish available at no extra charge

Weight of Entire Unit: 16 lbs.

Weight of Platter: 5 1/2 lbs.

Chassis Dimensions: 15 1/2" x 15 1/2"

Depth Requirement

Below Chassis: 6 1/2"

Cue-Master\$467.00



Cue-Master

Studio-Pro Turntable

• Unit is powered by a heavy-duty step-shaft motor (also available for 50 cycle operation) • Drive system is by a neoprene idler wheel transmitting power direct from the stepped capstan on the motor shaft to the inside platter rim • 2 speeds—45 and 33rpm • Oilite bearings are used throughout for extra long service life • Detachable tonearm mounting plate adaptable to any 12" tonearm • Acceleration, extremely fast, average results, 1/16 revolution of platter at 33rpm, 1/10 revolution at 45rpm • Wow and flutter—less than 2/10 of 1% • Rumble (both vertical and lateral) -38dB down from standard NAB level assures the finest sound reproduction • Standard color is blue-gray with maroon felt platter cover • Deluxe Mark V finish available at no extra charge

Weight of Entire Unit: 20 lbs.

Weight of Platter: 6 1/2 lbs.

Chassis Dimensions: 15 1/2" x 15 1/2"

Depth Requirement

Below Chassis: 7 1/2"

Studio-Pro\$527.00



Studio-Pro

Mark V Vari-Speed Turntables

• Removable/replaceable tone arm plate • Remote start/stop control: Momentary pushbutton with 24V lamp (electrically debounced by control circuitry), switch lights up when on • Low-profile Mark V will fit exactly into the mounting holes used for other RUSSCO turntables and screws down snug

Weight of Entire Unit: 20 lbs.

Weight of Platter: 6 1/2 lbs.

Chassis Dimensions: 15 1/2" x 15 1/2"

Depth Requirements

Below Chassis: 4"



Mark V

Mark V Broadcast/Deluxe

Features a LED tachometer that will show actual RPM speed as adjusted. Speed adjustment is made by screwdriver which safeguards tampering.\$720.00

Mark V Broadcast Production Model

Variable in speed with knob adjustment.\$720.00

RUSSCO ELECTRONICS, INC.

Amplifier/Remote Equipment

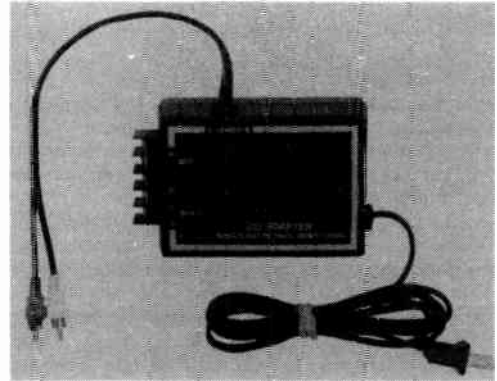
CD100 Compact Disc Adaptor-Amplifier

Using state-of-the-art manufacturing techniques, the overall price can be kept down without sacrificing quality. Designed specifically to interface consumer-type CD players, the CD 100 can be used to interface any high impedance output device to a 600 ohm line; balanced or unbalanced.

Specifications

Frequency Response: 15Hz - 30kHz
 H. Distortion: < .1%
 Noise: < 75dB

CD100.....\$69.95



T-212 Telephone Equalizer-Coupler

Built into the T212 is a three band equalizer which drastically changes the sound quality of the average telephone line enabling you to mold and contour frequency response as you need it, to transform a "tin can" phone line into a quality communication line. Other features include a 60Hz notch filter to eliminate hum, a high frequency boost filter for resurrecting lost highs, a 2W headphone amplifier, two 600 ohm high level output amplifiers, and rear panel connections for remoting the line connect switch and a hold switch. Single circuit board construction, no hard wiring and state-of-the-art PC mount components ensure the highest standards of construction and reliability.

When integrated with the Russco T321 remote broadcast mixer, the T212/T321 combination make up one of the simplest and most effective remote systems available today.



Specifications

All Outputs: < .3% THD at rated output level
 Phone Line Input: -15dB from typical phone line
 Hum and Noise Level: < -60dB below 0dB reference
 Frequency Response: 20Hz - 20kHz
 Equalization: + 10dB at 100Hz, 1.5kHz, 7kHz
 High Frequency Boost: + 6dB at 6kHz
 RF Proofed
 Transformer Isolated
 1 3/4" rack mount enclosure

T-212.....\$399.00

T-321 Telemote

The Stellar Series Telemote 321 gives you two low impedance microphone inputs and one medium impedance tape recorder input in a 3 lb. package. It requires no batteries or any other external power source except your phone line.

While you're broadcasting that important event, you can supply audio up to 3 headsets at once and control their level by a front panel pot. The audio level feeding the telephone line is controlled by a built-in limiter with the limiting action displayed by a LED bargraph meter. The 321 also incorporates a signal bell that allows calls originating at your station to be received at your remote location. Also, you may route the audio from a portable radio into the mixer for on-air checking with the program off the phone line. You'll like the convenient tilt-stand that doubles as a handle.

Specifications

- 2 low impedance microphone inputs (250 ohms)
- 1 medium impedance tape recording input, matches anything from 8 ohm tape recorder output to 10K ohms output
- 3"H x 8"W x 6"D
- Weight 3 lbs.
- Case: anodized aluminum cabinet with tilt up stand
- Frequency response of unit, 30Hz to 15kHz, maximum distortion 1 percent

T-321.....\$599.00



SACHTLER CORP. OF AMERICA

Camera Support Equipment

Video 80 Fluid Head

• OB/Studio applications • Leakproof, zero-friction fluid head • Fluid damping modules control very precisely camera/lens combinations weighing up to approx. 80kg • Damping modules guarantee grades of drag which can be reproduced exactly at all temperatures at which cameras can still be operated • Seven settings of drag for the horizontal and vertical position • Locks for the horizontal and vertical direction are working independent of the damping and counterbalancing system. They bring the camera to a stop, wherever desired, without transmitting vibrations • Maximum load: approx; 198 lbs. • Drag can be completely turned off, if one has to make sudden movements with the camera • Grades of drag: horizontally and vertically 7 each and 0 • V-shaped wedge plate is used to mount the camera to the sliding balance plate • Tilt angle: $\pm 60^\circ$

8080 Video 80\$7,935.00

OB 2 Tripod/OB Dolly

• Developed especially for outside broadcasting • Can be extended twice • Crank operated elevation unit • OB Dolly can have pneumatic tires of 8" diameter. As a special feature Sachtler offers an extender for the OB dolly. This extender, on the one side increases the size of the supporting base and on the other side it takes the weight off the wheels
 OB 2 Tripod (with elevation unit)\$4,595.00
 OB Dolly (with base extender, pneumatic tires)3,245.00
 OB Elevation column2,855.00

Video 20 II Fluid Head ENG/EFP

• Powerful counterbalancing spring • Positive operational pan and tilt lock • Safety lock • 100mm bowl, Pro-Junior intermediate tripod interface • A medium sized ENG/EFP fluid head for the ultimate in mobility • Lightweight but stable enough to accept ENG camera with EFP accessories • 15kg capacity • 5.5kg

Video 16 II 1 step on/off drag control for pan + tilt\$2,295.00
 Video 17 II 3 step on/off drag control for pan + tilt2,875.00
 Video 18 II 7 step on/off drag control for pan + tilt3,165.00
 Video 20 II 7 step on/off drag control for pan + tilt4,165.00

Video 25 II Fluid Head ENG/EFP

• A medium sized ENG/EFP fluid head optimized for on location shooting combining the stability and pan and tilt comfort previously offered only by significantly larger and heavier camera supporting systems • Balancing momentum adjustable in 4 steps • Positive operational pan and tilt lock • Safety lock • 150mm bowl, Mitchell intermediate tripod interface • 25kg capacity • 6.5kg

Video 25 II\$4,995.00
 Lens support435.00

Video 30 II Fluid Head EFP

• Heavy-duty 7 position dynamic counterbalancing system • 2 EFP pan arms • 150mm bowl, Mitchell intermediate-tripod interface • 40kg capacity • 9kg • For studio and field production using small studio or O.B. cameras

Video 30 II\$6,395.00
 Lens support525.00

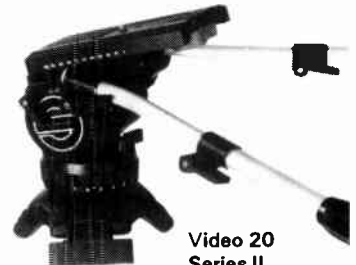
Panorama 7 + 7 Fluid Head ENG

• Touch and go quick-release system • One adjustable pan arm • 7 adjustable positions for pan and tilt • $\pm 90^\circ$ tilt range • 100mm bowl Pro-Junior intermediate tripod interface • 14mm pan arm ϕ • Touch and go system camera interface • Black enamel finish • 10kg capacity • 2.8kg • Small and lightweight fluid head for real news gathering • Integrated counterbalance spring adequate for today's ENG cameras

Panorama 7 + 7\$2,975.00
 Panorama 1 + 1 1 step on/off drag control for pan + tilt2,195.00
 Panorama 3 + 3 3 step on/off drag control for pan + tilt2,695.00
 Panorama to come with flat base in exchange for 100mm balladd 100.00



Video 80



Video 20 Series II



Combi Pedestal



Video 25 Series II



Panorama 7 + 7

Combi Pedestal

• Studio and field operation • Compact, modular set-up • Long-time wheel alignment of casters based on overload protection at each wheel case and after half a cycle of the steering wheel, all casters are aligned again • Double-wheeled casters with plained treads • Center column is supported with a low pressure pneumatic spring. A hand pump which is attached to the pedestal can be used to make readjustments while on location • Primary filling is made with a manual compressor • Brake for the center column • Make use of the pedestal's "on air" height adjustments without attaching the dolly • On slippery or delicate surfaces clip-on rubber feet for the pedestal are taking effect • Three-legged support construction • Safety catch prevents the center column from raising. Transport-clips at the center column prevent the tripod from unfolding while being carried • Precisely steerable dolly can be changed from a one-wheel to a 3-wheel steering mode (crab and steer) • Big steering wheel and telescopic transmission • Cable guards (height is adjustable) • Overload protection within each wheel guard ensures that the casters continue to run parallel • Transport and operation lock for the dolly arms • Folding design for pedestal and dolly to ease transport, no tools required; built-in handles • Twin wheels with a 4" diameter. Option: 6" • Maximum load: 55kg • Weight: 21kg

5198 Combi Pedestal\$ 7,395.00
 5198/1801 with Video 18 II Fluid head10,660.00
 5198/2021 with Video 20 II Fluid head11,660.00
 5198/2501 with Video 25 II Fluid head13,030.00
 5198/3001 with Video 30 II Fluid head14,430.00
 5196 Combi Pedestal/154 Dolly with twin wheels of 6" (154mm) diameter8,495.00

SACHTLER CORP. OF AMERICA

Camera Support Equipment

Pedestal 14

- Pneumatically supported center column tripod
- Allows the camera movement to acquire a third dimension
- Air pressure in the inside of the center column can be exactly adjusted to the camera weight. The camera is thus floating on an air cushion
- Center column can be locked in any position. For safe transportation, even while the center column is under pressure, a safety catch is engaged
- Center column is running on ball bearings
- Using the extendable tripod the stroke range of the center column can be adapted to the shooting requirements
- Height range: Spreader 29.1" - 53.5", Dolly 34.1" - 58.7"
- Center column range: 15.7"
- Maximum load: up to 44 lbs.

4190 Pedestal 14 \$1,250.00

Video 14 II Fluid Head

- 3 step dial-in drag adjustment
- Damping can be set for 3 different drag levels but the drag can also be disengaged. A selected setting can be re-engaged at any time
- Temperature span from -40° to +60°C
- Free-wheeling for pan and tilt
- Sliding, quick-release wedge plate (1/4" and 3/8" screws) for center of gravity compensation
- Touch and go system quickly fastens the camera to the supporting mount
- 2 adjustable pan arms
- In order to counterbalance (white tilting the camera) two adjustable pull-back springs are used
- Built-in counter balance spring tilt ± 60°
- Tripod interface flat base for video 14 pedestal/75mm bowl tripod
- Vertically and horizontally working brakes which when applied do not transmit vibrations to the camera
- For horizontal levelling a precise circular waterlevel is built-in
- Maximum load: approx. 33 lbs.

1400 Video 14 II Fluid Head \$1,295.00

Dolly 14 Rolling Triangle

- For pedestal and 75mm bowl tripod
- Heavy-duty 3.15" diameter casters
- Built-in handle
- 9.7 lbs.
- Dimensions for transporting: 75"H X 7.9"W x 24.2"L
- Maximum load: 88 lbs.

7053 Dolly 14 \$295.00

Tripods 14

- Work with a height of 15cm off the ground up to a height of approx. 1.50 meters
- 75mm bowl leveling
- Black anodized aluminum construction
- Maximum load: 33 lbs.

Tripod 14 Medium

- Height range: Spreader 14: 5.9" - 31.1"; Dolly 14: 16.1" - 33.5"

Tripod 14 Long

- Height range: Spreader 14: 24.8" - 54.3"; Dolly 14: 32.8" - 59.4"

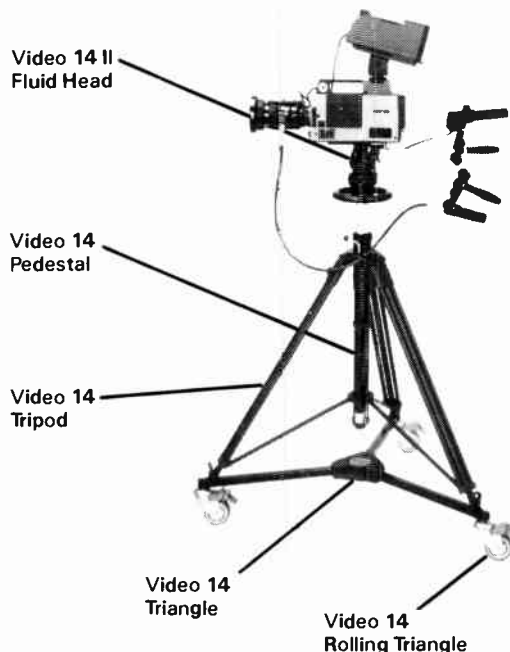
4151 Medium \$295.00

4182 Long \$315.00

Spreader 14

- For 75mm bowl tripod
- Works on slippery or delicate floors
- Light, robust and unbreakable
- For transportation purposes the spreader is simply folded up and remains attached to the tripod
- Maximum load: 88 lbs.

7001 Spreader 14 \$120.00



Video 14 II



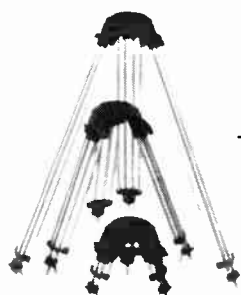
Tripod 14



Dolly 14 Rolling Triangle

SACHTLER CORP. OF AMERICA

Camera Support Equipment



Tripods



Hot Pod

Sachtler Tripods

- Extremely lightweight, robust and twist-free
- Ball-ring leg clamping devices with pre-set end pressure point
- Double claws for attaching triangle or rolling triangle—or stainless steel spikes for soft ground

	Panorama Specifications 100mm bowl	Horizon Studio and Standard Specifications 150mm bowl
Tripod long		
Height at 50cm spread	68-137cm	83-154cm
Length collapsed	82.5cm	92cm
Weight Duraluminum	2800g	4900g
Duraluminum h.d.	4150g	—
Inox	4750g	—
Carbonfiber	2300g	—
Tripod medium long		
Height at 50cm spread	—	68-137cms
Length collapsed	—	82.5cm
Weight Duraluminum	—	4550g
Tripod medium		
Height at 50cm spread	40-75cm	52-85cm
Length collapsed	50.5cm	57cm
Weight Duraluminum	2150g	3750g
Inox	2650g	—
Tripod short		
Height at 15cm spread	18.5cm	30cm
Length collapsed	21.5cm	32cm
Weight Duraluminum	1500g	3000g

Hot Pod

- Locked when folded
- Central lock for easy set-up
- Self-locking lever for camera levelling
- Pneumatically supported center column for increased rise and height
- Handy grip provided

For ENG Cameras:

The Sachtler Hot Pod with the Sachtler Panorama head.

Minimal height	940mm
(up to wedge plate)	1432mm
Legs fully extended	1892mm
Max. height	

For Recording Cameras:

The Sachtler Hot Pod with the Sachtler Video 20.

Minimal height	957mm
(up to wedge plate)	1449mm
Legs fully extended	1909mm
Max. height	

Volume, For Transport and Storage:

Hot Pod with Panorama	
Full length	1003mm, ø195mm
Hot Pod with Video 20	
Full length	1020mm, ø240mm

- Hot Pod (5185/10) with Spring 22 lbs. (10kg) for use with Panorama 7 + 7 Fluid head for ENG cameras **\$1,275.00**
- Hot Pod (5185/14) with Spring 31 lbs. (14kg) for use with VIDEO 20 Fluid head for recording cameras **1,275.00**

Tripods, 4" (100mm) Diameter Levelling Bowl for Panorama

Carbonfibre long, 33" (82.5cm)	\$1,065.00
Duraluminum heavy-duty long, 33" (82.5cm) . . . . .	.895.00
Duraluminum long, 33" (82.5cm) . . . . .	.675.00
Duraluminum medium, 20" (50.5cm) . . . . .	.635.00
Duraluminum short, 8" (21.5cm) . . . . .	.530.00
Inox (Stainless Steel) long, 33" (82.5cm) . . . . .	.985.00
Inox (Stainless Steel) medium, 20" (50.5cm) . . . . .	.945.00
Tripod-Extender 20" (50.0cm) . . . . .	.250.00

Tripods, 6" (150mm) Diameter Levelling Bowl For

Horizon 7 + 7/Studio 7 + 7/Standard 7 + 7	
Duraluminum long, 36" (92.0cm)	\$995.00
Duraluminum medium-long, 33" (82.5cm) . . . . .	.950.00
Duraluminum medium, 22" (57.0cm) . . . . .	.945.00
Duraluminum short, 13" (32.0cm) . . . . .	.695.00

Transport Covers for Complete Units

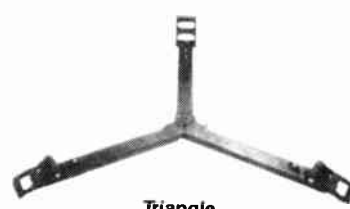
Panorama (head, 100mm bowl tripod long, triangle)	\$215.00
Panorama (head, heavy-duty tripod long, triangle) . . . . .	.295.00
Horizon 7 + 7 (head, 150mm bowl tripod medium-long, triangle) . . . . .	.445.00

Transport Covers for Tripods

4" (100mm) bowl medium	\$170.00
4" (100mm) bowl short . . . . .	.125.00
6" (150mm) bowl long . . . . .	.285.00
6" (150mm) bowl medium . . . . .	.225.00
6" (150mm) bowl short . . . . .	.215.00



Semi-Dolly



Triangle

Sachtler Semi-Dolly

- Lightweight rolling triangle
- Independent brakes for rolling and spinning action of the wheels
- Height adjustable wheel cable guards
- Easy-transport handy grip

Sachtler Semi-Dolly \$995.00

Sachtler Triangle

- Rubber and polyamid parts for slippery or delicate floors
- Light, robust, unbreakable
- Rubber pull loop tripod attachments
- Folds inward for transporting ease

Sachtler Triangle—Lightweight \$290.00

Sachtler Triangle—Heavy-Duty 395.00

SAMSON TECHNOLOGIES CORP.**Wireless Microphone Systems****Broadcast STD Series Frequency Selectable True Diversity Wireless Systems**

A significant evolution of wireless technology, Broadcast STD is the only system with 10 selectable frequencies in the receiver and transmitter, full RF monitoring and dbx noise reduction.

Offering more channels to choose from in different RF environments, Broadcast STD features ten selectable digitally-synthesized channels in both the receiver and the transmitter. The optimum channel can easily be selected using the BR-3 receiver's extensive RF monitoring capability on the front panel.

The visual "window" into the RF environment is actually a two-level, five segment multicolored LED ladder capable of scanning the RF level in any given location. Once the clearest frequency in the BR-3 has been selected, the user need only dial up the matching frequency in the transmitter. This delivers perfectly clear, uninterrupted wireless performance before the transmitter is even turned on. It also eliminates the need for a costly spectrum analyzer to "look at" the RF environment.

BR-3 Receiver

The BR-3 uses wide dynamic range dual-gate mosfet front ends. The dual receivers are arranged in a superheterodyne configuration with a maximum amount of interstage shielding.

A full array of convenient user features has been built into the BR-3. It includes dual A-B channel switching indicators, two separate 5 segment LED R.F. ladders that display R.F. signal strength, an LED 10 channel numerical indicator, separate up/down keyswitches for channel selection, audio level gain control, balanced XLR 600 ohm output jack, a 3-position attenuation switch for the balanced output (-20dB, -30dB, -40dB) and an unbalanced output jack with a nominal output of -20dB.

BH-3 Handheld Transmitter

Designed for maximum comfort with all-brass construction for total structural integrity, the BH-3 is available with a wide variety of today's most popular mike elements including the Electro-Voice N/DYM 757 Neodymium mike, the E-V BK-1 condenser and the Shure SM58, SM85 and SM87 capsules.

For greater ease of operation, all of the BH-3 transmitter's controls are located at the bottom of the mike barrel. These include a power on/off switch, mute on/off switch, a 10 channel selection rotary switch, a 3-function LED light to determine power "on", audio input overload and low battery, and a mike overload sensitivity control.

BT-3 Belt Pack Transmitter

The BT-3 supplies the highest level of sound and performance for a vast range of lavalier, headset mike and instrument applications. Supremely versatile, it accepts electret condenser mike capsules like the Sony ECM 44 and ECM 55, the Sennheiser MKE-2 or the Audio Technica 831-C uni-directional lavalier. The BT-3 comes equipped with a 6 pin Hirose input plug so that most any other type of lavalier may be used as well. The BT-3 is also fully compatible with the AKG C-410 and Audio Technica AT-73 headset microphones.

The BT-3's extensive controls include power on/off switch, a mute on/off switch, an audio level trimpot control, a 10 channel selection rotary switch, an external antenna and a unique "up-down" slide switch that optimizes its use with lavaliers, headset mikes or instruments.

Broadcast STD Series VHF Wireless Systems**Guitar System**

GC-1 instrument cable (1/4" male phone multi-pin plug); BT-3 body pack transmitter; BR-3 true diversity receiver. **\$1695.00**

Lavalier (Clip Mike) Systems

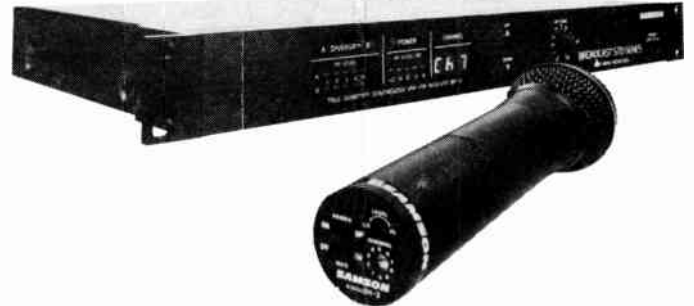
Audio Technica AT-831 uni-directional lavalier with multi-pin plug; BT-3 body pack transmitter; BR-3 true diversity receiver **1795.00**

Sony ECM-44 lavalier with multi-pin plug; BT-3 body pack transmitter; BR-3 true diversity receiver **1795.00**

Sony ECM-55 lavalier with multi-pin plug; BT-3 body pack transmitter; BR-3 true diversity receiver **1950.00**

Sony ECM-77 or Sennheiser MKE-2 lavalier with multi-pin plug; BT-3 body pack transmitter; BR-3 true diversity receiver **1995.00**

No lavalier included; multi-pin plug; BT-3 body pack transmitter; BR-3 true diversity receiver **1695.00**

**Headsets System**

AKG C-410 headset with multi-pin plug; BT-3 body pack transmitter; BR-3 true diversity receiver **\$1895.00**

Handheld Microphone Systems

E.V. N/DYM 757 dynamic mike; BH-3/757 handheld transmitter; BR-3 true diversity receiver **1995.00**

Shure SM-58 dynamic mike; BH-3/58 handheld transmitter; BR-3 true diversity receiver **1995.00**

E.V. BK-1 condenser mike; BH-3/BK-1 handheld transmitter; BR-3 true diversity receiver **2025.00**

Shure SM-85 condenser mike; BH-3/85 handheld transmitter; BR-3 true diversity receiver **2195.00**

Shure SM-87 condenser mike; BH-3/87 handheld transmitter; BR-3 true diversity receiver **2195.00**

Broadcast STD Series Wireless System Components**Receiver**

BR-3 true diversity receiver with antenna **\$1200.00**

Handheld Microphone Transmitters

BH-3/757 (E-V N/DYM 757 dynamic mike) **\$795.00**

BH-3/58 (Shure SM-58 dynamic mike) **795.00**

BH-3/BK-1 (E-V BK-1 condenser mike) **825.00**

BH-3/85 (Shure SM-85 condenser mike) **995.00**

BH-3/87 (Shure SM-87 condenser mike) **995.00**

Body Pack Transmitter

BT-3 body pack transmitter only **495.00**

Lavalier (Clip Mike) Microphones Only

Audio Technica 831 with multi-pin plug **125.00**

Sony ECM-44 with multi-pin plug **140.00**

Sony ECM-55 with multi-pin plug **295.00**

Sony ECM-77 with multi-pin plug **350.00**

Sennheiser MKE-2 with multi-pin plug **330.00**

Headset Microphones Only

AKG C-410 with multi-pin plug **250.00**

Antenna Distribution Amplifier

DA-4 distribution amplifier for 4 true diversity receivers (includes antenna connectors and cables) **625.00**

Accessories

GC-1 instrument (guitar/bass) cable for BT-3 body pack transmitter **\$35.00**

MK 100 expandable rubber mike clip. Fits any mike **8.00**

P-6 multi-pin female plug only. For input to BT-3 body pack transmitter **22.00**

MC-1 microphone adaptor cable XLR to P-6 plug. For adapting wired handheld mike to BT-3 body pack transmitter **45.00**

SCALA ELECTRONIC CORP.

Antennas

150-174MHz:

GP-150	VHF Groundplane 0dBd gain, omni, 144-174MHz (specify frequency), fully DC grounded, N or UHF connector . . . \$ 165.00
CDV-150	VHF sidemount dipole, 146-174MHz (broadband), N connector. 150.00
OG-4	Omnidirectional, 4.0dBd gain, 144-174MHz (specify frequency), N or UHF connector, (electrical downtilt optional: add \$30.00) 330.00
CA5-150EB	Five-element ruggedized yagi, 9.0dBd gain, rear-mount, H or V polarization, 144-174MHz (specify frequency), N or UHF connector 200.00
CL-150EB	High-performance ruggedized log-periodic, 7.35dBd gain, rear-mount H or V polarization, 147-174MHz (broadband), N connector 350.00

450-470MHz:

UBO-450K	Unity-gain (0dBd) omni, fiberglass, 406-470MHz (broadband), N connector \$ 155.00
UBO-470K	Unity-gain (0dBd) omni, fiberglass, 450-512MHz (broadband), N connector 155.00
OGB-455K	Omni, fiberglass, 5dBd gain, 440-470MHz (broadband), N connector 380.00
OG-6	Omnidirectional, 6dBd gain, 406-512MHz (specify frequency), N connector (electrical downtilt optional: add \$30.00) 330.00
OGB-460K	Omni, fiberglass, 7dBd gain, 450-470MHz (broadband), N connector 760.00
CA5-450	Five-element ruggedized Yagi, 10.0dBd gain, 406-512MHz (specify frequency) rear-mount, H or V polarization, N connector 185.00
CA7-460	Seven-element ruggedized broadband yagi, 10.0dBd gain, 450-470MHz (broadband) rear-mount, H or V polarization, N connector. 185.00
RA5-450	Radome-protected yagi, 10.0dBd gain, 400-512MHz (specify frequency), rear-mount, H or V polarization, N connector . . . 350.00
CL-400	Radome-protected log-periodic, B.0dBd gain, 400-512MHz (broadband), rear-mount, H or V polarization, N connector (35dB F/B ratio) 350.00
CPR-450K	Radome-protected helical, RH-CP, 12.0dBic gain, 400-512MHz (broadband), rear-mount, N connector 1540.00
PR-450U	Paraflector, half-parabolic screen, 15.5dBd gain, 450-470MHz (broadband), V or H polarization, N connector. 550.00
PR-450CU	Paraflector, as above except higher front-to-back ratio (25dB) 580.00
	Replacement feed assembly for PR-450U paraflector (specify 450-470MHz) 120.00
8000/460	Low-noise high-gain preamplifier, > 20dB gain, < 2.0dB noise figure, 450-470MHz (broadband), N connectors, cable-powered (includes 110VAC supply) 400.00

Note: Scala offers other antennas for the 450-470MHz band, including panels and dipoles. Also available are arrays of two or more antennas for increased gain and/or special patterns. Contact Scala for technical information and pricing.

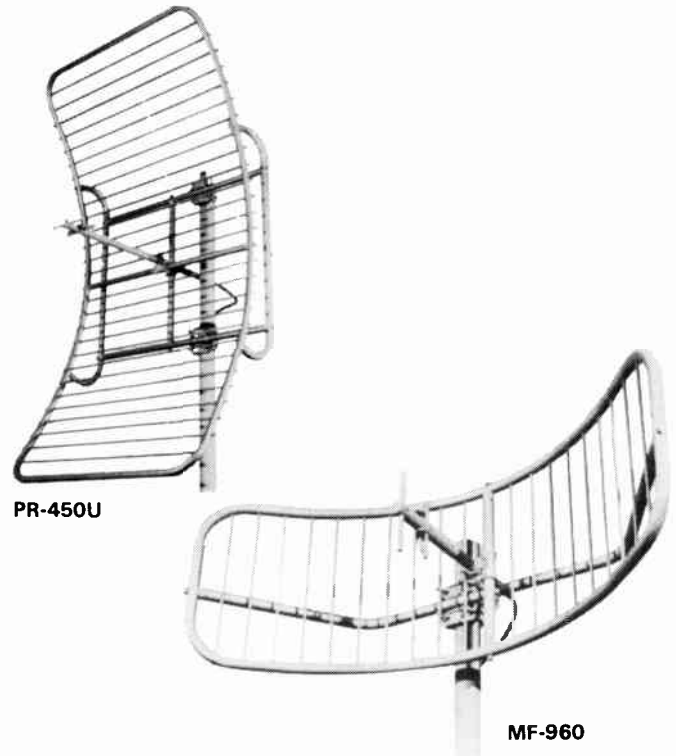
940-960MHz:

OGB3-900K	Omni, fiberglass, 3.0dBd, B90-960MHz (broadband), N connector \$ 400.00
OGB9-900K	Omni, fiberglass, 9.0dBd, B90-960MHz (broadband), N connector 1000.00
PR-450U	Paraflector, half-parabolic screen, 18.0dBd gain, 940-960MHz (broadband), H or V polarization, N connector. 550.00
PR-450CU	Paraflector, as above except higher front-to-back ratio (25dB) 580.00
	Replacement feed assembly for PR-450U paraflector (specify 940-960MHz) 120.00
MF-960	Miniflector, 14.0dBd gain, 940-960MHz (broadband), V-polarization, N connector 300.00
RA5-450	Radome-protected yagi, 10.0dBd gain, 940-960MHz (specify frequency) rear-mount, H or V polarization, N connector . . . 350.00
CL-900	Radome-protected log-periodic, 8.0dBd gain, 800-1000MHz (broadband), rear-mount, H or V polarization, N connector (35dB F/B ratio) 350.00
8000/STL	Low-noise high-gain preamplifier, > 20dB gain, < 2.0dB noise figure, 940-960MHz (broadband), N connectors, cable-powered (includes 110VAC supply) 400.00

FM Monitoring (88-108MHz):

CL-FM	Super-rugged log-periodic, B8-108MHz (broadband), 7.0dBd gain, 25dB F/B ratio, center-mount, H polarization, available in 50 or 75 ohms \$500.00
CL-FMHR	Rear-mount version of CL-FM 550.00
CL-FMRX	High-performance log-periodic, 88-108MHz (broadband), 6.5dBd gain, for precision monitoring applications, center-mount, H polarization, available in 50 or 75 ohms impedance. 280.00
CL-FMRXR	Rear-mount version of CL-FMRX 320.00

B-1016



HDCA-5	Five-element ruggedized yagi, 7.5dBd gain, BB-10BMHz (specify frequency) center-mount, H polarization, 75 ohms, available with N, UHF or F connector \$230.00
HDCA-5EB	Rear-mount version of HDCA-5 270.00
HDCA-10	Ten-element ruggedized yagi, 9.5dBd gain, BB-10BMHz (specify frequency) center-mount, H polarization, 75 ohms, available with N, UHF or F connector 310.00
HDCA-10EB	Rear-mount version of HDCA-10 350.00

VHF-TV Monitoring:

CL-26	Super-rugged log-periodic, B.25dBd gain, channels 2-6 (broadband), center-mount, H polarization, available in 50 or 75 ohms \$600.00
CL-24	Same as CL-26, except covers channels 2-4 500.00
CL-24HR	Rear-mount version of CL-24 550.00
CL-46	Same as CL-26, except covers channels 4-6 500.00
CL-46HR	Rear-mount version of CL-46 550.00
CL-713	Super-rugged log-periodic, 9.0dBd gain, channels 7-13 (broadband) center-mount, H polarization, available in 50 or 75 ohms 500.00
CL-713HR	Rear-mount version of CL-713 550.00
HDCA-5	Five-element ruggedized yagi, center-mount, 75 ohms Channels 2-6 (specify channel), 6.75 to 7.5dBd gain . . . 230.00
	Channels 7-13 (specify channel), B.0dBd gain 210.00
HDCA-5EB	Rear-mount version of HDCA-5 Channels 2-6 (specify channel), 6.75 to 7.5dBd gain . . . 270.00
	Channels 7-13 (specify channel), B.0dBd gain. 220.00
HDCA-10	Ten-element ruggedized yagi, center-mount, 75 ohms Channels 2-6 (specify channel), B.75 to 9.5dBd 310.00
	Channels 7-13 (specify channel), 10.0dBd 240.00
HDCA-10EB	Rear-mount version of HDCA-10 Channels 2-6 N/A
	Channels 7-13 (specify channel), 10.0dBd 250.00

UHF-TV Monitoring:

CL-1483	Radome-protected log-periodic, B.0dBd gain, channels 14-83 (broadband), rear-mount, 50 or 75 ohms, N connector, (35dB F/B ratio) \$350.00
PR-450U	Paraflector, half-parabolic screen, for any single UHF-TV channel, 15.5 to 18.0dBd gain (depending on channel), 50 or 75 ohms, N connector 550.00
PR-450CU	Same as PR-450U, except higher front-to-back ratio (25dB) 580.00
4DR-4S	Radome-protected panel, for any single UHF-TV channel, 9.0dBd, 50 ohms Channels 14-28 (specify channel) 500.00
	Channels 29-44 (specify channel) 450.00
	Channels 45-B3 (specify channel) 400.00

Prices and Specifications Subject to Change Without Notice.

SCALA ELECTRONIC CORP.

Antennas/Accessories

VHF-TV Antennas:

CL-26	Color log, 8.25dBd gain, channels 2-6 (broadband), center-mount, 50 or 75 ohms	\$600.00
CL-24	Color log, 8.25dBd gain, channels 2-4 (broadband), center-mount, 50 or 75 ohms	500.00
CL-24HR	Color log, 8.25dBd gain, channels 2-4 (broadband), rear-mount, 50 or 75 ohms	550.00
CL-46	Color log, 8.25dBd gain, channels 4-6 (broadband), center-mount, 50 or 75 ohms	500.00
CL46HR	Color log, 8.25dBd gain, channels 4-6 (broadband), rear-mount, 50 or 75 ohms	550.00
CL-713	Color log, 9.0dBd gain, channels 7-13 (broadband), center-mount, 50 or 75 ohms	500.00
CL-713HR	Color log, 9.0dBd gain, channels 7-13 (broadband), rear-mount, 50 or 75 ohms	550.00
CL-713E	Color log, 9.0dBd gain, 174-230MHz (broadband), center-mount, 50 or 75 ohms	500.00
CL-713EHR	Color log, 9.0dBd gain, 174-230MHz (broadband), rear-mount, 50 or 75 ohms	550.00

Note: N-type terminations are standard on all CL-series antennas. VHF-TV logs are available with UHF or F type terminations. Power input rating is 250W (1kW optional at extra cost).

Broadband Stacking Harnesses for CL-Series Antennas:

	Two-bay	\$150.00
	Four-bay	250.00
HDCA-5	Five-element ruggedized yagi, single-channel, center-mount, 75 ohms Channels 2-6 (specify channel when ordering)	\$230.00
	Channels 7-13 (specify channel when ordering)	210.00
HDCA-5EB	Five-element ruggedized yagi, single-channel, rear-mount, 75 ohms Channels 2-6 (specify channel when ordering)	270.00
	Channels 7-13 (specify channel when ordering)	220.00
HDCA-10	Ten-element ruggedized yagi, single-channel, center-mount, 75 ohms Channels 2-6 (specify channel when ordering)	310.00
	Channels 7-13 (specify channel when ordering)	240.00
HDCA-10EB	Ten-element ruggedized yagi, single-channel, rear-mount, 75 ohms Channels 2-6	N/A
	Channels 7-13 (specify channel when ordering)	250.00

Note: HDCA-series yagis are available for export channels in Bands I and III. Standard HDCA-series power rating is 250W. Arrays of two or more HDCA-series yagis available with 1kW rating (50 ohm input). Standard termination is 75-ohm type N (UHF and F types available).

Stacking Harnesses for HDCA-Series Antennas:

	Two-bay	\$100.00
	Four-bay	200.00

Circularly-Polarized Yagi Antennas For VHF-TV

CA-2	Two-element ruggedized dipole/reflector, single-channel, 50 or 75 ohms Channels 2-6 (specify channel when ordering), center-mount	\$250.00
	Channels 7-13 (specify channel when ordering), rear-mount	220.00
CA-4	Two-bay array of CA-2 dipole/reflectors, single-channel, 50 or 75 ohms Channels 2-6 (specify channel when ordering), center-mount	550.00
	Channels 7-13 (specify channel when ordering), rear-mount	480.00
2CA-4	Four-bay array of CA-2 dipole/reflectors, single-channel, 50 or 75 ohms Channels 2-6 (specify channel when ordering), center-mount	1200.00
	Channels 7-13 (specify channel when ordering), rear-mount	1060.00

Note: CA-series power rating is 250W. 1kW rating available at extra cost.

TVO	Crossed-dipole omni, single-channel, 50 or 75 ohms (specify channel)	250.00
TVO-2	Two-bay array of TVO crossed-dipoles, 50 or 75 ohms (specify channel)	600.00
TVO-4	Four-bay array of TVO crossed-dipoles, 50 or 75 ohms (specify channel)	1200.00

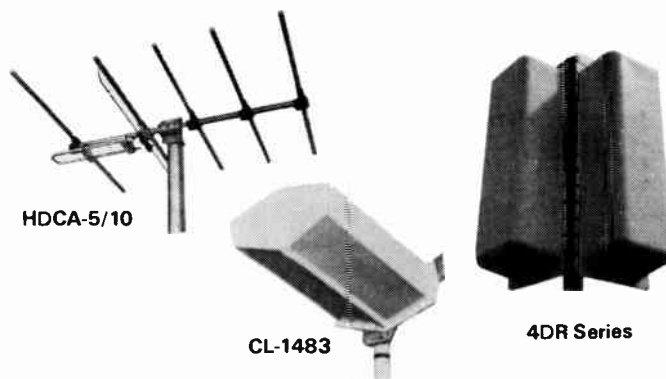
Note: TVO-series power rating is 100W. TVO-4 available for 1kW input.

UHF-TV Antennas:

CL-1483	Color log, 8.0dBd, channels 14-83 (broadband), radome protected, 50 or 75 ohms, rear-mount, H or V polarization, 100W power rating, type N termination	\$350.00
PR-450U	Paraflector, 15.5 to 18.0dBd, for any single UHF-TV channel in 470-890MHz band H or V polarization, 100W power rating, 50 or 75 ohms, type N termination	550.00
PR-450CU	Paraflector, same as PR-450U except higher front-to-back ratio (25dB)	580.00

Note: Stacking harnesses are available for CL-1483 and PR-450U series antennas.

SL-8 Paraslot, UHF-TV omni transmit antenna, available for one, two or three channels in bands IV/V (470-890MHz). 300W input power rating and type N termination are standard. 1kW models have 7/8" EIA flange termination. 1.75° of electrical downtilt (beamtilt) is standard. Additional downtilt and null-fill are optional at extra cost. All SL-8 antennas include a guy kit, plus your choice of mounting hardware to attach to a flat vertical surface or an appropriately-sized pipe mast. If antenna will be side-mounted on tower and stabilized with sidearm at top, the guy kit may be omitted by ordering "less guy kit" (deduct \$200.00).



	SL-8 (One Channel)	SL-8-2 (Two Channels)	SL-8-3 (Three Channels)
Channels 14-26 (470-548MHz)	\$4400.00	\$4900.00	\$5400.00
Channels 27-43 (548-650MHz)	4000.00	4500.00	5000.00
Channels 44-65 (650-782MHz)	3600.00	4100.00	4600.00
Channels 66-83 (782-890MHz)	3200.00	3700.00	4200.00

1kW power input rating: add \$500.00; Null-fill: add \$500.00; Guy spreader kit: add \$500.00

4DR-Series Parapanel, radome-protected UHF-TV panels and arrays, for any single specified UHF-TV channel in bands IV/V (470-890MHz). 100W and 1kW power rating available. All arrays include power divider and Andrew Superflex feeders. Supplied complete with hardware to attach to 2 3/8" (60mm) OD pipe mast. 100W panels and arrays have type N termination. Single 1kW panel has type HN termination. 1kW arrays have 7/8" EIA flange termination.

	Channels 14-28		Channels 29-44		Channels 45-83	
	100W	1kW	100W	1kW	100W	1kW
4DR-4S (one panel)	\$ 500.00	\$ 700.00	\$ 450.00	\$ 650.00	\$ 400.00	\$ 600.00
4DR-8S (two panels)	1300.00	2700.00	1200.00	2600.00	1100.00	2500.00
4DR-16S (four panels)	2400.00	4200.00	2200.00	4000.00	2000.00	3800.00
4DR-4-2HN (two panels)	1300.00	2700.00	1200.00	2600.00	1100.00	2500.00
4DR-8-2HN (four panels)	2400.00	4200.00	2200.00	4000.00	2000.00	3800.00
4DR-16-2HN (eight panels)	4700.00	7400.00	4300.00	7000.00	3900.00	6600.00
4DR-4-2HW (two panels)	1300.00	2700.00	1200.00	2600.00	1100.00	2500.00
4DR-8-2HW (four panels)	2400.00	4200.00	2200.00	4000.00	2000.00	3800.00
4DR-16-2HW (eight panels)	4700.00	7400.00	4300.00	7000.00	3900.00	6600.00

VHF-TV and UHF-TV Antenna System Accessories

Matching Transformers CX-series for any single VHF-TV or UHF-TV channel, allows low-loss impedance-matched interconnection of 50 and 75 ohm devices such as antennas, transmission line, transmitters, etc. (specify channels) \$40.00

Power Dividers Scala offers a broad range of RF power dividers for use in broadcast and communications systems, with equal and unequal power splits, and designed for operation at three power levels. All Scala dividers are foam-potted and designed for outdoor use with no pressurization required.

100W dividers are available with two, three and four-way equal or unequal splits, 50 or 75 ohms. Also available with 50-ohm input and 75-ohm outputs. Terminations are Type N, either 50 or 75 ohms as appropriate. (Specify channel, power split ratios and input and output impedance when ordering.)

PD-2 (two-way)	\$125.00
PD-3 (three-way)	135.00
PD-4 (four-way)	145.00

500W dividers are available in two, three, four, six and eight-way equal power splits, with 50-ohm N input and 50 or 75-ohm N outputs. (Specify channel and output impedance when ordering.)

PD-2MP	\$500.00
PD-3MP	550.00
PD-4MP	600.00
PD-6MP	700.00
PD-8MP	800.00

1000W dividers are available in two, three, four, six and eight-way equal power splits, with 50-ohm 7/8" EIA flange input and 50 or 75 ohm N outputs. (Specify channel and output impedance when ordering.)

PD-2HP	\$1000.00
PD-3HP	1100.00
PD-4HP	1200.00
PD-6HP	1400.00
PD-8HP	1600.00

SCALA ELECTRONIC CORP.

Antennas/Accessories/Preamplifiers

CL-FM	Ruggedized log-periodic, 7.0dBd gain, 88-108MHz (broadband), center-mount 50 or 75 ohms, N termination, 250W power rating (1kW available)	\$500.00
CL-FMHR	Rear-mount version of CL-FM	550.00
CL-FMRX	Precision monitoring log, receive only, 6.5dBd gain, 88-108MHz (broadband), center-mount, 50 or 75 ohms, N termination	280.00
CL-FMRXR	Rear-mount version of CL-FMRX	320.00

Broadband Stacking Harnesses for CL-Series Antennas:

	Two-bay	\$150.00
	Four-bay	250.00
HDCA-5	Five-element ruggedized yagi, 7.5dBd, single channel (specify frequency), center-mount, 75 ohms, N termination	230.00
HDCA-5EB	Five-element ruggedized yagi, 7.5dBd, single channel (specify frequency), rear-mount, 75 ohms, N termination	270.00
HDCA-10	Ten-element ruggedized yagi, 9.5dBd, single-channel (specify frequency), center-mount, 75 ohms, N termination	310.00
HDCA-10EB	Ten-element ruggedized yagi, 9.5dBd, single channel (specify frequency) rear-mount, 75 ohms, N termination	350.00
CA5-150H	Five-element ruggedized yagi, 9.0dBd, single channel (specify frequency), center-mount, 50 ohms, N termination (UHF type optional)	230.00
CA5-150EB	Five-element ruggedized yagi, 9.0dBd, single channel (specify frequency), rear-mount, 50 ohms, N termination (UHF type optional)	270.00
CA5-150V	Five-element ruggedized yagi, 9.0dBd, single channel (specify frequency), sidemount bracket for V polarization. 50 ohms, N termination (UHF optional)	360.00
2CA5-150HV	Dual yagi array, H polarization, V stack, 11.5dBd, single channel (specify), 50 ohms, N termination, with coax stacking harness	560.00
2CA5-150VH	Dual yagi array, V polarization, H stack, 11.5dBd, single channel (specify), 50 ohms, N termination, with crossarm assembly and stacking harness	820.00

Note: Single CA5-150 series yagis have power input rating of 250W. For 1kW rating (HN termination): add \$150.00. Contact Scala for pricing on arrays with 1kW power ratings.

Stacking Harnesses for HDCA and CA5-Series Antennas:

	Two-bay	\$ 100.00
	Four-bay	200.00
CA-2	Two-element ruggedized dipole/reflector, single channel (specify), 4.0dbd gain, 250W power rating, rear-mount, 50 or 75 ohms, N termination.	200.00
CA-4	Two-bay array of CA-2 dipole/reflectors, with stacking harness	500.00
2CA-4	Four-bay array of CA-2 dipole/reflectors, with stacking harness	1000.00

Note: CA-2-Series available with 1kW rating. Contact Scala for pricing.

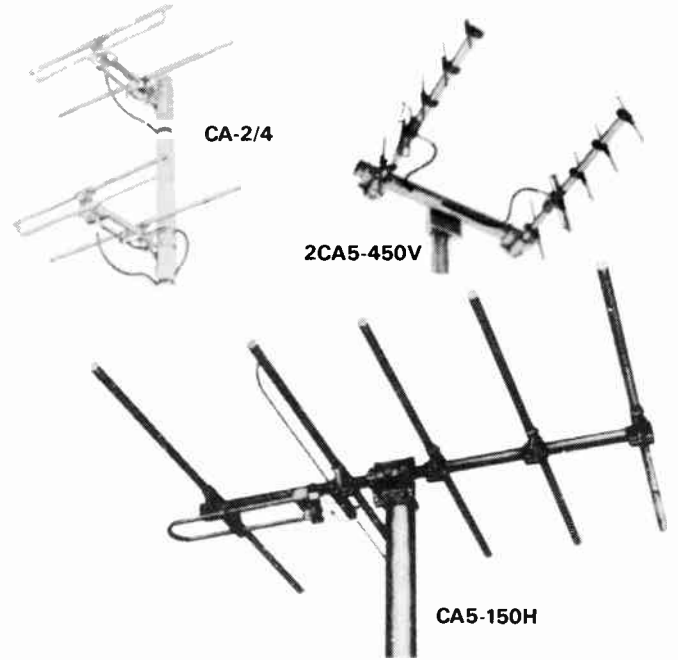
FMO	Crossed-dipole Omni, 88-108MHz (broadband), 50 or 75 ohms, 100W, H-pol	\$ 250.00
FMO-2	Two-bay array of FMO crossed dipoles (specify frequency if for transmit use)	600.00
FMO-4	Four-bay array of FMO crossed dipoles (specify frequency if for transmit use)	1200.00
FMV	Sidemount dipole, vertical polarization, 50 ohms, N termination, 100W with sidearm mount (specify frequency when ordering)	200.00
FMV-2	Two-bay array of FMV dipoles, V-pol, V-stack, 100W, with harness 50 ohms, N termination, with sidearm mounts (specify channel when ordering)	500.00
FMV-4	Four-bay array of FMV dipoles, 100W, with harness and sidearm mounts	1000.00

FM Antenna System Accessories:

Matching Transformers CX-series for any specified frequency in the 88-108MHz band allows low-loss interconnection of 50 and 75 ohm devices such as antennas, transmission lines, transmitters, etc. Specify channel and connector configuration when ordering. **\$40.00**

Power Dividers Scala offers a broad range of RF dividers for use in broadcast and communications systems, with equal and unequal power splits, and designed for operation at three power levels. All Scala dividers are foam-potted and designed for outdoor use with no pressurization required.

100W dividers are available with two, three or four equal or unequal power splits, 50 or 75 ohms. Also available with 50-ohm input and 75-ohm output. Termination are type N, either 50 or 75-ohm as appropriate. (Specify frequency, power split ratios, and input and output impedance when ordering.)



PD-2 (two way)	\$125.00
PD-3 (three way)	135.00
PD-4 (four way)	145.00

500W dividers are available with two, three, four, six and eight-way equal power splits, with 50-ohm N input and 50 and 75 ohm N outputs. (Specify frequency and output impedance when ordering.)

PD-2MP	\$500.00
PD-3MP	550.00
PD-4MP	600.00
PD-6MP	700.00
PD-8MP	800.00

1000W dividers are available with two, three, four six and eight-way equal power splits, with 50 ohm 7/8" EIA flange input and 50 or 75 ohm N outputs. (Specify frequency and output impedance when ordering.)

PD-2HP	\$1000.00
PD-3HP	1100.00
PD-4HP	1200.00
PD-6HP	1400.00
PD-8HP	1600.00

Low-Noise FM Preamplifiers:

Scala/Triax low-noise preamps offer high performance and reliability at a very reasonable cost. The high gain and low noise figure make possible the reception of very marginal signals. The preamp is housed in a cast aluminum weatherproof housing (normally installed adjacent to the antenna) and powered by a remote DC power supply through the coax downlead. Each preamp requires a power supply or a DC coupler which can be used to connect an external customer-provided regulated supply of 24VDC at 100ma (negative ground). The 2AT type preamps feature a 10dB trap which can be field tuned through the FM band in cases where it is useful to attenuate an unwanted signal (at least 1MHz removed from the desired signal).

8000/2A/F	Broadband FM preamp (88-108MHz), 20dB gain, < 2.0dB NF, F terminations	\$280.00
8000/2A/N-50	Same as 8000/2A/F except with 50-ohm N termination	290.00
8000/2A/N-75	Same as 8000/2A/F except with 75 ohm N termination	290.00
8000/2AT/F	Same as 8000/2A/F except has tunable 10dB trap	300.00
8000/2AT/N-50	Same as 8000/2A/N-50 except has tunable 10dB trap	310.00
8000/2AT/N-75	Same as 8000/2A/N-75 except has tunable 10dB trap	310.00
8000/SPS/F	Power supply for one preamp, F termination, 110VAC input	80.00
8000/SPS/N-50	Same as 8000/SPS/F except 50 ohm N termination	80.00
8000/SPS/N-75	Same as 8000/SPS/F except 75 ohm N termination	80.00
8000/PSC/F	RF/DC coupler for use with external DC supply, F termination	30.00
8000/PSC/N-50	Same as 8000/PSC/F except 50 ohm N termination	80.00
8000/PSC/N-75	Same as 8000/PSC/F except 75 ohm N termination	80.00

SCALA ELECTRONIC CORP.

Preamplifiers/Accessories

Scala/Triax Professional Low-Noise Preamplifiers for TV and FM

800/1A/F	Broadband channels 2-6 (F Conn)	\$280.00
8000/1A/N-75	Broadband channels 2-6 (75 ohm N conn)	290.00
8000/1A/N-50	Broadband channels 2-6 (50 ohm N conn)	290.00
8000/1A/K*/F	Single channel (CH2-6) (F conn)	\$300.00
8000/1A/K*/N-75	Single channel (CH2-6) (75 ohm N conn)	310.00
8000/1A/K*/N-50	Single channel (CH2-6) (50 ohm N conn)	310.00
8000/2A/F	Broadband FM (88-108MHz) (F conn)	\$280.00
8000/2A/N-75	Broadband FM (88-108MHz) (75 ohm conn)	290.00
8000/2A/N-50	Broadband FM (88-108MHz) (50 ohm conn)	290.00
8000/2AT/F	Broadband FM (with trap) (F conn)	\$300.00
8000/2AT/N-75	Broadband FM (with trap) (75 ohm conn)	310.00
8000/2AT/N-50	Broadband FM (with trap) (50 ohm conn)	310.00
8000/3/F	Broadband Channels 7-13 (F conn)	\$280.00
8000/3/N-75	Broadband channels 7-13 (75 ohm N conn)	290.00
8000/3/N-50	Broadband channels 7-13 (50 ohm N conn)	290.00
8000/3/K*/F	Single-channel (CH7-13) (F conn)	\$300.00
8000/3/K*/N-75	Single channel (CH7-13) (75 ohm N conn)	310.00
8000/3/K*/N-50	Single-channel (CH7-13) (50 ohm N conn)	310.00
80065/F	Broadband UHF-TV (CH14-69) (F conn)	\$280.00
80065/N-75	Broadband UHF-TV (CH14-69) (75 ohm N conn)	290.00
80065/N-50	Broadband UHF-TV (CH14-69) (50 ohm N conn)	290.00
80065/K*/F	Single channel UHF-TV (F conn)	\$320.00
80065/K*/N-75	Single channel UHF-TV (75 ohm N conn)	330.00
80065/K*/N-50	Single channel UHF-TV (50 ohm N conn)	330.00

*When ordering please specify channel (for single-channel models only)

Preamp Power Supplies and RF/DC Couplers

8000/SPS/F	Power supply for one preamp (F conn)	\$80.00
8000/SPS/N-75	Power supply for one preamp (75 ohm N conn)	80.00
8000/SPS/N-50	Power supply for one preamp (50 ohm N conn)	80.00
8000/PSC/F	RF/DC Coupler for Preamp** (F conn)	\$30.00
8000/PSC/N-75	RF/DC Coupler for Preamp** (75 ohm N conn)	30.00
8000/PSC/N-50	RF/DC Coupler for Preamp** (50 ohm N conn)	30.00

**For use with external 24VDC power source. Not required when Scala power supply is used.

Scala/Triax Preamplifiers for 950MHz Radio Links

8000/STL	Low-noise preamplifier with 120VAC remote power supply	\$400.00
800/STL/EX	Low-noise preamplifier with 230VAC remote power supply	400.00
800/STL/C	Low-noise preamplifier less power supply, but including DC/RF diplexer for use with external regulated 24VDC supply	350.00

Coaxial Cable Assemblies (Jumpers) for Installation

CJD-35-MN5/MN5	36" FSJ1-50 Andrew superflex with male N connector each end	\$40.00
CJD-36-MN5/FN5	36" FSJ1-50 Andrew superflex with male N connector one end and female N connector one end	40.00
CJE-36-MN5/MN5	36" FSJ4-50 Andrew superflex with male N connector each end	80.00
CJE-36-MN5/FN5	36" FSJ4-50 Andrew superflex with male N connector one end and female N connector one end	80.00
CJC-36-MN5/MN5	36" RG-214/U double-shield coax with male N connector each end	35.00
CJC-36-MN5/FN5	36" RG-214/U double-shield coax with male N connector one end and female N connector one end	35.00
CJA-36-MN5/MN5	36" RG-213/U coax with male N connector each end	25.00

CJA-36-MN5/FN5	36" RG-213/U coax with male N connector one end and female N connector one end	\$25.00
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Note: Other cables, connectors and lengths quoted per specific customer requirements.

Andrew Heliax Cables, Connectors and Accessories

FSJ1-50	(1/4" superflex—50 ohms)	Ft/\$1.20
	41SW (male 50—ohm N connector)	9.35
	41SP (male UHF connector)	6.25
	40622 (male BNC connector)	7.80
FSJ1-75	(1/4" superflex—75 ohms)	Ft/1.20
	41SW-70 (male 75 ohm N connector)	37.00
	41SW (male 50 ohm N connector)	9.35
	41SP (male UHF connector)	6.25
FSJ4-50B	(1/2" superflex—50 ohms)	Ft/\$2.70
	44ASW (male 50 ohm N connector)	27.00
	44ASN (female 50 ohm N connector)	27.00
	44ASP (male UHF connector)	27.00
	44ASU (female UHF connector)	27.00
	44ASJ (male HN connector)	77.00
	44ASR (7/8" EIA flange connector)	98.00
FSJ4-75A	(1/2" superflex—75 ohms)	Ft/\$2.70
	44ASW-75 (male 50 ohm N connector)	31.20
	44ASN-75 (female 50 ohm N connector)	31.20
	44ASP-75 (male UHF connector)	31.20
	44ASU-75 (female UHF connector)	31.20
LDF4-50A	(1/2" foam heliax—50 ohm)	Ft/\$1.80
	L44W (male 50 ohm N connector)	23.70
	L44N (female 50 ohm N connector)	23.70
	L44P (male UHF connector)	20.80
	L44U (female UHF connector)	20.80
	L44J (male HN connector)	84.00
	L44R (7/8" EIA flange connector)	84.00
	L44M (male LC connector)	84.00
	L44DM (male 7/16" DIN connector)	78.00
	L44Z (splice)	82.00
LDF4-75	(1/2" foam heliax—75 ohms)	Ft/\$1.80
	L44W-70 (male 75 ohm N connector)	33.00
	L44N-70 (female 75 ohm N connector)	33.00
	L44W-75 (male 50 ohm N connector)	27.00
	L44N-75 (female 50 ohm N connector)	27.00
	L44P-75 (male UHF connector)	26.00
	L44U-75 (female UHF connector)	26.00
LDF5-50A	(7/8" foam heliax—50 ohms)	Ft/\$4.70
	L45W (male N connector)	58.00
	L45N (female N connector)	58.00
	L45J (male HN connector)	130.00
	L45R (7/8" EIA flange connector)	88.00
	L45Z (splice)	98.00
Heliax Cable Assemblies		
Add attachment charge of \$10.00 per connector on all cable assemblies of 50' or less.		
Adaptors and Misc. Coax Fittings:		
1860A	Andrew adaptor (1 5/8" EIA to 7/8" EIA)	\$152.00
2260B	Andrew adaptor (7/8" to N female)	98.00
920247	Cablewave step reducer (1 5/8" EIA to 7/8" EIA) (used with Scala PD-HP power dividers)	200.00
1060A	Andrew 90° elbow (7/8" EIA flanges)	130.00
Installation Accessories		
43094	Hoisting grip for 1/2" Andrew cables	\$27.00
192568	Hoisting grip for 7/8" Andrew cables	38.50
40417	Nylon cable tie kit (50 PCS)	31.20
204989-1	Grounding kit for Andrew 1/2" cables	19.00
204989-2	Grounding kit for Andrew 7/8" cables	24.00

**Gyrozoom® 60/300 and FP-1
Image Stabilizer Lenses**

- 60 to 300mm zoom of subjects up to 1000'
- Compact and lightweight
- Easy to operate
- Variable speed servo zoom control
- Auto iris with momentary manual mode
- Standard lens flange and detachable power cable
- C-Mount adaptor available
- Low battery indicator
- Computer-designed optics
- Ultra high resolution and contrast

Gyrozoom image stabilizer lenses eliminate virtually all image vibration. They fit most ENG/EFV cameras and free you from bulky, unwieldy mechanical stabilizers and mounts.

Use it from any unstable platform—motor vehicle, helicopter, airplane, boat, or a camera operator's shoulder. Gyrozoom lets you get the shot right the first time.

Gyrozoom is available in two versions, the 60/300 or the fast-pan FP-1.

Specifications

	60/300	FP-1
Image Format	2/3" video (11mm diag., 6.6 x 8.8mm)	2/3" video (11mm diag., 6.6 x 8.8mm)
Focal Length	60µ300mm	60µ300mm
Zoom Ratio	5X	5X
Maximum Aperture Ratio	1:6.2	1:6.2
Focus Range	10' to infinity	10' to infinity
Field Angle	Horiz: 8.38°µ1.68° Vertical: 6.28°µ1.26°	Horiz: 8.38°µ1.68° Vertical: 6.28°µ1.26°
Filter Size	Ø 72mm P=0.75mm	Ø 72mm P=0.75mm
Stabilization (± 1/2° tremor)	.4Hz-85% (-16dB attenuation) 1Hz-94% (-24dB attenuation) > 4Hz-98% (-34dB attenuation)	.4Hz-85% (-16dB attenuation) 1Hz-94% (-24dB attenuation) > 4Hz-98% (-34dB attenuation)
Pan/tilt Rate	6° per second	30° per second
Power source required	12V (operating range 11.5-15V)	12V (operating range 11.5-15V)
Minimum supply rating (recommended)	200mA	1.3A
Power draw		
Nominal (quiescent) current	120mA	390mA
Warm-up (starting) current	150mA	570mA
Panning current	125mA	i (mA) = 390 + 15 x rate (°/second)
Additional battery usage at quiescent (referenced to 1.9 Å camera)	3 min/hr	10 min/hr
Battery usage when panning at maximum pan rate	3 min/hr	approximately 15 min/hr (50% DC at 30°/sec)
Operating temperature range	14 to 122°F	14 to 122°F
Dimensions	47/16" H x 13" L x 73/4" W	47/16" H x 13" L x 73/4" W
Weight	7.4 lbs.	7.9 lbs.

- 60/300 with deluxe travel and storage case . . . \$12,500.00
- FP-1 with one cable and deluxe carry case16,250.00
- FP-1 Image Stabilizer Upgrade4,000.00
- Manual Focus Module290.00
- Nova II Night Vision Device6,800.00
- C-mount adaptor210.00



Gyrozoom 60/300



FP-1

Accessories

Wide Angle Attachment

- Reduces the focal length by 5X (12mm to 60mm) (Note: When the wide angle is attached the 12mm to 60mm focal range is not stabilized)
 - Attaches quickly to the front of the Gyrozoom lens with a threaded mount
 - f/6.2 at all focal lengths
 - Minimum operating distance is 3"
 - Computer designed optics ensure ultra high resolution and contrast
 - Anti-reflective multilayer coatings on all air-to-glass surfaces for maximum light transmission
- Wide Angle Attachment (12mm to 60mm) \$1,495.00

Remote Control System*

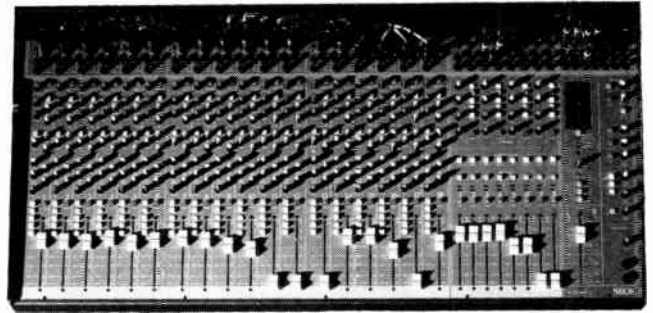
- Provides remote control of focus, stabilization, iris and zoom functions
 - Operator can be positioned up to 150' from camera. (When powered by 115VAC)
 - Compatible with several pan and tilt mechanisms
 - Power requirements: 115VAC or 28VDC
- Remote Control System \$2,250.00
- *(Requires factory retrofit)

Soft Travel Bag

- Padded, soft travel bag assures convenient, safe transport of your Gyrozoom lens
 - Separate compartments are provided to hold the wide angle attachment and additional lens cables
 - Lightweight yet sturdy
- Soft Travel Bag \$98.00

1282/1882 Audio Mixers

- Wide range of inserts and auxiliary buses
- Metal carrying handle
- Up to 6 auxiliaries
- "In place" or stereo solo
- In-line monitoring
- For studio or live performance
- Auxiliary returns
- Peak hold bargraphs
- Auxiliary masters
- Talk to tape and slate
- Master monitoring
- SNR master outputs
- 18 inputs subgrouped
- At Unity Gain: better than -80dB
- Distortion mike input (set to -30dBu) subgrouped to master outputs: 0.00085% THD at 1kHz
- Equalizer provides versatile controls of highs and lows plus a 20:1 mid sweep



1882

Access to controls is crucial. The 1282 and the 1882 have logical grouping of controls, the high profile knobs, and the immediate view of signal connections. Hands on, there's positive switch action, center detented pan and tone controls and an overall sense of precision, whatever you operate.

1282 12 channel.	\$4140.00
1882 18 channel.	4794.00

62/122/24-2 Audio Mixers

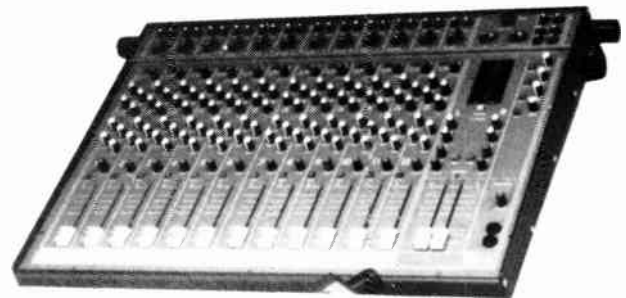
- Frequency Response: 20Hz-20kHz overall, -2dB
- Signal-to-Noise Ratio: All outputs at maximum, -84dB
- THD: Less than 0.03% at 1kHz
- Left/Right Outputs: +4dBm into 600 ohm min. load, max. output +21dBm
- Inputs: Microphones balanced from -65dBu into 1K ohm; line balanced from -30dBu into 50K ohms

Electronics are assembled onto double sided printed circuit boards. There are no wires inside these mixers, all the input and output connectors mount directly to these boards. Once assembled, these printed circuit boards are screwed to the steel front panel and slid inside an extruded aluminum shell. Finally, metal side cheeks are screwed on, which totally enclose to protect and screen the mixer. The result is very low hum and noise susceptibility.

Controls and connectors are laid out for ease of use. You see at a glance the cables running to microphones, amps and particularly effects.

Input channel controls are laid out in logical groupings. First the input section, then equalization auxiliaries and finally routing and panning. Controls are staggered, permitting the tightest knob density combined with ease of operation. Similarly, the output section is laid out in logical groupings. So you get to the controls you need without fumbling.

Access to each channel is directly above the input. Microphones are brought in via a standard wired, XLR connector. Line input is on a 3 pole jack. Both inputs are balanced so you can eliminate grounding problems in any unusual situation. An electronic balancing circuit is used in preference to transformers resulting in transmission of full bandwidth signal.



122

The input stage is the most critical part of any mixer design. Here the incoming signal is matched to the circuitry. The greatest care has been taken to ensure a large gain swing on the input—providing overall signal matching from -55dBm to +10dBm, and a wide 25dB margin of overload above this. Once set, it is unusual to need to readjust during a performance.

62	6 channel.	\$1345.00
122	12 channel.	1995.00
24-2	24 channel.	3450.00
12	Carry case	78.10
122	Carry case	99.00
62	Rackmount	55.00

SENNHEISER ELECTRONIC CORP.

Microphones

MKH 20 P48U Studio Condenser Microphone

- Frequency range: 20 to 20,000Hz
- Directional characteristic: Omnidirectional
- Ideally suited for the reproduction of acoustic string and wind instruments
- Optimal resistive loading of the diaphragm
- Low noise, transformerless

MKH 20 P48U 48V phantom powering \$925.00

MKH 30 P48U3 Studio Condenser Microphone

- Frequency range: 40 to 20,000Hz
- Directional characteristic: Bilateral (figure eight)
- Ideally suited for use in applications utilizing the "mid side" (M-S) recording technique in which the MKH 40 "piggybacks" the MKH 30 to enable both mono and stereo recording simultaneously
- Transformerless; optimal resistive loading of the diaphragm

MKH 30 P48U3 \$989.00

MKH 40 P48U Directional Studio Microphone

- Frequency range: 40 to 20,000Hz
- Directional characteristic: Cardioid
- Ideal for digital sampling and recording
- Wide, flat frequency response; very low inherent noise
- Capable of high sound pressure levels with low distortion

MKH 40 P48U 48V phantom powering \$925.00

MKH 416 Directional Field or Studio Microphone

- Frequency range: 40 to 20,000Hz
- Directional characteristic: Supercardioid
- Particularly low feedback
- Low proximity effect
- High signal-to-noise ratio
- Rugged and extremely resistant to adverse climatic conditions
- Built-in pop filter

MKH 416 TU 12V AB power \$875.00
MKH 416 P48U 48V phantom power \$875.00

MKH 816 Directional Field or Studio Microphone

- Frequency range: 40 to 20,000Hz
- Directional characteristic: Lobar
- Extremely sensitive to feedback
- High signal-to-noise ratio
- Rugged and extremely resistant to adverse climatic conditions
- For long recording distances

MKH 816 TU 12V AB power \$1179.00
MKH 816 P48U 48V phantom power \$1179.00

MD 409 U-3 Dynamic Cardioid Microphone

- Frequency range: 50-15, 000Hz
- Cardioid characteristic
- Capable of handling high sound pressure levels with excellent shock mounting and feed back protection
- Large transducer element enclosed in a flat black stainless steel basket gold-plated on the front side
- XLR connector

MD 409 U-3 \$269.00

MD 421 U-5 Dynamic Cardioid Microphone

- Frequency range: 30-17, 000Hz
- Directional characteristic: cardioid, low acoustic feedback
- Reduced handling noise and no overload, even at extremely high volume
- Five-step variable bass control
- Hum compensation coil
- Quick-release clip

MD 421 U-5 \$399.00



MKH 20 P48U MKH 40 P48 MKH 30 P48U3



MKH 416 MKH 816



MD 409 U-3 MD 421 U



MD 431 U MD 441 U

MD 431 U Supercardioid Musician's Microphone

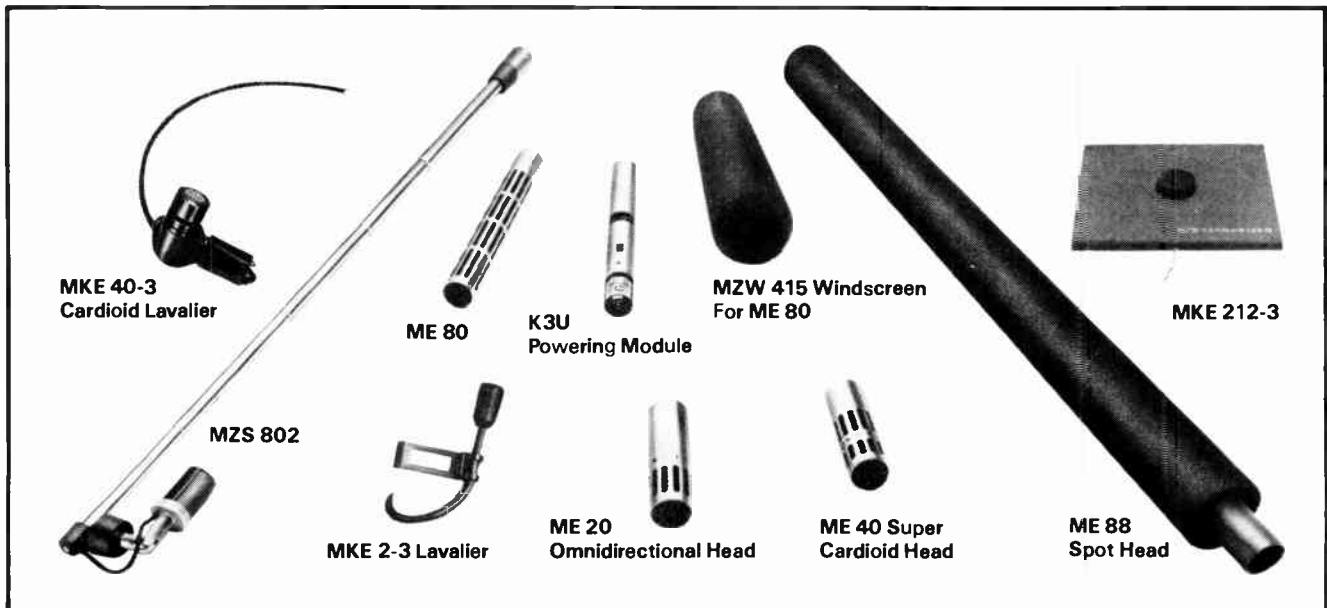
- Frequency range: 40-16, 000Hz
- Supercardioid directional characteristic allows extremely high volume before feedback occurs
- Optimum damping of handling noise owing to spring-mounted system suspension in all-metal housing
- Hum compensator coil
- Shock-tested
- Built-in impact noise filter
- Built-in pop filter
- Noiseless reed switch
- Quick-release mounting clip
- Suitable for connection to all musical instrument amplifier systems

MD 431 U \$429.00

MD 441 U Dynamic Supercardioid Microphone

- Frequency range: 30-20, 000Hz
- Directional characteristic: supercardioid
- Optimum protection against handling owing to shock-mounted capsule
- Distortion-free transmission even under highest sound pressure
- Ten different, switchable response curves
- Hum-bucking coil
- Built-in pop filter
- Quick-release clamp

MD 441 U \$559.00
MD 441 U-3 All black, no bass equalization \$467.00



PROFESSIONAL MICROPHONE SYSTEM

K3U Powering Module

Equipped with a 5.6V battery—or remote controlled with a recorder or console via a 12 to 48V phantom circuit—the K3U powers any one of the five modular heads. Battery life is approximately 600 hours. An LED indicator flashes when the K3U is switched on, indicating at least 20 hours of remaining battery life.

A 3-position roll-off switch (flat, -7dB and -20dB at 50Hz) permits reduction of wind and handling noise without affecting voice pickup.

The K3U has a balanced, low-impedance output.

K3U \$210.00

ME 20 Omnidirectional Head

The ME 20 preserves the entire acoustic ambience. For interviews and meetings in quiet surroundings, or when pickup of background noise is essential. Internal acoustic isolation to minimize handling noise.

ME 20 \$112.00

ME 40 Super Cardioid Head

The ME 40 has sharp attenuation of sound arriving from behind to eliminate ambient reverberations and feedback from loudspeakers. For interviews in noisy surroundings, film dubbing, PA...wide frequency response in musical applications.

ME 40 \$165.00

ME 80 Super Cardioid Shotgun Head

The ME 80 has pressure gradient interference transducer for accurate, noise-free sound pickup at a distance, even in acoustically poor environments. Can also be used to solve extremely severe PA system feedback problems.

ME 80 \$239.00

ME 88 Spot Head

The ME 88 provides clarity, even at long distances. A long interference tube transducer for an almost beam-like pickup pattern. Extremely lightweight (2 oz.) to permit direct mounting on a handheld camera or attachment to the MZS 802 Telescopic Boom. Fixed windscreen for imperviousness to wind and handling noise.

ME 88 \$315.00

MKE 2-3 Subminiature Omnidirectional Lavalier

Clip-on microphone, black, for electret microphone modular system. Also available in flesh color at same price.

MKE 2-3 \$254.00

MKE 2-3 + K3U Combination Package

Miniature clip-on microphone and grip/power supply, also available in flesh color.

MKE 2-3 + K3U \$409.00

MKE 40-3 Cardioid Lavalier

Clip-on directional microphone for electret microphone modular system.

MKE 40-3 \$289.00

MKE 40-3 + K3U Combination Package

Clip-on directional microphone and grip/power supply.

MKE 40-3 + K3U \$439.00

MKE 212-3 Boundary Microphone

Acoustical boundary microphone for electret microphone modular system.

MKE 212-3 \$399.00

MKE 212-3 + K3U Combination Package

Acoustical boundary microphone and grip/power supply.

MKE 212-3 + K3U \$499.00

MKE 42 Cardioid Podium "Wand" Microphone

Directional stick microphone (approx. 40cm) for connection to power supply adaptor or RF transmitter.

MKE 42 \$314.00

Accessories

MZQ 22A Dual Tie Clip

MKE 2 (black only) \$12.00

MZQ 2A Simple Tie Clip

MKE 2 (black) 11.00

MZQ 2B Simple Tie Clip

MKE 2 (nickel) 11.00

MZW 2A Windscreen

MKE 2 (gray) 5.00

MZW 2G Windscreen

MKE 2 (off-white) 5.00

MZQ 30 Camera mount 32.00

MZG 802 Camera mount for 19mm mikes 61.00

MZS 802 Telescopic boom—fits between powering module and microphone head to extend reach up to 27" 98.00

MZK 802-U Connection cable for recording with mini-jacks 34.00

MZW 30 Windscreen for ME 20/ME 40 14.00

MZW 415 Windscreen for ME 80 38.00

MZT 105-1 Desk stand 39.00

SENNHEISER ELECTRONIC CORP.

Wireless Microphones

TRANSMITTERS

SK-2012 Portable Single Channel Wireless Body Pac Transmitter

• For use with both stationary and portable receivers • DC-DC converter for constant voltage supply • "HyDYN" compander circuitry • 46dB input pad • Defeatable limiting amplifier • Battery condition LED indicator • Utilizes 3 AAA batteries • All metal construction • Shipping Weight: 12 oz.

- SK-2012-9H Operates on one carrier frequency between 174-216MHz \$1590.00
- SK-2012-TVH Operates on one carrier frequency between 947-952MHz 2490.00

Accessories

- MKE 2-2R Omnidirectional miniature lavalier microphone mini coax connector, black body and wire, and 3' of steel reinforced cable \$275.00
- MKE 2-2R-1 Omnidirectional miniature lavalier microphone capsule mini coax connector, and black capsule body 220.00
- MKE 2-2R-3 Omnidirectional miniature lavalier microphone mini coax connector, flesh tone body and wire, and 3' steel reinforced cable 275.00
- MKE 40-2R Cardioid lavalier microphone mini coax connector, black body and wire, and 3' of steel reinforced cable 312.00

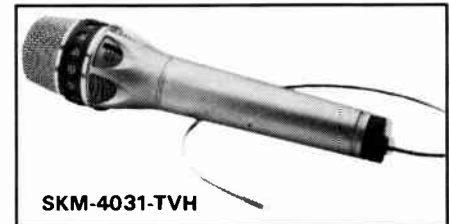


**SK-2012-TVH
Wireless Pocket
Transmitter**

SKM-4031 Handheld Single Channel Wireless Mike Transmitter

• For use with both stationary and portable receivers • DC-DC converter for constant voltage supply • "HyDYN" compander circuitry • ± 10dB attenuator • Battery condition LED indicator • Utilizes 3 AAA batteries • Shipping Weight: 42 oz.

- SKM-4031-9H Operates on one carrier frequency between 174-216MHz \$1290.00
- SKM-4031-TVH Operates on one carrier frequency between 947-952MHz 2090.00



SKM-4031-TVH

PORTABLE RECEIVERS

EK-2012 Portable Wireless Body Pac Receiver

• Dual channel capability for use with both handheld and body pac transmitters • DC-DC converter for constant voltage supply • "HyDYN" compander circuitry • Adjustable squelch and audio output gain • Battery condition LED indicator • Utilizes 3 AAA batteries • Shipping Weight: 12 oz.

- EK-2012-9H Operates on one carrier frequency between 174-216MHz \$1650.00
- EK-2012-TVH Operates on one (two optional) carrier frequency between 947-952MHz 2550.00

EM-1001 Quality Semi Portable Single Channel Wireless Receiver

• For use with both handheld and body pac transmitters • Defeatable "HyDYN" compander circuitry • Adjustable squelch • 20dB mike/line output attenuator • Balanced and floating output XLR • Variable gain headphone monitor • May be powered by 12-24VDC or 110/220VAC • Shipping Weight: 3 1/4 lbs.

- EM-1001-9H Operates on one carrier frequency between 150-216MHz \$1250.00



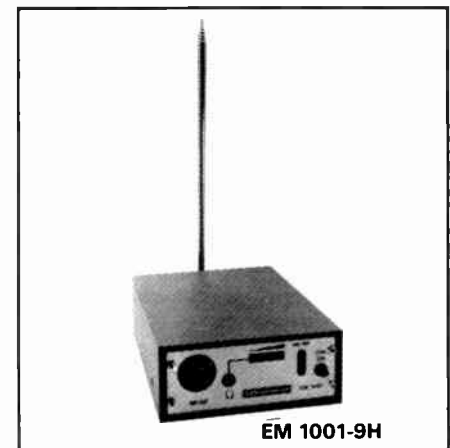
**EK-2012-TVH
Wireless Pocket Receiver**

VHF SYSTEMS

- VHF 1H SKM 4031-9H handheld microphone/transmitter and EK 2012-9H Body Pac receiver for camera mounting and/or portable use. System operates on one VHF carrier frequency between 174-216MHz. Includes one AC 2012-3 cable. Shipping Weight: 3 3/4 lbs. \$2940.00
- VHF 1B SK 2012-9H Body Pac transmitter and EK 2012-9H Body Pac receiver for camera mounting and/or portable use. System operates on one VHF carrier frequency between 174-216MHz. Includes one MKE 2-2R omnidirectional lavalier microphone and one AC 2012-3 cable. Shipping Weight: 4 lbs. \$3515.00
- VHF 2H SKM 4031-9H Handheld microphone/transmitter and EM 2003-9H single channel diversity receiver. System operates on one VHF frequency between 174-216MHz. Includes two tuned VGP ground plane antennas and two RFC-1 antenna cables. Shipping Weight: 10 lbs. \$3330.00
- VHF 2B SK 2012-9H Body Pac transmitter and EM 2003-9H single channel diversity receiver. System operates on one VHF carrier frequency between 174-126MHz. Includes one MKE 2-2R omnidirectional lavalier microphone, two tuned VGP ground plane antennas and two RFC-1 antenna cables. Shipping Weight: 10 1/4 lbs. \$3905.00

UHF SYSTEMS

- UHF 1H SKM 4031-TVH handheld microphone/transmitter and EK 2012-TVH Body Pac receiver for camera mounting and/or portable use. System operates on one UHF carrier frequency between 947-952MHz. Includes one AC 2012-3 cable. Shipping Weight: 3 3/4 lbs. \$4640.00
- UHF 1B SK 2012-TVH Body Pac transmitter and EK 2012-TVH Body Pac receiver for camera mounting and/or portable use. System operates on the UHF carrier frequency between 947-952MHz. Includes one MKE 2-2R omnidirectional lavalier microphone and one AC 2012-3 cable. Shipping Weight: 4 lbs. \$5315.00



EM 1001-9H

SENNHEISER ELECTRONIC CORP.*Headphones***HMD 224 Enclosed****Headphone/Microphone Combination**

• Frequency response of headphones: 16 to 20,000Hz • Frequency response microphone: 50-12,000Hz • Dynamic transducer principle headphone drivers 200 ohms; microphone system 200 ohms; microphone easily adjustable • Maximum sensitivity of microphone in direction of mouth owing to distinctive "displaced" directional characteristic • Circumaural air-filled double-layer plastic air cushions forms the basis of the HMD 224 headphone/microphone combination • Combination of headphones and microphone weighs 360g

HMD 224\$275.00

HMD 414-6 Open**Headphones/Microphone Combination**

• Frequency response of headphones: 20-20,000Hz • Frequency response of microphone: 50-12,000Hz • Dynamic transducer principle: headphone systems 600 ohms; microphone system 200 ohms • Flexible microphone mounting • Maximum microphone sensitivity in mouth direction by pronounced patented "displaced" directional characteristic

HMD 414-6\$245.00

HD 230 Sealed-Cushion Headphones

• Frequency response: 10Hz-30,000Hz • Impedance: 600 ohms per channel • Sensitivity nominal SPL at 1kHz: 94dB with 1mW input • Harmonic distortion: $\leq 1\%$ • Weight: 9.2 oz. without cable • Cord: 10' cable with molded stereo phone plug • Two-way design defines the state-of-the-art in headphone performance • Acoustically sealed cushions surround the room-sized sonics of separate woofers and tweeters, offering 12 octave dynamic range.

HD 230\$199.00

HD 540 Reference™ Stereo Headphones

• Frequency response: 16-25,000Hz • Nominal impedance 600 ohm per system • Open dynamic transducer principle • Novel type of diaphragm integral acoustical silk dampening and a unique ear cushion design • Virtually resonance-free transmission and exceptional transparency throughout the entire tonal spectrum, while effectively preventing standing waves between diaphragm and ear

HD 540\$189.00

HD 430 Open Stereo Headphones

• Speaker principle: Dynamic, open • Frequency response: 16—20,000Hz • Nominal impedance: 600 ohm (-2: 50 ohm) • SPL: 94dB approx. • Max. power handling cap.: 100mW • THD: 0.5% • Weight: 194g • Headband pressure: 3N • Ear contact: Semi-enclosed

HD 430\$159.00

HD 425 Open Stereo Headphones

• Speaker principle: Dynamic, open • Frequency response: 18—20,000Hz • Nominal impedance: 600 ohm (-2: 50 ohm) • SPL: 94dB approx. • Max. Power Handling cap.: 100mW • THD: 1% • Weight: 155g • Headband pressure: 3N • Ear contact: Semi-enclosed

HD 425\$139.00

HD 480 Open Stereo Headphones

• Neodymium iron magnets • 18-22,000Hz frequency response • 70 ohm impedance • Supplied with 10' stranded steel cable ending in stereo mini plug with 1/4 phone adaptor

HD 480\$99.00

HD 450 Open Stereo Headphones

• Neodymium magnets • 20-20,000Hz frequency response • 70 ohm impedance • Supplied with 10' stranded steel cable ending in stereo mini plug with a 1/4 phone adaptor

HD 450\$79.00

**HD 412 Dynamic Stick Phone**

• Frequency response: 20-20,000Hz • Open dynamic transducers • Thoroughly proven magnet system • Weight: 105g • Rugged, heavy-duty, helically coiled lead • Replaceable expanded foam ear cushions with plastic cover • Alternative for use as a sales aid • Accompanied by a suitable assembly kit for fitting the phone into bar or counter tops • For stereo transmission the phone should ideally be mounted at a slight distance apart in pairs

HD 412\$106.00

HD 44 Stereo Headphones

• Frequency response: 40-15,000Hz • impedance: 640 ohms • Nominal SPL (DIN 45 580): 94dB • Weight: 33g without cable • Cable length: 3m • Plugs into all stereo units, cassette recorders, record players and radios

HD 44\$49.00

PD 100 Mini Open Stereo Headphones

• Frequency range: 20—20,000Hz • Impedance: 42 ohms • Sensitivity Nominal SPL at 1kHz: 96dB • Harmonic Distortion: 1% • Weight: 1.4 oz.

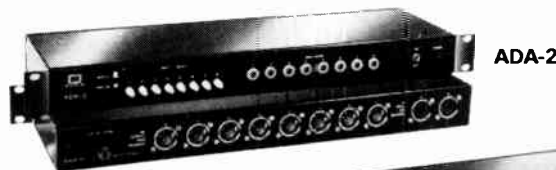
PD 100\$59.00

SESCOM, INC.

**Stereo Buffer/Audio DAs/
Phono Preamp**



SB-1 MKII



ADA-2



ADA-1 MKII



SC-3

SB-1 MKII Stereo Buffer

The SB-1 MKII is in a 1 3/4" rackmount case and is supplied with plain and rackmount end panels. The unit has an internal 120VAC power supply.

The SB-1 provides a convenient means to interface a two channel semi-professional tape recorder or VTR with -10dBV levels to a professional mixer with +4dBm levels.

The unit is divided into two sections. The amplifier section will accept the recorder outputs and is 100K ohms unbalanced bridging. The outputs of this section are 600 ohms transformer-balanced, which are used to feed the line level inputs of the mixer. The gain is adjustable from the front panel.

The inputs of the second section are 15K ohms transformer-balanced bridging, which will accept the outputs of a professional mixer. The outputs are 600 ohms unbalanced and will feed the -10dBV inputs of the recorder.

- Input:** 2 RCA phono jacks (amplifier)
2 female XLRs (transformer)
- Input Impedance:** 100K ohms unbalanced (amplifier)
600 ohms balanced (transformer)
- Max. Input Level:** +18dBV (amplifier)
+18dBV (transformer)
- Gain:** 0dB to +30dB (amplifier)
-14dB (transformer)
- Noise:** -101dB below rated output
- Freq. Response:** ±1dB, 20-20kHz
- Distortion:** <.2% at 20Hz max. rated output (amplifier)
- Output:** 2 male XLR (amplifier)
2 RCA phone jacks (transformer)
- Output Load:** >600 ohms balanced (amplifier)
>600 ohms unbalanced (transformer)
- Output Level:** +18dBm max. (amplifier)
+6dBm max. (transformer)
- Power Requirements:** 120VAC or 220VAC, 50/60Hz*
- Dimensions:** 19" x 1.75" x 5"
- SB-1 MKII** \$235.00

ADA-1 MKII Audio DA

The ADA-1 MKII is in a 1 3/4" rackmount case and is supplied with plain and rackmount end panels. The unit has an internal 120VAC power supply.

The ADA-1 MKII may be used as a four channel line level distribution amplifier or as four individual line drivers. The common feed input is line level balanced bridging. A second set of unbalanced inputs are provided by way of four 1/4" phone jacks which, when used, interrupt the corresponding line amplifier and all other higher numbered line amplifiers from the common feed. The gain of each line amplifier is screwdriver-adjustable from the front panel.

The outputs are 600 ohm transformer-balanced and have a maximum output level of +24dBm.

The ADA-1 MKII may be used as a four-channel DA or with semi-professional tape machines or mixers as a line driver to bring these units up to +4dBm.

- Input:** 1 female XLR (common)
4 1/4" phone jacks (individual)
- Input Impedance:** 15K ohms balanced (common)
150K ohms unbalanced (individual)
- Max. Input Level:** +18dBV (common)
+18dBV (individual)
- Gain:** +30dB to 0dB
- Noise:** 101dB below rated output
- Frequency Response:** ±1dB, 20-20kHz
- Distortion:** <.2% at 20Hz max. rated output
- Output:** 4 male XLRs
- Output Load:** >600 ohms balanced
- Output Level:** +18dBm max.
- Power Requirements:** 120VAC or 220VAC, 50/60Hz*
- Dimensions:** 19" x 1.75" x 5"
- ADA-1 MKII** \$290.00

ADA-2 Audio DA

The ADA-2 is a two input and eight output audio distribution amplifier in a 1 3/4" rackmount case which is supplied with rackmount end panels.

Eight front panel pushbutton type switches select either input A or B for each of the eight line amplifiers. This unique feature allows the ADA-2 to be used as a second DA when one input is not feeding all eight outputs. The inputs are transformer-balanced bridging, and front panel access is provided to the internal gain adjustments which have a range from 0dB to +30dB.

Each of the line amplifiers uses a pair of complementary output transistors with an output impedance of less than 100 ohms which is coupled to the output transformer. The transformer has a turns ratio of 1:2 and, therefore, a gain of 6dB. This configuration allows the ADA-2 to provide a +30dBm maximum output level. The unit is powered by an internal 120VAC power supply.

- Input:** 2 female XLRs (A & B)
- Input Impedance:** 15K ohms balanced (A & B)
- Max. Input Level:** +18dBV (A & B)
- Com.-Mode Rejection Ratio:** -87dB at 1kHz
-76dB at 10kHz
+30dB
- Gain:** +30dB
- Noise:** -101dB below rated output
- Frequency Response:** ±1dB, 20-20kHz
- Distortion:** <.2% at 20Hz max. rated output
- Output:** 8 male XLRs
- Output Load:** >600 ohms balanced
- Output Level:** +30dBm max.
- Power Requirements:** 120VAC or 220VAC, 50/60Hz*
- Dimensions:** 19" x 1.75" x 5"
- ADA-2** \$600.00

SC-3 Stereo Combiner

The SC-3 is a stereo RIAA phono preamp with super low noise, line amplifier and a stereo combiner. The unit features a 1 3/4" rackmount case which is supplied with plain and rackmount end panels and a 120VAC internal power supply.

The front panel switches permit selection of either RIAA phono inputs or line level inputs. A unity gain buffer is provided as the first stage to provide low input capacitance for the phono input.

The SC-3 inputs are RIAA phono, line level unbalanced 1/4" phono and transformer-balanced female XLR. The SC-3 has three 600 ohm transformer-balanced outputs; two for the left and right stereo outputs, and the third is a mono output. The SC-3 inputs are RIAA phono, line level unbalanced 1/4" phono and transformer-balanced female XLR.

- Input:** 2 RCA phono jacks (phono)
2 XLR female (line)
- Input Impedance:** 2 1/4" phone jacks (line)
47K ohms unbalanced (phono)
15K ohms balanced (line)
47K ohms unbalanced (line)
- Max. Input Level:** +18dBV (line)
- Gain:** +54dB (phono)
0dB (line)
- Noise:** -90dB below rated output
- Frequency Response:** ±1dB, 20-20kHz
RIAA nominal (phono)
- Distortion:** <.2% at 20Hz max. rated output
- Output:** 2 male XLRs (A & B output)
1 male XLR (mono output)
- Output Load:** >600 ohms balanced
>600 ohms (mono output)
- Output Level:** +18dBm max. (A & B output)
+18dBm max. (mono output)
- Power Requirements:** 120VAC or 220VAC, 50/60Hz*
- Dimensions:** 19" x 1.75" x 5"
- SC-3** \$295.00

*Internal Selectable

SESCOM, INC.

*Mike Line Driver/Audio Leveler/
Audio Generator*

MLD-6 Dual Mike-Line Driver

The MLD-6 is a rackmounted dual mike-line driver for low impedance microphones to bring them to line level. The unit features transformer-balanced inputs and outputs with XLR type connectors. The gain of the amplifiers is front panel adjustable. The MLD-6 is one rack unit high and is AC powered.

Specifications

Input: 2 Female XLR's, transformer balanced
Input Impedance: 150 ohms balanced
Maximum Input Level: -25dBV
Gain: +75 to +41dB (adjustable)
Noise: -85dB below maximum output
Frequency Response: ± 1dB 20-20,000Hz
Distortion: < .20% at 20Hz maximum output
 < .10% at 30Hz maximum output
 < .05% at 50Hz maximum output
 < .01% at 1kHz maximum output
Output: Transformer balanced, male XLR's
Output Load: > 600 ohms balanced
Output Level: +21dBm maximum
Power Requirements: 120VAC or 220VAC, 50/60Hz, Internally selectable
Dimensions: 19.00" x 1.75" x 5.00"

MLD-6\$315.00

SAT-2 Stereo Audio Leveler

The SAT-2 is a rackmounted stereo audio leveler for satellite audio. The unit will accept signals from -35dBm to +12dBm and provide an adjustable steady output within the range of -10dBm to +8dBm. All inputs and outputs are transformer-balanced and have XLR connectors. The unit features low distortion, typically below 0.2% across the bandwidth. The unit has adjustable attack and release times which are internal. The SAT-2 is one rack unit high and is AC powered.

Specifications

Input: 2 Female XLR's
Input Impedance: 115K ohms balanced
Maximum Input Level: +12dBV
Noise: -85dB below maximum output
Frequency Response: ± 1dB 20-20,000Hz
Bandwidth: 45kHz at -3dB
Distortion: < .2% at 20Hz maximum output
 < .2% at 30Hz maximum output
 < .2% at 50Hz maximum output
 < .2% at 1kHz maximum output
Output: 2 Male XLR's
Output Load: > 600 ohms balanced
Output Level: +21dBm maximum
Power Requirements: 120VAC or 220VAC, 50/60Hz, Internally selectable
Dimensions: 19.00" x 1.75" x 5.00"

SAT-2\$275.00

AG-1 Audio Generator

The AG-1 is a rackmounted low-distortion audio generator. The unit features pushbutton frequency selection and decade control. The range of selectable frequencies is from 100Hz to 15kHz which is very usable in studio applications. The output levels are +20, +8, +4, 0 and -10dBm transformer balanced. The unit also has a VU meter which tracks the output level. The AG-1 is one rack unit high and is AC powered.



MLD-6



SAT-2



AG-1

Specifications

Frequency Response: ± 1dB 100-15,000Hz
Distortion: < .05% at 20Hz maximum output
 < .05% at 30Hz maximum output
 < .05% at 50Hz maximum output
 < .01% at 1kHz maximum output
Output: 1 Male XLR
Output Load: > 600 ohms balanced
Output Level: +20dBm maximum
Power Requirements: 120VAC or 220VAC, 50/60Hz, Internally selectable
Dimensions: 19.00" x 1.75" x 5.00"

AG-1\$230.00

SESCOM, INC.

**Power Amplifier/Audio Test
Equipment Audio Accessories**



SH-1 MKII

SH-1 MKII Power Amplifier

The SH-1 MKII has been completely redesigned. It is in a 1 3/4" rackmount case and is supplied with plain and rackmount end panels. Also, the unit now has a 120VAC power supply.

The SH-1 is a 10W per channel stereo power amplifier designed for use in the studio, AV facilities and broadcasting. Used in conjunction with the SHB-1 MKII (headphone junction box), the SH-1 can drive multiple sets of headphones. Also, it may be used to drive small control room monitors or talk-back speakers.

Front panel level controls and headphone jack are provided. The input connectors are RCA phono jacks, and the output connectors are binding posts for each output, and one male 3-pin XLR for direct connection to the SHB-1. The power supply features a low flux field Toroidal power transformer.

SH-1 MKII \$240.00



LS-2

LS-2 Passive Distribution Box

The LS-2 is designed to provide up to four isolated transformer-balanced outputs from one input. It may be used in the same way as an audio distribution amplifier when active electronics are not needed. It is most useful when an output feed must be run a long distance and then split to runs in several different directions.

The input is selectable 150 or 600 ohms transformer-balanced, and the transformer has four 600 ohm balanced secondaries. Building-out resistors are placed between the transformer secondary and the XLR outputs for further isolation. The LS-2 has a maximum output level of +30dBm. (Rackmountable).

LS-2 \$220.00

**ASG-2
Audio Sinewave Generator**

The ASG-2 is a handheld, battery operated sinewave audio generator designed for field use. It is housed in a rugged aluminum case. The battery is a slide lock compartment that requires no tools for change.

The sinewave generator is a typical wien-bridge oscillator circuit with a thermistor for thermal stabilization. The unit is low distortion, typically under 25% across the band, and will generate high quality sinewave from 20-20kHz. The ASG-2 has three decade switching plus eight switches to determine the exact operating frequency. There is a pushbutton switch for turning the unit on and off.

The output level is a maximum +10dBm to 60dBm and has both balanced and unbalanced outputs. The balanced output is electronically done. The output levels are determined by two rotary switches. One switch is for the decades in 10dB increments and the other rotary switch is 1dB increments. The unit will drive 600 ohm loads.

The size of the unit is 3.6" x 5.5" x 1.8". The unit draws under 20mA. However, we recommend to use at least alkaline batteries if available, Kodak Lithium for the longest life.

ASG-2 \$185.00



OB-2

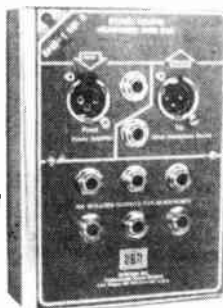
OB-2 Output Balancer

The OB-2 is designed to provide a means to convert line level, 600 ohm unbalanced outputs to 600 ohm balanced outputs. The unit features two channels, each with a maximum input level of +30dBm. Both female XLR's and 1/4" phone jacks are provided for the inputs while the male XLR's are used for the outputs.

The use of balanced lines is helpful in reducing noise as the shield is not a signal-carrying connector. When used properly, balanced lines are of great benefit when ground loops are encountered. The OB-1 is ideally suited for use with semi-professional tape recorders, VTR's and semi-professional mixers. Frequency response: ±1dB; 20-20kHz. (Rack-mountable).

OB-2 \$220.00

SHB-1 MKII



**SHB-1 MKII - Headphone
Junction Box**

The SHB-1 MKII is designed for use with the SH-1 MKII power amplifier as a stereo headphone junction box. It also may be used with any 10 to 75W stereo amplifier.

Looping inputs and outputs are provided using a female XLR type connector and RTS phone jack for the looping input. The looping output uses a male XLR type connector and RTS phone jack. The six headphone outputs have building-out resistors for isolation. Any headphones between 8 ohms and 2000 ohms may be used.

Standard two-connector shielded microphone type cable with 3-pin XLR type connectors can be used to connect the SHB-1 to a SH-1 or to additional SHB-1's by use of the looping inputs and outputs.

SHB-1 MKII \$95.00

PB-1 Patch Bay

The PB-1 is primarily designed for use in four and eight-track studios. It features ease of installation with no soldering and balanced line operation. Standard molded type cables may be used for connecting the studio equipment to the PB-1.

Designation strips and 16 pairs of patch points using RTS 1/4" phone jacks in a normaled configuration are provided on the front panel. An additional 16 RTS 1/4" phone jacks are located on the rear panel for connecting the patch points to the studio equipment. RTS 1/4" phone jacks of the insulated sleeve type are used so as to help prevent ground loops from occurring.

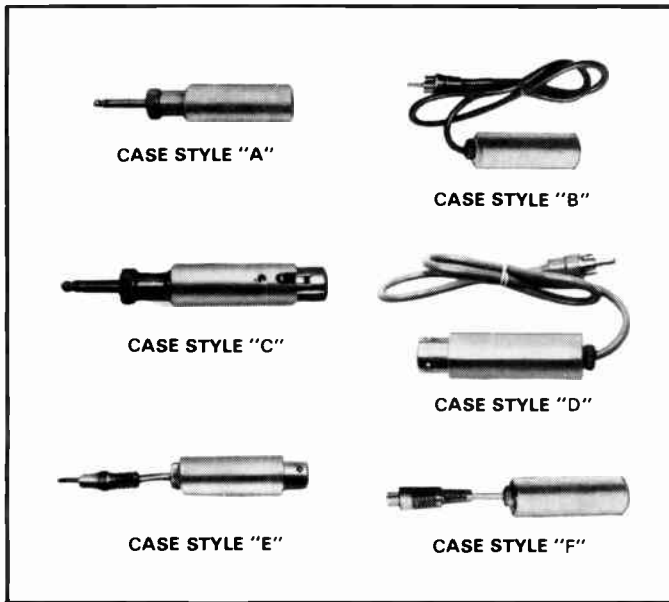
Also available is a non-normaled configuration: the PB-2.

PB-1 \$225.00

PB-2 \$225.00

SESCOM, INC.

Audio Transformers/Accessories



TR-Series Transformers

The "TR-Series" transformers are designed to match various sources such as microphones and line levels to inputs.

The entire series features low distortion and broad frequency response. There are seventeen different types of transformers in the series.

Model	Type	Prim. Imped. (ohms)	Sec. Imped. (ohms)	Case Style	Power Level	Price
TR-124	Mike-Matching	150	150	C	-30dBV	\$40.75
TR-125	Mike-Matching	150	600	E	-30	40.75
TR-119	Mike-Matching	150	60K	A	-30	33.50
TR-120	Mike-Matching	150	60K	B	-30	37.75
TR-122	Mike-Matching	150	60K	C	-30	40.75
TR-123	Mike-Matching	150	60K	D	-30	40.75
TR-132	Mike-Matching	600	600	F	-30	43.45
TR-130	Line-Matching	600	600	A	0	40.75
TR-131	Line-Matching	600	600	C	0	40.75
TR-126	Line-Matching	15K	15K	B	0	40.75
TR-127	Line-Matching	15K	15K	D	6	40.75
TR-128	Line-Matching	15K	15K	A	0	40.75
TR-129	Line-Matching	15K	15K	C	0	50.85
TR-136	Line-Matching and Pad	600	600	E	+ 4dBm	50.85
TR-135	Line-Matching and Pad	600	10K	D	+ 4dBm	50.85

MLD-1 MKII and MLD-3

Mike-Line Drivers

The MLD-1 and MLD-3 feature two stages of amplification with maximum output of + 16dBm and screwdriver adjustable gain from the front panel. The units are designed to be used for news, sports, or live commercials from remote locations.

The transformer-balanced input will accept a low impedance dynamic or condenser microphone, and the unit can supply phantom power to the microphone.

The output is 600 ohms transformer-balanced. The MLDs are most useful when using extremely long or noisy mike-type cables or Telco pairs.

The MLD-3 is also provided with switches to activate the limiter circuit and to turn on the phantom power to the input connector.

- MLD-1 MKII \$175.00
- MLD-3 210.00

IL Series In-Line Transformers

The IL-Series in-line transformers and accessories are widely used to solve interconnection problems in the field. These units are designed to be placed in the line between any two units.

Model	Type	Prim. Imped. (ohms)	Sec. Imped. (ohms)	Power Level	Price
IL-20	Mike-Matching	150	150	-30dBV	\$38.25
IL-1	Mike-Matching	150	600	-30	38.25
IL-2	Mike-Matching	150	5K	-30	38.25
IL-3	Mike-Matching	150	15K	-30	38.25
IL-6	Line-Matching	600	600	-20	38.25
IL-19	Line-Matching	600	600	0	38.25
IL-7	Line-Matching	600	15K	-20	38.25
IL-9	Line-Matching	15K	15K	0	38.25
IL-11	Phase Reverser	-	-	-	33.00
IL-12	Hi-pass Filter	600/150	600/150	-	33.00
IL-13	Lo-pass Filter	600/150	600/150	-	33.00
IL-14	Presence Filter	600/150	600/150	-	33.00
IL-15	Response Shaper	600/150	600/150	-	33.00
IL-16	Line to Mike Pad	600	150	-	33.00
IL-17	Ground Lifter	-	-	-	30.00
IL-18	Stepped Mike Attenuator	1.2K	1.2K	+ 10	79.25
IL-21	Line Pad Adj. 0-15dB	600	600	+ 18	53.35
IL-22	+ 8dBm to + 4dBm Pad	600	600	+ 18	34.35

Audio Accessories

Sescom offers a line of little problem-solving boxes, "The Portables." They are small, low cost units designed to solve specific audio problems. Most of the inputs and outputs are compatible and the series units can be used together to perform various functions.

PO-1	AC Power Supply	\$ 59.00
PO-2	Battery Supply	29.00
PO-3	Stereo Amplifier	59.00
PO-4	Mono Amplifier	43.00
PO-5	Stereo Amplifier w/Phono pre-amp	99.00
PO-6	1 x 3 Pro DA	118.00
PO-7	1 x 6 Semi-Pro DA	66.00
PO-8	3-Channel Semi-Pro Mike Mixer	160.00
PO-9	3-Channel Pro Mike Mixer	199.00
PO-10	Sine Wave Oscillator	66.00
PO-11	Stereo Phono pre-amp	52.00
PO-12	Source Selector	46.00
PO-13	Output Selector	66.00
PO-14	Stereo Tone Control	44.00
PO-15	Stereo Shelving Filter	52.00
PO-16	Mono Parametric Equalizer	52.00
PO-17	Interface Box	39.00
PO-18	Mono Line Balance Box	33.00
PO-19	Mono Output Balancer	27.50
PO-20	Mono Mike Isolation Box	33.00
PO-21	Dual LED VU	52.00
PO-22	Semi-Pro Mike-Line Driver	62.00
PO-23	Stereo Summing Amplifier	66.00
PO-24	Stereo Line Driver	79.00
PO-25	1 x 3 "Mike-Splitter"	72.00
PO-26	Passive Direct Box	66.00
PO-27	Active Direct Box	85.00
PO-28	Line Level Splitter	66.00
PO-29	Headphone Listen Box	66.00
PO-30	Pad Box 0-65dB	66.00
PO-31	Remote Headphone Box	52.00
PO-32	60dB Precision Gain Box	52.00
PO-33	Stereo Combiner	52.00
PO-34	Stereo Automatic Level Control	66.00
PO-41	AC Power Semi-pro Mike Line Driver	66.00
PO-42	Phantom AC Power Supply	105.00
PO-43	Rackmounting Accessory	29.00

SHARP ELECTRONICS CORP.

Broadcast Color Cameras

XC-B10/XC-B20P Broadcast
ENG/EFP Color Cameras

Broadcast-caliber picture quality starts with three $\frac{2}{3}$ " Diode Gun LOC/MS Saticon* (XC-B10) or Plumbicon* (XC-B20P) tubes coupled with a high-transparency glass f/1.4 prism beam splitter.

The Standard Automatics:

- **Auto-White**—The high performance Auto-White circuit is supplemented by a preset 3200°K setting
- **Auto-Black**—Black balance is continuously maintained by high-gain DC clamp circuitry and precisely calibrated by the microcomputer Digital Auto-Black Balance. This combination totally eliminates black balance adjustment when switching from 0 to 18dB gain
- **Auto-Centering**—The Automatic Centering circuit allows centering to be automatically adjusted using computer control. A preset switch position is also available
- **Automatic Beam Optimization Adjustment (A.B.O.)** Built-in automatic beam optimization circuitry can handle incident light intensity up to 8 times higher than normal. This feature eliminates "comet tailing" and "blooming" phenomena caused by bright pin-point light sources.

The Exceptional Automatics:

- **Auto Iris**—With NAM (non-additive mix) of R, G and B plus center screen weighting, achieves performance that rarely needs manual intervention
- **Auto Contrast**—The Auto-Contrast circuit automatically adjusts the camera when shooting in low contrast conditions. Manual Master Black adjustment is also available for shots where special effects are desired.
- **Auto-Knee**—The Auto-Knee circuit widens the dynamic range of the camera. Soft compression of the whites is automatically adjusted to capture the maximum information in high contrast outdoor or back-lighted scenes
- **The Standard Displays:**
Zebra with Level Adj and ON/OFF, Video Low, A/W, A/B, A/C Status, Genlock, Gain Position, Lo-Battery, Tally
- **The Exceptional Displays:**
Audio VU meter to get that perfect recording, Tape Remaining, Camera Number, Iris f-Stop, Filter Wheel Position, Lens Zoom Position, Auto Contrast...and more
The camera display is placed off-center so as not to disturb shooting. Display erases automatically, leaving only critical information on permanent display

Component VCR Compatibility

The XC-B10 and XC-B20P are compatible with Betacam and MII format component recorders. It is also compatible with the 26-pin SMPTE camera-to-VCR standard.

Choice of Viewfinders

- 1.5" Viewfinder with underscan can swivel 180° and can slide right or left. Additional features include a built-in peaking circuit, oversize optics for non-critical eye position and adjustable diopter.
- 5" High Resolution Viewfinder (over 500 TV lines) with underscan and precision low-profile pan/tilt mechanism.

Specifications

Optical System:	Prism beam splitter (f/1.4) with bias light injection
Lens Mount:	Bayonet
Pick-Up Tubes:	Three $\frac{2}{3}$ " Diode Gun LOC MS Saticons (XC-B10) or Plumbicons (XC-B20P)
Scanning System:	525 lines; 2:1 interlace 30 frames/second
Synchronization	
a. Internal Synchronization:	Built-in sync generator (meets SC-H Phase requirements of RS-170A)
b. External Synchronization:	Locks to composite video or black burst
Synchronization:	H-sync adjustable from 2 μ s delay to 4 μ s advance with respect to genlock input signal.
Timing for External Synchronization:	Subcarrier phase adjustable 360° with respect to gen-lock input signal
c. Blanking Width:	H-Blanking adjustable from 10.0 μ s to 11.5 μ s V-Blanking selectable—18, 19 or 20 lines



XC-B20P

Color Encoder System:	NTSC (I, Q System)
Sensitivity:	2000 lux 89.9% Refl. 3200°K f/4
Standard Illumination:	XC-B10—750 lines—center G-ch. 600 lines encoded
Horizontal Resolution:	XC-B20P—660 lines—center G-ch. 600 lines encoded
S/N Ratio:	57dB measured without Gamma and without image enhancement
Geometric Distortion:	Less than 1.5% of picture height
Color Temperature	Built-in optical filter turret, 3200°K, 5600°K, 5600°K + 12%
Compensation:	ND, cap and built-in auto-white balance circuit with memory produce total range from 2000°K to 10,000°K
Gain Boost:	+9dB (+6dB) or +18dB (+12dB)
Detail Correction:	2 line including level dependance, noise coring and comb filtering
Character Display:	VF character display of camera status. Optional status display on main video
Zebra Indication:	Adjustable zebra with ON/OFF switch
Color Bar:	Split field 100% saturated, 75% amplitude in accordance with EIA RS-189A (with camera identification) Compensated for individual channels
Flare Compensation:	
Input Signals:	
a. Genlock Signal:	1V, composite video or 0.43V, black burst (75 ohm) 2 inputs—BNC connector, Remote/VCR connector
b. Return Video:	1V (75 ohm) composite video synchronous or non-synchronous 1 input—Remote/VCR connector
c. Mike:	1 input—XLR connector
d. Tally:	1 input—Remote/VCR connector, BNC connector
Output Signals:	
a. Encoded Video:	1V (75 ohm) composite video 2 outputs—Remote/VCR connector, BNC connector
b. R,G,B Video:	0.7V (75 ohm) non-composite or 1V p-p with Sync internally selectable 1 output for each signal at Remote/VCR connector
c. Monitor Video:	1V (75 ohm). R,G,B individual video, encoded video, R-G, B-G. Registration video
d. Mike Audio:	Microphone Direct 1 output—Remote/VCR connector
Power Requirements:	+11V to +17.4VDC, approx. 21W regardless of input voltage approx. 24W with 1.5" viewfinder
Ambient Operating Conditions:	14°F to 104°F (-10°C to +40°C)
Weight:	Camera head approx. 9.2 lbs. (4.2kg) Viewfinder approx. 1.32 lbs. (0.6kg)
Dimensions:	Height: Approx. 10 $\frac{15}{16}$ " including legs Width: Approx. 16 $\frac{3}{8}$ " including 1.5" viewfinder Depth: Approx. 7 $\frac{13}{16}$ " including 1.5" viewfinder (without mike holder)
XC-B10	$\frac{2}{3}$ " diode gun Saticon tubes, ENG configuration, less lens . . . \$ 9,315.00
XC-B20P	$\frac{2}{3}$ " diode gun Plumbicon tubes, ENG configuration, less lens . . . 15,495.00
	*LOC (Low Capacitance) M.S. (Magnetic focus-static deflection)
	Saticon is a registered trademark of NHK.
	Plumbicon is a trademark of N. V. Philips

SHARP ELECTRONICS CORP.**Broadcast Color Camera****XC-A1 Broadcast ENG/EFP Color Video Camera****2/3" Diode Gun Saticon* Tubes with Prism Optics**

Broadcast-caliber picture quality starts with the three 2/3" Diode Gun LOC/MS Saticon tubes coupled with a high-transparency glass f/1.4 prism beam splitter. The result is high sensitivity, enhanced resolution (750 lines), excellent S/N ratio (57dB), truer colorimetry, plus reduced image retention and comet tailing. Bias lighting further reduces lag, especially for those critical low-light scenes.

Automatic Functions Offer Increased Ease-of-Use

- **Auto White**—The Auto-White circuit is supplemented by a preset 3200°K setting. This allows shooting to begin immediately if the action requires a quick change of scene
- **Auto-Black**—Black balance is continuously maintained by high-gain DC clamp circuitry and precisely calibrated by the microcomputer Digital auto-black balance. This combination totally eliminates black balance adjustment when switching from 0 to 18dB gain, and reduces routine maintenance requirements
- **Auto-Centering**—The Automatic Centering circuit allows centering to be automatically adjusted using computer control. A preset switch position is also available

+9/+18dB High Gain Switch

Sensitivity can be increased 3X or 8X for low-light level scenes using the +9dB and +18dB settings. Minimum required illumination is an amazingly low 30 lux (2.8fc) at f/1.4.

Compact, Lightweight Diecast Body

Sharp has precision-machined the diecast camera body to create a durable, solid unit that assures optical alignment under the roughest ENG applications.

Automatic Beam Optimization Adjustment (ABO)

Built-in automatic beam optimization circuitry can handle incident light intensity up to 8 times higher than normal. This feature eliminates "comet tailing" and "blooming" phenomena caused by bright pin-point light sources.

Color Temperature Filter System

A 4-position rotating filter system allows selecting the optimum color temperature filter for indoors, normal outdoor light, bright sunlit outdoors, and cloudy/dim outdoor light levels.

Power Conserving Standby Switch

Switching to standby mode further extends running time with battery operation by reducing power consumption to a minimum while the operator is waiting for the action to begin.

Information-Packed 1.5" Viewfinder

The 1.5" underscanned electronic viewfinder can swivel a complete 180° and can slide right and left. Additional features include a built-in peaking circuit and a zebra pattern video level indicator with adjustable threshold.

Multi-Standard Intercom System

The intercom provides communication with virtually all major 2-wire intercoms presently in use.

Specifications

Optical System:	Prism beam splitter (f/1.4) with bias light injection
Lens Mount:	Bayonet
Pick-Up Tubes:	Three 2/3" Diode Gun LOC MS Saticons
Scanning System:	525 lines; 2:1 interlace 30 frames/second
Synchronization:	
a. Internal Synchronization:	Built-in sync generator (meets SC-H Phase requirements of RS-170A)
b. External Synchronization:	Locks to composite video or black burst
Timing for External Synchronization:	H-sync adjustable from 2 sec. delay to 4 μ sec. advance with respect to gen-lock input signal. Subcarrier phase adjustable 360° with respect to gen-lock input signal
c. Blanking Width:	H-Blanking adjustable from 10.0 μ sec. V-Blanking selectable—18, 19 or 20 lines NTSC (I, Q System)
Color Encoder System:	
Sensitivity:	
Standard Illumination:	2000 lux 89.9% Refl. 3200°K f4
Resolution:	Horizontal—750 lines—center G-ch. (typ.)
S/N Ratio:	57 dB measured without Gamma and without image enhancement

**XC-A1****Registration Error:**

- Zone 1 (within a circle of diameter equal to 80% of picture height):
- Zone 2 (within a circle of diameter equal to picture width):
- Zone 3 (outside of Zone 2):

Less than 0.1% of picture height

Less than 0.2% of picture height

Less than 0.5% of picture height

Less than 1.5% of picture height

Geometric Distortion:**Color Temperature Compensation:**

Built-in optical filter turret, 3200°K, 5600°K, 5800°K, +12% ND, cap and built-in auto-white balance circuit with memory produce total range from 2000°K to 10,000°K +9 dB (+6 dB) or +18 dB (+12 dB)

Gain Boost:**Detail Correction:**

+9 dB (+6 dB) or +18 dB (+12 dB)

2 line type including level dependence, noise coring and comb filtering

Automatics:

Auto-White, Auto-Black, Auto-Centering with memory and presets

Character Display:

VF character display of camera status. Optional status display on main video

ABO:

Automatic Beam Optimization stabilizes highlights up to 8 times normal

Auto Iris:

Uses NAM (non-additive mix) of RGB plus center screen weighting

Zebra Indication:

Adjustable zebra with On/Off switch

Color Bar:

Split field 100% saturated, 75% amplitude in accordance with EIA RS-189A (with camera identification)

Flare Compensation:

Compensated for individual channels

Input Signals:

a. Gen-Lock Signal:

1V, composite video or 0.43V, black burst (75 ohm) 2 inputs—BNC connector, Remote/VTR connector

b. Return Video:

1V (75 ohm) composite video synchronous or non-synchronous. 1 input — Remote/VTR connector

c. Mic:

0 dB or +50 dB Gain (internally selectable) 1 input — XLR connector

d. Tally:

1 input—Remote/VTR connector

Output Signals:

a. Encoded Video:

1V (75 ohm) composite video 2 outputs—Remote/VTR connector, BNC connector

b. RGB Video:

0.714V (75 ohm) non-composite 1 output for each signal at Remote/VTR connector (GRN with sync available)

c. Monitor Video:

1V (75 ohm). RGB individual video, encoded video, (on encoded output) R-G, B-G. Registration video

d. Mic Audio:

-20 dBm or -70 dBm 600 ohm unbalanced 1 output—Remote/VTR connector

Power Requirements:

+10V to +17.4V DC, approx. 22W regardless of input voltage

Ambient Operating Conditions:

-10°C to +40°C (14°F to 104°F) less than 90% humidity

Weight:

Camera head approx. 8.58 lbs. (3.9kg)

Viewfinder approx. 1.32 lbs. (0.6kg)

Height: Approx. 10-15/16" including legs

Width: Approx. 15-7/8" including 1.5" viewfinder

Depth: Approx. 7-13/16" including 1.5" viewfinder (without mic. holder)

XC-A1U (ENG configuration, less lens) \$7790.00

*Note: LOC (Low Capacitance) MS (Magnetic focus-Static deflection) Saticon is a registered trademark of NHK.

SHINTRON CO., INC.

Signal Processing Equipment

690 ET (Everything Time Code) Reader/Generator

- Independent readers and generators handle time code and user bits in either Vertical Interval Time Code (VITC) or Longitudinal Time Code tracks
- Translate between VITC and Longitudinal Time Code
- Character generator for data display and user interface/menu purposes
- Interface based on the RS-422 Orange Bus protocol
- Microprocessor controlled
- Adjustable hysteresis levels from -15 to -25dB
- Ten internal memories
- All setups are stored in non-volatile memory
- In the longitudinal mode, reads at speeds from 1/60 to 80 times normal play speed in either forward or reverse
- One frame is automatically added when reading in the forward direction or is subtracted when reading in the reverse direction
- Jam-sync to other Time Code Generators in either Longitudinal or VITC mode

690 ET \$4500.00
 690-TD 690 with time/date option and built-in time/date calendar generator 4800.00
 650 Combination SMPTE/EBU TC/Userbits Generator/Reader identical to 690 except it does not include VITC capability 3000.00
 Time Clock/Date Calendar Option 300.00

647 SMPTE/EBU Edit Code Generator

- Capable of generating SMPTE/EBU code either independently or in synchronism with incoming video
- 6 digit, 1/2" LCD with back light
- Dropframe or non-dropframe
- Freely resettable time data
- Userbits are set by thumbwheels on the front panel

647 \$1500.00

646 Edit Code Reader/Raster Display

- Reads either SMPTE or EBU code
- Front panel 8 digit LED numerics of 1/2" height
- Readable tape speed range from 1/8" to 40X
- Capable of keying in the data on video raster in either black letter on white background or the reverse

646 \$1500.00

640/641 Portable SMPTE Time Code Generators

- Places time code on tapes to identify segments, takes and frames for later editing
- Battery-operated 3 "AA" cells
- Can be attached to portable VTRs such as Sony BVU series and JVC
- Displays both time code and userbits on liquid crystal digits and is able to generate userbits as well

640 SMPTE for ENG/EPF, dropframe \$ 990.00
 641 SMPTE or EBU, dropframe or nondropframe 1500.00

12X Routing Switcher Series

- 12 inputs of either composite video (V), three channel component video (C), or three channel audio (A)
- Control three separate video channels for RGB, YIQ, Y, R-Y, B-Y formats
- Can receive commands from any 12X remote control unit
- Engineered for the highest possible electrical performance and system transparency

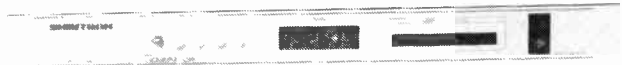
12X-C4
 "12X" high-isolation routing Switcher for component video 12 inputs and 4 outputs with 3 channels per output. 30MHz bandwidth. RS422 (SMPTE) remote controller with status indicators \$6990.00

12X-V4
 "12X" high-isolation video routing switcher, 12 inputs, 4 output buses. Remote controllable \$3300.00

12X-S1
 12 x 1 stereo audio switcher \$1000.00



690 ET



647



646



12X



260



MC-1

260 AFV Routing Switcher

- Provides passive switching of both video and up to 2 associated audio signals from 12 inputs to one output
- Can be used for stereo or a combination of audio and time code channel
- Audio circuits consist of two identical balanced pairs
- Equipped with a mechanical indicator switch
- Audio override capability built-in

260 \$510.00

MC-1 Component Intermatrix Converter

- Three BNC connectors for either YIQ, RGB, Y, Y-B and B-Y external genlock input
- Stand alone unit, one rackunit high
- Used as an integral part of editing and post production set-ups
- Genlocks to studio colorback
- Outputs are six BNC connectors for two sets of the selected format
- Bandwidth is better than 20MHz
- Equipped with one conversion matrix
- Basic proc amp is built-in

MC-1 \$2000.00

SHINTRON CO., INC.

Signal Processing Equipment

CB100-VA Dual Video Distribution Amplifier

- 2 (1 loopthrough/5 out) or 2 (1 terminated in/6 out) or 1 (1 in/2 out)
- 15MHz bandwidth
- Self contained power supply
- Adjustable cable compensation of 500' is built in
- Gain adjustable + 6dB to -10dB

CB100-VA \$330.00

CB100-CA CandyBox Dual Cable Compensation Amplifier

- Contains a pair of 1 in/5 out precision cable compensation DAs capable of compensating up to 1,000' of Belden 8281 coaxial cable
- The two amplifiers can be connected in cascade to compensate up to 2,000' of the same cable
- Gain and cable length are individually adjustable from front

CB100-CA \$600.00

CB100-LC IBM-PC To Video Level Converter

- Detects CGA or EGA card automatically
- Converts IBM-PC's RGBI to video RGB
- Produces proper waveform acceptable to video equipment
- Converts impedance to 75 ohm for long lines
- TTL inputs and buffered outputs
- Jumper selection of color/monochrome and sync level
- Adjustable horizontal blanking interval

CB100-LC \$300.00

CB100-EN NTSC/PAL Encoder

- Encodes RGB to NTSC or PAL
- Produces correct ScH relationship
- Genlocks to colorback
- 1 set of RGB input and 2 NTSC outputs
- Subcarrier phase adjustable

CB100-EN \$1500.00

CB100-SY NTSC Sync Generator

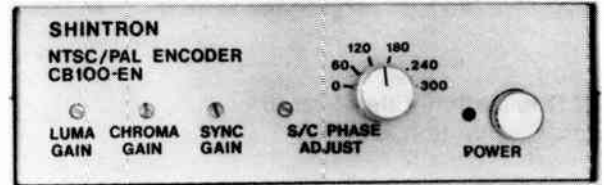
- Genlocks to helical video
- Correct ScH relationship
- Produces color ID pulse
- Colorblack, sync, blank and subcarrier outputs
- H and Sc phases are adjustable
- 2 independent selectable inputs
- Genlocks to incoming video or internal crystal

CB100-SY \$1100.00

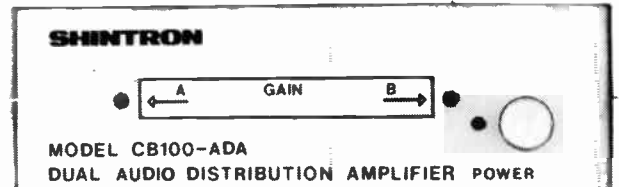
CB100-PT Protocol Translator

- Translates Grass Valley Switcher protocol and Shintron Orange Bus Language
- No external adjustment
- Automatic operations

CB100-PT \$2000.00



CB100-EN



CB100-ADA



CB100-LC

CB100-DD4 CandyBox Super-VHS Dub Distribution Amplifier

- S-VHS dub distribution amplifier specifically designed for duplication
- Equipped with dub 4-pin connectors
- One loop-through input with automatic terminating feature and 6 outputs
- Individual luminance and chrominance gain adjust from front

CB100-DD4 \$450.00

CB100-ADA CandyBox Dual Audio Distribution Amplifier

- Contains a pair of precision audio 1 in/6 out DAs for duplication facilities
- Connectors are all RCA phono-plug for convenience

CB100-ADA \$350.00

CB100-OC Octopus Intelligent Peripheral Multiplexer

- A CandyBox Series product
- Resource multiplexer which can perform as a Local Area Network, a print spooler with 250K byte memory and a multiported communication device
- Through an Octopus two computers can be connected to a printer, a communication link can be established between computers and many such convenient subsystems can be configured

CB100-OC \$700.00

251 Cable Compensation Video Amplifier Module

- An accurate cable compensation amplifier for up to 1,000' of Belden #8281 coaxial cable
- Trims are front accessible
- Equivalent of Grass Valley 3402 VDA

251 \$280.00

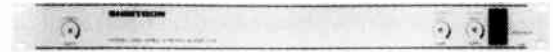
SHINTRON CO., INC.

Distribution Amplifiers

332 Duplication Video-Stereo Audio Distribution Amplifier

- Output capacity is 12
- Unit contains its own power supply
- One rack unit high enclosure
- Video, via BNC, audio via RCA
- Wideband low-noise
- For use in electromagnetically noisy environments
- Designed for duplication facilities

332\$600.00



332

336 Video Distribution Amplifier

- One input with loopthrough and termination switch
- Video gain screwdriver adjustment on front panel
- Six outputs
- All-silicon solid-state for multiple fan-out, high grade distribution systems

336\$300.00



336



211 Video Tray

- Accomodates 4 video modules and one power supply module
- Power supply module included
- Loopthrough input
- One rack unit high

211\$627.00

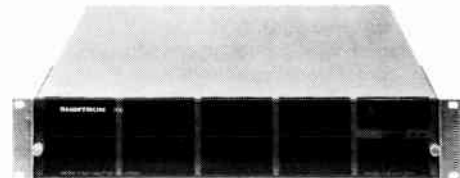


211

212 Video Tray

- Accomodates 8 video modules and two power supply modules for redundancy
- 1 power supply module included
- Loopthrough inputs
- Two rack units high

212\$825.00



212

213 Audio DA Tray

- Accomodates 4 audio modules and one power supply
- Power supply included
- Rear panel connection via terminal strips

213\$693.00

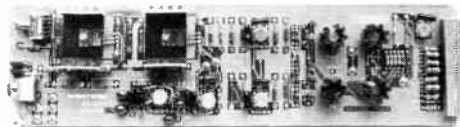


213

220 Super-Wideband Audio DA Module

- Designed for signal distribution in broadcast installations
- Exceeds broadcast specs in all crucial areas

220\$275.00

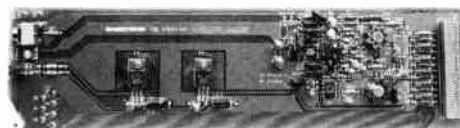


220

250 Video Distribution Amplifier Module

- Built-in 500' adjustable cable comp
- Broadcast specs
- 1 loopthrough, 6 out
- Trims are front accessible

250\$176.00



250

252 Video Distribution Amplifier Module

- 250 VDA with 12dB boost at 4MHz
- Cable compatible (non-broadcast)
- Crisp character display
- Designed for flight information display systems at airports

252\$220.00

6810 High Power Circularly Polarized

The 6810 has a 10kW power rating per bay and is an excellent choice for most class C stations. Maximum input for an array of four or more bays is 40kW due to feedline limitations. The broad bandwidth of the 6810 assures excellent stereo and SCA performance. It also allows two stations, with a frequency separation of up to 2.4MHz, to diplex into a common antenna.

The 6810 is also unusually capable of being accurately directionalized and so is used for FCC directional antenna requirements. The 6810 provides the high power FM broadcaster with a well-proven, reliable antenna.

VSWR—1.08:1 \pm 100kHz for single station operation

6812 Low Power Circularly Polarized

The 6812 was designed originally with the educational broadcaster in mind, but its design features and sturdy construction have led many commercial broadcasters to specify it for a low cost installation, translator, or as a standby antenna.

Like the 6813NP, the 6812 is a truly non-pressurized design. Constructed of stainless steel, the weight and windload of this antenna are extremely low.

VSWR—1.1:1 \pm 100kHz with optional matching transformer

6813 Medium Power Circularly Polarized

The 6813 has a 3kW per bay power rating and is competitively priced to offer an exceptional value to the medium power FM broadcaster. This antenna has proven to be the primary choice of the Class A broadcaster. The 6813 has extremely low windloading; its windload with radomes compares favorably to that of other similar antennas without radome protection.

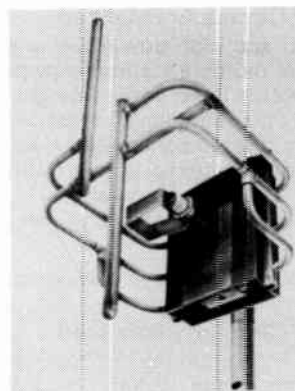
This model also has a broad bandwidth, assuring excellent stereo and SCA performance. In fact, in certain close-spaced situations, the bandwidth has allowed two stations to be diplexed into this model without degradation of stereo or SCA performance on either station. If the high power ($3\frac{1}{8}$ ") input is used, a maximum power input of 20kW is possible.

VSWR—1.08:1 \pm 100kHz

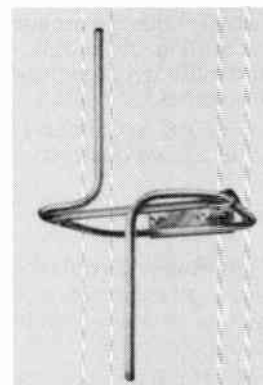
6813NP Medium Power Circularly Polarized—Non-Pressurized

The 6813NP is the only antenna at this power level specifically designed to operate without pressurization. It is not a de-rated version of an otherwise pressurized antenna. Originally developed for remote subarctic and tropical installations, it is an excellent solution to the problems remote areas pose to the broadcaster. The non-pressurized design and construction of this antenna include the matching transformer and eliminate the need for nitrogen or dry air, making it the perfect antenna for locations where nitrogen or pressurization equipment may not be easily available or practical. While retaining many of the features of the pressurized 6813, the 6813NP is feedline limited to a maximum 4kW input to an array.

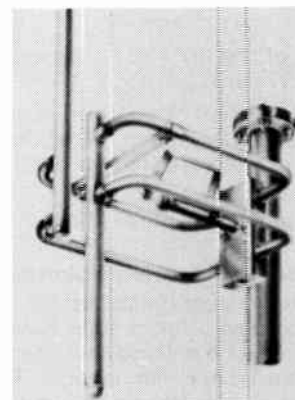
VSWR—1.1:1 \pm 100kHz



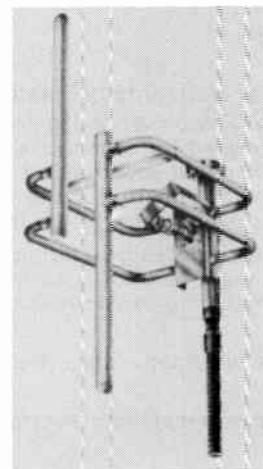
6810



6812



6813

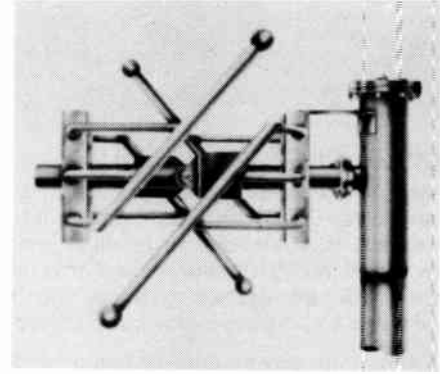


6813NP

SHIVELY LABS, INC.**FM Antennas****6814 Super Power Circularly Polarized**

The wide bandwidth and high power rating of the 6814 antenna make it ideal for multiple station operation or when very high transmitter power is used into a low gain configuration. Stations can be easily combined over a frequency spread of up to 6.0MHz. Each bay is rated conservatively at 25kW with an upper limit for the entire antenna array of 160kW because of feedline restrictions. During dry power testing, a single 6814 bay took 1.4mW of power before failing, 56 times its power rating.

VSWR—1.05:1 \pm 200kHz for single station operation



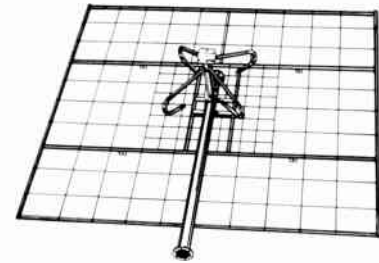
6814

6015P High Power Circularly Polarized

The 6015P panel antenna provides the best pattern omnidirectionality of any antenna on the market, boasting \pm 0.7dB in the horizontal polarization. It can also readily be modified to furnish directional patterns. By simply adding a broadbanding unit, the 6015PB is capable of accepting the output of two or more stations over a 3MHz bandwidth, while maintaining a VSWR of 1.1:1 or better over each channel.

The panels are approximately 8' square and are constructed entirely of stainless steel to assure durability, no maintenance and high strength.

VSWR—1.1:1 \pm 500kHz



6015P

6014PB Broadband High Power Circularly Polarized

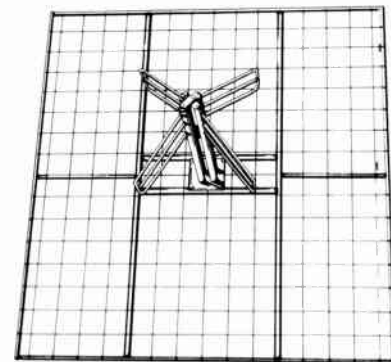
Stations from over the entire FM band can be combined into the 6014PB. Frequency changes or station additions involve no changes to the antenna.

The natural characteristics of a panel style antenna can yield excellent circularity for wide area metropolitan coverage, or a wide variety of directional patterns.

The power handling of the 6014PB is conservatively rated at 15kW average, 100kW peak, per panel.

The 6014PB has an excellent strength-to-windload ratio. The panels are approximately 8' square. Panels and radiators are constructed entirely of stainless steel for durability, no maintenance and high strength.

VSWR—1.1:1 or better across entire FM band

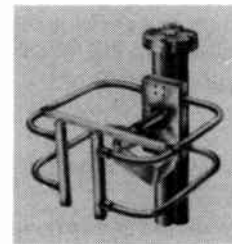


6014PB

6600 Medium Power Horizontally Polarized

The 6600 antenna is horizontally polarized only. This allows broadcasters with no desire for circular polarization to take advantage of the higher gain with no sacrifice in quality. Thus, maximum ERP is achieved at minimum cost. The power rating is 5kW per bay, with a maximum array input of 40kW for eight or more bays.

VSWR—1.08:1 \pm 100kHz



6600

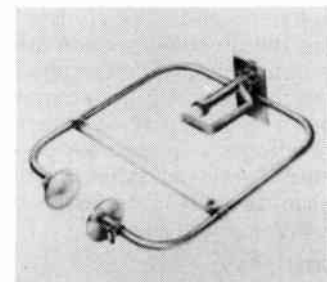
6601/6602 Low Power Horizontally Polarized

Both the 6601 and 6602 low power horizontally polarized antennas are primarily designed for educational stations. However, their excellent design and construction also make them ideal low cost, low power options for the commercial FM broadcaster who has no desire for circular polarization.

The 6602 is a non-pressurized design utilizing Type N connectors and RG-213 cable, while the 6601 is a pressurized system complete with our fine matching transformer and rigid interbay feedline.

The very low weight and windload of these models further add to their versatility.

VSWR—1.1:1 \pm 100kHz with matching transformer



6601

Circularly Polarized

No. of Bays	High Power 6810	Low Power 6812HP	Educational 6812	Med. Power 6813	Low Power 6813NP	Super Power 6814
1	\$ 3,500.00	N/A	\$ 650.00	\$ 3,100.00	\$ 3,700.00	\$ 4,600.00
2	6,000.00	\$2,350.00	1,200.00	4,400.00	5,500.00	7,500.00
3	7,500.00	3,150.00	1,800.00	5,150.00	6,200.00	10,500.00
4	9,800.00	4,000.00	2,400.00	6,100.00	7,600.00	13,600.00
5	11,900.00	4,850.00	3,000.00	7,600.00	8,500.00	16,800.00
6	14,900.00	5,700.00	3,500.00	8,500.00	9,600.00	20,000.00
7	16,300.00	6,500.00	4,000.00	9,600.00	10,700.00	23,000.00
8	19,200.00	7,900.00	5,000.00	10,700.00		27,300.00
10	23,800.00			13,300.00		31,500.00
12	29,700.00			15,500.00		36,700.00
14	35,000.00			18,000.00		43,000.00
16	39,000.00			21,700.00		48,000.00
Dalcers per bay	450	350	350	350	350	650
Low Windload Radomes per bay	700	650	650	650	650	N/A
Extra Heavy Icing Protection Radomes	1,000	1,000	1,000	1,000	1,000	N/A
XXL Mt. Washington Style Radomes	1,500	1,500	1,500	1,500	1,500	1,500
Center feed for 2, 4 or 6 bays (Std. for 8, 10, 12, 14 and 16 bays)	1,200	600	600	1,200	Contact factory	1,200
Inputs						
1 5/8"	N/A	1/2" Input	RG-213 Input	Standard	Standard	N/A
3 1/8"	Standard	N/A	N/A 1-6 Bays -- 1,800	Standard	N/A	Standard on 1 bay
			8-16 Bays -- Standard			Avail. on 2 bays and above
4 1/8"	3,000	N/A	N/A	N/A	N/A	Standard on 2 bays and above
6 1/8"	10-16 bays	N/A	N/A	N/A	N/A	Avail. for 4-16 bays
	N/A					3,500
Fine Matching Transformer	Standard	1,100 (Type N/750W rating)		Standard	Standard	Standard
Tower Mounts for Standard Uniform Towers	Included	Includes mounting hardware for 2 3/8" -3 1/2" O.D. pole		Included	Included	Included

Panel Antenna Circularly Polarized

No. of Bays	Circularly Polarized		Horizontally Polarized		
	Single Station 6015 (3 panels per bay)	Multistation 6014	High Power 6600	Low Power 6601	Educational 6602
1	\$ 19,500.00	Contact	\$ 3,500.00	\$ 2,700.00	\$ 650.00
2	34,000.00	Factory	5,000.00	3,900.00	1,200.00
3	50,000.00		7,000.00	4,200.00	1,800.00
4	64,000.00		9,100.00	5,300.00	2,400.00
5	79,000.00		10,300.00	6,300.00	3,000.00
6	94,000.00		11,800.00	7,400.00	3,500.00
7	107,000.00		14,000.00	8,500.00	4,000.00
8	120,000.00		15,200.00	9,500.00	5,000.00
10	147,000.00		18,800.00	11,800.00	
12	177,000.00		21,700.00	13,900.00	
14	Contact		24,700.00	16,000.00	
16	Factory		27,500.00	18,200.00	
Dalcers per bay	1,800		450	350	350
Low Windload Radomes per bay	N/A		700	650	650
Extra Heavy Icing Protection Radomes	1,800		1,000	1,000	1,000
Inputs					
RG-213	N/A		N/A	N/A	Standard
1 5/8"	N/A		N/A	Standard	1/2" HP \$500
3 1/8"	Standard		Standard	10-16 bays 2,500	plus \$300/bay
					N/A
Fine Matching Transformer	Standard		Standard	Standard	1,100 (Type N/750W rating)
Tower Mounts for Standard Uniform Towers	Included		Included	Included	Includes mounting hardware for 2 3/8" -3 1/2" O.D. pole

SHURE BROTHERS, INC.*Professional Microphones***SM10A/SM12A Headset Dynamic Microphones**

• Head-worn microphones for remote broadcasting, intercommunications systems and vocal performance for drummers and keyboard players • Noise-cancelling, unidirectional and close-talking • Lightweight, padded headbands eliminate user fatigue and an adjustable boom maintains proper mouth-to-microphone distance

SM10A-CN Boom microphone only \$140.00

SM12A-CN Microphone and single monitor earphone 190.00

SM17 Miniature Dynamic Microphone

• Designed especially for use with acoustic stringed and other acoustic musical instruments • Omnidirectional pickup pattern • Frequency response: 50-15,000Hz • Attached 10" small-diameter cable

SM17 \$103.00

SM15-CN Head-worn Condenser Microphone

• Close-talk, electret condenser design • High sound pressure level capacity (141dB) • Fully adjustable boom pivot • Comes with 4' microphone and 10' amplifier cable, a windscreen and a carrying/storage case • Frequency response of 50-15,000Hz

SM15-CN \$275.00

SM77EB/SM78EB Starmaker™ Series

• Fixed low frequency rolloff plus a slight mid-frequency presence rise in frequency response • SM77 has slim styling and is effective for instrumental applications • SM78 has superior wind and pop protection, making it well suited for vocal applications

SM77EB-LC Without cable \$111.00

SM78EB-LC Without cable 136.25

SM85-LC Unidirectional Condenser Microphone

• Lightweight microphone designed for handheld live vocal applications as well as broadcasting and studio recording requirements • Controlled low frequency rolloff minimizes handling noise and boominess • Lightweight, extremely tough aluminum case and a Teflon-coated all steel grille • Elastomer "spaceframe" isolates the condenser element from virtually all mechanical vibration

SM85-LC Without cable \$275.00

SM87-LC Supercardioid Condenser Microphone

• Similar in appearance and construction to the SM85, the SM87 features a supercardioid, rather than cardioid, pickup pattern • Flat response means less equalization is needed • Especially useful in multiple-miking situations, or single-miking in a noisy or reverberant environment • Frequency response is 50-18,000Hz

SM87-LC Without cable \$329.00

SM48 Unidirectional Dynamic Microphone

• Low-impedance, unidirectional dynamic vocal microphone • Equipped with its own specially designed cartridge • Utilizes a highly efficient cartridge shock mount, which reduces handling and stand noise dramatically (over 10dB quieter than many competitive models) • Extremely smooth peak-free frequency response with a slight mid-range presence rise for enhanced vocal intelligibility • Built-in spherical windscreen • Uniform cardioid pickup pattern greatly reduces off-axis coloration and rejects background noise to permit higher sound system gain before feedback • Non-glare gray handle finish and satin chrome grille provide for a professional on-stage appearance

SM48-LC Supplied without cable only \$126.00

SM94 Unidirectional Condenser Microphone

• Wide-range, smooth, flat frequency response has no presence boost or low-end rolloff, making it an ideal choice for live instrument miking or recording • Cardioid polar pattern is exceptionally smooth and uniform at all frequencies • Elastomer "space frame" shock mount • Can be



used at sound pressure levels up to 141dB (800-ohm load) • May be powered by standard phantom power supplies or by an internal 1.5V AA battery • Swivel adaptor and vinyl storage bag are included

SM94-LC Supplied without cable only \$250.00

SM96 Unidirectional Condenser Microphone

• Ideal for live performance and recording, as well as general sound reinforcement systems • Smooth, even frequency response has a slight presence rise and electronically generated low-frequency rolloff for maximum vocal sound clarity • Built-in multi-stage wind and pop filter and uniform cardioid polar pattern • Polar pattern that doesn't "collapse" at higher frequencies—off-axis response stays uniform throughout the sound spectrum • Elastomer "space frame" system isolates the transducer element from the roughest handling • Very low RF and hum susceptibility • Low distortion output • Wide dynamic range gives it the ability to take extremely high sound pressure levels without "breaking up" • Can be powered by virtually any phantom (simplex) power source, or by an internal 1.5V AA battery • Swivel adaptor and a zippered vinyl storage bag are included.

SM96-LC Supplied without cable only \$250.00

SM98 Miniature Musical Instrument Microphone

• Utilizes a high performance, low-noise, low-distortion preamp • Wide, extremely smooth frequency response for accurate, faithful reproduction of acoustic instruments • Nearly perfect cardioid polar pattern at all frequencies for superior source isolation • Incorporates a detachable cable for ease of set-up and tear-down • Preamp is powered by two standard 9V batteries or an 11 to 52VDC (phantom) simplex supply • Battery on/off switch and a 12dB/octave low-end cut-off switch • Included is a unique swivel adaptor which allows the miniature microphone to be used with all standard mike stands, booms and goosenecks

SM98 \$250.00

SHURE BROTHERS, INC.

Wireless Microphone Systems



W20R Receiver

• RF carrier frequency: 150 to 216MHz • Distortion: less than 0.5% THD • Dynamic range: 98dB A-weighted • Audio frequency response: 50 to 15,000Hz, ± 1 dB • Antenna type: $1/4$ wavelength omnidirectional vertical • $11\frac{1}{16}$ "H x $7\frac{1}{2}$ "W x $6\frac{13}{16}$ "D

If you have a clear path between mike/transmitter and receiving antenna, the W20R is a logical choice. It includes advanced companding circuitry, linear-phase filters and crystal-controlled frequency generation for a stable RF link with excellent signal-to-noise ratio.

W10BT Body-Pack Transmitter

• RF power output: 50mW max • Modulation: $54F3 \pm 12$ kHz deviation • Attached 12" omnidirectional flexible wire antenna • 4 "H x $2\frac{3}{4}$ "W x 1 "D

A sensitivity selection switch and concealed audio gain potentiometer let you fine-tune this compact transmitter for perfect compatibility with whatever microphone or musical instrument you're using. The input of the W10BT accommodates various input sources from low level, low impedance mikes to high level, high impedance electric guitars.

Separate power and audio on-off switches allow the sound to be muted without annoying "pop". All controls (except the recessed audio gain potentiometer) are conveniently located on top of the unit.

A fresh 9V alkaline battery provides power for approximately eight hours.

WL83 Microphone

This electret condenser mike is the wireless system version of Shure's SM83. It has just been refined for even greater performance and versatility.

Wear it as a lavalier. Clip it to acoustic, wind, or string instruments. No matter how you use it, you'll get the quality sound you expect.

Complete Systems

W1020S	Wireless Body-Pack System Consisting of: One W10BT One W20R One WL83	\$1200.00
W1025S	Diversiphase Wireless Body-Pack System Consisting of: One W10BT One W25DR One WL83	1700.00

Individual Components

W15HT/58	Dynamic handheld wireless microphone	\$ 750.00
W15HT/87	Condenser handheld wireless microphone	900.00
W10BT	Bodypack transmitter	400.00
WL83	Omni-directional lavalier condenser mike	165.00
WL84	Supercardioid lavalier condenser mike	190.00
WM15	Headworn condenser mike	190.00
WM98	Instrument condenser mike	165.00
W25DR	Diversiphase dual antenna receiver	1200.00
W20R	Non-diversity receiver	700.00

Accessories

WA200	Rackmount Kit for one W20R Receiver	\$33.50
WA210	Rackmount Kit for one or two W20R Receivers	38.50
WA220	Rackmount Kit for one W25DR Diversiphase Receiver	55.00
WA230	Rackmount Kit for two W25DR Diversiphase Receivers	65.00
WA250-A	$5/8$ -Wave Antenna for 150-176MHz	75.00
WA250-B	$5/8$ -Wave Antenna for 176-216MHz	75.00
WA260	Wallmount Bracket for WA250	16.50
WA280	25' Coaxial Cable for Remote use of WA250	30.00
WA300	Instrument Cable for W10BT	20.00
WA310	Microphone Adaptor Cable for W10BT	20.00
WA320	Replacement 120VAC/DC Power Converter	35.00
WA330	Switchcraft TA4F Connector	12.50
WA340	Replacement $1/4$ -Wave Antenna	35.00
WA350	220-240VAC/DC Power Converter	40.00

Wireless Microphone System

The Wireless Microphone System combines top-performance RF circuitry with unparalleled audio design to produce a wireless sound equal to that of a microphone with a cable. To perform this accurately, this system is totally integrated acoustically and electrically — guaranteeing that microphone, transmitter and receiver will work flawlessly together.

A great wireless system starts with a great microphone. Now you can use a wireless system that works beautifully with most Shure dynamic and battery-operated condenser mikes.

Thanks to the availability of many computer-selected frequencies, plus a well-controlled RF output concentrated at the given transmission frequency of each system, you can operate twelve — or more — W25DR Wireless Systems at the same location without interference, or up to seven or more with the W20R.

W25DR Diversiphase™ Receiver

• RF carrier frequency: 150 to 216 MHz • Distortion: less than 0.5% THD • Audio frequency response: 50-15,000Hz ± 1 dB • Antenna type: $5/8$ wavelength omnidirectional vertical • $3\frac{1}{2}$ "H x $8\frac{1}{4}$ "W x $8\frac{5}{16}$ "D

The Diversiphase receiver does much more than just minimize dropout from reflected signals or a blocked path between transmitter and receiver. Diversiphase also maximizes antenna gain by constantly monitoring the signals from both antennas, locking them into phase so they don't cancel each other, and adding them together.

Precision-tuned linear-phase filters and advanced RF circuits reject harmonic energy from TV, two-way radio and other stray signal sources. This increased selectivity means you hear only the signal from the wireless transmitter.

Signal-to-noise ratio is excellent, with a typical 98dB dynamic range (A-weighted).

Prices and Specifications Subject to Change Without Notice.

Stands

- BB-77 Baby Boom:** 31" (787mm) adjustable boom arm. Fits MS-10C Floor Stand. Standard 5/8"-27 thread accepts any threaded Shure microphone, mount or swivel adaptor. \$25.85
- CO-1 Stand Adaptor:** Screw-type clamp with 5/8"-27 male thread for mounting second microphone on microphone stand, table or desktop. Adjustable 360° swivel aids horizontal positioning. \$15.85
- MS-10C Floor Stand:** Quickly and easily adjusts from 35" to 64" high. Positive ring lock maintains desired height. Standard 5/8"-27 thread accepts any threaded Shure microphone, mount or swivel adaptor. Also accepts Model 88-77 Baby Boom. Chrome plated. Weighted 10" base for stability. \$33.35
- S15:** Tall mike stand that extends to 14'. Standard 5/8"-27 thread for direct mounting. Includes cable clamp for vertical application of wire. \$165.00
- S37A Modern Desk Stand:** Nonreflective, textured gray finish. For use with all microphones with swivel connector assemblies, or microphones with swivel adaptors \$21.65
- S39A Vibration-Isolation Stand:** For all applications where vibration is a problem. Fits all Shure microphones \$60.00

Adaptors

- A25B:** (Black) To be used with Models 515, 545, 565, SM57 and SM58 tapered handle microphones—for use with standard desk or floor stand \$4.00
- A25C:** For SM94, SM96 Mikes 4.00
- A57D:** (Champagne) Snap-in Locking Swivel Adaptor for Models SM80 and SM81. 3/4" (19mm) diameter microphones—for use with standard desk or floor stand. \$12.20
- A57E:** (Ebony) Adaptor for SM85 and SM87 12.20

Plug-In Modifiers

- A15AS Microphone Attenuator:** Prevents input overload in applications where very strong signals are applied to a microphone input. Selectable 15, 20 or 25dB loss. \$39.45
- A158T Bridging Transformer:** Matches balanced or unbalanced devices of different impedances. (33K ohm primary and 600 or 7500 ohm secondary) . . . \$42.50
- A15HP High Pass Filter:** Provides a low frequency cutoff to reduce unwanted low frequency noises \$36.00
- A15LA Line Input Adaptor:** Converts balanced low impedance microphone input to bridging line level input \$36.00
- A15LP Low Pass Filter:** Provides a high frequency cutoff to reduce objectionable high frequency noises. \$36.00
- A15PA Presence Adaptor:** Adds "presence" to vocals or instruments in recording, broadcasting, and PA applications \$36.00
- A15PRS Phase Reverser:** Reverses the phase of a balanced line without modification of equipment \$36.00
- A15RS Response Shaper:** Provides sibilance filtering in recording, broadcasting, and PA applications \$36.00
- A15TG Tone Generator:** Produces a continuous 700Hz signal capable of driving low-impedance balanced lines, and is extremely useful in setting up. . . . \$68.35
- A85F Low-Impedance To High-Impedance Line Matching Transformer . . . 17.50**
- A95U Series Low-Impedance to High-Impedance Line Matching Transformers (Plug-In Types):** Low-impedance connector is a 3-pin professional audio type designed to mate with Canon XL Series, Switchcraft A3 (Q.G.) Series or equivalent. High-impedance connector is a 1/4" phone plug or jack.
- A95U:** Male 3-pin \$29.60
- A95UF:** Female 3-pin. 31.70
- A97A Low-Impedance to Medium-Impedance Line Matching Transformer:** High quality transformer designed to properly match low-impedance (150 ohm to 600 ohm) microphone outputs to medium-impedance (1K ohm to 10K ohm) inputs, such as those frequently used in cassette recorders. Low-impedance connector—3-pin male professional audio connector. Medium-impedance connector—Amphenol MC 1M type connector \$29.50

Goosenecks

- A12:** Mounting flange \$3.70
- G6A:** 6" (152mm) flexible gooseneck (side vent). 8.35
- G12:** 12" (304mm) flexible gooseneck \$10.55

- G12-CN:** 12" (304mm) flexible gooseneck with professional female 3-pin audio connector \$20.00
- G18:** 18" (457mm) flexible gooseneck 12.00
- G18A:** 18" (457mm) flexible gooseneck (side vent) 12.50
- G18-CN:** 18" (457mm) flexible gooseneck with professional female 3-pin audio connector \$21.45
- A98-G18:** 18" (457mm) flexible gooseneck for SM98 microphones 42.00

Mounts

- A25M:** Designed to hold two tapered handle microphones such as Shure Models 545D, 545SD and 545L \$26.00
- A26M:** Designed to hold two microphones listed above when using A2WS Windscreens, "ball-type" Models 565D, 565SD, 588 and other Shure microphones with tapered handles. \$26.00
- A27M:** A highly versatile stereo microphone-adaptor designed to place two microphones in a variety of selectable positions. Allows for independent positioning flexibility. Consists of two stacking sections that rotate on their centers for complete angular adjustment. \$55.00
- A55M:** A breakthrough in noise isolation. Reduces mechanical and vibration noises by more than 20dB. Standard 5/8"-27 female thread fits all Shure desk and floor stands. Fits most Unidyne® and Unisphere® microphones, except those models with built-in swivel mounts. Size: 3 3/4" H x 1 1/2" D x 2" Dia. (95 x 38 x 51mm) \$35.55
- A55HM:** Half-mount version of A55M. 31.50
- A45Z Speaker Miking Bracket:** Z-shaped bracket permits positioning a microphone (in a swivel adaptor) in front of a musical instrument amp/speaker or sound reinforcement speaker for recording or other uses \$12.95
- A98HA:** Hanging adaptor for SM98 microphone 13.30
- A98MK:** Drum mount kit for SM98 microphone. 42.00
- A89SM:** Shock mount for SM89 shotgun microphone 90.00

Windscreens

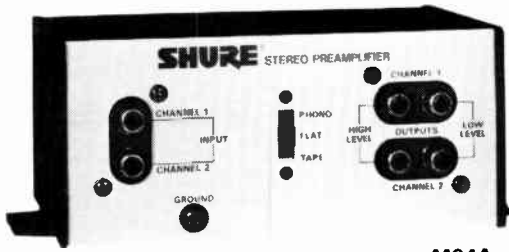
- A1WS:** Windscreen for 515 Series \$5.00
- A2WS:** Designed to effectively minimize wind noise in outdoor locations and control explosive breath sounds in any location. For Models 545D, 545SD, 545SH, 545L, and 571 \$10.85
- A2WS-BK:** Black Windscreen. 10.85
- A3WS:** Windscreen for SM94 5.00
- A58WS:** Controls wind noise and "pop". For use on all Shure "ball-type" microphones, such as the Unisphere models. \$ 5.00
- A58WS-BK:** Black Windscreen. 5.00
- A58WS-8L:** 8Lue Windscreen. 5.00
- A58WS-8R:** Brown Windscreen 5.00
- A58WS-GN:** Green Windscreen 5.00
- A58WS-OR:** Orange Windscreen 5.00
- A58WS-RD:** Red Windscreen. 5.00
- A58WS-WH:** White Windscreen. 5.00
- A58WS-YL:** Yellow Windscreen 5.00
- A98PF:** Pop filter for SM98 Microphone 13.30

Cables

- C15A:** 15', 1-conductor, with 3-socket mic and 1/4" phone plug connector \$8.50
- C20B:** 20', 1-conductor with 3-socket mic and 1/4" phone plug (equipment) connector \$11.00
- C20D:** 20', 2-conductor, heavy-duty with 3-socket (microphone) connector (only) \$23.95
- C20H:** 20', 2-conductor, heavy-duty with 3-pin and 3-socket connectors. \$29.40
- C25F:** 25', 2-conductor, Triple-Flex®, with 3-pin and 3-socket connectors. \$24.25
- C50J:** 50', 2-conductor, Hi-Flex®, with 3-pin and 3-socket connectors . . . 25.00
- C100J:** 100', 2-conductor, Hi-Flex, with 3-pin and 3-socket connectors . . . \$33.35
- C25E:** 25', 2-conductor, Triple-Flex, with 3-pin and black 3-socket connectors. \$26.00
- C258:** 25', 2-conductor, heavy-duty, with 3-pin and black 3-socket connectors. \$24.25
- C25J:** 25', 2-conductor, Hi-Flex, with 3-pin plus 3-socket connectors . . . 13.35

SHURE BROTHERS, INC.

Amplifiers/Mixers



M64A

M64A Universal Stereo Preamp

• Permits turntables to be used with PA mixers and amplifiers without phono inputs • Also useful as a microphone preamplifier or low-gain buffer amplifier • Includes a 3-position slide switch for selecting Phono, Tape, or Flat frequency compensation

M64A \$102.00

M68A Microphone Mixer

• 5-channel models with 4 microphone inputs (each switchable for high or low impedance) and a high-level auxiliary input • Both include high- or low-impedance auxiliary output • Units can be easily connected to provide additional inputs

M68A 3-pin male XLR input connectors \$211.00

M68FCA 3-socket female XLR input connectors \$211.00



M267

M267 Professional Mixer with Limiter

• For recording or broadcast use • Four low-impedance balanced inputs switchable to mike or line level • Simplex (phantom) power on each input • Fast-acting limiter; built-in battery supply • Headphone level control • Illuminated VU meter with LED peak level indicator • Low-cut filters and tone oscillator • Battery check switch • Mix bus jack • Mike and line level outputs • Master volume control • 120/240 VAC, 50/60Hz, 9.5W; battery power • 2³/₄" H x 11³/₈" W x 7¹/₂" D

M267 \$520.00

M268 Microphone Mixer with Phantom Power

• 5 Channels • Ideal for public address and recording applications • Mix bus, simplex (phantom) power • Automatic muting circuit • Active gain controls and electronic power supply regulation • 120VAC, 50/60Hz, 5W • 2³/₄" H x 11³/₈" W x 7¹/₂" D

M268 \$290.00

FP11 Mike-to-Line Level Amplifier

• Portable, 1-input, 1-output • Provides up to 84dB of gain so that microphone and auxiliary level devices can be boosted to line level • Balanced, locking XLR input and output provide a switchable peak limiter, a peak/limiter LED indicator, aux level mini-phone jack input, powered by one standard 9V battery

FP11 \$260.00

FP12 Headphone Bridging Amplifier

• 1-input, 2-output • Designed to provide headphone feeds from any type of audio input • Two XLR in/out connectors and two 1/4" in/out jacks • Mike/Line input switch • Hi-Z/Lo-Z headphones switch • Headphone level control, powered by one standard 9V battery

FP12 \$245.00

FP16 Distribution Amplifier

• 1-input, 6-output, compact, self-contained audio distribution amplifier for routing multiple audio feeds without sacrificing signal clarity • Specially designed for field production use

FP16 120VAC \$570.00



FP31

FP31 Microphone Mixer

• Designed for electronic news gathering (ENG) and electronic field production (EFP) use, including film, video, and remote broadcast applications • Measures just 6⁵/₁₆" x 5⁵/₁₆" x 1⁷/₈" • Incorporates the features most requested by audio engineers, electronic news professionals, sportscasters, and film and video sound engineers • Provides a wide, flat frequency response, low distortion, and up to +18dBm output • Built-in slate microphone for voice announcement and emergency field use

FP31 Battery power \$990.00

FP32 Stereo Microphone Mixer

• Two transformer-coupled outputs (one for each stereo channel) and three inputs, each switchable for low impedance microphone or line level operation • Stereo capability is enhanced by a concentric clutched stereo master gain control • Built-in slate microphone and slate tone • Built-in tone oscillator for level checks or line tests • Built-in phantom (simplex) and A-B(T) power for condenser microphones • "Phantom" jack permitting use of an external microphone power supply (up to 48 VDC)

FP32 Battery power \$1350.00

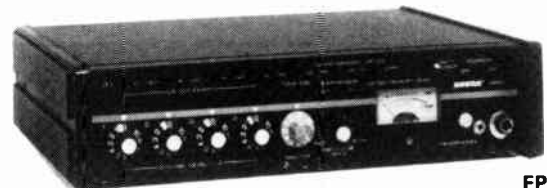


FP42

FP42 Stereo Microphone Mixer

• Handles remote mixing jobs with its two outputs (one for each stereo channel) and four balanced inputs, each switchable for line or mike level operation • Each input channel also has a low-frequency rolloff switch and a center-detented stereo pan pot for convenient stereo mixing • Concentric clutched stereo master level control • Pull-pot cueing permits cueing or checking each input via headphones • Can be battery or AC-operated • Mini and 1/4" stereo headphone jacks with level control are included.

FP42 120/240VAC/battery power \$990.00



FP51

FP51 Compressor/Mixer for Mike or Line Input

• 4 mike/line inputs • Cue on each input • Separate headphone amplifier • 1/4" and mini headphone jacks • Compressor and memory switch on front panel • AC/DC powered with battery check • Phantom power for mikes • Rackmountable • Peak light on U meter • Outputs at line mike and mix bus levels

FP51 \$940.00

SHURE BROTHERS, INC.

Broadcast Phonograph Cartridges

BC70/BC80/BC90

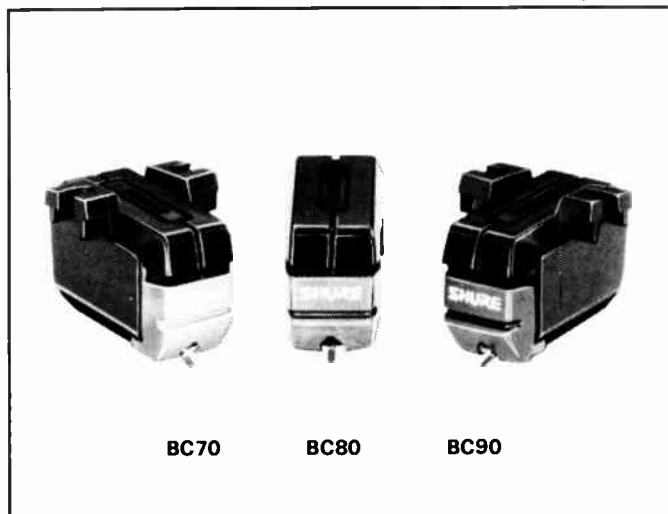
Professional Broadcast Phonograph Cartridges

The BC Series is designed specifically for radio station use. This is the first line of phonograph cartridges to offer professional broadcasters both high-fidelity sound reproduction and the ruggedness to withstand the rigors of constant backcuing, all at a very affordable price.

The three-model BC Series (BC70, BC80, BC90) has quickly set a standard for ruggedness in professional phonograph cartridges. Shure employs a uniquely engineered internal cue guard design which stabilizes the stylus shank and helps to prevent the shank from bending backward or snapping when backcuing. To extend the reliability of this design even further, a high-stiffness stylus shank is employed to ensure stability and longevity in heavy-duty use. Lateral stylus movement is limited by another Shure exclusive, a wraparound stylus grip. This device prevents accidental damage to the stylus if the tone arm is dropped on or slid across a record.

But Shure didn't sacrifice sound quality for durability. Shure borrowed from the most respected cartridges in the history of stereo reproduction—its very own V15 Series. For example, Mäsar® stylus polishing (a trademark exclusive from the Shure V15 Type-V-MR) is utilized for less surface noise from the very first play. And a ruler-flat frequency response (much like that of the V15 Type V-MR) ensures pure, uncolored sound reproduction. The Shure BC Series delivers sound of unmatched clarity and depth with detail rarely heard from broadcast music.

The BC Series incorporates important design features for making the DJ's job easier. Brightly colored stylus grips (BC70, red; BC80, blue; BC90, green) in a cutaway design make the stylus completely visible.



A bright orange dot on the top of the stylus tip itself makes for even greater visibility and ease in cuing up a record. For further convenience, Shure has packaged each BC Series Model with two replacement styli in addition to the one stylus mounted on the cartridge. Additional replacement styli are packaged four-to-a-box.

The BC Series also offers users a choice of tracking forces, stylus geometries, and mounting styles. The BC80 and BC90 both track in a range from 1-1.5g and have elliptical stylus tips; the BC80 is a P-mount and the BC90 is a 1/2" mount. The BC70 tracks from 2.5-3.5g, has a spherical stylus tip, and is a 1/2" mount.

- BC70** \$ 90.00
- BC80** 126.00
- BC90** 126.00

Model	Stylus Grip Color	Stylus Configuration	Mounting Style	Tracking Force Range (grams)	Frequency Response	Output Voltage (typical) (1kHz at 5cm/sec peak recorded velocity)	Channel Separation	Replacement Stylus Model Number (4 per box)
BC70	Red	Spherical	1/2"	2.5-3.5	20-15,000Hz	5.0mV	20dB at 1kHz	SS70
BC80	Blue	Elliptical	P-mount	1.0-1.5	20-20,000Hz	5.0mV	20dB at 1kHz	SS80
BC90	Green	Elliptical	1/2"	1.0-1.5	20-20,000Hz	5.0mV	20dB at 1kHz	SS90

CIK-1 Component Video Keyer/Mixer

The CIK-1 is a stand-alone keyer/mixer. It is the perfect solution for the existing component video facility that needs an extra level of effects or the "A/B" suite that wishes to have effects capabilities.

Linear Circuitry The CIK-1 uses wideband linear closed-loop multipliers (HDTV opt.) for noise-free key edges and precise multi-channel tracking.

Superior Chroma Keys Installing a CIK-1 upstream of a camera NTSC encoder stops a background from causing fringing in the encoder.

Key Source Selector The key source can be any combination of the insert sources Red, Green, Blue, Luminance value, Matrixed color (chroma key), or the Luminance of an external input. Also has key invert.

Variable Key Gain Wide range available. High gain for separating a computer-painted image from a darker background. Medium gain for fine tuning perfect chroma keys, low gain for quiet edges.

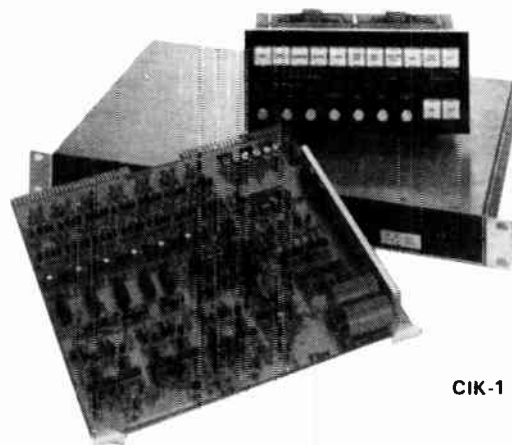
Transitions The CIK-1 can mix or cut to and from a key. There is a GPI interface (closure to ground) to initiate transitions.

Matte Generator Internal color generator for matte fill keys.

Remote Control Panel Rack or console mount up to 300' away.

RGB or Y/R-Y/B-Y Available in either format. Specify when ordering.

CIK-1 \$2990.00



CIK-1

Delta Series

All Delta modules have looping inputs, 3 outputs per channel, and output gain adjustments for each channel. Prices do not include mounting frame.

Delta CB Converts RGB to Y/R-Y/B-Y. Includes blanking processor for the addition of adjustable levels of sync and set-up to the Y channel. . \$495.00

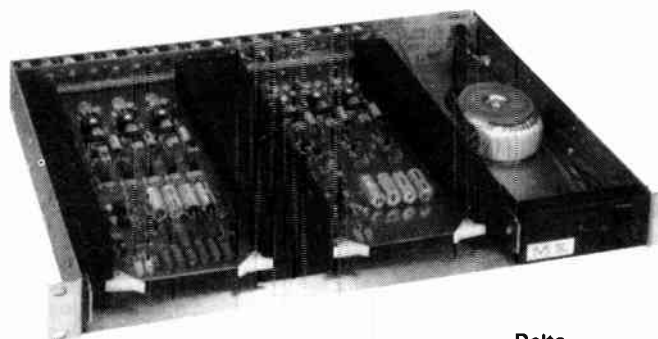
Delta BC Converts Y/R-Y/B-Y to RGB. Standard version passes Y channel sync and set-up to RGB outputs. Sync stripper to remove sync and set-up from Y channel input, keeping it off RGB. . \$495.00

Delta 33 Component video DA, no conversion. \$395.00

Delta CBG-1 Color Bar Generator The Delta CBG-1 is a split field SMPTE (RS-189) component video color bar generator that plugs into a Delta series frame. It is available in either the RGB or Y/R-Y/B-Y format. Also includes on-board sync generator for stand-alone operation.

Delta CBG-1 \$695.00

Rackmount Frame \$495.00



Delta

BetaMate CTDM/CTCM Dub Switchers

The BetaMate is designed to increase the productivity and quality of any Betacam™ or MII suite. A Betacam tape-to-tape dub is done in one of three ways:

1. NTSC—least desirable
2. Component—more desirable
3. Compressed Time Division Multiplexed (CTDM/CTCM)—most desirable

CTDM is the internal format of Betacam. A dub in this mode eliminates two stages of color difference channel expansion and compression. The BetaMate connects to the recorder and up to 4 source machines using the 12-pin dub cables. It also breaks out the component video signals to BNC's for connection to other equipment. A pushbutton selection then determines which source machine (or dub off) is connected directly to the record machine for a CTDM dub.

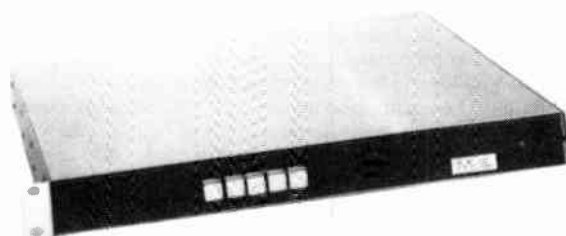
BetaMate (Specify Betacam or MII) \$1095.00

Break-Out Boxes (BOBs)

These passive Break-Out Boxes allow easy connection with BNC cables to the component video 12-pin connectors (Y/R-Y/B-Y format) found on Betacam or MII™ machines (specify). BOBs are rugged, diecast aluminum boxes that are easily rackmounted and are available in either record or playback configurations (specify).

BOBs (Betacam) \$89.00

BOBs (MII) \$99.00



BetaMate



BOBs

SIERRA VIDEO SYSTEMS, INC.

Routers/Distribution Amplifiers

SVS Series Wideband Routers

The SVS Series 8/16 wideband routers are a cost-effective solution to any facility's small to mid-size signal routing requirements.

Matrix

Our Series 16 routers are based on a 16x4 (16 in by 4 out) video crosspoint card and a 16 x 8 audio crosspoint card. There are two frame sizes: a 1 R.U. high frame (1 rack unit is 1 3/4" H) and a 3 R.U. frame. The 1 R.U. frame holds one video crosspoint card or two audio crosspoint cards. The 3 R.U. frame can hold up to six crosspoint cards. There is no hand wiring; a rear motherboard sandwich construction technique is used. This means that by simply using a different rear motherboard, we can build frames that use identical parts but are completely different size configurations. For example, a 3 R.U. frame that has six 16 x 4 video crosspoint cards can be a one level 16 x 24, or, with a different rear motherboard, it can be a component video 16 x 8. Component video being 3 levels: 1 for Red, 1 for Green, and 1 for Blue (or Y/R-Y/B-Y). Or, that same 3 R.U. frame may have 2 video cards and 4 audio cards for a 5 level 16 x 8 router with video, stereo audio, time code and data levels, all with breakaway capabilities. In addition, multiple frames may be added to the system design for more levels, larger routers, more audio, more time code, or data levels, etc. By doing this we obtain reliable, consistent performance in an easy-to-assemble and easy to expand router series that keeps efficiency up and cost down.

Performance

With a 20MHz video bandwidth, these routers can easily expand into new areas. All audio is switch balanced with common mode rejection to keep switching noise and crosstalk to a minimum. Dual power supplies (with alarm) are available and all modules have on-board voltage regulators. Many system sizes have both looping inputs and dual outputs. However, this varies from size to size as some systems contain more electronics in a frame than the connectors at the rear can accommodate.

Control

Control can be with either pushbutton control panels or, in the 3 R.U. frame, a microprocessor option is available (with back-up processor if desired). With the processor, serial control (RS-232 or RS-422) becomes available allowing the router to be controlled from a terminal or a host computer. The pushbutton panels (in 8, 16, 24, or 32 pushbutton sizes) are either X-Y or individual bus control with a wide variety of breakaway and level control configurations possible. Also available is a keypad type panel. All control panels have 2 control connectors (25-pin D) so they may be daisy chained or connected in parallel in any configuration to suit your particular installation requirements.

Series B

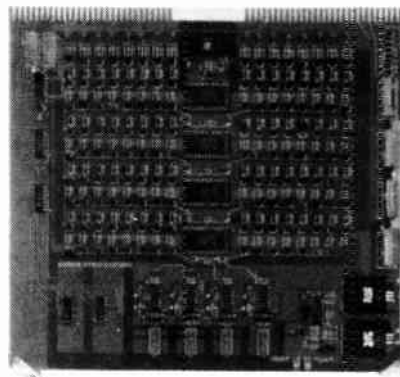
Same as above except based on an 8 x 8 video crosspoint or 8 x 8 stereo audio module. For example: six 8 x 8 crosspoint cards in a 3 R.U. frame may be configured as a single level 8 x 48.

Routing (Modules only)

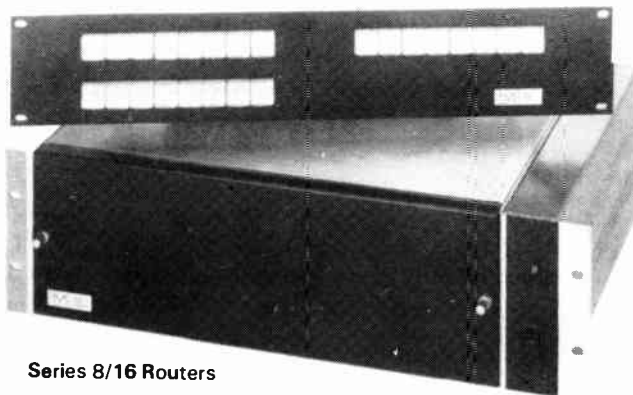
16 x 4 Video	\$1445.00
16 x 8 Audio	1445.00
8 x 8 Video	1445.00
CPU (Processor)	675.00
Typical X-Y Control Panel (16 x 8)	665.00
15 Meter Control Cable	75.00
1 R.U. mounting frame and power supply	495.00
3 R.U. mounting frame and power supply	995.00

Example Systems (Modules and Frames, Less Control)

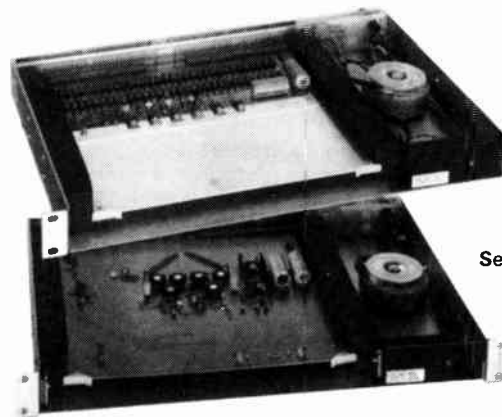
16 x 24 Video	\$9665.00
16 x 8 Video with Stereo Audio	6775.00
16 x 4 Component Video	5330.00
16 x 4 Video	1940.00



16 x 4 Video Crosspoint Card



Series 8/16 Routers



Series 32

Series 32 32 Output Distribution Amplifiers

These DAs are perfect for duplication facilities, pool feeds, studio outputs, etc. Wherever a large number of outputs with identical output-to-output performance is needed. Redundant power supplies are optional. All modules have differential inputs and excellent output-to-output isolation. Prices include mounting frame and power supply.

S32V	The video module is wideband output (-3dB at 30MHz)	\$1195.00
S32S	Audio with stereo outputs to +10dBm	1195.00
S32A	Audio with balanced outputs to +24dBm	1195.00
S32T	Audio with transformer coupled inputs	1295.00

SIGMA ELECTRONICS, INC.

Sync and Distribution Equipment

Color System Timing and Testing Products

TSG-375A Test Signal and Sync Generator
 Stable and accurate test signal generator, with 24 different patterns, a complete sync generator with 3 blackburst outputs, several production-aid outputs including source ID and countdown generator **\$2995.00**
TSG-370A A non-genlock version of above **.2695.00**

SCH-385 Subcarrier/Horizontal Phase Meter
 A display indicates relative sync and subcarrier of two different inputs, absolute SC/H phase of either input, and the associated "Color-Incidence" light provides a green light for proper color-framed edits or special effects **1650.00**

CSG-450 Color Sync Generator
 Master RS-170A Sync Generator with all standard sync outputs, C.F.I.D., and 3 blackburst signals. **1200.00**

CSG-455 Color Sync Generator
 Same as CSG-450 with additional outputs of selectable test signals of SMPTE Bars, Crosshatch, Red Field, and Safe Areas, plus Audio Tone. **1600.00**

CSG-460 Color Sync Generator
 Master or genlockable RS-170A sync generator, with all standard sync outputs, C.F.I.D., and 3 blackburst signals **1500.00**

CSG-465 Color Sync Generator
 Same as CSG-460 with the addition of selectable test signals of SMPTE Bars, Crosshatch, Red Field, and Safe Areas, plus Audio Tone . . . **1900.00**

BTS-414 Blackburst Timing System
 Genlocks to either composite video or blackburst, and provides 4 independently adjustable blackbursts out. Providing advance or delay of horizontal sync and 360° of continuous burst phase adjustment. **1750.00**

VPA-380 Video Processing Amplifier
 Built-in genlocking sync generator, adjustable blanking width controls to allow saving the various vertical test and identification signals; and a dual mode genlock circuit to allow acceptance of either stable or VTR signals **1750.00**

Video and Stereo-Audio Products

VSS-120 Switcher
 12 x 1 video with stereo-audio-follow passive switcher. Useful in stereo TV or 2nd language channel operations. Green legend indicates selected input, all others remain terminated in their characteristic impedance . . . **\$275.00**

VAS-120 Switcher
 12 x 1 video with single audio channel. **.250.00**

SVX-210 Video Only Switcher
 Provides vertical interval switching of 10 inputs to a dual output line. Output clamping is standard, with DC restoration optional **695.00**

SAV-210 Audio/Video Switcher
 Provides vertical interval switching of Audio-Follow-Video, Audio only, and Video only. A "dwell-timed" control function allows one handed selection of either audio or video breakaway. After dwell time has elapsed, the control function reverts to audio-follow-video operation. An audio input/output interface option provides for easy audio wiring **875.00**

SSV-210 Stereo-Audio/Video Switcher
 Functions in the same manner as the SAV-210, with an additional audio channel. Either channel is suitable for use with SMPTE time code. .995.00

VSD-200 Video/Stereo Audio Distribution Amplifier
 1 x 6 video with stereo-audio distribution amplifier. Optimum pricing and packaging for stereo television and duplication facilities **900.00**

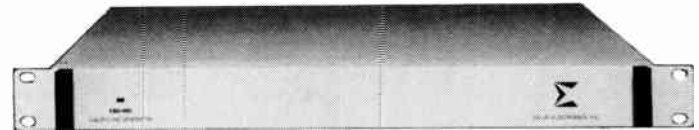
VAD-200 Video/Audio Distribution Amplifier
 1 x 6 video with single channel audio DA **.650.00**

ADA-110 Audio Distribution Amplifier
 High performance Audio DA. One input and ten outputs; low noise, flat response, adjustable gain -8 to +23.5dB. Can be used for SMPTE Code **405.00**

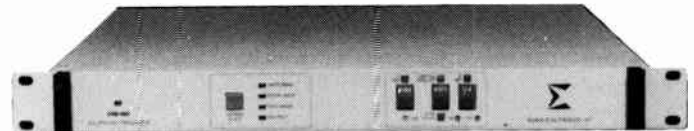
ADA-210 Audio Distribution Amplifier
 Same high performance DA as the 110 except dual configuration. Can be either dual 1 x 10 or a single 1 x 20. Ideal for SMPTE Code **\$610.00**



TSG-375A



CSG-450



CSG-465

Self-Contained Sync and Distribution Equipment

VDA-115 Video Equalizing Amplifier
 The VDA-115 is an extremely versatile unit. In its most simple configuration, it is a 1 x 6 Video DA. More importantly, it is a cable equalizing amplifier that can serve as a "line-driver" or "line-receiver" to compensate for up to 1100' of coaxial cable. It features a differential input that can eliminate as much as 10VAC of hum **\$360.00**

VDA-100A Video Distribution Amplifier
 6 output DA frequency response 0.2dB to 10MHz, looping input, DC coupled, ±6dB gain adjustable, 110/220VAC. Desk or rackmount **310.00**

ADA-106 Audio Distribution Amplifier
 1 x 6, high performance amplifier, with a frequency response of ±0.1dB to 30kHz, can be used for SMPTE Code. Screw capturing terminals. 110/220VAC. Desk or rackmount **310.00**

PDA-100A Pulse Distribution Amplifier
 1 x 6 pulse regenerative DA with looping input. 110/220VAC. Desk or rackmount **310.00**

SDA-110 Subcarrier Distribution Amplifier
 Regenerative subcarrier amplifier, 2 independently adjustable outputs. 110/220VAC. Desk or rackmount **390.00**

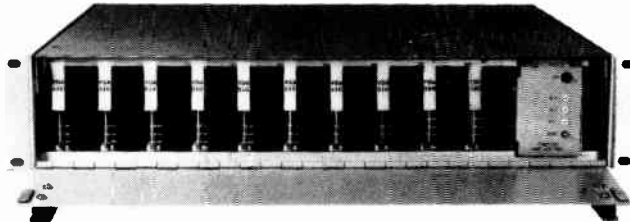
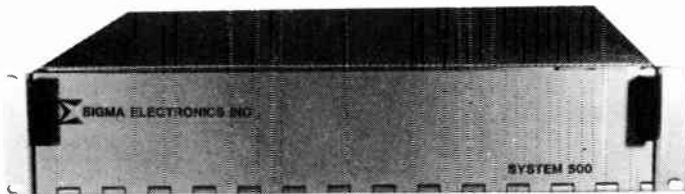
PDA-110 Pulse Delay Amplifier
 Ideal aid in system timing. Four independently delayable outputs, range of 0.2 to 2µsec. 110/220VAC. Desk or rackmount **415.00**

CSG-160 Color Sync Generator
 Provides all the standard synchronizing outputs including blackburst. RS-170 standard. Desk or rackmount **800.00**

AFV-100 Passive Audio Follow Video Switcher
 6 inputs to one output RCA jacks for audio **185.00**

VS6-100 Passive Video Switcher
 For switching six video inputs to one input. Desk or rackmount **115.00**

MODULAR DISTRIBUTION EQUIPMENT



System 500

System 500 Modular Distribution System

- Flexible
- Hinged front door
- 10 modules and 1 power supply capacity
- Space efficient
- EX-505 is required to service any of the distribution modules in the frame
- Frame is supplied with rear mounting blank panels
- Accepts a second PS-501A for redundant power supply operation

For any signal distribution equipment, the FR-500 Module Mounting Frame provides maximum flexibility in a very efficient package. Intended for use in broadcast, cable, industrial, duplication and similar installations.

Flexibility and versatility. An internal motherboard allows both modules and rear frame adaptors to be conveniently installed or reorganized, to meet any system requirement. Up to ten modules plus a power supply can reside in the frame, and any combination of existing or future System 500 modules can simultaneously be installed in the frame.

FR-500 Module Mounting Frame

Holds up to ten of any combination of modules plus a power supply. Internal "motherboard" allows for easy additional modules . . . **\$400.00**

EX-505 Module Extender **30.00**

PS-501A Power Supply Module

Provides necessary power for a fully loaded frame of modules. 110/220VAC operation. **150.00**

VDA-510 Video Distribution Amplifier

1 input/6 outputs, DC coupled, frequency response ± 0.2 dB to 10MHz, diff. phase 0.2°, diff. gain 0.2%, ± 3 dB gain adjustment **240.00**

VDA-515 Video Equalizing Amplifier

Capable of compensating up to 1100 ft. of coaxial cable **280.00**

ADA-526 Audio Distribution Amplifier

1 input/6 outputs, an extremely flat frequency response (0.1dB to 30kHz). Can operate bal. or unbal. **280.00**

PDA-530 Pulse Distribution Amplifier

Regenerative Pulse Amplifier 1 input/6 outputs. Input level 2-6V p-p, output level 4V p-p **240.00**

PDA-535 Pulse Delay Amplifier

Two sections of two independently adjustable stages **360.00**

SDA-540 Subcarrier Distribution Amplifier

1 input/3 outputs. Each output is independently adjustable. . . **320.00**

BTM-551 Blackburst Timing Module

Provides horizontal and burst phase adjustment of its blackburst output. Requires a BSG-100A for reference timing signals **375.00**

CBG-565 Color Bar Module

Provides dual outputs of selectable outputs of SMPTE Bars, Cross-hatch, Red Field and Safe Areas. This unit requires timing signals from BSG-550 **600.00**

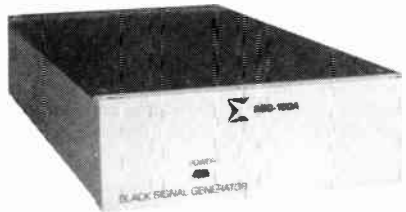
BSG-550 Black Signal Generator

Provides two RS-170A blackburst outputs, plus synchronizing signals for other System 500 modules **400.00**

CGM-560 Color Genlock Module

Used to genlock other System 500 modules, such as CBG-565 or BTM-551 to an external reference. **500.00**

SMALL STUDIO AND EDIT SUITE EQUIPMENT



BSG-100A



CBG-100A



BTM-100A

BSG-100A Black Signal Generator

Provides two RS-170A blackburst outputs, plus control driving signals for other Series 100 modules **\$495.00**

CBG-100A Color Bar Generator

Provides dual outputs of selectable SMPTE Bars, Crosshatch, Red Field, and Safe Areas. This unit requires a BSG-100A for timing reference **495.00**

BTM-100A Blackburst Timing Module

Provides horizontal and burst phase adjustment of its blackburst output. Requires a BSG-100A for timing reference **\$495.00**

CGM-100A Color Genlock Module

Used to genlock CBG-100A and BTM-100A to an external reference **495.00**

FR3-100 Rackmount Frame

For any 3 small box modules. **70.00**

SONY CORP. OF AMERICA

1" Video Tape Recorders

**BVH-3000 (Sync)/BVH-3100 (Non-Sync)
1" SMPTE Type C Format Video Tape Recorders**

- Air threading technology limits tape handling to a minimum for ease of operation and tape protection
- Easy manual tape threading with wide movable guide system
- Time base corrector function supplied as a standard
- Two types of time base corrector processors available—Standard TBC Processor or High Quality TBC Processor
- High Quality TBC Processor provides a steady DT playback picture
- Self-aligning DT system for Dynamic Tracking playback within a DT range of -1 to +3 times normal playback speed
- Separate SC-H phase meters for tape SC-H phase and reference signals provided
- Serviceability improved with the sophisticated one-circuitboard/one-function design
- Full scale built-in editing facility
- Video/audio confidence playback
- Versatile system interface available for system expandability
- Two hour recording and playback
- Computer controlled servo system including sophisticated self-diagnostics
- 147 lbs., 7 oz.

Supplied Accessories

- Extension board (EX-136)
- Empty reel (R1-11 VA)
- 37-pin D-sub connector
- 50-pin D-sub connector
- Phone plug adaptor
- Key ID label
- Overlay sheet (printed)
- Overlay sheet (blank)

BVH-3000 \$48,000.00
BVH-3100 40,125.00



BVH-3000

BVH-2500 1" Video Tape Recorder

- Various Δt recording modes:
 - Still—Records or replaces a selected field or frame
 - Step—Steps forward one time increment and records or replaces a selected field or frame
 - Slow—Records at speeds from $1/60$ to $8/60$ (NTSC), $1/50$ to $3/50$ (PAL), $1/90$ to $5/60$ (PAL-M) normal, set by the variable speed control

- No preroll for Δt recording
- Compatible with SMPTE/EBU type C format
- Standard real time recording
- Instantaneous and repeatable re-write capability using a DT Record, Play and Erase Head
- Approx. 400,000 fields or 200,000 frames recording capability with 2-hour reel
- Built-in time code generator/reader

Supplied Accessories

- 50-pin connector for Remote Out-3
- 37-pin connector for Monitor Select
- Empty reel
- Extension board
- Phone plug adaptor
- Operation and maintenance manual

BVH-2500 \$70,000.00



BVH-2500

SONY CORP. OF AMERICA**1" Video Tape Recorders****BVH-2800/2830 1" Digital VTRs with PCM Sound**

- BVH-2800 for 2 hour operation; BVH-2830 for 3 hour operation
- Playback compatible with BVH series VTRs
- A total of 5 audio channels—2 PCM audio channels and 3 analog audio channels
- PCM audio editing capability
- Video and audio (analog and digital) simultaneous playback during recording/editing
- Versatile system interface with a simple connection
- Integral time base corrector with a wide 15H p-p correction window (optional)
- High speed dynamic tracking system with DT ranges from -1 to +3 times normal speed
- Easy tape threading with movable head gate system
- Computer controlled servo system including sophisticated self-diagnostics
- Life of the lower drum improved and extended
- Mechanical squeeze plate to minimize impact error

Supplied Accessories

- 50-pin connector for remote out-3
- 37-pin connector for monitor select
- Extension board EX-113
- Phone plug adaptor
- PC board indication label
- Screw B5 x 16
- Operation and maintenance manual

BVH-2800	\$42,500.00
BVH-2830	60,000.00

**BVH-2800****BKH-2801 PCM Audio Processor**

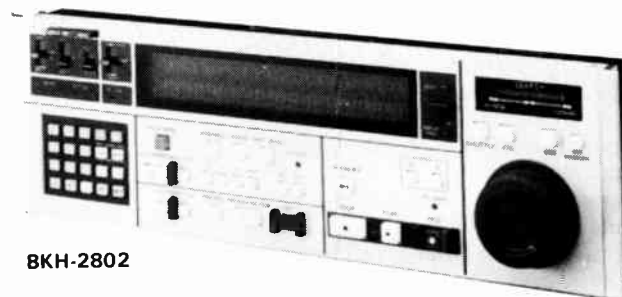
- When interfaced with BVH-2800 VTRs, enables high quality 2-channel digital recording and playback
- Three sampling rates, 48kHz or 44.1kHz/44.056kHz can be selected
- All of the audio function controls and indicators are located on the front panel for ease of operation
- Optional circuit boards for digital I/O interface (BKH-2804) and audio D/A converter (BKH-2805) are available
- 19" rackmountable or, with the BKH-2803 Processor Mount Adaptor, VTR mountable for desktop use

BKH-2801	\$15,000.00
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**BKH-2801****BKH-2802 Control Panel**

- Designed exclusively for BVH-2800 VTRs and houses all of the function keys needed for 2 machine editing including the numeric keypad
- In addition to the conventional editing capabilities of 1" machines, this control panel provides independent CH1 and 2 digital audio editing

BKH-2802	\$7,000.00
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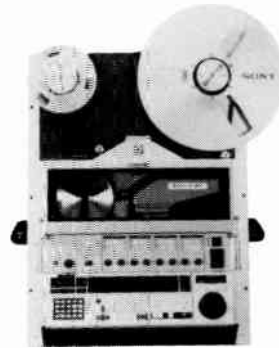
**BKH-2802**

SONY CORP. OF AMERICA

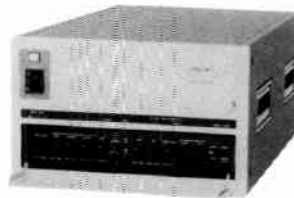
**1" Video Tape Recorders/
Time Base Correctors**



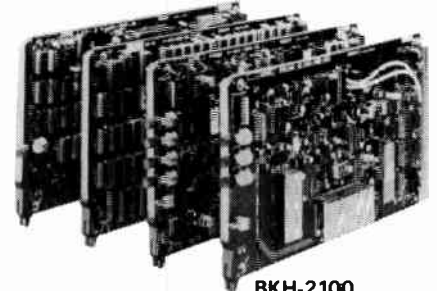
BVH-500A



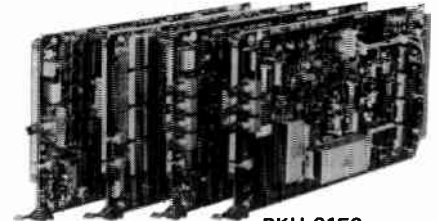
BVH-2180



BVT-2000



BKH-2100



BKH-2150

BVH-2180 1" Video Tape Recorder

- Tape transport with three-hour recording and playback capability
- High speed Dynamic Tracking System; Wide DT range from -1 to +3 times normal speed; Programmed play; DT variable memory function
- Easy threading head gate system with precise cross roller guide
- Three types of control panel (option)
- Plug-in time code board (option)
- Full scale editing facility
- Versatile system interface
- Front operation and improved serviceability
- Self-diagnostic system
- 170 lbs.
- 28.2"H x 24.5"W x 22.5"D

Supplied Accessories

- 50-pin connector for remote out-3
- 37-pin connector for monitor select
- Empty reel
- Extension board
- Phone plug adaptor

BVH-2180\$53,600.00

BVH-500A Portable 1" Video Tape Recorder

- Back space assemble edit with on/off switch
- Digital servo system
- Electric tension servo system
- Advanced gyro rolling characteristics
- Color framing facility
- Warning indicators
- Reel size selector
- 60 minutes recording/playback
- Dust and weather-proof housing
- 35 lbs.
- 7"H x 15"W x 16.5"D

Supplied Accessories

- Empty reel
- CCQ-2AR
- Operation and maintenance manual

BVH-500A\$33,700.00

Optional Accessories

- HT-500A Color stabilizer (NTSC)\$3,585.00
- BVR-500 Function remote control\$410.00
- CLP-550 Color playback for adaptor for (using with a TBC)
NTSC\$5,565.00

BVT-2000 Digital Time Base Corrector

- For BVH-2180/2500/2800/2830 1" VTRs
- Correction range of 12H p-p
- Dynamic tracking playback with BVH-1100/1100A/1180/2180/2500/2800/2830 series
- 9-bits, 4X fsc sampling
- 1H prior drop-out compensation with digital Y/C separation
- Built-in velocity error compensation
- Built-in sync generator
- Built-in video processor
- Built-in automatic advanced sync generator
- Synchronized to external reference signal with high and low tape speed
- Simultaneous playback monitoring
- Remote control facility

BVT-2000\$14,300.00

BKH-2100 Digital Time Base Corrector

- Plug-in TBC for BVH-2180/2800/2830
- Consists of 4 circuit boards (plug-in type)
- PAL/SECAM switch selectable (BKH-2300)
- 1H p-p window correction
- 8-bits, 4X fsc (NTSC)
- Recognizable B/W picture, up to ± 50 times normal speed
- Second order velocity error compensation
- Selectable vertical blanking 10H to 21H
- Full remote control capability

BKH-2100\$8,425.00

**BKH-2150 Digital Time Base Corrector
With Dynamic Tracking**

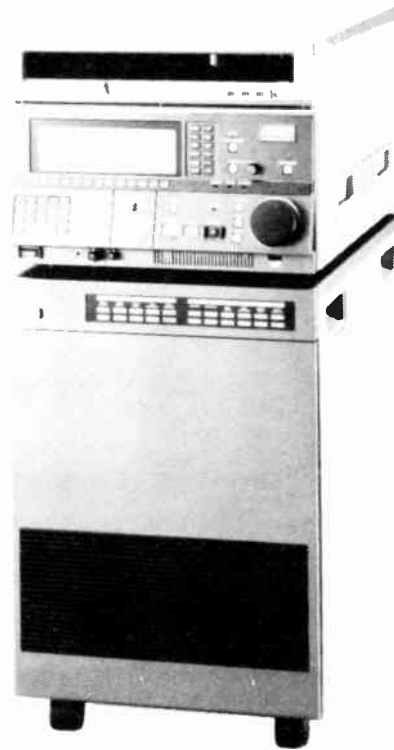
- Plug-in TBC for BVH-2180/2800/2830
- Consists of 4 circuit boards (plug-in type)
- PAL/SECAM switch selectable (BKH-2350)
- 15H p-p correction window
- 9-bits 4X fsc (NTSC), 8-bits 4X fsc (PAL/PAL-M) 8-bits 1135
- fH (SECAM) sampling frequency
- Recognizable monochrome picture up to ± 50 times normal speed
- Recognizable color picture up to ± 8 times normal speed
- Broadcast quality picture from -1 to +3 times normal speed
- Digital dropout compensation
- Second order velocity error compensation
- Selectable vertical blanking 10H to 21H

BKH-2150\$12,300.00

SONY CORP. OF AMERICA**Digital Video Tape Recorders****DVR-1000 4:2:2 Component Digital VTR**

- SMPTE D-1/EBU standard
- Meets the CCIR rec. 601 4:2:2 Component Digital Standard
- 525/60, 625/50 switchable
- Two levels power supply voltage (100-120V and 220-240V)
- Both L (Large) and M (Medium) size SMPTE D-1 cassettes usable
- Complete frame edit operations are assured with no picture shift
- Editing with direct digital data streams drastically reduces the signal degradation from multiple dubbing in editing, thus overcoming the inevitable limitations of analog recordings
- Both digital and analog I/O ports are provided for various video and audio inputs/outputs
- The analog ports can be used with any conventional studio equipment (RGB, Betacam)
- The digital port, which conforms to the SMPTE RP-125 and the EBU Tech 3246-E parallel digital interface standards, will allow interfacing with other digital studio equipment
- Each audio channel has a storage capacity of 20 bits per sample at a sampling rate of 48kHz
- The recording mode can be selected from eight modes available. The selected mode specifies the number of audio bits per sample and defines the type and quantity of associated ancillary data, thus ensuring transparency to AES digital audio signals
- The four digital audio channels provide high quality sound and flexible production capability
- System flexibility due to three RS-422 ports
- Wide Electroluminescence (EL) display system
- Broadcast level playback and freeze pictures at up to $\pm 1/4$ times normal speed
- Color pictures in shuttle up to ± 40 times
- Separate unit system, tape transport unit and processor unit

DVR-1000 \$140,000.00

**DVR-1000****DVR-10 D-2 Digital Cassette with Dynamic Tracking™ VTR**

- Conforms to SMPTE D-2 composite digital format
- With digital interfaces, more than 20 generations with no signal degradation in audio and video can be obtained
- Dynamic tracking facility permits noiseless still, slow motion and variable speed playback within -1 to 3X normal playback speed. (Audio channels muted during DT use)
- Wide bandwidth of 6MHz and high signal-to-noise ratio of 54dB
- Error correction/concealment feature for dropout-free performance
- Four digital audio channels
- Compact (6 rack units high) and lightweight (103 lbs., 10 oz.)
- Accepts both M-size (94 minute operation) and S-Size (32 minute operation) cassettes
- Large electroluminescent display (640 x 200 dots) with 12 menus for operation control and audio metering
- Two machine editing control (built-in) via RS-422 port
- Up to 99 cue points can be stored and selected for random accessing and pre-roll
- Control panel can be angled or removed and connected to the rear panel for maintenance
- DFX-1200 (D-1 to D-2) and DFX-2100 (D-2 to D-1) digital rate converters available for digital conversion

Supplied Accessories

- Control panel BKDV-101
- Extension board (EX-138)
- Extension board (EX-185)
- Rackmount kit
- Connector plug (50-pin)
- AC power cord
- Plug holder
- Operation and maintenance manual

DVR-10 \$72,500.00

**DVR-10**

SONY CORP. OF AMERICA

Video/Audio Tape



V1-K Series

V1-K Series 1" Video Tape

- Offers smooth transport in all modes and on all C-format VTRs

Cartons—V1-K-18B, V1-K-34B, V1-K-66B, V1-K-96B

Shipper Case—V1-K-18SP, V1-K-34SP, V1-K-66SP, V1-K-96SP, V1-K-126SP, V1-K-156SP, V1-K-188SP

V-16 Series 1" Video Tape

- High sensitivity for mastering durability to withstand stress of editing and repeated play • Minimal dropouts 3 per minute.

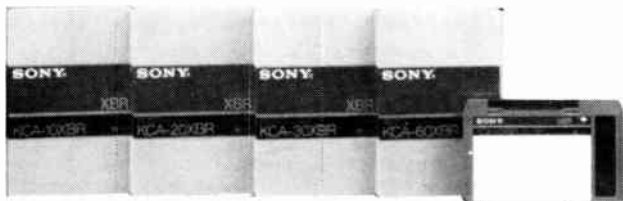
Cartons—V-16-18B, V-16-34B, V-16-66B, V-16-96B, V-16-126, V-16-188

Shipper Case—V-16-18SP, V-16-66SP, V-16-34SP, V-16-96SP

HD-1 Series High Definition 1" Video Tape

- High density Vivax™ magnetic particle rendering high quality picture and sound reproduction required for HDVS.

Shipper Case—HD-1-33SP, HD-1-48SP, HD-1-63SP



XBR Series

XBR Series U-Matic® Videocassettes

- The ultimate broadcast master • Offers improved video and audio characteristics, greater durability, reliability and low dropout rate

KCA XBR Videocassettes (for standard size U-Matic machines)

KCA-10XBR, KCA-20XBR, KCA-30XBR, KCA-60XBR

KCS XBR Mini Videocassettes (for portable, in-field use)

KCS-10XBR, KCS-20XBR

BRS Series U-Matic Videocassettes

- Broadcast standard videocassette • Carbon Mirror™ backcoating and anti-static shell

KCA BRS Videocassettes (for standard size U-Matic machines)

KCA-10BRS, KCA-20BRS, KCA-30BRS, KCA-30BRS-SC, KCA-60BRS, KCA-60BRS-SC

KCS BRS Mini Videocassettes (for portable, in-field use)

KCS-10BRS, KCS-20BRS, KCS-20BRS-SC

KSP Series U-Matic Videocassettes

- Designed especially for use with Sony Pro Plus VCRs • Super Vivax magnetic particles allows tape to handle higher FM carrier frequency of the U-matic SP system

KSP 10, 20, 30, 60, KSPS Mini S10, S20

BCT Series Betacam Videocassettes

- Reliable, durable, broadcast quality cassettes
- BCT-5K, BCT-10K, BCT-20K, BCT-30K, BCT-60L, BCT-90L (to be used only with Betacam SP VTRs capable of loading large cassettes)



BCT Series

BCT Metal Series Betacam SP Videocassettes

- Ultra-fine metal particle for enhanced video/audio characteristics
- BCT-5M, BCT-10M, BCT-20M, BCT-30M (small metal cassettes)
 BCT-5ML, BCT-10ML, BCT-20ML, BCT-30ML, BCT-60ML, BCT-90ML (large metal cassettes)
 BCT-5MNP, BCT-10MNP, BCT-20MNP, BCT-30MNP, BCT-20K-SC

4:2:2 Component Digital Video Master Cassettes

- Super Vivax magnetic particles • High Polymer binder system ensures uniform, high density particle distribution
- DCM-200, DCM-400, DCM-600, DCM-1600, DCM-75CL

D-2 Composite Digital Video Master Cassettes

- Metal particle formulation for outstanding picture quality • Small cassettes—DCS-60M, DCS-100M, DCS-180M, DCS-250M; Medium cassettes—DCM-60M, DCM-100M, DCM-180M, DCM-250M, DCM-300M, DCM-750M

1/2" PRO X Series Videocassettes

- Ultra fine super precision Vivax • Beta S/N improved by 1dB, color S/N by .5dB • VHS S/N by 1.5dB compared to ESX Hi-Fi • For recording video master tapes, editing and dubbing, PCM digital audio recording

BETA	VHS
L-250, L-500	T-120

Professional Grade VHS

30, 60, 90 and 120 minute lengths

1/2" Dynamicron-Series Videocassettes

- Economical, high value performance for general purpose recording

BETA	VHS	1/2" Reel-to-Reel
L-125, L-250, L-500,	T-60, T-90,	V-30H, V-32, V-35
L-750, L-830	T-120, T-160	

MP Series Metal Particle 8mm Videocassette

- Cosmilit Ultra-fine magnetic particle ensuring high output and low noise • Unique UST (Ultra Surface Treatment) eliminates dropouts

Packaged—P6-30MP, P6-60MP, P6-90MP, P6-120MP

Bulk—P6-30PH, P6-60PH, P6-90PH, P6-120PH

Bulk 8mm cassettes—P6-30PHB, P6-60PHB, P6-90PHB, P6-120PHB

EVPCASE—P-case for bulk cassettes must be ordered separately

D-1/4, D-1/2 Series Open Reel Digital Audio Tape

- High coercivity magnetic particles and precise surface technology provide excellent resolution and high output, especially in the high frequencies

1/4" — D-1/4-730, D-1/4-1460, D-1/4-2190

1/2" — D-1/2-1460, D-1/2-2920

3/4" Digital Audio Master Cassette

- Extremely low dropout rate • High precision cassette shell for reliable tape transport

KCA-60BRK-PCM, D-3/475U, DAU-30, DAU-60, DAU-75

Professional DAT

DT-60R, DT-90R, DT-120R, DT-10CL

Tape Accessories

CL-25—U-Matic tape case; **CL-1-SPS**—1" Tape shipper case (9" dia.); **CL-1-SPM**—1" Tape shipper case (10.5" dia.); **CL-16SPL**—1" Tape shipper case (14" dia.); **KCS-1CL**—U-Matic cleaning cassette; **BCT-5CL**—Betacam cleaning cassette; **L-25CL**—Betamax cleaning cassette; **V-25CL**—VHS cleaning cassette; **RI-9V**—1" Empty reel (9"); **RI-10V**—1" Empty reel (10.5"); **RI-11V**—1" Empty reel (11.75"); **RI-14V**—1" Empty reel (14")

Call For Current Pricing

Prices and Specifications Subject to Change Without Notice.

B-1051

SONY CORP. OF AMERICA

Betacam Camcorders

BVW-550 Betacam® SP Camcorder

- The BVP-50 Color Camera is combined with the BVV-5 Betacam Recorder to configure a camcorder for ENG use
- Simultaneous playback of video and audio
- 4-channel audio
- Built-in LTC, VITC, user bit generator with genlock capability
- Audio/video confidence playback
- Phantom power supply
- Built-in loudspeaker
- 8-digit LCD display
- Backspace edit
- CCD eliminates problems of lag, image burn-in and registration adjustments
- Electronic shutter speeds of $\frac{1}{100}$, $\frac{1}{125}$, $\frac{1}{175}$, $\frac{1}{250}$, $\frac{1}{500}$, $\frac{1}{1000}$, and $\frac{1}{2000}$ second
- Dynamic contrast control (auto knee control), switchable, extends dynamic range to 600%
- Automatic iris control, white/black balance with dual white balance memories for each filter position (4)

Supplied Accessories

- | | |
|---------------------------|------------------------------------|
| • Shoulder belt | • 50-pin connector cap |
| • Tripod adaptor (VCT-14) | • Rain cover |
| • Extension board | • Cap for handle hole |
| • Extractor | • Carrying handle |
| • Chest pad | • Operation and maintenance manual |
- BVW-550** \$36,500.00

BVW-530 Betacam SP Camcorder

- Can be separated into two parts: the three $\frac{2}{3}$ " diode gun Plumbicon tube camera (BVP-30) and the recorder part (BVV-5)
- 4-channel audio
- Built-in LTC, VITC, user bit generator with genlock capability
- Audio/video confidence playback
- Phantom power supply
- Built-in loudspeaker
- Back space edit
- Auto centering
- Auto white balance with 3-position digital memory
- Automatic beam optimizer
- Wide dynamic range to accept excessive light
- Two line image enhancer
- Color framing out from multi connector
- Video level indicator

Supplied Accessories

- | | |
|---------------------------|--------------------------------------------|
| • VTR bracket | • Extension board |
| • 50-pin connector caps | • Extractor |
| • 4-pin connectors | • Chart for automatic centering adjustment |
| • Shoulder belt | • Operation and maintenance manual |
| • Screws M4 | • Microphone adaptor |
| • Tripod adaptor, bracket | |
- BVW-530** \$45,500.00

BVW-507 Betacam SP Camcorder

- Can be separated into two parts: the BVP-7 3-CCD Portable Color Camera and the BVV-5 Betacam Recorder
- 4-channel audio
- Built-in LTC, VITC, user bit generator with genlock capability
- Audio/video confidence playback
- Phantom power supply
- Built-in loudspeaker
- Backspace edit
- Eliminates problems of lag, burn-in, vibration and electric interference
- Variable electronic shutter ($\frac{1}{100}$, $\frac{1}{125}$, $\frac{1}{250}$, $\frac{1}{500}$, $\frac{1}{1000}$, $\frac{1}{2000}$ second shutter speeds)
- Dynamic contrast control (auto knee control) extends high light dynamic range by 600% enabling a clear picture in high contrast environments
- Automatic white/black balance system includes two white balance memories for each optical filter (4 positions)
- 2H image enhancer
- Shading compensator for lens extender automatically selected

**BVW-505****Supplied Accessories**

- | | |
|------------------------------|------------------------------------|
| • Shoulder belt | • Rain cover |
| • VCT-14 tripod adaptor | • Handle-hole cap |
| • Extension board, extractor | • Carrying handle |
| • Chest pad | • Operation and maintenance manual |
| • 50-pin connector cap | |
- BVW-507** \$34,000.00

BVW-505 Betacam SP Camcorder

- Can be separated into two parts: the BVP-5 3-CCD Portable Color Camera and the BVV-5 Betacam Recorder
- 550 lines horizontal resolution, 58dB S/N ratio
- f/5.6 at 2000 lux
- 4-channel audio (2 longitudinal, 2 AFM)
- Capable of simultaneous monochrome video playback in the viewfinder
- Genlock capability
- Dynamic contrast control allows 600% highlights
- Phantom power supply
- Built-in time code generator/reader
- Built-in loudspeaker and microphone
- Automatic iris control
- Automatic white/black balance (4 positions)
- 2H image enhancement
- Linear matrix
- Shading compensation for lens extender
- 1.5" viewfinder with horizontal slide
- Weighs 14.3 lbs.

Supplied Accessories

- | | |
|-------------------|------------------------------------|
| • Tripod adaptor | • Cap for a handle hole |
| • Extension board | • Carrying handle |
| • Extractor | • Shoulder belt |
| • 50-pin cap | • Operation and maintenance manual |
| • Rain cover | |
- BVW-505** \$29,000.00

BVW-503 Betacam SP Camcorder

- Can be separated into two parts: the BVP-3A $\frac{2}{3}$ " MF Saticon™ Color Camera and BVV-5 Betacam Recorder
- Accepts lenses with 6 and 12-pin connectors
- Auto centering
- Auto white balance with 3-position digital memory
- Automatic beam optimizer
- Wide dynamic range to accept excessive light
- Two line image enhancer
- Shading compensation with lens extender
- 4-channel audio
- Built-in LTC, VITC, user bit generator with genlock capability
- Audio/video confidence playback
- Phantom power supply
- Built-in loudspeaker
- Backspace edit

Supplied Accessories

- | | |
|------------------------------|--------------------------------------------|
| • Shoulder belt | • Chart for automatic centering adjustment |
| • Tripod adaptor, bracket | • Operation and maintenance manual |
| • Extension board, extractor | |
- BVW-503** \$36,650.00

SONY CORP. OF AMERICA

Betacam Camcorder/Recorder

BVW-200 Betacam® SP Camcorder

- 3-chip 2/3" interline CCD pickup device
- Built-in Filters: 1: 3200°K, 2: 5600°K + 1/4ND; 3: 5600°K, 4: 5600°K + 1/16ND
- 58dB video S/N ratio
- 550 TV lines horizontal resolution
- Compact, lightweight (15 lbs., 3 oz.), and efficient (20W) with miniaturized tape transport and high density circuits in a one-piece VTR/camera system
- Automatic iris control with improved response speed
- Automatic white/black balance with dual white balance memory for each filter (4 positions)
- Dynamic contrast control (auto knee control) compresses highlight signals in high contrast environments
- Can use metal particle tape for the Superior Performance (SP) recording format or oxide tape for conventional Betacam format recording
- Monochrome viewfinder is selectable between viewing luminance or chrominance (CTDM) signal playback
- Recording review function rewinds tape 2-10 seconds, plays back last scene and stops at previous pause location
- Full function control (eject, play, rewind, FF, stop) are covered by safety lid and inhibited during recording mode
- Built-in time code generator/reader
- Time code slave lock function can slave or provide TC for other devices
- 8-digit LCD multiple display
- Detachable microphone is phantom powered and can be used for ambient audio or detached for interviews
- Two channels audio input with phantom powered microphone or line inputs, Dolby NR (noise reduction) on linear channels and two AFM audio channels simultaneous recording



BVW-200

- Built-in loudspeaker for monitoring individual or mixed audio channels and alarm tone
- Diagnostic system
- Record status, battery, 5-segment audio level, W/B balance and tape remaining indicators in viewfinder

Supplied Accessories

- Tripod adaptor
- Extension board
- Operation/maintenance manual
- Shoulder belt
- Rain cover

BVW-200 \$25,000.00

BVV-5 Betacam SP Recorder Unit

- Simultaneous playback of video and audio
- Can be operated as a combo camcorder when connected to BVP-3A/30/5 cameras, or as a portable recorder VTR when connected to an optional VA-5 VTR adaptor
- 4-channel audio
- Built-in LTC, VITC, user bit generator with genlock capability
- Audio/video confidence playback
- Phantom power supply
- Built-in loudspeaker
- 8-digit LCD display
- Back space edit
- 7 lbs., 3 oz.

Supplied Accessories

- VTR bracket
- 50-pin connector cap
- 4-pin connector
- Operation and maintenance manual
- Shoulder belt
- Screw M4

BVV-5 \$11,000.00

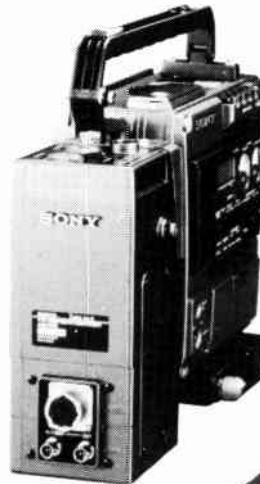
Optional Accessories

VA-5 VTR Adaptor

When attached to the BVV-5, the BVV-5 can be operated as a stand-alone recorder. Accepts composite or component signals via the 26-pin connector from the camera head \$2,200.00

VA-500 Playback Adaptor

When connected to the BVV-5 via a 20-pin connector, the BVV-5 can provide color playback, and it outputs either composite or VHF RF signals \$2,700.00



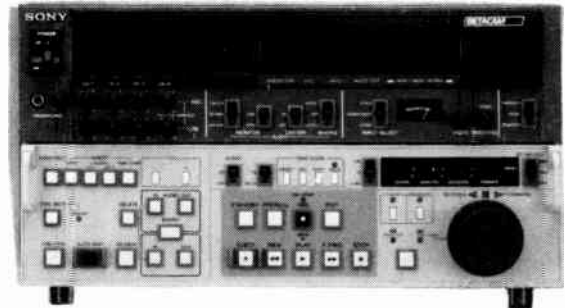
BVV-5
Shown with
optional VA-5



VA-500

SONY CORP. OF AMERICA*Betacam Recorder/Players***BVW-75 Betacam® SP Studio Editing Recorder/Player**

- Can be directly connected to other Betacam studio VTRs, BVE Series editors and BVH Series 1" VTRs via the RS-422 communication cable
- 36-pin parallel interface
- Dynamic tracking capability -1 +2
- Variable memory for DT editing
- 4-channel audio
- Capstan override $\pm 16\%$
- Time code reader/generator for LTC, VITC, U-bits
- Video/audio confidence
- Character display
- High speed picture search
- Two independent SC-H phase indicators
- Built-in TBC with remote control
- Color framing
- Simple audio mixing
- 66 lbs.

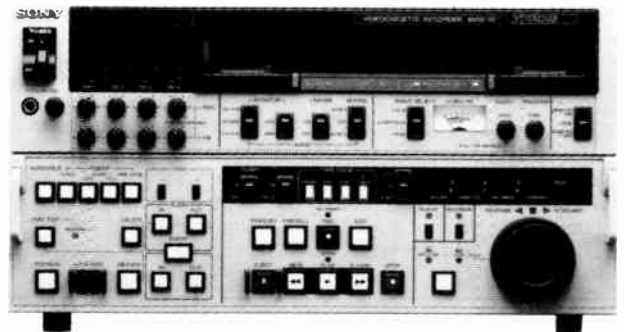
**BVW-75****Supplied Accessories**

- AC power cord
- Remote control cable RCC-5G (9-pin)
- 12-pin dubbing cable
- Extension board
- Operation and maintenance manual

BVW-75 \$35,900.00

BVW-70 Betacam SP Studio Recorder/Player

- Maximum playback time of over 90 minutes
- In addition to the two conventional longitudinal audio channels, two AFM audio channels are added, making a total of four channels available
- High speed picture search
- Built-in time code reader and time base corrector
- Built-in character generator and characters can be superimposed via Video Output 3
- Free from color framing as long as the recording component signals are fed directly from the component signal source
- RS-422 serial interface and 36-pin parallel interface
- Recording capability
- Built-in editing facility
- 225W power consumption
- Two independent SC-H phase indicators for composite input and output
- 66 lbs., 2 oz.; 5 rack units high

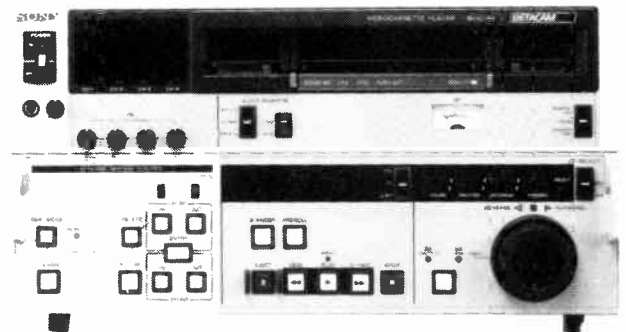
**BVW-70****Supplied Accessories**

- AC power cord
- RCC-5G remote control cable (9-pin)
- 12-pin dubbing cable
- Extension board
- Operation and maintenance manual

BVW-70 \$32,000.00

**BVW-65 Betacam SP Studio Player
With Dynamic Tracking (DT)**

- Maximum playback time of over 90 minutes
- In addition to the two conventional longitudinal audio channels, two AFM audio channels are added, making a total of four channels available
- High speed picture search
- Built-in time code reader and time base corrector
- Built-in character generator and characters can be superimposed via Video Output 3
- Free from color framing as long as the recording component signals are fed directly from the component signal source
- RS-422 serial interface and 36-pin parallel interface
- Dynamic motion control (DMC) playback which, when activated, will allow the BVW-65 to memorize the tape speed trajectory for noiseless playback picture within the Dynamic Tracking range of -1 to +2 times normal speed
- 175W power consumption
- 61 lbs., 11 oz.; 5 rack units high

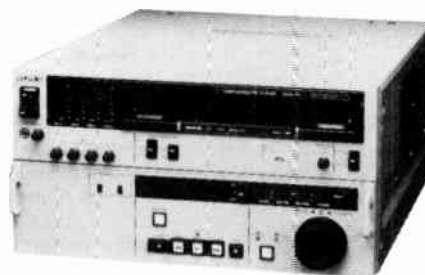
**BVW-65****Supplied Accessories**

- AC power cord
- Remote control cable RCC-5G (9-pin)
- Extension board
- Operation and maintenance manual

BVW-65 \$26,500.00

SONY CORP. OF AMERICA**Betacam Recorder/Players****BVW-60 Betacam® SP Studio Player**

- Maximum playback time of over 90 minutes
- In addition to the two conventional longitudinal audio channels, two AFM audio channels are added, making a total of four channels available
- 160W power consumption
- High speed picture search
- Built-in time code reader and time base corrector
- Built-in character generator and characters can be superimposed via Video Output 3
- Free from color framing as long as the recording component signals are fed directly from the component signal source
- RS-422 serial interface and 36-pin parallel interface
- 59 lbs., 8 oz.; 5 rack units high

**BVW-60****Supplied Accessories**

- AC power cord
- Remote control cable RCC-5G (9-pin)
- Extension board
- Operation and maintenance manual

BVW-60 \$22,500.00**BVW-35 Betacam SP Portable Recorder/Player**

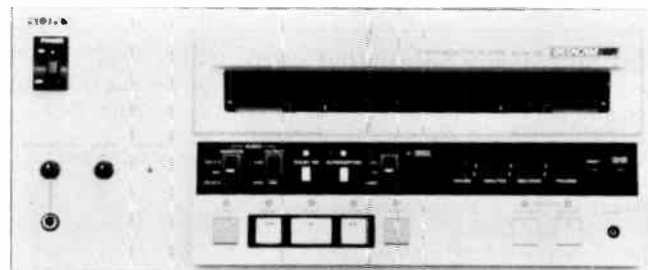
- Portable VTR with RS-422 interface based feeder capability
- 4-channel audio
- Built-in LTC, VITC, user bit generator and reader
- Frame accurate back space edit
- Feeder capability with RS-422 for field editing
- Audio/video confidence playback
- Phantom power supply
- Component and composite input/output
- Provision for TBC connection
- Built-in RF modulator
- Search mode
- 8-digit LCD display
- Weighs only 15 lbs.

**BVW-35****Supplied Accessories**

- Antenna selector switch
- Coaxial cable with F-type connector (NTSC)
- Coaxial cable with standard aerial connector (PAL)
- Extension board
- Soft carrying case
- Operation and maintenance manual

BVW-35 \$14,000.00**BVW-22 Betacam SP Player**

- Simply designed control panel, user-friendly
- Plays back Betacam SP (metal particle) and conventional Betacam (oxide) videotapes
- Plays back S-size 5/10/20/30 and L-size 60/90 minute videotapes
- Front-loading function convenient for limited spaces
- Four audio channels feature two linear channels with Dolby Type-C NR (Noise Reduction) and two AFM channels
- Dolby NR is automatically switched on when a metal tape is played and switchable when an oxide tape is played
- RM-770 wired/wireless remote control, supplied, features playback, FF, rewind, 3.5X search (forward/reverse), superimpose, functions and can be used in a wireless configuration or wired with a 5m cable, supplied
- Recognizable monochrome pictures at 3.5X speed in search mode with instant lockup
- Built-in RF modulator allows monitoring audio/video on ordinary TV receiver tuned to CH3 or CH4
- Superimpose function superimposes time code, CTL and user bit data on the monitor through the video, RF or monitor outputs, selectable on/off
- LED display shows TC, CTL, user bit, error messages or adjustment modes
- Compact and rackmountable (4 units high)

**BVW-22****Supplied Accessories**

- Remote control unit including remote control cable and battery (RM-770)
- Antenna selector
- Coaxial cable with F-type connector
- Operation and maintenance manual

BVW-22 \$4,950.00

SONY CORP. OF AMERICA

*Studio/Field Color Camera/
Accessories*

BVP-360 Studio/Field Camera

- For high quality field production and studio systems
- f/1.2 optical system gives superior sensitivity and depth of field
- Comprehensive auto alignment system ensures the highest quality picture
- 2/3" MS Plumbicon or MS Saticon™ tubes give high performance surpassing conventional larger tubes
- High resolution — 700 TV lines at center, 600 TV lines in corners
- Digital registration compensation ensures precise registration
- Superior S/N ratio of 60dB
- Streamlined mechanical design with compact and lightweight camera head for great maneuverability
- State-of-the-art triax transmission system
- RGB full band transmission for multicore system
- BVF-7000Q/7000QM 7" color viewfinder
- BVF-70/70CE 7" B/W viewfinder
- Convenient filing facility — setup files, scene files and lens files

Specifications

Camera Head

Pickup Tube System: 2/3" MS Plumbicon or MS Saticon 3-tube system
Optical System: f/1.2 prism
Filter Wheels: Color filters: A—Cross; B—3200°K; C—4300°K; D—6300°K; ND Filters: 0—cap; 1—clear; 2—1/4; 3—1/16

Sensitivity (at 90% Reflectance): 2000 lux with f/4.5 typical (MF "PbO"), 2000 lux with f/4 typical (MF "Saticon")

Minimum Subject Illumination: Approx. 10 lux f/1.2 + 24dB gain (MS "PbO"), Approx. 12 lux f/1.2 + 24dB gain (MS "Saticon")

S/N Ratio: 60dB (NTSC), typical
Resolution: 700 TV lines at center
Registration Error: Zone 1: 0.05%; Zone 2: 0.1%; Zone 3: 0.15%
Geometric Distortion: 1% (all zones)
Tracker: Intercom use

Incom/PGM Audio (2-ch): Double headset jack
Weight: Approx. 64 lbs.

BVP-360/TP\$62,300.00
 BVP-360/MP56,000.00

MSU-360 Master Set-up Unit

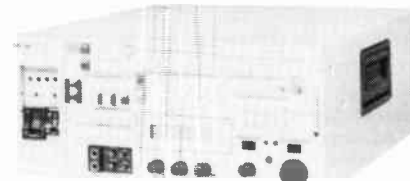
- A maximum of 8 BVP-360 cameras can be set up with one MSU-360. Together with the expansion unit, 36 cameras can be controlled
 - RS-232C external computer interface port
 - Two types of control panels, the OCU-3610 (drawer type) and OCU-3620 (console type) are available
 - Manual digital registration control
 - Self-diagnosis facility
 - Cable compensation facility
- MSU-360\$9,000.00

CCU-360 Camera Control Unit

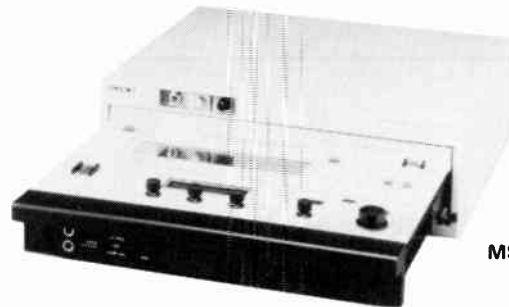
- Self contained power supply block makes utility AC power available for the camera head
 - RGB chroma key outputs with triax/multicore cable
 - SMPTE/EIA color bars
 - 2-wire, 4-wire, or RTS intercom system is provided
 - Detachable CCU control panel can be used as a remote control panel
 - Fully system-designed inputs/outputs facility is provided
 - Control panel, optional
- CCU-360T\$19,000.00
 CCU-360M1B,000.00



BVP-360



CCU-360



MSU-360

RCP-3620/3621 Type-II Remote Control Panels

- Versatile field application
 - Remote control for outside broadcasting
 - Basic painting facility
 - Simple auto setup functions
 - Joystick iris/master black control (RCP-3620)
 - Independent rotating controls for iris/master black control (RCP-3621)
- RCP-3620\$3,000.00
 RCP-36213,000.00

RCP-3630/3631 Type-III Remote Control Panels

- Sophisticated production
 - Creative production remote control
 - Extended painting facilities including differential gamma and flare
 - File facilities
 - Joystick iris/master black control (RCP-3630)
 - Independent rotating controls for iris/master black control (RCP-3631)
- RCP-3630\$3,900.00
 RCP-36313,540.00

SONY CORP. OF AMERICA

*Portable Color Video Camera/
Accessories*

BVP-350 3-Tube Portable Color Video Camera

- Ergonomically designed for operator ease and comfort and versatile shooting applications • f/1.2 optical prism block system matches the sensitivity and depth of field or larger format cameras • MS Plumbicon™ pickup tubes, high field operation and dynamic beam focusing techniques result in high resolution of 700 TV lines • Minimum illumination as low as 10 lux (at maximum gain) • Internal switch adds an additional 6dB when the camera is switched locally to 18dB for a total of 24dB gain • Employment of MS Plumbicon tubes, FET, pre-amplifier technology, an S/N ratio of 60dB (luminance) • High dynamic range allows acceptance of up to 600% of normal video level • Automatic digital registration compensation provides extremely precise and quick registration adjustment • Two optical filter wheels allow independent neutral density (ND) and color temperature adjustment • Viewfinder can be rotated 360° as well as adjusted horizontally, vertically, and laterally to enable the camera to be comfortably employed in complex handheld shooting sequences • Viewfinder has multiple status messages and alarms

Supplied Accessories

- Carrying case • Rain cover • VCT-13 tripod adaptor • Board extractor • EX-38, EX-90 extension boards • 6-pin connector • Shoulder belt • CAC-11A microphone adaptor • Operation and maintenance manual

Specifications

Pickup Tube: 2/3" MS Plumbicon
System: RGB 3-tube system
Color Filters: A: cross, B: 3200°K, C: 4300°K, D: 6300°K
ND Filters: 0: cap, 1: clear, 2: 1/4, 3: 1/16
Lens Mount: Bayonet mount
Sensitivity: 2000 lux with f/4.5 at 90% reflectance, typical (MS "PbO")
Illumination: Approx. 10 lux (f/1.2 lens, + 24dB gain)
Geometric Distortion: 1% (all zones)
Power Requirements: 12VDC (10.5V to 17V), 24W
Operating Temperature: -4°F to 122°F
Weight: 13 lbs., 6 oz.
Viewfinder: 1.5" monochrome picture tube; Tally; peaking switches: 500 TV lines

BVP-350\$51,400.00

CCU-355 Camera Control Unit

- Designed for use with the BVP-350 Color Camera via triax cables
- Remote operation of up to 1800 meters with 14.5mmØ triax cables
- Will accept Y/R-Y/B-Y signals. RGB or Y/R-Y/B-Y output is selectable with the built-in encoder
- Directly interfaces with the MSU-360 and the OCU-3610/3620 to allow the BVP-350 to be integrated into a multiple BVF-360 camera system
- Any of the RCF-3600 series of remote control panels can be directly interfaced with the CCU-355 via serial digital control
- Full communication facility including talkback and program audio feeds to the camera, and camera reverse talkback to the CCU
- Camera, CCU call, red and green tally circuits are also included
- Compact, half a 19" rack size

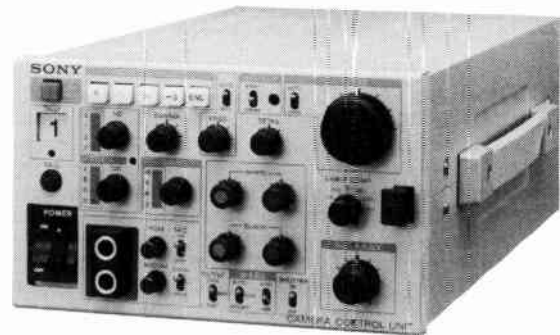
Supplied Accessories

- Power cable • Tally number label • 4-pin connector for waveform monitor • Operation and maintenance manual

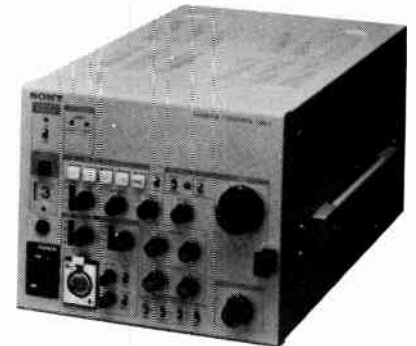
CCU-355\$14,000.00

CCU-350 Camera Control Unit

- Combines a high performance system interface and flexible remote video control with portability and low power consumption to provide dual purpose operation with either the BVP-350 or BVP-50 cameras
- The encoder is incorporated into the CCU to provide RGB or



CCU-350



CCU-355

- Y/R-Y/B-Y output selectable with an internal switch, along with composite output
- Directly interfaces with the MSU-360 and OCU-3610/3620 to allow the integration of the BVP-350 or BVP-50 portable cameras into a multiple BVP-360 camera system
- Any of the RCF-3600 series of video panels directly interface via serial digital control with the CCU-350, thus allowing a flexible choice of operational control
- Interfacing capability with BVP-50 series cameras with the CA-50 camera adaptor, thus offering precise adjustment of CCD cameras for field production applications
- Remote operation up to 300 meters
- 19" rackmountable with the optional RMM-301 rackmount unit (half rack size wide)
- Built-in genlock
- Full communication facility including talkback and program audio feeds to the camera, plus camera reverse talkback to the CCU
- Camera/CCU call, red and green tally circuits

Supplied Accessories

- Power cable • PCB extension board • Tally number label • Operation and maintenance manual

CCU-350\$10,500.00

SONY CORP. OF AMERICA

Portable Color Video Cameras

BVP-50 3-CCD Portable Color Video Camera

- 550 TV lines horizontal resolution • f/5.6 sensitivity at 2000 lux
- No lag or image burn-in • No vertical smear due to Frame Interline Transfer (FIT) CCD • Rejects interference from strong electric or magnetic fields • High precision CCD image geometry eliminates registration adjustments and results in 0.05% registration error in all zones
- Electronic shutter speeds of 1/100, 1/125, 1/175, 1/250, 1/500, 1/1000 and 1/2000 second enables capture of clear images of high speed objects
- Compact, lightweight (7 lbs., 7 oz.) and efficient (11.5W) • Dynamic contrast control (auto knee control), switchable, extends dynamic range to 600% resulting in crisp pictures even in high contrast environments • Automatic iris control • Automatic white/black balance with dual white balance memories for each filter position (4) • Multiple indicators in viewfinder including filter indicator, zebra pattern (video level), audio level and low battery • Can be interfaced with 1", U-Matic® and Betacam™ portable VTRs and can be docked to Betacam VTRs to configure a camcorder for ENG/EFP use

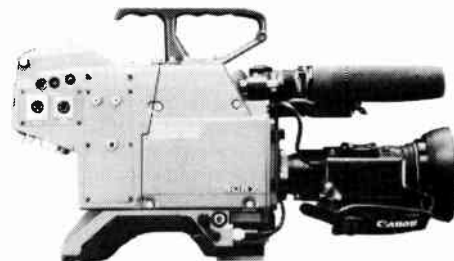
Supplied Accessories

- VCT-14 Tripod adaptor • Extension board • Extractor • Chest pad
- 50-pin connector cap • Rain cover • Cap for handle hole • Carrying handle • Operation and maintenance manual

BVP-50 \$25,500.00



BVP-50



BVP-7

BVP-7 3-CCD Portable Color Camera

- High resolution CCD for 700 TV lines resolution • No lag or burn-in, impervious to vibration and shock and not affected by magnetic or electric interference • Free from registration adjustments (0.05% registration in all zones) • Variable electronic shutter (1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000 second shutter speeds) captures clear images of high speed objects • Dynamic contrast control (auto knee control) extends high light dynamic range by 600% enabling a clear picture in high contrast environments (switchable) • CCD structure results in reduced vertical smear when handling severe highlights • Automatic W/B balance system includes two white balance memories for each optical filter (4 positions) • Viewfinder features high resolution CRT (550 lines) with quick start-up (1.5 sec.). Other features include video level, audio level (CH1), gain, filter position in addition to other indicators, vibration-resistance, sharp-directional microphone and two direction position adjustment • 2H image enhancer produces crisp pictures • Linear matrix features highly faithful color reproduction shading compensator for lens extender automatically selected • Can be coupled with a Betacam™ VTR for a one-piece camcorder or connected to various 1", Betacam or U-Matic® VTRs for standard ENG or production applications • CA-3A or CA-50 camera adaptors allow connection to a variety of VTRs, video systems (optional)

Supplied Accessories

- VCT-14 tripod adaptor • Extension board • Extractor • Chest pad
- 5-pin connector cap • Rain cover • Handle-hole cap • Carrying handle • Operation and maintenance manual

BVP-7 \$23,000.00



BVP-5



BVP-3A/30

BVP-5 3-Chip CCD Portable Color Camera

- 550 lines horizontal resolution • High quality CCD pickup device
- High sensitivity: f/5.6 (NTSC) • Minimal lag and high resistance to image burn-in • Impervious to vibration and shock • Minimum effects from electric/magnetic fields • Free from registration adjustment
- Compact and lightweight: super maneuverability (only 7 lbs., 1 oz. with VF) • Dynamic contrast control ensures wide dynamic range
- Automatic iris control • Automatic white/black balance • 2H image enhancement • Viewfinder indications for warning/confirmation
- 1.5" viewfinder with horizontal slide mechanism • Color framing out from multi-connector • Video level indicator

Supplied Accessories

- Tripod adaptor • Extension board • Extractor • 50-pin cap • Rain cover • Cap for handle hole • Carrying handle

BVP-5 \$18,000.00

BVP-3A/30 3-Tube Portable Color Video Cameras

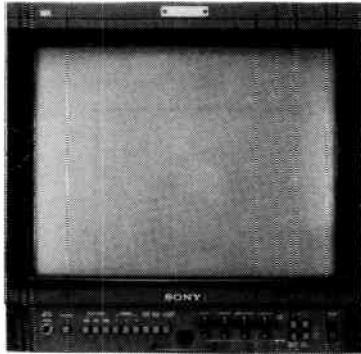
- BVP-3A: Three 2/3" MS Saticon™ tubes • BVP-30: Three 2/3" Diode Gun Plumbicon™ tubes • 650-line resolution at center, improved corner resolution • S/N: 59dB • Auto white balance with 3-position digital memory • Auto centering • Automatic beam optimizer • Wide dynamic range to accept excessive light • Shading compensation with lens extender • Two line image enhancer • Genlock facility with CA-3 or CA-30 camera adaptors, optional • CCU-300 interface with CA-30 camera adaptor, optional • Accepts lenses with 6 and 12 pin connectors, optional • Color framing out from multi connector • Video level indicator

Supplied Accessories

- Tripod adaptor • Extractor • Tripod bracket • Chart for automatic centering adjustment • Extension board • Operation and maintenance manual • Microphone adaptor

BVP-3A \$25,650.00

BVP-30 \$34,500.00



BVM-1912

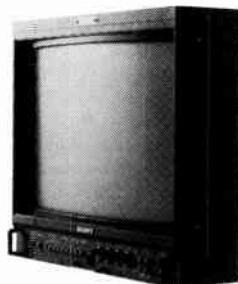
BVM-1912 Automatic Set-up Color Monitor

- Auto convergence and geometry adjustment • Auto setup capability (with the optional BKM-2053 probe) • Optional plug-in type decoder boards are available for viewing other TV standard systems • Component (Y, R-Y, B-Y) and RGB inputs available • Optional component (Y, R-Y, B-Y) and R, G, and B outputs are available with the BKM-1440 • Stabilized color temperature is obtained by employing a newly developed beam current feedback • A picture setup switch for accurate incoming video level alignment • Up to 6dB of aperture correction at 4.5MHz and 6.5MHz, selectable • Built-in cross hatch and white signal generator (100 IRE) for easy monitor alignment • Split screen (upper half: color mode; lower half: monochrome mode) • VITC display (with optional BKM-1460) • Safe area display (with optional BKM-1470) • With the optional BKM-1480, the black level signal generator is available for easy and precise adjustment of black level settings of the monitors • Blue only mode with monochrome display for noise component evaluation • A lockable pull-out drawer gives control access • Comb filter • Fast/Normal/Slow AFC mode switch • Over drive protection protects against picture tube damage • Provided with D-sub 9-pin RS-422 interface for future available remote control unit • 19" rackmountable with optional BKM-2000

Supplied Accessories

- BKM-1410 NTSC decoder • BKM-1411 NTSC comb filter • BKM-2056 auto setup adaptor

BVM-1912 \$10,000.00



BVM-1910

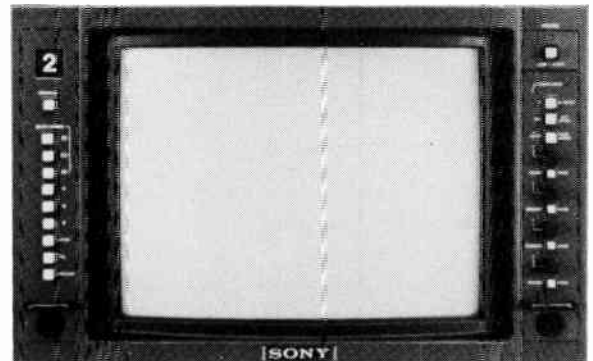
BVM-1910 19" Auto-Setup Color Monitor

- Auto setup capability (optional BKM-2056) • By using optional decoder boards (plug-in type), a maximum of 3 TV standard systems can be selected in the drawer • Component (Y, R-Y, B-Y) and RGB input facilities are available • Stabilized color temperature • Optional component (Y, R-Y, B-Y) and R, G, and B output facilities are available with the BKM-1440 • Split screen (upper half: color; lower half: monochrome) for precise picture confirmation • VITC display facility (with optional BKM-1460) • Safe Area Display facility (with optional BKM-1470) • Pulse cross facility is provided to check the horizontal and vertical syncs simultaneously • Built-in cross hatch and white signal generator (100 IRE) • With the optional BKM-1480, the black level signal generator is available for precise adjustment of black level settings • Blue only mode with monochrome display to evaluate noise components precisely • A lockable pull-out drawer gives access to convergence, color balance, level adjustment and other controls • Over Drive Protection circuit protects against picture tube damage • Super Fine pitch CRT assures a center resolution of 900 TV lines at 30fL • 19" rackmountable with the optional BKM-2000 • Precise convergence; convergence errors are less than 0.4mm at the center and 0.7mm at the edges

Supplied Accessories

- BKM-1410 NTSC decoder board • BKM-1411 NTSC comb filter adaptor • AC power cord • Extension board • 10-pin connector • Tally number plates • Operation and maintenance manual

BVM-1910 \$7,400.00



BVM-1310

BVM-1310 13" Color Monitor

- 700 TV lines center resolution at 40fL • Auto setup capability (option) • 3 TV standard systems out of the 4 TV standard NTSC, PAL, SECAM, or PAL-M can be selected using the optional decoder boards (plug-in type) • Stabilized color temperature obtained by a beam control circuit • Picture setup switch for accurate alignment • Up to 6dB aperture correction at 4.5MHz and 6.5MHz selectable • Built-in cross hatch and white signal generator (100 IRE) • Built-in component (Y, R-Y, B-Y) and RGB input facility with optional output facility • Pulse cross function for simultaneous checking of horizontal and vertical sync • Provides US standard phosphors • Over drive protection circuit protects picture tube from damage • Raster size stability within 1% from 0 to 40fL • Comb filter • 19" rackmountable with optional kit • Split screen (vertical only) for precise picture confirmation • VITC display facility (option) • Blue only mode with B/W display to evaluate noise component precisely • Two lockable pull-out drawers give access to convergence, color balance, level adjustment and other controls • AFC switch provides 3 modes [Fast/Normal/Slow] • Auto/manual degaussing

Supplied Accessories

- AC power cord • 10-pin connector • Screwdriver • Fuses and tally number labels • Operation and maintenance manual

BVM-1310 \$4,650.00



BVM-8021

BVM-8021 8" Portable Color Monitor

- Suitable for ENG/EFP applications • High resolution of 400 TV lines at center (composite input) • Operates with one or two NP-1A battery packs, a 12V car battery, or an AC outlet • BP-90 capability with optional bracket VLC-100 • Easy connection to TV tuner unit TU-1110 series using the tuner connector • Spring loaded control knob prevents control damage • Normal scan/under scan select switch • Blue only mode switch • H/V delay function displays horizontal and vertical sync signals • Input A or input B (BNC or tuner) selectable • Built-in charger for battery pack NP-1A

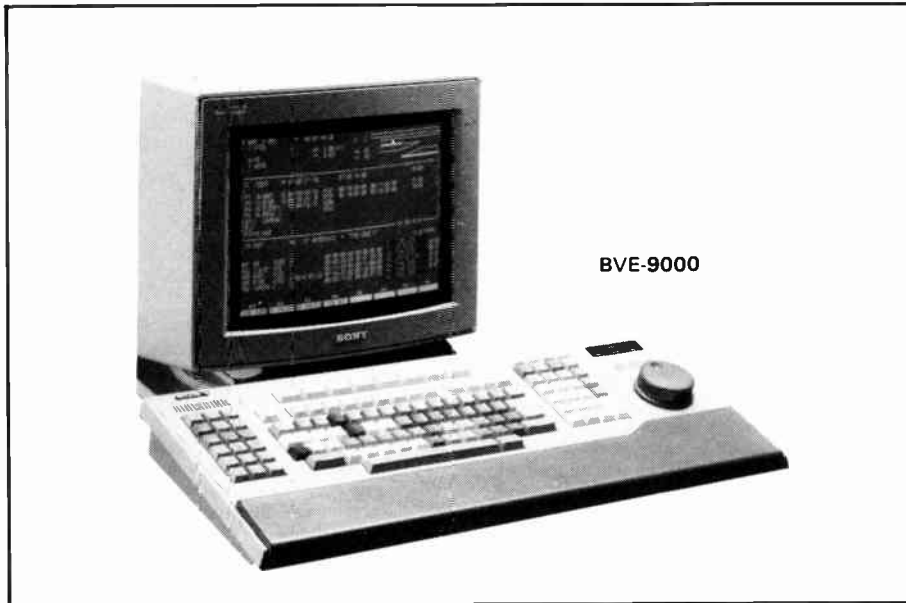
Supplied Accessories

- AC power cord • Hood • Operation and maintenance manual

BVM-8021 \$1,100.00

SONY CORP. OF AMERICA

Editing Control System



BVE-9000 Editing Control System

- Can be configured in its basic form to control 4 VTRs, a video switcher, and an audio mixer, and then be expanded to suit customer requirements
- Operator communicates with the system through dialogues with the CRT which keeps the operator informed of the current editing status
- Sony VTRs, such as the BVH Series 1", Betacam, BVU Series U-Matic and Component Digital VTRs, can be simultaneously controlled
- A maximum of 27 Sony VTRs, equipped with RS-422 interfaces, a video switcher and an audio mixer can be interfaced with the BVE-9000 system
- Standard RS-232 port dedicated for printer use
- Two 3.5" floppy disk drives provided as standard
- Machine control ranges from manual control (fast forward, rewind, shuttle and jog) to automatic control (preroll synchronization and audio recording)
- Dynamic Motion Control (DMC) is standard
- Provides full control of the main functions of the switcher in use
- Editing can be executed on selectable time references — VITC, LTC or CTL can be used individually or in any combination
- Synchronization is selectable from seven grades in order to execute editing under various circumstances
- Up to six player VTRs, two auxiliary inputs and black signals can be utilized as sources to perform assemble editing or insert editing by using Video, Audio 1, 2, 3, 4 in any combination
- Memory capacity provides a total of 512 events as standard and is optionally expandable to 999 events. Additional comments can be added to the EDL data and stored in the memory
- Time code, VTR operation status and the editing process can be superimposed on the sub-picture monitor or the main picture monitor to enable operators to remain informed of the BVE-9000 operations
- Provides powerful self-diagnostics on a block basis, and board basis
- Editing data display is available in either color or monochrome

Specifications

CPU:	16-bit microprocessor, common bus control, operational program in 3.5" floppy disk
Operation:	Data and source control by keyboard with VDU of edit data and source status
Keyboard:	58 keys in typewriter order, color coded; 24 keys for basic functions; 12 keys for system defined and user programmable function keys; 17 self lighted keys for source and monitor select and search dial mode keys; 18 keys for extra functions; Bidirex search control, shuttle, jog, DMC audible alarm
CRT Display:	B/W: 6 x 7 dot matrix x 80 characters x 29 lines, 640 x 261 graphics; Color: 6 x 7 dot matrix x 80 characters x 29 lines, 16 colors, 640 x 261 graphics, 16 colors
Edit Reference:	CTL, LTC (SMPTE/EBU), VITC (SMPTE/EBU)
Edit Accuracy:	±0 frame with time code operation (Normal play mode)
EDL I/O:	Standard 3.5" micro floppy disk, optional 8" floppy disk, printer, TTY, microcomputer, PTP/R
VTR Interface:	Model: BVH, BVW, BVU, DVR-1000/DVPC-1000, and HDV series VTRs. Maximum of 27 VTRs connectable. Maximum of 14 VTRs (6 players and 8 recorders) controllable
Video Switcher Interface:	Grass Valley Group 100/300/1680 series
Audio Mixer Interface:	MXP-29/MXP-2000 series
GPI:	3 standard ports + 32 optional output ports + 8 optional input ports. Programmable pulse output
RS-232C Port:	One standard port (printer) + 4 optional ports. Programmable baud rate and bit
BVE-9000	\$ 15,500.00

SONY CORP. OF AMERICA

Viewfinders/Accessories

BVF-7000Q 7" Color Viewfinder

- Specially designed for use with BVP-360
- Various camera indications provided in viewfinder
- Wide range of mechanical positioning
- Dimensions and camera interface compatible with BVF-70 7" viewfinder
- High resolution from Super Fine Pitch Trinitron (0.2mm center, 0.25mm side)
- Underscan display
- RGB inputs from camera give high quality color monitoring
- Composite video input for return video display

BVF-7000Q \$8,500.00

BVF-70 7" B/W Viewfinder

- Specially designed for use with the BVP-360—for direct camera installation
- High resolution, 800 TV lines at center
- Various camera indications provided in viewfinder
- Wide range of mechanical positioning

BVF-70 \$4,950.00

BVF-50 5" B/W Viewfinder

- 600 TV lines resolution at center
- Adjustable center position marker with on/off switch
- Panning and tilting facility
- For all BVP series portable cameras

BVF-50 \$2,250.00

CCU-300L Camera Control Unit

- AC/DC 2-way power operation
- 600m max. power operation
- Genlock function
- Multi and mixing monitor
- Double jacks for headset

CCU-300L \$9,000.00

AC-500/500CE AC Adaptor

Supplies DC power to Sony BV-series equipment; genlock functions by means of a VBS signal; AC power cord and DC cord 2m (1-551-258-00) with XLR-4P supplied; Power Requirements: 100/120/220/240VAC adjustable, 50/60Hz; Power Consumption: 120W max.; Input/Output Terminals: Camera connector (14-pin); Video out connector (BNC type) NTSC 1V p-p, 75 ohms; Mike out connector (equivalent to XLR-3-31), Reference Output: -60dBm 600 ohms, balanced; DC out connector (equivalent to XLR-4-31), + 12.3V, 7A; Ext. VBS input connector (BNC type), VBS (1V p-p) or BS, 75 ohms; 9 lbs., 8 oz.; 3.6"H x 8.5"W x 12.9"D \$590.00

BC-210/210CE Battery Charger For BP-90

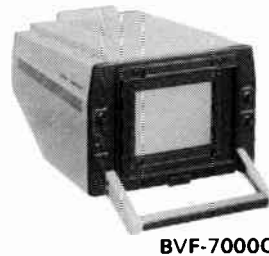
Battery charger for BP-90 battery packs; up to four BP-90 batteries; AC power cord supplied; Power Requirements: 100/120/220/240VAC adjustable, 50/60Hz; Power Consumption: 70W; Output Terminals: Battery jacks (for charging x 4) 2.0A (typical); Charging Time: Approx. 2 hrs. per BP-90; 11 lbs., 7 oz.; 3.6"H x 8.5"W x 12.4"D . . . \$890.00

BC-1WA Battery Charger For NP-1A

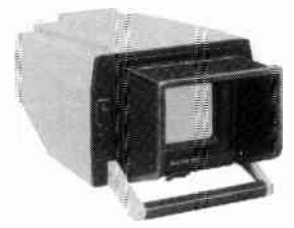
The BC-1WA is a battery charger for the NP-1A battery pack used in the Betacam; Up to four NP-1A batteries can be charged sequentially; Power Requirements: 120VAC ± 10%, 50/60Hz (for USA and Canada), 220 to 240VAC ± 10%, 50/60Hz (for Europe and UK); Power Consumption: 58W; Charging Time: Approx. 1 hr. (max. 2 hrs.); Rechargeable Battery: NP-1A only (per NP-1A); 5 lbs., 5 oz.; 3.1"H x 4.2"W x 10.3"D \$460.00

DC-100 Battery Case For NP-1A

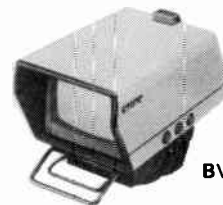
Battery case for one NP-1A battery; specially designed for the BVV-1A Betacam recorder; Metal fitting x 2, Screw (B 3 x 6) x 2, Screw (B 4 x 6) x 2 and Lace supplied; 10 oz.; 8"H x 3.3"W x 2"D \$265.00



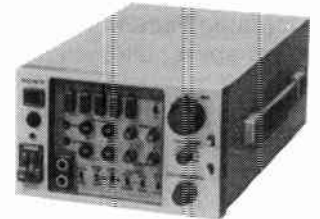
BVF-7000Q



BVF-70



BVF-50



CCU-300L



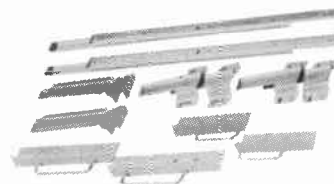
AC-500/500CE



BC-210/210CE



DC-100



RMM-100



BP-90

DC-300 Battery Case For BP-90

BP-90 battery case (one BP-90) for BVP-350 camera and CA-50/CA-3A/CA-30/CA-300 equipped cameras; 1 lb., 3 oz.; 7.3"H x 6.4"W x 1.9"D \$595.00

DC-310 Battery Case For NP-1A

Battery case for BVP series 3-tube cameras and CA-3/CA-30/CA-300 equipped cameras; Up to two NP-1 batteries can be carried; Holder x 1 and Screws x 1 set supplied; 1 lb., 6 oz.; 8"H x 3.5"W x 3.1"D \$550.00

RMM-100 Rackmount Kit

Can be rackmounted on a standard 19" rack or system console. For all Studio Betacam VTRs \$325.00

RMM-301 Rackmount Kit

The DCU-300 CCU adaptor and the CCU-300 can be rackmounted side by side in a standard EIA rack; 10 lbs., 6 oz.; 5.2"H x 19"W x 13"D \$175.00

BP-90 Rechargeable Battery Pack

Type of Battery: NiCad rechargeable; Voltage: 12V; Current Capacity: 3.5AH; 3 lbs., 12 oz.; 6.9"H x 4.8"W x 15.1"D \$365.00

NP-1A Rechargeable Battery Pack

Type of Battery: NiCad rechargeable; Voltage: 12V; Current Capacity: 1.5AH; 1 lb., 8 oz.; 1"H x 2.8"W x 7.3"D \$85.00

SONY CORP. OF AMERICA

Audio Recorder/Reproducers

**APR-5000 Series
Analog Audio Recorder/Reproducers**

Common Features

- Transport built on a rigid cast chassis
- 16-bit microprocessor control
- Precision tape counter with both location and go-to displays
- Forward reverse tape shuttling and wind speed control through Manual Velocity Control (MVC)
- ± 50% vari-speed range
- Automatic reel size sensing
- Ceramic capstan shaft
- 400kHz bias frequency for low modulation noise, low distortion and reduced "edit squeal"
- Spot erase function sensing
- Microprocessor-managed audio alignments with non-volatile parameter memory
- Instant recall of "personality" presets upon plug-in of alternative head block units
- Standard monitor amplifier and speaker
- Standard headphone output
- Integral editing block
- Quick-change, alignment stable head block units
- Optional stand (SU-14) allows for 15° angle positioning
- 102 lbs., 110 lbs. with SU-14 stand
- 16 1/4" H x 19" W x 19 7/8" D, with SU-14 stand 43" H x 22 1/8" W x 20 1/2" D

APR-5002 Audio Recorder

Specifications

Frequency

Response: Record/Reproduce — 30ips, AES: 50Hz-28kHz +0.75/-3dB; 15ips, NAB: 30Hz-24kHz +0.75/-2dB; 7.5ips, NAB: 30Hz-20kHz +0.75/-1.5dB; **Record/Sync** — 30ips, AES: 50Hz-20kHz +0.75/-3dB; 15ips, NAB: 30Hz-16kHz +0.75/-2dB; 7.5ips, NAB: 30Hz-8kHz +0.75/-1dB

Total Harmonic

Distortion: 30ips, AES < 0.025%, 15ips, NAB < 0.035%, 7.5ips, NAB < 0.055%

Bias and Erase

Frequency: Bias — (400kHz), Erase — (100kHz)

APR-5002 TBA

APR-5002H Audio Recorder

All Common Features Plus

- 1/2" tape width
- 2 channels
- Master recorder



Specifications

Frequency

Response: Record/Reproduce — 30ips, AES: 40Hz-25kHz +0.75/-3dB; 15ips, NAB: 25Hz-24kHz +0.75/-2dB; 7.5ips, NAB: 25Hz-22kHz +0.75/-2dB; **Record/Sync** — 30ips, AES: 40Hz-25kHz +0.75/-3dB; 15ips, NAB: 20Hz-20kHz +0.75/-2dB; 7.5ips, NAB: 20Hz-10kHz +0.75/-2dB

Total Harmonic

Distortion: 30ips, AES < 0.025%, 15ips, NAB < 0.035%, 7.5ips, NAB < 0.055%

Bias and Erase

Frequency: Bias — (400kHz), Erase — (100kHz)

APR-5002H TBA

APR-5002W "Wide Profile" Audio Recorder

All Common Features Plus

- Wide profile headstack (amorphous material heads)
- Extended low frequency response with uniformity and extended head life

APR-5002W TBA

APR-5003 "Center Track" Audio Recorder

All Common Features Plus

- IEC center track for time code
- Time code generator/reader
- Chase-lock synchronizer
- Dynamic sync offset adjustment

APR-5003 TBA

SONY CORP. OF AMERICA

Digital Audio Recorder

**PCM-3402 2-Channel DASH
(Digital Audio Stationary Head) Recorder**

- Electronic editing facility with 16-bit memory
- Digital fader and digital balance trim
- Programmable time code functions
- Synchronization with a video sync signal
- Versatile inputs/outputs, multiple digital formats
- Time code generator/reader
- Extended synchronization facilities
- Time code auto-conversion capability
- Two types of remote interfaces
- Sync recording (punch in/punch out) capability
- Flexible digital level meter
- 16M bit digital memory
- Shuttle (manual velocity control) facility
- Variable speed $\pm 12.5\%$
- Reduced power consumption
- With supplied stand, 169 lbs., 13 oz.

Specifications

Recording Format:	DASH-S/TWIN-DASH selectable
Number of Channels:	Digital audio x2, time code and cue x2
Tape Speed:	Low: 19.05cm/sec. (7.5 ips, at fs=48kHz) or 17.50cm/sec. (6.89 ips, at fs=44.1kHz); High: 38.1cm/sec. (15 ips, at fs=48kHz) or 35.00cm/sec. (13.78 ips, at fs=44.1kHz)
Recording Time:	Low: 3 hours max.; High: 1.5 hours max.
Rise Time:	0.7 sec.
FF/Rew. Time:	Approx. 3.5 minutes (10.5" reel)
Synchronization Accuracy:	Within 0.4msec.
Editing Accuracy:	Within 1msec (electronic editing)
Sampling Frequency:	48kHz/44.1kHz/44.056kHz (selectable)
Quantization:	16-bit linear
Dynamic Range:	>90dB (emphasis on)
Frequency Response:	20 ~ 20,000Hz
Total Harmonic Distortion:	<0.05% at 1kHz
Inter-Channel Crosstalk:	>80dB at 8kHz (max. input level)
Digital Level Control:	+12dB ~ - ∞
Cross-fade:	0 ~ 10.7msec. (16 steps, punch in/out edit); 0 ~ ∞ 21.3msec. (16 steps, splice edit)
Emphasis:	50 μ sec./15 μ sec.
Inputs/Outputs	
Line In:	(x2) — +4dBs (+24dBs max.), adjustable range: -2dB ~ +10dB, 10K ohms, transformerless, balanced, XLR-3-31
Line Out:	(x2) — +4dBs (+24dBs max.) 600 ohm load, adjustable range: -10dB ~ +2dB, <50 ohms, transformerless, balanced, XLR-3-32
Aux. Track In:	(x2) — +4dBs (+14dBs max.), 10K ohms, transformerless, balanced, XLR-3-31
Aux. Track Out:	(x2) — +4dBs (+14dBs max.) 600 ohm load, <50 ohms, transformerless, balanced XLR-3-32
Digital Interface In:	(x2) — AES/EBU and SDIF-2 (Sony Digital Interface Format) selectable, AES/EBU: RS422, XLR-3-31, SDIF-2: TTL compatible, BNC

**Digital Interface Out:**

(x2) — AES/EBU and SDIF-2 (Sony Digital Interface Format) selectable, AES/EBU, RS422, XLR-3-32, SDIF-2: TTL compatible, BNC

Composite Sync In:

(x1) — NTSC/PAL/SECAM, >0.3V p-p, 75 ohms, BNC

**Time Code In:
Time Code Out:**

(x1)
(x1) — SMPTE/EBU format, 200 ohms, balanced, XLR-3-32

Serial Remote Control In/Out:

(x1) — Sony 9-pin remote, RS-422, D-sub-9s

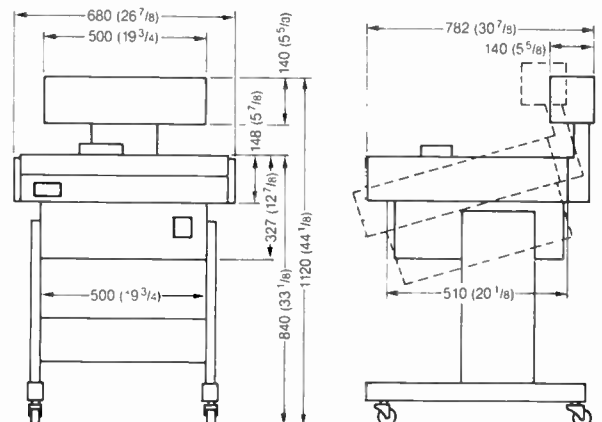
Supplied Accessories

- Stand
- 10.5" empty reel
- Power cord
- Extension board
- 9-pin cable
- Reel crampers

PCM-3402TBA

Dimensions

PCM-3402



Dimensions: mm (inches)

SONY CORP. OF AMERICA

Digital Audio Recorders

PCM-3324 Digital Audio Multi-Channel Recorder

• 24 channel digital audio recorder complying with "Digital Audio Stationary Head" (DASH) format • One full hour of high fidelity recording with 1/2" wide, 14" reel tape • Switchable 48kHz and 44.1kHz sampling frequencies • Bi-directional manual search to any desired point on the tape using shuttle dial • Auto locate of any cue point • Electronic punch in/out with crossfade variable in 16 steps: Splice editing also possible • Four memories each for cue points, channel setups, and channel groups • Precision-engineered heads for exceptional durability, recording density and accuracy • Tension servo controlled heavy-duty tape transport with BSL capstan motor • Variable pitch control ($\pm 12.5\%$) and half-tone adjustment • External synchronization and external servo control possible • 16 segment LED peak level meter for each channel • 485 lbs., 1.6 oz. • 39 1/2" H x 32 3/4" W x 29 1/4" D

Specifications

Number of Tracks: 28 tracks, 24 PCM tracks, CTL (control) track, EXT data track, and 2 tracks for analog audio signals

Tape Speed: 66.5cm/s (sampling rate at 44.1kHz); 72.38cm/s (sampling rate at 48kHz)

Tape: Digital audio master tape, D-1/2-2920 (65 minutes at 44.1kHz), D-1/2-1460 (33 minutes at 44.1kHz)

Sampling Rate: 44.1kHz and 48kHz (switchable)

Quantization: 16 bit linear/channel

S/Noise Ratio: > 90dB (Emphasis On at 1kHz)

Frequency Response: 20Hz to 20kHz, +0.5dB to -1.0dB

Power Supply: 100-120VAC model; 220-240VAC model, 50/60Hz approx. 2kVA

Total Harmonic Distortion: < 0.05%

Emphasis: On/Off switchable



PCM-3324

Wow and Flutter: Undetectable

Rec and Play Time: 65 minutes (14" reels at 44.1kHz); 60 minutes (14" reels at 48kHz)

Rewind and Fast Forward Time: 4 3/4 minutes (14" reels); 2 3/4 minutes (10.5" reels)

Channel Coding: HDM-1 (High Density Modulation)

Error Correcting: CRCC and Cross Interleave Code

Editing: Sync recording, punch in/out and splice free. (Cross fading at every editing point)

PCM-3324TBA

PCM-2500 Digital Audio Recorder

• Sampling frequencies of 44.1kHz or 48.0kHz are selectable for analog input, depending on which best suits your requirements • The 32kHz, 44.1kHz*, and 48.0kHz are ready for the digital input • Records the "start ID" in the sub-code area during both recording and playback and its timing is available • Digital I/O's correspond to AES/EBU, SDIF-2, and S/P DIF, to allow easy interfacing with other digital equipment • Two box construction consisting of the recorder and the interface unit which has the professional analog audio digital I/O's • Built-in error indicator, indicates the error conditions by 2 types of LEDs • Emphasis on/off • Wireless/wired remote control capability • The cue/review function makes finding specific points fast and easy • Master safe function, which helps prevent mis-erasure, is available. With this function, the recording is inhibited

*The 44.1kHz sampling frequency cannot be used through the S/P DIF

Specifications

Error Correction: Double-encoded RSC

Tape Speed: 8.15mm/sec. at $f_s = 48, 44.1, 32$ kHz; 12.23mm/sec. at $f_s = 44.1$ kHz (only playback for wide track mode)

Recording Time: Max. 120 min. (13.0 μ m tape, Sony DT-120)

Rewind and Fast Forward Time: Approx. 1 min. (with Sony DT-120)

Start ID Timing Accuracy: 0.3 sec.

Tape: Metal particle

Sampling Frequency: 32kHz (digital input only); 44.1kHz, 48kHz

Quantization: 16-bit linear

Dynamic Range: > 90dB (emphasis on at 1kHz)

Frequency Response: 2-22,000Hz at $f_s = 48$ kHz; 2-20,000Hz at $f_s = 44.1$ kHz

Total Harmonic Distortion: < 0.005% at +4dBs



PCM-2500

Wow and Flutter: Limited only by crystal oscillation accuracy

Crosstalk: > 85dB at 1kHz

Emphasis: On/off switchable 15 μ sec./50 μ sec.

Input/Output: Line In: Ref. level +4dBs +8/-10dB, max. 24dBs, 44K ohms, balanced, transformerless, XLR-3-31 x 2; Line Out: Ref. level +4dBs +8/-10dB, max. 24dBs, 100 ohms, balanced, transformerless, 600 ohm load permissible, XLR-3-32 x 2; Digital Interface I/O — AES/EBU: RS-422, XLR-3-31 (in), XLR-3-32 (out); SDIF-2: TTL compatible, BNC; S/P DIF: 0.5V p-p, phono; Word Sync Out: TTL compatible, 75 ohms, load permissible, BNC; Remote: Wireless and wired, stereo phone

Power Requirements: 100/120/220/240VAC, 50/60Hz

Power Consumption: Recorder: Approx. 37W; Interface Unit: Approx. 12W

Weight: Recorder: 26 lbs., 8 oz.; Interface Unit: 11 lbs., 1 oz.

Dimensions: Recorder: Approx. 4" H x 17" W x 16 5/8" D; Interface Unit: Approx. 4" H x 17" W x 15 3/8" D

PCM-2500TBA

SONY CORP. OF AMERICA

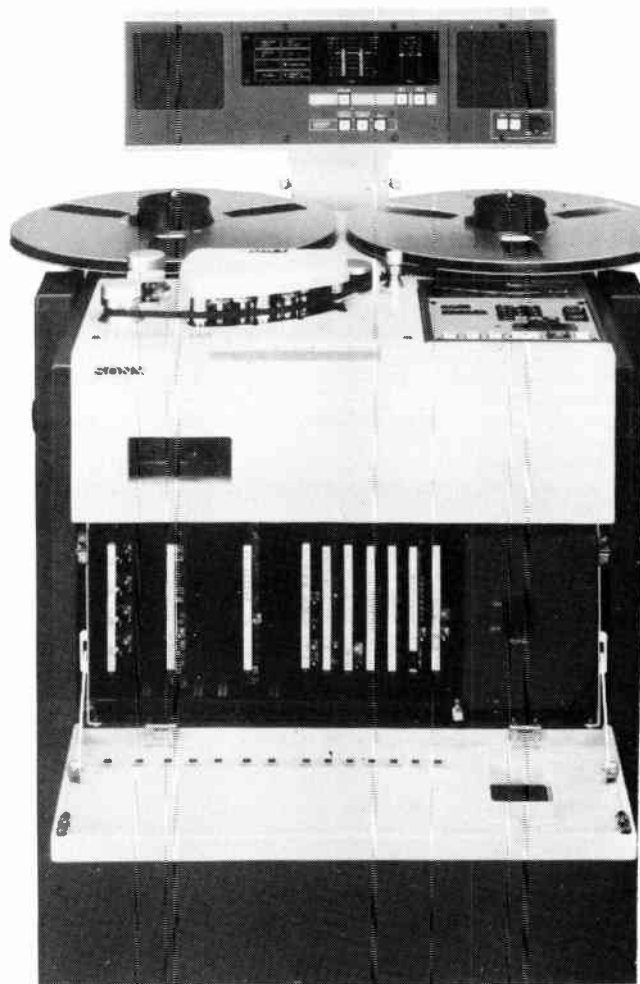
Digital Audio Recorders

PCM-3102/PCM-3202 2-Channel DASH (Digital Audio Stationary Head) Recorders

- Cut and splice editing
- Built-in time code generator readers
- Chase synchronization facility available
- Selectable sampling frequencies
- Versatile inputs/outputs
- Synchronization with a composite sync signal
- Tape/time control keyboard
- Approx. 147 lbs. with stand

Specifications

	PCM-3102	PCM-3202
Recording Format:	DASH-S	TWIN-DASH
Number of Channels:	Digital audio x 2, Time code, and Cue x 2	
Tape Speed:	19.05cm/sec. (7.5 ips, at fs = 48kHz) or 17.50cm/sec. (6.89 ips at fs = 44.1kHz)	38.1cm/sec. (15 ips, at fs = 48kHz) or 35.0cm/sec. (13.67 ips at fs = 44.1kHz)
Tape Speed Deviation:	± 0.2%	
Variable Speed Range:	± 12.5%	
Recording Time:	Approx. 3 hours max. (12.5" reel)	Approx. 1.5 hours max. (12.5" reel)
Rise Time:	0.7 sec.	
FF/Rew Time:	Approx. 4 minutes (10.5" reel)	
Synchronization Accuracy:	Within 0.4msec (using the built-in synchronizer)	
Sampling Frequency:	48kHz/44.1kHz (selectable)	
Quantization:	16-bit linear	
Dynamic Range:	> 90dB (emphasis on)	
Frequency Response:	20 - 20,000Hz, +0.5dB, -1.0dB	
Total Harmonic Distortion:	< 0.05% at 1kHz	
Inter-Channel Crosstalk:	> 80dB at 1kHz (max. input level)	
Digital Level Control:	-	
Cross-Fade:	3 - 20msec (16 steps)	3 - 10msec (16 steps)
Emphasis:	50µ sec/15µ sec	
Inputs/Outputs		
Line In (x2):	+4dBs (+24dBs max.), adjustable range -6dB +10dB, 10K ohms, transformerless, balanced, XLR-3-31 +4dBs (+24dBs max), 10K ohm load, adjustable range -6dB - +10dB, < 120 ohms, transformerless, balanced, XLR-3-32	
Line Out (x2):	+4dBs (+24dBs max), 10K ohm load, transformerless, balanced, XLR-3-31 +4dBs (+24dBs max), 10K ohm load, < 120 ohms, transformerless, balanced, XLR-3-32	
Aux Track In (x2):	+4dBs (+24dBs max), 10K ohm load, transformerless, balanced, XLR-3-31	
Aux Track Out (x2):	+4dBs (+24dBs max), 10K ohm load, < 120 ohms, transformerless, balanced, XLR-3-32	
Digital Interface In (x2):	AES/EBU and SDIF-2 (Sony Digital Interface Format) selectable, AES/EBU: RS422, XLR-3-31 SDIF-2: TTL Compatible, BNC	
Digital Interface Out (x2):	AES/EBU and SDIF-2 (Sony Digital Interface Format) selectable, AES/EBU: RS422, XLR-3-32 SDIF-2: TTL compatible, BNC	



PCM-3102/3202

Composite Sync

In (x1): NTSC/PAL/SECAM, 1V p-p, 75 ohms, unbalanced, BNC

Time Code In (x1): SMPTE/EBU format, 10K ohms, balanced, XLR-3-31

Time Code Out (x1): SMPTE/EBU format, 120 ohms, balanced, XLR-3-32

Note: 0dBs = 0.775Vrms

Supplied Accessories

- 10.5" empty reel
- Power cord
- Extension board
- Reel crampers
- Rubber reel shims

PCM-3102 TBA
PCM-3202 TBA

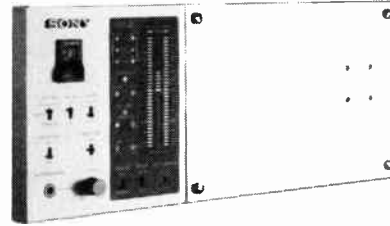
SONY CORP. OF AMERICA

*Digital Audio Equipment/
Compact Disc System*

PCM-1630 Digital Audio Processor

- 2-channel digital audio processor with 16-bit linear quantization
- Fully compatible with PCM-1610
- Switchable 44.1kHz and 44.056Hz sampling frequencies
- RAR for improved reproduction reliability, using optional DABK-1630 board and DMR-4000 recorder
- 16-bit linear quantization dynamic range
- Analog filter and oversampling digital filter
- Wide 20-20,000Hz + 0.5-1.0dB frequency response
- 57 lbs., 5 oz.
- 7⁷/₈" H x 16³/₄" W x 20⁷/₈" D

PCM-1630TBA



PCM-1630

DMR-4000 Digital Master Recorder

- Additional confidence heads for simultaneous monitoring of the signal being recorded (RAW)
- Two composite digital outputs (main/sub) to be supplied to the PCM-1630 with the DABK-1630, for reliable RAR operation that minimizes the effect of code errors on the reproduced sound
- Built-in time code generator/reader for recording the SMPTE time code on Aux channel 2
- A front panel switch allows selection of the free run, rec run, or re-generate mode
- Built-in head cleaner
- 8-pin connector for single cable connection to the DAE-3000 or PCM-1630 (with DABK-1630)
- Built-in 9-pin remote interface
- Simple editing without the need for an editor
- 9.53cm/sec tape speed
- Reliable mechanism for long-term high performance
- Power consumption: 170W
- Power requirements: 100/120/220/240VAC selectable

DMR-4000TBA



DMR-4000

DMR-2000 Digital Master Recorder

- Built-in time code generator/reader for recording the SMPTE time code in 3 different modes: auto stop, free run, and re-generate
- Built-in head cleaner
- Optional IF-5850DA for connection to the DAE-3000
- 9.53cm/sec tape speed
- Built-in 9-pin remote interface
- Power consumption: 85W
- Power requirements: 100/120/220/240VAC

DMR-2000TBA



DMR-2000

DTA-2000 Digital Tape Analyzer

- Allows testing of the error status of digital audio recording
- Connects to any printer with Centronics compatible interface for printing out a sequential list of CRC, Average, Hold, Mute and Parity errors as well as the sampling frequency, time code mode (drop frame/non-drop frame), time code jump and emphasis On/Off
- Power requirements: 100-120/220-240VAC, 50/60Hz
- 9 lbs., 15 oz.
- 13¹/₄" H x 16³/₄" W x 13" D

DTA-2000TBA



DTA-2000

DAQ-1000 Cue Editor

- Cue editor used in compact disc mastering
- Capable of producing subcode data in the form of Table of Contents (TOC) and recording them onto audio track of master tape recorded on PCM-1630/VTR combination
- Memory function to store subcode information, with selectable Direct, Editor Transfer and Edit input modes
- 99 auto locate points
- Built-in printer for making hard copies of data
- With optional DABK-1000 PQ generator added, subcode data can be recorded on P and Q channels of compact discs
- Compatible with DMR-4000, BVU-8000DB or DMR-2000 with IF-5850DA interface box
- Power requirements: 85-276VAC, 50/60Hz
- Processor—32 lbs., 1 oz.; Keyboard—18 lbs., 12 oz.
- Processor—5⁵/₈" H x 16³/₄" W x 19³/₈" D; Keyboard—4" H x 16³/₄" W x 15" D

DAQ-1000TBA



DAQ-1000

Compact Disc Mastering System

- Digital 2-channel recording
- Improved reliability—Read After Read (RAR) and Read After Write (RAW)
- 75-minute recording on a digital audio master cassette tape
- Electronic editing
- High editing resolution (363µs)
- No quality deterioration
- Edit RAW for real time monitoring of both recorder and player
- Rehearsal/review/revision functions
- CD subcode (P.Q.) editing
- Flexible 3-mode operation
- Automatic generation of subcode (PQ) data for recording on the master tape
- Check/revision facilities
- Data printing out

Compact Disc Mastering SystemTBA

SONY CORP. OF AMERICA

**Digital Audio Editor/Limiter/
Remote Meter**

DAE-3000 Digital Audio Editor

- System expandability
- User-friendly keyboard
- Flexible EL display
- Recorder control
- Edit point search with memory rehearsal
- Automatic editing
- Unmatched precision
- Improved crossfading
- Built-in time code generator/reader
- Self-diagnostics
- Low power consumption
- Player select keys
- Function keys
- Balance/fader controls
- Search dial
- Edit mode keys

Specifications

Inputs/Outputs: Digital I/O—SDIF-2 (BNC), AES/EBU (XLR type); Composite Digital—(BNC, B-pin); Remote I/O—(RS-422, P2 protocol)
Max. 4 units

Player Connection: Max. 4 units

Search Mode

Memory Capacity: Approx. 6 seconds (16-bit, stereo)

Fader Level Control: +6dB to $-\infty$ or +12dB to $-\infty$ (switchable)

Balance Control: 0dB to -3dB (0.2dB steps) or 0dB to -6dB (0.4dB steps) switchable

Crossfade Time: 0 to 999msec.

Auto Locate Accuracy: ± 1 frame (with DMR-4000/2000)

Preroll Time: 0 to 59 sec.



DAE-3000

Editing Resolution: 23 μ sec. equivalent to one sample with PCM-1630

Power Requirements: 100-240VAC, 50/60Hz

Power Consumption: 60W

Weight: Processor—55 lbs., 2 oz.; Keyboard—15 lbs., 6 oz.

Dimensions: Processor—9 $\frac{5}{8}$ " H x 16 $\frac{3}{4}$ " W x 20 $\frac{1}{8}$ " D; Keyboard—13" H x 16 $\frac{3}{4}$ " W x 13 $\frac{5}{8}$ " D

Supplied Accessories

- DABK-3001 interface kits (x 2)
- Extension board (x 1)
- Keyboard cables (15-pin x 1, 10m)
- Composite digital cables (B-pin x 2)
- Remote cables (9-pin x 2)
- AC power cord (x 1)

DAE-3000TBA

DAL-1000 Digital Audio Limiter

- Can achieve the "0 word" attack time
- Compact circuits replace conventional ICs and reduce the size and power consumption
- Interface: Complete digital coupling equipped with SDIF-2 (Sony Digital Interface Format) and AES/EBU format
- Allows the setting of 2 kinds of limiter curves
- 5 programmable preset memories for parameter setup
- Supplied with a wired remote control system for direct and quick access from the console, with 5m cable



DAL-1000

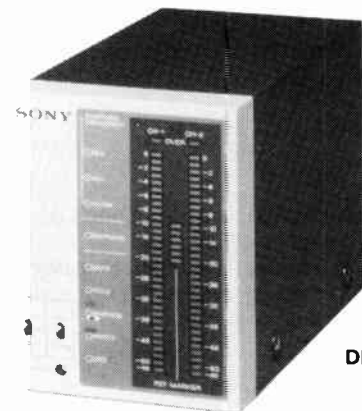
- Sampling Frequency: 44.056kHz, 44.1kHz, 48kHz (auto select)
- Main Unit: 9 lbs., 5 oz.; Remote Control Unit: 1 lb., 13 oz.
- Main Unit: 1 $\frac{3}{4}$ " H x 19" W x 12 $\frac{5}{8}$ " D; Remote Control Unit: 7 $\frac{1}{8}$ " H x 4 $\frac{3}{4}$ " W x 13 $\frac{1}{16}$ " D

DAL-1000TBA

DMU-30 Digital Remote Meter

- 32 segment LED type metering section (with overload indicator)
- Reference Marker: Reference signal level from -10 to -20dB
- Meter Fine Mode: 0.2dB steps
- Peak Hold: 1.5 or 4 seconds
- 2 types of data input with through output (same as PCM-1630/1610) status in/out, AES/EBU digital audio in/out
- Remote control facility for "peak hold reset" and "fine mode select"
- Indicators for CRC/Parity/Average/Hold
- Approx. 5 lbs., 8 oz.
- 5 $\frac{1}{4}$ " H x 4 $\frac{1}{4}$ " W x 7 $\frac{1}{2}$ " D

DMU-30TBA



DMU-30

SONY CORP. OF AMERICA

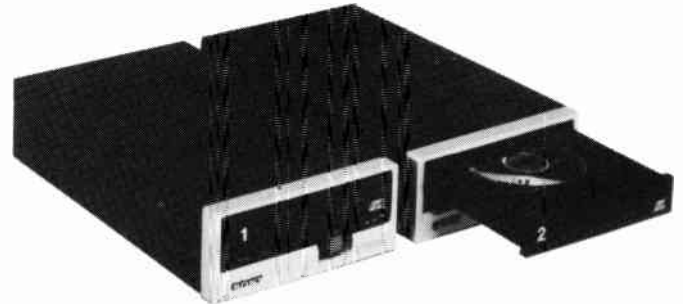
CD Players/Loader

CDP-3000/CDS-3000**Professional Compact Disc Player System**

- Separate player and control unit
- 10-key direct access and bi-directional search
- Programmed play
- Flexible monitoring
- Digital time display
- Remote start/stop
- T-type, optical pick-up

Specifications (CDP-3000)

Readout System:	Non-contact optical system using semiconductor laser pick-up
Distortion:	*0.015% (20-16,000Hz)
Dynamic Range:	> 92dB
Crosstalk:	88dB (at 1kHz), 70dB (at 20kHz)
Access Time:	Within 2 seconds
Frequency Response:	20-20,000Hz, +0.5, -1.0dB
Outputs:	Line out (Cannon XLR-3-32 type, 2 pcs.) + 4dBs (+ 6 to -20dBs variable) 600 ohms, balanced
Error Correction:	Sony Super Strategy Cross Interleave Reed Solomon Code (CIRC)
D/A Conversion:	16-bit linear
Dimensions:	37/8" H x 8 1/2" W x 18 3/4" D
Weight:	Approximately 17 lbs., 10 oz.
Supplied Accessory:	Data interface cable
CDP-3000	TBA



CDP-3000

Specifications (CDS-3000)

System:	Control unit for CDP-3000 compact disc player unit (Two units can be connected and controlled at a time)
Output:	Headphones (stereo phone jack, 20mW + 20mW at 8 ohm load)
Memory:	8 memory addresses for programmed play of up to 8 music selections randomly selected from 2 discs
Weight:	7 lbs., 4 oz.
Dimensions:	4" H x 13 1/4" W x 9 1/4" D
CDS-3000	TBA



CDS-3000

CDP-5000 Compact Disc Player

- Reference compact disc playback machine designed specially for use in broadcasting stations
- Sony's original T-type laser optical pick-up system
- Constant Linear Velocity (CLV) servo-controlled mobile disc table
- 10-key direct access and 2-speed manual search — access time of less than 2 seconds with a precision of 1 frame (13.3 milliseconds)
- Balanced line outputs, XLR-3-32 type connectors
- Power requirements: 120VAC, 60Hz or 220/240VAC, 50/60Hz
- 115 lbs.
- 19 3/4" H x 34 1/8" x 22 1/4"

CDP-5000

TBA



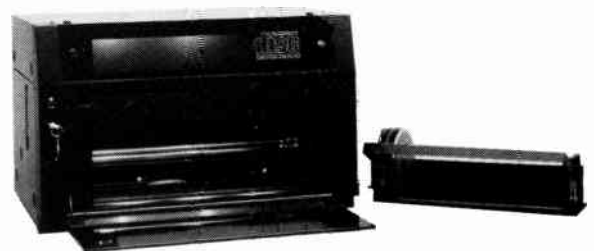
CDP-5000

CDK-006 Automatic Compact Disc Loader

- Can house up to 60 CDs
- Controlled by an external 8-bit microprocessor controller
- Detachable CD storage trays provide fast and easy tray exchange
- Self diagnostic capability
- Dual phono outputs
- 9 lbs., 7 oz.
- 19 3/4" H x 12 1/2" W x 16 5/8" D

CDK-006

TBA



CDK-006

MXP-3000 Series**Automated Audio Recording/Remixing Consoles**

- Frame accurate automation, fader and mutes, in all modes, read, write and update, menu driven system
- 20M byte hard disk drive storage system with 1M byte floppy disk for up/down loading of automation data
- Infrared remote keyboard for automation control from console
- 8 automated sub groups
- Electronically latched mutes
- Perpetual update mode
- Snapshot displays of faders and mutes
- 122 minutes of on-line storage
- Oxygen free copper cables and gold plated connectors (internal)
- Low noise hybrid amplifiers throughout
- Available in two frame sizes, 20 and 36 inputs, automated or non-automated versions
- 24 track dedicated bus assigns
- External microphone power supply (DC48V Phantom Power)
- Six sends: 1-4 mono, 5-6 stereo pair with pan control, all pre or post fader, with selectable channel or monitor location with level control
- 4 echo returns with PFL
- Switchable control room outputs to feed up to 4 sets of monitors
- 2-stage peak indicators at either mic preamp or EQ output
- Variable bus control from -14 to +5dBm
- Patchless audio sub grouping mode, allows any of the first 24 I/O modules to be assigned as an audio group master
- Metering, choice of mechanical VU or PPM meters, VF light meters
- Modular patch bay

Specifications**Inputs**

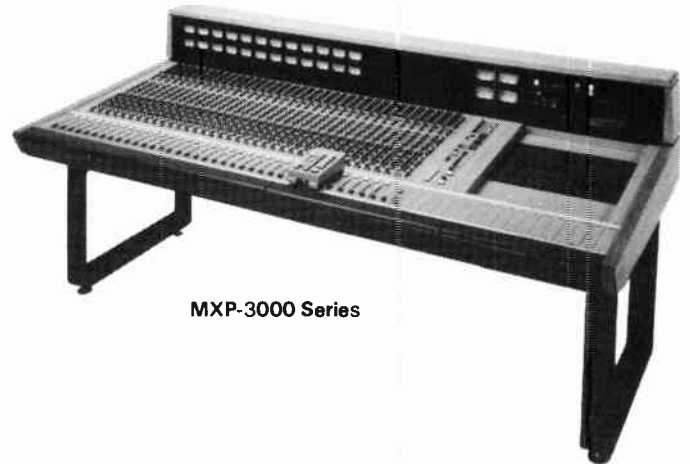
- Mic:** Up to 72 channels with dual mic inputs
Gain: Variable/switchable gain 15 to 35, 30 to 65dB
Max. Level: +7dBs, 1.2K ohms, balanced, transformer/transformerless (opt.)
Line: Up to 72 channels with dual line inputs
Ref. Level: +4dBs (± 10 dB)
Max. level: +28dBs, 10K ohms, balanced, transformerless/transformer (opt.)

Outputs

- Line:** Line 24 channels assignable up to 20 additional direct outputs
Ref. Level: +4dBs at 10K ohm load
Max. Level: +28dBs at 10K ohm load
Impedance: 120 ohms, balanced, transformerless/transformer (opt.)
Aux Send: (1-6), 2 MIX (L, R), Mono
Ref. Level: +4dBs at 10K ohm load
Max. level: +28dBs at 10K ohm load
Impedance: 120 ohms, balanced, transformerless/transformer (opt.)

Control Room

- Monitor:** (L, R), studio monitor (L, R)
Ref. Level: +4dBs at 10K ohm load
Max. Level: +28dBs at 10K ohm load
Impedance: 120 ohms, balanced, transformerless



MXP-3000 Series

- Frequency Response:** 20 ~ 20,000Hz ± 0.5 dB
Harmonic Distortion: < 0.003% (line in line out, +20dBs in), < 0.02% (Line in 2 mix out, +4dBs in)
- Equivalent**
Input Noise Mic: < -128dBs (20 ~ 20kHz, -0.5dB)
Line: < -110dBs (20 ~ 20kHz)
Noise Level: < -93dBs (line input tracks), < -85dBs (line input to 2-mix)
Crosstalk: < -80dB adjacent channel line inputs, at 15kHz, < -60dB (between channel and 2 mix ACN buses, at 15kHz)
- Equalizer**
Wien Fixed: MXBK-EQ31 Q adjustment: fixed at 1.5
 High: 8kHz ~ 20kHz ± 15 dB, shelving/peaking; Mid: 800Hz ~ 8kHz ± 15 dB; Mid: 150Hz ~ 2.5kHz ± 15 dB; Low: 40Hz ~ 250Hz ± 15 dB, shelving/peaking
Q Type: MXBK-EQ34 Q adjustment: fixed at 1.7; HIGH: Selectable 2kHz, 4kHz, 8kHz, 16kHz ± 15 dB, shelving/peaking; MID: selectable 480Hz, 1kHz, 2kHz, 4kHz ± 15 dB; MID: selectable 120Hz, 240Hz, 480Hz, 1kHz ± 15 dB; LOW: selectable 30Hz, 60Hz, 120Hz, 240Hz ± 15 dB, shelving/peaking
LC Type: MXBK-EQ32 Q adjustment: switchable 0.5/1.5
Wien: MXBK-EQ32 Q adjustment: switchable 0.5/1.5
Switchable: HIGH: 8kHz ~ 20kHz ± 15 dB shelving/peaking
Q Type: Mid: 800Hz ~ 8kHz ± 15 dB; Mid: 150Hz ~ 2.5kHz ± 15 dB; Low: 40Hz ~ 250Hz ± 15 dB
Low Cut Filters: Variable 20 μ 320Hz (-3dB), 12dB/octave
High Cut Filters: 16kHz (-3dB), 12dB/octave
Oscillator: Variable 20 ~ 20,000Hz with less than 0.1% distortion
Output Level: Max. +18dBs at 10K ohm load
- Supplied Accessories**
- I/O extender board
 - Fader removal tool
 - Knob tools (1 set)
 - "T" handles (2)
 - Cable chimney (1 set)
 - Meter lamps (4)
- MXP-3000**.....TBA

MXP-2000 Series Broadcast/Post Production Mixing Consoles

- Plug-in input cards
- Mono input module
- Stereo line input module
- Group module
- Master module
- Monitor module
- Communication module
- Dynamics processor module
- Phase reverse, low cut filter and EQ in/out
- Module faders control VCAs
- Modules can be assigned to any of four audio/VCA groups
- Separate direct output
- Solo and PFL
- MXP-2016S 1: Approx. 110 lbs.
- MXP-2026 with modules: Approx. 160 lbs.
- MXP-2036 with modules: Approx. 200 lbs.

Specifications

Inputs:	Mic—Reference Level: -70dBu, variable to +10dBu, Max. Level: 30dBu above nominal input, 1.2K ohms, transformer/transformerless (opt.); Line—Reference Level: 0dBu or +4dBu, Max. Level: +27dBu, 10K ohms, transformer/transformerless (opt.); Return—Reference Level: 0dBu or +4dBu, Max. Level: +27dBu, 10K ohms, transformerless
Outputs:	Line—Reference Level: 0dBm (600 ohm load), Max. Level: +25dBu at 1K ohm load, 50 ohms, transformer balanced; Group—Reference Level: 0dB (600 ohm load), Max. Level: +25dBu, 50 ohms, transformer balanced; Stereo—Reference Level: 0dB (600 ohm load), Max. Level: +25dBu, 50 ohms, transformer balanced; Send—Reference Level: 0dB (600 ohm load), Max. Level: +25dBu, 50 ohms, transformer balanced
Frequency Response:	30 ~ 20,000Hz \pm 0.5dB
Total Harmonic Distortion:	0.05% (+20dB at 1kHz)
Equivalent Input Noise:	-126dBu (150 ohms terminated)
Noise Level:	-95dBu (Master fader off), -75dBu (Channel fader off)
Crosstalk:	80dB (channel to channel, at 16kHz), 60dB (bus to bus at 16kHz)
Equalizer High Frequency:	Frequency Range—10kHz; Mid Frequency: Frequency Range—150Hz-5kHz; Low Frequency: Frequency Range—80Hz; High Pass Filter: Cutoff frequency (-3dB): 80Hz Slope: 12dB/oct.
Compressor:	Threshold: -20dB + 10dB; Attack Time: 1 to 5msec; Recovery Time: 25-1,000msec; Ratio: 1.5:1 to 5:1
Limiters:	Threshold: \pm 12dB; Attack Time: 100msec; Recovery Time: 500msec; Ratio: 20:1



MXP-2000 Series

Oscillator:	Variable 150-15kHz; Output Level: Max. +12dBu
THD:	<0.05% at 1kHz
Power Requirement:	100/120/220/240VAC, 50/60Hz
Power Consumption:	MXP-2016: 225W, MXP-2036: 440W

Supplied Accessories

- Extender card
- AC power cord
- "T" handles
- Knob tools
- Fuse
- Allen hex driver
- Connectors

Mixing Console Frames

MXP-2016 Holds up to 20 modules. Supplied modules same as 2026.TBA

MXP-2026 Mixing console frame includes a main frame, VU meters and the following modules. This frame holds up to 30 modulesTBA

MXP-2036 Mixing console frame includes a main frame, VU meters and the following modules. This frame holds up to 40 modulesTBA

Supplied Modules

MXBK-2005 Master module x 1. MXBK-2006 Monitor module x 1. MXBK-2007 Communication module x 1.

SONY CORP. OF AMERICA**Mixers****MXP-29 8-Channel Audio Mixer**

- Equipped with 8 mike/line inputs and 2 line outputs
- Incorporates Voltage-Controlled Amplifier (VCA) in front of each channel fader for editor control of channel levels
- Can be controlled from BVE-900 Sony edit controller
- Various optional inputs/outputs—2 sub inputs for extra source connection or echo/effects return, 2 external monitor inputs, 2 aux outputs for echo/effects send, 2 monitor outputs, and a TB output for studio communication
- Trim control for each balanced mike/line input—variable range 30dB
- Built-in 3-band equalizer and low cut filter
- VU meters with 15 segments of LEDs reading from -20dB to +3dB
- Operates on AC (100/120/220/240V) or external 12VDC
- Easy mounting into a 19" standard rack or a Sony U-matic rack
- Dimensions: 6¹/₈" H x 19" W x 17³/₄" D
- Weight: 28 lb. 11 oz.

MXP-29 \$3,849.00



MXP-29

MX-P21 8-Channel Audio Mixer

- Compact audio mixer with 8 channel inputs and 2 channel outputs, especially suitable for audio/video production
- Various optional inputs/outputs—2 sub input jacks and 2 Aux output jacks for connection to and from echo machine or reverberator; monitor output jacks for driving external monitor speaker; TB output jack for intercommunication; external monitor input jacks for return audio monitoring
- Built-in 3-band graphic equalizer and low cut filter
- 2-way operation: 100-120/220-240VAC or external 12VDC
- 19" EIA standard rackmountable
- Dimensions: 5¹/₈" H x 19" W x 17³/₄" D
- Weight: 27 lb. 13 oz.

MX-P21 \$1,899.00



MX-P21

MX-P61VU 12-Channel Audio Mixer

- Equipped with 12 mike/line inputs and 4 line outputs
- Switchable microphone power supply— +48V (phantom power) and +12V (A/B feed)
- Built-in 1kHz test tone for precise level setting
- Hi-cut and low-cut filters for convenient bandwidth limiting
- Monitoring either through headphones or external monitor speaker system
- TB output and communicate input connectors
- Cascade connectors for increasing the number of inputs
- Needle-type VU meters
- Compact and lightweight
- AC/DC operation
- Dimensions: 5¹/₈" H x 17" W x 22¹/₈" D
- Weight: 40 lbs. 13 oz.

MX-P61VU \$10,675.00



MX-P61VU

SONY CORP. OF AMERICA

Condenser/Lavalier Microphones

Professional Audio

ECM-23F Cardioid Back Electret Condenser Microphone
 • Operates for more than 6,000 hours with one size "AA" battery
 • Suited to professional and creative use in recording and broadcast studios as well as sound reinforcement systems
 ECM-23F \$155.00



ECM-23F

ECM-33F Uni-Directional Back Electret Condenser Microphone
 • Powered by an external phantom power DC source • Will operate for approximately 1,000 hours on a single battery (Eveready 126 or equivalent) • Low-cut switch • Pad switch • Wind screen
 ECM-33F \$241.00



ECM-33F

ECM-44S/44B Omni-Directional Lavalier Electret Condenser Microphone
 • Miniature $\phi 1\frac{1}{32} \times 1\frac{19}{32}$ ", ($\phi 8.5 \times 14.5$ mm) 0.07 oz. (2g) microphone head • Satin-nickel plating (ECM-44S) or black finish (ECM-44B) • Operation on AA-size battery • Supplied holder clip and urethane wind screen
 ECM-44S/44B (XLR Output) \$179.00
 ECM-44BPT-44SPT (Pigtail) 89.00
 ECM-44BC/44SC (SMC9-4P Connector) 131.00



ECM-55

ECM-66

ECM-77

ECM-44

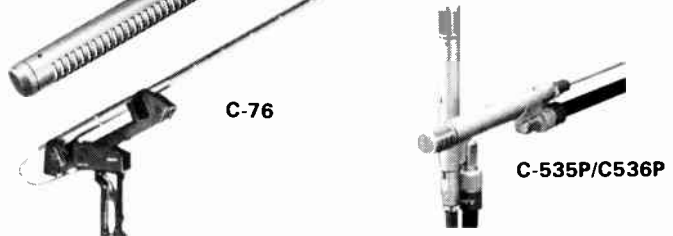
ECM-55S/55B Omni-Directional Lavalier Electret Condenser Microphone
 • Omni-directional electret condenser design • Designed for miking musical instruments and voice pickup • Frequency response range of 30 to 18,000Hz
 ECM-55S/55B (XLR Output) \$281.00
 ECM-55BPT/55SPT (Pigtail) 179.00
 ECM-55BC/55SC (SMC9-4P Connector) 219.00



ECM-672

C-76

ECM-66S/66B Uni-Directional Lavalier Electret Microphone
 • Wide-range, uni-directional back electret capsule • Clean, natural reproduction of musical instruments • Excellent isolation from the acoustic environment • Power supply includes a battery on-off switch • LED battery condition indicator • Frequency range of 70 to 14,000Hz
 ECM-66S/66B (XLR Output) \$325.00
 ECM-66BPT/66SPT (Pigtail) 240.00
 ECM-66BC/66SC (SMC9-4P Connector) 280.00



C-535P/C-536P

ECM-77S/77B Omni-Directional Lavalier Microphone
 • Fingernail-size—5.6mm • Frequency response range of 40 to 20,000Hz • Enables unobtrusive miking but reduces glare • Permits intelligible voice reproduction even if the microphone is hidden inside a costume
 ECM-77S/77B (XLR Output) \$320.00
 ECM-77BPT/77SPT (Pigtail) 245.00
 ECM-77BC/77SC (SMC9-4P Connector) 280.00

ECM-672 Unidirectional Back Electret Condenser Microphone
 • Frequency range of 50-16,000Hz • Operates on one AA size battery for 3000 hours • LED battery condition indicator • Built-in low cut filter operated by on/off switch • Supplied urethane wind screen has a stopper to prevent it from falling off the microphone
 ECM-672 \$475.00

C-48 Dual Diaphragm Condenser Microphone
 • Omni-directional, cardioid, and bi-directional • Selector switch • PAD switch and low-cut switch add to the operational features • 2-way power capability • Smooth, clear, natural sound • Low-noise, high-gain FET preamplifier • Frequency response over a range of 30 to 16,000Hz • Handles a minimum of 128dB SPL without audible distortion or coloration
 C-48 \$995.00

C-76/C-74 Super Uni-Directional Gun-Type Condenser Microphones

• For use in theaters, on sound stages, in large halls, in television studios and even outdoors • The microphone is simply aimed at the sound source • Suited to the performing arts • High sensitivity • Broad frequency response • Excellent transient capability • The microphones discriminate against background noise and unwanted sounds

The C-74 is shorter than the C-76 and therefore slightly more maneuverable.

C-74 \$860.00
 C-76 995.00

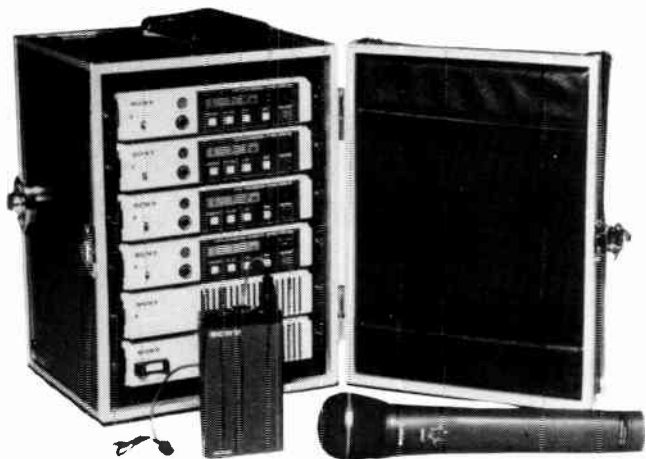
C-535P/C-536P Uni-Directional Condenser Microphones

• Inconspicuous on stage. Users can select the model that best suits their microphone positioning needs • C-535P is designed for on-axis sound pickup • C-536P is designed for applications requiring minimum clearance and right angle pickup • The microphones have a frequency response of 30 to 16,000Hz • Dynamic range of 116dB • Output impedance is 200 ohms • Maximum sound input pressure level is 138dB • 48VDC phantom powered, equipped with a 10dB switchable pad and offer a Canon XLR-3-12C type connector • Each unit measures 21 by 154mm • Weighs 148g

C-535P/C-536P \$487.00

SONY CORP. OF AMERICA

Wireless Microphone Systems



VHF Synthesized Wireless Microphone System

The VHF Synthesized Wireless Microphone System is designed to be an affordable yet equally super-performing counterpart to our UHF Systems. The compact, fully compatible units operate on the 200MHz TV band offering a total of 168 potentially usable channels.

VHF Wireless Microphone Systems

WRT-410	VHF Synthesized Wireless Microphone	\$ 1100.00
WRT-420	VHF Synthesized Transmitter	1100.00
WRR-410	VHF Synthesized Tuner	1250.00
WRR-420	VHF Synthesized Diversity Tuner	2100.00
AC-P210	Power Supply Unit	350.00
BTA-210	Betacam Attachment Kit	235.00

VHF Antenna System

AN-210	Doublet Antenna	\$ 115.00
AN-220	Shoulder Antenna	115.00
WD-210	VHF Antenna Divider	800.00

VHF System Racks and Cases

SC-210	Carrying Case	\$350.00
MB-210	Mount Bracket	65.00

UHF/VHF System Cables

WBC-0.3B-P	0.35m Coaxial Cable	\$ 20.00
WBC-0.6B-P	0.6m Coaxial Cable	20.00
WBC-10B-5P	10m Coaxial Cable	72.00
WBC-20B-5P	20m Coaxial Cable	99.00
WBC-30B-5P	30m Coaxial Cable	120.00
WBC-50B-5P	50m Coaxial Cable	165.00

Battery and Adaptor

7MR9	9.45V Mercury Cell for WRT-57	\$ 7.00
AC-D468	Power Adaptor	50.00



WRT-27A



WRT-57



WRR-57



WRR-27

UHF Multi-Channel Wireless Microphone System

This wireless microphone system is the answer to professional demands for a wireless microphone system featuring each of the three essentials of quality, reliability and versatility. The system offers extended dynamic range and the unique "Space Diversity Reception" assures failsafe operation as well as expands the possible service area. All units in the system are not only compact but also of the convenient plug-in type. The system can thus be adapted to many different applications with utmost precision.

UHF Wireless Microphone System

WRT-27A	Pack transmitter with ECM-50	\$ 1445.00
WRT-57	Microphone transmitter	1125.00
WRT-67	UHF wireless microphone	1445.00
WP-27	500mW Power amplifier (requires AD-27)	899.00
AD-27	External power adaptor	155.00
WRR-27	Receiver	2300.00
WRR-57	Two frequency receiver (selectable)	2355.00
WRR-55	Diversity unit	1775.00
WRR-37	Port. two-frequency diversity receiver (selectable)	4875.00

UHF Antenna Systems

AN-17	UHF sleeve mounting	\$ 215.00
AN-27	Shoulder antenna	129.00
AN-57	Ground plane antenna	170.00
WD-55	Antenna divider	1530.00
WB-57A	Antenna booster (Requires WD-55)	950.00

UHF System Racks, Cases and Attachments

SC-37	Carrying case	\$ 135.00
PB-53	Portable rack	1125.00
MB-52	Tuner base unit	3775.00
MB-56	Antenna base unit	1565.00
BTA-27	Betacam attachment for WRR-27	215.00
PB-36	Portable base unit	6179.00

Cables

WBC-0.3B-P	0.35m coaxial cable	\$ 20.00
WBC-0.6BP	0.6m Coaxial cable	20.00
WBC-10B-5P	10m Coaxial cable	72.00
WBC-20B-5P	20m Coaxial cable	99.00
WBC-30B-5P	30m Coaxial cable	120.00
WBC-50B-5P	50m Coaxial cable	165.00

Battery

7MR9	9.45V Mercury cell for WRT-57	\$ 7.00
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Use of Sony wireless devices is regulated by the Federal Communications as described in Part 74 subpart H of the FCC regulations and requires an appropriate license.

Refer to Green Section for Addresses and Telephone Numbers.

SOUNDCRAFT USA**Mixing Consoles****SERIES 200 CONSOLES**

• Internal working level of -6dB, allowing +26dB internal headroom level • Low noise/hi-slew rate mike preamp • 48V phantom power, switchable on each individual input • Balanced tape returns • Separate control room output on rear panel • Balanced line inputs • Channel pre-fade insert point • Direct assign to subgroups • Direct assign to stereo buses • -10 or +4 internal switching • Four aux. sends • Pre or post EQ selection for aux. sends • Pre or post fader selection for aux. sends • Talkback selection; to all groups, or to aux. 1 and 2 • 8 track monitoring • Balanced mix output • Ground compensated aux. and group outputs • Low profile, solid constructed frame • Internal oscillator with level control assigned to groups, mix, and aux. 1 and 2 • Headphone jack on master module • Can be used for a variety of applications, including recording, video production and post production, broadcast • By utilizing the eight monitor returns for effects returns (allowing for 8 extra line inputs), it can also be used as a sound reinforcement console

200SR

• 4 band fixed EQ • Balanced mike/line inputs • 4 aux. sends • 4 group assignments • 4 effects returns with 2 band EQ • 48V phantom power • Channel insert points

200SR	8/4 standard	.....	\$2430.00
200SR	8/4 rackmount	.....	2430.00
200SR	16/4	.....	3975.00
200SR	24/4	.....	5475.00
200SR	32/4	.....	6950.00

200B

• 4 band fixed EQ • Balanced mike/line input • 4 aux. sends (pre/post EQ or fader internal selection) • 4 sub groups and direct mix assignment • 8 monitor/FX returns • -10/+4 internal switching • Balanced outputs • 48V phantom power • 26dB headroom • Channel insert points

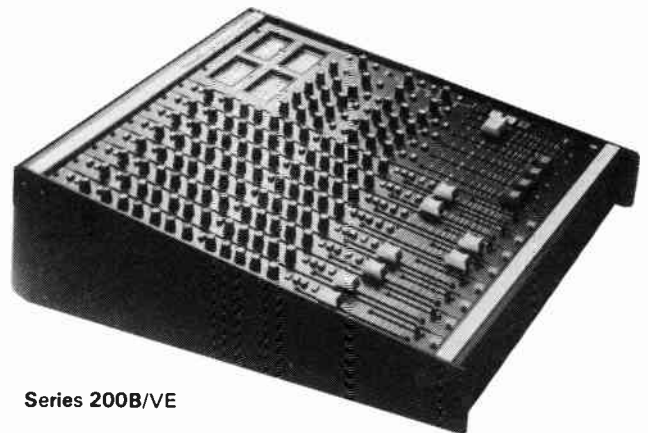
200B	8/4 standard	.....	\$3045.00
200B	8/4 rackmount	.....	3045.00
200B	16/4	.....	4625.00
200B	24/4	.....	6300.00
200B	32/4	.....	7950.00

**Series 200****Modules and Accessories**

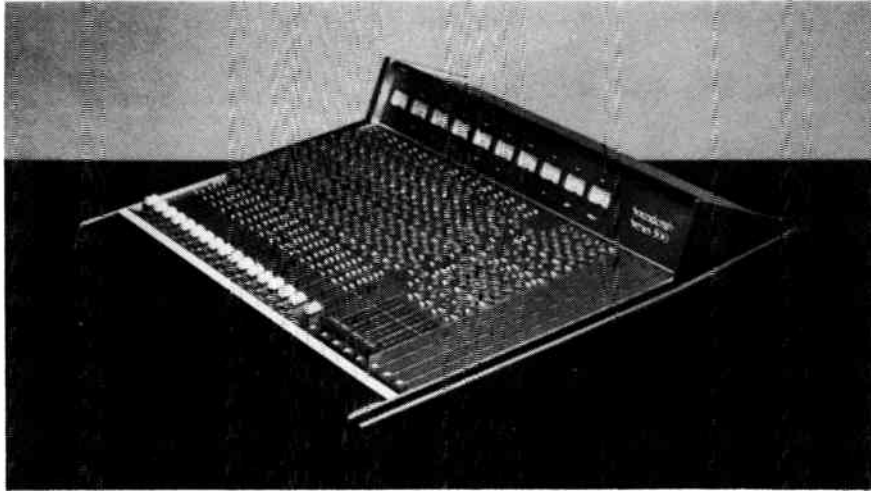
Standard Input Module for 200SR	.....	\$ 110.00
Blank Panel for 200SR	.....	.35.00
Standard Input Module for 200B	.....	150.00
Blank Panel for 200B (Fixed or SEQ)	.....	.35.00
Stereo Input Module for 200B	.....	260.00
Spare Power Supply (All Series 200)	.....	.575.00
Spare Power Supply Cable (All Series 200)	.....	.75.00

Series 200B/VE Console

• 8 input version of the Series 200B mixing console, specially adapted to work closely with a video editor • Audio crossfades can be made totally under editor control, though the console is also capable of operating in a standalone mode as a Series 200B • The edit decision list is created on the editor in the usual way which allows audio control to match video with simplicity and flexibility • The Series 200B retains all its facilities, including low noise microphone inputs with high common mode rejection and superlative transient performance • A parallel interface version for direct connection to a Sony BVE 900 or other similar system is available • Serial interfaces are optional • All auxiliary sends normally follow the fading action of the VCA, Aux. 1 and Aux. 2, however, may be switched pre-EQ and pre-VCA by moving internal push-on jumpers • Can respond to both control modes of the Sony BVE 900 with the BKE 916 card DIP switches up, 8 inputs are controlled as 4 stereo pairs, with accurately ganged fader control • With the DIP switches down, 6 inputs are controlled separately in a mono format, and 2 inputs are left under complete manual control • A compact additional 45mm fader controls the extent to which the BVE 900 can attenuate the signal and sets the maximum fade depth, significantly enhancing the control capabilities of this type of system • Either standard or sweep EQ input modules may be specified • Incorporates sophisticated solid-state switching between listening to the stereo master output, and the relay signal from the two-rack mastering machine • Monitor output is automatically dimmed by 20dB during VTR spooling to prevent high level signals from causing annoyance and possible loudspeaker damage • A large LED indicator on the output panel illuminates to show clearly when the console is under BVE control

**Series 200B/VE**

8 channel console with STD EQ	.....	\$4370.00
8 channel console with SEQ	.....	4950.00
16 channel console with STD EQ	.....	6545.00
16 channel console with SEQ	.....	7645.00



Series 500

Series 500 Mixing Consoles

Available in 4 mainframe sizes, the Series 500 will accommodate 16, 24, 32 or 40 input modules with eight subgroup modules. These incorporate the console's eight effects returns channels, ideal for live work—and they can also be used as monitor channels when the console is used for 8-track recording.

The console may be further extended by four input modules, available as an option to the right of the output section.

Signal-to-noise ratio is a whisper at $> -80\text{dB}$ (unity gain). The adjacent-channel crosstalk is an inaudible -70dB at 1kHz. And the distortion is just 0.005% at 1kHz.

The 500 is fully modular. You could opt for a complete 16, 24, 32 or 40 channel console—or buy a part-filled frame that gives you the opportunity for expansion.

The external power supply unit provides both the $\pm 17\text{V}$ audio rails and the $+48\text{V}$ phantom power.

Each input is electronically balanced, giving the benefits of low noise, excellent transient response and better high frequency common mode rejection.

Every input module offers 4-band variable frequency equalization, six auxiliary sends, a pan pot and soloing facility.

Each input module has its own individual post-fader line out jack socket to enhance its versatility and insert send and return jacks to accommodate external signal processing.

The 500 is a full 8-bus console, selected in pairs from each input module and grouped in pairs for convenience at the output modules. The signal can be routed either to the stereo master mix or to any or all of the eight sub-groups.

It's essential to have plenty of auxiliary sends. The 500 provides six, normally post-fader, though buses 1 and 2 can be switched to pre-fader for cue sends. It's also possible to place the auxiliary sends pre-EQ, using push-on links on the circuit board.

If more sends are needed, you can use the group buses as effects sends, too. There are eight effects returns for outboard signal processing units (reconfigurable as 8-track monitor returns for the smaller recording facility).

The input modules feature the same high performance 4-band equalization section as our more expensive consoles. Each band gives up to 15dB of boost or cut.

In addition, a switchable high pass filter is incorporated at 100Hz to curb residual stage rumble.

Series 500

16-channel console	\$ 8,950.00
24-channel console	11,850.00
32-channel console	14,850.00
40-channel console	17,500.00

Series 500 Monitor

24-channel monitor console	\$ 12,250.00
32-channel monitor console	15,250.00
40-channel monitor console	17,950.00

500 Modules and Accessories

Standard input module	\$ 220.00
Stereo input module	335.00
Monitor input module	235.00
Standard output module	400.00
8 x 8 Matrix kit	1,750.00
Blank panel	40.00
Master module	775.00
4 mono input option (including backpanel)	1,205.00
4-way mono back panel	300.00
4-way stereo back panel	300.00
Spare power supply (medium)	1,250.00
Spare power supply (large)	2,200.00
Spare power supply cable	125.00



Series 600

Series 600 Mixing Consoles

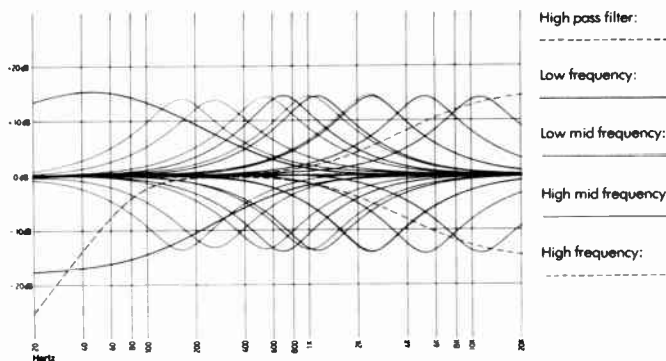
- Signal-to-noise ratio is better than -80dB (unity gain)
- Adjacent-channel crosstalk is -100dB at 1kHz
- Distortion is 0.005% at 1kHz
- Completely separate, comprehensive 16-track monitor section
- Can monitor three external stereo sources
- Wide 60dB input attenuation range (including the 20dB switchable pad) handles high level signals from condenser mikes or line inputs
- For mixdown, the tape returns are normalled to the first 16 input channels—leaving the monitor channels available for use as effects returns
- Can work with a 16-track recorder without ever repatching
- Each input module has its own individual post-fader line out jack socket
- Adjustable line level matching on each module (either -10dB or +4dB)
- Full 8-bus console, selected in pairs from each input module and grouped in pairs at the output modules
- Signal can be routed either to the stereo master mix or to any or all of the eight sub-groups
- Provides six-normally post-fader (buses 1 and 2 can be switched to pre-fader for cue sends, with the extra option of using a push-on link to bypass the channel EQ)
- Group buses can also be used as effects sends
- High and low shelving controls and two variable frequency mid EQ controls
- Each band gives up to 15dB of boost or cut

Specifications

Distortion:	Measured at unity gain with +20dBu at output	
	Line Input to Group Output: 1kHz: <.005%, 10kHz: <.015%	
	Line Input to Mix Output: 1kHz: <.005%, 10kHz: <.008%	
Crosstalk:	1kHz	10kHz
	Between group outputs	-85dB -68dB
	Between left and right mix outputs	-70dB -60dB
	Channel i/p to group (routing switch off)	-85dB -68dB
	Fader or channel On switch isolation	-85dB -68dB
Noise:	Measured with 20 – 20kHz bandwidth	
	Mike input EIN, 150 ohm source	-12dBu
	Group output bus noise	-94dBu
	Typical output noise (24 channels routed)	-81dBu

Frequency Response:	Measured at +10dBu, equalizer bypassed, ref 1kHz
	20Hz: -0.5dB, 20kHz: -1.0dB
Gain:	Max. gain from mike i/p to group o/p, 60+ 10+ 10dB
	Line i/p to group o/p, 30+ 10+ 10dB
Operating Levels:	Switchable, +4dBu or -10dBV (Tascam)
Input Impedance:	Mike: 2K ohm Line level inputs 10K ohm
Output Impedance:	Any output < 75 ohm
Max. Output Levels:	Ch Insert Sends & Line Output: +21dBu into 5K
	Mix Insert Sends: +21dBu into 600 ohm
	All electronically balanced outputs: +26dBu into 600 ohm
Dimensions:	16-channel frame: 11.6" H x 34.8" L x 34.4" D
	24-channel frame: 11.6" H x 44.8" L x 34.4" D
	32-channel frame: 11.6" H x 54.8" L x 34.4" D

Typical Equalizer and Filter Curves



Series 600

16-channel console	\$ 9,450.00
24-channel console	12,250.00
32-channel console	15,250.00
40-channel console	17,950.00
16-channel w/Patchbay	13,350.00
24-channel w/Patchbay	15,950.00
32-channel w/Patchbay	19,250.00

600 Modules and Accessories

Standard input module	\$ 220.00
Standard output module	420.00
Stereo input module	335.00
Tape monitor/FX return module	355.00
Blank panel	40.00
Console stand	600.00
Aux metering	795.00
17-24 metering	795.00
Master module	775.00
4-way mono back panel	300.00
4-way stereo back panel	300.00
Spare power supply (medium)	1,250.00
Spare power supply (large)	2,200.00
Spare power supply cable	125.00

SOUNDCRAFT USA

Mixing Consoles

Series 2400 Mixing Consoles

The Series 2400 combines up-to-the-minute technology and advanced features with a price that today's commercial recording studio demands. This high performance-to-cost ratio makes the Series 2400 an attractive proposition for the studio owner—while his clients will appreciate the sonic quality of the desk and the flexibility of its split console design. The Series 2400 is easy to use, because the logical format of the split design makes it simpler to memorize the layout and complex signal paths used in the recording session. Because the split console needs fewer functions on each module, the controls are easier to reach without stretching. With inputs and output/monitor modules at either end of the desk, the producer can use the monitor section without hindering the engineer while laying down tracks.

In mixdown, the Series 2400 gives you the option of using all the monitor channels as effects returns, so the 24 input console gives you 40 equalized inputs, while the 28 input version allows up to 52 inputs—all at a considerably more economical price than most other console designs. The choice of mainframe sizes makes the Series 2400 ideal for the large, successful studio as well as the personal recording facility or smaller studio. The 24 input mainframe provides 16 track equalized monitoring as standard, but also accommodates the 24 track monitor module to access tracks 17-24.

Both versions of the Series 24 are designed to cater for the Soundcraft automation system. The automation option memorizes fader and mute facilities, and provides VCA grouping—making more complex recording systems that much simpler. We use electronically balanced mike inputs, which give exceptional transient performance compared with conventional transformer balancing.



Series 2400

SPECIFICATIONS

Distortion	Mic pre-amp, -30dBv in, +4dBv out	40Hz: 0.008, 1kHz: 0.008, 18kHz: 0.01, IMD: 0.015
	Channel line in to mix out, +4dBv in, +4dBv out	40Hz: 0.005, 1kHz: 0.005, 18kHz: 0.01, IMD: 0.009
Crosstalk	Line in through pan control to stereo mix buss	40Hz: -64dB, 1kHz: -63dB, 18kHz: -55dB
	Adjacent channel	40Hz: -100dB, 1kHz: -95dB, 18kHz: -85dB
Noise	Equivalent input ref 200	-128.5dBv
	Mik noise: 28 inputs and 24 monitors routed to mik or unity gain	-74dBv (DIN Audio)
Input impedance	Mic input	2kΩ (5kΩ with pad)
	Line input	10kΩ
Output impedance	Any output	<40Ω
Output capability	Any group or mix into 600	+21dBv
Gain	Max mic	75dB
	Max line	40dB
Frequency response	Mic input at 50dB gain to mix	20Hz: -1.6dB, 1kHz: 0dB, 20kHz: -0.2dB
	Line input at unity gain to mix	20Hz: -0.8dB, 1kHz: 0dB, 20kHz: -0.2dB
Phase response	Line input to mix output	20Hz: +20°, 1kHz: 0°, 20kHz: -20°
	NB: 0dBv = 0.775vrms	

Every input module features the 4 band semi-parametric equalizer with sweepable mids, and a high pass filter that has a continuously variable turnover frequency between 50Hz and 800Hz. The monitor modules each contain a 3 band equalizer with sweepable mid frequency, which gives you EQ control over effects returns.

Consoles

24 x 16 VU 24 Input, 16 Output
24-Track Monitor
.....\$28,950.00

28 x 24 VU 28 Input, 24 Output
.....\$39,500.00
28 x 24 LED 28 Input, 24 Output
.....\$44,950.00

Accessories

Input Module\$ 650.00
Output Module (Double) . . .900.00
Master Module1,000.00
24 Track Monitor Module . .950.00
Blank Module Panels.65.00
Power Supply (Spare) . . .2,200.00

TS-24/TV-24 Mixing Consoles

We have established a set of master conditions which can configure the whole console at the press of just one button for each particular stage in recording, mixing, broadcasting, and video post production, without sacrificing any flexibility. The signal path designated Channel always goes to the multitrack routing, and the Mix path is always connected to the mix bus. Thus your monitor automatically becomes your mix, and you can mix as you go.

Only one set of multitrack returns is necessary since their connection to the mix path on each module is used for both monitoring and mixing, thus simplifying installation and patchbay arrangements. To help clarify visual indication, separate scribble strips are provided (instead of a confusing double one) and the Mix and Channel controls are in clearly defined areas. The equalizer, (with high pass filter and patch point) and each pair of auxiliary sends can be used in either signal path, as desired, but usually the position of the EQ, filter and patch point block is set by the master status and a LED indicates whether it is in Channel or Mix. To change this locally you may press Flip, but its position is always reset by a change in master status.

The dedicated "Instrument" input which, while still being capable of accepting normal line level signals, is able to accept an input directly from an instrument, thus eliminating the need for a D/I box in most cases. All the inputs and outputs including "oscillator out" are electronically balanced apart from the insert send, which is ground-compensated to allow for easy interchange of effects units which may have differing earthing arrangements.

Frame sizes are available to accommodate from 32 to 48 I/O modules or up to 40 and 8 optional stereo modules. Customized modules with tape remotes etc., may be ordered through the custom department. Blank modules for customizing are available in 1, 2 and 4 module-wide formats. The console is designed so that the modules (other than the command module) can be placed to suit individual requirements. Usually, from the left hand side, there are 24 I/O modules and then the command module. The section to the right may be fitted with I/O, stereo or custom/blank modules as desired. The 19" patchbay is situated on the right hand end of the console.

The TV-24 version of the TS-24 is designed to meet the specific needs of television and radio post-production and broadcasting. With the addition of an extra 16-way routing matrix, and extra 24 track monitoring facilities, independent multitrack back-up may be achieved. This is especially useful in live broadcast situations where a multitrack recording is needed for later remixing as well as the broadcast mix, which may be composed from any or all of 8 stereo solo groups. One button (marked TV) will initialize broadcast mode, otherwise the console functions in exactly the same way as the standard TS-24.

Optional Stereo Input/Sub Group and Effects Return Module

The top half of this module is a dedicated effects return, and the lower half may be a stereo sub group or separate stereo input. Separate scribble strips are provided to differentiate.

Effects Return Auxiliary Sends

Auxiliaries 1-4 may be accessed via individual level controls.

Equalizer

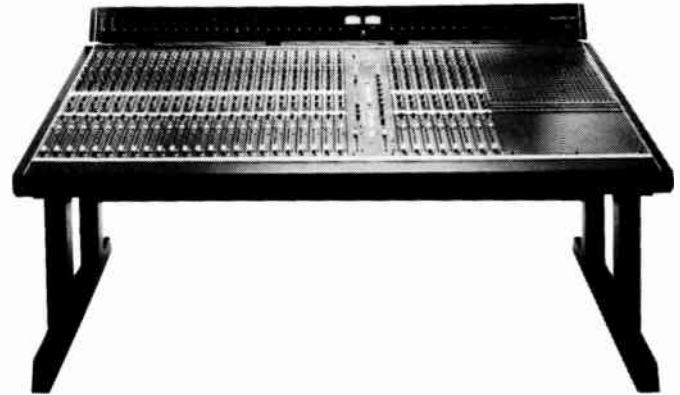
A four band equalizer with fixed frequency ranges is provided.

Level Control and Panning

Overall level control is via a rotary fader, and the stereo position is achieved via the pan pot above. PFL and Cut facilities are provided with associated LEDs. Sub cuts the feed to the mix bus and sends the signal into the stereo input/sub group below via the effects return level and pan control. This feeds adds to the stereo input.

Stereo Input/Sub Group

The lower half of the module may be used as a separate stereo input, or stereo sub group. The input to this section appears on the patchbay and is normalised to groups 1-16, i.e., if you do not plug anything into the patchbay, the 8 stereo sub groups will correspond to normal output groups 1-16, (1 and 2, 3 and 4, etc.) These feeds are paralleled from the group output which also appear separately on the patchbay. For use as a separate stereo input, you simply plug into the patchbay and override the usual group connection.

**TS-24 Series****Auxiliary Sends**

The six auxiliary sends available on the TS-24 can be accessed in the same way as the Input/Output module, i.e., with on/off and pre/post switching in pairs. However, since there is only one signal path present, the channel button CH is omitted. In its place is a button marked ST. When this button is down, the odd numbers (1, 3, 5) are fed from the left signal, and the even numbers (2, 4, 6) are fed from the right signal.

Equalizer

A four band fixed frequency stereo equalizer is provided which may be switched in and out via the EQ button and associated LED.

Main Fader

Main level control is via a stereo long throw fader with illuminated cut and solo buttons as on the input/output module.

TS 24 Series

24 input console	\$44,800.00
32 input console	55,600.00
40 input console	66,400.00
48 input console	77,200.00
56 input console	88,000.00

TS-24 Modules and Accessories

Standard I/O module	\$ 975.00
Command module	1,850.00
FX return module	1,575.00
FX return patch card	120.00
Stereo I/O module	1,395.00
Stereo patch card	120.00
Mute interface card	75.00
Power supply	2,200.00
Blank module facia	40.00
4 module blank facia	75.00

TV-24 Series

16 mono 8 stereo channels	\$59,750.00
24 mono 8 stereo channels	76,950.00
32 mono 8 stereo channels	93,950.00
40 mono 8 stereo channels	110,800.00
48 mono 8 stereo channels	127,750.00

TV-24 Modules and Accessories

TV mono I/O module	\$ 1,495.00
Stereo I/O modules	1,395.00
Stereo patch card	120.00
FX return module	1,575.00
FX return patch card	120.00
Command module	1,850.00
Blank panel	40.00
4 module blank panel	65.00
Power supply	2,200.00
Overbridge speaker mount	90.00
VCA subgrouping:	
24 mono channels	7,775.00
32 mono channels	9,450.00
40 mono channels	11,250.00
48 mono channels	12,750.00
VCA channel card	205.00
VCA master module	2,575.00

SOUNDCRAFT USA

Mixing Consoles

Series 8000 Mixing Consoles

The Series 8000's "Active Feedback Network" input amps create lower distortion figures and improve noise floors throughout the console. The mike input has a control range of 20-70dB (augmented by a switchable -20dB pad) while an adjacent button switches to the line level input, with a gain range of ±10dB. Switchable 48V phantom power is provided.

The switchable equalizer consists of a parametric four-band EQ, each band having dual concentric frequency/gain controls and a 3-position 'Q' selector, giving excellent overall control. The EQ section is completed by the switchable 80Hz high-pass filter.

Each pair of the eight auxiliary sends may be selected as pre or post the channel fader—or switched out of circuit.

Individual group selection, to any of the 8 groups or to Mix, is provided by a fast, flexible switching matrix—with LED indicators to show where the signals are routed. The pan pot is always in the mix path, but may also be switched in to the group path.

Other features include a channel on button and PFL facility, an 'Active' LED to show that a signal is present at the input, and a smooth, high quality 100mm channel fader.

The stage monitor console provides eight main sends, routed to the group outputs. In addition, there are two auxiliary sends which can be used either for effects, or as two extra monitor sends. The channel master VOL control is followed by a 4-band equalizer with two sweepable midrange bands.

To enhance the module's versatility the main and aux sends may be switched to Pre fader. In this mode the channel master control can be used independently for side fills, an emergency front-of-house mix or a stereo broadcast feed.

Series 8000

24 Channel house FX return	\$24,675.00
24 channel house matrix	24,675.00
32 channel house FX return	29,350.00
32 channel house matrix	29,350.00
40 channel house FX return	34,125.00
40 channel house matrix	34,125.00

8000 Modules and Accessories

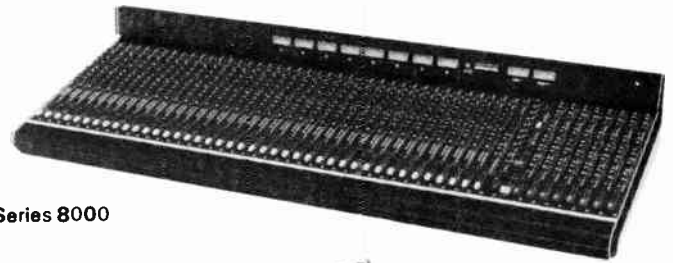
VCA subgrouping	
24 inputs	\$3,000.00
32 inputs	3,800.00
40 inputs	4,600.00
VCA channel card	135.00
VCA master module	625.00
LED input metering (per channel)	75.00
Input transformer	100.00
Output transformer	120.00
Standard input module	465.00
Standard output module	400.00
Stereo input module	460.00
PA input module	415.00
Monitor input module	415.00
Blank panel	40.00
Master module	795.00
Spare power supply	2,200.00
Spare power supply cable	125.00

Series 6000 Mixing Consoles

The 6000 delivers the ultimate in efficient multi-track recording in a simple and flexible package.

Structurally, the 6000 features the ultimate split bus architecture based on the popular Soundcraft 500 and 600 consoles, a design which allows simple access to the console's unique features.

A preamplifier for each input module accepts 68dB of continuously variable gain and a low noise floor, regardless of setting (without the need for a switchable pad). The closest competition in this price range offers only 50dB of continuously variable gain.



Series 8000



Series 6000

The 6000 is capable of up to 24 buses and can be expanded up to 32 track monitoring. It also features a four-band semi-parametric EQ and a phase reverse switch to reverse polarity on individual input modules. Each of the six discrete auxiliaries sends selectable pre or post fader with additional pre or post EQ settings.

Additionally, optional add-on packages and hardware are available for the 6000. A separate MIDI-based automation package provides the home studio enthusiast with the flexibility and "extra-hand" that is always needed. An optional internal patchbay with 64 tie lines for external effects allows for complete access to console connections. An optional floor stand is also available to keep the console securely mounted in place.

Series 6000

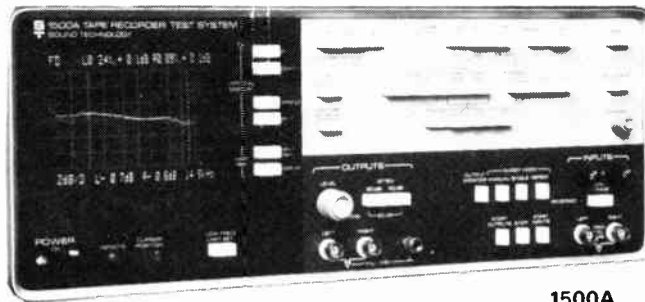
16 channel 16 bus console	\$14,250.00
24 channel 16 bus console	17,250.00
32 channel 16 bus console	21,250.00
40 channel 16 bus console	24,950.00
48 channel 16 bus console	28,750.00
16 channel 16 bus w/patch	18,900.00
24 channel 16 bus w/patch	21,900.00
32 channel 16 bus w/patch	25,900.00
40 channel 16 bus w/patch	29,900.00
28 channel 24 bus console	22,500.00
36 channel 24 bus console	26,250.00
44 channel 24 bus console	29,750.00
28 channel 24 bus w/patch	27,750.00
36 channel 24 bus w/patch	31,250.00

6000 Module and Accessories

Standard input module (16 bus)	\$ 300.00
Standard input module (24 bus)	325.00
Standard output module	420.00
Tape monitor/FX return module	355.00
Blank panel	40.00
Console stand	600.00
Aux meeting	795.00
17-24 metering	795.00
Master module	800.00
Spare power supply (medium)	1,250.00
Spare power supply (large)	2,200.00
Spare power supply cable	125.00

SOUND TECHNOLOGY, INC.

Tape Recorder Test System



1500A

1500A Tape Recorder Test System Measure and Display:

- AC Volts
- Phasing
- 2nd harmonic distortion -vs- level
- 3rd harmonic distortion -vs- level
- Frequency response
- Channel separation -vs- frequency
- Maximum Operating Level (MOL)
- Noise, composite and spectral
- Delta speed and drift
- Wow and flutter, average and spectral

All-In-One Instrument for Audio and Tape Machine Testing in the Service Department or on the Sales Floor

With the introduction of the 1500A Tape Recorder System, the service technician or audio salesman has the capability of performing all of the necessary tests for maintenance, troubleshooting or comparative analysis of any audio device, whether it be cassette or open-reel tape machine, preamplifier, equalizer, turntable/phono cartridge, or any other peripheral audio device. With the 1500A's exclusive 2-channel inputs and outputs, the instrument lends itself to rapid stereo (2-channel) check-out and comparative measurements.

With its built-in CRT, the 1500A gives you unparalleled information: both alphanumeric data on the screen plus graphic information for those applicable tests. Thus, we have combined the qualities of having an instrument with digital readout only, analog meter only, or an instrument having graphics plotting capability into one unit—the 1500A. This is all possible because of the built-in Z80 microprocessor and display processor circuitry.

The 1500A has been engineered with the operator in mind. The push of a button brings up a test from the on-board Read Only Memory (ROM). Push Start Inputs to activate the analyzer section or Start Outputs to activate the generator section. That's all there is to running a test on the 1500A. Also, for those facilities with automation in mind, the IEEE-488 general purpose computer interface bus is available.

SPECIFICATIONS

OUTPUT

Single Ended, Dual Channel
Impedance: 50 Ω \pm 1%
Response: 20 Hz to 40 kHz $<$ \pm 0.2 dB
Maximum Levels: \pm 18 dBm for Distortion, Frequency Response
Channel Separation and MOL tests, \pm 8 dBm for AC Volts, Δ Speed,
and Flutter tests
Level Control: 26 dB vernier
Level Attenuation: Selectable -20, -40 or -60 dB

INPUT

Single Ended, Dual Channel
Impedance: 100 K Ω \pm 1%
Maximum Level: \pm 22 dBm (10V rms)
Response: 20 Hz to 40 kHz $<$ \pm 0.2 dB
3 dB Bandwidth: $>$ 100 kHz

AC VOLTS

Measure Left Channel Only, Right Channel Only, or Both Channels
Accuracy: True rms. \pm 2.5% or reading with a crest factor no greater than 6
Autoranging: 1 mV to 40 V rms full scale 10 dB steps
Residual Noise: $<$ 100 μ V
Display: Vertical bar graph
Readout: Volts/dBm: 3 digits/0.1 dB

AZIMUTH/PHASE METER

Measurement Frequencies: 2.8 \times 1.57 \times 1.118 \times 1/4, 15.8 \times 1 kHz
Cycle Time: 0.1 seconds through noted frequencies
Measurement Range: \pm 180° electrical phase
Accuracy: \pm 2° electrical phase (Eqv. to 1/26 minute of arc in cassette format)
Display: Dynamic, shows instantaneous phase error between L and R channels, plus digital readout of error at measured frequencies

DISTORTION

Measure & Display: 2nd or 3rd Harmonic vs Level
Fundamental Frequencies: User selectable 315, 333, 400 or 1000 Hz
Accuracy: \pm 5% of reading
Residual Distortion: Output $<$ 0.1%, Input $<$ 0.3%
Input Level from Recorder: Display shows distortion vs level in 1 dB steps
Output Level to Recorder: \pm 10 to -20 dB in 1/2 dB steps referred to preset output
Sweep time: $<$ 40 secs. Can be terminated earlier with STOP button or at Low Sweep Limit or controlled manually
Display: Trace shows plot of distortion vs input level
Digital readout of distortion in % and dB

FREQUENCY RESPONSE

Frequency Range: Continuous sweep from 40 kHz to 20 Hz. Can be terminated earlier with STOP button or Low Sweep Limit or controlled manually
Accuracy/Resolution: \pm 5% of reading/ \pm 3%
Amplitude Accuracy/Flatness: \pm 0.2 dB / 0.2 dB
Minimum Input S/N Ratio: 20 dB
Max Input Signal Slope: 60 dB per octave in normal mode
Sweep Time: 34 secs. from 40 kHz to 20 Hz
Output Level Offsets: User selectable -10, 0, -10 or -20 \pm 0.1 dB
Display: Trace shows level at 123 discrete frequencies. Digital frequency readout. Level readout referred to input or display

CHANNEL SEPARATION

Frequency Range: Continuous sweep from 20 kHz to 20 Hz with 1/3 octave resolution
Residual Noise: $<$ 200 μ V
Amplitude Accuracy: \pm 1 dB
Output Level Offsets: User selectable -10, 0, -10 or -20 dB \pm 0.1 dB

Δ SPEED/DRIFT

Measurement Time/Range: 0 to 610 secs / \pm 4%
Output Frequency: 3.0 kHz (NAB, JIS) or 3.15 kHz (DIN, ANSI) \pm 0.05%
Display: Trace shows 10 second average speed error vs time. Digital readouts of both instantaneous and 10 sec. avg. error

FLUTTER

Output Frequency: Same as speed and drift
Autoranging: 0.3 to 10% full scale
Accuracy/Residual Flutter: \pm 5% of reading/ $<$ 0.005%
Detection, Weighting and Display Dynamics: Per NAB, JIS, or DIN/ANSI standards
Display: Vertical bar graph. Digital readout shows 2-Sigma signal (smoothed, 95% of peak)

NOISE

Residual Noise (1V reference): Flat -90 dB, Weighted -96 dB
Flat Response: -3 dB points at 20 Hz and 20 kHz
Detection, Weighting and Display Dynamics: Per NAB, ANSI, CCI-R/ARM OR CCIR standards
Output: Floating 50 Ω termination
Accuracy: \pm 5%
Display: Autoranged vertical bar graph with digital readout referred input ref. level

GENERAL

Rear Panel Outputs: Composite video signal, 1V p-p \pm 6 dB, 75 Ω , 1K Ω
negative sync. Demodulated flutter signal, autoranged, $<$ 15V p-p, 1K Ω
Power: 100, 120, 220, 240 V 48-66 Hz, 100 W
Dimensions - HWD: 7.0 X 17.0 X 16.4" (18 X 43 X 42 cm)
Weight - Net/Ship: 34 lbs (15.5 kg) / 43 lbs (19.5 kg)
Environmental: 90% RH, \pm 50 to \pm 104° F (\pm 10 to \pm 40°C)

OPTIONS

1/3 OCTAVE SPECTRUM ANALYZER

Accuracy: 1.0 dB
Rejection Ratio: $>$ 60 dB
Maximum Peak to Peak Pass Band Ripple: $<$ 1 dB
Center Frequency Accuracy: $<$ 3%
Typical Filter Slope: $>$ 50 dB per octave
Dynamic Range: $>$ 90 dB
Filter: ANSI S1 11-1966 (R1975) Third octave, class II, type 0
Noise Frequency Range: 20 Hz to 20 kHz
Flutter Frequency Range: 0.5 Hz to 200 Hz

IEEE-488 GENERAL PURPOSE INTERFACE BUS

Compatible with the IEEE-488, ANSI MC1 1 and IEC 625-1 bus configurations. All front panel buttons and functions, except for output level, are accessible from GPIB.

CCIR 468-2 FILTER

Replaces CCIR/ARM filter

MOL/MAXIMUM OPERATING LEVEL

Measurement & Display: Output level vs Amplitude Compression at test frequency
Measurement Frequencies: 31 user selectable frequencies between 40 Hz to 40 kHz
Accuracy: 5%
Output Level: \pm 10 to -20 dB
Sweep Time: 33 sec

1500A	Tape Recorder Test System	\$5650.00
Option 002	Rackmount Kit	130.00
Option 007	1/3 Octave Spectrum Analyzer	1595.00
Option 009	IEE-488 GPIB Computer Interface	695.00
Option 010	CCIR-468-2 replaces CCIR/ARM	250.00
Option 011	MOL Module	450.00

1510A TAPE RECORDER/ AUDIO TEST SYSTEM

With the introduction of the 1510A Tape Recorder/Audio Test Instrument, the audio engineer has the capability of performing all of the necessary tests for maintenance, troubleshooting and general check-out of any professional audio device, whether it be tape recorder, film machine, mixing board, reference turntable, parametric equalizer, or any other outboard device. With the 1510A's exclusive asynchronous inputs and outputs, the instrument lends itself to system check-outs and remote location testing such as satellite, transmitter or studio testing, using either the 1510A's microprocessor-controlled generator or an external generator (the 1510A's inputs are totally auto-ranging and auto-tuning).

With its built-in CRT, the 1510A gives you unparalleled information: both alphanumeric data on the screen plus graphic information for those applicable tests. Thus, we have combined the qualities of having an instrument with digital readout only, analog meter only, or an instrument having graphics plotting capability into one unit—the 1510A. This is all possible because of the built-in Z-80 microprocessor and display processor circuitry.

The 1510A has been engineered with the audio professional in mind. The 2-channel outputs are electronically balanced and floating, the inputs are differential, and the output levels are from +30dBm to -70dBm into 600 ohms with a pushbutton resolution of 0.1dB. For those facilities with automation in mind, the IEEE-488 general purpose computer interface bus is available.

SPECIFICATIONS

OUTPUT

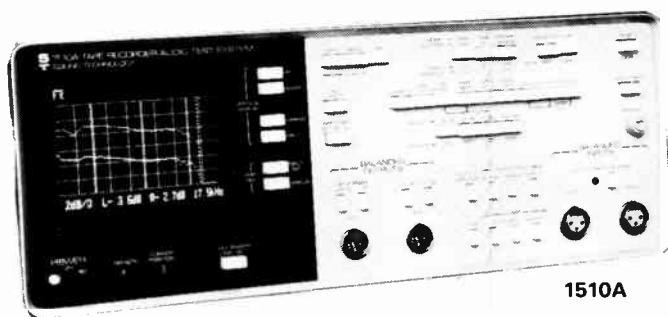
Balanced and Floating Dual Channel

Impedance: 50 Ω \pm 1%
Response: 20 Hz to 40 kHz \pm 0.1 dB
Maximum Level: +30 dBm for distortion and MOL test +20 dBm for frequency response and channel separation test. +10 dBm for AC volts, Δ Speed, Flutter and Dropout tests
Level Control: 0.1 dB vernier with a 20 dB range
Level Attenuation: Selectable 20, 40 or 60 dB
Differential Residual Noise: $<$ 50 μ V

INPUT

Differential Dual Channel

Impedance: 100 K Ω \pm 1%
Maximum Level: +34 dBm (42V rms)
Minimum Level: -70 dBm (245 μ V rms)
Common Mode Rejection: $>$ 60 dB at 60 Hz
Response: 20 Hz to 40 kHz \pm 0.1 dB
3 dB Bandwidth: $>$ 100 kHz



AC VOLTS

Measure Left Channel Only, Right Channel Only, or Both Channels

Accuracy: True rms, \pm 2% or reading with a crest factor no greater than 6
Autoranging: 300 μ V to 40 V rms full scale 10 dB steps
Residual Noise: $<$ 100 μ V
Display: Vertical bar graph
Digital readout of ACV: 3 digit, dBm 0.1 dB

AZIMUTH/PHASE METER

Measurement Frequencies: 2 E \cdot 1.5 7 \cdot 1.11 8 \cdot 1/4, 15 B \cdot 1 kHz
Cycle Time: 0.1 seconds through noted frequencies
Measurement Range: \pm 180 $^\circ$ electrical phase
Accuracy: \pm 2 electrical phase (Eqv. to 1/26 minute of arc in cassette format)
Display: Dynamic, shows instantaneous phase error between L and R channels, plus digital readout of error at measured frequencies

DISTORTION

Measure & Display: 2nd or 3rd Harmonic vs Level
Fundamental Frequencies: User selectable 315, 333, 400 or 1000 Hz
Accuracy: \pm 5% of reading
Residual Distortion: Output $<$ 01%, Input $<$ 025%
Input Level from Recorder: Display shows distortion vs level in 1 dB steps
Output Level to Recorder: \pm 2C to -10 cB in 1/2 dB steps referred to preset output
Sweep time: $<$ 40 secs, \pm 20 to -10 dB. Can be terminated earlier with STOP button or at Low Sweep Limit or controlled manually
Display: Trace shows plot of distortion vs input level
Digital readout of distortion in % and dB

FREQUENCY RESPONSE

Frequency Range: Continuous sweep from 40 kHz to 20 Hz. Can be terminated earlier with STOP button or Low Sweep Limit or controlled manually
Accuracy/Resolution: \pm 5% of reading/ \pm 3%
Amplitude Accuracy/Flatness: \pm 0.1 dB / 0.1 dB
Minimum Input S/N Ratio: 20 dB
Max Input Signal Slope: 60 dB per octave in normal mode
Sweep Time: 34 secs. from 40 kHz to 20 Hz
Output Level Offsets: User selectable +10, 0, -10 or -20 \pm 0.1 dB
Display: Trace shows level at 123 discrete frequencies. Digital frequency readout. Level readout referenced to input or display

SPOT FREQUENCY RESPONSE

Frequency Spots: 20, 50, 100, 200, 500, 1K, 2K, 5K, from 10K to 20K and 40 kHz
Sweep Time: 12 secs. in fast mode, 17 secs. in normal mode
Other Specifications: Same as Frequency Response

CHANNEL SEPARATION

Frequency Range: Continuous sweep from 20 kHz to 20 Hz with 1/3 octave resolution
Residual Noise: $<$ 100 μ V
Amplitude Accuracy: \pm 1 dB
Output Level Offsets: User selectable +10, 0, -10 or -20 dB \pm 0.1 dB

Δ SPEED/DRIFT

Measurement Time/Range: C to 610 secs./ \pm 4%
Output Frequency: 3.0 kHz (NAB, JIS) or 3.15 kHz (DIN, ANSI) \pm 0.05%
Display: Trace shows 10 second average speed error vs time. Digital readouts of both instantaneous and 10 sec. avg. error

FLUTTER

Output Frequency: Same as speed and drift
Autoranging: 0.03 to 10% full scale
Accuracy/Residual Flutter: \pm 5% of reading/ \pm 0.05%
Detection, Weighting and Display Dynamics: Per NAB, JIS, or DIN/ANSI standards
Display: Vertical bar graph. Digital readout shows 2-Sigma signal (smoothed, 95% of peak)

NOISE

Residual Noise (1V reference): Flat -92 dB, Weighted -97 dB
Flat Response: -3 dB points at 20 Hz and 20 kHz
Detection, Weighting and Display Dynamics: Per NAB, ANSI, CCIR/ARM OR CCIR standards
Output: Floating 50 Ω termination
Accuracy: \pm 5%
Display: Autoranged vertical bar graph with digital readout referred to input ref. level

GENERAL

Rear Panel Outputs: Composite video signal, 1V p-p \pm 6 dB, 75 Ω , negative sync. Demodulated flutter signal, autoranged, $<$ 15V p-p, 1K Ω
Power: 100, 120, 220, 240 V, 48-66 Hz, 120 W
Dimensions - HWD: 7.0 X 17.0 X 16.4" (18 X 43 X 42 cm)
Weight - Net/Ship: 34 lbs (15.5 kg) / 43 lbs (19.5 kg)
Environmental: 90% RH, \pm 50 to \pm 104 $^\circ$ F (\pm 10 to \pm 40 $^\circ$ C)

1510A	Tape Recorder/Audio Test System	\$6450.00
Option 002	Rackmount Kit	130.00
Option 007	1/3 rd octave spectrum analyzer	1595.00
Option 009	IEEE-488 GPIB Computer Interface Bus	695.00
Option 010	CCIR/ARM-2 replaces	250.00
Option 011	MOL (Maximum Operating Level Test)	450.00
Option 16	Dropout Test Customer Specs	820.00
MP510M	Multi-Test Module W/MP510S/T	850.00
MP510G	Graphics Module works with above	450.00

SOUND TECHNOLOGY, INC.

Test Equipment

1530A MTS Stereo Analyzer/Monitor

General Features:

• Test results displayed on integral CRT • "Video eye" — microwave test results back to master control • 7" H x 17" W x 16.4" D • 34 lbs.

Measurement Capabilities:

• 2 channel AC voltage • 2 channel swept frequency response • 2 channel swept channel separation • Phase error at 2.8, 5.7, 11.8, 15kHz • 2 channel composite and spectral noise • Wave analysis • IMD analysis (optional) • Differential inputs • Asynchronous inputs and outputs

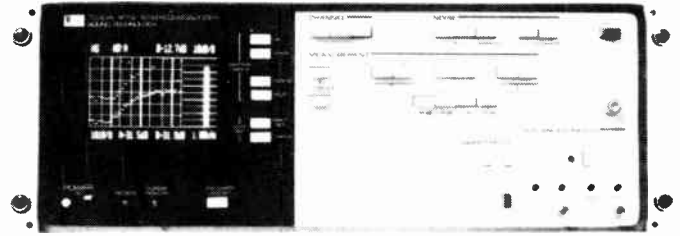
Optional Oscillator Capability:

• Automatic frequency sweeps • Automatic level sweeps • Balanced 2 channel outputs standard • Low distortion sideband generator for Bessel null alignment (10,396Hz)

The 1530 MTS/Stereo Analyzer can be used in Master Control or permanently stationed with a reference decoder at the transmitter. The 1530 is designed to analyze signals from any existing audio oscillator, or can be used with the 3100 2 channel programmable generator for optimal set-ups. The 1530 measures phase-error, voltage/power, frequency response, channel separation, noise and harmonic distortion. All test results are graphed on the built-in CRT.

Specifications

Input	
Response:	20Hz-40kHz ± 0.1dB
Differential Residual Noise:	< 50µV
Common Mode Rejection:	> 60dB at 60Hz
3dB Bandwidth:	> 100kHz
Input Impedance:	100K ohms ± 1%
Maximum Input Level:	42VRMS (+ 34dBm)
AC Volts	
Response:	True RMS with -3dB bandwidth from 5Hz-115kHz
Accuracy:	± 2% of reading
Autoranging:	Full scale readings of 100V, 30V, 10V, 3V, 1V, 300mV, 100mV, 30mV, 10mV, 3mV, 1mV, 300µV and 100µV
Residual Noise:	< 100µV
Display:	Vertical bar graph Digital readout of AC Volts (3 digits) Digital readout of AC Volts in dBm (± .1dB)
Phase Error (Phase Meter)	
Measurement	
Frequencies:	2.8, 5.7, 15.0kHz, ± 1kHz min. and 11.8kHz, + 1/-4kHz min.
Measurement Range:	± 180° of electrical phase
Accuracy:	± 2° electrical phase at 15.0kHz
Display:	Dynamic: Bars show instantaneous phase error between A and B channels for each frequency. Digital readout of error at measured frequencies
Wave Analysis	
Display:	2 nd or 3 rd harmonic distortion versus the input level
Fundamental Frequencies:	100, 400, 1000 or 5000Hz
Accuracy:	± 5% of reading
Maximum Residual Distortion:	Output: < 0.01%. Input: < 0.01% (3 rd harmonic); < 0.02% (2 nd harmonic)
Input Level:	Input from DUT: Display shows distortion versus input level in 1dB steps
Sweep Time:	< 40 sec. from + 20 to -10dB. Can be terminated with Low Sweep Limit or Stop button
Display:	Trace shows plot of distortion versus input level. Digital readout of distortion in both percent and dB
Minimum Input S/N Ratio:	The noise at the harmonic of the frequency tested must be at least 10dB lower than the distortion level to meet the 5% accuracy specification
Frequency Response	
Frequency Range:	Stepped sweep from 40kHz-20Hz. Low Sweep Limit can be used to reduce frequency sweep.



1530A

Wideband intelligent mode for use with external discrete freq. oscillator available using Manual Mode
± 3%

Frequency Resolution:
Minimum Input S/N Ratio: 20dB
Maximum Input Signal Slope: 60dB per octave in Norm mode, 30dB per octave in Fast mode
Output Level Offsets: + 10, 0, -10, -20dB ± 0.1dB
Display: Level of 123 discrete frequencies. Digital frequency readout

Channel Separation Frequency Range: Sweep from 20kHz to 20Hz with 1/3 octave resolution
Residual Noise: < 100µV
Amplitude Accuracy: ± 1dB
Output Level Offsets: + 10, 0, -10 and -20dB (± 0.1dB)

Noise Residual Noise (referred to 1V): Flat: < -92dB. NAB weighted: < -97dB
Response (Flat Mode): -3dB frequencies are 20Hz and 20kHz
Detection, Weighting, and Display Dynamics: Per NAB, ANSI, or MTS standards (MTS = 15kHz lo-pass, notch at 15,734Hz plus switchable 75µs de-emphasis curve)

Accuracy: ± 5%
Display: Autoranging vertical bar graph with digital readout, referred to input reference level (1/3 octave spectral display available as option)

1530A	MTS - Stereo Analyzer/Monitor	\$5850.00
	Add Option 001 Oscillator (includes 10,396Hz Sideband Generator frequency)	1250.00
	Add Option 002 Rackmount Kit	130.00
	Add Option 004 Intermodulation Distortion Analyzer	475.00
	Add Option 007 1/3 Octave Spectrum Analyzer	1595.00
	Add Option 008 Rugged Flight Case	240.00
VP150	Video Printer for 1530A	1695.00
76 10-0000	Printer Paper (per roll) . . . . .	.950

MSAT Multi Channel Switching System

• A minimum system consists of one Master Controller plus one Slave Mainframe plus one Audio Switcher Card • Each Slave Mainframe holds up to 13 Audio Switching Cards • One Master Controller can control up to 16 Slave Mainframes • A "split backplane" allows you to perform 2 channel switching within the same mainframe

With the Programmable Multi Channel Switching System you will be able to test up to 1,536.00 channels of audio. You can test multi channel consoles, tape machines, routing switchers, patch bays and multiple satellite transponders — all automatically.

MSAT-100G	Master Controller with GPIB	\$ 1350.00
MSAT-100R	Master Controller with RS-232	1350.00
MSAT-200	Slave Mainframe having continuous backplane	1690.00
MSAT-202	Audio Switcher Card (8 x 1 channel)	360.00
MSAT-203	Audio Switcher Card (4 x 2 channel)	360.00
MSAT-204	Switch Closure Module	160.00

SOUND TECHNOLOGY, INC.**Transmission/Audio Test Systems****3000 Series****Transmission/Audio Test Systems**

- 2-channel inputs and outputs
- The ability to run automated tests without using a computer
- Separate generator and analyzer for remote testing capability
- Front panel programmability
- FSK (Frequency-Shift-Keying) communication between generator and analyzer is standard, as well as GPIB and RS-232 interfaces
- The 3000 Series is fast. THD measurements typically made in 500ms, level measurements as fast as 30ms

The 3100A output configuration is 2-channel, electronically balanced, and completely floating. This transformerless design allows you to drive virtually any kind of circuit—balanced, unbalanced, off-ground or whatever, with no loss of level and no groundloops. This unique design insures that you get very clean low level signals, even below microphone line levels and down to 24.5 μ V (-90dBm). Also, RF shielding built into and around the 3100A insures RF rejection. RF rejection is accomplished by complete isolation of the oscillator module from the microprocessor control section using optical-isolation techniques.

One of the primary design considerations for the 3000 Series was speed and the 3100A generator was no exception. Using the latest state-variable oscillator technologies, oscillator stabilization times were reduced to permit a sweep from 20Hz to 20kHz with 10 points/decade (30 measurements) in less than 6 sec. for level measurement and 15 sec. for THD measurement using the companion 3200 Analyzer.

Another feature of the 3100A Generator is the concept of front panel programmability. Not only can comprehensive frequency and level sweeps be generated and stored, but entire testing procedures or proofs can be built and stored into memory locations in the 3100A. There are 50 locations used for panel set-ups and 10 locations for chaining panel set-ups for automated test sequences. A single panel set-up can run an automatic sweep. When using the stored programs within the 3100A Generator, in conjunction with the analyzer programs stored in the 3200A Programmable Audio/Transmission Analyzer, you have the ability to design whatever automated testing sequences you want right on the front panels.

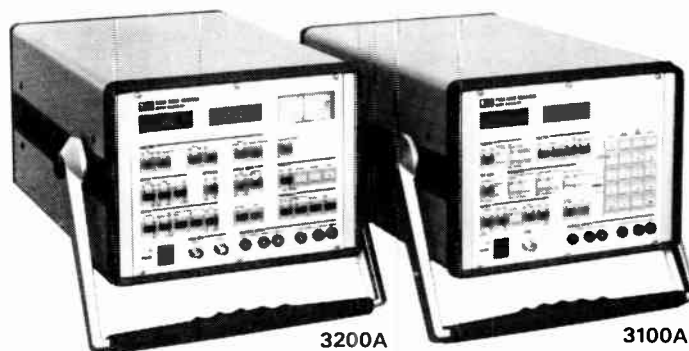
For the first time your field engineering people can duplicate the exact testing procedures used back at the main facility without having to cart along a computer and its peripherals. You have a complete, comprehensive test system at your disposal for normal, nonautomated troubleshooting. The 3000 Series is a versatile piece of stand-alone test equipment in the field or on the bench.

The 3200A Audio Analyzer can handle any demanding testing situation thrown at it: stereo measurements? No problem, it's 2-channel. Need to perform rapid phasing and channel separation tests? The 3200A has it covered; measure phase to 40kHz, channel separation at any frequency up to 100kHz in fractions of a second. Remote measurement requirements from time-to-time? The 3200A has you covered; when used with the FSK capability contained in the ST 3100A Audio Generator, it will make remote measurements unmanned. And, because of the ability to store panel set-ups in its memory (like the ST 3100A Generator), you can perform complete proofs with the 3200A Analyzer remotely located and unmanned—all without the use of a computer or external communication lines. The generator/analyzer communication is done through the audio line being tested.

With the 3100A Analyzer, you have unmatched measurement capability: Flat and filtered level ratio and Notch Lock; THD vs level or frequency; SMPTE IMD analysis; phase error; channel separation.

All measurements can be made 2-channel and can be displayed on both of the LED readouts, as well as the tracking analog meter.

In addition to the ability to receive FSK data from the 3100A Generator, the 3200A Analyzer can be controlled via GPIB or RS-232C. More importantly though, front panel test set-ups can be stored into the 3200A memory. As a result, automatic receipt and analysis of data from the 3100A Generator can all be accomplished through the line you are testing.



The analyzer was also designed with speed in mind: it takes the 3200A Analyzer only 30ms (above 1kHz) to make a level reading and 500ms (above 50Hz) to make a THD measurement.

Notch Lock allows you to make signal-to-noise measurements in the presence of a low level signal as in the case of measuring quantization noise in digital audio systems. Without Notch Lock, the auto-nulling notch filter on an analyzer such as the 3200A could become a hindrance when attempting to measure the most bothersome aspect of digital audio: increased noise floor due to the quantizing error occurring in low passages.

Measurements can be made to virtually any audio specification due to the inclusion of the following standard filters: Hi Pass—20Hz, 200Hz, 400Hz; Low Pass—15kHz, 20kHz, 30kHz and 80kHz. The 200Hz and 15kHz filters conform to the IEEE RCVR spec. There is also provision for the use of external filters.

The following peripherals can be driven directly from the 3200A rear panel: X-Y plotter, Epson® or Okidata® type printer. Data can also be recalled and viewed on the two LED displays. Test results can also be left in protected memory for later retrieval by a printer, a computer or through a modem if the analyzer is remotely located.

System Ordered in One Mainframe:

3000A	Programmable Transmission/Audio Test System	\$9395.00
Option 002	Rackmount mainframe	130.00
Option 004	Intermodulation Distortion Analysis (IMD)	850.00
Option 005	Generator Special Functions Group (Toneburst, Sine/Step)	895.00
Option 006	Generator De-emphasis Group (10, 25, 50, 75 μ s)	495.00
Option 009	GPIB Computer Interface	590.00
Option 010	Analyzer Notch Lock	350.00

System Ordered in Separate Mainframes:

3100A	Programmable Audio Generator	\$4250.00
Option 002	Rackmount Mainframe	100.00
Option 004	IMD Generator	275.00
Option 005	Special Functions Group (Toneburst, Sine/Step)	895.00
Option 006	De-emphasis Group (10, 25, 50, 75 μ s)	495.00
Option 009	GPIB Computer Interface	295.00

3200A	Programmable Transmission/Audio Analyzer	\$5495.00
Option 002	Rackmount Mainframe	100.00
Option 004	IMD Analyzer	575.00
Option 009	GPIB Computer Interface	295.00
Option 010	Notch Lock	350.00
Option 011	Remote Self Check	350.00

Packaging Option Available for Each of the Above Instruments:

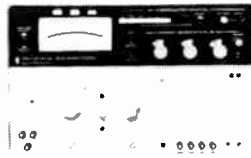
Option 003	Amber-Color Acrylic Tilt-Up Cover with Lock	\$110.00
Option 008	Rugged Flight Case	240.00

SOUND TECHNOLOGY, INC.

Distortion Measurement Systems



1701A



1710A



1700B

1700 Series

Distortion Measurement Systems

- Pushbutton frequency selection is fast and repeatable
- Fully automatic nulling circuits measure distortion as low as 0.0009% in five sec.
- RMS, peak, and average responding meter circuits let you measure to accepted standards
- Measure floating sources from 30μV to 300V; break ground loops with the built-in balanced voltmeter; measure power in dBm or in watts across 8 ohms
- Internal 10Hz to 110kHz balanced and floating oscillator is adjustable from -90 to +26dBm in 0.1dB steps
- Measure signal-to-noise ratios with 100dB dynamic range
- Automatic Set Level and IM distortion measurements optional

1700B Distortion Measurement System. **\$3200.00**

Option 002 Rackmount Kit **130.00**

Option 005 dBm Meter Scale and Front Panel **390.00**

1701A Precision Distortion Measurement System. **\$3250.00**

Option 002 Rackmount Kit **130.00**

Option 004 Intermodulation Distortion Analyzer. **750.00**

1710A Professional Distortion Measurement System. **\$3990.00**

Base unit includes Automatic Set Level and Selectable Average, RMS, Peak Responding Meter Circuits

Option 002 Rackmount Kit **130.00**

Option 004 Intermodulation Distortion Analyzer. **975.00**

Option 005 Output Attenuators and Meter Calibrated for both 150 and 600 ohms. **350.00**

Option 008 Rugged Flight Case (Available for above instruments) **240.00**

Accessories

1200-6000 8 ohm, 1% tolerance, 250W, non-inductive load resistor. **\$ 40.00**

31001 Factory retrofit of Auto Set Level (option 003) into 1700A/B, 1701A and 1710A **450.00**

SPECIFICATIONS

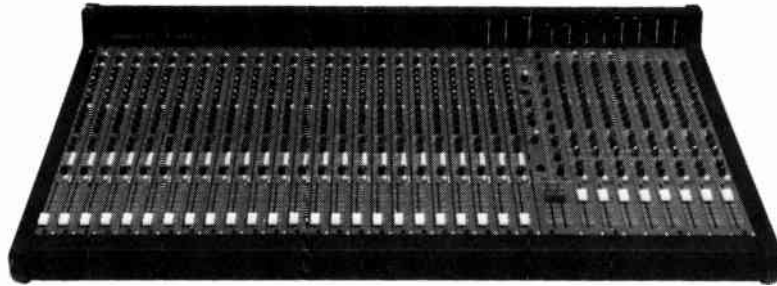
GENERATOR	1700B	1701A*	1710A
Frequency Range/Accuracy	10 0 Hz to 110 kHz in four overlapping ranges/± 2% of setting		
Frequency Vernier	None	± 75% of least significant digit	
Frequency Response (referred to 1 kHz)	Flat within 0.2 dB		
Output Level	1 mV - 3V, continuously variable, open circuit	1 mV - 6V, open circuit	+26 to -89.9 dBm (ref to 600Ω) into 150 or 600Ω loads *
Output Control/Attenuator	Single-turn log pot *	70 dB range, 10 dB ± 0.1 dB steps Vernier has > 10 dB range	115.9 dB, 0.1 dB steps Acc'y ± 0.15 dB (1.5%) Balance > 70dB to 20kHz, > 50 dB > 20 kHz Vernier ± 1 dB
Output Impedance	Variable up to 625Ω *	600Ω ± 1%	150 or 600Ω ± 1%, balanced and floating (< 2Ω on > 26 dBm step)
Distortion - Low Distortion Mode	< 0.002% 20 Hz - 20 kHz, < 0.0025% 10 Hz - 20 Hz, < 0.003% to 30 kHz, < 0.02% to 50 kHz, < 0.05% to 80 kHz, < 0.1% to 100 kHz	< 0.001% 20 Hz - 10 kHz, < 0.002% 10 Hz - 20 kHz, < 0.003% to 30 kHz, < 0.005% to 50 kHz, < 0.01% to 100 kHz Distortion doubles when using +6 dB switch	Output level to +26 dBm with 600Ω load, or +20 dBm with 150Ω load < 0.002% 20 Hz - 10 kHz, < 0.0025% 10 Hz - 20 kHz, < 0.003% to 30 kHz, < 0.007% to 50 kHz, < 0.02% to 80 kHz, < 0.05% to 100 kHz At +26 dBm 150Ω load, distortion doubles above 5 kHz
Distortion - Fast Response Mode	< 0.05% 100 Hz - 50 kHz < 0.2% 20 Hz - 110 kHz	< 0.05% 100 Hz - 50 kHz < 0.2% 20 Hz - 110 kHz	< 0.05% 100 Hz - 50 kHz < 0.2% 20 Hz - 110 kHz
Hum and Noise	100 dB below rated output		Greater of 120 dB below 0 dBm, 600Ω balanced load (100 dB unbalanced), or 100 dB below signal level

ANALYZER/VOLTMETER

Frequency Range/Accuracy	Same as generator section Analyzer tuned simultaneously with generator		
Input Impedance (THD, Volts/Power, Ratio)	Balanced, 100kΩ shunted by < 100 pF each terminal to ground	Same, but < 400 pF to ground	
100% Set Level Input	0.1 to 300V		0.1 to 100V
Distortion Measurement Range	0.1% to 100% full scale in 9 ranges		
THD Acc'y (2nd-5th harmonics to 300 kHz)*	± 1 dB 10 Hz - 20 kHz, ± 2 dB 20.1 kHz - 50 kHz, ± 3 dB 50.1 kHz - 110 kHz		
Fundamental Rejection	Greater than 100 dB		
THD Residual Distortion	< 0.002% 10 Hz - 10 kHz, < 0.003% to 20 kHz, < 0.007% to 30 kHz, < 0.02% to 50 kHz, < 0.05% to 80 kHz, < 0.1% to 100 kHz	< 0.001% 20 Hz - 10 kHz, < 0.002% 10 Hz - 20 kHz, < 0.003% to 30 kHz, < 0.005% to 50 kHz, < 0.01% to 100 kHz (20% higher on 10V range)	< 0.002% 10 Hz - 10 kHz, < 0.003% to 20 kHz, < 0.007% to 30 kHz, < 0.02% to 50 kHz, < 0.05% to 80 kHz, < 0.1% to 100 kHz
Noise (80 kHz filter in, signal > 0.3Vrms < 0.3V Voltmeter noise spec applies)*	< 0.0025% to 10 kHz < 0.003% to 20 kHz	< 0.002% to 20 kHz	< 0.0025% to 10 kHz < 0.003% to 20 kHz
Distortion Output (full scale deflection)	31.6 mVrms ± 5%, open circuit, 1 kΩ ± 5% output impedance		
Input Monitor (referred to chassis gnd)	Ranged reproduction of input signal		
Automatic Null Time (using internal osc)	< 6 seconds, all THD ranges		
Meter Response (auto-band, rms calib)	Average value	AVG, RMS, or PEAK value *	Average value*
Common Mode Rejection	ADJUST control fully ccw > 40 dB at 60 Hz, control fully cw 25 dB (> 40 dB with ASL Option)		
Maximum Common Mode Voltage	Not to exceed input voltage range setting or 1V, whichever is greater		
INPUT Filters	High Pass 3 dB point at 400 Hz, 18 dB/oct roll-off 60 Hz rejection > 40 dB Low Pass 3 dB point at 80 kHz (and 30 kHz for 1710A), 18 dB/octave roll-off		
Voltmeter Input Range	3 mV to 300V full scale, 1 μW - 10 kW across 8Ω, to 30 μV full scale using RATIO switch	100 μV to 100V full scale, 80 to +80 dBm, 600Ω	
Voltmeter Accuracy	± 2% 20 Hz - 20 kHz, ± 5% 10 Hz - 110 kHz		± 0.2 dB (2%) 20 Hz - 20 kHz ± 0.6 dB (6%) 10 Hz - 110 kHz
Residual Noise (referred to input)	< 8 μV (80 kHz filter in) < 15 μV (80 kHz filter out)	< 8 μV (80 kHz filter in) < 10 μV (80 kHz filter out)	< 5 μV (30 kHz filter in) < 8 μV (80 kHz filter in) < 15 μV (filters out)
RATIO Input for 0 dB Reference Set	0.1V to 300V		0.077 to 77.7 (-20 to +40 dBm)
RATIO Measurement Accuracy	± 0.2 dB 20 Hz - 20 kHz ± 0.5 dB 10 Hz - 110 kHz		± 0.2 dB 20 Hz - 20 kHz ± 0.6 dB 10 Hz - 110 kHz

GENERAL

Power (115/230V, ± 10%, 50/60 Hz)	18 Watts maximum		36 Watts maximum
Dimensions - HWD (add 0.6" for mtg feet)	8.7 x 17.2 x 12" (22 x 44 x 31 cm)		10.5 x 17.2 x 14.5" (27 x 44 x 37 cm)
Weight - Net/Shipping: lbs (kg) *	16 (7.3) / 21 (9.5)	17 (7.7) / 22 (10)	25 (11.4) / 33 (15)



M Series

M Series Modular Mixing Consoles

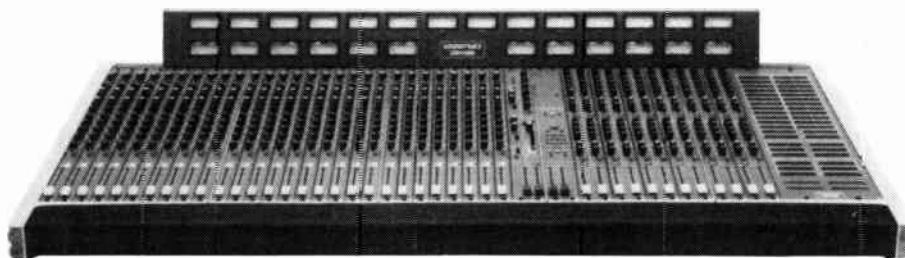
Usability, and simplicity with flexibility was the key instruction in the design brief. "A 'live audio' mixer with the basic essentials for Concert Sound Reinforcement, Theatre, Television Production and Multi-track Recording, incorporating the suggestions of many experienced users, incorporated in an affordable package."

For television production, the matrix can create mix feeds to production assistants and camera operators as well as actors/participants not required to hear certain parts of the production (i.e. mix-minus) and can feed various VTR's with separate mixes and provide primary and secondary transmission feeds.

The extruded aluminum mainframe is available in two sizes, 34mu (up to 24-8-2) and 42mu (up to 32-8-2), housing a variable number of inputs (1mu) modules and the eight groups and master (10mu) module. Cosmetically designed to enhance any production control room, the "M Series" is built to withstand the rigors of mobile and location work, and the modular construction facilitates efficient "on the spot" servicing.

Full visual monitoring is provided by eleven high intensity LED bargraphs reading the VU scale of stereo masters, 8 sub groups, solo, six auxiliary and the four matrix outputs.

- 16-8 16 channel console. 16 input modules and 8 blank modules in a 24-8 frame. Includes 8 subgroups with 16 track monitoring facilities, external power supply **\$10,335.00**
- 24-8 24 channel console. 24 input modules and 8 subgroups with 16 track monitoring facilities, master selection and external power supply **11,595.00**
- 32-8 32 channel console. 32 input modules and 8 subgroups with 16 track monitoring facilities, master section and external power supply. **13,995.00**



CM-4400 Digital Routing and Muting Synchronized to SMPTE

CM-4400 Series Modular Mixing Consoles

The CM-4400 with its Digital Routing System provides a superior alternative to conventional consoles. Some of the advantages of this system are rapid assignment setups and changes, immediate visual assignment indication, pre-programmed muting, and with the optional external computer interface it is possible to have all muting and assignment control synchronized to SMPTE Time Code.

The CM-4400 is of fully modular construction. Each unit is 35mm or 1.377" wide. The frame prices include the master module, computer module, meter bridge and external power supply.

- 32 WPB **\$39,655.00**
- 32 Series **30,655.00**
- 28 WPB **32,595.00**
- 28 Series **28,995.00**
- 24 WPB **29,475.00**
- 24 Series **24,275.00**
- 16 WPB **24,455.00**
- 16 Series **19,255.00**

WPB after model number indicates unit comes with patchbay.

SOUND WORKSHOP

Mixing Consoles/Storage/Editing System



Series 34C

Series 34C Modular 24-Bus Audio Recording/Mixing Consoles

- Clear, uncluttered layout for quick understanding of control locations and purpose
- All circuitry is high slew, yielding unexcelled transient response
- Dynamic LEDs are all driven from constant current sources, eliminating clicks and induced power supply ripple
- Line and mike inputs are fully balanced designs using IC and discrete devices
- 4-band equalizer with sweepable frequency selection
- Auxiliary send system consists of 6 send buses configured as four mono sends and one stereo send
- Stereo mix bus serves as the monitor mix bus during tracking sessions
- Solo systems are provided on both the monitor and channel signal paths
- Consoles equipped with the ARMS console computer offer an independent solo/mute system that further enhances the function of the Series 34's standard systems
- High resolution metering modules provide 40 segment, 3-color LED displays that feature both peak and average modes
- Patch bay is an expandable modular

design providing 7 jacks per I/O channel plus complete facilities for Master Module functions and an array of external signal processing gear • Mainframe is a unitized, welded, steel structure, not a series of bolted-on sections

Series 34C Ordering Information

No. of Inputs	Mainframe Size			
	24-Input	32-Input	40-Input	50-Input
24	\$33,900.00	\$33,900.00	—	—
28	—	36,900.00	\$39,400.00	—
32	—	39,900.00	42,400.00	—
40	—	—	48,400.00	\$52,400.00
50	—	—	—	59,900.00

Options	At time of Purchase	After Purchase
I/O Module with FDR	\$ 800.00	\$ 850.00
Hi-Res Metering (Track/Mix)	5,000.00	—
Dual Metering Wiring	250.00	—
Mech Meter Module (Two Meters)	200.00	230.00
Hi-Res Meter Module	245.00	265.00
Patch Bay Card (16 Points)	265.00	285.00
MB Patch Panel (Holds 5 Cards)	155.00	175.00
Molex Crimp Tool	250.00	250.00
Rolling Desktop	750.00	850.00
Monitor Mixer (First 8 Channels)	1,500.00	1,650.00
Monitor Mixer (Additional 8 Channels)	1,000.00	1,150.00
Extra Balanced Output	150.00	—
Stereo Input or Output Module	850.00	900.00
VCA Assembly (Mono)	190.00	200.00
VCA Assembly (Stereo)	350.00	375.00
ARMS-II with VCA (32 Channels)	9,500.00	10,500.00
ARMS-II with VCA (48 Channels)	10,500.00	11,500.00
ARMS-II with VCA (50 Channels)	11,500.00	12,500.00
Video Editor Interface	POR	—

ARMS Computer pricing includes mono VCA grouping package.

DISKMIX™ Console Automation Storage/Editing System

- Only one track of the multi-track tape recorder is needed for time code. This track may be shared for video lock-up, etc.
- You can start and end anywhere within a mix
- No cumulative delays are built up during the mix process regardless of the number of update passes
- An unlimited number of mixes may be stored. Up to 99 mixes can be saved under any one mix name (Songcode)
- All mixes are stored in complete form. New sections are automatically merged after each pass. There is no need to construct or "join" mixes
- DISKMIX is a "slave" type device which may be "driven" by any audio or video production system which uses SMPTE Time Code
- Complete offline facilities allow sections of mixes to be "spliced" and "merged" on disk without having to run the tape. There is no arbitrary limit to the number of mixes that may be spliced or merged using the offline functions. The merge function allows specific faders and/or mutes to be selected for each mix merge
- Fast, transparent operation does not get in the way of the creative process. Logical on-screen menus allow selection of all functions without the need for cumbersome typing or memorization of command syntax rules
- Optional custom keypad provides convenient full system operation (except for entering Songcodes, Titles, and Notes), eliminating the need for the computer keyboard at the console
- All important system information is clearly displayed in color on-screen windows
- System is hosted by a PC or PC Clone computer. All Data files are in standard MS/PC-DOS format

DISKMIX System \$7,950.00

Included:
DISKMIX Computer, DISKMIX System Software, DISKMIX Interface Cable

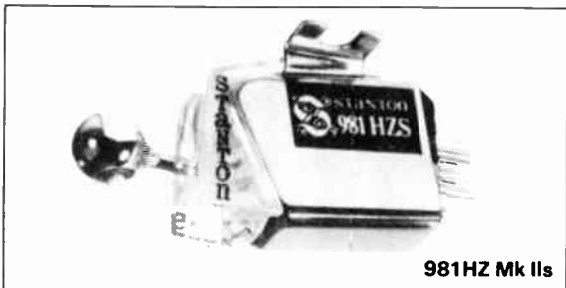
Required:
PC/XT Compatible Host Computer, Display Monitor, PC-DOS 3.1, ARMS Compatible Audio Console
DISKMIX Keypad (optional) \$950.00



DISKMIX System Shown with Optional Keypad

STANTON MAGNETICS, INC.

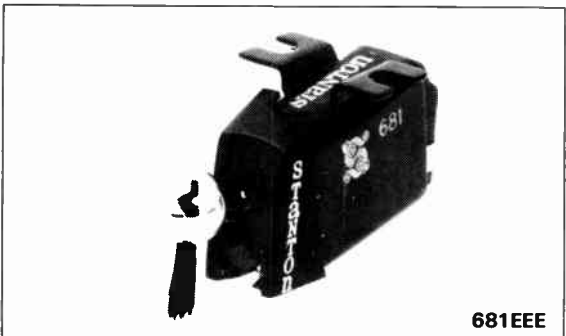
Phono Cartridges



981HZ Mk IIs



881S



681EEE



680EL



500AL

Cartridge Model	Tracking Force in grams	Stylus Type	Stylus Tip	Frequency Response range in Hz ± dB	Price
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HZS Series (High Impedance)

981HZ Mk IIs	.75-1.5	◆	.3x2.8 (8x71)	10-50k Calib. 10-20k	\$250.00
881 Mk IIs	.75-1.25	◆	.3x2.8 (8x71)	10-25k Calib. 10-20k	180.00
681EEE Mk IIs	.75-1.5	◆	.3x2.8 (8x71)	10-22k Ind. Fac. Calib.	120.00

LZS Series (Low Impedance)

981LZ Mk IIs	.75-1.5	◆	.3x2.8 (8x71)	10-50k Calib. 10-20k	\$250.00
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Universal Series (For standard 1/2" and P-Mounts)

L847S	.75-1.5	◆	.3x2.8 (8x71)	10-36k	\$180.00
L837S	.75-1.5	◆	.3x2.8 (8x71)	10-30k	140.00
L747S	.75-1.5	◆	.3x2.8 (8x71)	10-25k	125.00
L737S	.75-1.5	◆	.3x2.8 (8x71)	10-22k	100.00
L737E	.75-1.5	●	.3x7 (8x18)	10-22k	85.00
L727E	.75-1.5	●	.4x7 (10x18)	10-20k	75.00
L725E	.75-1.5	●	.4x7 (10x18)	10-22k	55.00
L720EE	.75-1.5	●	.4x7 (10x18)	10-20k	50.00

Disco Series

681SE	2-4	●	.4x.7 (10x18)	10-10k Calib. 10-20k	\$110.00
L680EL	3 1/2-4	●	.4x.7 (10x18)	20-18k	106.00
680EL	2-5	●	.4x.7 (10x18)	20-18k	106.00
680AL	2-5	●	0.7 (18)	20-18k	90.00
680SL	2-5	◆	.3x2.8 (8x71)	20-20k	109.00
L500AL	3 1/2-4	●	.7 (18)	20-17k	53.00
500AL	2-5	●	.7 (18)	20-17k	53.00
500EL	2-5	●	.4x.7 (10x18)	20-18k	56.00
681A	1.5-3	●	.7 (18)	10-10k Calib. 10-20k	88.00

Stereo Standard Series

680EE-S	.75-1.5	◆	.3x2.8 (8x71)	20-20k	\$95.00
680EE	.75-1.5	●	.3x2.8 (8x71)	20-20k	76.00

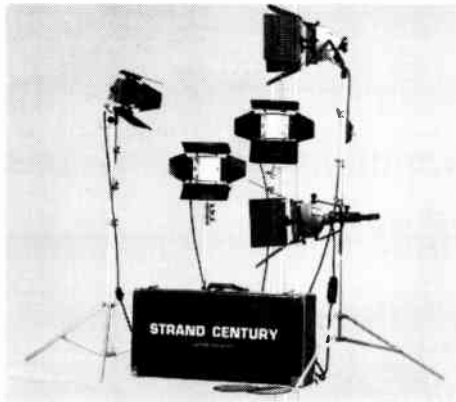
Broadcast Series

600EE	1-2	●	.3x.7 (8x18)	20-20k	\$66.00
600A	2-4	●	.7 (18)	20-20k	51.50
500EE Mk II	.75-1.5	●	.3x.7 (8x18)	10-22k	50.00
500E Mk II	1-2	●	.4x.7 (18)	10-22k	45.00
500A Mk II	1-2	●	.7 (18)	10-20k	37.50

◆ Stereohedron ● Elliptical ● Spherical

STRAND LIGHTING

Portable Lighting Kits



KIT V



KIT VII

Pulsar 600W

A light, compact, open faced floodlight, it is ideally suited for remote and location work. Stand camera-mounted or handheld, the Pulsar's fiberglass "cool touch" housing is a great asset. It gives a soft edged beam with variable spread, has a rapid-turn fast focus knob and an integral heat dissipator—and slips into compact storage. Operates both 120V and 240V lamps.

lanebeam 650W

lanebeam floodlights have basic features in all sizes: They are open faced, lightweight, compact, durable and ideally suited for work in film, television and still photography. They provide a soft edged beam with variable spread and fast focus. The 650W model accepts a variety of tungsten-halogen lamps for both 120V and 240V operation.

lanebeam 1000W

The 650W and 1000W lanebeam floodlights feature molded fiberglass housing for "cool touch" operation permitting faster pack-up after shooting as well as comfortable handling. The 1000W accepts a

variety of tungsten-halogen lamps and like all lanebeams has available a wide variety of accessories and both yokes for stand mounting as well as gaffer grips.

lanebeam 2000W

The largest lanebeam offered as a kit component is the 2000W which features a lightweight aluminum housing, will operate on 120V and provides a soft edged beam with variable output. It has rapid-turn fast focus knob, is equipped with yoke and stand mounting bracket and a complete range of mounting and grip equipment and accessories. Will also operate on 240V.

ladi 1000W

This unit provides high output fill light for portable and remote applications in television, film and still photography and features a one piece reflector for a wide field and smooth light distribution. The compact housing with folding, springloaded integral 4-way barndoors is ventilated for cooling and efficient operation on a wide range of tungsten-halogen lamps for both 120V and 240V operation.

Century Kit I (1051)

Includes:			
3-4515MP	Pulsar	1-1228	Half Single Scrim
3-1310	4-leaf Barndoor	3-DYS	600W, 75 hrs., 3200°K
1-1225	Full Double Scrim	3-1529	Stand
1-1226	Full Single Scrim	1-1977	Case
1-1227	Half Double Scrim		\$ 1120.00

Century Kit II (1052)

Includes:			
2-4501MP	lanebeam 650	1-1217	Single Scrim
2-1230	Accessory Holder	2-1529	Stand
2-1324	4-leaf Barndoor	1-1978	Case
1-1216	Double Scrim		\$ 811.00

Century Kit III (1053)

Includes:			
3-4501MP	lanebeam 650	1-1217	Single Scrim
2-1230	Accessory Holder	3-1529	Stand
2-1324	4-leaf Barndoor	1-1977	Case
1-1216	Double Scrim		\$ 1028.00

Century Kit IV (1054)

Includes:			
2-4501MP	lanebeam 650	1-1217	Single Scrim
2-1230	Accessory Holder	2-4522	ladi Fill
2-1324	4-leaf Barndoor	4-1530	Stand
1-1216	Double Scrim	1-1978	Case
			\$ 1339.00

Century Kit V (1055)

Includes:			
2-4503MP	lanebeam 1000	3-4522	ladi Fill
2-1230	Accessory Holder	1-1963	Gaffer Grip with
2-1324	4-leaf Barndoor		5/8" (16mm) stud
1-1216	Double Scrim	4-1535	Stand
1-1217	Single Scrim	1-1978	Case
			\$ 1589.00

Century Kit VI (1056)

Includes:			
4-4501MP	lanebeam 650	2-1217	Single Scrim
4-1230	Accessory Holder	4-1535	Stand
4-1324	4-leaf Barndoor	1-1978	Case
2-1216	Double Scrim		\$ 1494.00

Century Kit VII (1057)

Includes:			
4-4503MP	lanebeam 1000	2-1217	Single Scrim
4-1230	Accessory Holder	4-1535	Stand
4-1324	4-leaf Barndoor	1-1978	Case
2-1216	Double Scrim		\$ 1494.00

Century Kit VIII (1058)

Includes:			
3-4503MP	lanebeam 1000	1-1217	Single Scrim
2-1230	Accessory Holder	3-1529	Stand
2-1324	4-leaf Barndoor	1-1978	Case
1-1216	Double Scrim		\$ 1028.00

Century Kit IX (1059)

Includes:			
2-4503MP	lanebeam 1000	1-1217	Single Scrim
2-1230	Accessory Holder	2-1530	Stand
2-1324	4-leaf Barndoor	1-1979	Case
1-1216	Double Scrim		\$ 811.00

Century Kit XI (1061)

Includes:			
2-4505MP	lanebeam 2000	1-1223	Half Double Scrim
2-1325	4-leaf Barndoor	1-1224	Half Single Scrim
1-1221	Full Double Scrim	2-1535	Stand
1-1222	Full Single Scrim	1-1973	Case
			\$ 1311.00

STRAND LIGHTING

Portable Lighting Units

QUARTZCOLOR PORTABLE LIGHTING UNITS

Pulsar 600

4515MP 600W Pulsar, fiberglass variable focus spotlight, with integral accessory holder, switch and 12' cable \$227.00



4515MP

Accessories

1133 Color or diffuser frame \$15.00
1141 Outrigger color/diffuser frame 96.00
1183 Variable cone 62.00
1225 Full double scrim 12.00
1226 Full single scrim 12.00
1227 Half double scrim 12.00
1228 Half single scrim 12.00
1278 Safety glass (clear) 53.00
1281 Dichroic filter 92.00
1310 4-way barndoor 41.00
1529 Stand for Pulsar 68.00
1960 Handle 45.00
1963 Gaffer grip with 5/8" stud 34.00

Lamps

DYS 600W 75 hrs., 3200°K †
DYG 250W 20 hrs., 3200°K, 30V †
DYR 650W 75 hrs., 3200°K, 220/240V †
EYL 100W 50 hrs., 3300°K, 12V †

lanebeam 650

4501MP 650W lanebeam, fiberglass variable focus spotlight \$150.00
4502MP 800W lanebeam, fiberglass variable focus spotlight, 220/240V 180.00



4503MP

lanebeam 1000 (120V Only)

4503MP 1000W lanebeam, fiberglass variable focus spotlight \$162.00



4505MP

Accessories for lanebeam 650 and 1000

1230 Accessory holder (required for all accessories) . . . \$45.00
1324 4-way barndoor 34.00
1135 Outrigger extended color/diffuser frame 96.00
1282 Dichroic filter 129.00
1279 Safety glass (clear) 53.00
1216 Full double scrim 13.00
1217 Full single scrim 13.00
1218 Half double scrim 13.00
1219 Half single scrim 13.00
1530 Small kit stand aluminum, folds to 21", extends to 6'5", 5/8" stud, 2.3 lbs. 75.00
1535 Reg. kit stand aluminum, folds to 30", extends to 8'6", 5/8" stud, 2.9 lbs. 88.00

Lamps for lanebeam 650

FDA 400W 250 hrs., 3200°K †
FAD 650W 100 hrs., 3200°K †
FBX 650W 100 hrs., 3200°K, frosted †
DXX 800W 50 hrs., 3200°K, 220/240V †

Lamps for lanebeam 1000

FCB 600W 75 hrs., 3200°K †
DXW 1000W 150 hrs., 3200°K †
FBY 1000W 150 hrs., 3200°K, frosted †

lanebeam 2000

4505MP 2000W lanebeam, variable focus spotlight with integral accessory holder \$356.00
4506MP 2000W lanebeam, variable focus spotlight with integral accessory holder, 220/240V 356.00

Accessories

1325 4-way barndoor \$ 63.00
1283 Dichroic filter 264.00
1221 Full double scrim 15.00
1222 Full single scrim 15.00
1223 Half double scrim 15.00
1224 Half single scrim 15.00
1519 Trojan stand 134.00

Lamps

FER 1000W 500 hrs., 3200°K †
DVV 1500W 300 hrs., 3200°K, 220/240V †
FEY 2000W 300 hrs., 3200°K †
FEX 2000W 300 hrs., 3200°K, 220/240V †

†Call for current lamp prices.

STRAND LIGHTING

Fresnels



3101MP



3301TV



3501TV



3601TV

Strand Lighting/Quartzcolor Fresnels

Efficient, soft edged beam with excellent barndooring characteristics for high performance situations.

3" (76mm) "Mizar"

3101TV	3" (76mm), 200W Fresnel, hanging	\$268.00
3101MP	3" (76mm), 200W Fresnel, stand mount	280.00
3102TV	3" (76mm), 500W Fresnel, hanging	308.00
3102MP	3" (76mm), 500W Fresnel, stand mount	322.00

Accessories

1310	4-way barndoor	\$41.00
1133	Color or diffuser frame	15.00
1225	Full double scrim	12.00
1226	Full single scrim	12.00
1227	Half double scrim	12.00
1228	Half single scrim	12.00
1183	Variable cone	62.00
1500	Safety cable for hanging	9.00
1560	Table stand with 5/8" (16mm) stud	33.00

Lamps

FEV	200W, 50 hrs.	†
CP81	300W, 150 hrs.	†
CP82	500W, 150 hrs.	†

6" (152mm) 1000W "Polaris"

3301TV	6" (152mm) 1000W Fresnel, hanging	\$392.00
3301PO	6" (152mm) 1000W Fresnel, pole-op	611.00
3301MP	6" (152mm) 1000W Fresnel, stand mount	404.00

Accessories

1300	8-way rotatable barndoor	\$ 56.00
1144	Color or diffuser frame	13.00
1201	Full double scrim	12.00
1202	Full single scrim	12.00
1203	Half double scrim	12.00
1204	Half single scrim	12.00
1123	Wireguard	15.00
1170	2 1/4" (57mm) cone	45.00
1171	3" (76mm) cone	45.00
1172	4 1/4" (108mm) cone	45.00

Lamps

EGN	500W, 100 hrs.	†
EGR	750W, 200 hrs.	†
EGT	1000W, 200 hrs.	†
CP39	650W, 100 hrs., 220/240V	†
CP40	1000W, 200 hrs., 220/240V	†

10" (254mm) 2000W "Castor"

3501TV	10" (254mm), 2000W Fresnel, hanging	\$675.00
3501PO	10" (254mm), 2000W Fresnel, pole-op	861.00
3501MP	10" (254mm), 2000W Fresnel, stand mount	807.00

Accessories

1301	8-way rotatable barndoor	\$79.00
1145	Color or diffuser frame	25.00
1208	Full double scrim	16.00
1209	Full single scrim	16.00
1210	Half double scrim	16.00

1211	Half single scrim	\$16.00
1125	Wireguard	19.00
1173	4 3/8" (111mm) cone	96.00
1174	6" (152mm) cone	96.00
1175	7 3/4" (197mm) cone	96.00
1500	Safety cable for hanging	9.00

Lamps

CYV	1000W, 200 hrs.	†
CXZ	1500W, 325 hrs.	†
CYX	2000W, 250 hrs.	†
CP41	2000W, 400 hrs., 220/240V	†

12" (305mm) 5000W "Pollux"

3601TV	12" (305mm), 5000W Fresnel, hanging	\$1022.00
3601PO	12" (305mm), 5000W Fresnel, pole-op	1239.00
3601MP	12" (305mm), 5000W Fresnel, stand mount	1128.00

Accessories

1302	8-way rotatable barndoor	\$118.00
1146	Color or diffuser frame	31.00
1147	Outrigger color/diffuser frame	236.00
1212	Full double scrim	34.00
1213	Full single scrim	34.00
1214	Half double scrim	34.00
1215	Half single scrim	34.00
1126	Wireguard	23.00
1176	6 1/4" (159mm) cone	124.00
1177	9" (229mm) cone	124.00
1178	11" (279mm) cone	124.00

Lamps

DPY	5000W, 500 hrs.	†
CP29	5000W, 500 hrs., 220/240V	†

Note: Units include wireguard

Fresnel Performance Data

Cat. No.	Distance	Spot Focus		Flood Focus		Lamp
		Footcandles (Lux)	1/2 Peak Diameter	Footcandles (Lux)	1/2 Peak Diameter	
3101	10' (3m)	234 (2600)	1.4' (4m)	31 (350)	8.3' (2.5m)	FEV
3301	15' (4.5m)	560 (6222)	1.7' (5m)	48 (533)	16.5' (5m)	EGT
3501	25' (7.5m)	423 (4708)	5' (1.5m)	63 (702)	25' (7.5m)	CYX
3601	35' (10.5m)	449 (4989)	8' (2.4m)	81 (907)	39.6' (11.9m)	DPY

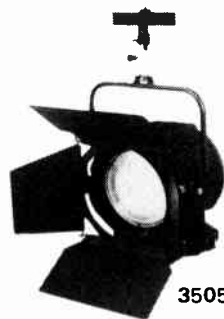
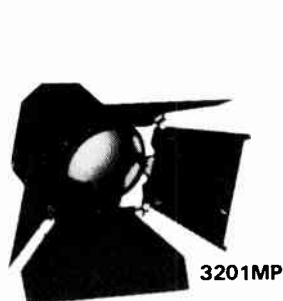
Notes:

- Fixtures are provided with 3' (.9m) leads, connectors and C-Clamp for hanging unless otherwise specified
- To specify grounded connector type, add suffix to catalog number:
GP—Three Pin
GTL—Twistlock
GR—Parallel Blade U-Ground
HGP—Harj-lock Pin Connector
- To specify fixture type add suffix for catalog number:
MP—For stand mounting, with 23' (7m) cable and in-line switch
PO—For Pole Operation
TV—With C-Clamp for hanging
- Lamps and color frames not included unless otherwise noted
- Lamps listed are 3200°K unless otherwise noted. Lamps and fixtures are 120V unless otherwise noted
- For international applications, designate 100, 120, 220 or 240V operation

† Call for current lamp prices

STRAND LIGHTING

Fresnels



5" (127mm) 1000W Bambino

- 3201TV 5" (127mm) 1000W Fresnel, hanging \$443.00
- 3201MP 5" (127mm) 1000W Fresnel, stand mount 449.00

Accessories

- 1306 8-way rotatable barndoor \$97.00
- 1143 Color or diffuser frame 13.00
- 1200 Full double scrim 12.00
- 1205 Full single scrim 12.00
- 1206 Half double scrim 12.00
- 1207 Half single scrim 12.00

Lamps

- ERN 500W 100 hrs. †
- EGR 750W 200 hrs. †
- EGT 1000W 200 hrs. †
- CP39 650W 100 hrs., 220/240V †
- CP40 1000W 200 hrs., 220/240V †

6" (152mm) 2000W Bambino

- 3302TV 6" (152mm) 2000W Fresnel, hanging \$661.00
- 3302PO 6" (152mm) 2000W Fresnel, pole-op. 896.00
- 3302MP 6" (152mm) 2000W Fresnel, stand mount 667.00

Accessories

- 1300 8-way rotatable barndoor \$56.00
- 1144 Color or diffuser frame 13.00
- 1201 Full double scrim 12.00
- 1202 Full single scrim 12.00
- 1203 Half double scrim 12.00
- 1204 Half single scrim 12.00
- 1123 Additional wireguard 15.00
- 1170 2 1/4" (57mm) 45.00
- 1171 3" (76mm) 45.00
- 1172 4 1/4" (108mm) 45.00

Lamps

- CYV 1000W 200 hrs. †
- CXZ 1500W 325 hrs. †
- CYX 2000W 250 hrs. †
- CP41 2000W 400 hrs., 220/240V †

10" (254mm) 5000W Bambino

- 3505TV 10" (254mm) 5000W Fresnel, hanging. \$1016.00
- 3505PO 10" (254mm) 5000W Fresnel, pole-op. 1265.00
- 3505MP 10" (254mm) 5000W Fresnel, stand mount 1045.00

Accessories

- 1301 8-way rotatable barndoor \$79.00
- 1145 Color or diffuser frame 25.00
- 1208 Full double scrim 16.00
- 1209 Full single scrim 16.00
- 1210 Half double scrim 16.00
- 1211 Half single scrim 16.00
- 1125 Additional wireguard 19.00
- 1173 4 3/8" (111mm) cone 96.00
- 1174 6" (152mm) cone 96.00
- 1175 7 1/4" (197mm) cone 96.00

Lamps

- DPY 5000W 500 hrs. †
- CP29 5000W 500 hrs., 220/240V †

14" (356mm) 10,000W Bambino

- 3701TV 14" (356mm) 10,000W Fresnel, hanging \$2099.00
- 3701PO 14" (356mm) 10,000W Fresnel, pole-op 2372.00
- 3701MP 14" (356mm) 10,000W Fresnel, stand mount 2194.00

Accessories

- 1302 8-way rotatable barndoor \$118.00
- 1146 Color or diffuser frame 31.00
- 1147 Outrigger color frame 236.00
- 1212 Full double scrim 34.00
- 1213 Full single scrim 34.00
- 1214 Half double scrim 34.00
- 1215 Half single scrim 34.00
- 1126 Additional wireguard 28.00
- 1176 6 1/4" (159mm) cone 124.00
- 1177 9" (229mm) cone 124.00
- 1178 11" (279mm) cone 124.00

Lamps

- DTY 10,000W 300 hrs. †
- CP83 10,000W 500 hrs., 220/240V †

Operating Poles

- 1941 Operating pole 6' (1.8m), 2.1 lb. (0.95kg) \$107.00
- 1942 Operating pole 9' 3" (2.8m), 2.8 lb. (1.3kg) 112.00
- 1943 Operating pole 12' 7" (3.8m), 3.5 lb. (1.6kg) 118.00
- 1944 Operating pole 15' 10" (4.8m), 4.2 lb. (1.9kg) 124.00

Bambino Performance Data

Catalog Number	Distance	Spot Focus		Flood Focus		Lamp
		Footcandles (Lux)	1/10 Peak Diameter	Footcandles (Lux)	1/10 Peak Diameter	
3201	15' (4.5m)	675 (7500)	4.2' (1.26m)	63 (700)	20.2' (6.1m)	EGT
3302	20' (6m)	385 (4305)	7' (2.1m)	52 (580)	29' (8.7m)	CYX
3505	35' (10.5m)	448 (4985)	11.5' (3.5m)	65 (725)	41.6' (12.6m)	DPY
3701	50' (15m)	328 (3645)	22.5' (6.8m)	60 (665)	61.6' (18.5m)	DTY

Notes

- Fixtures are provided with 3' (.9m) leads, connectors and C-Clamp for hanging unless otherwise specified
- To specify grounded connector type, add suffix to catalog number:
 - GP—Three Pin
 - GTL—Twistlock
 - GR—Parallel Blade U-Ground
 - HGP—Harj-lock Pin Connector
- To specify fixture type add suffix to catalog number:
 - MP—For stand mounting, with 23' (7m) cable and in-line switch
 - PO—For pole operation
- TV—with C-Clamp for hanging
- Lamps and color frames not included unless otherwise noted
- Lamps listed are 3200°K unless otherwise noted. Lamps and fixtures are 120V unless otherwise noted
- For international applications, designate 100, 120, 220 or 240V operation

† Call for current lamp prices.

STRAND LIGHTING

Fresnels



3380



3480



4757

Strand Lighting Fresnels

- 3380 6" (152mm) 500/1000W; 10.5 lb. (4.8kg) \$205.00
- 3480 8" (203mm) 1000/2000W; 17 lb. (7.7kg) 325.00

Accessories for 3380

- 1108 Color or Diffuser Frame \$ 5.00
- 1332 High Hat 18.00
- 1350 Accessory Safety Clip Assembly 8.50
- 1406 8-Way Barndoor 66.00
- 1500 Safety Cable for hanging 9.00

Accessories for 3480

- 1110 Color or Diffuser Frame \$ 7.00
- 1333 High Hat 18.00
- 1358 Accessory Safety Clip Assembly 8.50
- 1408 8-Way Barndoor 100.00
- 1500 Safety Cable for hanging 9.00

Lamps for 3380

- BTM 500W; 100 hrs., 3200°K †
- BTL 500W; 500 hrs., 3050°K †
- BTP 750W; 200 hrs., 3200°K †
- BTN 750W; 500 hrs., 3050°K †
- BTR 1000W; 200 hrs., 3200°K †
- T14 1000W; 750 hrs., 3050°K, 220/240V †
- CP51 650W; 100 hrs., 3200°K, 220/240V †
- T13 650W; 750 hrs., 3050°K, 220/240V †
- CP52 1000W; 200 hrs., 3200°K, 220/240V †

Lamps for 3480

- BVV 1000W; 200 hrs., 3200°K †
- BVT 1000W; 500 hrs., 3050°K †
- CWZ 1500W; 325 hrs., 3200°K †
- BVW 2000W; 250 hrs., 3200°K †

Par Holders

- 4750 Par 64 Holder—Aluminum with color frame, no connector \$62.00
- 4757 Par 64 Holder—Steel with color frame, no connector, black finish, 8.8 lb. (4kg) 49.00
- 4758 Par 64 Holder—Steel with color frame, no connector, white finish, 8.8 lb. (4kg) 70.00

Accessories

- 1110 Color/Diffuser Frame \$ 7.00
- 1408 8-Way Barndoor 95.00
- 1333 High Hat 18.00

Lamps

- FFN 1000W; 400 hrs., 3200°K, very narrow spot †
- FFP 1000W; 400 hrs., 3200°K, narrow spot †
- FFR 1000W; 400 hrs., 3200°K, medium flood †
- FFS 1000W; 400 hrs., 3200°K, wide flood †
- EXC 1000W; 300 hrs., 3200°K, narrow spot, 220/240V †
- EXD 1000W; 300 hrs., 3200°K, medium spot, 220/240V †
- EXE 1000W; 300 hrs., 3200°K, wide flood, 220/240V †

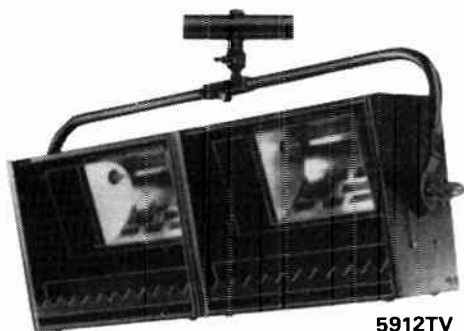
Notes

- Fixtures are provided with 3' (.9m) leads, connectors and C-clamp for hanging unless otherwise specified
- To specify grounded connector type, add suffix to catalog number
GP—Three Pin
GTL—Twistlock
GR—Parallel Blade U-Ground
HGP—Harj-lock Pin Connector
- Lamps and color frames not included unless otherwise noted
- Lamps listed are 3200°K unless otherwise noted. Lamps and fixtures are 120V unless otherwise noted
- For international applications, designate 100, 120, 220 or 240V operation

† Call for current lamp prices.

STRAND LIGHTING

Fill Lighting



5912TV



4271



5915

Scoops

4271	14" (356mm) 1000W fixed focus	\$230.00
4271MP	14" (356mm) 1000W fixed focus, stand mounting . . . . .	.265.00
4291	14" (356mm) 1000W focusing (screw feed) . . . . .	.265.00
4291MP	14" (356mm) 1000W focusing (screw feed), stand mounting . . . . .	.285.00

Accessories

1116	Color or Diffuser Frame	\$40.00
1500	Safety Cable for hanging . . . . .	.9.00

Lamps

EGD	500W 150 hrs., 3200°K	†
EGE	500W 2000 hrs., 3000°K	†
EGF	750W 250 hrs., 3200°K	†
EGG	750W 2000 hrs., 3000°K	†
EGJ	1000W 400 hrs., 3200°K	†
EGK	1000W 400 hrs., 3200°K frosted	†
EWE	1000W 250 hrs., 3200°K, 220/240V	†
4273A	18" (457mm) 2000W fixed focus . . . . .	.270.00
4273A/MP	18" (457mm) 2000W fixed focus, with stud adaptor, for stand mounting . . . . .	.290.00

Accessories

1119A	Color or diffuser frame 0.8 lb. (0.36kg)	\$58.00
1500	Safety cable for hanging lamps . . . . .	.9.00

Lamps

DSE	1000W 750 hrs., 3050°K frosted	†
DSF	1500W 1000 hrs., 3150°K frosted	†
Q2000/4/95	750 hrs., 3200°K	†

Broad Location Floodlights

4520TV	1000/1500W for hanging	\$231.00
4520MP	1000/1500W stand mounting . . . . .	.231.00
4521TV	1000/1500W for hanging, 220/240V . . . . .	.262.00
4521MP	1000/2500W stand mounting, 220/240V . . . . .	.262.00

Accessories

1344	4-way barndoor	\$68.00
1155	Outrigger extended color/diffuser frame . . . . .	.79.00

Lamps

FFT	1000W 400 hrs., 3200°K	†
FDB	1500W 400 hrs., 3200°K	†
P2/7	1000W 200 hrs., 3200°K, 220/240V	†
P2/12	1250W 200 hrs., 3200°K, 220/240V	†

"Iris" Overhead Quartzcolor Cyclorama Lighting

Color frames are included

5911TV	One light, one circuit, for hanging	\$311.00
5911PO	One light, one circuit, pole operated . . . . .	.519.00
5901TV	One light, one circuit, for hanging, 220/240V . . . . .	.415.00
5901PO	One light, one circuit, pole operated, 220/240V . . . . .	.607.00
5912TV	Two lights, two circuits, for hanging . . . . .	.611.00

5912PO	Two lights, two circuits, pole operated	\$ 789.00
5902TV	Two lights, two circuits, for hanging, 220/240V . . . . .	.764.00
5902PO	Two lights, two circuits, pole operated, 220/240V . . . . .	.914.00
5913TV	Three lights, three circuits, for hanging . . . . .	.862.00
5913PO	Three lights, three circuits, pole operated	1022.00
5903TV	Three lights, three circuits, for hanging, 220/240V	1015.00
5903PO	Three lights, three circuits, pole operated, 220/240V	1163.00
5914TV	Four lights, four circuits, for hanging	1087.00
5914PO	Four lights, four circuits, pole operated	1246.00
5904TV	Four lights, four circuits, for hanging, 220/240V	1233.00
5904PO	Four lights, four circuits, pole operated, 220/240V	1393.00

Accessories

1151	Additional color frame for iris cyc lights	\$30.00
1238	Wire guard for iris cyc lights	15.00
1155	Outrigger color frame for mini iris . . . . .	.79.00

"Mini Iris" (Color frames not included)

5915TV	One light, for hanging	\$231.00
5915MP	One light, stand mounting . . . . .	.231.00
5905TV	One light, for hanging, 220/240V . . . . .	.295.00
5905MP	One light, stand mounting, 220/240V . . . . .	.317.00

Lamps

FFT	1000W 400 hrs., 3200°K	†
FDB	1500W 400 hrs., 3200°K	†
FGT	1500W 400 hrs., 3200°K, frosted	†
P2/10	625W 200 hrs., 3200°K, 220/240V	†
P2/7	1000W 200 hrs., 3200°K, 220/240V	†
P2/12	1250W 200 hrs., 3200°K, 220/240V	†

Quartzcolor Cyclorama Lighting Groundrow

Color frames and wire guards are included.

5940	Orion — one light, one circuit (can be joined to form rigid or curved unit), 9.5 lbs. (4.3kg)	\$350.00
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Accessories

1150	Additional curved color frame for Pallas cyc lights, 0.9 lb. (0.4kg)	\$31.00
1239	Additional wire guard	14.00

Lamps

FDN	500W 400 hrs., 3200°K, frosted	†
EJG	750W 400 hrs., 3200°K, frosted	†
FHM	1000W 500 hrs., 3200°K, frosted	†
EMF	800W 250 hrs., 3200°K, frosted, 220V	†

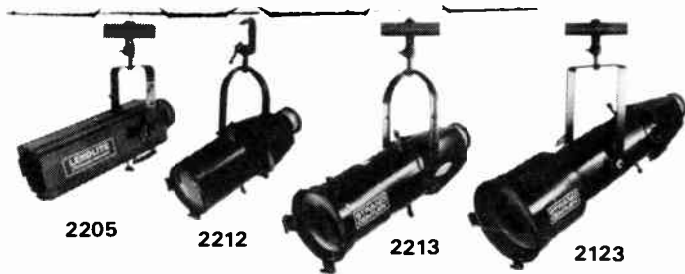
Pallas Groundrow P.O.A.

Available on special order only.

†Call for current lamp prices.

STRAND LIGHTING

Spotlights



Lekolite® Spotlights

All Lekolites include 4 shutters and template slot. Lekolites with iris kit also include shutters and template slot. All units with plano convex lenses.

2205 4 1/2" (114mm). Measurement: 8" x 8" x 20"
(203 x 203 x 508mm) 150/500W Variable Focus
Ellipsoidal 15 lbs. (6.8kg) \$225.00

Accessories

1105 Color frame \$ 5.50
1331 High hat 18.00
1345 Pattern holder 16.00
1352 Set of 6 patterns 21.00
1355 Iris kit 105.00
1500 Safety cable 9.00

Lamps

150Q/CL 150W, 2000 hrs., 2900°K †
EHT 250W, 2000 hrs., 2900°K †
Q400CL/MC 400W, 2000 hrs., 2900°K †
EVR 500W, 2000 hrs., 2900°K †
JD500 500W, 300 hrs., 3000°K (220/240V) †

500/750/1000W Units

2206 6" (152mm) 1kW Zoom Lekolite 15° to 40° 24
lbs. (10.9kg) \$385.00
1346 Pattern holder for 6" (152mm) Lekolites 16.00
1356 Iris kit for 6" (152mm) Lekolites 105.00
2204 4 1/2" (114mm) 500/1000W Lekolite 44° Spread,
15 lbs. (6.8kg) 345.00
2209 6" (152mm) 500/1000W Lekolite 31° Spread,
17 lbs. (7.7kg) 345.00
2212 6" (152mm) 500/1000W Lekolite 25° Spread,
16 lbs. (7.3kg) 345.00
2213 6" (152mm) 500/1000W Lekolite 25° Spread,
with Iris, 17 lbs. (7.7kg) 450.00
2216 6" (152mm) 500/1000W Lekolite 17° Spread,
16 lbs. (7.3kg) 345.00
2217 6" (152mm) 500/1000W Lekolite 12" x 12"
x 24" (305 x 305 x 610mm) 17° Spread, with Iris,
17 lbs. (7.7kg) 450.00
2112 6" (152mm) 500/1000W Lekolite 14° Spread,
15 lbs. (6.8kg) 345.00
2111 6" (152mm) 500/1000W Lekolite 14" x 14"
x 39" (356 x 356 x 991mm) 14° Spread, with Iris,
16 lbs. (7.3kg) 450.00
1108 Color frame for 4 1/2" (114mm) and 6" (152mm)
Lekolites 0.2 lbs. (0.1kg) 5.00
1332 High hat for 4 1/2" (114mm) and 6" (152mm)
Lekolites, 2.0 lbs. (0.9kg) 18.00
2113 8" (203mm) 1000W Lekolite 12° Spread,
21 lbs. (9.5kg) 485.00
2114 8" (203mm) 1000W Lekolite 14" x 15" x 33"
(356 x 381 x 838mm) 12° Spread, with Iris,
21 lbs. (9.5kg) 560.00

1110 Color frame for 8" (203mm) Lekolite, 0.3 lbs.
(0.14kg) \$ 7.00
1333 High hat for 8" (203mm) Lekolite, 4 lbs. (1.8kg) . . 18.00
2123 10" (254mm) 1000W Lekolite 9° Spread,
25 lbs. (11.3kg) 685.00
2124 10" (254mm) 1000W Lekolite 14" x 15" x 37"
(356 x 381 x 940mm) 9° Spread, with Iris,
26 lbs. (11.8kg) 720.00

Accessories

1112 Color frame for 10" (254mm) Lekolite,
0.5 lbs. (0.2kg) \$ 9.00
1336 High hat for 10" (254mm) Lekolite,
5 lbs. (2.3kg) 23.00
1342 Pattern holder, 0.1 lbs. (0.05kg) 11.00
1352 Set of 6 patterns, 0.1 lbs. (0.05kg) 21.00
1354 Iris kit (for customer installation), 0.5 lbs.
(0.2kg) 105.00

Lamps

EHC/EHB 500W, 200 hrs., 3200°K †
EHD 500W, 2000 hrs., 3000°K †
EHF 750W, 300 hrs., 3200°K †
EHG 750W, 2000 hrs., 3000°K †
FEL 1000W, 300 hrs., 3200°K †
FKR 650W, 300 hrs., 3100°K (220/240V) †
CP77 1000W, 300 hrs., 3200°K (220/240V) †

Performance Data				
Catalog Number	Distance	Footcandles (Lux)	1/10 Peak Diameter	Lamp
2204	20' (6m)	206 (2285)	16.2' (4.8m)	FEL
2209	30' (9m)	165 (1870)	16.5' (4.9m)	FEL
2212/13	40' (12m)	169 (1880)	17.6' (5.3m)	FEL
2216/17	50' (15m)	124 (1395)	14.9' (4.5m)	FEL
2112/11	60' (18m)	84 (935)	14.4' (4.3m)	FEL
2113/14	80' (24m)	91 (1010)	14.7' (4.4m)	FEL
2123/24	100' (30m)	88 (975)	16' (4.8m)	FEL

Retrofit Kits

(For old diecast Lekolites)

2000 1000W kit for 6" x 9" (152 x 229mm) and 6"
x 12" (152 x 305mm), includes complete rear-end
assembly and front barrel, 11 lbs. (5kg) \$190.00
2016 1000W kit for 6" x 16" (152 x 406mm),
includes complete rear-end and front barrel,
11 lbs. (5kg) 190.00
2750 500/750W kit for all 6" (152mm) units, includes
complete rear-end assembly, 6 lbs. (2.7kg) 150.00

Notes

- Fixtures are provided with 3' (.9m) leads, connectors and C-clamp for hanging unless otherwise specified
- To specify grounded connector type, add suffix to catalog number
GP—Three Pin
GTL—Twistlock
GR—Parallel Blade U-Ground
HGP—Harj-lock Pin Connector
- Lamps and color frames not included unless otherwise noted
- Lamps listed are 3200°K unless otherwise noted. Lamps and fixtures are 120V unless otherwise noted
- For international applications, designate 100, 120, 220 or 240V operation

† Call for current lamp prices.

STRAND LIGHTING**HMI Systems****Quartzcolor HMI Fresnels**

HMI Systems are available for 120V or 240V and either 50Hz or 60Hz.

3360MP	575W system complete with: 6" (152mm) 575W Sirio Mark 2 HMI fresnel, color frame, barndoor, wire guard and ballast	\$ 2,790.00
3570MP	1200W system complete with: 10" (254mm) 1200W Sirio Mark 2 HMI fresnel, color frame, barndoor, wire guard and ballast	3,785.00
3680MP	2500W system complete with: 12" (305mm) 2500W Sirio Mark 2 HMI fresnel, color frame, barndoor, wire guard and ballast	5,245.00
3790MP	4000W system complete with: 14" (356mm) 4000W Sirio Mark 2 HMI fresnel, color frame, barndoor, wire guard and ballast	7,370.00
3796MP	6000W system (220V only) complete with: 14" (356mm) 6000W Sirio Mark 2 HMI fresnel, color frame, barndoor, wire guard and ballast	11,900.00
3890MP	12000W system (220V or 220/380V only) complete with: 20" (508mm) 12000W Sirio Mark 2 HMI fresnel, color frame, barndoor, wire guard and ballast	22,222.00

Color Frames

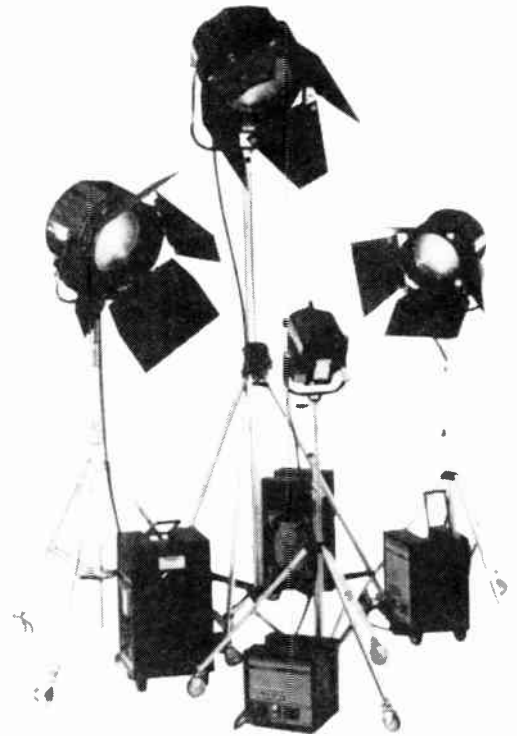
1144	For 575 HMI	\$ 13.00
1145	For 1200 HMI	25.00
1146	For 2500 HMI, 4000 HMI, 6000 HMI	31.00
1147	Outrigger for 2500 HMI, 4000 HMI, 6000 HMI	236.00
1158	For 12000 HMI	137.00

Scrims

1201	Full double for 575 HMI	\$ 12.00
1202	Full single for 575 HMI	12.00
1203	Half double for 575 HMI	12.00
1204	Half single for 575 HMI	12.00
1208	Full double for 1200 HMI	16.00
1209	Full single for 1200 HMI	16.00
1210	Half double for 1200 HMI	16.00
1211	Half single for 1200 HMI	16.00
1212	Full double for 2500 HMI, 4000 HMI, 6000 HMI	34.00
1213	Full single for 2500 HMI, 4000 HMI, 6000 HMI	34.00
1214	Half double for 2500 HMI, 4000 HMI, 6000 HMI	34.00
1215	Half single for 2500 HMI, 4000 HMI, 6000 HMI	34.00
1240	Full double for 12000 HMI	195.00
1241	Full single for 12000 HMI	195.00
1242	Half double for 12000 HMI	195.00
1243	Half single for 12000 HMI	195.00

Barndoors (Portable)

1300	8-way for 575 HMI	\$ 56.00
1301	8-way for 1200 HMI	79.00
1302	8-way for 2500 HMI, 4000 HMI, 6000 HMI	118.00
1348	8-way for 12000 HMI	TBA

**Cases**

3363	Fixture case for 575W HMI head	\$504.00
3366	Ballast case for 575W HMI ballast	790.00
3573	Fixture case for 1200W HMI head	728.00
3576	Ballast case for 1200W HMI ballast	896.00
3683	Fixture case for 2500W HMI head	830.00
3686	Ballast case castered for 2500W HMI ballast	952.00
3786	Ballast case castered for 4000W HMI ballast	986.00
3793	Fixture case for 4000W HMI head	964.00

Extension Cables (Ballast to Fixture)

3362	26' (8m) for 3360MP	\$ 267.00
3364	49' (15m) for 3360MP	330.00
3572	26' (8m) for 3570MP	267.00
3574	49' (15m) for 3570MP	331.00
3682	26' (8m) for 3680MP	341.00
3684	49' (15m) for 3680MP	426.00
3792	26' (8m) for 3790MP	342.00
3794	49' (15m) for 3790MP	426.00
3797	26' (8m) for 3796MP	622.00
3799	49' (15m) for 3796MP	847.00
3882	26' (8m) for 3880MP	695.00
3884	49' (15m) for 3880MP	1,005.00

STRAND LIGHTING

Lighting Control

Mantrix™ 2S Control Console

• A complete two scene preset console with up to 56 manual overlapping submasters • Operates as a standard four scene preset Mantrix 2 at the flip of a switch • Electronic matrix patch (optional) with displays allows assignment of dimmers to control channels at proportional levels • Controls up to 288 dimmers on 12 to 48 channels • Split crossfader with tracking LED display • Fade rate control for times from 1 second to 4 minutes with manual takeover • Grand Master • Blackout switch • Multiplexed control signal for control of up to 96 2.4kW dimmers on 4 wires, or 97 to 288 dimmers on 8 wires • Controls any combination of 2.4kW, 6kW and 12kW CD80 dimmers • Ideal for use as manual back-up or stage manager's panel with Light Palette® or MiniLight Palette®

Single Tier Consoles

8110	12 channels, without patch	\$2,070.00
8111	12 channels with patch	3,150.00
8112	24 channels, without patch	2,700.00
8113	24 channels with patch	3,780.00
8108	36 channels, without patch	3,420.00
8114	36 channels with patch	4,500.00
8109	48 channels, without patch	4,050.00
8115	48 channels with patch	5,130.00

Double Tier Consoles

8116	36 channels with patch	\$4,950.00
8117	48 channels with patch	5,580.00
8118	60 channels with patch	6,300.00
8119	72 channels with patch	6,930.00
8120	84 channels with patch	7,560.00

Mantrix 2S With Memory

(All prices include 25' control cable)

Single Tier Consoles

8181	12 channels	\$8,186.00
8182	24 channels	8,822.00
8183	24 channels with video module	9,550.00
8184	36 channels	9,458.00

Double Tier Consoles (all with video modules)

8186	36 channels	\$10,641.00
8187	48 channels	11,278.00
8188	60 channels	11,914.00
8189	72 channels	12,550.00

Light Palette Control Console

• Programs and executes six-part fades • Six timed or manual faders, two of which are split • Electronic proportional patching • Programmable fade profiles • Integral memory backup system • Multiplexed output • Special effects package

Light PalettePOR

Mini Light Palette Control Console

• Two 9" high resolution CRT displays with all operational information • Proportional patch for assigning dimmers and levels to channels • 7 overlapping pile-on submasters, 3 inhibitive submasters • Executes up to 3-part cues • 3 crossfaders, 1 of which is split • 200 control channels for up to 384 dimmers • Special effects package • Electronic back-up • Disk for library storage • Interfaces to any dimmer • Diagnostics program

Options

• Designer's remote console • Remote control unit • Printer • Remote monitor • Full system back-up • Mantrix manual console • Non-dim and auxiliary controls

Mini Light PalettePOR

Mantrix 2S



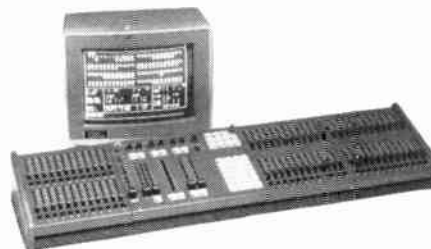
Mini Light Palette



Light Palette



Lightboard M



MLP/2 Mini Light Palette Two Control Console

• Two full-color, high resolution CRT displays are integral • Ability to respond to ambient lighting conditions: dark control booth or bright work lights, MLP/2 adjusts the CRT intensity automatically • Up to 100 unique lighting groups can be loaded onto 10 fully overlapping submasters for ease of operation • Lighting information on all 10 submasters may be assigned and replaced quickly and easily providing random access to 10 banks of manual presets—it's like having a 10-scene preset and memory console in one • Bump buttons are included for even greater effect

MLP/2POR

Lightboard M Control Console

• Multiplex control signal to drive 384 dimmers, with optional expansion to 768 • Up to 96 channels can be addressed digitally or manually • Up to 48 overlapping submasters • 200 memories • 2 internal special effects generators • 8 remote field-programmable function keys for automated systems • 3 1/4" disk drive standard • Video output standard • Optional remote focus module and printer • Bump buttons on channels and submasters with level control • Recorded or manual rate control

Lightboard MPOR

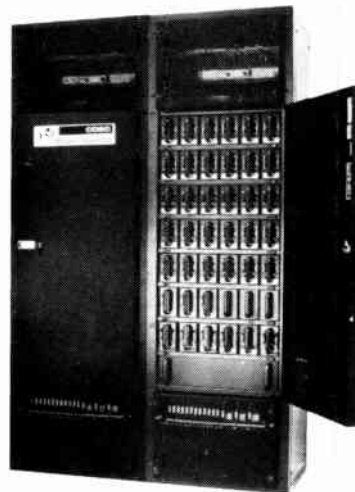
CD80 Dimmer Packs With Toroidal Chokes

• Compact design: Twelve 2.4kW, six 6kW or six 12kW dimmers in a 8 1/2" H x 23 1/2" W x 20 1/2" D (21.6 x 59.7 x 53.2cm) package • Toroidal chokes • Terminal block phase changer in 2.4 and 6kW packs • All electronics on a single, easily accessible card • Failure indicators for power, overtemp and over voltage • Multiplexed control wiring and "daisy-chained" connections for expandability

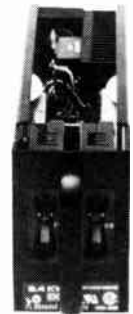
- 8124** 120V with 12 2.4kW dimmers, two 20A GTL receptacles per dimmer, 65 lb. (29.5kg) \$4035.00
- 8125** 120V with 12 2.4kW dimmers, two 20A GP receptacles per dimmer, 65 lb. (29.5kg)4035.00
- 8126** 120V with 12 2.4kW dimmers, two 20A GR receptacles per dimmer, 65 lb. (29.5kg)4035.00
- 8127** 120V with 12 2.4kW dimmers, terminal strips for hard wiring, 65 lb. (29.5kg)4035.00
- 8066** 120V with six 6kW dimmers, one 50A GTL receptacle per dimmer, one 50A test outlet, 65 lb. (29.5kg)4625.00
- 8067** 120V with six 6kW dimmers, one 60A GP receptacle per dimmer, one 60A test outlet, 65 lb. (29.5kg)4625.00
- 8068** 120V with six 6kW dimmers, terminal strip for hard wiring, 65 lb. (29.5kg)4625.00
- 8063** 120V with six 12kW dimmers, one 100A GP receptacle per dimmer, one 100A test outlet, camlock plugs, 85 lb. (38.6kg)5510.00
- 8064** 120V with six 12kW dimmers, terminal strip for hard wiring, 85 lb. (38.6kg)5310.00
- 8124SA** 220/240V with 12 2.2kW dimmers, two 10A GTL receptacles per dimmer, 65 lb. (29.5kg) . . .4230.00
- 8125SA** 220/240V with 12 2.2kW dimmers, two 10A GP receptacles per dimmer, 65 lb. (29.5kg)4230.00
- 8127SA** 220/240V with 12 2.2kW dimmers, terminal strips for hard wiring, 65 lb. (29.5kg)4085.00
- 8066SA** 220/240V with six 6.6kW dimmers, one 30A GTL receptacle per dimmer, one 30A test outlet, 65 lb. (29.5kg)4895.00
- 8067SA** 220/240V with six 6.6kW dimmers, one 30A GP receptacle per dimmer, one 30A test outlet, 65 lb. (29.5kg)4895.00
- 8068SA** 220/240V with six 6.6kW dimmers, terminal strip for hard wiring, 65 lb. (29.5kg)4895.00



CD80 Pack



CD80 Dimmer Bank



CD80 Dimmer Module

CD80 Dimmer Banks and Modules

• Compact, high density dimmer banks • Dual 2.4kW, single 6kW or 12kW dimmer modules • Designed for all theatrical and television applications

Dimmer Banks

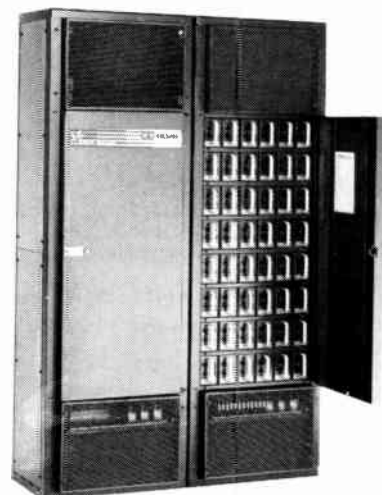
• Extremely shallow—only 17 3/4" (.45m) deep • Up to 96 plug-in 2.4kW dimmers in 24 1/2" (6.2m) width • Ideal for dimmer per circuit applications • Equipped with quiet fans to maintain proper operating temperatures • Designed to reduce installation costs • Full length guides and self aligning dimmer connectors for positive dimmer module alignment

Dimmer Modules

• Heavy gauge aluminum chassis • Heavy-duty, self aligning power and control plug • Toroidal chokes • Plug-in non dim modules available

CD80/8 Dimmer Banks

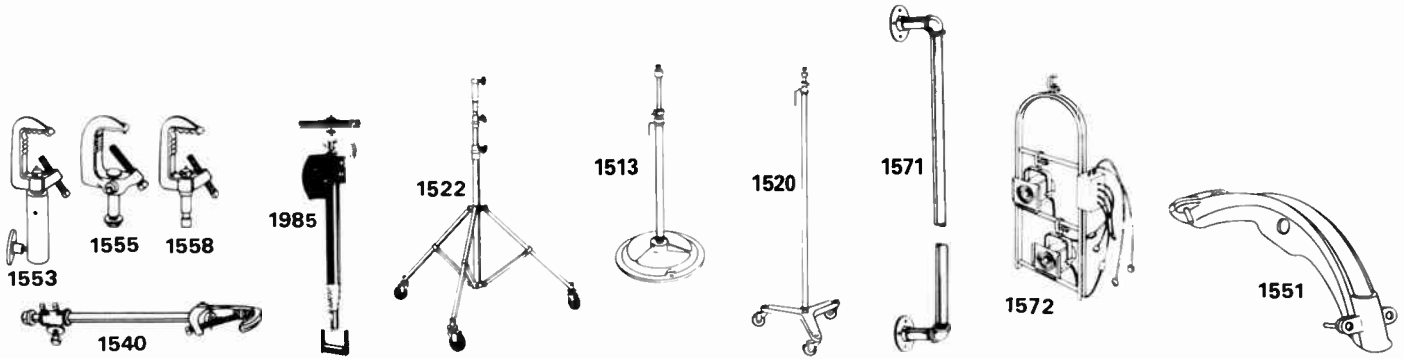
• High performance, increased filtering chokes that address the requirements of rise time and harmonic distortion in applications where electrical noise and lamp sing is a concern • Racks allow control from more than one console and have the provision of "status quo memory" operation • Compatible with all control consoles in the Strand family • Available with 2.4kW and single 6.0kW modules • No loss in density—48 modules per rack • Compact size—only 17 3/4" (0.45m) deep x 24 1/2" wide • Easy to install; simple to maintain • Quiet fans to maintain operating temperatures • Optional split rack control • Optional "status quo" memory



CD80/8 Dimmer Bank

STRAND LIGHTING

Lighting Accessories



Grip and Mounting Equipment

1500	Safety cable for fixtures up to 100 lbs. (45kg)	\$ 9.00
1502	Scenery guard 18" (457mm) diameter, 2 lbs. (0.9kg)	68.00
1504	Pipe stiffener, 6 lbs. (2.7kg)	80.00
1509	Bambino adaptor for 5/8" (16mm) stud or 1 1/8" (29mm) spigot for conversion to MP type units	24.00
1536	Trunions, 1 pair single horizontal, for Jules Fisher Mini-Strip	48.50
1537	Trunions, 1 pair double horizontal, for Jules Fisher Mini-Strip	44.00
1538	Trunions, 1 pair double vertical, for Jules Fisher Mini-Strip	47.00
1540	15" (381mm) sidearm with 2" (51mm) C-Clamp and sliding tee. 5 lbs. (2.3kg)	56.00
1543	Clamp hanger with swing joint. 5 lbs. (2.3kg)	67.00
1550	Cable clamp, 3 lbs. (1.4kg)	26.00
1551	Support cradle for 1 3/4" (45mm) cable. 14 lbs. (6.4kg)	83.00
1552	Kellem's grip, specify cable size when ordering	70.00
1553	Pipe C-Clamp adaptor, 1 1/8" (29mm) spigot	55.00
1555	2" (51mm) C-Clamp with stud. 2 lbs. (0.9kg)	11.00
1558	Standard pipe C-Clamp, 5/8" (16mm) stud. 3 lbs. (1.4kg)	34.00
1559	Standard double pipe C-Clamp, 5 lbs. (2.3kg)	18.00
1580	Clancy Sure-Clamp, 3 lbs. (1.4kg)	38.00
1584	Swivel crossbar for Coda/3	20.00
1585	Swivel crossbar for Coda/4	28.00
1586	Safety cable for Coda	8.00
1963	Gaffer grip, 5/8" (16mm) stud. 0.9 lbs. (0.4kg)	34.00
1964	Heavy-duty gaffer grip, supports up to 25 lbs. (11.4kg) 2 lbs. (0.9kg)	73.00
1965	Gaffer grip (small) with 5/8" (16mm) socket	41.00
1966	Gaffer grip (large) with 5/8" (16mm) socket	92.00

Bases

1560	Table stand with 5/8" (16mm) stud. 4 lbs. (1.8kg)	\$33.00
1561	3" (76mm) diameter base, 1 lb. (0.45kg)	38.00
1562	6" (152mm) diameter base, 3 lbs. (1.4kg)	40.00

Tormentors and Ladders

1570	1 1/2" (38mm) Tormentor boom, 20' (6.1m) long, 6" (152mm) base and tie-off 65 lbs. (29.5kg)	\$237.00
1571	1 1/2" (38mm) Tormentor pipe, 12' (3.7m) long, wall mounted, 44 lbs. (20kg)	160.00
1572	Three-rung ladder with four 18" (457mm) 20A pigtails and two 12" (3.7m) 20A feed cables. 60 lbs. (27.2kg)	696.00
1573	Three-rung ladder, same as 1572, unwired. 50 lbs. (22.7kg)	370.00

Stands

1513	4'-7" (1.2m-2.1m) stand with 14" (356mm) diameter. 20 lbs. (9.1kg) base	\$113.00
1514	5'-8" (1.5m-2.4m) stand with 18" (457mm) diameter. 25 lbs. (11.3kg) base	165.00
1519	"Trojan" folding stand for lanebeam 2000	134.00
1520	3'-5" (0.9m-1.5m) stand, castered 30 lbs. (13.6kg) legs	196.00

1521	5'-8" (1.5m-2.4m) stand, castered 40 lbs. (18.1kg) legs	\$ 200.00
1522	Stand, heavy-duty aluminum castered, extends from 4' (1.22m) to 8'6" (2.6m) 18.5 lbs. (8.4kg)	353.00
1529	Stand for 4500MP Pulsar	68.00
1530	Small kit stand, aluminum, folds to 21" (533mm) extends to 8'6" (2.6m), 5/8" (16mm) stud. 2.3 lbs. (1.04kg)	75.00
1531	Wind-up stand, extends to 8'6" (2.6m)	495.00
1535	Regular kit stand, aluminum, folds to 30" (762mm), extends to 8'6" (2.6m), 5/8" (16mm) stud. 2.9 lbs. (1.3kg)	88.00
1631	Gladiator stand for 12,000 HMI	5725.00

Operating Poles

1941	Operating pole, 6' (1.8m) 2.1 lbs. (0.95kg)	\$107.00
1942	Operating pole, 9'3" (2.8m) 2.8 lbs. (1.3kg)	112.00
1943	Operating pole, 12'7" (3.8m) 3.5 lbs. (1.6kg)	118.00
1944	Operating pole, 15'10" (4.8m) 4.2 lbs. (1.9kg)	124.00

Lite Lifts and Hangers

1980	Pantograph lite lift, supports 12 lbs. (5.4kg), extends 10' (3m) 13.5 lbs. (6.1kg)	\$428.00
1981	Pantograph lite lift, supports 25 lbs. (11.3kg), extends 10' (3m) 13.5 lbs. (6.1kg)	450.00
1983	Pantograph lite lift, supports 35 lbs. (15.9kg), extends 10' (3m) 15.5 lbs. (7kg)	571.00
1984	Telescopic hanger, 10-20 lbs. (4.5-9.1kg), extends 12'3" (3.7m) 16.5 lbs. (7.5kg)	320.00
1985	Telescopic hanger, 10-20 lbs. (4.5-9.1kg), extends 7'4" (2.2m) 12.5 lbs. (5.7kg)	279.00
1986	Telescopic hanger, 20-40 lbs. (9.1-18.1kg), extends 12'3" (3.7m) 14.5 lbs. (6.6kg)	376.00
1987	Telescopic hanger, 20-40 lbs. (9.1-18.1kg), extends 7'4" (2.2m) 15 lbs. (6.8kg)	320.00

Extension Cables

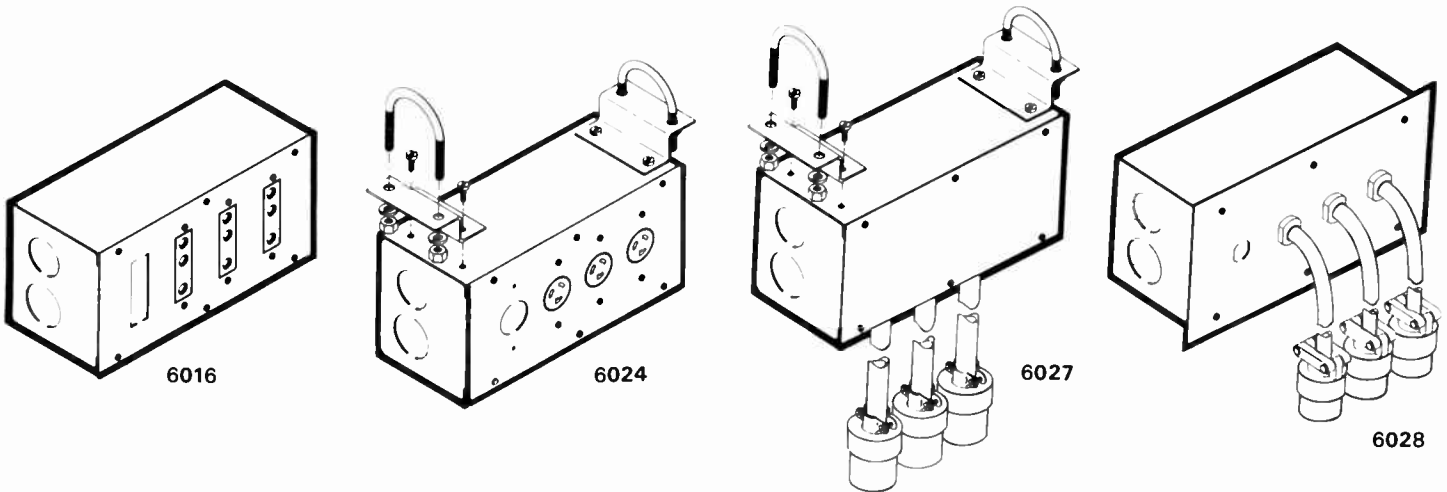
6410	10' (3m) 3-wire grounded pin connectors 20A, 2.6 lbs. (1.2kg)	\$52.00
6411	10' (3m) 3-wire grounded twistlock connectors 20A, 2.6 lbs. (1.2kg)	57.00

Cases

1977	Carrying case for Century Kit I (1051)	\$271.00
1978	Carrying case for Century Kits II (1052), III (1053), IV (1054), V (1055), VI (1056), VII (1057), VIII (1058) and IX (1059)	311.00
1979	Carrying case for Century Kit XI (1061)	311.00
3363	Fixture case for 575W HMI head, 25 lbs. (11.3kg)	504.00
3366	Ballast case for 575W HMI ballast, 34 lbs. (15.4kg)	790.00
3573	Fixture case for 1200W HMI ballast, 39 lbs. (17.7kg)	728.00
3576	Ballast case for 1200W HMI ballast, 39 lbs. (17.7kg)	896.00
3683	Fixture case for 2500W HMI head, 43 lbs. (19.5kg)	830.00
3686	Ballast case, castered for 2500W HMI ballast, 45 lbs. (20.4kg)	952.00
3786	Ballast case, castered for 4000W HMI ballast, 52 lbs. (23.6kg)	986.00
3793	Fixture case for 4000W HMI head, 49 lbs. (22.2kg)	964.00

STRAND LIGHTING

Plug-In Boxes



	A	B	C	D	E	F	G
2-Gang, 20A Twistlock	(6066) \$ 77.00	(6069) \$ 77.00	(6064) \$ 93.00	(6067) \$ 93.00	N/A	N/A	(6061) \$ 145.00
2-Gang, 20A Pin Connector	(6076) 77.00	(6079) 88.00	(6074) 93.00	(6077) 103.00	N/A	N/A	(6071) 145.00
3-Gang, 20A Twistlock	(6026) 103.00	(6029) 103.00	(6024) 120.00	(6027) 120.00	(6025) \$ 109.00	(6028) \$ 109.00	(6021) 171.00
3-Gang, 20A Pin Connector	(6016) 103.00	(6019) 120.00	(6014) 120.00	(6017) 136.00	(6015) 109.00	(6018) 125.00	(6011) 171.00
3-Gang, 50A Twistlock	(6126) 237.00	(6129) 281.00	(6124) 250.00	(6127) 364.00	(6125) 237.00	(6128) 281.00	(6121) 315.00
3-Gang, 50A Pin Connector	(6116) 185.00	(6119) 217.00	(6114) 201.00	(6117) 233.00	(6115) 191.00	(6118) 223.00	(6111) 254.00
3-Gang, Two 20A, One 50A Twistlock	(6152) 141.00	(6158) 173.00	(6154) 158.00	(6156) 190.00	N/A	N/A	N/A
3-Gang, Two 20A, One 60A Pin Connector	(6153) 131.00	(6159) 141.00	(6155) 148.00	(6157) 158.00	N/A	N/A	N/A
4-Gang, 20A Twistlock	(6046) 131.00	(6049) 131.00	(6044) 147.00	(6047) 147.00	(6045) 136.00	(6048) 136.00	(6041) 201.00
4-Gang, 20A Pin Connector	(6036) 131.00	(6039) 141.00	(6034) 147.00	(6037) 158.00	(6035) 136.00	(6038) 147.00	(6031) 201.00
4-Gang, 50A Twistlock	(6146) 282.00	(6149) 368.00	(6144) 299.00	(6147) 380.00	(6145) 287.00	(6148) 368.00	(6141) 376.00
4-Gang, 60A Pin Connector	(6136) 185.00	(6139) 282.00	(6134) 201.00	(6137) 299.00	(6135) 190.00	(6138) 287.00	(6131) 308.00
6-Gang, 20A Twistlock	(6086) 185.00	(6089) 185.00	(6084) 201.00	(6087) 201.00	(6085) 191.00	(6088) 191.00	(6081) 255.00
6-Gang, 20A Pin Connector	(6096) 185.00	(6099) 217.00	(6094) 201.00	(6097) 233.00	(6095) 191.00	(6098) 223.00	(6091) 255.00

Column A Surface-mounted wall box, flush receptacles
Column B Surface-mounted wall box, 18" (457mm) pigtails
Column C Pipe-mounted box, flush receptacles
Column D Pipe-mounted box, 18" (457mm) pigtails

Column E Recessed wall box, flush receptacles
Column F Recessed wall box, 18" (457mm) pigtails
Column G Floor pockets

Catalog numbers are in parentheses.

STUDER REVOX AMERICA, INC.

Recorder/Reproducer

A807



A807-2/2VUK

A807 Recorder/Reproducer

- Rugged transport with aluminum diecast chassis
- Servo controlled spooling motors and brushless DC capstan motor
- 3 tape speeds
- User friendly operating concept
- Shuttle controller and "one hand cueing"
- Microprocessor controlled tape deck and audio electronics
- Phase compensated digitally controlled audio electronics, no alignment potentiometers
- Microphone inputs with 48V or 12V phantom powering
- NAB/CCIR equalization switchable
- Built-in monitor speaker for input and "off tape" monitoring
- RS-232 serial port and parallel remote port
- Scissors, tape marker, cut and splice blocks optionally available

With the A807 series recorder/reproducer, Studer introduces a compact low cost professional recorder for a multitude of applications. Its compact size (19" rackmount compatible) makes the machine ideally suitable for all kinds of broadcast applications, on location as well as for general use in the recording field.

Model	Order No.	Price
A807-1 VU	60.116.07012	
Rackmount	1.727.071.00	\$5595.00
A807-1 VU + K	60.116.07012	
Floor Console	20.020.205.25	6395.00
A807-1 VUK		
Floor Console with Overbridge	60.116.07013	6995.00
A807-0.75 VU	60.116.07022	
Rackmount	1.727.071.00	6195.00
A807-0.75 VU + K	60.116.07022	
Floor Console	20.020.205.25	6995.00
A807-0.75 VUK		
Floor Console with Overbridge	60.116.07024	7595.00
A807-2/2 VU	60.116.07032	
Rackmount	1.727.071.00	6195.00
A807-2/2 VU + K	60.116.07032	
Floor Console	20.020.205.25	6995.00
A807-2/2 VUK		
Floor Console with Overbridge	60.116.07034	7595.00
A807-2/4 VU with 1/4	60.116.07053	
Track Playback Rackmount	1.727.071.00	6695.00
A807-2/4 VU + K with 1/4	60.116.07053	
Track Playback Floor Console	20.020.205.25	7495.00
A807-2/4 VUK with 1/4		
Track Playback Floor Console with Overbridge	60.116.07051	8095.00
A807-2 VU PBO (Playback Only)	60.116.07037	
Rackmount	1.727.071.00	4600.00
A807 Accessories		
Wooden Side Panels with Handles	1.727.070.00	\$295.00
Wooden Side Panels with Padded Armrest	1.727.072.00	295.00
Tape Marker and Scissors	20.807.895.00	245.00
Head Cover with Integrated Splicing Block	20.807.172.00	142.00
Mono/Stereo Switch and Test Generator	20.807.174.00	370.00

**Remote Controls
Transport Remotes**

	Order No.	Price
Parallel transport remote controller, table cabinet with 15m connection cable (vacant space for 21.328.253.00 vari-speed controller)	20.820.366.00	\$770.00
Secondary (pass through) 25-pin D-connector for installation into cabinet of 20.820.366.00 controller	21.328.254.00	44.00
Parallel transport remote controller, Studer standard module dimension, 1 module width, with 15m connection cable	20.820.367.00	670.00
Vari-Speed Remote		
Vari-speed controller for installation into cabinet of 20.820.366.00	21.328.253.00	270.00
Vari-speed controller, Studer standard module dimension, 1 module width (without connecting cable)	21.328.290.00	372.00
Vari-speed controller, deluxe version with digital readout of speed deviation in percentage and halftones, Studer standard module dimension, 1 module width (without connection cable)	10.403.050.00	750.00
Connection cable, 15m long, for connecting vari-speed controller with machine directly (25D)	1.328.292.00	128.00
Flat ribbon cable, 0.3m long, for connecting vari-speed controller to 20.820.367.00 parallel transport remote controller	1.023.102.03	24.00
Flat ribbon cable, 0.3m long, for connecting deluxe vari-speed controller to 20.820.367.00 parallel transport remote controller	1.023.730.00	36.00
Connecting cable, 15m long, for connecting deluxe vari-speed controller with machine directly (9D-25D)	1.023.731.00	95.00

STUDER REVOX AMERICA, INC.

Recorder/Reproducer

A810 Professional Broadcast Recorder/Reproducer

- Four tape speeds front panel selectable
- Servo control of capstan and spooling motors
- Precision milled, diecast transport chassis
- Selectable "softkey" functions, including up to 4 autolocate points, start locate, tape lifter defeat, vari-speed mode, tape dump, remote control enable, and fader start
- Zero locate
- Real-time counter automatically translates time with speed change
- Self diagnostic system
- Advanced phase compensation in audio circuits
- Digital storage of audio parameters
- Instant realignment for alternate tape formulation
- Optional center track time code channel with separate time code heads and microprocessor delay for time coincidence of code and audio
- Optional serial communications bus for RS-232 and SMPTE bus

With internal function re-programming as well as a variety of options and configurations, the A810 can be tailored to virtually any professional recording need.

Applications

- Broadcast production
- Video post-production
- Broadcast on-air
- Recording studio mastering
- Critical quality tape copying
- TV stereo simulcast
- High quality industrial A/V

Order Numbers

- VU = Portable/rackmount
- VUP = Separate VU panel for rack or console mount
- VUK = Includes rolling console
- 1 = mono
- 0.75 = 2 track 0.75mm separation
- 2/2 = 2 track 2mm separation
- TC = Center track time code channel

A810 Recorder/Reproducer	Order Number	Price
A810-1 VU	60.118.10121	\$ 8,400.00
A810-1 VUP	60.118.10131	8,750.00
A810-1 VUK	60.118.10132	9,550.00
A810-0.75 VU	60.119.10240	9,500.00
A810-0.75 VUP	60.118.10260	9,850.00
A810-0.75 VUK	60.118.10261	10,750.00
A810-2/2 VU	60.118.10330	9,500.00
A810-2/2 VUP	60.118.10350	9,850.00
A810-2/2 VUK	60.118.10351	10,750.00
A810-2/2 TC VU	60.118.10421	12,000.00
A810-2/2 TC VUP	60.118.10431	12,350.00
A810-2/2 TC VUK	60.118.10432	13,150.00

Special Versions

A810-2 TC/FM/NEO VUK*	60.118.10436A	\$15,500.00
A810-1 P VUK	60.118.10435A	12,950.00

*Requires optional mono head assembly 20.020.301.52 for mono and neopilot operation (see options below)

A810 Options

Full track mono neopilot head assembly For A810 - 2 TC/FM/NEO VUK above	20.020.301.52	\$1,759.00
Vari-speed kit for portable models (Control is mounted in external chassis)	20.810.871.00	449.00
Vari-speed kit for console models	20.810.872.00	386.00
Serial remote port for RS-232	20.810.881.00	369.00
Tape scissors	20.810.891.00	84.00
Tape marker	20.810.892.00	158.00
Tape marker and scissors	-	242.00
Test generator and mono/stereo switch	20.810.903.00	660.00
Transformerless inputs and outputs (per channel)	1.820.715.81	413.00
Noise reduction interface, for VUP/VUK versions only (not required if 20.810.901.00 is ordered)	20.810.944.00	200.00

A810 Accessories

	Order Number	Price
Floor console with casters, operational height 840mm, with standard VU-meter penthouse	1.038.880.00 1.038.886.00	\$1,029.00
Floor console with casters, operational height 840mm, with extended VU-meter penthouse	1.038.880.00 1.038.888.00	1,029.00
Floor console with casters, operational height 840mm, without penthouse, with rear cover	1.038.880.00 1.038.885.00	758.00



A810



Transport Remote Controls	Order Number	Price
10 button, tabletop with 45' cable. 5 transport functions plus transfer, loc, recap, lifter defeat, varispeed enable. Includes vari-speed input	1.328.200.82	\$572.00
5 button, tabletop with 30' cable. Control panel may be removed for flush mount	10.403.001.03	361.00
5 button, Studer module with 45' cable. For mounting in Studer remote stand, Studer 19" rack frame or Studer desktop cabinet	10.403.041.00	509.00
Varispeed Remote Controls with LED Display		
Tabletop with 45' cable	10.403.025.00	\$605.00
Studer module with 45' cable for mounting in Studer remote stand, Studer 19" rack frame or Studer desktop cabinet	10.403.050.00	730.00
Parallel Remote Channel Controller and Interface (Both are required)		
Interface (includes NR system interface)	20.810.901.00	\$ 450.00
Audio remote control; Studer standard module size, with 15m interconnection cable	21.328.260.00	560.00
Rugged transportation case 19" rack for mounting into pedestal	8.386.001.01	1,095.00
Set of wooden side panels with handles	1.038.890.00	195.00
Set of carrying handles for chassis version	1.810.077.00	295.00
Extender board for audio and logic section	1.810.075.00	78.00
	1.820.799.00	125.00

Refer to Green Section for Addresses and Telephone Numbers.

B-1101

STUDER REVOX AMERICA, INC.

Reel-to-Reel Recorders

B77 MKII Professional Audio Recorder/Reproducer

- Massive diecast aluminum alloy chassis for transport stability
- Three heads for off tape monitoring • Three motors • Servo controlled direct drive capstan motor for low wow and flutter • 3³/₄ and 7¹/₂ ips tape speed (standard version) • Solid-state, full logic transport control with motion sensing for safe tape handling • 10¹/₂" reel capacity
- Built-in variable speed control • Input switching for track bounce and tape echo effects • Front panel microphone inputs (Hi- or Lo-Z)
- VU meters with adjustable peak indicators • Edit switch for monitoring tape in all transport modes • Splicing block with tape cutter
- Infrared end-of-tape sensor • Modular electronics for fast servicing
- Carry handle on cabinet versions



B77 MKII

B77 Recorder/Reproducer		Order Number		Price
		Cabinet	Cage	
HS MKII	1/2-track	14106	14306	\$2450.00
STD MKII	1/2-track	14102	14302	2450.00
STD MKII	1/4-track	14104	14304	2450.00
LS	1/2-track	14453	14454	2450.00
LS	1/4-track	14451	14447	2450.00
SLS	1/2-track	14502	14500	2650.00
SLS	1/4-track	14507	14505	2650.00

B77 Auto Start

STD Auto	1/2-track	14498	14489	\$2650.00
STD Auto	1/4-track	14499	14488	2650.00
LS Auto	1/2-track	14484	14485	2650.00
LS Auto	1/4-track	14597	14602	2650.00
SLS Auto	1/2-track	14479	14478	2775.00
SLS Auto	1/4-track	14477	14475	2775.00

B77 A/V Modifications

B77 Dia Synchro	1/2-track	1.177.092.00	\$245.00
Single Slide Projectors	1/4-track	1.177.093.00	245.00
B77 Dissolve Head Amp	1/2-track	1.177.083.00	340.00
Multiple Slide Projectors	1/4-track	1.177.084.00	340.00
B77 "Free Head"	1/2-track	1.177.090.00	140.00
External Slide Electronics	1/4-track	1.177.091.00	140.00
B77 Locking Pause Control		1.177.082.00	115.00

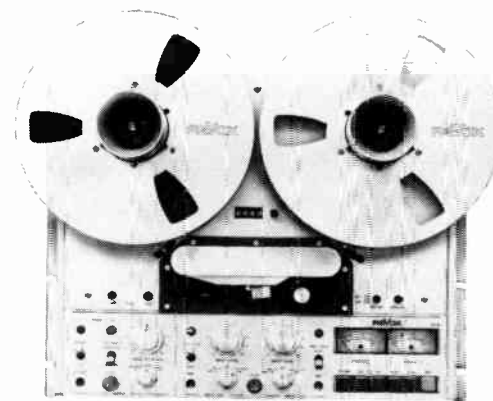
B77 Options

Standard NAB Adaptor	45001	\$ 29.00
Professional NAB Adaptor	45010	65.00
10 ¹ / ₂ " Novodur Plastic Reel	44151	15.00
10 ¹ / ₂ " Metal NAB Reel, Silver	44044	30.00
10 ¹ / ₂ " Metal NAB Reel, Black	44042	30.00
Remote Control	34227	330.00
Vari-Speed	34237	330.00
Operational Dust Cover (B77 Only)	34007	120.00
19" Rack Adaptor (Cage Models)	34099	60.00
25Hz End Of Message (EOM) Sensor	74497	275.00
Alternate Switcher for Loggers	34230	240.00
Conversion of HS Model to 1/4-track	80013	225.00
Splicing Kit	45240	45.00
Head Cleaning Kit	39000	10.00

PR99 MKII Professional Broadcast Recorder/Reproducer

- Balanced and floating inputs and outputs • Calibrated input and output levels • Input and output mode switching • Full logic transport control
- Repeat function • Microprocessor controlled real time counter • Autolocate and zero locate functions programmed to stop precisely on cue
- Variable speed control with 7 halftone range • Splicing block with built-in tape cutter • Modular electronics for easy servicing • 2-way self-sync for monitoring off record head • Front panel microphone inputs • Ready/Safe switches for recording modes • Adjustable headphone output with ample amplification • Rackmount flange and metal cage standard • Tape speed options: 3³/₄-7¹/₂ ips (STD) or 7¹/₂-15 ips (HS) • Tape dump button • Edit switch for monitoring audio in all transport modes • Connections for fader start, remote control (serial or parallel), external vari-speed and motor panel • Massive diecast aluminum alloy transport chassis

The PR99 MKII offers professional production features and superb audio performance in a compact, economical package. In addition to balanced and floating "+4" inputs and outputs, the PR99 MKII includes a microprocessor-controlled real time counter with autolocate functions for faster production and easier editing.



PR99 MKII

PR99 Recorder/Reproducer	Order No.	Price
STD MKII 1/2-track Stereo	13502	\$2799.00
HS MKII 1/2-track Stereo	13506	2799.00
STD MKII Full-track Mono	13501	2799.00
HS MKII Full-track Mono	13503	2799.00

PR99 Reproduce Only	Order No.	Price
STD MKI 1/2-track Stereo	13203	\$1950.00
HS MKI 1/2-track Stereo	13303	1950.00

Options

Console, Including Utility Shelf	34500/34505	\$938.00
Console, Without Utility Shelf	34500	783.00
Portable Carrying Case	34502	550.00

Monitor Panel, Stereo	34509	\$342.00
Blank Panel	34508	43.00
Balanced and Floating Microphone Inputs (pr.)	1.177.855	144.00
Remote Control, 32' Cable	34227	330.00
Vari-Speed Control, 6' Cable	34237	330.00
Professional NAB Hub Adaptor (ea.)	45010	65.00
Complete Service Manual	10.18.1963	65.00
Conversion to 1/4-track	80013	225.00
Cycle Control	34231	325.00

Refer to Green Section for Addresses and Telephone Numbers.

TELEPHONE HYBRID AND TELEPHONE SYSTEM

Hybrid

- Effective attenuation of sidetone signals
- Separate transmit and receive paths
- Electronic feedback loop for matching to prevailing line conditions
- Built-in limiter
- Bandpass filters for voice clarity and system protection

Telephone System

- Palm-sized remote module
- Microphone input
- Headphone output
- VU meter for line level
- Level controls for mic, telephone receive, and headphone
- Integrated mic/line amplifier



Telephone Hybrid System

Specifications

TRANSMIT CIRCUIT

Input sensitivity, adjustable	+ 6 dBu ... + 15 dBu
Input impedance	>5 kOhms
Input symmetry	>60 dB
Input balanced and floating	
Bandpass in transit circuit producing frequency response of a telephone capsule	300 Hz ... 3400 Hz (-3 dB), 12 dB/oct.
Transmit level	-13 VU at 600 Ohms
Total harmonic distortion	<1%

RECEIVE CIRCUIT

Input level, nominal	-13 VU at 600 Ohms
Max. input level	+3 VU
Output sensitivity, adjustable	+6 dBu ... +15 dBu
Output balanced and floating	
Output impedance	≤50 Ohms
Load	≥200 Ohms
Frequency response: bandpass	300 Hz ... 3400 Hz (-3 dB), 30 dB/oct.
Built-in noise generator, level adjustable	
Total harmonic distortion	<1%
Threshold fixed	at approx. +16 dBu
Attack time	approx. 0.5 msec
Release time (IEC 268-8)	approx. 0.5 sec

HYBRID CIRCUIT

Input/output balanced and floating	
Test voltage	1kV
DC input/output impedance	1500 Ohms
Balancing range R	200 Ohms ... 2000 Ohms
Balancing range C	0 ... 0.1 μF
Sidetone attenuation-sine wave (dummy load)	>40 dB
Sidetone attenuation-white noise (dummy load)	>30 dB
Sidetone attenuation on an exchange line, depending on quality of line (measured with voice)	approx. 20 dB
Symmetry	>60 dB
Matching is controlled by the voice signal in the transmitted circuit.	
Threshold adjustable, rang	0 ... -25 dB

MICROPHONE/LINE AMPLIFIER

HYBRID INPUT

Nominal level	+6 dBu
Max. input level	+24 dBu
Input impedance	≥10 kOhms
HYBRID OUTPUT	
Nominal level	+6 dBu
Max. level	+22 dBu
Load impedance	≥200 Ohms

Single Telephone Hybrid System

19" card frame with built-in power supply, wired for two electronic telephone hybrids (cradles) and one relay unit, equipped with one electronic telephone hybrid (cradle) consisting of: 1 x 19" card frame 1.918.102.00; 1 x telephone hybrid (cradle) with noise gate 1.915.764.00; 1 x relay unit 1.915.762.00.
#75.700.89114 \$2100.00

Dual Telephone Hybrid System

19" card frame with built-in power supply, wired for two electronic telephone hybrids (cradles) and one relay unit, equipped with two electronic telephone hybrids (cradles) consisting of: 1 x 19" card frame 1.918.102.00; 2 x telephone hybrid (cradles) with noise gate 1.915.764.00; 1 x relay unit 1.915.762.00.
#75.700.89224 \$3100.00

Telephone Audio System

19" card frame with built-in power supply, equipped with one electronic telephone hybrid and one relay unit, one microphone and line amplifier, one remote control unit with 10M cable consisting of: 1 x 19" card frame 1.918.102.00; 1 x telephone hybrid (cradle) with noise gate 1.915.764.00; 1 x relay unit 1.915.762.00; 1 x mike and line amplifier 1.915.906.01; 1 x remote control unit with 10M cable 1.918.106.01.
#75.700.89113 \$2725.00

STUDIO TECHNOLOGIES, INC.

Recognition/Control Unit/
Stereo Simulator**RCU-1 Recognition/Control Unit**

- Recognizes if input signal is stereo or monaural. Circuitry compensates for phase errors and level differences
- High performance cross-fade circuit automatically switches stereo simulator in-circuit on detection of mono. Compatible with the AN-2 Stereo Simulator or other manufacturers' products
- Manual override functions using front panel controls or logic level signals from remote control equipment
- Two auxiliary relay contacts provide contact closures on recognition of mono and simulator in-circuit conditions

Applications

As television broadcasters begin MTS broadcasting, most programming material available is still monaural. Stereo simulators can greatly improve the listener's appreciation of "stereo" TV. However, when a stereo simulator is used in the television broadcasting on-air audio chain, it must be switched into the chain for mono programming and out of the chain for programming that is already stereo.

The RCU-1 Recognition/Control Unit is designed to solve the problem of controlling the stereo simulator by determining whether the input is mono or stereo and automatically switching a stereo simulator in-circuit when mono is detected.

The RCU-1 is a reliable, real-time device designed expressly for on-air MTS.

The RCU-1 can also be employed as a dedicated mono/stereo recognition device when connected to a broadcast video tape recorder. Prior to broadcast, a video tape can be previewed to determine if the audio channels are mono or stereo. Broadcast audio routing and processing standards can more readily be maintained.

How the Recognition/Control Unit Works

The RCU-1 incorporates circuitry which continuously compares the L-R signal level with the L+R signal. If mono is recognized (i.e. the L+R signal is predominant) the circuitry switches the stereo simulator in line; if stereo is recognized (i.e. the L-R signal is predominant) the stereo simulator is switched out, allowing the stereo program to be broadcast. During silent passages the RCU-1 "remembers" the preceding mono/stereo condition and remains in that state.

When program material is mono, under ideal conditions the two inputs to the RCU-1 will be identical and have no L-R component. In reality, this is seldom the case due to conditions such as tape head misalignment. Extensive circuitry is used to allow $\pm 45^\circ$ of phase error (at 1kHz), and 10dB of level difference to still be recognized correctly.

The line outputs of the RCU-1 employ VCA based crossfading circuitry, connecting the inputs to the outputs when the input is recognized as stereo, and connecting the output of the stereo simulator to the RCU-1 outputs when the input is recognized as mono.

Specifications**Input and**

Output Levels: +8dBm (will operate correctly at +4dBm)
Input Impedance: 20K ohms, electronically balanced
Output Impedance: 100 ohms, electronically balanced
Output to Simulator: Sum of left and right (L+R) line input signals
Mono Input Signals: Mono input signal must be present on both left and right line inputs for correct recognition

Frequency Response: 10Hz to 20kHz, ± 1 dB
Distortion: .04% THD at max output (+22dBm)
Signal-to-Noise Ratio: 80dB
Output Signal Switching: VCA based cross-fade circuit
Recognition Section: Will recognize phase error of $\pm 45^\circ$ at 1kHz, and channel level difference of 10dB

Remote Control Inputs: Current limited logic level
Auxiliary Relay Contacts: Isolated, sealed, bifurcated type
Connections: 26-position screw terminal strip
Power: 115/230V, 50-60Hz, 10W
Dimensions: 1 $\frac{3}{4}$ "H x 19"W x 7"D (one standard rack space)

RCU-1\$1200.00



RCU-1



AN-2

Mod-1 Optional Recognition Circuitry

The Mod-1 adds to the RCU-1 the ability to recognize a signal on the left channel only as mono. Signals on the right or both channels will be recognized as stereo. The Mod-1 is an optional feature.

Physically, the Mod-1 consists of a printed circuit board that is installed inside the RCU-1's cabinet, and electrically connected to five points on the RCU-1 motherboard circuitry. The Mod-1 can be installed at the factory or in the field.

Mod-1\$100.00

AN-2 Stereo Simulator

- Restores natural timbre of acoustic instruments—adds warmth and reality to synthesized ones
- Simulates the sound of a spaced pair of microphones without loss of mono compatibility
- Adds "air" and "definition" to mix, reducing the need for equalization
- Completely mono-compatible—no fade-outs or phase problems
- Simulates space without reverberation by using random, non-recursive filter techniques
- Variable width control allows "spread" and "size" of image to match sound.

Applications**Recording Studios:**

Many times, multi-track recording of voices, an instrument or group of instruments must be assigned to a single track. This results in the loss of the complex overtones and relationships in their true sound.

The Stereo Simulator recreates that stereo space and depth. This makes it especially useful with purely electronic instruments such as synthesizers and guitars—instruments usually assigned to a pan pot during mixdown (a mono device). The Stereo Simulator creates a much more pleasing "spread" to the sound, allowing the instrument to be heard even in the most complex mixes.

Also, by using the Stereo Simulator's modulation feature, many effects are possible such as stereo chorusing and stereo pitch blends.

The Stereo Simulator has a place in both small and large studios as a track saver and versatile enhancer.

Broadcast & Film

Unlike most outboard devices such as time delays, harmonizers and equalizers, the Stereo Simulator is fully mono compatible.

This means recordings produced with the Stereo Simulator suffer no balance distortion when heard on AM radio.

The Stereo Simulator is also a valuable resource for television broadcasters that offer stereo transmission since much of the material they must broadcast is, in fact, monaural.

And, it's ideal for converting mono film tracks to a fuller, more contemporary "stereo" sound for either broadcast or theater use.

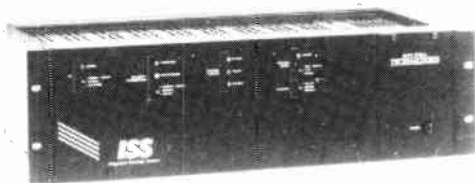
Specifications**Input and**

Output Levels: Selectable—10 or +40dBm, electronically balanced
Frequency Response: 20Hz to 15kHz ± 2 dB
Distortion: 0.2% THD
Dynamic Range: 90dB
Signal-to-Noise Ratio: 70dB
Power: 115/230V, 50-60Hz, 10W
Dimensions: 1 $\frac{3}{4}$ "H x 19"W x 7"D (one standard rack space)

AN-2\$650.00

STUDIO TECHNOLOGIES, INC.

Audio Simulator/Microphone Preamp



ISS



Mic-PreEminence

ISS Integrated Audio Simulator System

Through its full remote capabilities, the ISS is completely equipped to interface with a station's automation system or operator controls. Or, the ISS recognition card can be added, enabling the ISS to precisely determine the mono/stereo status of the audio input signals and automatically switch the simulator into the on-air audio chain upon recognition of mono. The recognition circuitry detects mono in three ways. A signal on either the left or the right channel only is recognized as mono. If there are signals on both the left and right channels, the recognition circuit accurately compares them to identify stereo or mono. One channel phase reversals are a constant concern for MTS broadcasters. To prevent loss or degradation of audio to mono listeners, the ISS Polarity Correction card can be added. It continuously monitors the input signals and upon recognition of a phase reversal, automatically restores signal integrity. Sometimes you don't need simulated stereo, so the ISS electronically crossfades between the audio input signals and the simulated stereo. The ISS circuitry selects one of three crossfade speeds for smooth, unobtrusive transitions.

Specifications

Input and Output

Format:	Dicrete left and right
Input Level:	0, +4, or +8dB, switch selectable
Input Impedance:	20k ohms, electronically balanced
Output Level:	0, +4, or +8dB, switch selectable
Output Impedance:	100 ohms, electronically balanced
Maximum Output Level:	+26dBu into 600 ohms
Frequency Response (Simulator By-passed):	20Hz to 20kHz, ±0.1dB
Signal to Noise Ratio (Simulator in Circuit):	76dB
Distortion (THD): (20Hz to 20kHz):	Simulator by-passed: < 0.06%, Simulator in circuit: < 0.40%
Remote Control Inputs:	Optically coupled, current limited logic level, switch selectable for continuous or pulse type
Output Signal Switching:	VCA based crossfade circuit
Auxiliary Relay Contacts:	Isolated, sealed, bifurcated type
Connections:	Screw terminal strip
Power:	115/230V, 50-60Hz, 100W
Dimensions:	5.25" H x 19.00" W x 13.00" D three standard rack spaces
Weight:	19.0 lbs.
ISS	\$4995.00

Accessories

Recognition Module

Precisely determines the mono/stereo status of the input audio programming and automatically switches the simulator into the on-air audio chain upon recognition of mono **\$995.00**

Polarity Correction

Monitors input signals and upon recognition of a phase reversal, automatically restores signal integrity **\$995.00**

Extender

Allows testing of any module easily **250.00**
+ **12VDC Power Supply** **75.00**

Mic-PreEminence Microphone Preamp

- Two independent channels each with a gain control
- Transformerless electronically balanced input and output
- Phantom power, switchable on/off
- Minimal number of capacitors in audio path
- Two stage LED metering
- Output phase reverse switch
- Output unbalance switch
- Noise within 1dB of theoretical limit (-129.5dB EIN)

Studios: The Mic-PreEminence can be used to minimize the signal flow through a console during original recording and over-dubbing. Put critical instruments through the Mic-PreEminence and then directly into the multi-track.

Sampling: Use the Mic-PreEminence with digital sampling. Store the best sound you can.

Location Recording: Plug a stereo mike pair into the Mic-PreEminence, then connect the output directly into a two track digital recorder.

Specifications

Power Requirements:	115 or 230VAC (Japan 100 or 200VAC), switch selectable 50/60Hz, 10W
Connectors:	XLR type, pin 2 high
Input/Output:	Electronically balanced, capacitor coupled
Noise:	-69.5dB at 60dB Gain (i.e., -129.5dB EIN, which is 1dB above theoretical minimum). (20Hz to 20kHz bandwidth, 150 ohm resistor on input)
Frequency Response:	+0/-1.5dB, 20Hz to 60kHz, 40dB Gain +0/-0.5dB, 10Hz to 90kHz, 68dB gain +12 to +68dB, adjustable
Gain Range:	20V/μs
Slew Rate:	0.0020% at 1kHz and 30dB gain 0.0025% at 20kHz and 30dB gain
Distortion:	
Input to Output Phase Shift:	9° maximum, 20Hz to 20kHz
CMRR:	70dB, 20Hz to 20kHz, 30dB gain
Output Level at Clipping:	+30dBu into 10K ohms balanced, +29dBu into 600 ohms balanced, +24dBu into 10K ohms unbalanced, +23dBu into 600 ohms unbalanced
Dimensions:	1.75" H x 19" W x 7" D (one standard rack space)
Mic-PreEminence	\$795.00

When you have to tame heavy duty power problems.

NEW **WHR Series** **STABILINE®** **Automatic Voltage** **Regulators**

- High accuracy $\pm .5\%$ to $\pm 1\%$
- Efficiency 99%
- Low harmonic distortion and internal impedance
- 350 single and three phase models
- Single and individual phase control
- Input circuit breaker standard on many models
- Customization available
- Narrow range (+7.5%, -15%) typical input correction models
- Wide range (+12.5%, -25%) typical input correction models
- Ratings from 2 to 1680kVA

WHR Series STABILINE® Automatic Voltage Regulators are high power regulators that correct the wide fluctuations in input voltage that can cause irreparable computer memory loss or damage to components in sensitive electronic equipment. They are ideally suited to protect applications such as process control, computer centers, X-ray equipment, broadcast transmitters, laboratories, precision machinery, lighting circuits, and electric heating.

Advantages include high efficiency (99% typical) and extremely low harmonic distortion (less than 0.25%). WHR Series units are insensitive to the magnitude and power factor of the load, so they can be used even with loads having high inrush currents.

A WHR Series regulator is comprised of three basic modules: an input circuit breaker; a control module or modules; and a power module. The input circuit breaker eliminates the need for additional circuit protection since it protects against both sustained overloads and short circuits. The solid-state control module monitors output voltage and actuates the power module if voltage fluctuates beyond the selected limits. Single and three phase models may have one control for all phases or individual controls for each phase, depending on model.



MODELS

Single Phase – Wide & Narrow Range
120V Input & Output
208/240V Input & Output
380/480V Input & Output
480/600V Input & Output
Ratings from 2.5 to 425kVA

Single Phase – 3-Wire, Wide & Narrow Range
Single & Individual Phase Control
208 & 240/120V Input & Output
Ratings from 5 to 500kVA

Three Phase – Wide & Narrow Range
Single & Individual Phase Control
208/240V Input & Output
380/480V Input & Output
480/600V Input & Output
Ratings from 7.5 to 1680kVA

Write for complete information or call
1-800-446-6262



Superior Electric

383 Middle Street
Bristol, Connecticut 06010

TEL:203/582-9561 TELEX:96-2446 TWX:710-454-0682 CABLE:SUPELEC FAX:203/584-1483

SWINTEK ENTERPRISES, INC.

Wireless Microphone Systems

Handheld Wireless Microphone Transmitters

MARK SM58/PL80	Handheld VHF transmitter: supplied with Shure SM58 or Electro-Voice PL-80 element. Features Swintek dBS audio scaling expander, 100dB dynamic range minimum. Black body standard (gold and chrome optional): supplied with 2 ea. THR-B NiCad batteries, THR-BC charger and BUB 9V battery adaptor	\$1295.00
MARK SM55	Omni handheld VHF transmitter: supplied with Sony ECM-55 electret mike element for broadcast interviewing applications. Same specifications and accessories as SM58/dBS	\$1295.00
MARK SM78, SM87, M500	Rock handheld VHF transmitters: featuring the Shure SM78, SM87, or the Beyer M500 mike elements. Same specifications and accessories as the MARK SM58/dBS.	1395.00

Mark 50A/ENG



Body Pac Wireless Transmitters

MARK 50A	Body Pac VHF transmitter: features the complementary Swintek audio scaling expander/compander dBS to achieve a S/N ratio >90dB, which helps eliminate buzz zones and other forms of low level interference. Incorporates military step attenuator with external adjust; switching Pos/Neg bias for all condenser mikes; LED indicator for compressor adjust and battery level; transmitter is equipped to accept 100K ohm music input via 4-pin TA4F jack; steel 9V battery clip. Supplied with flex antenna and battery	\$580.00
MARK 50A/S	MARK 50A/dBS with mike mute switch.	580.00
MARK 50A/2	Dual frequency MARK 50A/dBS, PL-2 input deleted	680.00
MARK 50A/ENG	Body Pac ENG dBS VHF transmitter: features the Swintek dBS audio scaling expander/compander with high gain mode for whisper sound or high impedance boom mike. In addition to dynamic mike operation, switchable Pos/Neg bias is supplied for condenser mike use. Headset monitor output for fish pole microphone. Microphone input attenuator is a military step attenuator supplied with coax antenna and batteries	\$780.00
MARK 50A/ENG/2	High powered dual frequency ENG dBS VHF transmitter: same specs as MARK 50A/ENG.	980.00
MARK 50A/UHF/ENG	UHF Body Pac dBS transmitter: same specs as MARK 50A/ENG, supplied with coax antenna and batteries.	780.00

Mark QDC



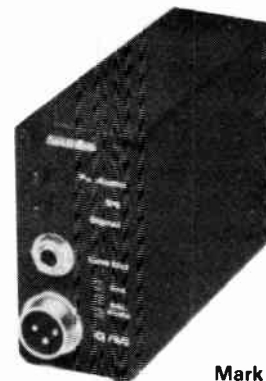
Switching Diversity AC Receivers

MARK 1L/RFSD	Pro Stage AC switchable diversity VHF receiver: features LED indicators for peak audio, analog field strength, AC, external squelch switch. Outputs: balance mike level on XLR; high level with volume control. Supplied with whip antenna, AC cord, and NiCad handheld recharger (check for receiver options).	\$1260.00
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Portable DC Receivers

MARK 3	Cinematography DC portable VHF receiver: powered by AA batteries or external ± 10-16VDC, LED indicators for analog field strength, audio and battery on. MARK 3 receiver equipped with 3-pin audio (XL) connector, internal high level switch and external LEMO power input plug. Supplied with ANT-3 antenna, batteries, and LEMO plug for external power input	\$1175.00
MARK QDC	Mini Pro Video DC Body Pac VHF receiver: supplied with dBS compander, 12dB Sinad at .5µV, unbalanced low level out at -30dBV, powered by two transistor batteries or external 12-18VDC, external LED indicator for battery power and audio level; adjustable line output at + 10dBV; pocket size; (5.6"L, 2.75"W, 90" thick) excluding knobs and connectors; weight 10 oz.	\$780.00
MARK QDC/2	Dual frequency QDC receiver: same specs as MARK QDC	\$880.00
MARK QAC	Weather resilient AC Q receiver: features 12dB Sinad at .5µV balanced low level out at -40dBV powered by external 12-18VDC source, LED modulation indicator balanced at + 10dBV.	580.00
MARK QAC/2	Dual frequency QAC receiver: same specs as MARC QAC.	680.00

Mark QAC



Complete Wireless Microphone System Packages

Handheld Switching Diversity Systems

MARK 1L/SM58	Complete Pro Vocal system featuring the Shure SM58 mike element, high-band diversity receiver, NiCad batteries with charger and carrying case	\$2588.00
MARK 1L/SM78	Same as above featuring the Shure SM78 mike element	2588.00
MARK 1L/PL80	Same as above featuring the EV PL80 mike element	2688.00
MARK 1L/SM87	Same as above featuring the Shure SM87 mike element	2688.00
MARK 1L/M500	Same as above featuring the Beyer M500 mike element	2688.00

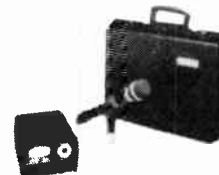
Body Pac Switching Diversity Systems with Mike

MARK 1L/50A	Complete Pro Stage lavalier system, including pocket transmitter, Sony 55 lavalier mike, hi-band diversity receiver, transmitter battery and carrying case.	\$1988.00
MARK 1L-50A/ENG	Same as above but supplied with the hi-power ENG transmitter on specified broadcast frequencies.	2188.00
MARK 1L-50A/UHF	Same as above but supplied on UHF broadcast frequencies	2488.00

Portable Wireless Systems with Mike

MARK 3-50A	Complete Pro Cinematography hi-band system which includes receiver, lavalier transmitter, Tram lavalier mike, batteries and carrying case	\$1888.00
MARK QDC-50A	Complete Pro Video mini hi-band wireless system which includes Beta Cam	1488.00
MARK QDC/SM55	Same as above but supplied with Omni handheld transmitter.	2088.00
MARK QDC/ENG	Same as above but supplied with hi-power ENG transmitter on specified broadcast frequencies and with Sony 55 Lavalier mike.	1888.00
MARK QDC-50A/2	Dual frequency MARK QDC-50A system	1688.00
MARK QDC/ENG/2	Dual frequency MARK QDC-ENG system	2088.00
MARK QAC-50A	Complete audio/visual hi-band system featuring durable weather resilient receiver, lavalier transmitter with lavalier mike and batteries.	1288.00
MARK QAC/SM58	Same as above but supplied with SM58 handheld transmitter	1888.00
MARK QAC/50A/2	Dual frequency MARK QAC-50A system	1488.00

Mark 1L RFSD/PL80



SWINTEK ENTERPRISES, INC.

Wireless Microphone Systems

Full Duplex Transceiver Systems

- Mark 200DS** Two heavy duty all metal Mark 200D communicators including 2ea. NB200D nicad batteries, charger, carrying case and antenna. (headsets not included) **\$ 2,190.00**
- Mark 200DP/S** Two ABS lightweight Mark 200DP communicators with integrated antenna, 2ea NB200D nicad batteries, charger and carrying case. (headsets not included) **1,990.00**
- Mark 200DP-200D/C** Mark 200D/C RTS/Clear-Com/Telex transceiver interconnect with Mark 200DP, nicad battery, charger, HS200D/BP headsets, ANT-2MM antenna and carrying case. **2,190.00**
- Mark 200DP-200D/AC** Mark 200D/AC duplex base transceiver with headset input, Mark 200DP, nicad battery, charger, 2ea HS200D/TP headsets, ANT-2MM antenna and carrying case **2,290.00**
- Mark 200DP-200D/V** Mark 200D/V duplex base transceiver with line level in/out, Mark 200DP, nicad battery, charger, HS200D/TP headset, ANT-2MM antenna and carrying case **2,190.00**
- Mark 200-2CH/200DP** Portable two channel full duplex 1/2W system for use by broadcaster under group K frequency, with 2ea Mark 200DP, nicad batteries, chargers, 3ea HS200D/BP headsets, antenna system and carrying case **9,990.00**
- Mark 200-RPL/6-CH-200PD** Complete six channel full duplex wireless intercom system utilizing seven frequencies in a common 19" x 7.25" rack with cabinet, six Mark 200DP remote transceivers, 12ea nicad batteries, antenna system, charger and carrying case. (headsets not included). **11,990.00**

* When supplied with Mark 200D all metal industrial grade transceiver add \$ 100.00 per 200D transceiver.

Transceivers

- Mark 200D** Industrial grade full-duplex all metal transceiver with nicad battery, charger and antenna system. **\$1,095.00**
- Mark 200DP** Lightweight (24 oz. with nicad battery) ABS plastic full duplex transceiver with internal antenna, nicad battery, and charger **995.00**
- Mark 200D/V** Full duplex base transceiver with line level in/out and whip antenna **995.00**
- Mark 200D/C** Full duplex base transceiver interconnect for use with single channel Clear-Com or RTS dual channel architecture, utilizing three pin XLR and whip antenna **995.00**
- Mark 200D/C2** Mark 200D/C transceiver with channel 1 or 2 select from remote transceiver (note: remote unit must have tone option). **1,295.00**
- Mark 200D/AC** Full duplex base transceiver with headset input and whip antenna **995.00**
- Mark 200-RPL/D** One rack mounted RPL console with cabinet, which will accept six Mark 200D/R receivers, includes antenna system and one Mark 200D/T transmitter **2,250.00**
- Mark 200D/R** Mark 200D/R receiver for use with Mark 200-RPL/D console **580.00**
- Mark 200D/T** Mark 200D/T transmitter for use with Mark 200-RPL/D console **580.00**
- Mark QDC** Pocket receiver for monitoring transmissions between full duplex systems. **780.00**

Headsets For Mark 200DP Lightweight Transceiver

- HS200D/BDP** Beyer DT 109 (dual muff) with preh plug **\$ 250.00**
- HS200D/BP** Beyer DT 108 (single muff) with preh plug **210.00**
- HS200D/SP** Hard-hat (single muff) preh plug **250.00**
- HS200D/TP** Wire-band (single muff) preh plug **150.00**
- HS200D/HNP** Hi-noise cancelling (dual muff) with preh plug **325.00**
- HS200P** Rugged (single muff) with preh plug **150.00**
- HQDC** Earpiece with mini plug for QDC **50.00**

Headsets For Mark 200D All Metal Industrial Transceiver

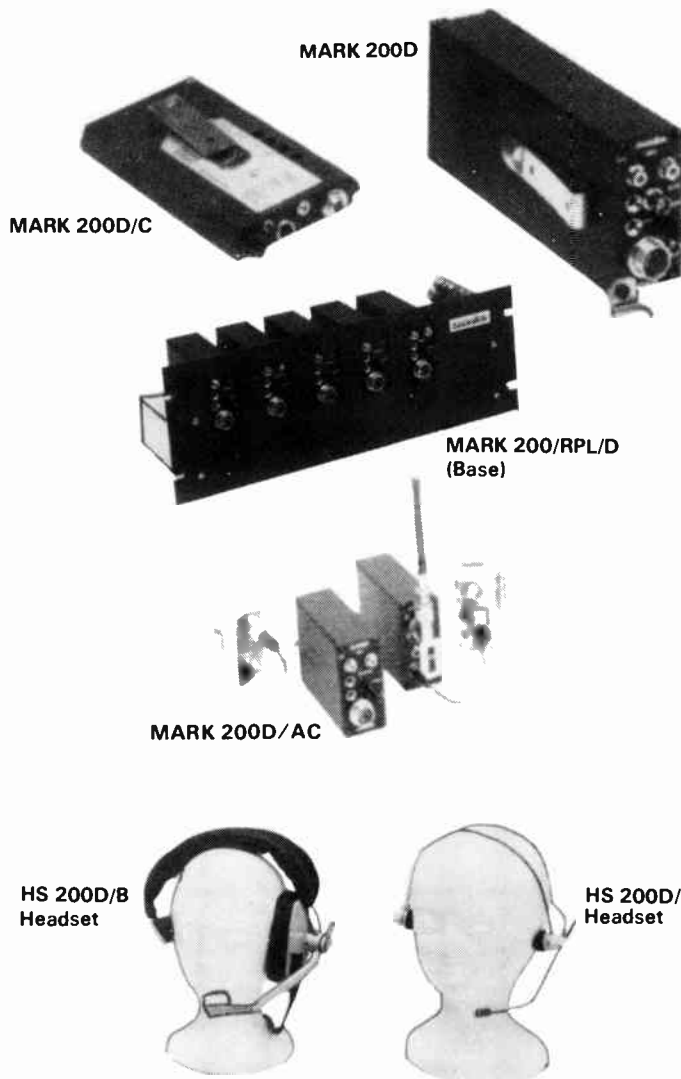
- HS200D/BD** Beyer DT 109 (dual muff) with four pin female XLR with built in antenna **\$275.00**
- HS200D/B** Beyer DT 108 (single muff) with four pin female XLR and built in antenna **235.00**
- HS200D/S** Hard-hat (single muff) with four pin female XLR and antenna **275.00**
- HS200D/T** Wire-band (single muff) with four pin female XLR, ANT-4BNC required **150.00**

Batteries and Chargers

- AL200D** Alkaline battery for Mark 200D transceivers **\$ 35.00**
- NB200D** Nicad battery for Mark 200D transceivers **75.00**
- NB200D/9V** Nine volt transistor battery pack for Mark 200D transceivers **75.00**
- AC200D** NB200D battery charger. **40.00**
- NB200D/1-CH** NB200D fast charger for one NB200D battery outside of communicator **150.00**
- NB200D/2-CH** Four hour NB200D battery charger outside of communicator **150.00**
- NB200D/6CH** NB200D fast charger for six NB200D batteries **595.00**
- NB-D** Belt pack nicad battery for Mark 200 systems supplied with nicad and charger **350.00**

Hard Wire Interface Cables and Controls

- TA4F-V** TA4F plug to (phone plug audio out 0dB, mini plug audio in at 0dB) **\$70.00**
- TA4F-VR** TA4F plug to (mini plug audio in 0dB, mini plug audio out -40dB) **70.00**
- TA4F-PT** Remote push to talk button for Mark 200 series of remote transceivers **70.00**



Tone Encoders

- 200D/TONE** Tone encoder/decoder for use with all 200 series of transceivers **\$ 150.00**

200D/Scrambler

- 200D/Scrambler** Scrambler for use with all 200 series of transceivers **895.00**

Miscellaneous Items

- BP200D** Belt-holster for Mark 200D **\$75.00**
- BP200DP** Belt-holster for Mark 200DP **75.00**
- 200RC** Rack cabinet for Mark 200D/RPL; black or gray **250.00**
- 200CC** Mark 200 series carrying case with insert. **150.00**
- A4F** Four pin XLR plug for Mark 200D **15.00**
- 17HR595** Five pin preh plug for Mark 200DP **15.00**
- TA4F** Four pin Switchcraft mini XLR plug. **15.00**

Antenna Accessories

Model	Description	Connector	Price
ANT-2DD	Dual diversity antenna	BNC	\$ 90.00
ANT-2MM	Magnetic whip antenna	SO239	90.00
ANT-2GC	Gutter whip antenna	SO239	90.00
ANT-2TLM	Trunk mount whip antenna	SO239	90.00
ANT-2TMB	Temp trunk mount antenna	SO239	90.00
ANT-2WB	Wide band base antenna	BNC	225.00
ANT-3	REC Vert. wire whip	SO239	12.00
ANT-3BNC	REC Vert. wire whip	BNC	12.00
ANT-4	REC Vert. helical stub	SO239	24.00
ANT-4C	COMM Vert. helical stub	PL-2	24.00
ANT-4BNC	BNC Vert. helical stub	BNC	24.00
C-3	3' coax cable	SO239	20.00
C-25	25' coax cable	SO239	30.00
C-50	50' coax cable	SO239	40.00
C-100	100' coax cable	SO239	50.00
PL-238	ST UHF to RG 58	SO239	10.00
UG-646	RT angle UHF	SO239	15.00

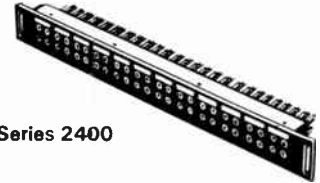
SWITCHCRAFT, INC.

Jack Panels/Patch Cord Sets/Jacks

Jack Panels

Rugged, heavy-duty jack panels for switching, distribution and control of audio signals in broadcasting stations, theaters, P.A. installations, etc. Series 1200 has black phenolic panels reinforced with steel for rigidity. Slotted mounting brackets fit standard 19" relay racks. Panel includes plastic covered designation strips.

Part No.	Rows	Number of Jacks	Size, In. (mm) Width x Depth x Height	Price
1200	Single	24 ¹	19 x 1.25 x 1.75 (482.6) (31.75) (44.45)	\$ 44.95
1400 1400-301 ³		26 ¹	19 x .625 x 1.75 (482.6) (15.88) (44.45)	50.60 50.60
2400 2532A 2600 2600-301 ³		48 ² 48 MT-332A 52 ¹	19 x 1.25 x 2.125 (482.6) (31.75) (53.98)	61.80 233.05 73.05 73.05
	Double		19 x .265 x 1.75 (482.6) (15.88) (44.45)	



Series 2400

NOTE: ¹ Jacks not supplied, except on special order.
² Recommended plugs are Switchcraft Nos. 420 or 425.
³ Supplied with "Kwik-Change" designation strips.

Patch Cord Sets

Constructed of bronze tinsel conductors, insulated and shielded with black nylon braid overall.
Series 18Q—3-cond. shielded (TRS) patch cords use Military Plug PJ-051R (Part No. 482) at each end with grounded shields (both ends).
Series 19Q—2-cond. (TS) patch cords use Military plug PJ-047B. (No. 420) connected to each end with shield grounded (both ends).

Part No.	Length, Ft. (m)	Plugs Used	Price
18QA18	.5 (.152)	482	\$29.55
18QB18	1 (.305)		31.05
18QD18	2 (.610)		32.25
18QF18	3 (.914)		33.50
18QK18	6 (1.829)		37.40
19QD19	2 (.610)	420	18.00



"MT-Jax" Military Telephone Jacks

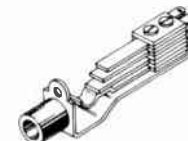
Long frame 2- and 3-cond. jacks, commonly referred to as telephone switchboard jacks, designed for communication and military equipment. Springs are nickel silver alloy with welded cross bar palladium contacts. Available in "A" and "C" frame designs. Part numbers cover "A" frame design. For frame design "C" add prefix letter "C" for part numbers.

Part No.	Cond.	Adjusted for Plug	MIL-Type No.	MIL Part No.	Price
MT-331	2	440, 445, 470 ¹	JJ-086	M641/2-8	\$3.90
MT-332A	2	440, 445, 470 ¹	JJ-024	M641/2-3	4.25
MT-332B	3	482, 483 ²	JJ-022	M641/3-1	4.25
MT-333	2	440, 445, 470 ¹	JJ-084	M641/2-4	4.95
MT-333B	3	482, 483 ²	—	—	4.35
MT-334B	3	482, 483 ²	JJ-042	M641/3-2	5.05
MT-336C	3	482, 483 ²	JJ-073	M641/3-3	6.80

NOTE: ¹Mating Plugs—PJ-055B, M642/4-1; PJ-055R, M642/4-2; PJ-055M, M642/4-3
²Mating Plugs—PJ051B, M642/2-1; PJ-051R, M642/2-2



"MT-Jax"
("A" Frame)
























"MT-Jax"
("C" Frame)

SWITCHCRAFT, INC.

Plugs/Jacks/Connectors

-  **A3F - 3 Pin Female Microphone Connector**
Accepts Wire Up To .250" Diameter \$5.65
A3FL - Same as above but accepts
Wire .250" to .338" 6.70
A4F to A7F - Also Available
-  **A3M - 3 Pin Male Microphone Connector**
Accepts Wire Up To .250" Diameter \$5.00
A3ML - Same as above but accepts
Wire .250" to .338" 5.80
A4M to A7M - Also Available
-  **C3F - 3 Pin Female Round Panel Mount Jack**
1 7/16" Diameter \$7.85
-  **C3M - 3 Pin Male Round Panel Mount Jack**
1 7/16" Diameter \$5.25
-  **D3F - 3 Pin Female Rectangular Panel Mount Jack**
1 1/16" x 1 7/16" \$6.25
D4F to D7F - Also Available
-  **D3M - 3 Pin Male Rectangular Panel Mount Jack**
7/8" x 1 7/16" \$4.70
D4M to D7M - Also Available
-  **P3F - 3 Pin Female Microphone Connector Fits 5/8"-27**
Thread. Mike Plugs Directly Into Connector
Gooseneck Not Supplied With Either P3M or P3F . . \$8.60
-  **P3M - 3 Pin Male Microphone Connector**
Fits Standard Gooseneck with internal 5/8"-27 Thread.
Use Gooseneck with Mike Plug on Opposite End
Plugs into Female \$6.90
-  **S3FM - 3 Pin Male to 3 Pin Female Microphone**
Connection with 1 1/2" Space Between Terminals
..... \$12.10
-  **T3F - 3 Pin Female Microphone Connector**
with On/Off Switch \$19.05
-  **11 - 2 Conductor 1/4" Phone Jack** \$1.75
L11 - 2 Conductor 1/4" Phone Jack for 1/4" thick
panels 1.80
12B - 3 Conductor 1/4" Phone Jack 1.85
-  **121 - 2 Conductor 1/4" Female Extension Jack** \$6.10
131 - Same as above except 3 Conductor 7.65
-  **125 - 1/8" Mini Female Jack**
2 Conductor \$4.95
-  **151 - 2 Conductor 1/4" Panel Jack 1 1/4" Long Bush-**
ing \$5.55
152B - Same as above except 3 Conductor. 6.10
-  **280 - Standard 2 Conductor 1/4" Metal Plug** \$3.80
297 - Same as above except 3 Conductor 5.05
-  **321 - RCA Male Plug to 3 Pin Female**
Microphone Input \$12.45
-  **322 - RCA Female Jack to 3 Pin Female**
Microphone Input \$12.45

-  **323 - RCA Male Plug to**
3 Pin Male Plug \$11.00
-  **228 - Rt. Angle 2 conductor 1/4" Metal Plug** \$3.80
238 - Same as above except 3 Conductor 5.20
-  **336A - 2 Conductor 1/4" Jack to RCA Male Plug** . . \$9.30
336B - 2 Conductor 1/4" Jack to RCA Female Jack . . 9.30
-  **345A - RCA Female Jack to 1/4" Male Plug** \$5.65
-  **349A - RCA Female Jack to RCA Female Jack** . . . \$6.95
-  **363 - Coupler - 2 Conductor 1/4" Male Plugs**
each end \$7.55
-  **364A - 2 Conductor "Tini-Jax" Female Jack to**
2 Conductor 1/4" Male Plug \$5.30
-  **365 - 2 Conductor "Tini-Jax" Female Jack**
to RCA Male Plug \$5.30
-  **370A - RCA Female Input to a 2 Conductor**
"Tini" Plug \$5.40
-  **376 - "Tini-Jax" Input to a 2 Conductor**
Micro Plug \$6.55
-  **377 - Micro Jax Input to a**
2 Conductor "Tini" Plug \$5.60
-  **383A - 3 Pin Female Input to a 3 Conductor**
1/4" Female Output \$13.75
-  **384A - 3 Pin Male Plug to a 3 Conductor**
1/4" Female Output \$12.65
-  **386A - 3 Pin Female Input to a 3 Conductor**
1/4" Male Plug \$13.40
-  **389 - Coupler - 3 Pin Female Connector**
At Each End \$13.55
-  **390 - Coupler - 3 Pin Male**
Plug At Each End \$11.30
-  **780 - 2 Conductor 1/8" Mini Metal Plug** \$3.10
-  **2501F - 2 Conductor Screw-On**
Microphone Connector \$3.50
-  **3502 - RCA Male Plug**
2 Conductor \$1.65

-  Transformer
Lo-Z Switchcraft 3 Pin Female
Hi-Z 2 Conductor 1/4" Male Plug
with 4" Extension Cable
-  Transformer
Lo-Z Switchcraft 3 Pin Male
Hi-Z 2 Conductor 1/4" Female Input
With 4" Extension Cable

SYMETRIX, INC.

Signal Processing Equipment



A-220

A-220 Stereo Amplifier

Stereo Power Output: 20W/ch. at 8 ohms, 40W/ch. at 4 ohms • Mono: (bridged) Power Output: 40W/ch. at 8 ohms • THD + N: .05%, 20Hz-20kHz • S/N Ratio: 93dB 20Hz-20kHz • Controls: Channel 1 Level, Channel 2 Level • Switches: Power, Stereo/Mono Bridged (rear panel)

The A-220 is equipped with both 1/4" TRS and XLR connectors, in parallel. Balanced or unbalanced signals may be input to either connector, and the unused connector may be used for "loopthrough".

The configuration of the input level controls may be switched to reflect the way the amplifier is used. When it's operated as a stereo amplifier, channel-to-channel level matching is a must. The dual tracking level control configuration routes the left and right input signals to a close tolerance dual potentiometer (Level 1), so the level for both channels is accurately set by a single knob.

For 2-channel use, the independent position routes signals separately to the Level 1 and Level 2 input controls, allowing each channel's level to be set separately.

The A-220 is intended for use in medium power applications that require exceptional quality and reliability, such as audio monitoring in video production, near field studio monitors, small speakers used for "radio reference," and for headphone monitoring.

A-220 \$315.00



528

528 Voice Processor

• Mike Preamp: Gain: 0-50dB EIN: -127dBm phantom power: +48VDC THD: <.035% • Parametric/Notch Filter: Boost/Cut: +12/-30 Bandwidth: .05-3.3 octave • De-esser: Range: 20dB f_c: 1kHz-8kHz • Comp/Limit/Expander: THD: <.035% Max gain reduction/attenuation: 40dB • Output: Gain: 0-25dB Metering: de-esser, comp/limit/exp, output • Controls: Preamp Gain, De-ess Frequency, De-ess Range, Compress Threshold, Compress Ratio, Gate Threshold, Cut/Boost (x3), Bandwidth (x3), Frequency (x3), Output Level • Switches: Bypass (x3), Meter Select, Power

The 528 is a complete microphone input signal processor: mike pre-amp, compressor/limiter, downward expander, parametric equalizer/notch filter, de-esser, all in single rack space package. Phantom powering for condenser mikes, balanced line input for high level signals. LED metering indicates output level, gain reduction, de-esser activity. Used for broadcast announce mikes, public address, and specialized processing in recording and high level sound reinforcement.

528 \$649.00



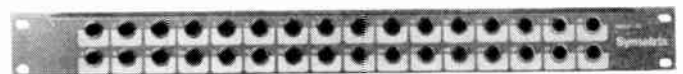
571

571 SPL Computer™

• Output Control Range: 40dB • Noise to Gain Ratio: 1:1 to 3:1 • Averaging Time: 5 sec. to 5 min. • Output Gain Trim: -15dB, +5dB (remote control optional) • AGC: selectable fast, slow • S/N Ratio: >86dB • THD: <.035% • Max. Output: +24dBm, balanced, into 600 ohms • Operating Controls: Averaging Time, Page-Over-Music, Ratio, Output Gain Trim • Set-Up Controls: Page Mike Gain, Sense Mike 1 Gain, Sense Mike 2 Gain, Page/Music Mode (rear panel) • Calibration Controls: Max level, Min level, Cal (on/off)

The 571 senses ambient noise and automatically adjusts level. Stand-alone paging controller with separate music input, adjustable page-over setting, two sensing mike inputs. Digital signal processing under proprietary software control assures freedom from runaway gain and feedback problems. Fast one-time calibration, non-volatile memory. Used for automatic level control in environmental/life safety systems in public gathering places, paging/music systems in airports, subway, bus and train stations, factories, restaurants, night clubs.

571 \$B49.00



Patchbay

32 Jack Patchbays

The Patch-32 family of patchbays is the perfect solution to the problem of interconnecting your equipment in any audio system. The Patch-32's "normalized" connectors let you set up commonly used signal paths without using any patchcords. Then, if you change your mind about a connection, all you have to do is insert a patchcord to reroute the signal. You do all the patching with standard, reliable, 1/4" to 1/4" patchcords, no RCA cords, miniphone plugs, etc. The Patch-32 allows you to make all the connections from the back of the patchbay to your equipment without resorting to custom wired cables or expensive adaptors. By using standard off-the-shelf phone to phone or RCA to RCA cables the connections from the back of the Patch-32 to and from your equipment are made simple and quick. All Patch-32s have two rows of sixteen 1/4" jacks on the front panel.

Patch-32A A 1 3/4" high, rackmount patchbay for interconnecting unbalanced equipment. 1/4" phone to 1/4" phone \$189.00

Patch-32B Identical to 32A except for rear panel RCA jacks. 179.00

Patch-32AB Rear panel is a combination of 1/4" and RCA jacks. 189.00

Patch-32Access Gives separate send and return from consoles with single jack access points 189.00

Patch-32TRS Tip-ring-sleeve, front and rear. 209.00

SYMETRIX, INC.

Signal Processing Equipment



CL-150B

CL-150B Fast RMS™ Compressor/Limiter

- Fast RMS circuitry with "soft knee" transition characteristic yields smooth overall compression, excellent control of dangerous peaks
- Selectable automatic or manual operation • Integral sidechain de-esser controls sibilance and high frequency sensitivity • Used for music recording, sound reinforcement, radio/television spot production, and audio for video

CL-150B **\$279.00**



501

501 Peak-RMS Compressor/Limiter

- Two processor device with variable ratio compressor and an infinity-to-1 peak limiter for the ultimate in compression/limiting • "Soft knee" transition characteristic assures sonic integrity • Selectable automatic mode significantly reduces overshoot and distortion • Balanced and unbalanced inputs and outputs • Used in broadcasting, recording, sound reinforcement and tape duplication

501 **\$339.00**

501 Option 01—Transformer balanced output **389.00**



525

525 Dual Gated Compressor/Limiter

- Combines the best attributes of compressor/limiters and expander/gates • Program-controlled system analyzes incoming signals, adjusts attack and release times accordingly • Controls very wide dynamic range signals with no "pumping" or "breathing" • Stereo or two-channel mono operation • Used for live sound reinforcement, high level stage monitors, recording, video post production, audio duplication and video transfer

525 **\$495.00**



511A

511A Noise Reduction System

- Two channel single-ended noise reduction system configured for use in professional and commercial audio systems • Dynamic high frequency filter and downward expander • Up to 30dB overall reduction of both high frequency and broadband noise • Dynamic filter reduces high frequency sounds like hiss, RF artifacts, and dimmer noise, while broadband and low frequency phenomena like hum, turntable rumble and air conditioning noise are reduced by the expander • 18dB/octave rumble filter is included for optimal treatment of low frequencies • Works on any signal without pre-processing • Independent two channel or true stereo operation is front panel selectable

511A **\$629.00**



544

544 Quad Expander/Gate

- Four channel, dual-mode processor for problem solving and special effects • Full control complement, sidechain processing, external key (trigger) inputs • Sonic excellence, ease of operation, total control • Used to eliminate mike leakage and room noise from vocal and drum recordings, to "clean up" live stage sound, and for effects like gated reverb and keyed bass

544 **\$629.00**



SX201

SX201 Parametric EQ Preamp

- Designed to handle both low level and line level inputs • Three fully parametric bands of equalization are provided, with +15dB boost and -30dB cut capability • Overlapping frequency controls cover the entire audio range, from 16Hz to 20kHz • Bandwidth is continuously variable from .05 octave (for deep notch filtering), to 3.3 octaves (for smooth tone shaping) • Separate line and preamp inputs • Line level input provides both balanced or unbalanced terminations, for levels ranging from a nominal -10 to +8 • The preamp input is unbalanced, and is intended for use with low level signals, such as those from synthesizers, guitars, and electronic drums • The overall input level control allows the operator to set internal signal levels to match boost cut conditions • High headroom, high slew rate active devices are employed • Separate balanced and unbalanced output line drivers, capable of +18dBm and +24dBm respectively

SX201 **\$239.00**

SX202 Dual Microphone Preamplifier

- Two ultra clean microphone preamplifiers • Variable gain • 15dB pad • Polarity switch (one channel only) • Selectable +48V phantom powering for professional condenser microphones • Balanced or unbalanced individual and summed outputs • Microphone inputs on 3-pin XLR connectors, outputs on 3-conductor 1/4" connectors • Independent power supply included

SX202 **\$219.00**

SX204 Headphone Amplifier

- 1-in 4-out stereo headphone amplifier • High voltage converter technology provides ample headroom for even the loudest headphone requirements • Stereo/mono switch • An overall input level control • Individual level controls for each output • Balanced or unbalanced inputs on 3-conductor 1/4" connectors • Headphone outputs on 3-conductor 1/4" conductors • Independent power supply included

SX204 **\$269.00**

SYMETRIX, INC.

Telecommunication Equipment

104 Multi-Line Telephone Interface

- Consists of two modules: a rackmount controller unit and a remote desk module
- Interconnection between the desk module and controller unit is via a standard 25 pair telephone cable (up to 300 feet of additional extension cable may be implemented)
- All system control is performed by the desk module
- May be used in conjunction with a user provided 2500 telephone (standard desk set) or in a "hands free" fashion
- Control functions include seize, release, transfer to hold, transfer to cue, and transfer to air
- Up to four callers may be conferenced "on air" at once
- An output jack and gain control on the desk module provide caller monitoring via headphones or 25 ohm speaker
- Audible ring indicator in the desk module may be muted

The 104 is a telephone interface system designed specifically for broadcast and teleconferencing applications. The 104 is essentially a stand-alone electronic telephone system which connects to up to four incoming telephone lines via standard RJ-11 ("modular") connectors. No additional telephone line equipment is necessary. The 104 is FCC approved (parts 68 and 15) and may be installed by non-technical personnel.

- 104**\$1695.00
- 104 CTRL** Extra console for two-station operation of the 104. Includes 50-pin bridged-T adaptor and two 25/25 cables.**400.00**

108 Broadcast Telephone Interface

- 108 system consists of two modules: a rackmount controller unit and remote desk module
- Supports a second (optional) desk module
- All system control is performed by the desk module
- May be used in conjunction with a user provided 2500 telephone (standard desk set) or in a "hands free" fashion
- All lines may be seized, routed, and released by buttons on the 108 desk module
- Control functions include seize release, transfer to hold, transfer to cue bus, and transfer to air
- "Profanity button" momentarily mutes all callers

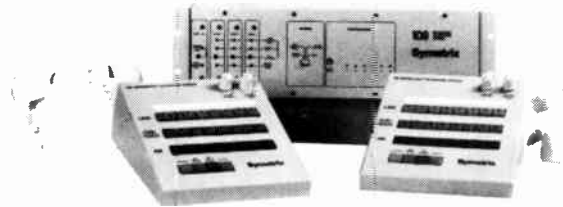
The 108 Broadcast Telephone System is a microprocessor based telephone interface designed specifically for broadcast use. The 108 allows the broadcaster to interface his on-air mixing console to up to eight incoming telephone lines for talk shows, news broadcasts, or any other telephone-air applications.

The 108 is essentially a stand alone electronic telephone system which interfaces directly to incoming telephone lines via standard RJ-11 ("modular") connectors. No additional telephone line interface equipment is necessary. The 108 is FCC approved (parts 68 and 15) and may be installed by non-technical personnel.

- 108**\$2995.00



104



108

Accessories

- 108 CTRL** Optional control console for two-station operation of the 108. Ready to plug in. Includes 25' cable with connectors**\$400.00**
- 108RB** An accessory for the 108 System that provides an external relay for each of eight telephone lines. Relays close whenever a line is seized on the 108. Use the 108RB for A-lead control, or with user-supplied high current relays to transfer lines and/or light indicator lamps**\$250.00**
- 25/25** 25' long 25-pair cable used to connect 104 and 108 control consoles with rackmount electronics package. May be used to extend existing cables. Female 50-pin "D" connector one end, male on the other end**\$70.00**
- Bridged-T** Y-adaptor for using two control consoles with a 104, or more than two consoles with a 108. Has three 50-pin "D" connectors, two male, one female**\$60.00**



TI-101

TI-101 Single Line Telephone Interface

- Level compatibility. Back-panel gain switches permit the TI-101 to operate with virtually any professional mixer or console
- Bandpass filtering
- Caller mute: A user provided remote contact closure mutes the caller instantly without clicks or pops
- LED clip indicators are provided
- Conference linking
- Caller equalization
- Two band equalizer with 8dB of boost and cut at 400Hz and 2.5kHz brightens up the caller and enhances intelligibility
- Send limiter
- Receive compressor/expander

The TI-101 Telephone Interface is designed specifically for the connection of professional audio equipment to telephone lines in broadcast and production operations. The TI-101 employs an electronic hybrid circuit which creates a maximum trans-hybrid loss, yielding effective isolation between your studio's send to the telephone line, and your caller return signal.

- TI-101****\$495.00**

TAPECASTER

Cartridge Machines/Loader

X-701 Series Tape Cartridge Machines

- Steel case for optimum electrostatic and electromagnetic shielding
- Electronic tone cueing
- Remote control of all functions
- 100% solid-state
- Premium core, laminated metal faced heads
- Precision machined 2 lb. flywheel assembly hysteresis synchronous motor
- Heavy-duty air damped solenoid
- Extremely rugged construction
- Suitable for high vibration environment
- Auxiliary cue tone option for automation of exhibits, lights, other A/V equipment
- Precision adjustable head bracket

Specifications

- Equalization:** NAB standard
- Freq. Response:** ± 2dB 50-12,000Hz at 7.5 IPS
± 3dB 40-15,000Hz at 7.5 IPS
(Exclusive of head contour effects)
- Distortion:** 2.0% or less
- Signal-to-Noise Ratio:** 58dB or better
- Wow and Flutter:** Less than 0.1% RMS weighted
- Tape Speed:** 7.5 IPS
- Input:** (Line) 0.1V (bridging)
(Mike, 150 ohms) 1.5mV
(Available on record-playback units only)
- Output:** 0dBm at 600 ohms
- Cue Tones:** (Primary) — 1kHz (stop)
(Secondary) — 150Hz (optional extra)
- Cueing Accuracy:** 0.1 second
- Starting Time:** 0.05 second
- Playing Time:** 1 second to 31 minutes at 7.5 IPS
- Power Requirement:** 105-125VAC, 60Hz, 50W standard
220V optional; 50Hz optional
- Power Supply:** Regulated, solid-state
- Motor:** Hysteresis synchronous



X-701PS



X-701RP



X-701RPS

Mono Cartridge Recorders/Reproducers

- X-701P** Mono cartridge reproducer . . . \$ 765.00
- X-701RP** Mono cartridge recorder/reproducer . . . 1050.00
- X-701RPD** Mono cartridge recorder/reproducer with delay . . . 1195.00

Stereo Cartridge Recorders/Reproducers

- X-701PS** Stereo cartridge reproducer . . . \$ 945.00
- X-701RPS** Stereo cartridge recorder/reproducer . . . 1345.00

Accessories

- 701-38** 150Hz auxiliary tone sensor (for X-701P or X-701PS) . . . \$ 80.00
- 701-37** 150Hz auxiliary tone generator (for X-701RP or X-701RPS) . . . 150.00
- 701-GS** 150Hz auxiliary tone generator and sensor for X-701RP or X-701RPS . . . 175.00
- 701-T1** Telephone interface (for X-701 Series) . . . 250.00
- 701-TC** Counter option for telephone interface . . . 75.00
- 701-45** 1kHz mono level test cartridge . . . 23.00
- 701-46** 12kHz mono alignment test cartridge . . . 26.00

X-100 Automatic Cartridge Loader

- Available for 115 or 220V operation (as specified with order)
- Ultra-stable heavy-duty steel top deck
- Separate heavy-duty synchronous motors on drive capstan and take-up hub
- Editall splicing block comes standard with unit
- Adjustable tape supply table braking mechanism
- Automatic timer reset
- Mechanical bistable pressure roller
- Provides for the accurate measurement of tape length through precision calibrated minute and second face mounted controls
- Ease of operation is provided by one lever which activates the reset, start, and run functions

X-100 \$550.00



X-100

TASCAM/TEAC CORP. OF AMERICA

Loggers/Recorders/Reproducers

48L 8-Channel Logger

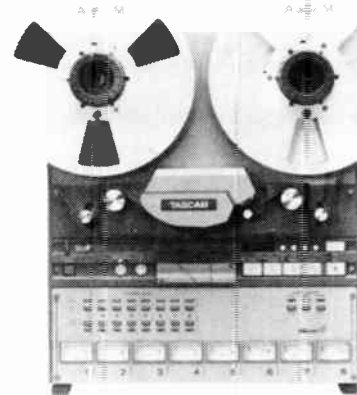
- Operates at 15 ips tape speed • Recommended 3M #8206 and Am-
pex #705 • Tape counter will display a maximum reading of 23 hours
and 59 minutes • Counter operates in either direction additive or sub-
tractive • 8-track, 8-channel • Head configuration: 3-heads; erase, re-
cord and reproduce • Remote control optional with RC-71 • 17" x
19⁷/₈" x 12⁷/₁₆" • 81⁹/₁₆ lbs.

The 48L is slow speed, logger version of the 48 multi-channel recorder/
reproducer. It is designed for long term, multi-channel recording in an
industrial, broadcast, or governmental setting. The 48L may be exter-
nally controlled for continuous operation by means of a computer, or
intermittent operation by means of a voice actuated circuit (VOX) or
computer control.

48L 8-channel\$4995.00
44L 4-channel3495.00

48 OB Recorder/Reproducer

- Operates at 15 ips with industry standard equalization • Nominal
+ 4dBm balanced inputs and outputs are standard • -10dBV RCA jacks
are provided • Headroom: 24dB at the XLRs; 28dB headroom at the
RCAs • All three motors are under servo control • Rapid spooling
mode • Normal play/record speed can be fixed via an internal crystal,
externally controlled or adjusted over a full ± 12% • Capstan motor:
Phaselock loop DC, direct drive • 19" H x 17" W x 12⁷/₁₆" D • 89.6 lbs.



48 OB

The 48 OB is a high quality 8-track 1/2" recorder/reproducer designed
for audio and video production work where flexibility, reliability and
synchronized operation are primary requirements. We have improved
the audio electronics, added a total servo system under microprocessor
control, and provided single plug compatibility with popular SMPTE
controller/synchronizer systems.

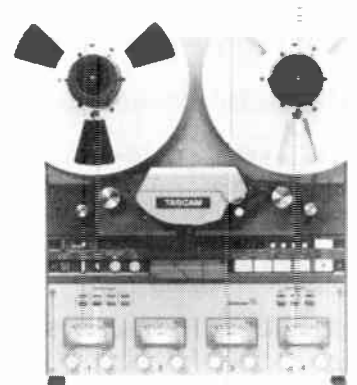
48 OB\$4999.00

44 OB 4-Track Compact Recorder/Reproducer

- All 3 motors are under servo control • Rapid spooling mode permits
forward or reverse winding 8 times normal play/record speed • Normal
play/record can be fixed via an internal crystal, externally controlled or
adjusted over a full ± 12% range • Tape motion is fast and accurate
• Search-to-zero and Search-to-cue functions • Tape counter displays
positive or negative "real time" • Microprocessor control of all trans-
port functions • Each track has its own function selector and pre-load
selector • Sync response is equal to repro response • Precision splicing
block • Simple installation and signal operator controllability

The 44 OB is a high quality 4-track 1/4" recorder/reproducer designed
for audio and video production work where flexibility, reliability and
synchronized operation are primary requirements. The 44 OB operates
at 15 ips and 7 1/2 ips with industry standard NAB equalization, and can
be set for flux reference levels of 250 or 320 nanoWebers per meter.
Nominal + 4 standard, and -10dBV RCA jacks are also provided for the
broadest possible compatibility.

44 OB\$3999.00



44 OB

42B 2-Track Recorder/Reproducer

- Full servo system including capstan and reel motors • Electronically-
balanced + 4dBm inputs/outputs • Custom microprocessor ensures
rapid yet gentle tape handling in all modes • PLL Direct drive capstan
motor and non-magnetic ceramic capstan shaft • Long-life hard perma-
lloy heads mounted on a solid base plate • Manual edit, dump edit and
stop edit • Front-access to all adjustment for transport and amplifier
• Precision real time tape counter

The 42B is an exceptionally versatile high-performance 2-track, 2-
channel tape recorder/reproducer that uses 1/4" wide tape and oper-
ates at tape speeds of 15 ips (38cm/s) and 7 1/2 ips (19cm/s).

Designed especially for demanding production applications, including
lockup to SMPTE/EBU controller/synchronizers, the 42B transport is
built on an extra heavy-duty chassis that ensures stable tape motion
and stable alignment despite the long hours of high speed, start-stop
shuttling that are typically part of editing.

42B\$2999.00



42B



32



34B



38

Series 30 Recorder/Reproducers

- 38—8-Track, 8-Channel
- 34B—4-Track, 4-Channel
- 32—2-Track, 2-Channel

The Series 30 sync and repro heads offer identical response so you don't lose sound quality during track bouncing operations. Further, contour effect has been minimized and head life has been extended by 20%. Even the erase heads are improved with a material that allows more complete erasure.

Special DC reel motors achieve extremely high torque to minimize wow and flutter and provide higher fast-wind speed. A belt-driven, FG servo controlled DC capstan motor ensures exceptionally precise tape speed. A microprocessor transport control guarantees smooth, positive switching with no appreciable stop between fast wind and play/record modes. Lower noise levels are realized with the use of selected integrated circuits and amplifiers.

On each deck, each track has a Function Select button that places it in the Safe or Record Ready mode. There are three Output Select buttons that determine the source of the line output: Input, Sync or Repro.

Remote punch-in recording is also possible using the remote transport control unit (RC-71) or a remote footswitch (RC-30P). Each deck offers a Cue lever, Zero Return function, Pitch control, expanded VU meters, and full dual process dbx noise reduction compatibility (DX-2D/4D optional). The 32 and 34B also offer 19 cm/sec tape speed along with the studio standard 38cm/sec. Other features that are extra on the 32 and 34B are microphone inputs, Mike/Line switches and 0/20dB attenuators, input and output level controls and a monaural headphone monitor output with track assignment switches.

32 1/4" Half Track Master Recorder/Reproducer

- 10 1/2" reel capacity • 15 and 7 1/2 ips • Independent record mode L & R • Simul-sync • Full frequency response in sync mode • Function select and output select • Punch in/out recording • Pitch control ± 12% • Dump edit • Mike inputs • Independent input/output level control • Headphone jack and volume control • Cue control • FL tape counter • Zero return
- 32\$1749.00

Recommended Accessories

- RC-71 remote control • RC-30P foot control • Optional dbx® • RM-300 rackmount • CS-607 console for Series 30

DX-2D

- Two channel professional dbx 1 • Dual process dbx noise reduction for 32 only\$349.00

34B 1/4" 4-Track Recorder/Reproducer

- Track format: 4-track, 4-channel, 1/4" tape • Reel size: 10 1/2" • Tape speeds: 38 and 19cm/sec. • Wow and flutter (peak, weighted): ± 0.06% at 38cm/sec., ± 0.09% at 19cm/sec. • Frequency response (OVU): 40Hz—22kHz, ± 3dB at 38cm/sec., 40Hz—16kHz, ± 3dB at 19cm/sec. • S/N ratio: 68dB at 38cm/sec., 66dB at 19cm/sec. • THD: 0.8%, (OVU, 1kHz) • Dimensions: (461mmH x 410mmW x 256mmD) • Weight: 20kg.

34B\$2199.00

Recommended Accessories

- RC-71 remote control • RC-30P foot control • RM-300 rackmount • CS-607 console for Series 30

DX-4D

- 4-channel professional dbx 1 • Dual process dbx noise reduction • For use with 34B (one unit) • For use with 38 (two units)

DX-4D\$649.00

38 1/2" 8-Track Recorder/Reproducer

- 8-tracks on 1/2" tape • 10 1/2" reel capacity • 15 ips • Pitch control ± 12% • TASCAM function select and output select • Punch in/out recording • Dump edit • Cue control • FL tape counter • Zero return

38\$2999.00

Recommended Accessories

- RC-71 remote control • RC-30P foot control • RM-300 rackmount • YTT-1144 calibration tape • CS-607 console for Series 30

®dbx is a registered trademark of dbx, Inc.

TASCAM/TEAC CORP. OF AMERICA**Recorder/Reproducer****MS-16 16-Track Recorder/Reproducer**

The MS-16 is a top-line professional multitrack recorder, designed to provide outstanding overall performance in even the most demanding professional applications. The transport chassis has been re-designed to extra heavy-duty standards so that tape motion and alignment will remain stable even through hours and hours of the most rugged use. The MS-16 is also ready for immediate interfacing with SMPTE standard controllers/synchronizers for precision automated location and video/film sync.

The MS-16 employs the economical 1" 16-track tape format, running at 38cm per second. It also offers both balanced +4dBm inputs and outputs as well as unbalanced -10dBV RCA pin jack inputs and outputs for full compatibility with all types of professional and semi-professional equipment. Sync and repro frequency response are identical so there's absolutely no loss of sound quality during track bouncing operations.

Monitor selection facilities have been carefully designed for maximum speed and ease of use in all recording situations. You have a choice of Input, Sync, or Repro output selection, and Insertion (pre-load) switches make it possible to select either input or sync repro monitoring on record-ready tracks. An Input Enable switch permits input monitoring while in the fast wind or stop modes, regardless of the rec function mode, to establish communication between the control room and studio.

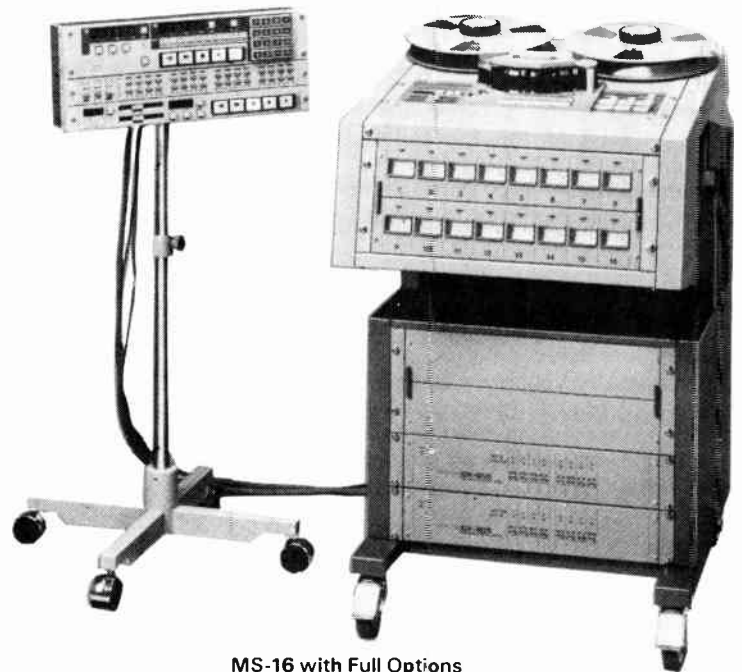
A comprehensive range of editing functions are also offered. In the Dump Edit mode the takeup reel is defeated, making it easy to "dump" large edits. In the Manual Edit modes either reel can be easily rotated by hand and the other will follow precisely, maintaining tape tension. And in the Stop Edit mode the reels can be independently rotated by hand. A splicing block is conveniently located right in front of the head assembly—where you need it most.

The MS-16 is fully compatible with SMPTE interlock systems. It features full, precision servo control on the capstan motor, reel motors, and even on the tape tension system. The direct-drive PLL servo capstan motor further offers a choice of three selectable sync modes: Fixed, Variable and External. A channel 16 Sync Lock monitor mode permits continuous time code output to a synchronizer/controller regardless of the deck's Output Select mode. And channels 1 through 15 have a special Lifter Defeat Mute function which automatically engages the muting circuitry when a specified cue point is reached and the tape lifter is activated.

The MS-16 transport and electronics are separate, and both can be mounted in any standard EIA equipment rack. The TASCAM CS-65 console rack neatly mounts both transport and electronics sections in one easy-access unit. For convenient meter location, the meter section is removable from the electronics using the T-0865 amp panel/meter cable kit. The electronics and amplifiers for record, play and bias functions are modularly constructed on one circuit card per channel. Access is fast and easy, minimizing down time for maintenance. For remote control convenience, the record function select and output control unit is removable from the transport block using the CS-63 function remote kit.

Other features offered by the MS-16 include $\pm 15\%$ pitch control, a spooling mode for neater tape packs, VU meters with peak-reading LEDs for each channel, low-frequency compensation control on each channel, and a precision non-magnetic ceramic capstan shaft. Options available for the MS-16 include the AQ-65 10 point remote auto-locator; RC-65 remote transport control unit; CS-64 remote control stand; TZ-65 metal reel clampers; and the DX-8DS dbx units.

MS-16 \$8999.00



MS-16 with Full Options

Specifications

Track Format:	16-track, 16-channel 1" tape
Reel Size:	10 1/2", NAB
Tape Speed:	38cm/s
Wow and Flutter (peak, weighted):	$\pm 0.08\%$
Frequency Response: (0VU):	40Hz-22kHz, $\pm 3\text{dB}$
S/N Ratio:	69dB (weighted)
THD:	0.8% (0VU, 1kHz)
Dimensions:	Transport: 18.4" x 19.3" x 12.4" Electronics: 7.7" x 19.3" x 12.8"
Weight:	Transport: 84 lbs. Electronics: 36.5 lbs.

TASCAM/TEAC CORP. OF AMERICA**Recorder/Reproducers****ATR-60 Series
Recorder/Reproducers****ATR-60-2T Center Track
Time Code Reader**

The ATR-60-2T is a 2-track with an additional IEC standard center track to record and reproduce SMPTE/EBU time code. The additional time code track occupies the normally blank space between tracks of the traditional NAB 2-track format. As a result, previously mastered 2-track tapes from your library (even DIN) can be time code striped and reedited.

The coincident-head configuration makes time code virtually invisible on the ATR-60-2T. You don't have to change a single operating or editing technique. Use your razor blade to edit if you wish because the code is where it belongs, directly coincident with the audio. Don't worry about striping enough code before your audio, or worry about code overrun at the end of the audio.

Advantages of coincidence carry over to machine maintenance and service. Head Wrap adjustments, which many techs perform as regular maintenance, are very difficult with offset head designs. Special equipment is needed to perform these procedures so that factory service may prove necessary for a routine adjustment. Tape wrap is crucial in an offset design because it affects the distance between gaps on the audio and time code heads, adding yet another variable to a system burdened with delay lines and offset calculations.

In order to record and reproduce time code in the center track, crosstalk performance must be superior or the time code head must be offset. It's easier to offset the head, but to do so means losing editing flexibility and devising "compensating" schemes to deal with the offset.

**ATR-60-2N
Mastering Recorder**

The NAB Standard ATR-60-2N is a quarter-inch mastering machine, designed with an easy going but hard working personality that makes it a joy in the mastering suite. Unsurpassed frequency response, signal-to-noise ratio, crosstalk, distortion, and wow and flutter performance are byproducts of

TASCAM's 30 years of innovative head and transport design.

Designed to prosper in even the most brutal environment, the ATR-60-2N is steel toughened in a two piece configuration that will fit in tiny remote trucks or where audio was an afterthought in planning the video suite. Its Omega Drive transport will thrive on thousands of passes a day, all the while gently protecting your tape from the cumulative tension of the day's shuttling.

**ATR-60-2HS and ATR-60-4HS
High Speed Mastering Recorders**

These machines bear the "HS" designation, meaning high speed. Operating at 30 ips and using half-inch tape, they are perfect for maximum quality music mastering. The 2HS model is a 2-track machine. The 4HS is a half-inch 4-track, a format favored by those mastering audio for video and film.

The 2HS and 4HS have heads that maximize the inherent advantages of high speed operation and wider tape including vivid audio characterized by impressive high frequency response, linearity, and signal-to-noise performance. Able to print at 320nWb/m in addition to the standard 250nWb/m, the ATR-60-2HS and ATR-60-4HS wring every last dB of signal-to-noise performance from your tracks. The Omega Drive transport delivers and retrieves the half-inch tape with absolute precision and speed. The machined head block and hardy deck plate/chassis combination don't give tape skewing or wow and flutter problems a chance to start. And a scrape flutter filter takes dead aim at even miniscule friction induced noise.

**ATR-60-8
High Performance 8 Track**

A half-inch machine, the ATR-60-8 offers a transport designed for extensive shuttling and frame accurate, computer controlled parking. Despite being parked and started in exactly the same spot hundreds of times while editing a single scene, the ATR-60-8 will not pass along cumulative tension spikes to your tape as will many straight-line tape path machines.

You won't be wasting a track as a guard band using your ATR. The ATR-60-8 head offers crosstalk performance so good you can confidently print audio on the track adjacent to code. Time Code



ATR-60

Lock and Sync Lock give your synchronizer/controller optimum access to code without affecting audio, and a single multipin connector is your door to the most responsive SMPTE/EBU control in the business.

Frequency Response

30 ips:	30Hz-26kHz, ± 2 dB at 0VU
	30Hz-28kHz, ± 2 dB at -10VU
15 ips:	2T, 2N: 40Hz-22kHz, ± 2 dB at 0VU
	30Hz-24kHz, ± 2 dB at -10VU
2HS:	20Hz-22kHz, ± 2 dB at 0VU
	20Hz-24kHz, ± 2 dB at -10VU
4HS:	30Hz-22kHz, ± 2 dB at 0VU
	30Hz-24kHz, ± 2 dB at -10VU
8:	40Hz-22kHz, ± 2 dB at 0VU
	30Hz-24kHz, ± 2 dB at -10VU
7 1/2 ips:	2T, 2N: 30Hz-16kHz, ± 2 dB at 0VU
	30Hz-20kHz, ± 2 dB at -10VU
8:	30Hz-16kHz, ± 2 dB at 0VU
	30Hz-20kHz, ± 2 dB at -10VU
ATR-60-2T	.....\$6999.00
ATR-60-2N	.....5999.00
ATR-60-2HS	.....6499.00
ATR-60-4HS	.....6999.00
ATR-60-8	.....7999.00



M-216

M-200 SERIES MULTI-PURPOSE MIXERS

- 5 complete submix systems (Main Mix, Stereo Mix, Foldback, Effects, Solo) instantly organize and simplify complex sound reinforcement or recording setups without patching
- 8 Tape input jacks combined with top-panel switching matrix provide one-button access to tape or other Line-level sources
- 4 Program buses, each with a Master fader and Pan control plus your choice of XLR and RCA outputs. Single fader grouping for maximum mixing convenience
- Trim and Pad controls enable each channel input to accommodate signals from -70 to +28dBV
- 3-Band EQ combines shelving and sweep-type parametric EQ to provide 12dB and 15dB of cut or boost at each frequency band
- LED Overload indicators on each channel avoid accidental clipping, distortion, or tape saturation
- Switchable VU meters with built-in peak level indicators allow easy comparison of output bus levels
- Convenient front-panel headphone jack can be used to monitor any submix system
- Individual circuit cards mounted on a steel subchassis for maximum strength and road-worthiness

The 200 Series Mixers have what it takes to meet today's growing demand for high-quality audio in the broadcast and cable TV markets. Mono or stereo audio signals from multiple source machines can be mixed simultaneously. These signals can be readily combined with various other audio sources such as voice-over mixes, turntables and cart machines. The mixed program is sent to the edit master VTR via the Program outputs or Stereo Master outputs. Because there are four Program outputs, it's easy to hook up a second VTR to record a "mix minus" (i.e., a "no dialog" mix of music and effects tracks to be dubbed in different languages).

The 200 Series has all the features and functions you need for 4 or 8 track recording — from basic tracks to overdubs and mixdown. Their Program Outputs can be connected to up to 8 individual tracks of a multitrack recorder. They make it easy to record complex combinations of instruments and effects on individual tracks without repatching.

The master control section is where the signals from the input channels are combined and routed to the appropriate output buses. Think of it as the nerve center of the 200 Series. It provides extremely flexible signal routing without the need for cumbersome patch cables. Every signal path is placed right at your fingertips.

There are four Program Master faders which feed the 200 Series' Program outputs. These work in conjunction with a set of Master Pan controls. They accept signals from the Program Master faders and determine the amount of signal that will be sent to the left and right sides of the Stereo Output bus (which has its own set of left and right Master faders). Not only does this give you the convenience of combining related groups of inputs on a single Program fader, it also lets you collectively pan the group of inputs as well.

200 Series channel controls allow each input signal to be carefully shaped and then passed on to the console's submix systems. Precise tonal shaping of input signals is provided by a three-section EQ. The high and low-frequency controls are shelving-type equalizers, offering 12dB of cut or boost. The high-frequency control's center frequency is 10kHz and the low-frequency centers at 100Hz. The mid-frequency control is a sweep-type parametric EQ that allows you to select any frequency from 250Hz to 5kHz and apply up to 15dB of cut or boost. An Overload indicator provides a warning when a signal leaving the equalizer is too hot.

The Stereo Output bus can provide a house mix to the main power amp and speakers, while the Foldback output provides a monitor mix for the talent onstage. 200 Series mixers furnish generous options for hooking up effects and signal processing devices. Effects for a single instrument or voice are best applied using the Insert jacks on individual channels. Effects that are intended for use on several instruments, or applied to the mix as a whole, can be brought in via the Effects sub-mix system and assigned as needed.

The 200 Series' back panel covers all the input and output options for a wide variety of applications. Each channel module offers a complete choice of Mic and Line level inputs, balanced XLR, and unbalanced quarter-inch connectors. Altogether, each channel module can handle input impedances from 50-600 ohms balanced or 150-10 kohms unbalanced.

M-224 24 channels	\$2599.00
M-216 16 channels	1849.00
M-208 8 channels	1199.00

TASCAM/TEAC CORP. OF AMERICA

Mixing Consoles

**M-500 SERIES
MIXING CONSOLES**

The M-500 Series are sophisticated audio mixing consoles designed for professional production applications. The M-520 (20-in/8-bus) is intended primarily for 16-track studios, while the M-512 (12-in/8-bus) is ideal for 8-track installations.

- 20-input channels on the M-520, 12-input channels on the M-512, each with selectable inputs, provide:
 - 20 (M-520), 12 (M-512) balanced XLR microphone inputs with individually switchable phantom power.
 - 2 pair of instrument inputs (1/4" phone and RCA pin).
 - 2 RIAA phono inputs (RCA pin).
 - 16 (M-520), 8 (M-512) line inputs (RCA pin).
 - 16 (M-520), 8 (M-512) multi-track tape returns (RCA pin).
 - 2 pair of stereo tape returns (RCA pin).
- 8 main program busses with bus master controls
- 4 independent auxiliary busses
- 16 (M-520), 8 (M-512) groups of stereo monitor mix controls
- 8 balanced amplifiers (input; RCA pin/22K ohms, output; XLR/600 ohms)
- Access Send/Receive on each input channel and program bus
- 3-band parametric EQ on each input channel
- Mute switch on each input channel
- Direct Out on each input channel
- Built-in talkback mic plus slate tone/test oscillator
- Stereo SOLO
- PFL (Pre Fader Listen)
- 12 (M-520), 8 (M-512) VU meters with LED peak indicators
- 100mm input and bus master faders (compatible with PG-3000)
- Bipolar 15 volt power supply
- Optional pedestal (CS-520 for M-520, CS-512 for M-512)
- Optional top/side board (CS-521 for M-520, CS-513 for M-512)



M-512

Specifications

Crosstalk: Better than 70dB (1kHz)
Better than 60dB (15kHz)

Total Harmonic Distortion

1 line to 1 PGM out: 0.02% (1kHz, nominal level)
1 mic to 1 PGM out: 0.025% (1kHz, 50dB above nominal level,
MIC ATT 30dB on)

Fader Attenuation: 80dB or more
Overload Indicator: 25dB above nominal level
Meter Peak Indicator: 10dB above nominal level

Dimensions:

M-520: 1082W x 240H x 798D mm
M-512: 802W x 240H x 798D mm

Weight:

M-520: 47kg
M-512: 38kg

Frequency Response: Line in to —

PGM out: 20-20kHz, \pm 1dB
Aux out: 20-20kHz, \pm 1dB
Mon out: 20-20kHz, \pm 1dB

Equalizer

Type: Sweep
Level: Boost/Cut \pm 15dB
Frequency (low): 50Hz to 500Hz
(mid): 100Hz to 5kHz
(high): 2.5kHz to 15kHz

Oscillator Frequencies: 40Hz, 1kHz, 10kHz switchable

S/N Ratio: (nominal input level, EQ out, UNWTD/"A" WTD)

1 line to 1 PGM out: 85dB, 87dB
1 mic to 1 PGM out: 68dB, 70dB
1 tape to 1 PGM out: 86dB, 70dB



M-520

M-512 12 input channels \$4499.00
M-520 20 input channels \$6999.00

TASCAM/TEAC CORP. OF AMERICA

Audio Cassette Decks/CD Player

112 4-Track 2-Channel Stereo Cassette Deck

- High stability transport using diecast and precision machined parts
- Dolby * HX Pro for enhanced high frequencies
- Dolby B and C noise reduction
- Cue and review functions to monitor during fast wind modes
- High slew-rate IC electronics

112 \$679.00
 112R Bi-directional version of 112 \$859.00

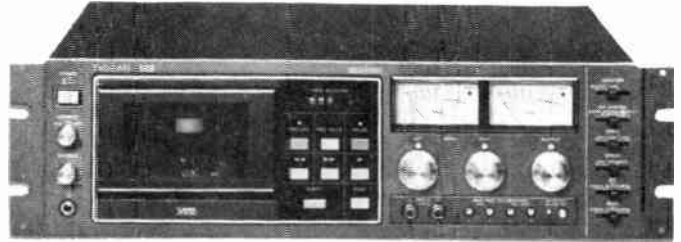


112

122 MK II Studio Cassette Deck

- 3 head (Cobalt Amorphous)
- Cue and review function
- Dolby HX Pro
- Dolby B, C
- Zero return, stop/play and cue point stop/rewind loop functions
- Standard speed 1 7/8 ips
- Tape run time counter and index mode
- XLR + 4 RCA -10 connectors
- Weight: 19 lbs.

122 MK II \$1099.00



122 MK II

133B Stereo Plus Cue Cassette Recorder/Reproducer with Auto Present Features

Recorder Features:

- + 4 balanced XLR/-10 unbalanced inputs and outputs
- 2 speeds: 1 7/8-3 3/4 ips
- Dolby NR System
- Simul-sync recording or multitrack recording

Auto Present Features:

- Cue pulse generates a 25Hz tone on the cue channel (does not affect the projector operations but triggers the auto present)
- Automatic shutoff or rewind at cue tone



133B

Recommended Accessories:

- AH-50 Rackmount Handles
- RC-133 Remote Control
- FC-133 Flight Case
- RX-8 dbx *-II Interface

133B \$1349.00

234 Syncaset® 4-Track Production Cassette Deck

- 3 3/4 ips tape speed
- dbx noise reduction switchable
- Function select
- 4 x 2 internal mix
- Weight: 21 5/8 lbs.
- Dimensions: 5 13/16" H x 19" W x 14 1/16" D

Recommended Accessories:

- AH-50 Rackmount Handles
- RC-90 Remote Control
- TO-122A Test Tone Oscillator

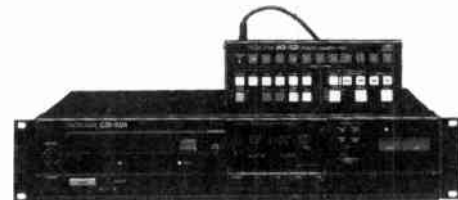
234 \$1099.00



234

CD-501 Compact Disc Player

- Pair of electronically balanced XLR type line output connectors. A Mono (L + R) switch permits summing the left and right channel signals to provide monaural output if required. For broad system versatility a separate pair of RCA-jack monitor outputs are provided — one Fixed and one Variable
- AQ-501 wired remote control unit permits remote control of all playback and programming operations
- Remote control system can be used to control two CD-501's linked via a simple phone plug cable. Switching between "CD1" and "CD2" control is accomplished directly from the remote control unit
- Accessible via the remote control unit is 20-selection random programming
- Original LSI incorporating the TEAC ZD Digital Circuit (ZD stands for "Zero Distortion") effectively minimizes digitally-generated distortion products
- Oversampling Digital Filter is used to double the sampling frequency of the digital signal
- Dual Monaural 16-bit D/A converters used for the left and right channels eliminate the need to de-multiplex a combined left/right signal from single-converter systems, thereby eliminating de-multiplexing (switching) noise



CD-501

- 3-beam Laser Pickup is directly driven by a precision Linear Pickup Drive Motor instead of the conventional rotary motor/gear system
- Three repeat modes — Automatic repeat playback of the entire disc or a programmed sequence, or a specified A — B segment
- Next Function

CD-501 \$1249.00

*Dolby is a registered trademark of DOLBY LABORATORIES, INC.

**dbx is a registered trademark of dbx, INC.

TDK ELECTRONICS CORP.

Video/Audio Tape

VIDEOCASSETTES

HD-XPro High Definition-Extra

• 7 layer tape construction for improved picture clarity and tape transportability • Dropout frequency for 5 and 15 μ s disturbances is superior to virtually all other 1/2" videocassettes • SQ precision cassette mechanism for optimum tape transport, tracking and alignment

VHS

T-120 HD-XPro

VHS-C

TC-20 HD-XPro

HD High Definition

• HDD binder system and USF (Ultra-Smooth and Flat) film base with a 1 μ m back coating provide HD with a mirror-smooth finish on the active face and optimum frictional coefficients on its rear surface • Luminance and chrominance signal-to-noise ratios have been improved +3.0dB and +2.5dB respectively • SQ (Super Quality) precision cassette mechanism for optimum tape transport, tracking and alignment

VHS

T-120 HD

E-HG Extra High Grade

• Finest video and audio characteristics of any 1/2" video tape in its class • Packaged to maintain original performance characteristics

VHS

Beta

T-60 E-HG

T-120 E-HG

L-750 E-HG

VHS-C

TC-20 E-HG

HS High Standard

• Ultra-refined Super Avilyn particles with a BET value of 25m²/g • HDD binder system significantly reduces oxide shedding on video heads thereby extending tape life and reducing dropout levels • Special static-resistant DP leader tape maintains high level performance

VHS

Beta

T-30 HS

T-60 HS

L-750 HS

T-120 HS

T-160 HS

AUDIO CASSETTES

D Dynamic

• Excellent high frequency response with low distortion • Wide dynamic range, high MOL • Low noise • Precision cassette mechanism • Touch and tell marks allow you to identify A and B sides with your fingertip

D30

D90

D46

D120

D60

AD Acoustic Dynamic

• Ideal for car cassette playback, home decks, and portables • Delivers wide dynamic range, extra high MOL iwth low bias noise

AD-60

AD-90

AD-X Acoustic Dynamic-Extra

• High sensitivity and superior MOL compared to other Type I (normal bias) cassettes • Extended frequency response, low bias noise level

AD-X60

AD-X90

HX-S Metal Particle High-Bias

• Four times more magnetic storage ability than other Type II formulations • Extended high frequency response assures excellent transient performance • Particularly suitable for recording the high energy output of digital sources

HX-S60

HX-S90

SA Super Avilyn

• Superior frequency response and recording headroom • Improved Laboratory Standard cassette mechanism • Outstanding sensitivity across the entire frequency range

SA60

SA90

SA-X Super Avilyn-Extra

• "DLM" cassette mechanism for reduced modulation noise • Dual coated Super Avilyn formulation provides low bias noise for less tape hiss and extends dynamic range • Extra-high sensitivity and MOL

SA-X60

SA-X90

SA-XG Super Avilyn-Extra

• Low bias noise yields less tape hiss and extends dynamic range • Extra-high sensitivity and MOL • RS-II mechanism virtually eliminates sympathetic vibration

SA-XG60

SA-XG90

MA Metal Alloy

• Allows for high level recording without distortion, resulting in increased dynamic range and reduced tape noise • Offers superior MOL characteristics over Type II tapes • Super Finavinx formulation

MA-60

MA-90

MA-X Metal Alloy-Extra

• "DLM" cassette mechanism for reduced modulation noise • Super Finavinx particles provide a high packing density • Increased MOL handles transient peaks without distortion • Accepts high input levels without saturation • Reduced bias noise

MA-X60

MA-X90

MA-XG Metal Alloy-Extra Grade

• Optimum recording from all music sources • Accepts high input levels without saturation • RS-II shell mechanism virtually eliminates vibration and provides uniform performance between Side A and Side B

MA-XG60

MA-XG90



E-HG



HD



HD-X

Call For Current Pricing

Refer to Green Section for Addresses and Telephone Numbers.

TECHNICS

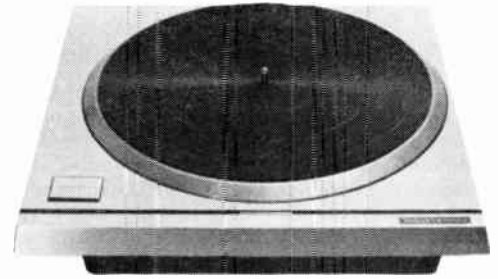
Turntables

SP-10MK2A Broadcast Turntable with Quartz Phase-Locked Direct Drive Motor

• Quartz control provides virtually perfect speed accuracy (no more than $\pm 0.002\%$ deviation) • Direct drive system uses no belts, idlers or other speed reduction mechanisms, resulting in very low rumble, very low wow and flutter • Elaborate servo system provides enormous torque: start-up time is 0.25 second (25° rotation) from standstill to $33\frac{1}{3}$ rpm • Electromechanical braking system brings platter to dead stop in 0.3 second from $33\frac{1}{3}$ rpm • Heavy (6.4 lb.) platter, rubber-damped both on top and underside to resist vibration • High moment of inertia (130 lb.-in.²) plus enormous torque result in high immunity to load-caused fluctuation — 0% speed change with up to 4.3 lb.-in. load drag • Separately-housed power supply • Quartz-controlled stroboscope for 3 speeds: $33\frac{1}{3}$, 45 and 78.26 rpm • Includes remote control for start/stop

SP-10MK2A \$1550.00
SH-10B3 Base for SP-10MK2A 750.00

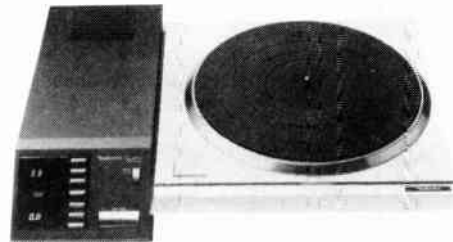
SP-10MK2A



SP-10MK3 Quartz Synthesizer Controlled Direct Drive Turntable

• Starting torque is 16 kg-cm, and only one quarter of a second is required to reach rated speed • Moment of inertia is 1.1 ton-cm • Wow and flutter is 0.015% WRMS • Rumble is -92dB (Din-B) • Quartz locked pitch is adjustable in 0.1% step increments or decrements up to $\pm 9.9\%$ • Ultra low speed brushless DC motor based on the Technics SP-02 cutting lathe drive system

SP-10MK3 \$2665.00
SH-10B5 Base for the SP-10MK3 1200.00



SP-10MK3

SL-1200MK2 Quartz Synthesizer Direct Drive Turntable

• Quartz direct-drive disco type manual turntable with tone arm • $33\frac{1}{3}$ + 45 rpm • All quartz-locked variable slide type pitch control ($\pm 8\%$) • Quick start-up and quick braking • Wow and flutter 0.025% WRMS • Pop-up stylus illuminator • Strobe illuminator • Gimbal-suspension tone arm with variable height adjustment • Brushless DC motor • Aluminum diecast cabinet • Anti-resonant visco-elastic main base

SL-1200MK2 \$525.00

SL-1200MK2



SP-15 Quartz-Synthesizer Controlled Direct Drive Turntable

• Quartz control provides virtually perfect speed accuracy, with $\pm 0.002\%$ of perfect speed • Quartz synthesizer pitch adjustment permits up to $\pm 9.9\%$ deviation from standard $33\frac{1}{3}$, 45 and 78.26 rpm speeds, completely under quartz control • Speeds indicated by digital read-out, in 0.1% increments • High torque provides fast start up — 0.4 second from standstill to $33\frac{1}{3}$ rpm, 5.9 lb. platter sustains high 130 lb.-in² moment of inertia for superb immunity to transient load changes • Will withstand up to 2.2 lb.-in. load drag without slow-down • Electro-mechanical braking system stops platter in 0.4 second • Diecast aluminum base with "TNRC" (Technics Non-Resonant Compound) on underside to resist vibration • Platter is rubber-damped on top, underside, and under rim for insulation against vibrations • Pulsed power supply avoids hum induction • Pitch-lock mechanism • Wow and flutter 0.025% WRMS • Rumble -78dB Din B

SP-15 \$980.00

SP-15

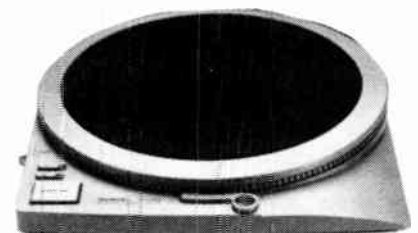


SP-25 Quartz Synthesizer Controlled Direct Drive Turntable

• Quartz synthesizer control governs platter speed in $33\frac{1}{3}$ and 45 rpm, and in pitch-altered modes within $\pm 6\%$ of standard speeds • High torque, tolerates up to 1.3 lb.-in. load drag without slow-down • Electronic braking system stops platter quickly • Platter is rubber-damped on both top and underside to resist vibration • Wow and flutter 0.025% WRMS • Rumble -78dB Din B

SP-25 \$600.00

SP-25



Bases for SP-15/SP-25 Turntables

• Heavy, acoustically-inert rubber material for outstanding insulation against vibration • Four individual spring-loaded feet, tonearm base and acrylic dust cover are coupled to heavy rubber material to further suppress transmission of vibrations

SH-15B2 Rosewood \$420.00
SH-15B3 Black 420.00

TECHNICS

CD Players

SL-P990 Compact Disc Player

- 4-times (176.4kHz) oversampling digital filter • 4 digital-to-analog converters (2 per channel) • 18-bit high resolution signal processing
- Auto-cue to music • Analog and digital circuits have separate power supplies, including transformers • Optical and electrical digital outputs • Signal output meters • Linear crystal-oxygen free copper wiring throughout, including printed circuit board conductors and power transformer windings • Full function FL display • Linear matrix track and programming indicator • 20-key direct access system begins play automatically • Random play • Headphone terminal with level control • Disc window • High speed linear motor access system • High speed transport • High resolution laser pick-up • Full function wireless remote control with 20-key direct access • 5-layer anti-vibration chassis • 2-speed search dial • Peak level search locates highest output level on disc for accurate tape-deck level setting • CD edit calculates program for each side of tape after tape length is input • Music scan • A-B repeat • Track repeat • Two-speed audible search • Dimmer switch controls FL display brightness and disc window lamp • Gold-plated output jacks • 32 track programmability • Timer play • Class AA sample/hold • Class AA output • Laser pick-up position indicator

SL-P990 \$825.00



SL-P990

**SL-P770 Programmable Compact Disc Player**

- 4-DAC 18-bit high resolution system • Transport designed for 3" CD singles as well as regular (5") CDs • Optical and coaxial digital output terminals • Large 2-speed search dial for professional cueing • Digital peak level meters • Auto peak search • Edit guide simplifies transfer to tape • Direct access to any track for play or programming by 20-key pad • 41 keys wireless remote control with 20-key pad • 32-selection random access programming • Timer play capability (random/normal play) • Large multi-function FL display includes indicators for program, emphasis, edit guide, peak level search, repeat, random play, music scan, auto cue, and search dial mode • + 10 key for direct access and programming • Gold plated output jacks • High resolution laser pickup • Motor driven slide-out compartment with illuminated "disc window" for disc visibility during play • Track/index skip, forward and reverse • Repeat/A-B repeat • Random play • Music scan • Gold plated headphone jack with volume control

SL-P770 \$600.00



SL-P770

**SL-P50P Compact Disc Player**

- Astigmatic 3-beam pickup • Semiconductor laser • Direct drive motors • Aluminum diecast chassis • 16-bit D/A converter • Mono/AM broadcasting • Digital LED display • Fader slider and fader start key • Built-in monitor speaker • Search dial • VU meters • One-line stop/play key • Numeric 10-key pad (029 cursor keys) • Dynamic range and S/N ratio over 96dB • Over 90dB of channel separation • Frequency response 20-20,000Hz • Tabletop version 190H x 430W x 530D (mm) • Weight: 30 kg.

SP-P50P \$4000.00

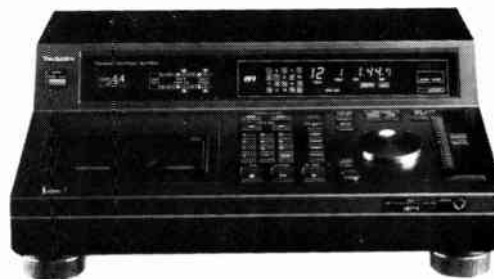


SL-P50P

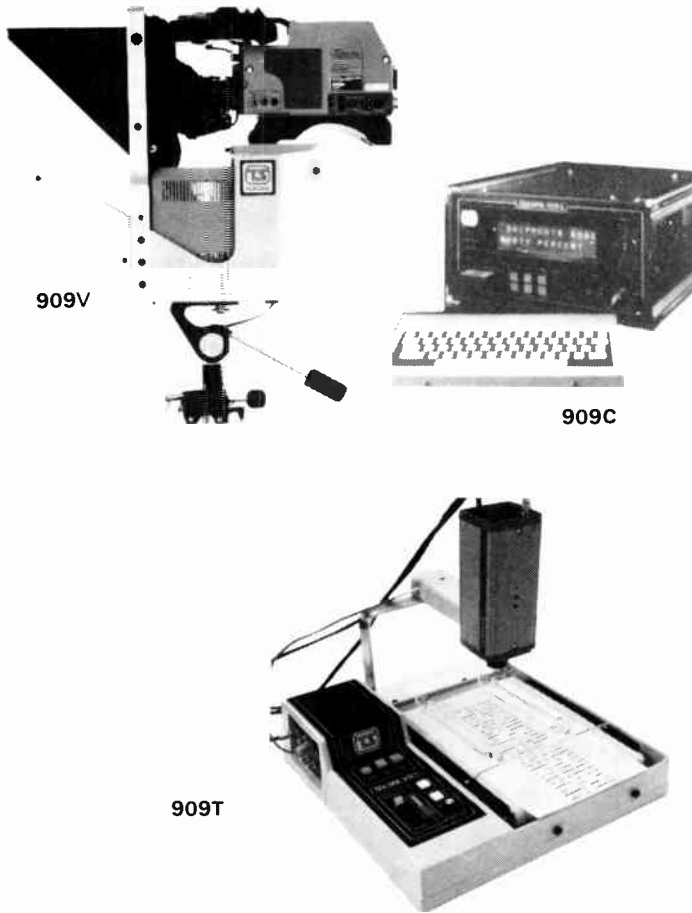
SL-P1200 Compact Disc Player

- Twin class AA circuitry • Dual high-speed D/A converter • High resolution digital filter • Separate power supply for digital and analog • Serial transfer of digital data • Select audio circuit parts • Tri-layer base construction • Double insulation helps prevent structural vibrations • FF1 fine focus single beam system • 2-speed search dial cueing • Precision pitch control • 20-selection random access programming • Multi-mode repeat • Auto space for convenient tape editing • Music matrix • Elapsed time indication

SL-P1200 \$1300.00



SL-P1200



909 Prompter System

- Uses a variety of material for on-camera prompts
- State-of-the-art controls
- Compact, rugged design
- Aluminum casting
- Uses script paper in any format
- Lets your talent see what the camera sees
- Pans and tilts as smoothly as a studio camera
- Provides individually-buffered NTSC video outputs
- Switches between normal and reverse video text displays
- Adjustable video enhancer
- Suited to EFP and ENG

The 909 is a prompter designed specifically to work with your portable video camera. Other prompting systems, designed for heavy studio cameras, have front-mounted imaging monitors that must be counterweighted. The result is a clumsy system that doesn't lend itself to smooth camera work and is time-consuming to set up. The 909 eliminates these problems with a totally different design.

Full-function display control

The 909T provides for two NTSC inputs: One for the text camera and one for your portable camera, with instant switching between cameras. Script feed stops when the talent or operator switches to the auxiliary video feed. When the script is recalled, it continues where it left off, at the exact speed it was moving before the switch.

State-of-the-art microcircuitry controls

The 909T uses a pulse frequency modulation circuit to give you precise one-touch control of script speed forward and backward. A bar-graph display indicates scroll-ready status, direction of movement, and speed. Once your script assistant has established the best speed for the talent, that precise speed can be used every time. Scrolling speed and video-input switching can also be controlled by means of a plug-in remote controller.

Pan and tilt your portable as smoothly as a studio camera

The 909V Camera Viewing Unit mounts on any standard-mount field or studio tripod and accepts any portable camera. It holds the prompting monitor below the camera, so that both are balanced over the tripod head. Tekskil uses folded optics — a surface-reflectance mirror and a 70/30 beamsplitter — to bring the prompts up in front of the lens.

Specifications

Power	120VAC, .2 amp, 60Hz; or (optional) 240VAC, .1 amp, 50Hz
909V Viewing Unit	
Weight	(without monitor) 11.0 lbs. (5.0kg)
Imaging Monitor	9" industrial monitor, Panasonic TR-930 or equivalent
Dimensions	18" H x 12 1/2" W x 19 7/8" D (45.8 x 31.7 x 50.5cm)
909T Script Transport	
Weight	(without camera) 17.0 lbs. (7.7kg)
Inputs	Two, 1V p-p, negative sync video, BNC connector standard
Outputs	Three individually buffered NTSC outputs
Text Camera	Panasonic WV 1410, c/w 16mm lens
Dimensions	15 3/8" H x 17 1/8" W x 17 1/16" D (39.0 x 43.5 x 44.9cm)

909 Prompter System - Includes 909T (script transport), 909V (Camera viewing unit), Remote control and cables

.....	\$4250.00
909V* Camera viewing unit	1340.00
909T* Script transport includes remote control and cables	2910.00

909C Computer Prompter

The 909C lets you compose, edit and play back scripts anywhere in a case small enough to fit under an airplane seat. It has a 128K memory, a display, a keyboard and its own micro-processing system built in. The 909C comes with its own 12V power source, and takes a live feed from the camera or any output from the switcher and lets you see it on the prompt monitor. The talent can also use it via remote control.

***909C Computer Prompter** Includes carrying case, text file cartridge, 2 handheld remote control units **\$5995.00**

*Note: Prices above do not include camera or monitor

TEKTRONIX, INC.

Waveform Monitors



1710B

1710B SERIES WAVEFORM MONITORS

- Burst Phase Indicator
- Dual Filter Display
- Half Rack Width
- Bright CRT Display
- Internal Graticule
- DC Operation
- Available in NTSC and PAL Standards

The 1710B Series Waveform Monitors provide all of the commonly used display modes. In addition, the 1710B Series adds relative burst phase indication and dual filter display. All of this in a cost effective package for the user who wants high quality at a low price. These new monitors are mechanically compatible and retrofit into an existing system that uses half rack width, 5 $\frac{1}{4}$ " waveform monitors.

Because of its extreme light weight, low power consumption, and DC operation (field installable kit) the 1710B Series is ideal for field production, mobile operations, and any other application where space, power consumption and/or portability are prime considerations.

Easy Operation. This monitor was also designed with the user in mind. Controls have clear nomenclature and are laid out in a logical order. This makes the operation of this powerful tool easier than one might expect.

Burst Phase Indication. The relative burst phase between inputs is displayed on the LED bar graph. The center green LEDs indicate the two signals are phase matched. The yellow ones warn the phase is slipping out of an acceptable range. Finally, the red LEDs flag an unacceptable amount of phasing error. This feature allows one instrument to do the complete job of timing and phasing in a basic television system.

Dual Filter Display. The dual filter display allows the user to view both the complete video signal and the luminance information at the same time using just one instrument. This eliminates the need for switching back and forth between filters and makes the instrument easier to operate. Ideal for camera setup.

Bright CRT Display. The bright CRT display permits use of the 1710B Series in high ambient light conditions. Brightness remains high in the magnified sweep modes enhancing the 1710B's use in system timing applications. The internal graticule is parallax-free to reduce errors and improve its monitoring and measuring capabilities.

ELECTRICAL SPECIFICATIONS

VERTICAL DEFLECTION SYSTEM

Frequency Response:

FLAT: Within 5% of the response at 50kHz from 50kHz to 6MHz. The response at Fsc is within 2% of the response at 50kHz.

L PASS: At least 97% attenuation at Fsc.

Transient Response:

Rise to Bar Ratio: 0.99:1.00 to 1.01:1.00

Ringing: 2% or Less

Overshoot: 2% or Less

Tilt (Field Rate Square Wave, Vertical Window, or 25 μ S Bar): 1% or Less

Gain Range:

Input signals between 0.25V and 2.0V can be adjusted to 140 IRE (NTSC) or 1V (PAL) display.

Maximum Absolute Input Level:

+2V (dc + peak ac)

Deflection Accuracy:

1710B: 1V input for 140 IRE display within 2%.

1711B: 1V input displays 1V within 2%.

DC Restoration:

DC Restorer Clamp Time Back Porch

Low Frequency Response at 50Hz Attenuation of 50Hz on Input Signal 20% or less.

Blanking Level Shift with 10% to 90% APL Change: 1710B: APL changes from 50% to either 10% or 90% will cause blanking level shift of 1 IRE unit (7 mV) or less.

1711B: APL changes from 50% to either 10% or 90% will cause blanking level shift of 7.2 mV or less.

Blanking Level Shift Due to Presence or Absence of Burst: 1% or less of 100% video.

HORIZONTAL DEFLECTION SYSTEM

Sweep:

Sweep will occur in all Horizontal mode settings with or without synchronization.

Synchronization:

Sweep will synchronize to composite video 0.5V p-p to 2.0V p-p or to composite sync 143mV p-p to 8V p-p.

2FLD Sweep Repetition Rate:

Equal to frame rate of applied video or external sync.

2H Sweep Repetition Rate:

Equal to half line rate of applied video or external sync.

Timing Accuracy:

1 μ S/div Sweep within 2%.

Linearity (1 μ S/div):

Within 2%

Differential Linearity (1 μ S/div):

Within 3% 0.1 div (0.5 minor div) or less compression or expansion of a center screen 4 div signal, when positioned anywhere horizontally.

POWER SOURCE

Mains Voltage Ranges:

115V (90-132V)

230V (200-250V)

Mains Frequency Range:

48Hz to 66Hz.

Power Consumption:

25 Watts (85.25 BTU./hour) maximum.

CALIBRATION SIGNAL

Frequency:

100kHz + 1kHz.

Amplitude:

1V within 1%.

PHYSICAL CHARACTERISTICS

Dimensions:

5.25"H x 8.424"W x 16.875"L

(13.3 x 21.4 x 42.9cm)

Weight: Approx. 8 lbs. (3.6kg).

INCLUDED ACCESSORIES

Instruction Manual 1710B Series: 070-5522-00

Power Cable Assembly: 161-0066-00

1710B Waveform Monitor

(NTSC system applications) \$1,745.00

1711B Waveform Monitor

(PAL system applications) 1,745.00

OPTIONAL ACCESSORIES

Cabinet—Plain, Order 1700F00 \$ 60.00

Cabinet—Portable, Order 1700F02 85.00

Side-By-Side Rackmount—For mounting two half racks (1750, 1730, etc.), in a standard 19" rack, Order 1700F05 180.00

Blank Panel Adaptor—For the side-by-side rackmount, Order 1700F06 60.00

Snap-On Front Cover—High impact plastic, Order 200-1566-00 22.00

Viewing Hood—For high ambient light environments, Order 016-0475-00 10.00

DC Operation Kit—12VDC, Order 1700F10 200.00

Camera—C-5C Option 02 (Regular), C7

Option 03 (Automatic) 465.00

C7 565.00

Battery Pack—Requires 1700F03 case to

mount the BP1 to the 1710B or 1711B.

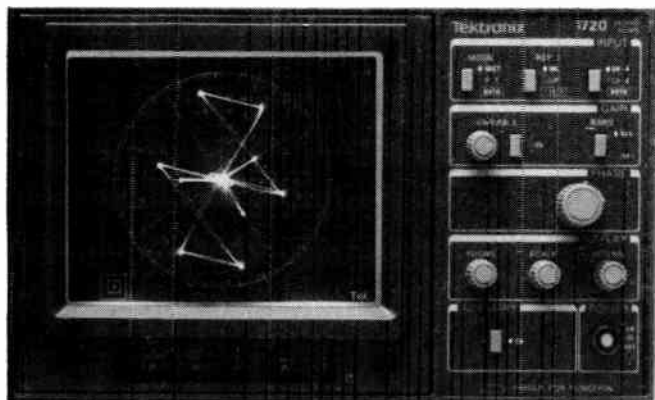
Order BP1 600.00

Snap Lock Power Cord Kit—North America,

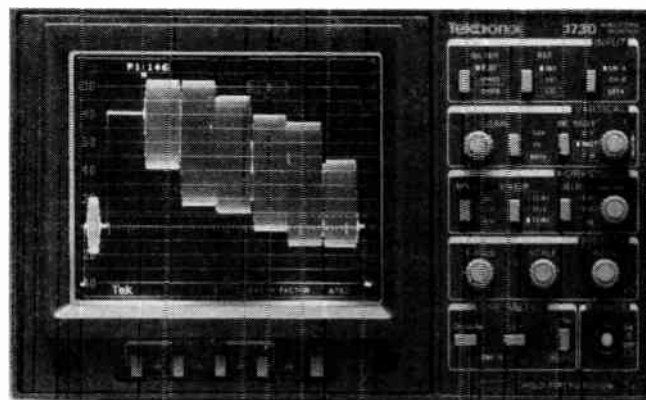
Order 040-1185-00 POR

TEKTRONIX, INC.

Vectorscopes/Waveform Monitors



1720



1730

**1720 SERIES VECTORSCOPES
1730 SERIES WAVEFORM MONITORS**

- Performance and economy
- Complete line select
- Simultaneous Channel A & B display
- Dual filter display
- One-button front panel recall
- Differential phase and gain measurement
- Stereo audio phase measurement
- RGB/YRGB display capability
- Vector center dot clamping
- Parallax-free internal graticules
- Portable DC power and battery available
- Remote control capability
- Available in NTSC and PAL standards

The Tektronix 1730 Series Waveform Monitors and 1720 Series Vectorscopes provide a new dimension in television signal monitoring for both NTSC and PAL applications. These versatile instruments are lightweight, half-rack width, and have bright CRTs for comprehensive video signal monitoring. Both instruments exceed normal monitoring capabilities. Their unique features make them even more powerful when operated in tandem. Each monitor has its own advanced feature set and the proven 1700 Series family performance to provide more monitor for the money.

Portable DC power

In addition to being ideal for camera control units and video tape recorders, these instruments can be equipped with cabinet and field upgrades allowing them to operate from a 12VDC source for portable operation. They can be used with the Tektronix BP1 or other 12V supply. Coupling this DC operation with their lightweight (about 9 lbs., including cabinet), low power consumption, and compact size make these instruments well suited for use on a portable production cart.

Remote control

Internal front panel presets, RGB/YRGB enable, along with front panel recall/setup can be accessed through the Waveform Monitor Remote Connector.

Available in NTSC and PAL

Both the 1730 Series and the 1720 Series are available in either NTSC or PAL versions.

1720/1730 SPECIFICATIONS

- CRT Viewing Area:** 80 x 100mm
- Trace Rotation:** 8° range, typical
- Graticule:** Internal scale with variable illuminator
- Power Source**
- Mains Voltage Ranges:** 115V, 90-132V
230V, 200-250V
- Mains Frequency Range:** 48Hz to 66Hz
- Power Consumption:** 25W (85 BTU/HR) max.
- Battery Operation:** 12VDC (when 1700F10 is field installed)

Environmental Characteristics

- Temperature**
- Non-operating:** -55°C to +75°C
- Operating:** 0°C to +50°C
- Altitude**
- Non-operating:** To 18,000M (50,000 ft.)
- Operating:** To 5,500M (15,000 ft.)
- Shock**
- Non-operating:** 30g's, 1/2 sine, 11ms duration, 3 shocks per surface (18 total)
- Transportation:** Qualified under NTSC Test Procedure 1A, Category II (30" drop)
- Humidity:** Meets Tektronix Standard 062-2847-00
- Certification**
- Safety:** U.L. 1244
Factory Mutual 3820
CSA Bulletin 556B
IEC 348

EMI Compatibility:

FCC Rules, Part 15, Subpart J, Class A, VDE 0871.5 (Class B)

Physical Characteristics

- Dimensions:**
- Height: 5.25" (133.4mm)
- Width: 8.5" (215.9mm)
- Length: 18.125" (460.4mm)
- Weight: Approximately 8.5 lbs. (3.8kg)

Included Accessories:

- Instruction manual
- Power cable assembly
- Spare fuse
- Remote control mating connector
- Auxiliary control cable (1720 series only)

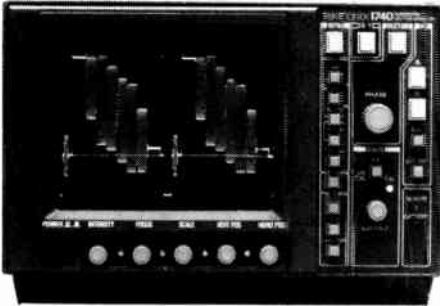
OPTIONAL ACCESSORIES

Cabinets		
Plain	1700F00.....	\$ 60.00
(Painted silver gray)		
Portable	1700F02.....	85.00
(Including handle & feet, painted silver gray)		
Side-by-side rack adaptor	1700F05.....	180.00
Blank half-rack width panel	1700F06.....	60.00
DC power converter (kit)	1700F10.....	200.00
Battery pack	BP1.....	600.00
Cameras	C5C Opt. 02.....	465.00
	C7 Opt. 03.....	565.00
Viewing hood	016-0475-00.....	10.00
Snap-on Front Cover	200-1566-00.....	22.00

- 1720 Vectorscope (For NTSC System Applications) \$2250.00
- 1721 Vectorscope (For PAL Systems) 2250.00
- 1730 Waveform Monitor (For NTSC System Applications). . . 2250.00
- 1731 Waveform Monitor (For PAL Systems). 2250.00

TEKTRONIX, INC.

Waveform/Vector Monitors



1740 SERIES

1740 SERIES

- Two Instruments in One
- Optional Dc Power Capability
- Bright CRT Display
- R-Y (V-Axis) Mode
- VITS Monitoring
- RGB/YRGB Display Capability
- Remote Control Capability
- Available in NTSC, PAL, and PAL-M

Similar to the 528A and 142C Series products, the 1740 Series provides all the basic waveform monitoring and vectorscope functions, but in a single, compact package. In addition, the 1740 Series adds dc power operation (optionally), single line vertical interval display which is internally preset, an R-Y/sweep mode for differential phase measurements, and remote control of waveform/vector mode and most of the front panel sweep and vertical amplifier response functions.

The 1740's half-rack width package allows easy installation where space and power requirements are important considerations. The 1740 is mechanically compatible with the 528A, 602, 1420 and 1750 Series instruments.

Typical applications include video signal monitoring in VTR bridges, camera control units, production switcher consoles, and in mobile vans and field productions.

EXTERNAL REFERENCES INPUT

Dc Input Impedance— $>15\text{ k}\Omega$.

Return Loss—At least 40 dB from 50 kHz to 6 MHz.

RGB/YRGB MODE

Will display either a 3-step or 4-step RGB/YRGB display.

Staircase Amplitude—A 10 V input will result in a horizontal display of 9 divisions ± 1.4 major divisions.

Maximum Operating Staircase Signal Voltage—12 V p-p ac component. Signal voltage not to exceed $\pm 12\text{ V}$ dc + peak ac.

VECTOR MODE

Chrominance Bandwidth

Upper: -3 dB point Fsc +500 kHz $\pm 100\text{ kHz}$.

Lower: -3 dB point Fsc -500 kHz $\pm 100\text{ kHz}$.

Vector Phase Accuracy—Within 1.25 degrees.

Vector Gain Accuracy—1740: Within 1.25 IRE. 1741/1742: Within 1.25%.

Quadrature Phasing—Within 0.5 degrees.

SUBCARRIER REGENERATOR

Pull-In Range—1740: Within 50 Hz of Fsc. 1741/1742: Within 10 Hz of Fsc.

Phase Shift with Subcarrier Frequency Change—1740: Within 0.5 degrees from Fsc to (Fsc +50 Hz), or Fsc to (Fsc -50 Hz). 1741/1742: Within 0.5 degrees from Fsc to (Fsc +10 Hz), of Fsc to (Fsc -10 Hz).

Phase Shift with Burst Amplitude Change—Within 2 degrees from nominal burst amplitude to $\pm 6\text{ dB}$.

Phase Shift with Reference Switched Between Internal and External References—Within 0.5 degrees.

Phase Shift with Input Channel Change—Within 0.5 degrees.

Phase Shift with X5 Gain—Within 2 degrees.

Phase Shift with Variable Gain—Within 1 degree as gain is varied from +3 dB to -6 dB.

Phase Control Range—360 degrees continuous rotation.

DISPLAY CHARACTERISTICS

Differential Phase—Within 1 degree.

Differential Gain—Within 1%.

Variable Gain Range—1740: Input subcarrier signals between 28 IRE and 140 IRE can be adjusted to normal burst vector length.

1741/1742: Input carrier signals between 210 mV and 1.0 V can be adjusted to normal burst vector length.

CRT DISPLAY

CRT Viewing Area—80 mm x 100 mm.

Accelerating Potential—Nominally 15 kV.

GRATICULE

Waveform—Internal, variable illumination.

Vector—External, variable illumination. Illuminated with VECTOR or R-Y mode selected.

POWER SOURCE

Mains Voltage Ranges—100 V (90 V to 100 V); 120 V (108 V to 132 V); 220 V (200 V to 242 V); 240 V (218 V to 250 V).

Mains Frequency Range—48 Hz to 66 Hz.

Power Consumption—50 W maximum in ac. 30 W nominal in dc.

DC BATTERY OPERATION (OPTION 07)

Voltage Input Range—11 V to 16 V.

Over Voltage and Polarity Reversal Protection—Fuse blows if $>20\text{ V}$ dc or opposite polarity is applied to the dc INPUT.

Under Voltage Protection—Instrument shuts down when battery voltage (under load) is below 9 V.

Battery Current—3.5 A or less at 12 V.

ENVIRONMENTAL CHARACTERISTICS

Temperature—Operating: 0°C to $+50^\circ\text{C}$. Nonoperating: -55°C to $+75^\circ\text{C}$.

Altitude—Operating: 4500 m (15,000 ft). Nonoperating: 15,000 m (50,000 ft).

CERTIFICATION

Safety/EMC—UL 1244.

PHYSICAL CHARACTERISTICS

Dimensions	mm		in	
Width	216		8.5	
Height	133		5.3	
Depth	460		18.1	
Weights	kg		lb	
Net	8.2		18.8	
Battery Pack	13.6		30.0	

INCLUDED ACCESSORIES

0.3 A fuse (159-0029-00); 0.6 A fuse (159-0043-00); Power cord assembly (161-0066-00); clear filter (378-0219-00); female remote connector, 25 pin (131-0569-00); remote connector housing, 25 pin (200-1667-00); strain relief, 25 pin (358-0314-00); instruction manual (070-4473-00).

These instruments are configured for rack-mounting and are shipped without cases or covers. Order appropriate options or optional accessories to configure for bench or portable use.

1740 Option 01 Waveform/Vector Monitor (For NTSC applications) \$3,970.00

1741 Option 01 Waveform/Vector Monitor (For PAL applications) 3,970.00

1742 Option 01 Waveform/Vector Monitor (For PAL-M applications) 4,370.00

Option 06—(Composite internal graticule, waveform and vector) 30.00

Option 07—(Adds DC power operation capability, must be installed during manufacture) 60.00

Option 11—(Portable carrying case, DC power operation, and a BP1 Battery Pack) 650.00

OPTIONAL ACCESSORIES

Battery Pack—Requires 1700F03 case to mount the BP1 to the 1740 or 1741. Order BP1 600.00

Cabinet—Aluminum, no handle or feet. Order 1700F00 60.00

Cabinet—Painted, with handle and feet. Order 1700F02 85.00

Side-By-Side Rackmount—For mounting two half racks (1750, 1730, etc.) in a standard 19" rack. Order 1700F05 180.00

Blank Panel—For one half of the side-by-side rackmount. Order 1700F06 60.00

Snap-On Front Cover—High impact plastic. Order 200-1566-00 22.00

Viewing Hood—For high ambient light environments. Order 016-0475-00 10.00

Camera—Use C-30 Option 01 with adaptor 016-0269-03, or C-5C Option 02 or 04, or standard C-4 POR

MAINTENANCE ACCESSORIES

Extender Board—64 pin. Order 670-7980-00 POR

Extender Cable—Order 670-0709-00 POR

Deflection Leads Extender Cables—(Order four each) Order 196-0939-00 POR

TEKTRONIX, INC.

Waveform/Vector Monitors

**1750 SERIES****1750 SERIES
WAVEFORM/VECTOR MONITORS**

- Two Instruments in One
- SCH Phase and Color Framing
- R-Y (V-Axis) Mode
- RGB/YR GB Mode
- Remote Control Capability

The 1750 Series offers comprehensive monitoring and measurement of television signals, including SCH phase and color framing, in one compact unit. While similar in appearance to the 1740 instruments, the 1750 has enhanced performance in each of its operating modes.

The unique SCH phase display presents horizontal sync timing relative to reference subcarrier (burst) for verification of signal format and color framing. This mode enables easy analysis and monitoring of these important characteristics of the television signal, a task which previously required complex techniques, highly skilled operators and/or additional instrumentation. The 1750's SCH phase and color frame displays are derived from the standard composite signals. No extra pulses or added signal details are required.

The 1750's SCH capability makes it particularly valuable in production and editing environments where maintenance of SCH phase and color frame are critical considerations. Applications include VTR bridges, camera control units, switcher consoles, master control, mobile and field production units, and in maintenance operations supporting any of these areas.

The 1750's half-rack package allows easy installation in environments where space and power requirements are important considerations. The 1750 is mechanically compatible with 528A, 602, 1420, and 1740 Series instruments.

Waveform Mode

The waveform mode vertical response is controlled by selectable flat, chroma, and luminance (IRE) filters. A backporch slow clamp is controllable from the front panel. An internal jumper reprograms the clamp timing for sync tip operation.

The 1750 has pushbutton selection of H, 2H, V, and 2 V horizontal sweeps. A magnifier provides calibrated sweep speeds of 1 $\mu\text{s}/\text{div}$, 0.5 $\mu\text{s}/\text{div}$, and 0.2 $\mu\text{s}/\text{div}$ at the line display rates, and about 20X magnification of the vertical rate display. The faster sweep speeds are useful for determination of horizontal blanking, pulse widths, risetimes, and other timing details of the signal, while the magnified vertical sweep allows viewing of the vertical blanking interval.

The internal calibrator signal in the 1750 is useful for verification of both video amplitude and sweep timing calibration. Crystal control of the calibrator waveform provides an accurate 1V p-p squarewave and 10 μs timing interval.

The sweeps may be locked to the selected signal (A or B input), or to a separate external reference input. The horizontal rate sweeps may be triggered by the selected source (which presents a stable display in the presence of sync jitter) or may be AFC controlled (which displays sync jitter for analysis). Use of the AFC sweep control can also reposition the H sweep for more convenient timing measurements.

The 1750 Series has front panel line and field selection, and LED readout of the selected line number, and a video output with a strobe pulse on the displayed line. The 1750 (NTSC) will display line 8 thru 23 of either monochrome field (color fields 1, 3 or fields 2, 4). The 1751 (PAL) will display lines 6 thru 21 or 319 thru 334. The line selection range may be extended to any line of the frame by the use of rear panel remote control input in conjunction with the front panel controls.

The line selection function is operational in waveform, R-Y, and vector modes. These features provide convenient in-service monitoring or measurement of field blanking interval test or data signals.

R-Y (V-Axis) Mode

In this mode the display is similar to a waveform display with the demodulated chrominance signal on the vertical axis and the selected sweep on the horizontal axis. Any demodulation axis may be set with the phase control; properly setting the display of burst in the vector mode will ensure R-Y axis decoding when the R-Y mode is selected.

There are differential phase markings on the graticule for use in this mode. Resolution of differential phase error is about twice that of

vector measurement techniques, and the displayed errors may be correlated with time and luminance amplitude by using modulated staircase or modulated ramp test signals.

SCH Phase Mode

This display is a combination of the burst vectors of the vector display and a bright dot on the outer degree circle of the vector graticule. The position of this "sync dot" around the circle represents the timing (phase) of the horizontal sync edges relative to the reference subcarrier. An individual signal may be analyzed for proper format (for proper SCH phase) without any additional reference.

Since it is possible for two signals to be properly formatted but not properly timed to each other (i.e., a color framing error exists), the 1750 has provision for using an external reference input for its subcarrier phase reference. When the external reference mode is used, the display shows the burst phase and sync timing of the selected signal relative to the burst of the reference signal, simultaneously indicating the SCH phase of the selected input signal and its color frame relative to the external reference signal.

INCLUDED ACCESSORIES

Power cord assembly (161-0066-00); clear filter (378-0219-00); contrasting filter (378-0221-00); female remote connector, 25 pin (131-0569-00); 9 pin (131-1006-00); remote connector housing, 25 pin (200-1667-00); 9 pin (200-1170-00); strain relief, 25 pin (358-0314-00); 1.0 A fuse (159-0022-00); 0.5 A fuse (159-0032-00); instruction manual (070-4472-00).

1750 Waveform/Vector Monitor (for NTSC Applications) \$6050.00
1751 Waveform/Vector Monitor (for PAL Applications) 6050.00

OPTIONAL ACCESSORIES

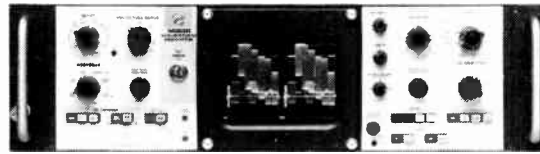
Cabinet—Aluminum, no handle or feet. Order 1700F00 \$60.00
Cabinet—Painted, with handle and feet. Order 1700F02 85.00
Side-By-Side Rackmount—For mounting two half racks (1750, 528A, etc.) in a standard 19" rack. Order 1700F05 180.00
Blank Panel—For the side-by-side rackmount. Order 1700F06 60.00
Viewing Hood—For high ambient light environments. Order 016-0475-00 10.00
Camera—Use C-30 Option 01 with adaptor 016-0269-03, or C-5C Option 02 or 04, or standard C-4 POR

MAINTENANCE ACCESSORIES

Extender Board—64 pin. Order 670-7980-00 POR
Extender Board—32 pin. Order 670-7981-00 POR
Extender Cable—Order 067-0709-00 POR
Deflection Leads Extender Cables—(Four each) Order 196-0939-00 POR

TEKTRONIX, INC.

Waveform Monitors

1485R Option 01 PAL/NTSC
Dual Standard Waveform Monitor
(Rackmount)1480 SERIES
WAVEFORM MONITORS

- Bright CRT Especially Suitable for Vertical Interval Testing
- Advanced Measurement Modes
- Amplitude Measurement Accuracy Approaching 0.2%
- Digital Selection of Line and Field
- Probe Input Option
- 15-Line Display for VTR Applications

The 1480 Series waveform monitors have excellent amplitude measuring accuracy and many unique operating modes that enable you to work more precisely and accurately. The monitoring needs of CCU, VTR, control room, transmission facilities, transmitter, and special systems are met by the use of 1480 Series waveform monitors. The 1485C and 1485R PAL/NTSC dual standard monitors (see photos) represent the essentials of all seven monitors in the 1480 Series. The differences between the monitors in the series are essentially confined to what lines in the vertical interval are selectable, what filters are selectable in the response mode, and in the field selection modes. Dual-Standard Monitors recognize the signal standard in use automatically and indicate that standard with front panel indicators.

CHARACTERISTICS

VERTICAL DEFLECTION

Inputs—Input A and B are 75 Ω high impedance loop-through. Return loss is ≥ 40 dB from dc to 5 MHz in a 75 Ω system. Aux Video Input is internally terminated in 75 Ω . Return loss is ≥ 34 dB from dc to 5 MHz.

Scale Factor—A and B input calibrated 1.0 V ± 7 mV, 0.5 V ± 15 mV, 0.2 V ± 7 mV. (0.05 V ± 2.5 mV Option 06) volts full scale. Variable: Range for each scale factor at least +40% to -50%. Aux Video Input 1.5 dB gain.

Maximum Input Voltage—2 V p-p (ac coupled), ± 1.5 V dc + peak ac (dc coupled).

Frequency Response

FLAT: 50 kHz to 5 MHz $\pm 1\%$ (1.0 V F.S., VAR in detent). 5 MHz to 8 MHz +2, -3%, 8 MHz to 10 MHz +2, -6%. Typically within +2, -15% to 18 MHz and typically -3 dB at 20 MHz.

Low Pass: Attenuation ≥ 14 dB, 500 kHz and above. 3.58 MHz Bandpass: Amplitude within $\pm 1\%$ of amplitude in Flat response position. Bandpass ≈ 600 kHz. 4.43 MHz Bandpass: Amplitude within $\pm 1\%$ of amplitude in flat response position. Bandpass ≈ 800 kHz. IRE: Conforms to IEEE Standard 205, 1972.

Linear Waveform Distortion

Pulse/Bar Ratio: $\pm 1\%$. For NTSC or PAL 2T Pulse or NTSC T Pulse.

Short Time: Preshoot, overshoot, ringing $\leq 1\%$ of NTSC or PAL T Pulse and Bar.

Line Time: Tilt or rounding $\leq 1.0\%$. Field Time: (Ac coupled) $\leq 1\%$.

Nonlinear Distortion—Differential Gain: $\leq 0.5\%$.

Dc Restorer—Keyed type, may be turned off. Clamping point: Back Porch/Sync Tip. Time Constant: FAST reduces mains hum ≥ 26 dB, SLOW reduces mains hum < 0.9 dB.

Calibrator—Amplitude selected by dc Restorer switch. Sync Tip: 1 V $\pm 0.2\%$. Back Porch: 714 mV or 700 mV $\pm 0.5\%$.

1480 SERIES

HORIZONTAL DEFLECTION

Time Base—5 μ s and 10 μ s timing accuracy $\pm 2\%$ (center 10 divisions). 5 μ s and 10 μ s linearity $\pm 1\%$ (center 10 division).

External Sync Input—Two loop-through high impedance, with ≥ 46 dB return loss in a 75 Ω system. Inputs are slaved to A and B input or to A external sync input only.

External Sync Input Requirements—400 mV to 2 V composite video or 200 mV to 8 V composite sync.

Field Selector—Positive selection of Field 1 or Field 2 in the NTSC system. Positive selection of 1, 2, 3, 4, or 1 & 3, 2 & 4 in the PAL systems.

Line Selector—Dig: Selects lines 9 to 22 NTSC, line 9/322 to line 22/335 PAL, line 9/272 to line 22/285 PAL-M. Var: Approx line 20 of the selected field to line 4 of the next related field. 15 lines. Identical to Var, except 15 successive lines are displayed.

Sync—AFC horizontal frequency range is 15.75 kHz ± 200 Hz. Maximum Jitter with Respect to Input Sync: 10 ns with 4 V RMS hum (30 ns with the addition of -36 dB white noise). Direct horizontal frequency up to ≤ 20 kHz. Maximum Jitter with Respect to Input Sync: 12 ns with 4 V RMS hum (90 ns with the addition of -36 dB white noise).

OUTPUTS

Line Strobe—TTL amplitude pulse. Pulse coincident with line or lines selected by VAR, 15 LINE or DIG modes of DISPLAY switch.

Picture Monitor—Output of incoming video with Line Strobe added. Output impedance is 75 Ω . Output gain adjustable to unity with respect to A and B video input.

Aux Video—Output of incoming video. 75 Ω output impedance. Gain adjustable to unity with respect to A and B video input.

OTHER CHARACTERISTICS

RGB/YRGB Staircase Input— ≈ 12 V for 12.7 divisions deflection. RGB sweep length internally selected for 1/3 normal sweep. YRGB sweep length internally selected for 1/4 normal sweep length.

Mains Voltage—Ranges 100 V ac, 110 V ac, 120 V ac, 200 V ac, 220 V ac, 240 V ac $\pm 10\%$. Frequency 48 Hz to 62 Hz, maximum power consumption 75 W. At factory, 1480, 1482 preset for 110 V ac. 1481, 1485 preset for 220 V ac.

CHARACTERISTICS (OPTION 01)

10X Probe Channel—Scale Factor: 1 V, 0.5 V, 0.2 V full screen with 10X attenuator probe. Gain Range: $\pm 10\%$. Tilt: $\leq 5\%$ on 50 Hz. Squarewave High Frequency Response: $\pm 3\%$, 25 Hz to 5 MHz. Referenced to 50 kHz. Input Resistance 1 M Ω , $\pm 2\%$, not including probe. Input RC Product: 20 μ s, $\pm 1\%$, not including probe. BNC connector accepts most Tektronix probes.

10X Probe Calibrator—Output voltage 1,000 V ± 0.005 V or 0.995 V to 1.005 V.

SLOW SWEEP CHARACTERISTICS (OPTION 07)

Duration—4 to 12 s, variable with front panel control. Linearity— $\pm 5\%$ of full-screen over the length of the sweep.

Indicator—Front panel indicator on when slow sweep is operating but sweep is not running.

Triggering Signal—APL change $\leq 10\%$ to 90% (Bump or Bounce), front panel selectable for either + or - level change.

Sensitivity—400 mV to 2 V p-p composite video with APL change.

Rate— ≥ 0.2 Hz, free-runs at rates < 0.2 Hz or with no triggering signal.

Input—Internal or External

50Hz/60Hz Squarewave Triggering—Sensitivity: 400 mV p-p minimum to 3 V p-p maximum. Input Impedance: ≈ 10 k Ω ac coupled (Rear Panel loop-through connectors not return loss compensated.)

INCLUDED ACCESSORIES

Two BNC right angle adaptors (103-0031-00); One pair rackmount ext DWR Slides (351-0195-01); various external graticules (see matrix below); manual.

External Graticules w/Tek P/N	1480R/C	1481R/C	1482R	1485R/C
Blank				
331-0393-00	x	x	x	x
NTSC				
Composite				
331-0393-01				x
CCIR				
331-0393-02				
CCIR K				
Visual				
331-0393-05		x		x
CCIR K				
Photo				
331-0393-07		x		x
GRAT A				
Visual				
331-0393-08				x
GRAT B				
Visual				
331-0393-18	x			x
GRAT A				
Photo				
331-0393-10				x
GRAT B				
Photo				
331-0393-17	x			x

ORDERING INFORMATION

1480C NTSC Waveform Monitor	\$6,300.00
1480R NTSC Waveform Monitor	\$6,300.00
1481C PAL Waveform Monitor*1	\$6,090.00
1481R PAL Waveform Monitor*1	\$6,090.00
1482R PAL-M Waveform Monitor	\$6,790.00
1485C PAL/NTSC Dual Standard Waveform Monitor*1	\$6,300.00
1485R PAL/NTSC Dual Standard Waveform Monitor*1	\$6,300.00

Option 01—1 M Ω , 20 pF Probe Input (not available with Option 06, probe not included)

Option 06—(1480R only) 124 ohm WECO STYLE inputs

Option 07—Slow Sweep*2 (Option 07 performance included with Option 06. Don't order with Option 06)

Option 08—SECAM Field Identification (1481C, 1481R, 1485C and 1485R only)

*11481C/R, 1485C/R meets European Broadcast Union Tech. 3221-E, Guiding Principles for design of Television Waveform Monitors.

*2Option 07 satisfies EBA Tech 3321-E§ 3.2.2.

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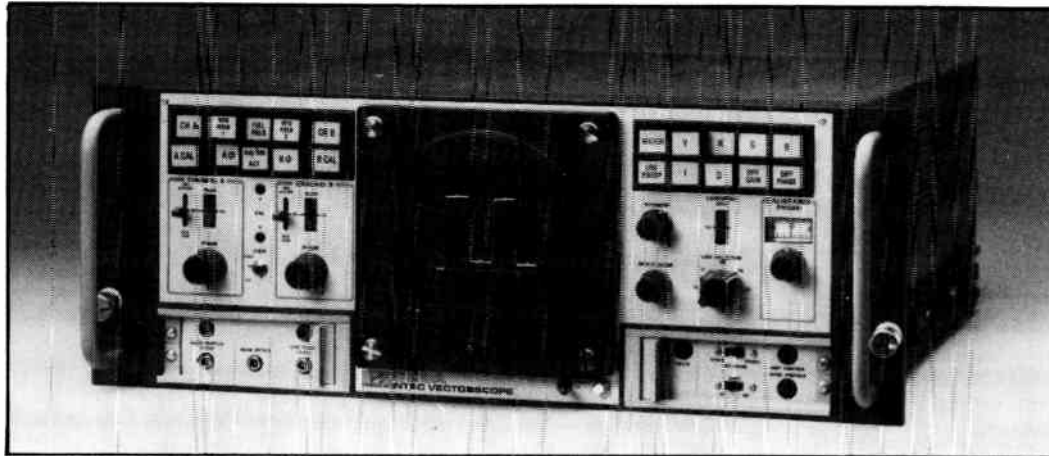
Option 07—Slow Sweep*2 (Option 07 performance included with Option 06. Don't order with Option 06)

Option 08—SECAM Field Identification (1481C, 1481R, 1485C and 1485R only)

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Option 06—(1480R only) 124 ohm WECO STYLE inputs



R520A NTSC VECTORSCOPE

R520A/R521A/R522A Vectorscopes

- Luminance Amplitude
- Chrominance Amplitude and Phase
- Precision Differential Phase and Gain

The Tektronix R520A Series vectorscopes include three basic instruments. These are the R520A for NTSC, the R521A for PAL, and the R522A for PAL-M.

DISPLAYS

The vector display shows the relative phase and amplitude of the chrominance signal on polar coordinates. To help identify these coordinates, the graticule has points corresponding to the proper phase and amplitude of the primary and complementary colors: R (Red), B (Blue), G (Green), CY (Cyan), YL (Yellow), and MG (Magenta).

Any errors in the color encoding, video-tape recording, or transmission processes that change these phase and/or amplitude relationships cause color errors in the television picture. Polar coordinate displays, such as those obtained on the R520A, R521A, and R522A CRT, have proven to be the best method for displaying these errors.

The polar display permits measurement of hue in terms of relative phase of the chrominance signal with respect to the color burst. Amplitude is expressed in terms of the displacement from center (radial length) toward the color point which corresponds to 75% (or 100%) amplitude of the particular color being measured.

The outer boxes around the color points correspond to phase and amplitude error limits ($\pm 10^\circ$, $\pm 20\%$). For the R520A (NTSC) the inner boxes indicate $\pm 2.5^\circ$ and 2.5 IRE units, and correspond to phase and amplitude error limits per EIA specification RS-189, amended for 7.5% setup. For the R521A (PAL), and R522A (PAL-M), the inner boxes indicate $\pm 3^\circ$ phase angle and $\pm 5\%$ amplitude.

An internally generated test circle, used with the vector graticule, verifies quadrature accuracy, horizontal to vertical gain balance, and gain calibration for chrominance signal

amplitude measurements. Two methods of measuring phase shifts are provided. You can accurately read large phase shifts from the parallax-free vector graticule. A precision calibrated phase shifter with a range of 30° , spread over 30 inches of dial length, is provided for measuring small phase shifts.

CHARACTERISTICS

Graticule—Two separate graticules provide reference for vector and line sweep displays. The parallax-free vector graticule, or the luminance graticule, is automatically selected and edge-lighted concurrent with operating mode selection.

Z-Axis Input—The Z-Axis Input connector accepts external trace-brightening pulses for intensifying a portion of the display during the time of interest.

Video Inputs—Dual BNC input connectors for each channel permit 75 Ω loop-through operation with a return loss >46 dB to 5 MHz (exceeds CCIR recommendation 567, Part D and D2). Amplitude range is 0.7 V to 1.4 V Video (sync tip to peak white).

AC POWER

Mains Voltage Range—90 V ac to 136 V ac or 180 V ac to 272 V ac.

Mains Frequency—47 Hz to 63 Hz.

Power Consumption—95 W maximum at 115 V ac/60 Hz. (Rear panel selector provides rapid accommodation to six line-voltage ranges. Factory set at 115 V ac for the R520A and R522A and 230 V ac for the R521A).

ENVIRONMENTAL CHARACTERISTICS

Operating Temperature Range— 0°C to $+50^\circ\text{C}$ ambient.

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
	Width	483	19.0
Height	178	7.0
Depth	483	19.8
Weights	kg	lb
	Net	15.0	33.0
Shipping ⁼	27.7	61.0

- R520A NTSC Vectorscope \$8,525.00
 - R521A PAL Vectorscope 8,525.00
 - R522A PAL-M Vectorscope 9,540.00
- Includes: Manual**

OPTIONAL ACCESSORIES

75 Ω Voltage Step-Up Termination—When used with a Tektronix vectorscope, the 75 Ω Voltage Step-Up Termination provides an X5 increase in chrominance amplitude and lets you make more accurate Differential Gain and Differential Phase measurements. Input impedance to the termination is a constant 75 Ω . Use of the termination requires a source of external sync to the vectorscope.

Voltage Step-Up Termination—For use with R520A (NTSC), R522A, (PAL-M) Vectorscopes. Order 011-0100-00 **POR**

Voltage Step-Up Termination—For use with R521A Vectorscope. Order 011-0109-00 **POR**

Single Sideband Chroma Amplitude Corrector—Designed for use with a Tektronix vectorscope in transmitter applications where a vestigial sideband signal is being demodulated with a detecting diode. The corrector provides an X2 increase in chrominance amplitude and passes luminance components with little or no attenuation. Input impedance is 75 Ω .

Chroma Amplitude Corrector—For use with R520A (NTSC), R522A (PAL-M) Vectorscopes. Order 011-0107-01 **POR**

Chroma Amplitude Corrector—For use with R521A Vectorscope. Order 011-0108-01 **POR**

Recommended Camera—For Display Photographs: C-59AP with mounting adaptor 016-0295-01. . . \$90.00

R520A Cradle Assembly—For mounting the R520A in a WECO backless rack. Order 426-0667-00 **POR**

Rackmount to Cabinet Conversion Kit—Order 040-1153-00 **POR**

WFM-300 Component Television Waveform Monitor

- Electronic graticule
- Lightning display
- Waveform display parade and overlay
- Vector display
- Bowtie timing display
- Color gamut limit indication
- Linearity measurements
- Input selectable between Y, B-Y, R-Y, R, G, B, Y, Q, I
- 625/50 and 525/60 configurations
- RGB picture monitor output

The versatile WFM-300 Component Television Waveform Monitor provides a comprehensive set of signal monitoring capabilities designed specifically for the component television environment.

The component based television equipment produces signals quite different from the composite television signals, and the WFM-300 provides new monitoring capabilities to meet this challenge. An innovative Lightning display provides amplitude and timing information for all three channels simultaneously, allowing the operator to set up equipment accurately and efficiently.

The traditional parade display of three signals provides side-by-side comparison of all signals. In addition, any combination of the three signals can be overlaid for accurate comparisons. Both horizontal and vertical magnification can be applied for detailed inspection of the signal being observed.

A vector display of the color difference signals provides the traditional color bar vector display. The new bowtie display uses the special bowtie timing test signal from the TSG-300 component television test signal generator, allowing precise timing of three wire component television systems.

The 3-channel input signals can be Y, B-Y, R-Y or R, G, B, or Y, Q, I with internal accommodation for each signal type. All of these signal types are converted to R, G, B for a dedicated picture monitor output. The valid RGB gamut limit is monitored to ensure the operator is warned if a combination of signals is not valid. The WFM-300 can be configured for both 525/60 and 625/50 signal standards.

Specifications

Vertical Deflection System — Frequency Response: 1 V Full Scale; 50 kHz to 6 MHz within 2% of response at 50 kHz. X5 Gain; 50 kHz to 5 MHz within 2% of response at 50 kHz. Dif'd Step; Equal to greater than -20 dB at 14 kHz and 2 MHz. Transient Response: 1 V Full Scale; Pulse-to-bar 0.99:1.00 to 1.01:1.00. Ringing and Overshoot; 2% or less. Tilt: 1% or less; Variable Gain Range: 1 V Full Scale; Input signals between 0.7 V and 2 V can be adjusted to 1 V display. Deflection Accuracy: Within 2%.

DC Restoration — Attenuation of 50 Hz on Input Signal: Less than or equal to 20%. Blanking Level Shift with 10% to 90% APL Change: Less than or equal to 1%.

Inputs — CH 1, CH 2, CH 3, & External Reference: Return Loss (75 ohms) at least 40 dB from 50 kHz to 6 MHz. Cross Talk Between Channels: Greater than 46 dB isolation between channels. Loop-Through Isolation: Greater than 60 dB isolation between channels. Maximum Input Level for Normal Operation (CH 1, CH 2, CH 3) ±2 V (dc + peak ac). External Reference: +2 to -4 V peak ac (compatible with comp sync).

Horizontal Deflection System — (Waveform and Parade Mode) Sweep will occur in all sweep rate settings with or without a reference signal. Synchronization: Sweep will synchronize to sync amplitude of 0.3 V p-p ±6 dB. 2 FLD Sweep Repetition Rate: Equal to frame rate of selected reference. 2 FLD MAG (Magnification): Approximately X20. 1 LINE Sweep Repetition Rate: Equal to line rate of selected reference. 2 LINE Sweep Repetition Rate: Equal to half line rate of selected reference. Timing Accuracies: 1 μs/Div; within 2%. 0.2 μs/Div; within 2%. Linearity (1 μs/Div and 0.2 μs/Div): within 2%.

Parade Mode — Sweep Repetition Rate: Field or line rate of selected reference.

Vector Mode — Vertical Bandwidth: 900 kHz ±100 kHz. Horizontal to Vertical Bandwidth Matching: No eye opening at 500 kHz or 2 MHz. Vertical Gain Accuracy: ±1%. Horizontal Gain Accuracy: ±1%. Electronic Graticule Accuracy: ±1%.

Bowtie Mode — Common Mode Rejection Ratio: Greater than 40 dB.

Calibration — Calibrator accuracy within 1%.

Transcoder — Accuracy: Within 1%. GBR Outputs: Impedance 75 ohms nominal. Back porch clamped to 0 V. Gamut Limit: Preset threshold settings are nominally +735 mV and -35 mV within ±5 mV.

CRT Display — CRT Viewing Area: 80 × 100 mm. Horizontal = 12.5 div. Accelerating Potential: Nominally 13.75 kV. Trace Rotation Range: Greater than ±1 degree from horizontal.

Power Source — Mains Voltage Ranges: 110 V (88-132 V); 220 V (198-242 V). Mains Frequency Range: 48 Hz to 66 Hz. Power Consumption: 35 Watts maximum.



WFM-300

Physical Characteristics

Dimensions: 5.25" H x 8.424" W x 16.875" L

Weight: Approximately 9 lbs.

Included Accessories

Instruction manual; spare fuse; remote control mating connector; power cable assembly

WFM-300 Component Television Waveform

- Monitor \$4900.00
- Option 01
For 625/50 operation NC
- Option 10
For Betacam® transcoder. 5020.00
- Option 12
For YQI transcoder 5020.00
- Option 14
For MII transcoder 5020.00

Only one color difference transcoder (SMPTE, Option 10, Option 12 or Option 14) can be installed in a single WFM-300. RGB operation is selectable from the front panel on all instrument/option combinations. Option 01 can be combined with all other options.

Optional Accessories

- Cameras**
- Regular order C5
(Option 2). \$465.00
- Automatic Order C7**
(Option 3) 465.00

- Cabinets — Plain:**
- Order 1700F00 \$ 60.00
- Cabinets — Portable:**
- Order 1700F02 85.00
- Rack Adaptor**
- Order 1700F05 180.00
- Blank Panel**
- Order 1700F06 60.00
- Viewing Hood**
- Order 016-0475-00.POR

Betacam® is a registered trademark of SONY CORP.



TSG-170A NTSC Television Generator

- Simple, Effective Test Signal Complement
- RS-170A Sync Pulse Generator with Digital Genlock
- Separate Timing Controls for Sync and Test Signals
- Separate SMPTE Bars Output with Programmable ID (option 01)
- Audio Tone Output (option 01)
- Tape Leader Countdown

The Tektronix TSG-170A NTSC Television Generator offers you the test signals you need plus the advantages of master and genlock sync capability. It provides true 10 bit digital signal accuracy with a full complement of test signals and a stable RS-170A sync generator.

The rugged, compact TSG-170A is designed to support both operational and maintenance requirements. The TSG-170A Option 01 provides even more versatility by adding a separate SMPTE bar generator, programmable identification, and audio tone output.

RS-170A Sync Generator with Digital Genlock

The TSG-170A sync generator's stable color standard and unique digital genlock make it ideal for either master generator or slave operation. All outputs are correctly SC-H phased, even if the TSG-170A is locked to an improperly SC-H phased reference input. The digital genlock calculates sync timing and subcarrier phase to properly identify color framing of the input reference signal. The TSG-170A automatically senses composite video or 3.58 MHz subcarrier reference inputs. It switches to an internal oscillator in the absence of a reference input signal. This high stability crystal oscillator, with its constant temperature oven, ensures long term frequency stability.

Flexible Timing Controls

Horizontal and subcarrier phasing control settings are stored in nonvolatile RAM for digital control of genlock timing. In addition, a separate set of timing controls is provided for sync outputs to simplify system timing. A front panel lockout feature prevents inadvertent changes to the front panel system timing controls.

SMPTE Bars with Programmable ID and Audio Tone (Option 01)

Option 01 adds a separate SMPTE bar output for routine studio needs, such as tape leaders, freeing the front panel selected test signals for engineering and maintenance.

An ID of up to 12 alphanumeric characters may be inserted in the SMPTE bar output. This front panel programmable ID is ideal for identifying satellite feeds, and videotapes.

Option 01 also provides a 400 Hz audio tone output, useful for checking program line continuity and adjusting audio levels. The tone can be adjusted over a 0 dBm to +8 dBm range into 150 Ω or 600 Ω.

Remote Control

Remote operation of test signal selection and timing functions is available by simple ground closure control through a rear panel connector.

TEST SIGNAL GENERATOR

Luminance Amplitude Accuracy	± 1%
Chrominance-to-Luminance Gain	± 1%
Output Impedance	75 ohm
Return Loss	36 dB to 4.2 MHz
TEST SIGNALS COLOR BARS	SMPTE Bars with 10.6 μs blanking
CONVERGENCE	14 lines per field 17 lines per horizontal
PULSE & BAR WITH WINDOW	
2T Pulse HAD	250 ns ± 25 ns
White Bar Amplitude	100 IRE
Field Tilt	0.5%
Line Tilt	0.5%
MULTIBURST	
White Reference Bar Amplitude	428.6 mV (60 IRE)
Packet Amplitude	428.6 mV (60 IRE) p.p
Burst Frequencies	0.5 1.0 2.0 3.0 3.58 and 4.2 MHz
5-STEP STAIRCASE	714.3 mV (100 IRE)
LUMINANCE RAMP	0 to 714.3 mV (100 IRE)
MODULATED RAMP	
Chrominance Amplitude	285.7 mV (40 IRE)
Diff Gain	0.6%
Diff Phase	0.3°
APL	10% and 90%
AC BOUNCE	
Bounce Rate	1 second high 1 second low
FLAT FIELDS	10 IRE, 100 IRE
RED FIELD	
Luminance Amplitude	202.2 mV (28.3 IRE)
MULTIBARS	Color bars and multiburst
NTC7 COMPOSITE	80 IRE 5-step modulated staircase and pulse & bar
LINE SWEEP	714.3 mV p.p Linear sweep from 500 kHz to 5 MHz
MULTIPULSE	
Amplitude	714.3 mV
Frequencies	0.5, 1.0, 2.0 3.0 3.58 and 4.2 MHz

SYSTEM TEST MATRIX	Multibars and NTC7
MONITOR SETUP MATRIX	Convergence IWOB convergence color bars reverse bars and convergence
DAC TEST	500 kHz and 3.58 MHz
OPTION 01 COLOR BARS	SMPTE bars
IDENTIFICATION	12 characters 7x9 matrix
AUDIO TONE	450 Hz (locked to vertical) distortion less than 0.01% 0 to +8 dBu into 150Ω 600Ω or high impedance Click ID adjustable 0.2 to 4 Hz

SYNC GENERATOR

SUBCARRIER STABILITY	3.579545 MHz ± 1Hz over temperature typically less than 1 Hz drift over a year after initial aging
BLACK BURST OUTPUT	
Setup	7.5 IRE
Blanking	Less than 10.6 μs
PULSE OUTPUTS (GENERAL CHARACTERISTICS)	
Amplitude	40 ± 0.1V
Impedance	75 ohm
Return Loss	30 dB to 4.2 MHz
Rise Time	140 ns ± 20 ns
PULSE OUTPUTS (SIGNALS) COMPOSITE SYNC	
BLANKING	
Horizontal Blanking Duration	10.7 μs ± 0.1 μs jumper selectable for 10.2 μs or 10.9 μs
Vertical Blanking Duration	20 lines jumper selectable for 19 or 20 lines
BURST FLAG	
HORIZONTAL DRIVE	
VERTICAL DRIVE	
COLOR FRAME PULSE	Field 1 Line 11
SUBCARRIER OUTPUT	
Amplitude	2 V p.p ± 0.2V
PULSE AND SUB-CARRIER OUTPUTS	
Timing Range	4 μs advance 4 μs delay relative to the test signal and black burst outputs

GENLOCK

GENLOCK SOURCE (COMP VIDEO)	
Input Configuration	75 ohm loop through
Return Loss	At least 40 dB to 4.2 MHz
Burst Amplitude	286 mV +1 dB to -6 dB
Sync Amplitude	286 mV +3 dB to -6 dB
GENLOCK PERFORMANCE	
Horizontal Timing Range	8 μs advance 8 μs delay
Vertical Timing Range	0 1 or 2 lines advance or 1 line delay jumper selectable
Burst Lock Range	3.579545 MHz ± 20 Hz
Jitter	0.5°

PHYSICAL CHARACTERISTICS

Dimensions	mm	in
Width	483	19.0
Rackmount Height	44	1.734
Length	561	22.1

TSG-170A NTSC Television Generator \$4995.00
 TSG-170A Option 1 Adds separate SMPTE Bars output with 12 character ID, audio tone output and tape leader countdown 1000.00



SPG-170A

SPG-170A Sync Generator

- Digitally generated RS-170A black burst
- Digital genlock
- High stability subcarrier
- Flexible pulse outputs
- Pulse timing independent of black
- Remote control timing presets
- Remote control ID presets
- Optional SMPTE bars, ID, and audio tone

The SPG-170A sync generator offers all the features expected in a sync generator, plus the advantages of digital accuracy and system flexibility. Ideal for either master or slave generator operation, the SPG-170A features stable RS-170A performance and a rugged 1 3/4" package. The SPG-170A Option 1 provides even more versatility by adding SMPTE bars with programmable identification and audio tone.

Digital Accuracy

All SPG-170A signals are digitally generated to provide excellent SCH and timing accuracy. The SPG-170A also has a digital genlock to ensure consistent color framing and to eliminate timing drift inherent in other genlock systems. This microprocessor-based system calculates genlock input burst phase and sync timing to control output timing and color framing. All outputs are correctly SCH phased, even if the SPG-170A is locked to an improperly SCH phased input. When no input signal is present, it switches to an internal oscillator. This high stability crystal oscillator, enclosed in a constant temperature oven, ensures long term frequency accuracy.

System Flexibility

The flexibility of the SPG-170A's pulse outputs allows you to configure it to your specific system needs. The SPG-170A has eight sync generator outputs: Sync, Subcarrier, Blanking, Black Burst, and four selectable outputs. The selectable outputs can be used for Burst Flag, H Drive, V Drive, and Color Frame Pulse, or they can be used to provide an additional set of outputs for the pulses most commonly used in modern television facilities. Horizontal blanking can be set to 10.5, 10.7, or 10.9 μs and vertical blanking can be set to either 19 or 20 lines.

The SPG-170A sync timing controls allow you to advance or delay subcarrier and pulse outputs relative to the black burst output, eliminating the need for separate delay lines. Microprocessor control enables both genlock and sync timing settings to be stored in nonvolatile memory in case of power failure. To prevent inadvertent changes to critical timing settings, the front panel timing controls can be locked out by an internal jumper. Up to eight timing presets are selectable through the remote control to simplify timing of shared equipment.

SMPTE Bars with ID and Audio Tone (Option 1)

By specifying Option 1, basic video and audio test capabilities are added to the SPG-170A. Option 1 includes SMPTE bars and audio tone generators for setting program levels. Also, a preset ID of up to 12 characters can be added over the SMPTE bar output. This ID is stored in nonvolatile memory from the front panel, and up to four preset IDs can be recalled through the remote control. Additionally, the remote control allows the ID to be replaced by a countdown, providing a tape leader function. The vertically locked 450Hz audio tone provides a unique method for checking audio edit quality. The audio tone can be combined with a variable rate click to distinguish various audio sources.

Total System Solution

The SPG-170A NTSC sync generator is ideal in a master sync system with the ECO-170A synchronous changeover and TSG-170A NTSC television generator.

- SPG-170A NTSC sync generator \$3300.00
- SPG-170A Option 1 SMPTE bars with ID and audio tone \$4300.00

Physical Characteristics

DIMENSIONS	
Rackmount Height	1.734 inches (44 mm)
Width	19.0 inches (483 mm)
Length	22.1 inches (561 mm)
NET WEIGHT	
	6.14 kilograms, 13.5 pounds
SHIPPING WEIGHT	
	10.4 kilograms, 22.88 pounds
POWER	
	90-132 VAC or 180-250 VAC, 60 W max.
TEMPERATURE	
	Operating 0° to 50°C, Storage -40° to +65°C

Test Signal and Black Burst Generator

Luminance Amplitude Accuracy	± 1%
Chrominance-to-Luminance Gain	± 1%
Output Impedance	75 ohm
Return Loss	36 dB to 4.2 MHz
OPTION 01	
COLOR BARS	SMPTE bars
IDENTIFICATION	12 characters, 7 x 9 matrix
AUDIO TONE	450 Hz (locked to vertical), distortion less than 0.01%, 0 to +8 dBu into 150Ω, 600Ω, or high impedance. Click ID adjustable 0.2 to 4 Hz.

Sync Generator

SUBCARRIER STABILITY	3.579545 MHz ± 1Hz over temperature. Long term stability typically less than 1Hz drift per year
BLACK BURST OUTPUT	
Setup	7.5 IRE
Blanking	10.7 μs
PULSE OUTPUTS (GENERAL CHARACTERISTICS)	
Amplitude	4.0 ± 0.2 V
Impedance	75 ohm
Return Loss	30 dB to 4.2 MHz
Rise Time	140 ns ± 20 ns
PULSE OUTPUTS (SIGNALS) COMPOSITE SYNC	
BLANKING	10.7 μs ± 0.1 μs, jumper selectable for 10.5 μs or 10.9 μs
Horizontal Blanking Duration	
Vertical Blanking Duration	20 lines, jumper selectable for 19 or 20 lines
BURST FLAG	
HORIZONTAL DRIVE	
VERTICAL DRIVE	
COLOR FRAME PULSE	Field 1, line 11 load
SUBCARRIER OUTPUT	
Amplitude	2 Vp-p ± 0.2V
SYNC TIMING RANGE	
	4 μs advance, 4 μs delay

Genlock

GENLOCK SOURCE (COMP VIDEO)	
Input Configuration	75 ohm loop-through
Return Loss	At least 40 dB to 4.2 MHz
Burst Amplitude	286 mV +3 to -6 dB
Sync Amplitude	286 mV +3 to -6 dB
GENLOCK PERFORMANCE	
Horizontal Timing Range	8 μs advance, 8 μs delay
Vertical Timing Range	0, 1, or 2 lines advance or 1 line delay, jumper selectable
Burst Lock Range	3.579545 MHz ± 20 Hz
Jitter	0.5° maximum

TEKTRONIX, INC.

Synchronous Changeover



ECO-170A

ECO-170A

Synchronous Changeover

- Automatic sync changeover
- Clean electronic switching
- Unique fault detection system
- 8 channels
- Manual override
- Remote control with fault indicators

The ECO-170A Synchronous Changeover provides transparent, automatic selection of sync sources. Front panel controls allow simple access to changeover functions. A two level front panel lockout protects these controls in critical master sync systems.

Transparent Switching

The ECO-170A employs electronic sync transfer to ensure uninterrupted sync for critical production and on-air operations. Unlike other sync changeovers, the ECO-170A uses relay switching only for bypass in case of power failure. This gives optimum sync system performance while ensuring maximum system reliability. Manual sync source selection provides a means for periodic verification of changeover and backup sync generator operation.

Fault Detection

By testing both pulse amplitude and pulse timing, the ECO-170A provides two methods of error checking for your sync system. Conventional amplitude detection finds missing pulses quickly, while the ECO-170A's additional timing detection identifies errors that would otherwise be undetected. When the ECO-170A detects a fault, it automatically switches to the backup generator, unless the backup generator also has a fault. Separate indi-

cators on both the front panel and remote control display faults for each generator. These indicators remain on until cleared by an operator.

System Configuration

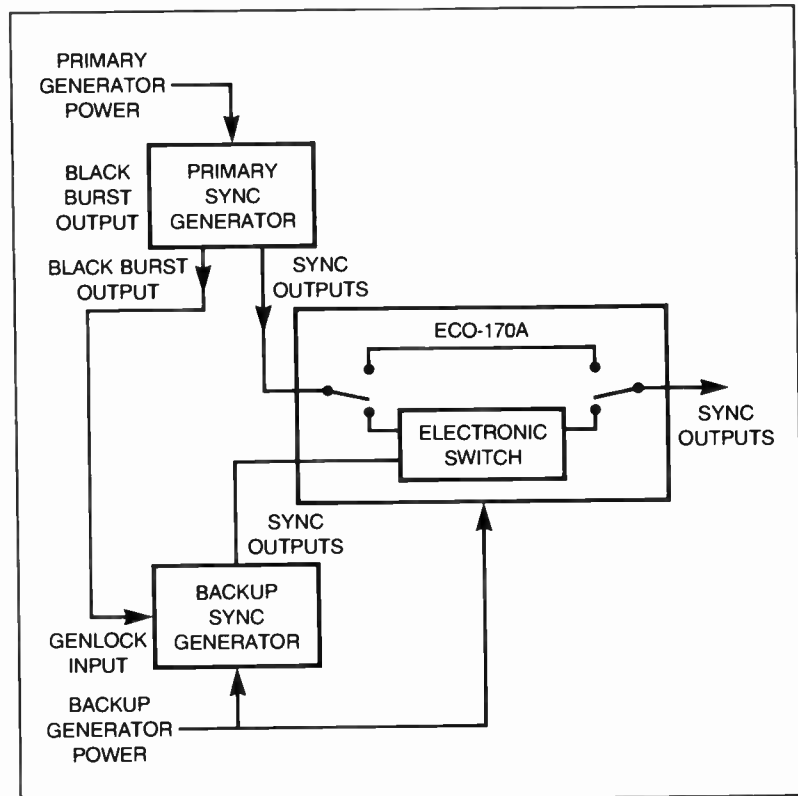
The flexibility of the ECO-170A lets you configure it to your specific system needs. The ECO-170A has eight inputs for each sync generator: Sync, Subcarrier, Blanking, Composite Video, and four selectable outputs. The selectable outputs can be used for Burst Flag, H Drive, V Drive and Color Frame Pulse, or they

can be used to provide an additional set of outputs for the pulses most commonly used in modern television facilities. The composite video channels may be black burst or color bars.

Reliable Sync

With its clean switching and two level fault detection, the ECO-170A teams with your sync generators to provide a reliable master sync system.

ECO-170A \$2000.00



A Master Sync System using the ECO-170A

TEKTRONIX, INC.

Television Generator



TSG-300

Component Television Generator

- Multiple Formats and Standards
- Y,B-Y,R-Y (Y,Pb,Pr; SMPTE/EBU)
- GBR
- Betacam®
- MII
- 525/60 and 625/50
- 10 Bit Digital Signal Generation
- New Test Signals for Component Video
- Bowtie
- Coring
- Valid Ramp
- Shallow Ramp
- User Configurable Controls
- Digital Genlock

Digital Genlock

From news gathering to post-production, component television is providing new levels of image quality and operational flexibility. While component television solves many problems inherent in composite NTSC and PAL, it brings with it a new set of concerns. The TSG-300 Component Television Generator provides innovative solutions to the measurement problems encountered in component television systems.

Multiple Formats and Standards

While the EBU and SMPTE are setting standards for component video, there is already a large base of installed component equipment using many different operating levels. The TSG-300 bridges this gap between formal and de-facto standards, providing signals in SMPTE/EBU standard formats as well as previously existing component formats. Signal formats supported by the TSG-300, using color bars as an example (Figure 1), are Y, B-Y, R-Y (Y,Pb,Pr; SMPTE/EBU), GBR, Betacam, and MII. The TSG-300 also supports both 525/60 and 625/50 systems by either internal jumper selection or remote control.

Digital Signal Generation

Precision digital signal generation insures the accuracy and stability of the TSG-300 test signals. 10 bit digital to analog conversion at 13.5 MS/s, even in the color difference channels, allows full bandwidth testing of GBR systems. Digital generation of each individual format eliminates transcoding artifacts.

New Test Signals for Component Video

The TSG-300 provides unique solutions to component measurement problems with signals such as Bowtie, Coring, Valid Ramp, and Shallow Ramp, as well as a wide range of more conventional signals

User Configurable Controls

Operation of the TSG-300 is simplified by its user configurable controls. Many of the test signal controls access a variety of similar signals. These signals are accessed by pressing the switch repeatedly. By simply specifying which signal you want to appear first, the problem of searching for a commonly used signal is eliminated.

Digital Genlock

The TSG-300's unique digital genlock and stable internal oscillator make it suitable for either slave or stand-alone operation. After the incoming signal is digitized, a processor analyzes timing to control the TSG-300's system clock. The digital genlock works with component video or composite NTSC, PAL, or SECAM sources operating in either 525/60 or 625/50 systems. The TSG-300 automatically switches to its internal oscillator in the absence of a reference input signal. This high stability crystal oscillator, with its constant temperature oven, ensures long term frequency stability.

Remote Control

Remote operation of test signal selection, system timing, and line and field rate selection is available by simple ground closure control through a rear panel connector.

TSG-300 Specifications

Signal Formats	Y, B-Y, R-Y (SMPTE; Y,Pb,Pr; EBU) GBR Betacam (3 wire) MII (3 wire) Y-CTDM (Betacam 2 wire) YCTCM (MII 2 wire)
Systems	525/60 and 625/50 by jumper selection or remote control
Signal Generation	10 bit digital 13.5 MS/s Direct generation (no transcoders)
Outputs	Channel 1: 2 outputs Channel 2: 2 outputs Channel 3: 2 outputs Sync 13.5 MHz Reference Space for Betacam or MII Dub
Inputs	Genlock loop-through
Test Signals	(Unless otherwise specified)
Luminance Amplitude	700 mV for 100% luminance
Color Difference	± 350 mV for 100% color difference
Sync Amplitude	- 300 mV on luminance channel
Blanking level	0 ± 50 mV
Amplitude Accuracy	1%
Channel Amplitude Match	0.5%
Channel Timing Match	5 ns
Frequency Response	1% to 5 MHz 2% to 5.5 MHz 1% ringing on 2T pulse T = 100 ns
Pulse Response	0.5% 0.5% 75 Ohm 36 dB to 5 MHz
Line Tilt	0.5%
Field Tilt	0.5%
Output Impedance	75 Ohm
Return Loss	36 dB to 5 MHz
Y, B-Y, R-Y (Y,Pb,Pr; SMPTE; EBU)	
100/0/100/0	700 mV luminance ± 350 mV color difference
100/0/75/0	700 mV luminance ± 262.5 mV color difference
GBR Bars 100/0/100/0 75/0/75/0	700 mV all channels 525 mV all channels
Betacam Bars 100/7.5/75/7.5	714 mV luminance in 525/60 53.6 mV setup ± 14.3 mV pluge ± 350 mV color difference Obtainable by applying the TSG-300 boost function (1.33 gain on color difference channels) to 75% SMPTE/EBU bars
100/0/75/0	
Y-CTDM 100/7.5/75/7.5 100/0/75/0	714 mV luminance in 525/60 700 mV luminance in 625/50 ± 350 mV color difference

TSG-300

TSG-300 Specifications (Continued)

MII Bars 100/7.5/75/7.5	700 mV luminance for 525/60 52.5 mV setup ± 243 mV color difference Same as SMPTE/EBU bars
100/0/75/0	
Y-CTCM 525/60 100/7.5/75/7.5	700 mV luminance ± 350 R-Y ± 250 B-Y
Y-CTCM 625/50 100/0/75/0	700 mV luminance ± 262.5 mV color difference
Luminance Reference with pluge	0, 175, 350, 525, and 700 mV Gray scale references with -70 and +770 mV clipping indicators ± 14 mV pluge
5 Step Staircase	700 mV luminance ± 350 mV color difference
120% Ramp	-70 mV to +770 mV
Valid Ramp	700 mV p-p
Shallow Ramp	± 350 mV from Pedestal 0 to 700 mV Pedestal luminance ± 350 mV pedestal color difference in 5.5 mV increments
Pulse and Bar	2T Pulse and 2T Bar luminance 3T or 5T Pulse and Bar color difference Includes 3 step or 5 step staircase to indicate pulse HAD
Pulse and Bar with 20T Pulse	2T pulse and 2T bar luminance 20T pulse on all channels codes to modulated pulse in composite signal
Window	Pulse and Bar signal gated on during lines 72-202 in 525/60 and lines 78-234 in 625/50
Field Square Wave	700 mV luminance 350 mV color difference Vertical timing same as window
Multipulse	420 mV 60% amplitude selectable 1, 2, 3, 4, and 5 MHz luminance 350 to +70 mV color difference 0.5, 1, 1.5, 2, and 2.5 MHz color difference
Wideband Multiburst	420 mV p-p 60% on 350 mV pedestal for luminance 1, 2, 3, 4, and 5 MHz all channels
Narrowband Multiburst	420 mV p-p 60% 1, 2, 3, 4, and 5 MHz luminance 0.5, 1, 1.5, 2, and 2.5 MHz color difference
Wideband 100% Line Sweep	700 mV p-p 200 kHz to 5.5 MHz all channels
Narrowband Sweeps	420 mV p-p and 250 mV p-p 200 kHz to 5.5 MHz luminance 100 kHz to 2.75 MHz color difference
Bowtie	500 kHz luminance 502 kHz color difference ± 100 ns delay range with markers every 20 ns
Convergence	525 mV (75%) 14 horizontal lines; 15 vertical lines
Coring	70 mV p-p 0 to 700 mV pedestal luminance ± 350 mV pedestal color difference 1, 2, 3, 4, and 5 MHz luminance 0.5, 1, 1.5, 2, and 2.5 MHz color difference
Flat Field	0 to 700 mV variable luminance ± 350 mV variable color difference
Genlock	Loop-through input Return loss 40 dB to 5.5 MHz Locks to NTSC, PAL, SECAM, or Component luminance
Genlock Timing	± 8 µs delay range

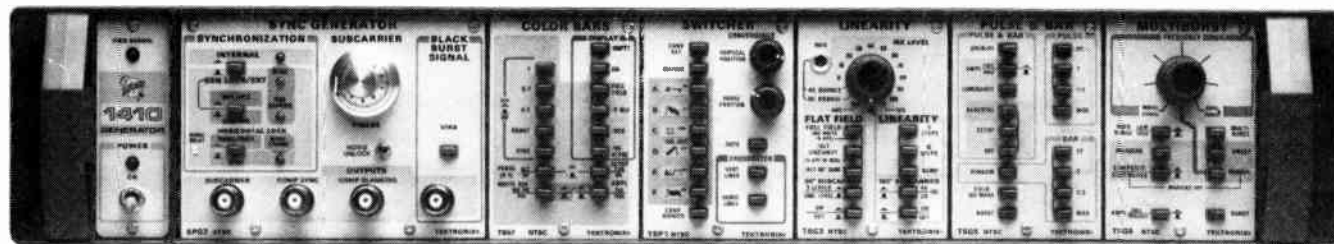
TSG-300 \$8850.00

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Prices and Specifications Subject to Change Without Notice.

TEKTRONIX, INC.

Sync/Test Generators



1410R

1410R/1411R/1412R SYNC/TEST GENERATORS

- Five Test Signal Generators and One Switcher
- Conforms to EIA Standard RS-170A (1410R)
- Sync to Subcarrier Phasing Maintained or Corrected
- Color Frame Reference Output
- Genlock to Composite Video
- Lock to External References
- Adjustable Blanking Widths
- Adjustable Sync Delays (H and V)
- Parallel Test Signal Outputs

The 1410R Series Sync and Test Signal Generators are precision generators for use in studios, remote vans, maintenance facilities and anywhere high quality sync or test signals are required.

1410R Series Products

Description	Color Standard		
	NTSC	PAL	PAL-M
Mainframe	1410R	1411R	1412R
Sync Pulse Generator	SPG2A	SPG12	SPG22
Color Bars Generator	TSG7	TSG11	TSG21
Convergence Generator	TSG2	TSG12	
Linearity Generator	TSG3	TSG13	TSG23
Pulse/Bar Generator	TSG5	TSG15	TSG25
Multiburst Generator	TSG6	TSG16	TSG26
Signal Switcher	TSP1	TSP11	TSP21

SPG2A/SPG12/SPG22 SYNC PULSE GENERATORS

The SPG2A, SPG12 and SPG22 are high quality sync generators designed for use in systems where accuracy, stable SCH (Sync-to-Subcarrier) phasing capability, and lockup mode versatility are of prime importance.

Two external synchronization modes, external reference and genlock, are available. In the genlock mode, line field, subcarrier and PAL pulse (SPG12, SPG22) timing are derived from the incoming composite video signal.

In the external reference mode, line, field, subcarrier, and PAL pulse timing is derived from individual reference signals applied to the generator.

The SCH phasing of the generator outputs can be set for zero error or offset to match the SCH phase of the incoming genlock signal.

A slow genlock mode is provided for those applications where fast-lock may upset the system. The slow-lock selector is located on the generator card sets.

Internal adjustments permit some variation of burst and blanking widths on the burst flag, comp blanking, and black burst outputs.

CHARACTERISTICS

Sync Pulse Generators

1410R Subcarrier—Frequency (F_{sc}): 3.579545MHz \pm 1Hz. Pull-in Range: $F_{sc} \pm$ 20Hz.

1411R Subcarrier—Frequency F_{sc} : 4.43361875MHz \pm 1Hz. Drift \leq 1 part in 10^7 per week. Pull-in Range: $F_{sc} \pm$ 20Hz

1412R Subcarrier—Frequency F_{sc} : 3.57561149MHz \pm 1Hz. Drift \leq 1 part in 10^7 per week. Pull-in Range: $F_{sc} \pm$ 20Hz.

PULSE OUTPUTS

Output Level (Into 75 ohms)—4V (1410R), 1V, 2V, or 4V (selectable, 1411R and 1412R) \pm 2V.

Return Loss \geq 30dB to 5MHz

Risetime and Falltime—10% to 90% (Linear Ramp). 140ns, (1410R, 1412R). 250ns (1411R—Other values internally selectable).

Jitter—Linlock: \leq 10ns. Subcarrier Lock: \leq 4ns.

Outputs—Comp sync, comp blanking, burst flag, H drive, V drive, Field reference, 1411R/1412R only: PAL pulse, V/2, V/4, and 64H.

SUBCARRIER OUTPUT

Amplitude—2V p-p into 75 ohm. Return Loss: \geq 30dB to 5MHz.

BLACK BURST OUTPUT

Amplitudes—Sync: 286mV \pm 3.57mV (1410R); 300mV \pm 3mV (1411R, 1412R) from blanking. Burst: 286mV \pm 2.86mV (1410R). Absolute: 300mV \pm 9mV. Setup: 53.57mV \pm 3.57mV (1410R), 0% (1411R), 50mV \pm 2.5mV (1412R).

VIR Signal—(1410R Only) Chrominance Amplitude (40 IRE); phase within 0.5° of burst; envelope risetime Sin^2 shaped $1\mu\text{s} \pm 150\text{ns}$. Luminance: Setup level (7.5 IRE \pm 0.5 IRE); gray level (50 IRE \pm 0.5 IRE); chroma pedestal (70 IRE \pm 0.7 IRE); risetime and falltime Sin^2 shaped. 250 ns. \pm 39 ns.

GENLOCK

Input Configuration—75 ohm Loopthrough with Return Loss: \geq -46dB to 5MHz (1410R); \geq 40dB to 7MHz (1411R); \geq 40dB to 5MHz (1412R).

Input Requirements—1V nominal composite video or black burst, sync negative. Sync Amplitude: Nominal \pm 6dB. Burst Amplitude: Nominal \pm 12dB. Burst Sync Ratio: Within 6dB.

Subcarrier Phase Range—360° via front panel goniometer.

Line Sync Delay Range—Adjustable to advance output sync $\geq 10\mu\text{s}$ or delay $\geq 4\mu\text{s}$ (internal adjustment). A front panel screwdriver adjustment provides a delay/advance range of $\pm 0.5\mu\text{s}$.

Stability (Over Ambient Temperature Range 0°C to $\pm 50^\circ\text{C}$)—Line Lock: Within 70ns. Subcarrier Lock: Within 35ns.

Field/Frame Sync—Fast Lock: Direct-acting in one field. Slow Lock: One line/field slow.

Loss of Lock—Indicated by front panel LEDs (automatic switching to full or partial internal).

1410R NTSC Mainframe and SPG2A . . . \$4200.00
Includes: Extender board (670-4441-02); 1.5 A fuse (159-0016-00); 0.75 A fuse (159-0042-00); rack-mount hardware; instruction manual.

OPTIONS

Option 03^{**}—NTSC Package Installed and Tested Together \$3460.00

Option 04^{**}—NTSC Package Installed and Tested Together 8280.00

Option 1B—Adds TSG7 Installed 1870.00

Option 1S—Adds TSP1 Installed 1645.00

Option 2C—Adds TSG2 Installed 530.00

Option 3L—Adds TSG3 Installed 1315.00

Option 4M—Adds TSG6 Installed 2380.00

Option 4P—Adds TSG5 Installed 1710.00

1411R PAL Mainframe and SPG12 4200.00

OPTIONS

Option 03^{**}—PAL Package Installed and Tested Together \$3000.00

Option 04^{**}—PAL Package Installed and Tested Together 7500.00

Option 1B—Adds TSG11 Installed 1500.00

Option 1S—Adds TSP11 Installed 1535.00

Option 2C—Adds TSG12 Installed 495.00

Option 3L—Adds TSG13 Installed 1225.00

Option 4M—Adds TSG16 Installed 2220.00

Option 4P—Adds TSG15 Installed 1595.00

^{**} Cannot be combined with any other option.

1412R PAL-M PACKAGES

1412R PAL-M Mainframe and SPG22, TSG21 \$7415.00

Option 05—Adds TSG23/TSG25/TSG26/TSP21 Installed 8795.00

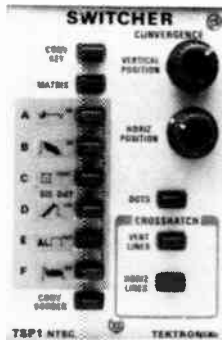
OPTIONAL ACCESSORIES

(For All Configurations)
Single-Width Blank Panel—Order 333-2171-00

Conversion Kit for SMPTE Bars—For TSG1 Module. Order 040-1010-00

Rackmount to Cabinet Conversion Kit—Order 040-1152-00

1410 R Series (Cont'd)



TSP1/TSP11/TSP21 Switchers and Convergence Generators

- Single Switchable Output for Two to Six Generated Signals
- Blanking, Sync and Burst Insertion for External Sync
- Matrixing—Eight Programmed Display Formats to up to Six Sequential Signals
- Convergence Border
- Convergence Key
- Crosshatch or Dots
- Combined Crosshatch and Dots

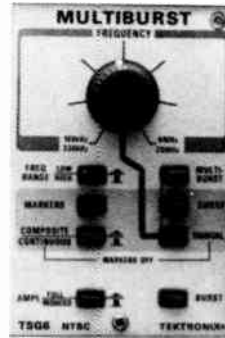
The TSP1, TSP11, and TSP21 combine the capabilities of a test signal switcher and convergence signal generator in a single unit. They simplify and expand the uses of the 1410R Series signal generators.

From a single, electronically switched output, you have access to all the test signals generated by the card sets in the mainframe. Meanwhile, you may continue to use the individual generator card sets' parallel outputs, so no restrictions are imposed on an established system. As an added feature, one of the input signals can be external (composite or non-composite). All of the switcher inputs are provided with clamp circuitry.

Eight different matrixes are stored in the PROM. This signal matrixing capability, combined with the full-field mode of the TSP1 presents several combinations of signals sharing the full field display.

Most of TSP1 switching functions can be remotely controlled through the mainframe's Remote connector.

TSP1 (NTSC)	\$ 1725.00
TSP11 (PAL)	1610.00
TSP21 (PAL-M) . . . . .	.POR



TSG6/TSG16/TSG26

- Multiburst Signal Generators
- Multiburst Signal
- Controlled Risettime Burst Packets
- Last Burst Frequency Variable
- Manual and Field Swept Frequency Signals to 20MHz
- Markers for Both Frequency and Amplitude Reference
- Full and Reduced Amplitude on all Signals

The TSG6, TSG16 and TSG26 are television multiburst and video sweep test signal generators designed for the 1410R Series signal generators.

Performance advances include reduction in harmonic content of sinewave signals and skirt energy associated with gating burst packets. Phase modulation of the burst packets aids ease of measurement by filling in shape of packets. Two ranges of multiburst frequencies are available: the 500 kHz to 4.1 MHz (TSG6) range aids in testing television transmitters and common carrier links, while the 1.25 MHz to 12 MHz range is used in testing television studio equipment and cabling.

Use these generators where nonlinearities make reduced amplitude test signals desirable. The reduced amplitude multiburst signal allows accurate testing of video tape record/playback systems, since it is not subject to the false distortion of the full amplitude multiburst that often occurs in such applications.

High and low frequency bands are provided for both the multiburst and sweep signals. Amplitude and frequency markers may be added to the sweep signal.

Color burst and the horizontal and field sync signals may be removed when non-composite signals are required.

TSGG (NTSC)	\$2495.00
TSG16 (PAL)	2330.00
TSG26 (PAL-M) . . . . .	.POR

Specifications:

SYNC PULSE GENERATORS

1410R Subcarrier — Frequency (F_{SC}): 3.579545 MHz \pm 1 Hz. Pull-in Range: $F_{SC} \pm 20$ Hz.

1411R Subcarrier — Frequency F_{SC} : 4.43361875 MHz \pm 1 Hz. Drift \leq 1 part in 10^7 per week. Pull-in Range: $F_{SC} \pm 20$ Hz.

1412R Subcarrier — Frequency F_{SC} : 3.57561149 MHz \pm 1 Hz. Drift \leq 1 part in 10^7 per week. Pull-in Range: $F_{SC} \pm 20$ Hz.

PULSE OUTPUTS

Output Level (Into 75 Ω) — 4 V (1410R), 1 V, 2 V, or 4 V (selectable, 1411R and 1412R) ± 2 V.

Return Loss — ≥ 30 dB to 5 MHz.

Risettime and Faltime — 10% to 90% (Linear Ramp). 140 ns, (1410R, 1412R). 250 ns (1411R — Other values internally selectable).

Jitter — Linelock: ≤ 10 ns. Subcarrier Lock: ≤ 4 ns.

Outputs — Comp sync, comp blanking, burst flag, H drive, V drive, Field reference, 1411R/1412R only: PAL pulse, $1/2$, $1/4$, and 64H.

SUBCARRIER OUTPUT

Amplitude — 2 V p-p into 75 Ω . Return Loss: ≥ 30 dB to 5 MHz.

BLACK BURST OUTPUT

Amplitudes — Sync: 286 mV ± 3.57 mV (1410R); -300 mV ± 3 mV (1411R, 1412R) from blanking. Burst: 286 mV ± 2.86 mV (1410R). Absolute: 300 mV ± 9 mV. Setup: 53.57 mV ± 3.57 mV (1410R), 0% (1411R), 50 mV ± 2.5 mV (1412R).

VIR Signal — (1410R Only) Chrominance Amplitude (40 IRE); phase within 0.5° of burst; envelope risetime Sin^2 shaped $1 \mu\text{s} \pm 150$ ns. Luminance: Setup level (7.5 IRE ± 0.5 IRE); gray level (50 IRE ± 0.5 IRE); chroma pedestal (70 IRE ± 0.7 IRE); risetime and faltime Sin^2 shaped, 250 ns ± 39 ns.

GENLOCK

Input Configuration — 75 Ω Loop-Through With Return Loss: ≥ -46 dB to 5 MHz (1410R); ≥ 40 dB to 7 MHz (1411R); ≥ 40 dB to 5 MHz (1412R).

Input Requirements — 1 V nominal composite video or black burst, sync negative. Sync Amplitude: Nominal ± 6 dB. Burst Amplitude: Nominal ± 12 dB. Burst Sync Ratio: Within 6 dB.

Subcarrier Phase Range — 360° via front panel goniometer.

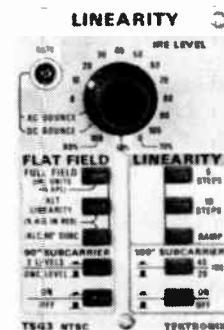
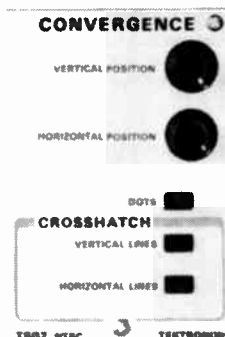
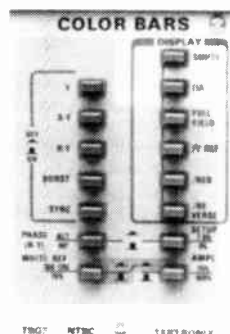
Line Sync Delay Range — Adjustable to advance output sync $\geq 10 \mu\text{s}$ or delay $\geq 4 \mu\text{s}$ (internal adjustment). A front panel screwdriver adjustment provides a delay/advance range of $\pm 0.5 \mu\text{s}$.

Stability (Over Ambient Temperature Range 0°C to $\pm 50^\circ\text{C}$) — Line Lock: Within 70 ns. Subcarrier Lock: Within 35 ns.

Field/Frame Sync — Fast Lock: Direct-acting in one field. Slow Lock: One line/field slew.

Loss of Lock — Indicated by front panel LED's (automatic switching to full or partial internal).

1410 R Series (Cont'd)



**TSG7/TSG11/TSG21
Color Bars Generators**

- Color Bars Signals
- SMPTE Color Bars (TSG7)
- EIA (TSG7)
- Fixed Full Field (TSG11/TSG21)
- Full Field with Switchable Components
- 75% or 100% Amplitude
- Split Field/Y Reference
- Split Field/Red
- Split Field Bars/Bars Reversed

The TSG7, TSG11 and TSG21 provide high-quality full field and split field color bars for the 1410R series signal generators. Fixed configuration signals are available for operational environments such as post production. For lab and maintenance facilities, front panel control of luminance and chrominance signal components provides the flexibility to meet most engineering and testing requirements. The split field bars/Y reference signal provides a convenient means for simultaneous checking of picture monitor color performance and gray scale tracking.

The split field bars/red field signal is useful in detection of VTR noise and moire.

The SMPTE Bars signal provides an easy way to adjust picture monitor chroma, hue, and brightness.

TSG7 (NTSC)	\$ 1965.00
TSG11 (PAL)	1575.00
TSG21 (PAL-M) . . . . .	.POR

**TSG2/TSG12
Convergence Test
Signal Generators**

- Dots and Crosshatch
- Dots Only
- Vertical Lines Only
- Horizontal Lines Only
- Vertical and Horizontal Lines
- Position Controls

The TSG2 and TSG12 provide high-quality convergence test signals for the 1410R Series signal generators. You can use them to determine picture monitor or camera scanning linearity, aspect ratio, and geometric distortion. Signals for the TSG2 conform to IEEE Standard 202.

Provision is made for on/off switching of the dots, vertical lines, and/or horizontal lines and for positioning vertical and horizontal lines.

TSG2 (NTSC)	\$560.00
TSG12 (PAL) . . . . .	.520.00

**TSG5/TSG15/TSG25
Pulse and Bar Generators**

- Pulse and Bar Overlay
- Full and Half Amplitude Pulse and Bar
- Field Squarewave and Window
- Modulated Pulse and Modulated Bar
- Front Panel Selection of 2T, T, and T/2 Pulse Width and Bar Risetime

The TSG5, TSG15, and TSG25 are sin² pulse and bar television test signal generators designed for use with the 1410R Series signal generators.

The pulse and bar test signal consists of a sin² modulated pulse, a sin² pulse, and luminance bar. The pulse and bar overlay mode lets you conveniently compare pulse to bar ratio without manipulating waveform monitor controls.

TSG5 (NTSC)	\$ 1800.00
TSG15 (PAL)	1680.00
TSG25 (PAL-M) . . . . .	.POR

**TSG3/TSG13/TSG23
Linearity and Modulated
Pedestal Test Generators**

- 5 Step and 10 Step Staircase Signal
- Ramp Signal
- 2 Modulation Amplitudes
- One or Three Level Modulated Pedestal
- Flat Field with 11 Fixed Levels
- AC and DC Bounce
- Variable APL

The TSG3, TSG13 and TSG23 provide high-quality linearity and modulated pedestal test signals for the 1410R Series signal generators.

You can select the 5 step and 10 step staircase signals and the ramp signal with or without 180° subcarrier modulation for PAL, or U subcarrier modulation for PAL and PAL-M. Applications include measuring differential phase and gain, dynamic gain, luminance linearity, and burst phase errors.

On the ac Bounce signal, the active portion of each line (excluding sync) changes APL levels at a rate determined by the rate control (1 second to 30 second intervals). Blanking level remains fixed at 0 V. To check ac coupled circuitry use ac bounce.

On the dc bounce signal, ac bounce occurs as described above. In addition, the entire signal changes dc level in the opposite direction at the same rate resulting in no change in average dc level. Clamp circuits may be checked using dc bounce.

TSG3 (NTSC)	\$ 1375.00
TSG13 (PAL)	1285.00
TSG23 (PAL-M) . . . . .	.POR

TEKTRONIX, INC.

Color Monitors

650HR Color Monitor

- High Resolution Display Plus Capability for Critical Signal Analysis
- 0.25mm Triad Pitch High Resolution Trinitron® CRT
- Variable Aperture Correction
- Precise Color Tracking Over Full Signal Range
- Two Video Inputs with Differential (A-B) Capability
- Video Inputs Isolated from Ground for Hum Rejection
- Optional Parallel Component Inputs—Internally Selected Format
- NTSC, PAL and Multistandard Decoders Available
- Precise Decoders with Outputs to Provide Vector Display on External X-Y Monitor
- Unique Monochrome (White) Display of Decoded Blue Signal for Critical Analysis of Color Noise

The Tektronix 650HR Series color picture monitors are designed for exacting applications where picture quality and signal quality analysis are particularly important. The 650HR uses a Trinitron CRT with resolution capabilities which exceed the performance of encoded television signals. The decoders have sufficient chroma channel bandwidth to pass all of the information in standard signals.

The unique blue only mode feeds the decoded blue video signal to the red, green, and blue channels simultaneously. This produces a monochrome display with a high subjective sensitivity to chroma noise, allowing better analysis of video quality.

The chrominance channel may be manually switched to either the monochrome or color modes, or activated automatically by the presence of burst.

Circuits in the Tektronix 650HR Series are designed for color stability and consistency. Outputs are provided from the precision decoders and may be used to drive an X-Y monitor for a vector display. The regulated EHT supply is not affected by extreme changes in APL even when calibrated brightness, at peak white, is set at 30 fL. Raster size is held within 1%, while excellent clamping maintains a stable black level with a 0% to 100% range of APL.

CHARACTERISTICS

Input Signal Level—0.5 V p-p minimum composite video 2 V p-p maximum. (Exceeds CCIR recommendations 567, Part D and D.2)

Impedance—Terminated: High Z bridging inputs loop-through compensated for 75 Ω (not internally terminated). Return Loss: ≥ 46 dB to 5 MHz, power on or off, input in use or not.

Maximum Safe Input—Exceeds CCIR Recommendation 451-2 (± 5 V peak).

Hum Rejection—Hum is ≥ 50 dB down when 4 V maximum RMS common mode mains hum signal is applied to the monitor in floating ground mode.

NTSC Luminance Channel—Bandwidth (notch filter removed) ≈ 6 MHz. Subcarrier notch filter automatically removed when burst is not present and Mode switch is

in Auto position. Subcarrier notch filter removed when Mode switch is in Monochrome position. Dc Restoration back porch type; not affected by burst. Mains hum reduction due to dc restorer is < 6 dB. Amplitude Linearity: Within 2%.

NTSC Chrominance Channel—Demodulation Axis: R-Y, B-Y. Bandpass: 1.3 MHz equiband. Gain Range: Preset at 0 dB; adjustable from -6 dB to +10 dB.

PAL Luminance Channel—Bandwidth (notch filter removed) ≈ 6 MHz. Subcarrier notch filter can be removed by changing internal jumper. Subcarrier notch filter normally left in circuit.

PAL Chrominance Channel—Demodulation Axis: U, V. Bandpass: ≈ 1.2 MHz. Gain Range: Preset at 0 dB; adjustable from -6 dB to +10 dB.

Residual Subcarrier Detection (On Applied Signal)—Color of displayed picture will shift due to any residual subcarrier. This feature can be inhibited by a jumper on the decoder board.

Chrominance/Luminance—Timer Error: < 30 ns. Gain Error: < 3%.

Delay—Red to green to blue < 50 ns.

Subcarrier Regeneration—Phase Error: Within 1° with input burst variation of ± 10 Hz from subcarrier nominal burst frequency. With Temperature Variation: Within 5° with ambient temperature variation from 0° C to +50° C; with 1° for any +10° C increment within the range 0° C to +50° C. With Input Signal Variation: Within 1° with input signal variations of ± 3 dB from 1.0 V, within 3° with variation of burst/sync ratio of -6 dB to +10 dB. Breezeway Stability: ≤ .02° for burst timing errors including burst width variance (8 to 11 cycles), and breezeway variance ± 0.28 μs. Phase Error Due to Noise: Within 1° with RMS white noise at -24 dB (0 dB = 700 mV RMS).

PICTURE

Height—184 mm (7.2 in).

Width—244 mm (9.6 in).

Underscan—≈ 20% reduction in both height and width.

Aspect Ratio—4:3.

Deflection Linearity—Vertical and Horizontal: 1% of picture height within a central area bounded by a circle whose diameter equals picture height, ± 2% of picture height outside of central area.

Convergence Error—< 1 mm within the central area. Outside of the central area, color separation (misconvergence) is < 2 mm.

Unblanking—All active picture elements are displayed. (Horizontal retrace is accomplished within 10 μs.)

Color Temperature—6500° K. Easily adjustable to other standards.

Calibrated Contrast—30 fL at peak white of standard 1 V signal.

Calibrated Brightness—Displayed black may be preset to a level appropriate for ambient conditions.

EHT (Extremely High Tension)—19 kV nominal, regulated. Load variations cause < 1% picture size variation. Monitor complies, as of date of manufacture, with applicable DHHS standards under Radiation Control for Health and Safety Act of 1968.

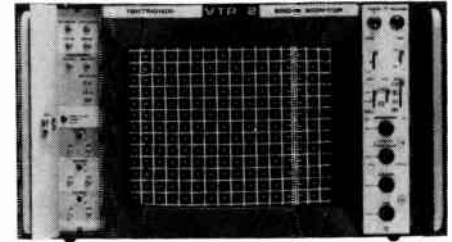
Kinescope Protection—Failure of horizontal or vertical scanning shuts off the EHT. Failure of HV Regulator circuit does not cause EHT to soar excessively. EHT supply is current limited.

Heater Voltage—Regulated dc.

SYNC and TIMING

Signal Range—Composite sync 0.5 V p-p to 8 V p-p or composite video 0.5 V p-p to 2 V p-p.

Impedance—Terminated: High Z bridging inputs loop-through compensated for 75 Ω (not internally terminated). Terminated: 75 Ω. Return Loss: ≥ 46 dB to 5 MHz with respect to 75 Ω.

**650HR**

Synchronization—Stable subcarrier regeneration, limited by line sync performance. Line sync white noise immunity is 20 dB. Field sync white noise immunity is 20 dB. Field sync stable with tilt equal to 100% of sync amplitude in vertical blanking. Stable with 20 IRE mains hum.

AFC (Two Loop AFC Type)—Phase Corrector: Corrects for phase errors due to side pincushion correction and other effects within the monitor. Slow AFC: Displays timing errors of incoming sync, particularly, 60 Hz or 240 Hz timing errors. Bandwidth is ≈ 25 Hz. Fast AFC: Largely corrects for incoming sync errors, ≈ 2 kHz bandwidth.

Scan Delay—Horizontal Delay: ≈ 1/4 line; displays burst. Vertical Delay: Displays the vertical blanking interval of the input signal expanded ≈ 2.5 times unless underscan is activated. If the underscan button is depressed, vertical expand is inhibited.

AC POWER

Mains Voltage Range—115V: Within 10% (104VAC to 126VAC). 230V: Within 10% (207VAC to 250VAC maximum). 650HR, 650HR-C are factory set for 115V. 651HR, 651HR-1, 655HR-C and 652HR-C are factory set for 230V.

Crest Factor—≥ 1.3.

Mains Current—1.5A RMS maximum at 115V, 60Hz, 0.75A maximum at 230V, 50Hz. Current is substantially higher during degaussing.

Degaussing Surge Current—5A RMS.

Power Consumption—150W maximum, 110W typical.

Mains Frequency—48Hz to 66Hz.

PHYSICAL CHARACTERISTICS

Dimension	Cabinet		Rackmount	
	mm	in	mm	in
Width	426	16.8	483	19.0
Height	279	11.0	266	10.5
Depth	419	16.5	464*1	18.3*1
Weights	kg	lb	kg	lb
Net	22.7	50.0	23.5	52.0
Domestic Shipping	28.5	65.0	30.4	67.0
Exp. Shpg.	36.3	80.0	37.2	82.0

*1With handles

650HR NTSC	\$4950.00
650HR-C NTSC Component	5300.00
651HR PAL	5165.00
651HR-C PAL Component	5515.00
652HR-1 M Component	5875.00
655HR-C NTSC, PAL, Component	6100.00



1440



REMOTE CONTROL UNIT



REMOTE MONITOR UNIT

1440 Automatic Video Corrector

- Reduces Operating Costs
- Extends Transmitter Tube Life and Reduces Maintenance Costs
- Maintains Consistent High Quality Color Pictures
- Automates Transmitter Modulation Level Control
- Maintains Correct Sync-To-Video Ratios During Line Voltage Fluctuations
- Automatic VIRS Referenced Correction of:
 - Overall Video Signal Amplitude
 - Chrominance to Luminance Gain Ratio
 - Black Level
 - Chrominance Phase
 - Burst Gain
 - Sync Gain
- Optional Closed Loop Capabilities for Greater Efficiency and Economy in Transmitter and VTR Operations

The 1440 VIRS Automatic Video Corrector gives fully automatic correction of video gain, chrominance to luminance gain ratio, black level (set up), chroma phase, burst amplitude, and sync amplitude errors. With this corrector in your facility, the quality of the program signal is rigidly maintained. Ordinary changes and even many severe distortions are automatically corrected.

Video gain correction is referenced to the 50 IRE level of the VIRS. Chrominance to luminance gain ratio and burst phase corrections are referenced to the amplitude and phase of the VIRS chrominance respectively. Set up level correction is referenced to the 7.5 IRE level of the VIRS. Sync and burst gain corrections are controlled respective to their standard amplitudes.

Auxiliary Units

In most applications, the usefulness of automatic correction is enhanced by a Tektronix Remote Control Unit. You can conveniently select corrector modes and manually correct six signal parameters with this unit. The remote unit allows easy adjustment of the parameter's preset values for operation in the absence of a reference signal. Automatic correction value adjustments are also provided.

The Tektronix Remote Monitoring Unit provides meter indications of the amount of correction applied to the signal.

CHARACTERISTICS

- Input Impedance—75 Ω nominal.
- Video Display—145 ns.
- Output Impedance—75 Ω.
- Linear Waveform Distortions (Maximum)—Field Time: 0.5%. Line Time: 0.5%. Short Time: T Pulse/Bar: 2%. 2T Pulse/Bar: 1%.
- Nonlinear Waveform Distortions—Differential Gain (10% to 90% APL): 0.5% Differential Phase (10% to 90% APL): 0.5%. Dynamic Gain (10% to 90% APL): Picture 0.5%, sync 0.5%. Chrominance/Luminance Intermodulation: 0.5%. Line Time Nonlinearity: 0.5%.
- Unweighted Video Signal to Random Noise Ratio—≥60 dB to 5 MHz.
- Spurious Subcarrier—-60 dB.
- Field Time Tilt Correction—25% Tilt on Input Signal: Will be reduced to ≤1%.
- Clamping Characteristics—10% to 90% APL or 90% to 10% APL. Recovery within one line to within five IRE without overshoot. Slow clamp option provided to reduce keyboarding when used with noisy signals. Hum Reduction: 1 V hum on input signal can be reduced to ≤25 mV.
- Maximum Correction Ranges—Video Level at Input: ±6 dB. Sync Level at Input: ±3 dB. Chrominance/Luminance Gain: ±3 dB. Burst Level: ±6 dB. Burst/Chrominance Phase: ±25°. Black Level Set Up: ±10 IRE.
- Reduced Correction Ranges—Video Level: ±2 dB. Sync Level: ±3 dB. Chrominance/Luminance Gain: ±3 dB. Burst/Chrominance Phase: ±25°. Black Level Set Up: ±5 IRE.

Dc Error-Signal Output—Source Impedance: 10 kΩ. Open Circuit Voltage: 10 V for remote metering and telemetry. Six Outputs: Video gain, sync gain, burst gain, relative chroma gain, burst phase, and set up.

Chroma/Luminance Gain Correction (±3 dB to -3 dB)—2T Pulse/Bar Ratio—110% maximum and 92% minimum. T Pulse/Bar Ratio: 125% maximum and 85% minimum. 2T Pulse Preshoot: 5% maximum. T Step Overshoot: 5% maximum. T Step Risettime: 95 ns minimum and 155 ns maximum. Chrominance/Luminance Delay: 10 ns minimum and 10 ns maximum. VIR Signal Correction Rate: 0.35 s (90% correction without overshoot).

POWER SUPPLY

- Line Voltage Range—115 V ac ±10% and 230 V ac ±10%.
- Maximum Power Consumption—35 W.
- Line Frequency Range—48 Hz to 66 Hz

PHYSICAL CHARACTERISTICS

Dimensions	mm		in	
	mm	in	mm	in
Width	483	19.0	881	3.5
Height	881	3.5	412	16.2
Depth	412	16.2		
Weights	kg		lb	
	kg	lb	kg	lb
Net	7.6	16.7	11.0	24.1
Domestic Shipping	11.0	24.1	16.8	37.0
Export Shipping	16.8	37.0		

1440 NTSC Automatic Video Corrector
 \$6,325.00

OPTIONAL ACCESSORIES

- Remote Control Unit for 1440—(Includes two connectors). Order 015-0240-00 \$1,020.00
- Remote Monitor Unit for 1440—(Includes one connector). Order 015-0239-00 \$1,080.00
- Six Foot Extender Cable—With connectors for use between the 1440 and Remote Control Unit or Remote Monitor Unit. Order 012-0131-00 \$405.00
- Three Foot Extender Cable—With connectors, for use between the 1440 chassis and the rear rackmounting section. Order 012-0637-00 \$410.00

760 Stereo Audio Monitor

- Graphic CRT display of stereo audio signal
- AGC for continuously viewable pattern
- Bar graph for quick setups and accurate peak indication
- Third bar indicates mono compatibility when set to SUM
- Suitable for phase and amplitude measurements

With the 760 Stereo Audio Monitor, the audio engineer can analyze a pattern display of the stereo audio signal. This display, along with a high resolution bar graph, provides accurate monitoring and measurement capabilities. Used in both operation and setup, the instrument provides immediate feedback of the audio signal for creative or technical correction. With the appropriate test signals, the unit can also be used for accurate phase and amplitude measurements.

On the CRT and adjacent bar graph, you can observe amplitude information, stereo separation, and phase correlation between the left and right channels. Also of great importance, you can see monaural amplitudes resulting from the stereo channels.

Your choice of automatic or manual gain control provides flexible control of the pattern size. With no input signal, the display will dim to prolong CRT life.

Two calibrated bars are dedicated to the left and right channels. The input to a third bar is selectable from Sum, Difference (both internally derived), and an Auxiliary input on the rear panel. These bars give the operator even greater resolution for setting levels when the Scale/10 pushbutton is depressed. This increases resolution by a factor of 10 around the 0dB point of the bars. A selectable three second Peak Hold control makes level monitoring easier than ever.

The 760 is ideally suited for use in editing suites, master control, transmission, and any other locations where monitoring the stereo audio signal is a must.

Specifications

Audio Inputs

Balanced Bridging: > 10K ohm/side
Termination: Selectable from > 20K ohm, 600 ohm, 150 ohm (internal jumper)

Protection: Will withstand 50V peak common mode input, DC to 20kHz, without damage

Sensitivity: Gain selectable for 0dB bar indication for sine waves of 0, +4, +8, +12 and +16dBu (internal jumper)

CRT Display

Graticule: L, R, L=R and L=-R lines. Major and minor ticks for phase measurements at 10° and 5° respectively, on L axis

Automatic Gain Control (AGC)

Control Range: +8dB to -20dB (referenced to 0dB on bar graph)

Gain Match and Tracking (over AGC range):

± 0.3dB

Phase Match: ± 1° at 0dB

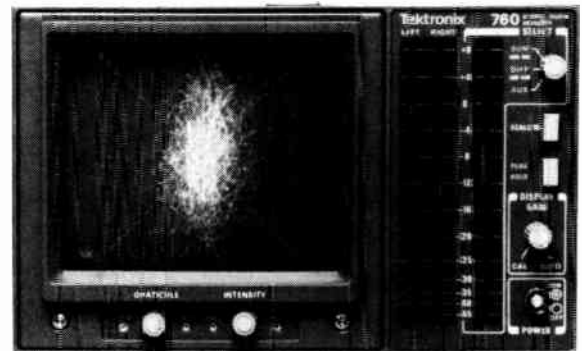
Frequency Response: ± 0.5dB, 20Hz to 20kHz from +8 to -20dB

Z-Axis Dimming: With absence of signal

Bar Graph

100 Segment LED: Green to 0dB, red above 0dB

Display Range: +8dB to -45dB



760

- Scale:** dB linear from +8 to -20dB
- Resolution:** 0.4dB/segment
0.04dB/segment with Scale/10 depressed (from +8 to -20dB)
- Accuracy:** ± 0.3dB at 0dB and 1kHz
- Peak Hold:** Approximately 3 seconds
Switchable on/off
- Attack/Decay Dynamics:** PPM (Peak Program Meter) per DIN 45406
- Frequency Response:** ± 0.5dB, 20Hz to 20kHz from +8 to -20dB
- Gain Match:** ± 0.3dB
- Crosstalk:** A +8dB signal on any channel causes no indication on remaining bars

Front Panel Controls

Power On/Off

For CRT Display

- Intensity
- Gain Auto/Man/Cal.
- Horizontal/Vertical Position
- Focus
- Trace Rotation

For Bar Graph

- Third Bar Selector SUM, DIFF, AUX.
- Peak Hold On/Off
- Scale/10 (expander)

Rear Panel Connectors

XLR Inputs

- Left, Right, Auxiliary
- Power
- Fuse

Physical Characteristics

Dimensions: Height: 5.25" (13.3cm)
Width: 8.424" (21.4cm)
Length: 16.875" (42.9cm)

Weight: Approximately 10 lbs. (4.5kg)

760 Stereo Audio Monitor \$ 1990.00

Optional Accessories

- Cabinets:**
- Plain (1700F00) \$ 60.00
- Portable (1700F02) 85.00
- Rack Adaptor (1700F05) 180.00
- Blank Panel (1700F06) 60.00
- DC Operation Kit (12VDC) (1700F10) 200.00
- Battery Pack (BP1) 600.00

AVC-20 Audio Vector Converter

- Use with any NTSC vectorscope
- Balanced line level inputs
- User selectable display formats
 - Lissajous pattern with calibrated amplitude
 - Lissajous pattern and sweep displays of both channels
- Time code or third channel input
 - Field locked for time code phase
- Time versus amplitude sweep display
 - Selectable between all 3 inputs
 - Left plus right sweep
- Low power consumption
- No front panel space required
- Simple remote control

The AVC-20 provides stereo audio monitoring capability when installed with an NTSC vectorscope. Complete audio monitoring can be added to VTR bridges, master control consoles and other locations requiring stereo audio monitoring without modifying the vectorscope and without using front panel space.

Stereo phase, individual signal amplitudes and audio distortions can be observed by simply using the B input to an existing vectorscope. A third audio input channel and a field locked sweep are available for monitoring time code or a second language program.

The AVC-20 is easy to operate, install and afford. It's an excellent choice for stereo television facilities.

Audio Monitoring

In an operational television facility, easy to use, reliable instrumentation is a necessity and the AVC-20 provides a multitude of selectable displays that fulfill many audio monitoring requirements. The most versatile display includes a left and right audio sweep displayed simultaneously with a Lissajous display for stereo phase at a glance. A Lissajous only display is available for simple applications. A time versus amplitude sweep display of the left channel, the right channel, or the left plus right channel are available for detailed inspection of each audio signal.

A third input channel provides time code monitoring. It allows an operator to make sure the time code signal is locked to video, is adequately free of noise and of the correct amplitude. It also lets the operator see if the time code sync word is in phase with reference video. Any of the eight display modes can be internally or remotely selected with a simple ground closure.

AVC-20 employs an innovative concept allowing easy and inexpensive monitoring of a stereo audio signal without the need to use front panel space. Operators can set the audio level against the calibrated electronic graticule, while simultaneously checking for audio clipping, audio phase reversal, or measuring phase error. These observations can be made with this single display on an existing vectorscope.

Specifications

Audio Inputs

Balanced Bridging: > 10K per side with > 40dB common mode rejection



AVC-20

Full Scale Input:	Calibrated for 0, 4, 8, or 12dBm jumper selectable with range adjustable for levels from -6 to 12dBm (0dBm = 1mW into 600 ohms)
Maximum Input:	18dBm
Left or Right Phase Error:	< 1° from 100Hz to 10kHz and < 5° from 20Hz to 20kHz
Frequency Response:	From 20Hz to 20kHz within 0.2dB of response at 1kHz
Time Code Input:	Balanced bridging > 10K ohms with a bandwidth > 100kHz
Input Level:	Adjustable for inputs from 0 to 12dBm while maintaining a 4cm deflection
External Reference Loopthrough	
Hi-Z Input:	> 40dB return loss from 50kHz to 5MHz
Input Level:	From 0.75 to 1.5V composite video signal (black burst)
Subcarrier Genlock	
Capture Range:	Within 50Hz of Fsc
Quad Phase Error:	≤ 1°
Adjustable Delay Compensation:	> 360°
Vector Output	
Maximum Output	
Noncomposite:	(no sync) 1V p-p into 75 ohms
Return Loss:	> 26dB from 50kHz to 5MHz
Power	
Mains Voltage	
Range:	105 to 129VRMS
Power Consumption:	10W maximum (34 BTU/hour)
Mains Frequency:	60Hz
Physical Characteristics	
Dimensions:	Height: 2.0" (5.1cm) Width: 6.175" (15.7cm) Length: 10.75" (27.3cm) Weight: Approximately 4 lbs. (1.82kg)
AVC-20 Audio Vector Converter \$495.00	

7932 12 x 3 AV Routing Switcher

The 7932 is a modular system that uses 4 in 1 out video cards, and 4 in 1 out audio cards. The audio and video output amplifiers are also separate plug-in cards; therefore, a system can be expanded from 4 x 1 to 4 x 2, 8 x 1, 8 x 3 etc., to a maximum of 12 x 3 in one chassis. For economy, two other chassis are available wired 12 x 1 and 12 x 2 which can be used when it is known that expansion will not be needed.

7932-B1 (Remote control version)

12 x 1	\$2,535.00
12 x 2	4,080.00
12 x 3	5,565.00

Note: Above prices include Switchcraft pushbutton panels with 50' cables.

7932-B2 (self contained version)

12 x 1	\$2,465.00
12 x 2	3,935.00
12 x 3	5,325.00

Note: Above prices include Switchcraft pushbuttons on front panel.

7934 AV Routing Switcher

- Remote controlled
- Crosspoints and latching CMOS integrated circuits provide energy efficient design
- Unlimited control versatility and computer interface with programmable switching
- <0.1µs switching time, 50mV max. instantaneous video change
- V.I. switching
- Stereo audio switching plus auxiliary. (Can be used for tally)
- Breakaway audio available
- Hi level tally available
- 20 x 10 standard, 400 x 400 possible
- Input sync adders optional
- Video DC restorers optional
- Accurate color timing
- Complete accessibility through modular construction
- All boards removable/insertable with power on

NTSC, PAL and SECAMPOR

3713 Stereo/Audio Demodulator

The 3713 is a comprehensive, precision testing instrument for checking the video quality of the television broadcast signal. It has its own built-in tester for self checking calibration.

3713-B1 VHF—5mV sensitivity	\$12,590.00
3713-B2 UHF—5mV sensitivity	13,115.00

4500 Demodulator

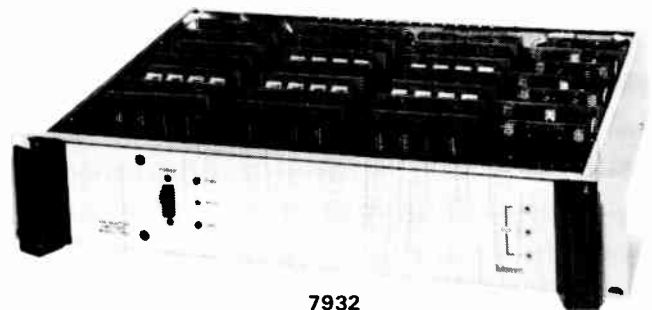
The 4500 accepts the broadcast signal and converts it to base band without distorting the original picture quality. It houses a plug-in VHF front end module that is selected and ordered separately for the particular VHF channel required. This VHF module is Telemet type D-xx-A1, where xx denotes the VHF channel number (e.g. D-02-A1 for Channel 2). It contains a crystal-controlled oscillator and FET mixer. Also a 2-stage AGC controlled VHF amplifier, using silicon insulated-gate field effect transistors.

4500-B1 VHF Demodulator (off-air)	\$2,325.00
D-xx-A1 VHF plug-in (channels 2-13)	745.00

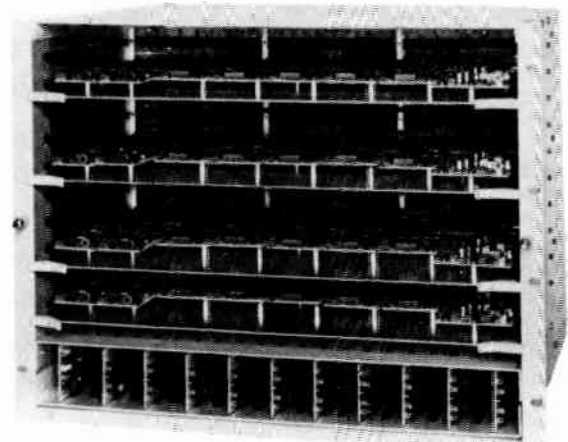
4501 Broadcast Demodulator

The 4501 is for use in the measurement of the characteristics of broadcast television signals, including chrominance-luminance relative gain and delay, K rating, burst amplitude and modulation depth, differential phase and gain, intercarrier frequency stability (using an external counter) and other distortions.

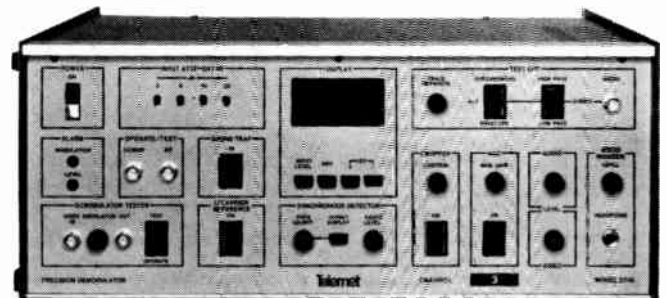
4501-B1 VHF—5mV sensitivity	\$6,930.00
4501-B2 UHF—5mV sensitivity	7,245.00



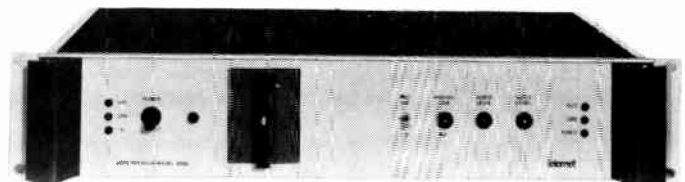
7932



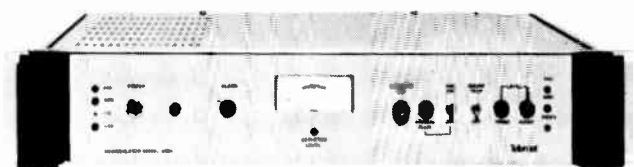
7934



3713



4500-B1

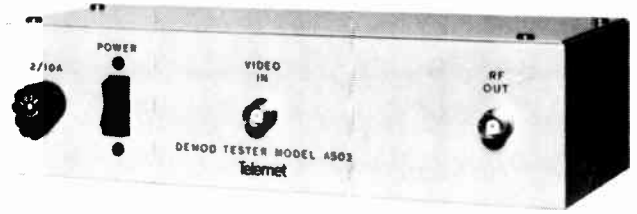


4501

4503 Demodulator Tester

The 4503 provides a fast sure method of determining on-going frequency response of a broadcast TV demodulator.

- 4503-B1 VHF \$ 925.00
- 4503-B2 UHF 1065.00

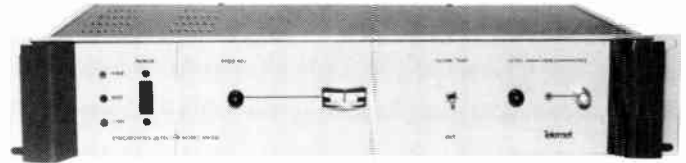


4503

4504-C1 Synchronous Detector

The 4504-C1 is designed to measure transmitter parameters, especially the incidental phase modulation of the visual carrier. The 4504-C1 can be used with the 4501 broadcast test demodulator and other suitable test modulators.

- 4504-C1 \$2600.00



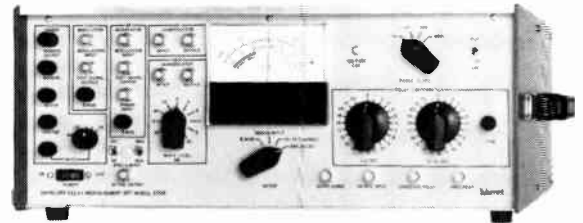
4504-C1

3705-A1 Envelope Delay Measurement Set

The 3705-A1 measures envelope delay over a wide frequency range. It is expressly designed for measuring the envelope delay incurred in equipment used in the transmission and reception of color television signals.

The 3705-A1 uses the split-frequency method proposed by Nyquist and Brand: a relatively low frequency, 20kHz, called a split-frequency amplitude — modulates a video or RF test frequency and the modulated test signal is applied to the equipment "under test". The split-frequency is demodulated from the output of the equipment "under test" and compared in phase with the split-frequency modulation.

- 3705-A1 \$8835.00

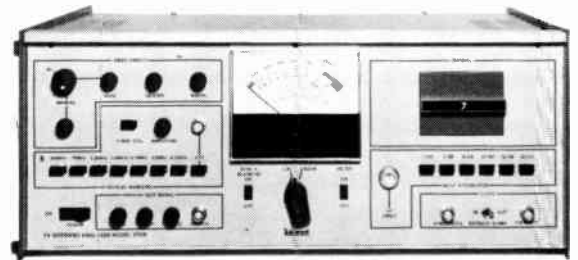


3705-A1

3706-A1 Sideband Analyzer

The 3706-A1 by direct display permits thorough examination of the entire sideband response of television transmitters and sideband filters. It can also be used for the examination, evaluation, and adjustments of video circuits. Spurious emissions, low level sidebands, and frequency deviations are accurately pin pointed with the use of 7 crystal markers whose frequencies are of the most interest in a television transmitter's VSB passband. Discrete frequency marking is augmented by a 1MHz crystal comb frequency marker which provides markers at 1MHz intervals across the swept band on display.

- 3706-A1 Includes VHF channel element (3708-A) \$8660.00



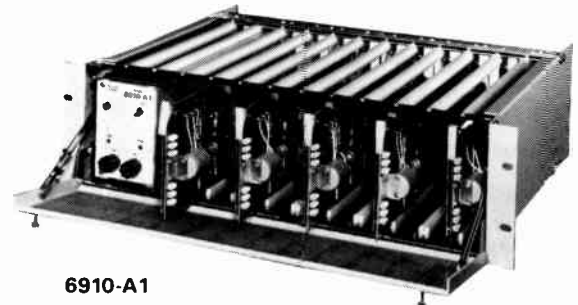
3706-A1

6910-A1 Audio DA System

The 6910-A1 is designed for distribution of audio signals in AM, FM and TV systems. The performance characteristics of the 6910-A1 are in keeping with the high standards of modern audio equipment.

Flexibility as to impedance, and expandability as to the number of single and dual channels available should fill all input and distribution requirements.

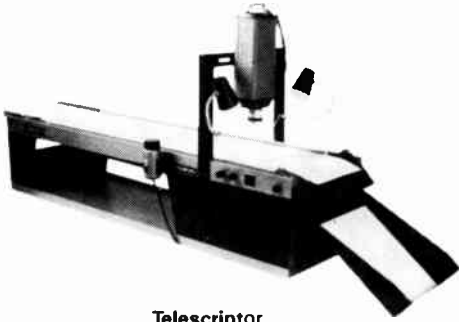
- 6910-A1 Audio DA system consisting of:
- 6001-A1 Frame \$ 575.00
- 6101-A1 Power Supply 600.00
- 6201-A2 Audio distribution amplifier with terminal board assembly 525.00
- 4145-A1 Extender 80.00
- 7300-B1 Audio Monitor 1195.00



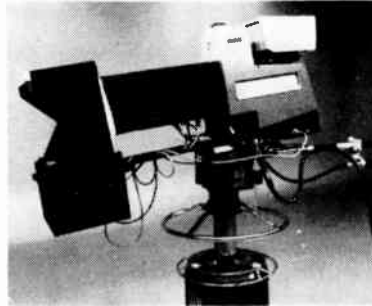
6910-A1

TELESCRIPT, INC.

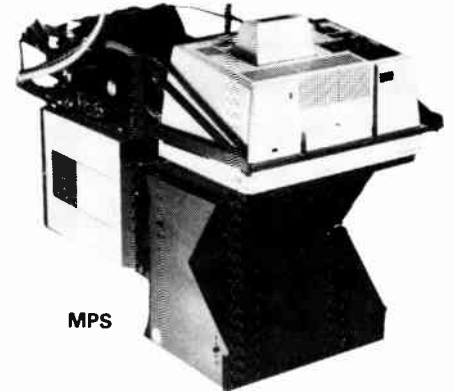
Monitor Prompting Systems



Telescriptor



Monitor Prompter



MPS

The Telecue

The compact, portable Telecue transports prompting scripts and graphics with equal facility. To facilitate script prompting continuity and for remote location operation, 8 1/2" x 11" sheets of paper should be taped together.

The Telescriptor

The Telescriptor transports prompting scripts and graphics via a white fiberglass belt with equal facility. Telescriptor prompting only requires that 8 1/2" x 11" sheets of paper be placed singly on the transport's belt. Over and under lapping and immediate editing by exchanging sheets is the norm.

The "Presidential" System

2 Monitor Prompting System (MPS) for Public Speaking

- Telecue with hand control and 25' cable
- Vidicon camera with mounting plate int. 2-1, 12.5mm f/1.8 1" format lens
- 2 17" monitor prompters
- 4 coax cables 50', 25', 10', 5'
- 2 mirror views for public speaking, housing for monitor prompter, panels, adj. bstr. holder and bstr.
- Workstation monitor

Presidential System \$5690.00
 With C-64 (Commodore) Program **4330.00**

Optional Equipment

- Video Blanking Control** 2 position or 4 position **\$75.00-\$125.00**
- Contrast Enhancer** provides enhancement plus Video Rev. (white/black/shades of gray)
- Lightweight Carrying Cases** Foam lined, handles, latches, 2" wide straps. Fiberglass covered plywood **\$255.00**
- 23" Monitors, 1000L** For placement in key areas for walk-about type speaking or group viewing **\$950.00**

1 and 2 Monitor Prompting Systems Product Selections

Telecue Transport including Script Feed Assembly

— or —

Telescriptor Transport including Table with Casters

Remote Hand Control and 25' extension cable, and **Vidicon Camera** with mounting plate Int. 2-1, 12.5mm f/1.8 1" format lens, (Included with Telecue or Telescriptor)

— or —

Program for the Commodore (C-64) Computer included ROM cartridge, support disk, 10 pushbutton controller, cables and 12" workstation monitor

1 Monitor Prompting System (MPS)

- 1 Monitor Prompter
- 1 Monitor Lensview Assembly
- 1 Monitor Mount Assembly
- Manuals

1 MPS with Telecue \$4540.00
1 MPS with Telescriptor 4860.00
1 MPS with C-64 Program 3430.00
1 MPS (12" Monitor Prompter-1000 Dots) with C-64 Program . . 2890.00

2 Monitor Prompting System (MPS)

- 2 Monitor Prompters
- 2 Monitor Lensview Assemblies
- 2 Monitor Mount Assemblies
- Manuals

2 MPS with Telecue \$6160.00
2 MPS with Telescriptor 6480.00
2 MPS with C-64 Program 5050.00

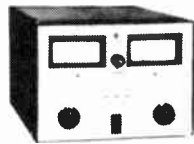
Telecue with hand control, 25' extension cable and script assembly . . \$2390.00
 Dual Control with hand control features plus 2 foot pedals, controls and 25' extension **290.00**
 Telescriptor with hand control and 25" cable **2690.00**
 Table with casters (Telescriptor) **90.00**
 Vidicon Camera with mounting plate Int. 2-1, 12.5mm 1" format lens . . 560.00
 C-64 Program ROM Cartridge, Support Disk, 10 Pushbutton Controller, Cables **1630.00**
 IBM Transfer Disk, Cable and C-64's RS232 **160.00**
 Monitor Prompter, 17" 1000 dots **895.00**
 Monitor Prompter, 12", 1000 dots **385.00**
 Work Station Monitor, 12", 1000 dots **205.00**
 Monitor Lensview (LV) Assembly with Beamsplitter, Amb. Light Mask **\$275.00-360.00**
 Monitor Mount Assembly with Counterbalancing Plate and Accessories **355.00-475.00**
 Compensating Weight Assembly CWT (Pb) Ext. Plate and Hardware . . . 120.00
 Beamsplitters 30/70 or 40/60 with 2nd surface Low Refl. Coatings . . 95.00-145.00
 Wedge Adaptor and Wedge **130.00 & 80.00**
 Counterweights (Pb) and Hardware **35.00-85.00**
 Pedestal Weights **20.00-30.00**
 Contrast Enhancer with Video Rev. (In and Out-of-doors Composite Prompting) **410.00**
 Clarifier for Computer Prompting **310.00**
 Telepod (Off camera Monitor Prompter support) Head, Adj. Pedestal, Base-Casters, Brackets for LV or direct Monitor Prompter Viewing . . . 520.00
 Mirror View for Public Speaking. Housing, Grained Panels, 3 Tiered Clutch Tubes, Beamsplitter Clamp Assy and B'str. "The Presidential System . . 540.00
 Universal Fluid Heads. For EFG cameras with MPS...The 50 lb. 205BVH 2 Pro handles, leveling adaptor for center post tripod, dolly with "Sticks-lock" wheels **\$2190.00**

TELEVISION TECHNOLOGY CO.

TV and FM Translators/Accessories



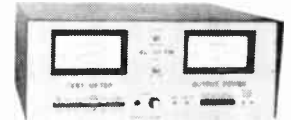
MA-TVF-10



TVF-10 Series



TVB-1 Series



XLFM Series

VHF 100W

VHF input, specify channel (2-13)
 UHF input, specify channel (14-83)
 Video input, 2 piece

XL100VV \$16,280.00
 XL100UV 16,280.00
 XL100MV (LPTV) 17,468.00

Option

TVK-1, Code Keyer 1380-2002 \$285.00

FM Translators

FM 1W

117VAC or +24VDC solar powered (specify). Solar powered models do not have the audio monitor feature. Specify 50 or 75 ohm, "F", BNC, VHF or "N" connector output; input and output frequency.

Single output XL1FM \$3,295.00
 Single output, on-channel booster XL1FMB 3,530.00
 Dual output XL1FM2 3,950.00
 Dual output, on-channel booster XL1FMB2 4,185.00

FM 10W

117VAC or +24VDC solar powered (specify). For solar power applications only the single output model is available and does not have the audio monitor feature. Specify 50 or 75 ohm, "F", BNC, VHF or "N" connector output; input and output frequency.

Single output XL10FM \$3,595.00
 Single output, on-channel booster XL10FMB 3,830.00
 Dual output XL10FM2 4,350.00
 Dual output, on-channel booster XL10FMB2 4,585.00

FM 100W

117VAC only, single output. Specify 50 or 75 ohm, "N" connectors; input and output frequency.

Single output XL100FM \$7,990.00

Option

Optional monophonic modulator module (AC powered models only) 6900-5025 \$350.00
 TVK-1, Code Keyer 1380-2002 285.00

* The cost, after options, of the solar power systems depend on location and load. Please call or write for details.

Linear Amplifiers

FM Translator Amplifiers

Provide up to four 1W or 10W outputs from a single 1W input. Greatly increases coverage at moderate cost. 117VAC, specify input and output impedance, 50 or 75 ohms.

3 output, 1W XL1AF3 \$2,695.00
 3 output, 10W XL10AF3 3,295.00
 4 output, 1W XL1AF4 3,195.00
 4 output, 10W XL10AF4 4,095.00

UHF 100W

Input 10-20W, 50 ohm "N" connector. Specify channel (14-69) or frequency (470-800MHz).

XL100AU \$17,500.00

UHF 1000W

Input 20-100W, 50 ohm "N" connector. 50 ohm 7/8" EIA flange output connector. Specify channel (14-69) or frequency (470-800MHz)

XL1000AU \$36,500.00

VHF 5W

Input 1W. For +24VDC or solar powered operation. Includes input jumper cable. Specify jumper; specify connector ("F", "N", or UHF 75 ohm output connector). Channel (2-13)

TVF-5 \$2,195.00

VHF 10W

117VAC powered. Includes input jumper and splitter if multiple amplifiers are used. Specify jumper; specify connector ("F", "N", or SO-239 output); specify channel or frequency. 50 ohm "N" connector output available at no extra cost.

.25-1W input (54-216MHz) TVF-10 \$2,250.00
 .25-1W input (251-317MHz) TVF-10SB 2,450.00
 .50-1V input (54-216MHz) TVF-10SP 2,650.00

VHF 100W

Input 10W XL100AV \$13,950.00

Television and FM Translators

UHF 1W

Includes separate AC power supply, 75 ohm "F" connector input, 50 ohm "N" connector output. Specify output channel (14-69) or frequency (470-800MHz).

VHF input, specify channel (2-13) TL1VU \$3,695.00
 UHF input, specify channel (14-83) TL1UU 4,295.00
 Video input, specify channel (14-69) TL1MU 5,850.00

UHF 10W

Includes AC power supply, 75 ohm "F" connector input, 50 ohm "N" connector output. Specify output channel (14-69) or frequency (470-800MHz). For video input models specify composite baseband or separate audio and video.

VHF input, specify channel (2-13) XL10VU \$8,950.00
 UHF input, specify channel (14-83) XL10UU 9,550.00
 Video input, 3 piece rackmount XL10MUP1 (LPTV) 12,250.00
 Video input with cabinet XL10MUP2 (LPTV) 12,750.00
 Video input w/cabinet and video switching XL10MUP3 (LPTV) 13,500.00

UHF 20W

Includes AC power supply, 75 ohm "F" connector input, 50 ohm "N" connector output. Specify output channel (14-69) or frequency (470-800MHz). For video input models specify composite baseband or separate audio and video.

VHF input, specify channel (2-13) XL20VU \$9,950.00
 UHF input, specify channel (14-83) XL20UU 10,450.00
 Video input, 3 piece rackmount XL20MUP1 (LPTV) 13,050.00
 Video input with cabinet XL20MUP2 (LPTV) 13,450.00
 Video input w/cabinet and video switching XL20MUP3 (LPTV) 13,950.00

UHF 100W

Solid-state up to single long life output tube, 50 ohm "N" connector output. Specify output channel (14-69) or frequency (470-800MHz).

VHF input, specify channel (2-13) UST-106A \$14,250.00
 UHF input, specify channel (14-83) UUST-106A 14,750.00
 Video input, specify composite baseband or separate audio and video MA-UST-106A (LPTV) 17,500.00

Completely Solid-State

VHF input, specify channel (2-13) XL100VU \$22,500.00
 UHF input, specify channel (14-83) XL100UU 23,000.00
 Video input, specify composite baseband or separate audio and video XL100MU 26,500.00

UHF 1000W

Solid-state up to single long life output tube, 7/8" EIA flange output. Specify output channel (14-69) or frequency (470-800MHz).

VHF input, specify channel (2-13) XL1000VU \$47,125.00
 UHF input, specify channel (14-83) XL1000UU 47,555.00
 Video input, specify composite baseband or separate audio and video XL1000MU (LPTV) 49,500.00
 XL1000TU (Part 73) 51,500.00

VHF 1W

Specify 75 ohm "F", "N" or UHF output connector, or 50 ohm "N" output connector; input (2-83) and output (2-13) channel. Special frequencies available on request.

VHF input, AC or +24VDC (specify) TVB-1 \$3,150.00
 UHF input, AC or +24VDC (specify) UTVB-1 3,150.00
 VHF input, Solar Powered* (-24VDC) T-99 2,495.00
 AC Power Supply, T-99 DC-2430 175.00

VHF 10W

117VAC powered. Specify 75 ohm "F", "N" or UHF output connector; output channel (2-13). 50 ohm "N" connector output available at no extra cost. Models MA-TVF-10P2 and -10P3 incorporate extra heavy-duty power supplies for use where wide AC frequency and voltage variations can be expected. For video input models specify composite baseband or separate audio and video.

VHF input, specify channel (2-13) TVB-1/TVF-10 \$5,450.00
 UHF input, specify channel (14-83) UTVB-1/TVF-10 5,450.00
 Video input, 2 piece MA-TVF-10P1 (LPTV) 6,595.00
 Video input with cabinet MA-TVF-10P2 (LPTV) 7,150.00
 Video input w/cabinet and video switching MA-TVF-10P3 (LPTV) 7,650.00

TELEVISION TECHNOLOGY CO.

Recorder/Reproducers

250 Series Recorder/Reproducers

The 250 Series meets your quality, reliability, and operational needs in one professional, compact 10.5" broadcast recorder/reproducer.

For rackmounting in your studio, or case mounting for field recording, the 250 will take on all assignments. You can plug in mike preamps for direct news, sports, and other portable recording requirements. In the studio the 250 will complement your audio system, requiring only 19 1/4" rack height.

The 250 features low-noise, dependable electronics with sync control provided for adding a track to alternate channel, and input/playback monitor/VU selectors. Equalization is switched with speed control. Adjustments and maintenance are made easy by a pull-out drawer providing top access to equalization and bias controls. The transport has all touch-button control TTL logic with protective motion-sensing circuits which prevent tape break or spill when operating from fast mode to play. Automatic tape lifter defeat is actuated by depressing fast mode button or transport or remote control. XLR input and output connectors are standard.

Configurations include full- or half-track mono; two- or quarter-track stereo. All models have two-speed hysteresis synchronous direct drive capstan motors. Unmounted weight is about 45 lbs.

Specifications

Head

Configurations: Full-track, half-track, 2-track, quarter-track, 1/4"

Tape Speeds: 3.75 and 7.5 ips or 7.5 and 15 ips

Frequency

Response: 15 ips ± 2dB, 50Hz-18kHz; 7.5 ips ± 2dB, 50Hz-15kHz; 3.75 ips ± 2dB, 50Hz-10kHz

Signal-to-Noise

Ratio: (Using 3M 206 tape or equivalent) peak record level to NAB weighted noise (NAB equalization 500nWb/m)

	Full Track	Half Track	Stereo 2-Track
15 ips	70dB	66dB	66dB
7.5 ips	70dB	66dB	66dB
3.75 ips	66dB	63dB	63dB

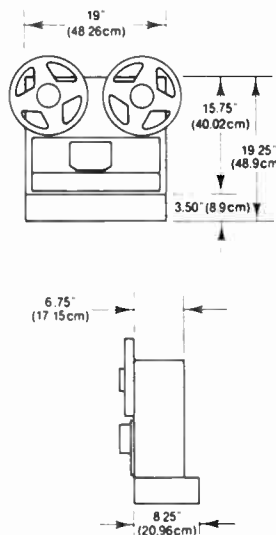
Distortion: 500Hz 3rd harmonic (500nWb/m): < 3%. Standard operating level (250nWb/m): < 0.7%

Flutter and Wow: Weighted peak flutter (ANSI S 4.3-1972; IEC 386-1972) 15 ips .08% or better; 7.5 ips 0.1%; 3.75 ips 0.2% or better

Speed Accuracy: ± 0.2% throughout reel at all speeds using 1.5 mil tape

Brakes: Differential "fail safe" spot brakes

Winding Time: Approximately 90 seconds for 2400' NAB reel



250 Series

- Start Time:** < 0.5 second at 15 ips
- Reel Size:** 5" -7" EIA, and 10.5" NAB
- Equalization:** NAB or IEC
- Bias/Erase**
 - Frequency:** 120kHz
 - Erase Efficiency:** > 70dB at 1kHz
- Inputs:** 10K ohms, min. level 200mV (accessory plug-in balanced bridge transformer or 250-600 ohms mike preamp)
- Outputs:** 600 ohms unbalanced + 17dBm (balanced transformer available) Monitor earphone jack on front panel, 8 ohm min. impedance
- Motors:** Capstan — Direct drive hysteresis synchronous, plus two torque motors
- Control Logic:** TTL with motion-sensing protection
- Transport**
 - Controls:** Power, Hi-Lo tension, fast FWD, fast RWD, stop, start, record
- Power**
 - Requirements:** 105-125V or 220-240V, 50 or 60Hz, 150W

250 Series

Specify NAB or IEC equalization, AC line voltage, AC line frequency, and tape speeds desired when ordering. (Speeds available: 3.75/7.5 or 7.5/15 ips)

Mono Full Track	\$2595.00
Mono 2 Track	2595.00
Stereo 2 Track	2695.00
Stereo Quarter Track	2695.00

Options and Accessories

Mike Preamplifier Mono	\$ 125.00
Input Transformer Mono	40.00
Output Transformer Mono	40.00
Mike Preamplifier Stereo	250.00
Input Transformer Stereo	80.00
Output Transformer Stereo	80.00

50Hz motors and 3.75 ips operation are higher cost options.

TELEVISION TECHNOLOGY CO.

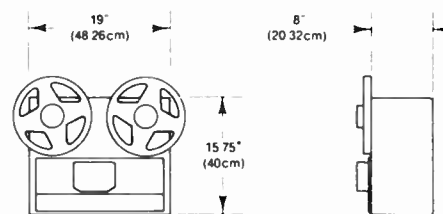
Recorder/Reproducers

255 Series Recorder/Reproducers

The 255 is designed for continuous operation in automation systems and other playback requirements. It is extremely rugged, employs trouble-free TTL control logic, low-noise plug-in electronics and a precision milled heavy cast deck plate.

The 255 features all touch-button control logic with protective motion-sensing circuits to prevent tape break or spill when operating from fast mode to play. Automatic tape lifter defeat is actuated by depressing fast mode button on transport or remote control. Set-up adjustments and easy maintenance are accomplished by a pull-off front dress panel which permits access to equalizers. XLR output connectors are employed to make the 255 compatible to broadcast standards.

Basically developed as a 7.5 ips two-track, two-channel system, the 255 is also available in all standard mono and stereo configurations.



255 Series

Specifications

Head

Configurations: Full-track, half-track, 2-track, quarter-track, 1/4"

Tape Speed: 7.5 ips standard, 3.75 ips available

Frequency

Response: (3M 206 equivalent) 7.5 ips ± 2dB, 50-15kHz; 3.75 ips ± 2dB, 50-10kHz

Amplifier Noise: -74dB, ANSI weighted below 500 nWb/m (half-track)

Distortion: 0.2%, 1000Hz at +4dBm, 3rd harmonic

Equalization: NAB or IEC

Line Output: 600 ohm unbalanced +17dBm (balanced transformer available)

Phones Output: Front panel phone jack, 8 ohm min. impedance

Line Out

Connections: XLR type

Amplifier

Controls: Front panel gain knobs (eq. adjustments accessible from front)

Head

Adjustments: Pull-off head cover and Mumetal shield gives full access to plug-in heads for all adjustments and cleaning

Flutter and Wow: 0.08% weighted peak flutter

Speed Accuracy: ± 0.2% throughout reel at all speeds using 1.5 mil tape

Winding Time: < 90 seconds for 2400' NAB reel

Reel Sizes:

5" -7" EIA and 10.5" NAB reel

Motors:

Single-speed direct drive hysteresis plus two torque motors

Brakes:

Differential "fail safe" spot brakes

Control Logic:

TTL with motion-sensing protection

Transport

Controls:

Power, Hi-Lo tension, fast FWD, fast RWD, stop, start

Remote Control:

(Accessory) contains all mode controls including lifter defeat

Power

Consumption: 120W, 117V or 220V, 50Hz or 60Hz

Rack Space:

15 3/4" H x 19" W x 1.5" D, reel overhang at top using NAB reel

255 Series

Specify NAB or IEC equalization, AC line voltage, AC line frequency, and tape speed desired when ordering (Speeds available: 3.75/7.5 or 7.5/15 ips).

- Mono Full Track \$ 1495.00
- Mono 2 Track 1495.00
- Stereo 2 Track 1595.00
- Stereo Quarter Track 1595.00

Options and Accessories

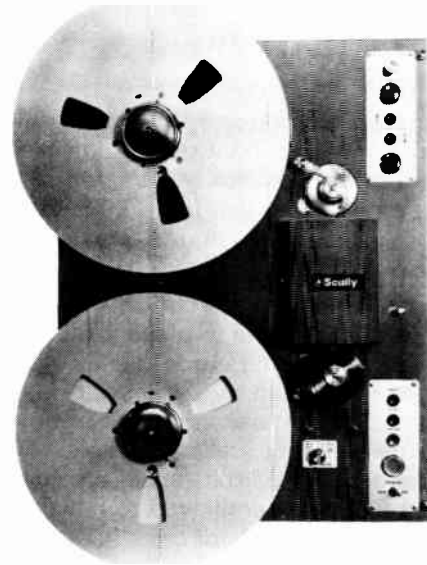
- Output Transformer Mono \$ 40.00
- Output Transformer Stereo 80.00
- 25Hz Sensor 165.00
- Extender Board 40.00

TELEVISION TECHNOLOGY CO.

Recorder/Reproducers

270 Series Recorder/Reproducers

- Disc brakes
- Fully transistorized, plug-in amplifiers
- Rugged cast frame and solid panel construction
- Direct drive heavy-duty motors
- Removable face plate
- Instant access for maintenance
- Automatic start torque tension control
- Reversing capability with mono half-track and stereo quarter-track units only; accomplished by foil sensing low current transistor switching
- Designed to run for long periods reliably and with trouble-free performance



270 Series

Specifications**Head**

Configurations: Monophonic, half- or full-track; stereo, 2- or quarter-track

Tape Speed: 3³/₄-7¹/₂ or 7¹/₂-15 ips

Tape Width: 1/4"

Reel Size: Up to 14"

Start Time: Play speed in 0.1 seconds

Rewind Time: Approximately 105 seconds 4,800' reel

Timing Accuracy: Better than 99.7% for 30 min. tape Power

Requirements: 117V, 60Hz, 275W (50Hz optional)

Transport

Controls: Play, fast, direction change, stop, speed selector

Control System: All relays and solenoids 24VDC; plug-in relays

Frequency

Response: Mono and 2-track, ± 2 dB, 50-7,500Hz at 3³/₄ ips; $+2$ -3dB, 50-15,000Hz at 7¹/₂ ips; ± 2 dB, 50-15,000Hz at 15 ips. Quarter-track stereo, ± 4 dB, 50-100Hz; above 100Hz response same as mono and 2-track

Signal-to-

Noise Ratio: Mono full-track; 65dB minimum at 7¹/₂ and 15 ips. Stereo 2-track; 60dB minimum at 7¹/₂ and 15 ips. Stereo quarter-track; 58dB minimum at 7¹/₂ and 15 ips, 54dB minimum at 3³/₄ ips

Flutter and Wow: 3³/₄ ips—0.2% RMS or better; 7¹/₂ ips—0.1% RMS or better; 15 ips—.08% RMS or better

Distortion: <.5% total harmonic distortion at +18dBm

Equalization: Front panel switch

Output: +18dBm into 600 ohm balanced line (normally supplied +4dBm = zero VU)

Tape Tension: Continuous adjustable electrical control system

Shipping Weight: 100 lbs.

Size: 19" x 24¹/₂" x 8³/₄"

270 Series

Specify NAB or IEC equalization, AC line input voltage, AC line frequency, and tape speeds desired when ordering (Speeds available: 3.75/7.5 or 7.5/15 ips).

Mono Full Track	\$4595.00
Mono 2 Track Auto Reverse	4795.00
Stereo 2 Track	4995.00
Stereo Quarter Track Auto Rev.	5695.00

TELEVISION TECHNOLOGY CO.

Recorders/Reproducers

280B Series Recorder/Reproducers

Functionally-illuminated transport controls, motion-direction sensing, dynamic braking and a constant tape tension control for improved tape handling are incorporated in the 280B Series Recorder/Reproducers.

An optional DC capstan-servo drive with variable pitch control is available. Two advantages are gained, in addition to servo control: the ability to adjust pitch up or down to a desired level, and the more positive tape drive at all speeds afforded by the larger capstan and pinch roller in the servo system.

All this adds up to a standard in broadcast and studio recording where smooth, positive tape handling, low-noise electronics, and control convenience provide truly professional results. The 280B is available in full- or half-track mono; 2- or quarter-track stereo in 1/4" models, or 4-track (quad stereo) in 1/4" or 1/2" tape width models.

Specifications

Flutter and Wow:

Weighted peak flutter (ANSI S 4.3-1972: I.E.C. 386-1972) using a prerecorded flutter tape.

	DC Servo	AC Motor
Speed		
30 ips	.04%	—
15 ips	.04%	.08%
7.5 ips	.05%	.1%
3.75 ips	.1%	.2%

Speed Accuracy:

± 0.1% with DC servo; ± 0.2% with AC motor throughout reel 7.5 to 30 ips using 1.5 mil tape < 60 seconds for 2400' NAB reel, 1/4" tape To 11.5" (CCR)

Wind Time:

Reel Sizes:

Tape Speed:

Equalization switches automatically with speed. 3.75 ips and 7.5 ips and 15 ips or with DC servo option, 15 ips and 30 ips

Motors:

Capstan: Direct drive hysteresis synchronous or optional DC servo. Reel: induction torque motor (2)

Brakes:

Remote Control:

Dynamic, plus disc

Fast (FWD-RWD), start/stop, record, and ATL defeat (fast FWD or RWD button)

Transport Motion Controls:

Power Requirements:

Fast (FWD-RWD), start, stop, record, edit

105-125V or 220-240V, 50 or 60Hz. Power consumption at 117V, 60Hz: 1 and 2 channel = 223VA; 4 channel = 328VA

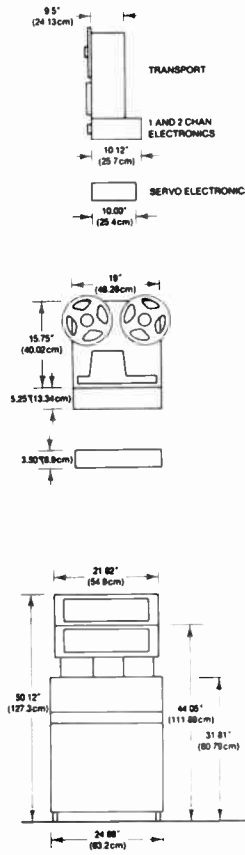
Head and Track Configuration:

- Full track mono 1/4"
- Half-track mono 1/4"
- Two-track stereo 1/4"
- Quarter-track stereo 1/4"
- Four-track 1/4"
- Four-track 1/2"

Weights

(approx.):

Shipping weights, standard carton. Un-mounted recorders: Mono—106 lbs. 2-channel—106 lbs. 4-channel—127 lbs. Empty consoles: 1- and 2-channel—103 lbs. 4-channel—120 lbs.



280B

Mono Full Track	\$4095.00
Mono 2 Track	4295.00
Stereo 2 Track	5095.00
Stereo Quarter Track	5295.00
Quad 4 Track 1/4" Tape	7395.00
Quad 4 Track 1/2" Tape	7595.00

Options and Accessories

Variable Speed Servo Capstan Motor	\$ 400.00
Varisync Accessory (requires Servo option)	1495.00
Console Mount	1495.00
Remote Mount	1495.00

Console Mounts

280B Mono or Stereo	\$500.00
280B-4	550.00

Remote Controls

Deluxe Remote (tabletop box)	\$250.00
Deluxe Remote (panel mount)	220.00

Spare Equalizer Boards (specify equalization and tape speed) \$55.00

Specify NAB or IEC equalization, AC line input voltage, AC line frequency, and tape speeds desired when ordering. (Speeds available 3.75/7.5, 7.5/15 or 15/30 ips). 50Hz motors and 3.75 ips operation are higher cost options.

TELEVISION TECHNOLOGY CO.

Recorder/Reproducers

284B-8 Series Recorder/Reproducers

The 284B-8 is available in an eight-channel version using low-noise 280B electronics. These 284B-8's use 1" tape for maximum eight-channel separation and quality; up to 14" tape reels to provide a realistic supply of tape for program-length recording and post-production. The 284B-8 has motion-direction sensing, dynamic braking, and automatic start-torque boost for smooth, positive tape shuttling; uses a constant tension system for added tape handling precision in the Play/Record modes. DC capstan servo drives are standard on all units, as is the variable pitch control. Any two specified adjacent speed-pairs will be present when the machine is ordered. Equalization is automatically switched with speed control. A sturdy console cabinet is included as standard equipment.

Specifications

Flutter and Wow: Weighted peak flutter (ANSI S 4.3-1972: IEC 386-1972) using a pre-recorded flutter tape

Speed	DC Servo
30 ips	.04%
15 ips	.04%
7.5 ips	.05%
3.75 ips	.1%

Speed Accuracy: $\pm 0.1\%$ throughout reel 7.5 to 30 ips using 1.5mil tape To 14"

Reel Sizes: Equalization switches automatically with speed. 3.75 ips and 7.5 ips or 7.5 ips and 15 ips or 15 ips and 30 ips

Tape Speed: Capstan: DC servo
Reel: induction torque motor (2)

Motors: Dynamic, plus disc

Brakes: Fast (FWD-RWD); start/stop; record, and ATL defeat (fast FWD or RWD button)

Remote Control: Fast (FWD-RWD); start; stop; record; edit

Transport Motion Controls: 105-125V, 50 or 60Hz (220/240V optional), 400VA

Power Requirements: 8-track (1.00")

Head and Track Configuration: Shipping weight, standard carton. With console: total—391 lbs.



Specify NAB or IEC equalization, AC line input voltage, AC line frequency, and tape speeds desired when ordering (Speeds available 3.75/7.5, 7.5/15 or 15/30 ips).

284B-8 \$15,495.00

Options and Accessories

Varisync Accessory

Console Mount \$1,495.00

Remote Mount 1,495.00

Remote Controls

Deluxe Remote—table top box \$250.00

Deluxe Remote—panel mount 220.00

Spare Equalizer Boards

Specify NAB or IEC equalization and tape speed (one required for each channel) \$55.00

50Hz motors and 3.75 ips operation are higher cost options.

285B Series Recorder/Reproducers

The 285B is a professional quality playback or editing system for broadcast or studio applications, as automated tape players, quality control monitors, broadcast control room reproducers, or music library reproducers. The 285B electronics include 600 ohm line output and 8 ohm (3W) speaker output for cueing, editing and monitoring. Speaker gain control is on the front panel.

Transport features in the 280B Series are standard, such as motion-direction sensing logic, functionally-illuminated pushbuttons, edit control, and dynamic braking. Rackmount units occupy only 15.75" of vertical space—electronics are mounted behind the transport deck plate. Electronic set-up adjustments are accessible by removing the head cover. A monitor headset jack is mounted on the transport panel for convenience. Configurations include: full-track mono, two- or quarter-track stereo.

Specifications

Frequency Response: (3M 206 or equivalent) 15 ips ± 2 dB 30Hz to 18kHz, 7.5 ips ± 2 dB 30Hz to 15kHz, 3.75 ips ± 2 dB 30Hz to 10kHz

Signal-to-Noise Ratio: (Using bulk erased 3M 206 tape or equivalent) Peak record level (500nWb/m) to NAB weighted noise.

	Full Track	Two Track	Quarter Track
15 ips	72dB	68dB	65dB
7.5 ips	72dB	68dB	65dB
3.75 ips	68dB	64dB	61dB

Flutter and Wow: Weighted peak flutter (ANSI S 4.3-1972: IEC 386-1972) using a prerecorded flutter tape

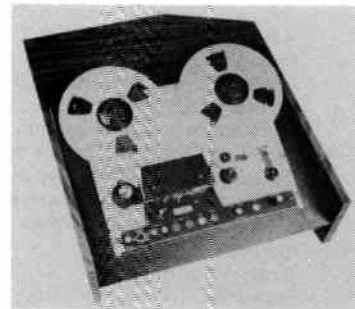
Speed: **AC Motor**

15 ips	.08%
7.5 ips	.1%
3.75 ips	.2%

Distortion: 3rd harmonic distortion of 500Hz signal; at peak record level (500nWb/m) less than 3%; at standard operating level (250 nWb/m) less than 0.6%. Speaker out 1% at 3.0W into 8 ohm resistive load

Outputs: Line + 17dBm into 600 ohm load. Speaker 3.0W into 8 ohm resistive load

Equalization: Automatically switched with transport speed. Specify NAB or IEC (CCIR)



Speed Accuracy: $\pm 0.2\%$ throughout reel 7.5 to 15 ips using 1.5 mil tape

Reel Sizes: To 11.5" (CCIR)

Brakes: Dynamic, plus disc

Power Requirements: 105-125V or 220-240V, 50Hz or 60Hz. Power consumption at 117V 60Hz: 250VA

Weights (approx.): Shipping weights, standard carton. Unmounted reproducer: 90 pounds empty console: 105 pounds

Specify NAB or IEC equalization, AC line voltage, AC line frequency, and tape speeds desired when ordering (Speeds available: 3.75/7.5 or 7.5/15 ips).

Mono Full Track \$3,495.00

Mono 2 Track 3,695.00

Stereo 2 Track 3,750.00

Stereo Quarter Track 3,995.00

Options and Accessories

Console Mount \$500.00

Remote Controls

Table Top Box \$250.00

Panel Mount 220.00

50Hz motors and 3.75 ips operation are higher cost options.

TELEVISION TECHNOLOGY CO.

Audio Consoles

AC/LC Series Audio Consoles

- Muting programmer board to allow any mike input to control any of the four muted monitor outputs
- Remote start switching for all high-level inputs
- Two studio intercom plus remote line talkback and program cue
- Step-type rotary faders with silver contacts and detented cue on each channel
- Telephone grade lever key switches
- Fully shielded, printed circuit mixing bus
- Four level LED "stretched peak" indicators on each output channel in addition to two standard VU meters
- Balanced transformer pre-amps on all mike and high-level inputs
- Stereo pre-amps for all mike and high-level inputs on all stereo, dual-stereo and simulcast models
- Four interlocked pushbutton switches per input channel allow easy expansion of input sources
- 20W monitor amplifier with four inputs, switch selectable to either program line or two auxiliary inputs
- Dissipation-sensing monitor protects against shorts and overloads
- Headphone amplifier with 4 switchable inputs
- Phase test switch for immediate audible check of signal deterioration from improperly processed stereo source material (standard on all stereo models)
- Plug-in modular PC board electronics



6 Channel



8 Channel



10 Channel



12 Channel

Audio Consoles

	Rotary Fader	Linear Fader
6 Channel Monaural, 24 input	\$3,950.00	NA
6 Channel Dual Monaural, 24 input	4,350.00	NA
6 Channel Stereo, 24 input	5,494.00	NA
6 Channel Stereo with Summing Amp	5,995.00	NA
8 Channel Monaural, 32 inputs	4,795.00	\$ 5,495.00
8 Channel Dual Monaural, 32 input	4,995.00	5,795.00
8 Channel Stereo, 32 input	5,995.00	6,795.00
8 Channel Stereo with Summing Amp	6,695.00	7,395.00
8 Channel Dual Stereo, 32 input	6,895.00	7,595.00
8 Channel Dual Stereo with Summing Amp	6,995.00	7,795.00
8 Channel Stereo-Mono, 32 input	6,795.00	7,495.00
10 Channel Monaural, 40 input	5,895.00	6,695.00
10 Channel Dual Monaural, 40 input	6,395.00	7,095.00
10 Channel Stereo, 40 input	7,595.00	8,295.00
10 Channel Stereo with Summing Amp	7,895.00	8,695.00
10 Channel Dual Stereo, 40 input	7,995.00	8,795.00
10 Channel Dual with Summing Amp	8,295.00	9,095.00
10 Channel Stereo-Mono, 40 input	7,995.00	8,695.00
12 Channel Monaural, 48 input	6,695.00	7,395.00
12 Channel Dual Monaural, 48 input	6,995.00	7,695.00
12 Channel Stereo, 48 input	8,495.00	9,195.00
12 Channel Stereo with Summing Amp	8,995.00	9,695.00
12 Channel Dual Stereo, 48 input	9,195.00	9,950.00
12 Channel Dual Stereo with Summing Amp	9,495.00	10,195.00
12 Channel Stereo-Mono, 48 input	8,995.00	9,695.00
Summing Amp Stereo	400.00	400.00
Summing Amp Dual Stereo	375.00	375.00
Spare Semi-conductor Kit	56.00	56.00

Refer to Green Section for Addresses and Telephone Numbers.

TELEVISION TECHNOLOGY CO.

Cartridge Tape Reproducer

Series 8300**Three-Deck Cartridge Tape Reproducer**

The Series 8300 three deck tape cartridge reproducer provides a standard of excellence in a convenient modular configuration.

Standard features include a two bearing crystal-controlled DC brushless servo motor, 150Hz secondary cue tone, audio mixer, audio switcher, and a reload indicator.

Modular construction allows field conversion from Mono to Stereo, as well as fast and easy maintenance.

Specifications

Tape Speed:	7.5 ips
Timing Accuracy (at 7.5 ips):	0.1% second maximum
Wow and Flutter:	0.15% peak weighted
Noise (reproducer):	Monophonic: 60dB or better below reference at 400Hz at 3% THD; 52dB below 160 nWb/m at 1kHz. Stereophonic: 58dB or better below reference of 400Hz at 3% THD; 50dB below 160 nWb/m at 1kHz

Distortion

(Playback Electronics only):	18dB above 160 nWb/m 50-15kHz less than .5%
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Equalization:

NAB, IEC, CCIR as specified

Frequency

Response:	± 2 dB from 50Hz to 15kHz exclusive of head contour effect
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Cross Talk

(Magnetic Head Limited):

Cue channel to program channel, monophonic. 150Hz - 50dB, 1kHz - 55dB, 8kHz - 50dB

Stereo, cross talk between program channels better than 50dB, 50Hz to 15kHz

Audio Output:

Differentially balanced output* Maximum adjustable level +14dBm into 600 ohm load from 160 nWb/m at 1kHz

*Transformers optionally available for 600/150 ohm balanced floating output. Peak output level: differentially balanced output +22dBm clipping into 600 ohm load

Cue Signals:

1kHz primary—standard feature. 150Hz secondary**—standard feature with remote status available 8kHz tertiary**—optional feature with remote status available

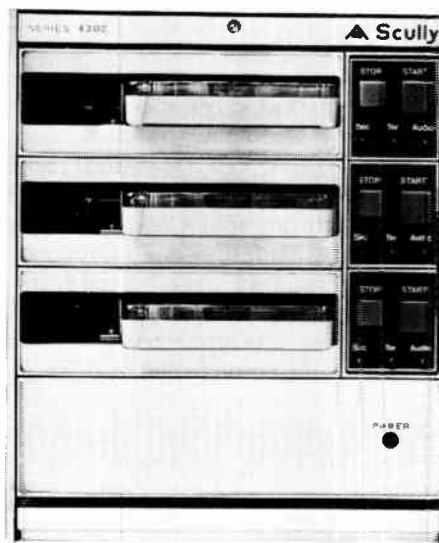
**Relays optionally available for normally open or closed isolated contacts

Audio Mixer:

Standard feature allows two or three decks to be actively combined (summed) to provide one audio output

Audio Switcher:

Standard jumperable feature allows decks combined with audio mixer to only pass audio from the last started deck. 150Hz control is also a jumper-



Series 8300

able selected standard feature to turn off a deck's audio switcher at the beginning or ending of the 150Hz secondary cue tone

Reload Indicator
(indicated "played" status):

Stop/ready lamp flashes when cartridge has been started and then stopped, either by pushing the stop button or by the presence of the cue tone

Motor:

Two bearing non-adjustable closed loop crystal controlled direct drive servo

Tape Capacity:

Type A or B, AA or BB NAB cartridge

Power:

105 to 125V or 210 to 230 50/60Hz, ambient operating temperature: 0°C to 50°C

Remote Control:
External

All front panel switches and indicators

Connections:

Audio: 15 position "D" type, mating connector supplied. Remote: 25 position "D" type, mating connector supplied

Dimensions

(less feet):

10³/₈" H x 8⁵/₈" W x 13¹/₂" D

Weight:

43 lbs.

8300 Series

Specify NAB or IEC equalization, AC line input voltage, AC line frequency, and tape speed desired when ordering

8321 Mono Three Deck \$3525.00

8322 Stereo Three Deck 3750.00

50Hz motor 200.00

3³/₄ ips motor 200.00

TELEX COMMUNICATIONS, INC.

Headsets/Headphones

Model	Catalog No.	Description	Impedance Ohms	Cord Length	Plug	Price
Studio and Sportscasting Headsets (w/ Push-to-Cough Switch)						
PH-91	64390-000	Dynamic Dual (Mike dynamic 150/200 ohms)	300/Side	9'	None	\$210.00
PH-92	64390-001	Dynamic Dual (Mike dynamic 150/200 ohms)	600/Side	9'	None	245.00
PH-93	64390-002	Dynamic Dual (Mike condenser 150/250 ohms)	300/Side	9'	None	250.00
PH-24	64356-000	Lightweight Mono (Mike noise canceling condenser 150/250 ohms)	150	9'	None	220.00
PH-25	70425-000	Lightweight Bln. (Mike condenser 150/250 ohms)	300	9'	A3M/1/4"	245.00



PH-91
PH-92

Studio and Vocal Headband/Boom Microphones						
PH-20	64327-000	Electret Mike System	150(mike)	3'	TA4F	\$210.00
PH-21	64327-001	Electret Mike	N/A	3'	TA4F	115.00
PH-22	64327-002	Electret Mike	N/A	3'	LEMO	125.00
PS-10	64239-000	Battery or Phantom Supply for PH-21				115.00



PH-24
PH-25

Monitor Headphones — Stereo						
PH-6	64437-003	Dynamic Dual	600/Side	12' coiled	1/4"	\$110.00
PH-35	64359-000	Lightweight	300/Side	6.5'	1/4"	52.00

Monitor Headphones — Mono						
PH-7	64437-000	Dynamic Dual	600	5'	1/4"	\$100.00
PH-11	64438-000	Dynamic Single	600	5'	1/4"	68.00
PH-36	64353-000	Lightweight Dual Side	600	6'	1/4"	52.00

Professional Communications Headsets						
PH-45	64437-001	Dynamic Dual (Mike carbon 20/50 ohms)	600	5'	1/4"	\$125.00
PH-61	64437-002	Dynamic Dual (Mike noise canceling dynamic 150 ohms)	600	5'	1/4"	130.00
PH-75	64438-001	Dynamic Single (Mike noise canceling dynamic 150 ohms)	600	5'	1/4"	115.00
PH-78	64438-002	Dynamic Single (Mike carbon 20/50 ohms)	600	5'	1/4"	110.00
PH-62	70362-000	Dynamic Binaural Dual (Mike noise canceling dynamic 150 ohms)	300/Side	5'	None	120.00



PH-45
PH-61

Intercom Headsets (with A4F or A5F Connector)						
Plug compatible with Telex, Clear-Com, and HME intercom systems						
PH-1	64438-005	Dynamic Single (Mike noise canceling dynamic 150/200 ohms)	150	6' coiled	A4F	\$110.00
PH-2	64437-006	Dynamic Dual (Mike noise canceling dynamic 150/200 ohms)	150	6' coiled	A4F	140.00
PH-3	64437-007	Dynamic Binaural (Mike noise canceling dynamic 150/200 ohms)	150/Side	6' coiled	A5F	140.00
PH-4	70340-000	Dynamic Dual (Mike noise canceling dynamic 150/200 ohms)	150	6'	A4F	150.00
PH-5	70350-000	Dynamic Binaural dual (Mike noise canceling dynamic 150/200 ohms)	300/Side	6'	A5F	150.00



PH-75
PH-78

Video Camera Headsets (With Carbon 20/50 Ohm Microphone)						
PH-81	64438-004	Magnetic Single	275	6' coiled	None	\$115.00
PH-83	64438-003	Magnetic Single (w/PTT switch)	275	6' coiled	None	130.00
PH-85	64437-005	Magnetic Dual	275/625	6' coiled	None	185.00
PH-87	64437-004	Magnetic Dual (w/PTT switch)	275/625	6' coiled	None	205.00



PH-7
PH-6

Hearing Protection Headset						
HD-3A	63700-011	Dynamic Dual (Mike noise canceling dynamic 150 ohm)	150	6' coiled	A4F	\$140.00



PH-35
Stereo
PH-36
Mono

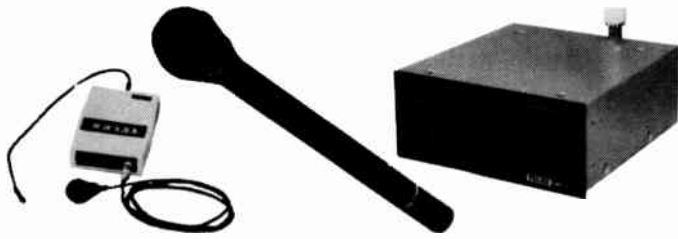
Headset Accessories			Used On		Price
8-3	35355-004	Battery, 1.4V	PS-10		\$ 1.50
CC-1	35772-000	Cushion Cover—Sock (1)	All circumaural headsets		3.50
C-3	63444-000	Earcushion (1)	PH Series full cushion		6.00
C-4	64301-000	Earcushions (2)	PH Series Lightweight		3.50
HP-2	63461-000	Headband pad	HD Series		8.00
HP-3	63801-000	Headband pad	PH Series		8.00
WS-5	59737-001	Windscreen	PH-91/PH-92		9.00
WS-7	59835-000	Windscreen	PH-62		4.00
WS-11	59747-001	Windscreen	PH-20/PH-21/PH-22/PH-24/PH-25		4.00
PT-400	63295-000	DPDT Press-to-talk Sw. Kit			30.00

Prices and Specifications Subject to Change Without Notice.

B-1155

TELEX COMMUNICATIONS, INC.

Wireless Microphone Systems



Diversity Wireless Microphone System. FMR-2 receiver with WT-200 belt-pack transmitter, WLM-200 lapel microphone and WHM-500 handheld microphone/transmitter

FMR-2 Diversity Wireless Microphone Receiver

- Peak reading volume indicator • Power-on LED • Display that indicates RF field strength • Adjustable mike • Auxiliary headphone output capability • Fixed line level output • Two 5/8 wave antennas are supplied • Operates on 120VAC (240VAC available) or 12VDC • Free-standing receiver can be rackmounted

FMR-50 Wireless Microphone Receiver

The FMR-50 provides a clearer, better sounding signal for longer distances from the receiver • Signal remains crisp for distances of 500' or more • Operates on high band frequencies between 150 and 186MHz

WLM-100/WLM-200 Electret Lapel Microphone

- Electret omnidirectional lapel style • Available in both silver and black • Equipped with supple anti-noise cord • Lemo corrector-foam wind screen and three styles of mounting clips available

WT-200 Belt-Pack Transmitter

- Roughly the size of a cigarette package • Easily concealed under clothing • Sensitivity switch • Phantom power • Connectorless battery terminals • Battery test circuit • Separate on/off switches for RF and audio

WHM-410 Dynamic Handheld Transmitter

- Cardioid dynamic • Offers a great deal of economy • No switches are provided which prevents a user from inadvertently turning "off" the microphone

WHM-500 Handheld Condenser Microphone/Transmitter

- Separate on/off switches for audio and RF • Two wind screen styles and two 4.5V batteries are provided • Superb rejection of handling noise • Ideal for the vocalist because of a tailored frequency response



ENG-4

ENG-4 4-Channel Receiver

- Fully transportable VHF FM receiver ideally suited for electronic news gathering, film or sound recording • Simple rotary dial allows quick channel changes in the field • Spring-loaded battery compartment pops up so battery "sled" can be taken out and replaced instantly with a spare—reducing battery change downtime to just seconds • Supplied with a small monitor earphone and a 1/4 wave antenna that mounts vertically or at a right angle.

WT-400 2-Channel Transmitter

The WT-400 transmitter is a belt-worn battery powered VHF FM transmitter for any activity requiring a cordless portable microphone.

Professional Audio/Commercial Sound/Music Series Wireless Systems

Systems Pricing – Non-diversity – 150-186MHz

Lapel Mike System

Includes: WT-50 Transmitter, FMR-50 Receiver, WLM-50 Electret Lapel Microphone 64381-XXX \$ 975.00

Dynamic Handheld System

Includes: WHM-410 Transmitter, FMR-50 Receiver 64382-XXX 995.00

Condenser Handheld System

Includes: WHM-500 Transmitter, FMR-50 Receiver 64383-XXX 1055.00

Headworn Mike System

Includes: PH-21 Headworn Microphone, WT-50 Transmitter, FMR-50 Receiver 64373-XXX 995.00

Wireless Guitar System

Includes: WT-50G Transmitter, Instrument Antenna/Cable, FMR-50G Receiver 64384-XXX 865.00

Systems Pricing – Posi-i-Phase™ Diversity

Lapel Microphone System – 150-216MHz

WT-200 Transmitter 64182-XXX \$ 495.00

FMR-2 Diversity Receiver 64213-XXX 1095.00

WLM-200 Electret Lapel Microphone (Black) 63852-001 130.00

System Total \$ 1720.00

Lapel Microphone System – Economy – 150-186MHz

WT-50 Beltpack Transmitter 64229-XXX \$ 315.00

FMR-2 Diversity Receiver 64213-XXX 1095.00

WLM-50 Electret Lapel Microphone (Gray) 64277-000 110.00

System Total \$ 1520.00

Dynamic Handheld System – 150-216MHz

WHM-410 Dynamic Microphone/Transmitter (No on/off switches) 64225-XXX \$ 445.00

FMR-2 Diversity Receiver 64213-XXX 1095.00

System Total \$ 1540.00

Condenser Handheld System – 150-216MHz

WHM-500 Condenser Microphone/Transmitter 64203-XXX \$ 505.00

FMR-2 Diversity Receiver 64213-XXX 1095.00

System Total \$ 1600.00

Headworn Microphone System – 150-216MHz

WT-200 Transmitter 64182-XXX \$ 495.00

PH-22 Noise Cancelling, Electret Headworn Microphone with windscreen 64327-002 125.00

FMR-2 Diversity Receiver 64213-XXX 1095.00

System Total \$ 1715.00

Wireless Guitar System – 150-216MHz

WT-50G Beltpack Transmitter including Instrument Antenna/Cable 70361-XXX \$ 315.00

FMR-2G Diversity Guitar Receiver 70525-XXX 1295.00

System Total \$ 1610.00

Pro Star Entertainer Series – Posi-i-Phase™ Diversity

Handheld System with TE-10 Microphone Head – 150-216MHz

HT-400 2-Channel (TE-10) 70321-012 \$ 885.00

FMR-4 4-Channel Diversity Receiver 70270-012 1485.00

System Total \$ 2370.00

Handheld System with Shure SM-58 Microphone Head – 150-216MHz

HT-400 2-Channel (Shure SM-58) 70322-012 \$ 990.00

FMR-4 4-Channel Diversity Receiver 70270-012 1485.00

System Total \$ 2475.00

Handheld System with Shure SM-87 Microphone Head – 150-216MHz

HT-400 2-Channel (Shure SM-87) 70323-012 \$ 1095.00

FMR-4 4-Channel Diversity Receiver 70270-012 1485.00

System Total \$ 2580.00

Multi-Channel Lapel Microphone System – 165-216MHz

WT-400 2-Channel Transmitter 70279-012 \$ 798.00

FMR-4 4-Channel Diversity Receiver 70270-012 1485.00

WLM-200 Electret Lapel Microphone (Black) 63852-001 130.00

System Total \$ 2413.00

Lapel Microphone System with 1-Channel Transmitter – 165-216MHz

WT-200 Transmitter 64182-XXX \$ 495.00

FMR-4 4-Channel Diversity Receiver 70270-012 1485.00

WLM-200 Electret Lapel Microphone (Black) 63852-001 130.00

System Total \$ 2110.00

Condenser Handheld System with 1-Channel Transmitter – 165-216MHz

WHM-500 Condenser Microphone/Transmitter 64203-XXX \$ 505.00

FMR-4 4-Channel Diversity Receiver 70270-012 1485.00

System Total \$ 1990.00

Broadcast/Video Production Wireless Microphone Systems – ENG Series

Lapel Microphone ENG System – 165-216MHz

WT-400 2-Channel Beltpack Transmitter 70279-012 \$ 798.00

ENG-4 4-Channel Receiver 64490-012 1260.00

WLM-300 Electret Lapel Microphone 70483-000 120.00

System Total \$ 2178.00

Handheld ENG System – 150-216MHz

HT-400 2-Channel Microphone/Transmitter with Telex TE-10 Head 70321-012 \$ 885.00

ENG-4 4-Channel Receiver 64490-012 1260.00

System Total \$ 2145.00

*The last three digits in the transmitter and receiver catalog number will be determined by the frequency that is selected. Full line accessories available.

TELFAX COMMUNICATIONS

Telephone Remote Units

TFX-31C Telephone Remote Unit

• 2-way electronic telephone circuit with rotary dialing • Electronic "ringer" and LED to indicate incoming calls • 3 microphone inputs and fourth channel for cassette or cart machines • Auxiliary output for recorders or PA systems • Headphone amplifier is powerful enough to drive several headsets • Headphone noise canceler enables broadcaster to hear studio cues with maximum clarity in noisy environments • The built-in rechargeable NiCad battery pack provides 10 hours of service from a 7 hour charge • AC or battery operation with automatic switchover • Battery status LED indicates charge or discharge • Input jack and selector switch for radio monitoring • Modular phone cable and 4 prong adaptor are included • Color coded knobs and input jacks; fold-away handle

Specifications

Mike Inputs: 3 at 150 ohms impedance unbalanced
Aux. Input: 1 at 600 ohms impedance balanced
Aux. Output: .7VRMS into 10,000 ohms unbalanced
Phone Line Feed: -6dBm into standard dial line at 600 ohms balanced, + 4dBm into direct loop (level is switch selectable)
Freq. Response: ± 3 dB, 90 to 15kHz into a resistive load
Distortion: 1% or less at operating levels (+ 14dBm output before clipping)
Headphone Output: 3 at 200 ohms or higher. Switchable input provided for radio monitor



TFX-31C

Headphone Noise

Cancelling: Up to 14dB noise reduction in headphones (switchable)

Power

Requirements: 20VAC at .51A (120VAC/60Hz wall transformer provided for AC operation and battery charging)

Internal Bi-Polar

Battery Pack: 12 long life NiCad batteries (1.2V at 450mAh each), quick charge in 7 hours

Dimensions:

4.5" H x 6.25" W x 6.5" D, 4 lbs.

TFX-31C\$695.00

TFX-131B Telephone Remote Mixer

• Switchable tone or pulse dialing • Built-in rechargeable NiCad battery pack provides 10 hours of service from a 7 hour charge • LCD clock/stopwatch with alarm function • Accessory jack interfaces external audio processors and phone equipment • Channel 4 can be switched to generate 1kHz tone or to become a closed circuit spotter channel • Rugged, lightweight, all-aluminum cabinet • A side-mounted carrying handle rotates out of sight when not in use • Powerful headphone amplifier drives 4 headphone jacks and monitors phone line for reset to dialtone upon disconnect and for studio cues • Radio monitor input jack and selector switch provided • Electronic "ringer" and LED signal incoming calls • Battery status LED indicates charge or discharge • AC or battery operation with automatic switchover. Batteries automatically charge while unit is being AC operated • Switch selectable line level, for either dial or "loop" lines • Quick disconnect mike jacks are standard • Color-coded knobs and input jacks • Modular phone line connectors, cables and service manual are included • An optional carrying case is available

Specifications

Mixing Channels: 4 (channels 1 and 4 can be used as mike or high level inputs...no switching required)
Microphone Inputs: 4 at 150 ohms (unbalanced/accepts A3M plug)
Aux. Inputs: 2 at 600 ohms (balanced/isolated RCA jacks...channels 1 and 4)
Aux. Output: 1 at 10,000 ohms, 0VU = .7V (unbalanced/RCA jack)
Line Output ("Dial"): 1 at 600 ohms, 0VU = -6dBm (balanced/modular jack)*
 or
Line Output ("Loop"): 1 at 600 ohms, 0VU = +4dBm (balanced/modular jack)*
Dialing Pad: Pulse output, 10 pps (switchable to tone dialing, DTMF signaling)



TFX-131B

Headphone Output: 4 at 200 ohms or higher (1/4" mono jacks)

Headphone Noise Cancelling: 14dB (max.), activate to reduce crowd noise

Radio Monitor

Input: 1 (un-amplified/accepts 3.5mm mini-plug)
Accessory Jack: 1 (ext. input to phone line interface, line out and aux. out/6 pin female DIN)

Freq. Response: ± 3 dB, 90 to 15kHz (into a resistive load)
Distortion: 1% or less (+ 14dBm output before clipping)

Power

Requirements: 20VAC/60Hz, .51A (external transformer) or 24VDC

Battery Pack

(Bi-Polar): 12 quick charge NiCads (1.2V at 450mAh ea)

Dimensions: 3 3/4" H x 8 5/8" W x 8 3/4" D (9.5 x 21.9 x 22.2cm)

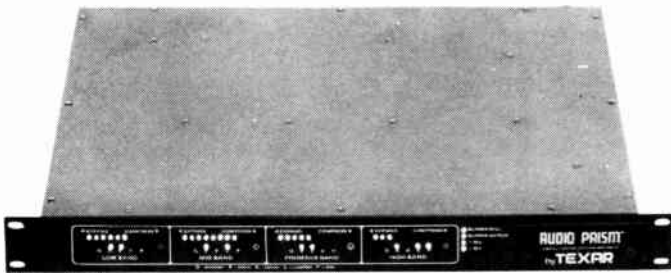
Weight: 5 lbs. (2.3kg)

TFX-131B\$850.00

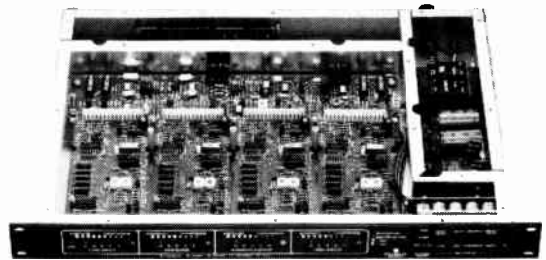
*Switchable between -6dBm and +4dBm

TEXAR, INC.

Signal Processing Equipment



Audio Prism



Phoenix

Audio Prism™ Audio Processor

The Audio Prism is a high-performance multi-band audio processor designed for major market broadcast use and other applications where sophisticated program handling is required. It utilizes four intelligent, digitally-controlled processor cards to achieve high apparent loudness while producing few processing artifacts. This absence of undesirable subliminal listener aggravation reduces listener tune-out, producing higher quarter-hour ratings.

For AM broadcast, the Audio Prism is designed to be used with the Texar Eagle™ family of AM Modulation Controllers. For the Orban 8100, 8000*, or other high-quality limiter/stereo generator combination. If transmitter and studio are at separate locations, the preferred placement for the Audio Prism is at the studio, this prevents accidental overdriving of the telephone lines or STL and provides the maximum signal-to-noise ratio over the program circuit.

The unit is completely self-contained in a single 1 3/4" rack-height enclosure and will operate normally in severely hostile electrical environments. Extensive RFI filtering and a three-part lightning protection circuit are standard on all conductors leaving the chassis.

The input impedance is factory-wired for 600 ohms resistive, but can be changed to 10k (nominal) bridging with the removal of a single resistor. The output will drive a 600 ohm balanced load to +12dBm nominal program level.

Audio Prism \$1995.00

AMC-2 Eagle

The AMC-2 Eagle, when added to the Audio Prism, makes a complete monaural AM processing system, from console output to transmitter input. The AMC-2 mounts inside the Audio Prism and has variable asymme-

try and low-frequency tilt correction. A switchable, internal, low-pass filter conforms to the voluntary NAB standard for occupied bandwidth.

AMC-2 Eagle \$695.00

RCF-1 Replacement Card

The RCF-1 is a plug-in upgrade for the Orban Optimod 8100*, which can be used when the Optimod is used in conjunction with a pair of Audio Prisms. No soldering is required. The RCF-1 kit includes a plug-in circuit board and a replacement for the chocolate-brown, metal control cover. Controls include variable bass boost, density and interband coupling. RCF-1 increases loudness by over 1dB and increases bass performance with no sacrifice in signal clarity.

RCF-1 Replacement Card \$425.00

PR-1 Phase Rotator

The PR-1 removes asymmetrical components from program material to eliminate loudness loss caused by unbalanced modulation. Recommended for both AM and FM, the PR-1 mounts inside the Audio Prism and comes installed if ordered at time of purchase. The PR-1 can also be added to Audio Prisms already in the field. Some minor soldering is required for Audio Prisms with serial numbers less than 605.

PR-1 Phase Rotator \$55.00

Phoenix Audio AM Processor

- NRSC compliant • Digital control • Four-band power
- Variable asymmetry • Voice phase rotator • Low-frequency tilt-corrector that can compensate for some weaknesses in plate-modulated transmitters • Requires simple AC voltmeter for easy set-up

Phoenix \$2745.00

*Optimod 8100 and Optimod 8000 are registered trademarks of ORBAN ASSOCIATES, INC.

TFT, INC.

Studio Transmitter Links

8300 Series Broadcast Quality Composite 950MHz Aural Studio Transmitter Link and Intercity Relay System

• Improved signal-to-noise ratio • Better stereo separation • Reliable operation in dense RF signal environments • Unique IF repeater capability • Automatic hot-standby switchover (optional) • Tested to customer specified operating frequency

8300 Series Transmitter

• Direct locked RF carrier • IF modulation—between 60 and 80MHz • Fully protected against short and open circuits and high VSWR • Wide baseband bandwidth • RF power output—4W minimum, 14W maximum • ± 50 kHz deviation for 100% modulation • Frequency stability—better than .0001% 0°C to 50°C

8300 Series Receiver

• Surface acoustic wave filter is used to eliminate phase distortion and to provide superior selectivity • Pulse-counting discriminator provides ultra-linear FM demodulation • Selectable IF bandwidth • Selectable hi or low gain RF amplifier

- 8300 5116-8300 Composite transmitter \$4550.00
- 8301B 5116-8301B Narrow/Wide Band (250kHz) composite receiver \$4400.00
- Option 22 IF Repeater 1290.00

7700B Series Broadcast Quality Composite 950MHz Aural Studio Transmitter Link and Intercity Relay

Outstanding performance for the budget conscious, quality conscious user.

7700B Series Transmitter

• IF modulation—between 60MHz and 80MHz • High output power • Power can be adjusted from 3W to maximum power • Fully protected against short circuits and high VSWR • Frequency stability ± 1 p-pm/year • Accommodates two additional subcarriers

7700B Series Receiver

• Crystal controlled triple conversion super heterodyne design • Low noise RF amplifier—3.5dB noise figure • Pulse-counting discriminator • Automatic changeover optional

- 7700B 5116-7700B Transmitter for composite or monaural use \$3850.00
- 7707 5116-7707 Composite receiver 3145.00
- 7705 5116-7705 Monaural receiver 3395.00

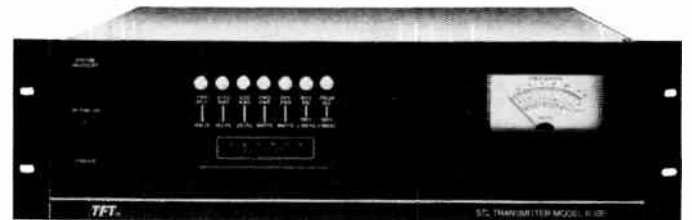
8600 950MHz STL System

• For single-channel or dual monaural applications • Optimized for mono applications • Efficient spectrum use (± 25 kHz deviation, 100kHz channel spacings) • Direct output power amplification • Built-in SCA generator/demodulator (39kHz) • Provision for phase matching between two systems for stereo • Compatible with TFT Hot-Standby Auto Changeover Equipment • Tested to customer specified operating frequency • Also available for FCC Part 94 frequencies

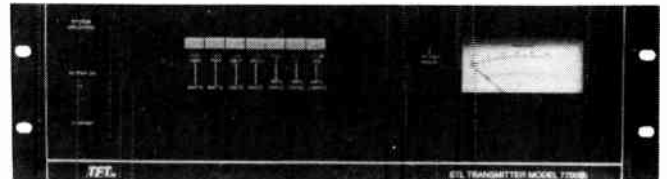
- 8600 5116-8600 All solid-state monaural transmitter \$1600.00
- 8601 5116-8601 All solid-state monaural receiver 1595.00

8700 450MHz Transmitter Studio Data Link

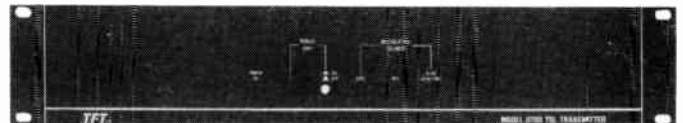
• Ideally suited for the telemetry return of a remote control system using FSK data modems • Audio frequency response 300-3000Hz ± 3 dB • ± 1.5 kHz for 100% modulation • Sensitivity— 1μ V for 20dB S/N • 50 ohm RF input • $\pm 0.00025\%$ frequency stability • 6W



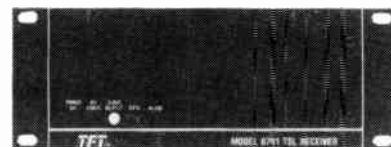
8300



7700B



8700



8701

transmitter power • Optional morse code identifier • External battery back-up available • Optional multi-user time division multiplex

- 8700 5116-8700 450MHz Transmitter Studio Voice/Data Link. Specify FCC Group P frequency \$1375.00
- 8701 5116-8701 450MHz Receiver-Studio Voice/Data Link. Specify FCC Group P frequency 1375.00
- Option 01 Automatic ID (Specify ID code) 320.00
- Option 02 Time division multiplex for transmitter 920.00
- Option 03 Time division multiplex for receiver 420.00

TFT, INC.

TV/Aural Modulation Monitors

701 Frequency Monitor

- Covers all UHF and VHF channels
- Off air monitoring of aural modulation
- 250µV sensitivity
- Digitally set peak modulation flashers
- Built-in aural modulation calibrator
- Built-in frequency synthesizer-type modulation calibrator
- Optional over-modulation alarm
- Portable or rackmount
- RF-frequency range-channels 2-83 (54MHz-890MHz)
- 75 ohms impedance input
- ± 0.2dB, 50Hz to 15kHz frequency response
- Off-the-air monitoring of visual and aural carrier frequencies
- Usable as a 6-digit precision frequency counter up to 10MHz
- Optional off-frequency alarm

The 701 is a state-of-the-art TV Monitor designed and optimized for off air monitoring of aural modulation in UHF and VHF TV transmitters without the need of an external RF amplifier.

- 701 TV Frequency & Aural Modulation Monitor Rack-mount (Specify Channel & Offset) \$8,950.00**
Option 02 (7100-0050) Alarm (frequency and modulation) . . .625.00
Option 03 (7100-0010) SCA Output585.00



701

- Option 06 (7100-4060) Automatic Logging Output (BCD) . \$ 420.00**
Option 07 (7100-0030) CCIR Format *1,255.00
Option 08 (7100-0060) Spare Parts Kit885.00
704 Remote Meter and Peak Flasher Panel540.00

850 BTSC TV Stereo Aural Modulation Monitor

- Monitors BTSC Aural Stereo Broadcast in one package
- Full EIA BTSC recommended practice measurements
- Built-in RF amplifier for off-air monitoring
- Built-in distortion analyzer and AC auto ranging digital voltmeter (optional)
- FM frequency synthesized type modulation calibrator
- Microprocessor controlled
- 50 ohms input impedance
- RF frequency range channels 2-83 (54MHz-890MHz)
- 6 Peak flasher lights

- 850 BTSC Aural Modulation Monitor Rackmount (Specify channel) \$10,350.00**
Option 01 (7100-4010) Distortion Analyzer2,990.00
Option 02 (7100-4020) Remote Meter & Flasher Panel for Model 850.595.00
Option 03 (7100-4050) Spare Parts Kit for Basic Model 8501,025.00
Option 04 (7100-4110) Alarm (Carrier & Modulation) with 2 MUX filters. *840.00
851 BTSC Aural Modulation Monitor, Rackmount Baseband input only. Specify De-emphasis 8,750.00
Option 01 (7100-4010) Distortion Analyzer2,990.00
Option 02 (7100-4020) Remote Meter & Flasher Panel for 851.595.00



850

- Option 03 (7100-4132) Spare Parts Kit for 851 \$ 824.00**
Option 04 (7100-4110) Modulation Alarm with 2 MUX filters *815.00
855 SAP/PRO Modulation Monitor Rackmount3,950.00
Option 01 (7100-4133) Remote Meter & Flasher for 855590.00
Option 02 (7100-4134) Spare Parts Kit for 855.410.00
Note: When an 850 or 851 is purchased together with an 855, a \$1,000.00 allowance off the 850 or 851 list price is made.

8500/8501 BTSC Stereo Composite Subcarrier Generator/Demodulator

- Transmits BTSC TV stereo composite signal and remote control on one multichannel subcarrier
- 48dB Stereo separation
- Input and output signals fully metered
- 70dB SNR in the stereo channel
- Direct FM modulation
- 75 ohm system input impedance
- Adjustable output levels
- 1.75" H x 19" W x 10" D
- Approx. 10 lbs. each

System comprising an 8500 Generator and 8501 Demodulator. Specify frequency of 6.2, 6.8, or 7.5MHz. Others between 5MHz and 10MHz, are a special order.



8500/8501

- 8500 (5116-8500) Generator only \$2580.00**
8501 (5116-8501) Demodulator only3870.00
Option 01 (7100-4040) Spare Parts Kit for 8500 System595.00

*Not field installable

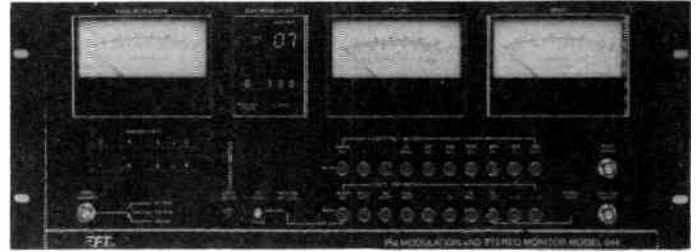
TFT, INC.

Modulation Monitors/EBS Equipment

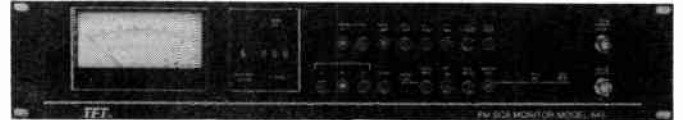
**844 FM/Stereo Modulation Monitor/
845 SCA Modulation Monitor**

• 844 combines a tunable RF preselector, a baseband monitor and a stereo monitor in one compact instrument • 845 SCA monitor is a multi-frequency instrument designed for use with the 844 • With an optional receiver module, the 845 can be used as a stand-alone unit, for both off-air and direct transmitter monitoring • Both can be used for remote, off-air monitoring or for direct transmitter measurements • 844 features 50kHz, frequency synthesized channel tuning, to accommodate all U.S. and international standards

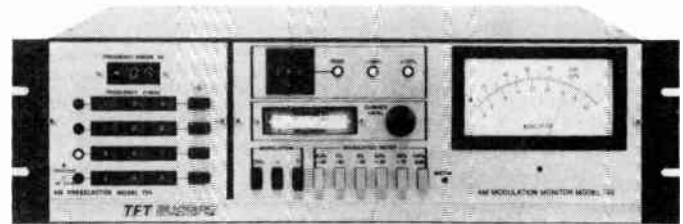
- 844** (5116-0844) FM Baseband/Stereo Modulation Monitor (specify frequency for high level monitoring) (75µs de-emphasis supplied standard) **\$4250.00**
- Option 01 (7100-3870) Absence of Modulation/Carrier Fail Alarm **.275.00**
- Option 02 (7100-3890) Spare Parts Kit **.475.00**
- 804** (5116-0804) Remote Meter and Peak Flasher Panel for 844 **.525.00**
- 845** (5116-0845) 3-channel SCA Modulation Monitor, 67kHz supplied standard **.2265.00**
- Option 01 (7100-3880) RF Module-Preselector (specify frequency) **.710.00**
- Option 03 (7100-3910) SCA Channel (92kHz) **.235.00**
- Option 04 (7100-3920) Spare Parts Kit **.230.00**
- Option 05 (7100-4151) Service channel (specify frequency) **.210.00**
- 805** (5116-0805) Remote Meter and Peak Flasher Panel for Model 845 **.495.00**



844



845

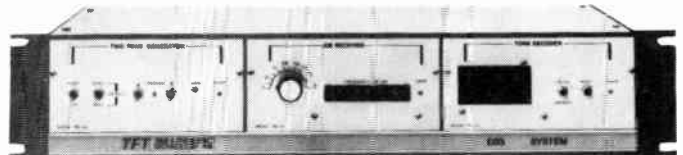


753/755A

753 AM Modulation Monitor

• Makes extremely accurate proof-of-performance measurements
• Allows you to monitor your transmitter so precisely that you can modulate it to the maximum legal limits in absolute confidence

- 753** (5116-0753) AM Modulation Monitor **\$1525.00**
- Option 02 (7100-2440) Carrier Power Alarm **.90.00**
- Option 03 (7100-2410) 10kHz Whistle Filter **.340.00**
- Option 04 (7100-2420) 30Hz Telemetry Lowpass Filter **.260.00**
- Option 05 (7100-2430) Absence of Modulation Alarm **.290.00**
- Option 06 (7100-2460) 230VAC ***60.00**
- Option 07 (7100-2560) Spare Parts Kit **.225.00**
- 755A** (5116-0755A) AM RF Preselector (tunable in 1kHz increments) ***1610.00**
- Option 01 (7100-2470) Narrow Band Filter **.485.00**
- Option 04 (7100-2500) Spare Parts Kit **.290.00**
- 704E** (5116-704E) Remote Meter and Peak Flasher Panel for Model 753 **.495.00**



760



8020

760 Emergency Broadcast System

• Designed for broadcasters to meet parts 73.940, 73.941 and 73.942 of the FCC rules and regulations for decoding and encoding the two-tone EBS alert signal • Modular construction of the system provides for maximum versatility and consists of a cabinet assembly, AM or FM receiver, two-tone decoder and a two-tone generator

- 760-1A** (5116-760-1A) Tunable AM Receiver/Encoder/Decoder **\$1420.00**
- 760-1B** (5116-760-1B) Single Channel FM Receiver/Encoder/Decoder (specify one receive frequency) **.1420.00**
- 760-1C** (5116-760-1C) Dual Channel FM Receiver/Encoder/Decoder (specify two receive frequencies) **.1675.00**

8010/8020 E-Alert Receivers

• Continuously monitors local AM or FM radio stations for emergency broadcast system (EBS) attention signals • Audio mute with emergency override provides silent stand-by operation. Flashing LED activated upon alert

- 8010** (5116-8010) FM E-Alert Receiver, specify frequency **\$275.00**
- 8020** (5116-8020) AM E-Alert Receiver, specify frequency **.275.00**

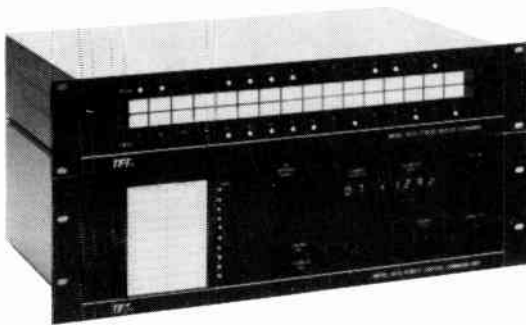
*Not field installable

TFT, INC.

Remote Control Equipment

8632

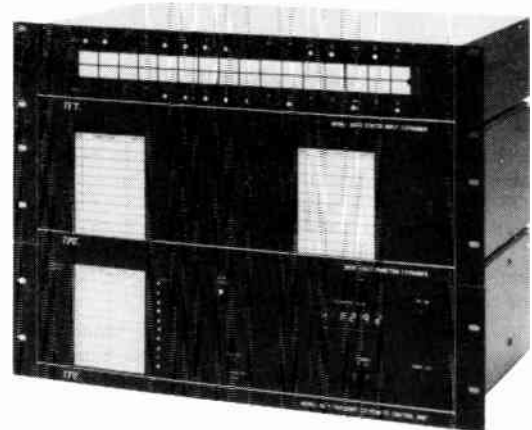
8610



8633

8631

8611



8610/8611

10-channel raise/lower plus 10-channel telemetry and status digital remote control system. Expandable by adding models 8631, 8632/33, to a 112-channel system. To provide digital remote control systems for AM, FM and medium size TV stations. Minimum system comprises one (1) 8610 and one (1) 8611.

8610 (5116-8610) Control portion only of 8610/8611 system **\$1650.00**

8611 (5116-8611) Remote portion only of 8610/8611 system. **2150.00**

Option 01 (7100-2610) Subcarrier (SCA) Detector. Frequencies from 26kHz to 185kHz available. Mounts within 8610 or 8611. To provide demodulation of the SCA subcarrier (Specify frequency and whether for uplink or downlink) **\$280.00**

Option 02 (7100-2620) Subcarrier (SCA) Generator. Frequencies from 26kHz to 185kHz available. Mounts within 8610 or 8611. To generate the SCA subcarrier (Specify frequency and whether for uplink or downlink) **\$280.00**

Option 03 (7100-2600) SCA Generator/Detector in one module. Single module combines functions of option 01 and 02 (Specify frequencies and whether for uplink or downlink). **\$610.00**

Option 07 (7100-4136) Spare Parts Kit. To provide spare parts such as relays, IC's and other critical components for emergency repairs **\$475.00**

8631 (5116-8631) Channel Expander (20 channels) To expand the raise/lower and telemetry channels of the Model 8610/8611 by 20 additional channels (to be installed at the remote terminal only) Up to 3 Model 8631's can be added (for 70 channels total). **\$1690.00**

Option 01 (7100-4137) Spare Parts Kit. To provide spare parts such as relays, IC's and other critical components for emergency repair **\$240.00**

8632/8633

32-channel status/alarm expander. Provides an additional 32 channels of status/alarm to 8610/8611 system, for a total of 42 channels.

8632 (5116-8632) Control portion only of 8632/8633 system (One 8633 is also required for full operation) **\$1375.00**

8633 (5116-8633) Remote portion only of 8632/8633 system (One 8632 is also required for full operation) **1455.00**

Option 01 (7100-4138) Spare Parts Kit. To provide spare parts such as relays, IC's, and other critical components for emergency repair **390.00**

7815

(Standalone Unit) Status and control system with 15 on/off control and 15 status indication channels, consisting of a control and remote unit. For on/off control and status indications only. Expandable to 47 channels of status by the addition of 8632 and 8633.

7815-C (5116-7815) Control portion of 7815 system (One 7815-R is also required for full operation) **\$1860.00**

7815-R (5116-7816) Remote portion of 7815 system (One 7815-C is also required for full operation) **2155.00**

Option 02 (7100-3100) Spare Parts Kit. To provide spare parts such as relays, IC's and other critical components for emergency repair **455.00**

Option 03 (7100-3130) Momentary Switch Kit. 8 momentary switches and instructions for replacing front panel toggle switches. Field installation only. **90.00**

REMOTE CONTROL INTERFACE ACCESSORIES

Model Description	Application	Price
FSU-01 Fail-safe unit for TV (5116-0FSU)	Monitors 4 critical parameters, plus aural power and visual power	\$1360.00
ADS-01 Alternate Data Path Selector (5116-0ADS)	Switch from main to alternate data path when invalid data is detected from either the Control or the Remote terminal. Both local and remote units are included	1860.00
CSA-01 Chopper Amplifier (5116-0CSA)	To provide isolation from a floating circuit to a grounded circuit. DC gain is also provided	560.00
PLC-01 Power-to-Linear Converter (5116-0PLC)	To linearize power readings from log scale to linear scale	715.00
TLK-01 Tower Light Monitor (5116-0TLK)	To monitor AC line current.	315.00
LVK-01 Line Voltage Monitor (5116-0LVK)	To monitor AC line voltage	245.00
PVK-01 Plate Voltage Monitor (5116-0PVK)	To monitor plate voltage up to 20kV	240.00
TSK-01 Temperature Sensing Kit (5116-0TSK)	To monitor temperature of air or components	425.00
MBB-01 Isolation Amp (high voltage) (5116-0MBB)	For monitoring voltage and current at 10kV above ground and translate reading in reference to ground voltage to suit the input of the remote control terminals	375.00
SCA1 SCA Generator (5116-SCA1)	Standalone unit converts FSK from modem to SCA frequency. (Specify operating frequency)	840.00
SCA2 SCA Detector (5116-SCA2)	Standalone unit converts SCA frequency to FSK. (Specify operating frequency)	840.00
SCA3 SCA Generator/Detector (5116-SCA3)	Standalone unit combines functions of SCA1 and SCA2 (Specify two operating frequencies)	1110.00

THORN EMI

Studio/Theatre Lamps

Medium Prefocus 120V

BTL	500W	\$47.00
8TM	500W	47.00
8TN	750W	47.00
8TP	750W	47.00
BTR	1000W	52.50
FKA	650W	99.00
FKC	1000W	70.00
FKL	650W	99.00

220/240V

FK8 (T13)	650W	\$102.00
FKD (T14)	1000W	57.00
FKF (T17)	500W	92.00
FKM (CP51)	650W	99.00
FKN (CP52)	1000W	99.00

Mogul Prefocus 120V

BVT	1000W	\$70.00
8VV	1000W	70.00
BVV	2000W	88.00
CWZ	1500W	96.00
DTA	1500W	90.00

Medium Bi-Post 120V

EGR	500W	\$50.00
EGR	750W	70.00
EGT	1000W	75.00

220/240V

FKH (CP39)	650W	\$80.00
FKJ (CP40)	1000W	92.00

Mogul Bi-Post 120V

8WA	2000W	\$120.00
CXZ	1500W	115.00
CYV	1000W	90.00
CYX	2000W	120.00
DPY	5000W	535.00
DTY	10000W	995.00

220/240V

FKK (CP41)	2000W	\$135.00
CP29	5000W	525.00
CP83	10000W	995.00

Medium 2-Pin and Gy 9.5 120V

EHC/EHB	500W	\$50.00
EHD	500W	52.00
FKV	650W	58.00
EHF	750W	58.00
EHG	750W	58.00
FCV*	1000W	64.00
FEL	1000W	52.00
CP81/FRW	300W	45.00
CP82/FRG	500W	62.00
CP89/FRM	650W	62.00
T18/FRF	500W	65.00
T26/FRE	650W	65.00

220/240V

FKR (HX 86)	650W	\$70.00
FEP (CP 77)	1000W	60.00
CP 81	300W	55.00
CP 82/FRH	500W	66.00
CP 89/FRK	650W	67.00
T18	500W	68.00
T26	650W	69.00

Medium Prefocus 120V

EGE	500W	\$58.00
EGG	750W	66.00
EGJ	1000W	68.00
EGK*	1000W	70.00

220/240V

EWE	1000W	\$71.50
FKE (T15)	1000W	99.00

Mogul Screw

BWF	2000W	\$130.00
8WG*	2000W	140.00
DSE*	1000W	54.00
DSF*	1500W	62.00
BWL*	2000W	140.00
HX 147	2000W	130.00

Par 64 Tungsten Halogen 120V

FFN (VNSP)	1000W	\$ 92.00
FFP (NSP)	1000W	92.00
FFR (MFL)	1000W	92.00
FFS (WFL)	1000W	92.00
FGM (NSP)	1000W	190.00
FGN (MFL)	1000W	190.00
FGP (WFL)	1000W	190.00
HX135 (XWF)	1000W	92.00
HX136 (XWF)	1000W	190.00

220/240V

EXC (CP60) (VNSP)	1000W	\$152.00
EXD (CP61) (NSP)	1000W	152.00
EXE (CP62) (MFL)	1000W	152.00

2-Pin Prefocus, Mini-Can Screw

DYH (120V)	600W	\$30.00
DYR (220V)	650W	33.50
DYG (30V)	250W	30.00
DYS/BHC/DYV (120V)	600W	25.00
P2/25 (120V)	850W	40.00
EVR	500W	35.00
EVR (240V)	500W	45.00

Double-Ended, 3¹/₈" M.O.L. 120V

EHR	400W	\$37.00
FAD	650W	22.00
F8X*	650W	27.00
DWV	650W	26.00
FCA*	650W	26.00

220/240V

DXX (P2/13)	800W	\$26.00
DXV	800W	31.50

Double-Ended, 3³/₄" M.O.L. 120V

FCB	600W	\$32.00
DXN	1000W	37.00
DXW	1000W	38.00
F8Y*	1000W	39.00

220/240V

DWN	800W	\$38.50
P2/35	1000W	38.50

Double-Ended, 4¹/₁₆" M.O.L. 120V

EHM	300W	\$29.00
EHZ*	300W	33.00
FCL	500W	29.00
FCZ*	500W	33.00
FDV	500W	31.00
FDN*	500W	32.00
EJG	750W	35.00
EMD*	750W	40.00
FCM	1000W	30.00
FHM*	1000W	32.00

220/240V

EME (P2/11)	800W	\$37.00
EMF*	800W	37.50
K9	300W	37.50
K9F*	300W	39.00
K1	500W	32.00
K1F*	500W	34.00

Double-Ended, 5⁵/₈" M.O.L.

FEY (120V)	2000W	\$ 88.00
FEX (220/240V) (P/27)	2000W	113.00

Double-Ended, 6⁹/₁₆" M.O.L. 120V

FFT	1000W	\$56.00
FDB	1500W	58.00

Double-Ended, 7⁷/₁₆" M.O.L.

220/240V

EKM (P2/7)	1000W	\$31.50
P2/10	625W	36.00
P2/12	1250W	36.00

CSI Compact

Source Iodine Lamp

99-0201	400W	\$157.50
99-0221	1000W	315.00
99-0421†	1000W	420.00
99-1222 (Par 64)	1000W	472.50
99-1422† (Par 64)	1000W	630.00

CID Compact

Iodine Daylight Lamp

99-0211†	200W	\$ 236.25
99-0413	300W	310.00
99-0415† (Par 46)	575W	11450.00
99-0416	575W	11342.25
99-0222	1000W	11450.00
99-0422†	1000W	525.00
99-1225 (Par 64)	1000W	11630.00
99-1425† (Par 64)	1000W	11735.00
99-1435R† (Par 64)	1200W	11725.00
99-0431†	2500W	1145.00

Mid-Metal Iodide Daylight (Linear Double-Ended)

MID 200	200W	\$ 285.00
MID 575	575W	405.00
MID 1200	1200W	575.00
MID 2500	2500W	1000.00
MID 4000	4000W	1270.00
MID 6000	6000W	2095.00
MID 12,000 (380V)	12000W	4200.00

Xenon Lamps

98-0351	250W	\$ 650.00
98-1005	500W	975.00
98-1351	700W	900.00
98-1361	900W	950.00
98-1431	1000W	900.00
98-1439	1000W	900.00
98-1476	1600W	1200.00
98-1479	1600W	1275.00
98-1477	1600W	1275.00
98-1516	2000W	1400.00
98-1841	2500W	1830.00
98-1842	2500W	1875.00
98-1902	3000W	2070.00
98-1903	3000W	2070.00
98-1910	4000W	2475.00
98-1911	4000W	3800.00
98-1915	6500W	4350.00

Projection Lamps

MR-16

BAB	\$21.00	EPV	\$17.50
BRL	7.50	EPX	18.50
DDL	17.50	EPZ	18.50
DDM	21.50	ESX (M68)	21.00
DDS	20.00	EXN (M58)	20.00
DED	20.00	EXT (M49)	21.00
DZE/FDS	14.00	EXZ (M50)	21.00
EHJ	20.00	EYC (M61)	20.00
ELC	21.00	EYF (M60)	20.00
ELD/EJN	19.00	FAL	27.50
ELH	27.50	FCR	10.00
ELS/ELR	23.00	FCS	10.00
EMM/EKS	27.50	FDT	14.00
ENX	28.50	FHX	20.00

MR-11

FLS	\$17.00	FT8 (M52)	\$20.00
FLT	17.50	FTC (M51)	20.00
FSS (M55)	20.00	FTD (M62)	20.00
FST (M54)	20.00	FTE (M65)	20.00
FSV (M63)	20.00	FTF (M66)	20.00
FTA (M64)	20.00		

*Frosted

†Instant (Hot) Re-strike

††With set of five lenses (narrow spot, spot, medium flood, wide flood, extra wide flood). If lens set not required, deduct \$70.00 from price.

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1988 AUDIO

1860 pages covering the complete product lines of 434 manufacturers who serve the Professional Audio and Commercial & Industrial Sound Industries. Featuring studio and remote audio equipment plus sound reinforcement, background music, paging, intercommunications and telecommunications systems and equipment. ISSN# 0882-5432

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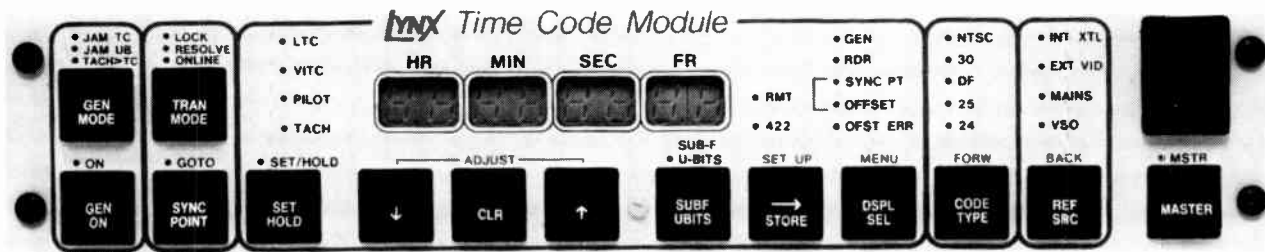
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TIME LINE, INC.

Time Code Module



LYNX

LYNX Time Code Module

The LYNX Time Code Module is a high performance modular time code product that is actually four independent functional units in a single enclosure:

- Wide band SMPTE time code reader
- Multi-standard SMPTE time code generator
- Audio/video tape machine synchronizer
- SMPTE 422 communications port for use with external editors

The LYNX module is available in two software versions—the LYNX/SAL (standalone) configuration, and the LYNX/VSI video editor interface.

The modules are half-rack, and only 1³/₄" high, which creates an extremely small rackmounted system. A four machine controller with four independent generators uses just 3¹/₂" of rack space. There are no internal adjustments. Machine interfaces are made by cable change and machine selection from the front panel. Reconfiguration of all operating parameters are automatically controlled by the internal microprocessor. For each controlled machine the independent generator allows convenient local time code striping.

Additional Features

- Nonvolatile battery backup RAM
- No internal adjustments
- Machine selection made from front panel and stored in battery backup RAM
- Employs latest VLSI components for high performance
- CMOS design for low power and heat dissipation
- Opto-isolation between machine audio, video, and communications grounds
- Worldwide transportability:
 - All time code standards
- Internal options cards:
 - RS232/422 machine control board to supplement parallel output
 - Film chain quadrature interface

LYNX/SAL (Standalone)

- Internal crystal or external video reference input
- Selected reference resolves speed of all machines, including current master (wow and flutter are not passed through)
- Expandable up to 32 machines online
- Masterless system—any machine may be freely selected as current master
- Operates in standalone mode only

The LYNX/SAL forms a standalone synchronization system, which employs one LYNX module to each machine in the system and a minimum of two LYNX for master/slave operation. The units are interconnected with 9-pin RS422 data cables supporting up to a 32 machine system.

Front panel access is given to setting sync points, offsets, control of the generator, and basic system functions. Software compatibility is built-in for most standard tape transports.

LYNX/SAL \$2559.00

LYNX/VSI (Video Editor Interface)

- Direct plug-in to machine port of external video editor
- Supports Ampex VPR3 style serial communications
- Enables complete emulation of video transport:
 - Locks audio transport to house video reference
 - Accepts video editor commands
 - Reports transport status to editor
- Accepts all standard LYNX audio interfaces
- Interfaces with video editors only

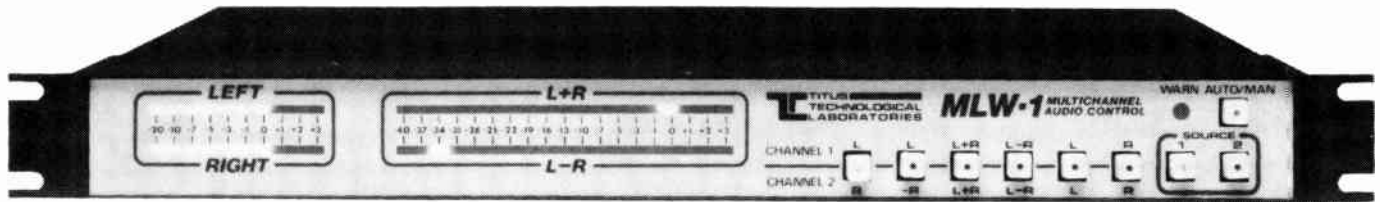
The LYNX/VSI video editor interface software version makes the LYNX module a compatible audio machine interface to Ampex, CMX, and Grass Valley/ISC editing systems. This LYNX software also enables external computer systems to assert machine control, when transmitting Ampex VPR3 type commands.

LYNX/VSI \$2879.00

Interface Cables

Ampex ATR 100, 102, 104	\$275.00
Ampex ATR 124	275.00
Ampex MM-1100, MM-1200	385.00
JVC 6650, 8250, 850, 8600 (Y)	385.00
Mitsubishi X-850	275.00
Otari 5050B, 5050 MK-III 16-pin	275.00
Otari 5050B, 5050 MK-III 34-pin	275.00
Otari 5050B, 5050 MK-III 34-pin (Y)	385.00
Otari MTR 10 I, MTR 12 I (20-pin Honda)	275.00
Otari MTR 10 II, MTR 12 II, MX70	275.00
Otari MTR 20, MX 80, DTR 900	275.00
Otari MTR 90 Series I	385.00
Otari MTR 90 Series II	275.00
Sony PCM-3324 (requires "V-clock" Board)	385.00
Sony VO-5850 (includes serial interface) (Y)	650.00
Sony BVU-800, BVW-10, BVW-40	275.00
Sony BVH-2000, PCM-2800 (incl. serial interface)	500.00
Sony JH-114, JH-24 (Y)	495.00
Sony JH-110 (Y)	495.00
Studer A80	385.00
Studer A800	275.00
Studer A810, A820	275.00
Tascam 40 Series, 60 Series, MS-16	275.00
Tascam 50 Series	275.00
3M M79	275.00
Sony BVU-90 Includes serial interface	

Transports listed on the same line use interchangeable cables.



MLW-1

MLW-1 Automatic Stereo Router

- Automatic change to alternate channel on loss of channel
- Automatic change to alternate source on loss of channel or loss of signal
- Three balanced, bridging inputs
- Three modes of operation: automatic, manual, forced
- Full metering of left and right channels as well as left plus right and left minus right channels on front panel
- Microprocessor controlled audio routing and VCA control for precise and inaudible audio corrections
- User programmed time delays and sequence on loss of channel and loss of signal action
- User programmed input and output operating levels
- +29dBV (+27dBm) maximum output level (X-balanced, D.C. isolated outputs)
- Multiple manual audio control functions

The MLW-1 not only detects and corrects problems, its microprocessor based controls make decisions instantly before inaudibly "cross fading" the appropriate MLW-1 functions in or out of the audio chain.

In the automatic mode the MLW-1 will sense the loss of a channel and instantly switch both outputs to the channel with audio, or switch in a second or third audio source. The MLW-1 will also bring up a second or third audio source upon loss of signal. The MLW-1 provides an alarm on these conditions for your operator. User selected programming of the MLW-1 allows changes in the delay on channel loss time and loss of signal reaction time. User defined sequencing of the input channels with loss of signal and channel loss is also user selected. If the polarity of the audio, in either monaural or stereo, is out-of-phase, the MLW-1 will automatically correct the problem and alert your operator. The MLW-1 uses microprocessor audio routing and VCA control for inaudible changes.

In the manual mode the MLW-1 provides the user with six modes of operation on either of the two stereo audio inputs. The MLW-1 will reproduce the stereo input, produce an out-of-phase stereo source, produce the sum of the inputs on both output channels, produce the difference between the two channels on both outputs, direct the left or right channel input to both outputs, all with the push of a button. In either mode the detector circuits and the front panel metering follow the active audio input.

The audio inputs for each channel are balanced bridging, and can be dip switch set for -10dBm, +4dBm, and +8dBm. The audio outputs are X-balanced and D.C. isolated. The operating levels for the outputs can be dip switch set for either +4dBm or +8dBm. Maximum output is +29dBV.

Metering is provided on the front panel for left and right selected input channels on a 23dB range LED VU meter. L + R and L - R metering is also provided on a 43dB range LED VU meter. The remote control connector provides the user with buffered outputs from the current active left and right channels as well as the L + R and L - R audio. Extensive alarm outputs and remote control of the MLW-1 is also provided for remote operation and monitoring.

The MLW-1 can be placed in series with any monaural or stereo audio program path, or can be used as a bridging monitor device to monitor level and channel balance of any audio source. The MLW-1 can be placed pre- or post-audio processing or STL. For Production the MLW-1 can be used to directly switch between multiple sources (at different operating levels) or in series with the program output of a production console for catching and correcting audio problems as well as monitoring all audio production. Audio processing can be precisely balanced using the L - R mode and "nulling" the audio on the processing equipment. Full metering of both channels, sum channel, and difference channel allows for "on-the-fly" audio set-up of audio sources.

Specifications

Frequency

Response: 20-20,000Hz, ± 0.5 dB

Harmonic

Distortion: <0.1%THD + noise (20-20kHz)
<0.1IMD (SMPTE)

Input Level:

-10, +4, +8dBm user selectable. Three stereo inputs, all active, balanced, bridging

Signal-to-Noise:

>70dB below +8dBm operating level

Metering:

LED type 23dB VU left, right
LED type 43dB VU L + R, L - R

Outputs:

Program Left, Program Right +4, +8dBm user selectable
+29dBV, +27dBm max output

Remote I/O:

37 pin connector providing alarms, buffered audio, MLW-1 controls

Power:

110VAC, 50/60Hz

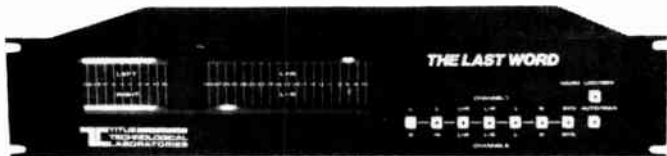
Dimensions:

1.75" H x 19" W x 15" D standard EIA rack

MLW-1\$1800.00

TITUS TECHNOLOGICAL LABORATORIES

Audio Processing Unit/On-Air Light



TLW-1

TLW-1 The Last Word Audio Processing Unit

- Three modes of operation: Automatic, manual, and forced synthesis
- True instrumentation amplifier inputs, balanced, Hi-Z or 600 ohm switchable
- Full metering of left and right channels as well as left plus right and left minus right channels on front panel
- Microprocessor controlled audio routing and VCA control for precise and inaudible audio corrections
- XLR type input and output connectors
- Power loss/audio bypass relay
- Internal or external stereo synthesizer, user selected
- Automatic synthesis on channel loss or mono program detection, user selected
- Automatic mono out with loss of channel with no loss in audio level
- Automatic phase reversal with out of phase source/mono or stereo
- Factory installed optional HOWE phase chaser or automatic audio time base correction
- All outputs: active, x-balanced, DC isolated, unity gain

The Last Word is the single unit that provides broadcasters with automatic detection and correction of a wide variety of problems that can afflict a stereo program. The Last Word not only detects and corrects problems, its microprocessor based controls make "intelligent" decisions instantly before inaudibly by "cross fading" the appropriate Last Word functions in or out of the audio chain.

Because of its exceptional flexibility The Last Word can be installed in many locations. Use The Last Word at the beginning or end of the audio chain. Use it at your STL receiver site to correct instantly for loss of a channel. The Last Word can also be used in the nulling mode to adjust audio processing equipment quickly.

Minor phase errors can also be corrected when The Last Word is equipped with the optional Howe Phase Chaser™. These minor phase errors can be far more disturbing to your mono listeners than to those who are listening to your signal in stereo. Since the majority of the public still listens to broadcasts in mono, The Last Word with the Howe Phase Chaser can be invaluable to you. It will help you protect these people from listener fatigue (and the inevitable loss in ratings) caused by phase errors in the program material or from improper tape head alignment.

The Last Word Eliminates These Problems:

Channel Loss: The Last Word senses a missing channel and instantly switches both outputs to the channel with audio. Or, you can opt for The Last Word's built-in stereo synthesizer to provide a stereo output for broadcast, or bring your station's external stereo synthesizer on line. The Last Word will provide an alarm for your operator.

Audio Out-of-Phase: If the polarity of the audio, in either mono or stereo, is out of phase, The Last Word automatically corrects the problem and alerts your operator.

Mono Program: When The Last Word detects mono programming it can automatically insert either its built-in stereo synthesizer or your external stereo synthesizer into the audio chain for uninterrupted stereo transmission. The Last Word automatically returns to normal "unsynthesized" stereo when a stereo program is detected.

Production: The Last Word is an invaluable production tool. Use it in the manual mode to reproduce the stereo source, produce an out-of-phase stereo source, produce the sum of the inputs on both channels, produce the difference between the two channels on both outputs, direct the left or right channel to both outputs, or place a stereo synthesizer into the audio circuit. This synthesizer can be either its own internal unit, or an external stereo synthesizer. To take advantage of any of these options, simply push a button on the front panel.

TLW-1 The Last Word	\$2975.00
Howe Phase Chaser . . . . .	.910.00



OAL-HG



OAL-VS

On Air Lights

- Handsome appearance
- Oak base
- Silver or gold frame
- Horizontal or vertical mounting
- "On air" or "recording"
- "Blackout" face when not in use
- Dimensions: 4³/₄" H x 8¹/₁₆" W x 2¹/₂" D
- Power: 24VDC 680 MA (four #1864 bulbs in parallel)
- Wiring: class 2, #18 to #24 gauge

The On Air light provides the broadcaster and recording studio with a beautiful but practical means of indicating that a studio is in use. The On Air light features a smoked glass window mounted in either a gold or silver frame which is attached to an oak mounting base. The warning "On Air" or "Recording" only appears when illuminated and is blacked out when not in use.

The On Air light uses four 24VDC bulbs which almost completely eliminates the chance of total failure. Bulb replacement is quick and easy. Class 2 wiring, using #18 to #24 gauge wiring directly to your audio console's relays, eliminates the need for special interface boxes.

OAL-HG Horizontal "On Air" gold frame	\$125.00
OAL-HS Horizontal "On Air" silver frame	125.00
OAL-VG Vertical "On Air" gold frame	125.00
OAL-VS Vertical "On Air" silver frame	125.00

For horizontal or vertical "Recording" add suffix "R" (e.g. OAL-HGR)

TRIDENT AUDIO USA

Mixing Consoles

Series 24

• 4 band high and low mid sweepable EQ with variable high pass filter • Balanced mike and line inputs with separate gain controls and phase reverse • 8 auxiliary sends with pre/post switching in pairs • 24 sub-groups with direct mix assignment • 24 monitor/FX returns with 2 band EQ and fader reverse • 4 echo returns • Stereo in place solo • Auto muting bus • Direct outputs and separate insert send and return on each channel • 48V phantom power • Talkback facilities • Balanced outputs • 24-track metering, including floor stand

28-24-24	\$22,300.00
36-24-24	25,900.00
44-24-24	29,500.00
52-24-24	33,100.00

TT Patch Bay Versions

28-24-24	\$31,900.00
36-24-24	35,900.00

Modules and Accessories

Input module	\$ 325.00
Output module	325.00
Auxiliary/echo return module	525.00
Master remix module	525.00
Blank panel	40.00
Spare power supply	1,300.00
Spare parts kit	325.00

Series 65-8

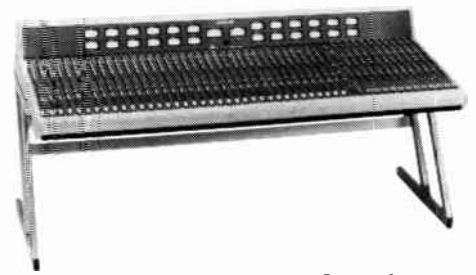
• 4 band high and low mid sweepable EQ with variable high pass filter • Balanced mike and line inputs with separate gain controls and phase reverse • 8 auxiliary sends with pre/post switching in pairs • 8 sub-groups with direct mix assignment • 16 monitor/FX returns, 8 with 3 band EQ • 4 echo returns • Stereo in place solo • Auto muting bus • Direct outputs and separate insert send and return on each channel • "Group assignment" allows 16 bus routing without patching • 48V phantom power • Talkback facilities • Balanced outputs • 16-track metering

16-8-2	\$12,500.00
24-8-2	15,700.00
32-8-2	18,900.00
40-8-2	22,100.00
48-8-2	25,300.00
56-8-2	28,500.00

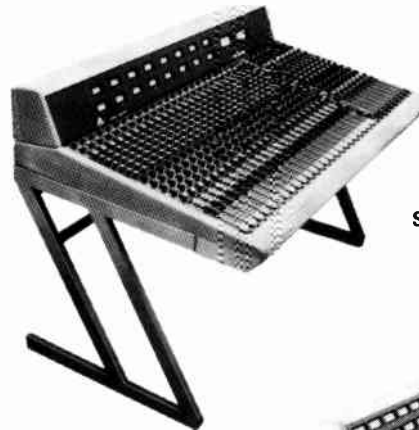
Series 65-16

• 4 band high and low mid sweepable EQ with variable high pass filter • Balanced mike and line inputs with separate gain controls and phase reverse • 8 auxiliary sends with pre/post switching in pairs • 16 sub-groups with direct mix assignment • 16 monitor/FX returns, with 2 band EQ and fader reverse • 4 echo returns • Stereo in place solo • Auto muting bus • Direct outputs and separate insert send and return on each channel • 48V phantom power • Talkback facilities • Balanced outputs • 16-track metering

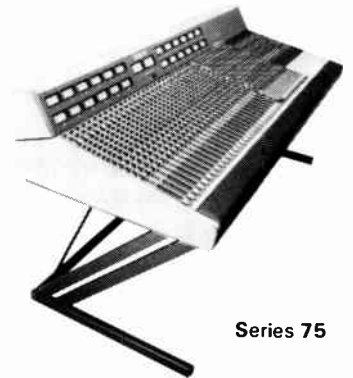
16-16-2	\$13,300.00
24-16-2	16,900.00
32-16-2	20,500.00
40-16-2	24,100.00
48-16-2	27,700.00
56-16-2	31,300.00



Series 24



Series 65



Series 75

Series 75

• 4 band high and low mid sweepable EQ with variable high pass filter • Balanced mike and line inputs with separate gain controls and phase reverse • 8 auxiliary sends with pre/post switching in pairs • 24 sub-groups with direct mix assignment • 24 monitor/FX returns with 2 band EQ and fader reverse • 4 echo returns • Stereo in place solo • Auto muting bus • 48V phantom power • Talkback facilities • Balanced outputs • 24-track metering • 364 point TT patch bay on 28 input frame and 510 point TT patch bay on 40 input frame

28-24-24	\$33,950.00
40-24-24	41,950.00
36-32-32 (Special order)	43,950.00

NOTE: Console price includes stand, all mating connectors and manual.

Modules and Accessories

Series 75 input module	\$ 325.00
Series 75 output module	325.00
Series 75 auxiliary/echo return module	525.00
Series 75 master remix module	525.00
Series 75 blank panel	40.00
Series 75 spare power supply	1,300.00
Series 75 spare parts kit	325.00

TRIDENT AUDIO USA

Mixing Consoles

Series 80B

• 4 band high and low mid sweepable EQ with hi and low frequency 2 position shelving and 50Hz, 12dB per octave high pass filter • Transformer balanced mike and electronically balanced line inputs with separate gain controls and phase reverse • 5 auxiliary sends (3 mono and 1 stereo pair) with pre/post switching • 24 separate bus outputs with direct mix assignment • Stereo in place solo • Auto mute bus • Channel mute • Channel AFL and PFL • 4 echo returns with EQ 24 monitor/FX returns with 3 band EQ, fader reverse and remix assignment • Console status routing for record, overdub, and remix modes • 48V phantom power • Talkback facilities • Full patch bay and stand • Available in 3 frame sizes of 30, 40 and 50 input

30-24-24	\$59,950.00
40-24-24	80,950.00
50-24-24	101,950.00

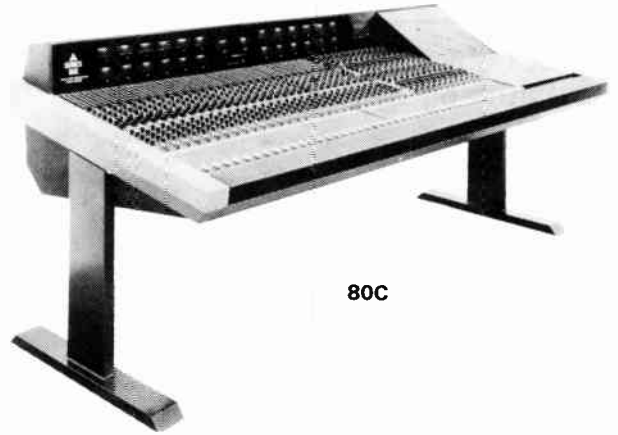
Modules and Accessories

Monitor module (specify with/without EQ)	\$ 895.00
Auxiliary module	1,300.00
Echo return module	1,600.00
Dual 20V power supply (spare)	1,550.00
Dual 05V power supply (spare)	1,200.00
Blank module panel	35.00
Input fader with panel (Audiofad 1040P mono)	95.00
Remix fader with panel (Audiofad 1040 stereo)	140.00
Audiofad fader with 1040P mono	70.00
Audiofad fader 1040P stereo	115.00
Module extender card	100.00
Spare parts kit for console	400.00
Spare parts kit for power supply	115.00

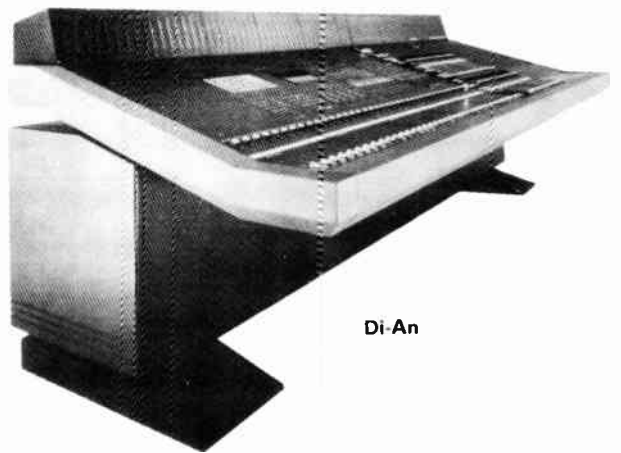
Series 80C

• Unique 48-track split monitor return section with 4 band EQ and access to all auxiliary sends • Additional monitor features include: fader reverse to long throw faders, assignment to remix, solo, mute, and 48 monitor level control pots • Input section includes: 4 band EQ with high pass filter, transformer balanced mike input, and electronically balanced line inputs with separate gain control and phase reverse • 5 auxiliary sends (3 mono and 1 stereo) with pre/post switching • 24 separate bus output assignments, stereo in place solo, auto mute bus, channel mute, channel AFL and PFL, 4 echo returns with EQ • Console status routing for record, overdub and remix modes • 48V phantom power, talkback facilities • Full patch bay designed for dual 24-track patching • 4 frame sizes of 32, 40, 48 and 56 input

32-24-48	\$ 74,500.00
40-24-48	92,000.00
48-24-48	109,500.00
56-24-48	117,500.00
Input module	895.00
Monitor module	895.00
Auxiliary module	1,300.00
Echo return module	1,600.00
Dual 20V power supply (spare)	1,550.00
Dual 05V power supply (spare)	1,200.00
Blank module panel	35.00
Input fader with panel (Audiofad 1040P mono)	95.00
Remix fader with panel (Audiofad 1040 stereo)	140.00



80C



Di-An

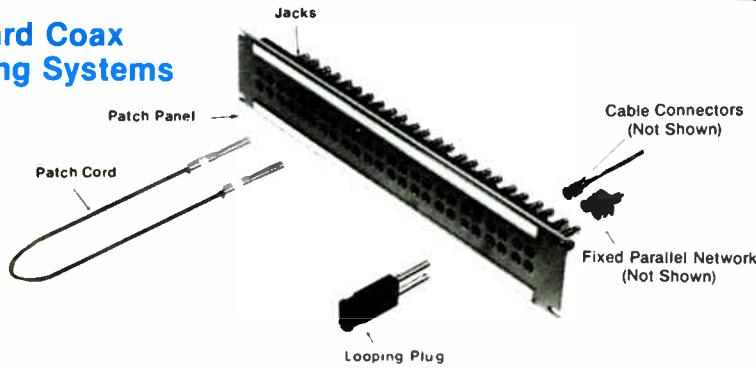
Audiofad fader 1040P mono	\$ 70.00
Audiofad fader 1040 stereo	115.00
Module extender card	100.00
Spare parts kit (for console)	400.00
Spare parts kit (for power supply)	115.00

Di-An

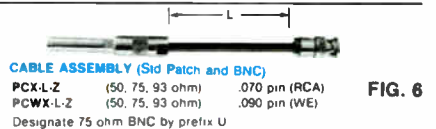
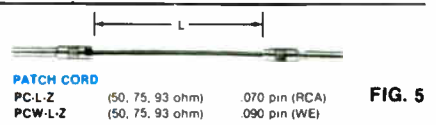
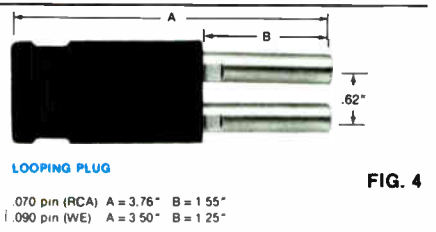
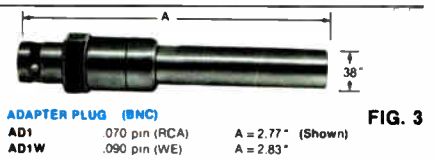
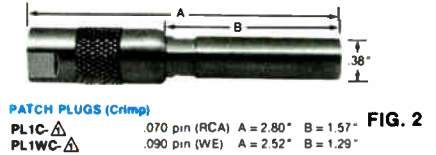
• Ability to store and recall every major console function right from the microphone input to group input • Most of the main channel functions such as equalization, routing, panning and auxiliary sends are centrally accessed • Controls which the operator requires on a per channel basis are conveniently located just above each fader • The console computer provides 1M byte of memory (RAM) which makes it possible to store all events in real time • Because the audio signal path is controlled to digital accuracy, a mix stored on one Di-An console and subsequently recalled on another will be extremely precise • Contains very few rotary controls • Since all front panel controls do not have audio signals passing through them, noisy or intermittent switch problems are greatly reduced • Each input has 24 auxiliary sends which can also be ganged together as 12 stereo pairs • An auto gain facility on each input samples the input signal and sets the amplifier gain to within 5dB of peak • Input, group/tape and stereo mixdown buses are monitored by digitally controlled 100 segment bar-graph displays • Switchable between VU or PPM characteristics, with peak-hold and spectrum analysis facilities, the attack and decay of all meters is controlled by a single eprom

Di-An

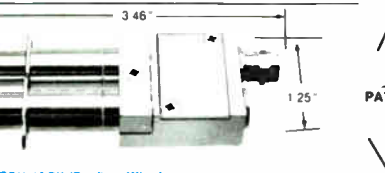
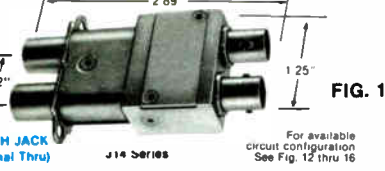
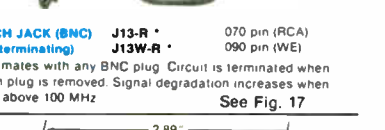
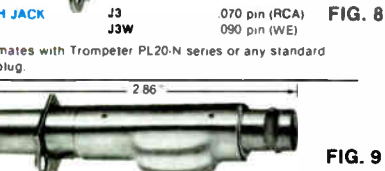
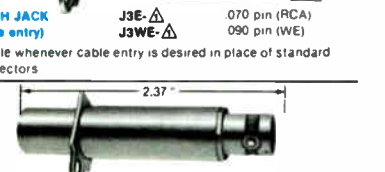
Standard Coax Patching Systems



Plugs & Cable Assemblies



Jacks: Single/Dual



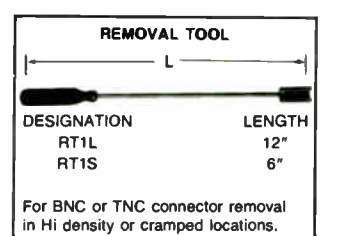
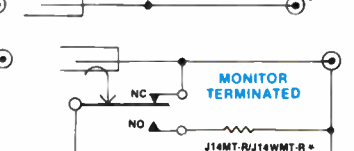
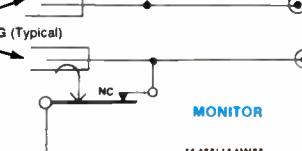
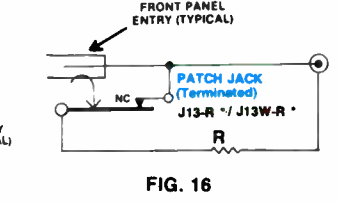
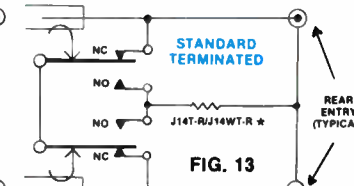
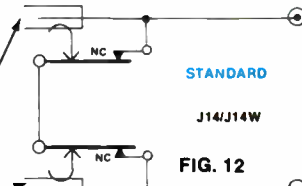
Introduction:

Trompeter Electronic's standard coax patching systems, shown on this page, provide limitless flexibility to route signals from one place to another. Two basic versions of Standard Coax patching are available. The RCA 50 ohm with a pin size of .070" and the Western Electric (WE) 75 ohm type with a pin size of .090". Signal degradation occurs above 100 mhz. The two series are not interchangeable but can be intermixed on the same panel along with TEI's audio patch jacks and panel lites (not shown).

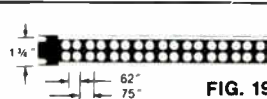
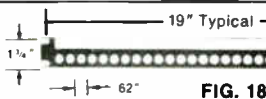
PART NO.	RCA	WESTERN ELECTRIC	FUNCTION	REAR ENTRY	PC FIG.	CIRCUIT FIG.
J3E-Δ	J3WE-Δ	Patch Jack, Single	Cable*	7	—	
J3	J3W	Patch Jack, Single	BNC Standard TNC Available	8	—	
J30	J30D	Patch Jack, Single	Solder Pot	Not Shown	—	
J13R*	J13WR	Patch Jack, Single — Self Terminating	BNC Standard TNC Available	9	16	
J13C-R*	J13WC-R	Patch Jack, Single — Self Terminating	Cable, Crimped	Not Shown	16	
J14 Series	J14W Series	Patch Jack, Dual — Self Terminating	Dual BNC Standard TNC Available	10	12 thru 15	
J15 Series	J15W Series	Patch Jack, Dual — Prewired Parallel or No Wiring	Single — BNC, TNC or Cable	11	—	

* Substitute Resistance for R (1/2 W 5%)

RG CABLE	1	2	4	5	3
	58	59	122	174	223



Patch Panels



PANEL HEIGHT	NO. ROWS	FIG.	PANEL DESIGNATION AND NO. OF SINGLE JACKS ACCOMMODATED												VERTICAL SPACING		
			12	14	16	20	24S	26	28	32S	40S	48S	52S				
1 3/4"	1	18															.625
	2	19															
3 1/2"	2	20					24L		28A	32A	36A	40	48	52	56		.625

◀ Will not accept J14 or J15 Dual Jack.
 Full Line Catalog and Pricing Available on Request. Prices and Specifications Subject to Change Without Notice.

Ordering Information:

JSI - 12 / J3W

Panel Type _____
 (JS = Aluminum)
 (JSI = Insulated)
 No. of Jack Holes _____
 Jack Type _____
 To Order Panels Only, Leave "Jack Type" Blank.

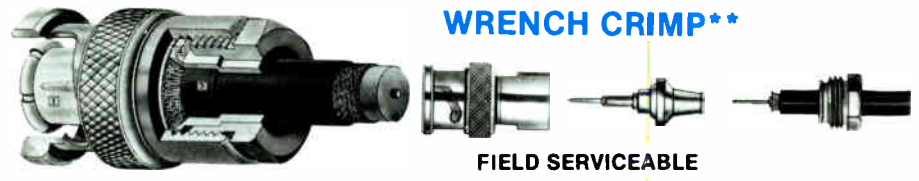
The TROMPETER NETWORK CONNECTION

MINIATURE COAX SERIES CONSTRUCTION



FEATURES

- 1 Shield conductor, captive "hardened Beryllium copper" spring
- 2 Metal to metal contact provides positive shield integrity
- 3 Positive jacket crimp locks exceed MIL C 39012 Cat A (Wrench Crimp) & Cat D (Tool Crimp)
- 4 Wrench Crimp — Floating no-twist bushing
- 4 Tool Crimp — Teflon insulators (featured exclusively in all TEI connectors)

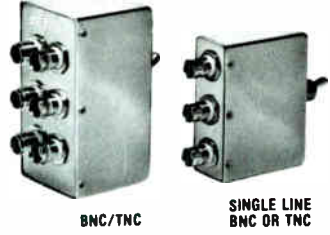


BNC 2-LUG BAYONET				TNC THREADED				
		Construct.	50 Ohm	75 Ohm		Construct.	50 Ohm	75 Ohm
IN-LINE CABLE PLUGS		WRENCH CRIMP	PL20-N*	UPL20-N*		WRENCH CRIMP	PL40-N*	UPL40-N*
		TOOL CRIMP	PL220-N*	UPL220-N*		TOOL CRIMP	PL240-N*	UPL240-N*
IN-LINE CABLE JACKS		WRENCH CRIMP	CJ20-N*	UCJ20-N*		WRENCH CRIMP	CJ40-N*	UCJ40-N*
		TOOL CRIMP	CJ220-N*	NOT AVAILABLE		TOOL CRIMP	CJ240-N*	NOT AVAILABLE
INSULATED BULKHEAD CABLE JACKS		WRENCH CRIMP	BJ26-N*	UBJ26-N*		WRENCH CRIMP	BJ46-N*	UBJ46-N*
		TOOL CRIMP	BJ226-N*	NOT AVAILABLE		TOOL CRIMP	CONTACT FACTORY	NOT AVAILABLE
INSULATED BULKHEAD FEEDTHRU JACKS		—	BJ28	UBJ28		—	BJ48	UBJ48

*SPECIFY CABLE NO. & MANUFACTURER. JACKET DIA. MAX. .332" (8.42mm) CONDUCTOR DIA. MAX. .057" (1.45mm)
 **TEI'S TPS & TCM SUBMINIATURE, F MINIATURE & C & N STANDARD COAX CONNECTOR SERIES ALSO FEATURE 3 PIECE WRENCH CRIMP CONSTRUCTION

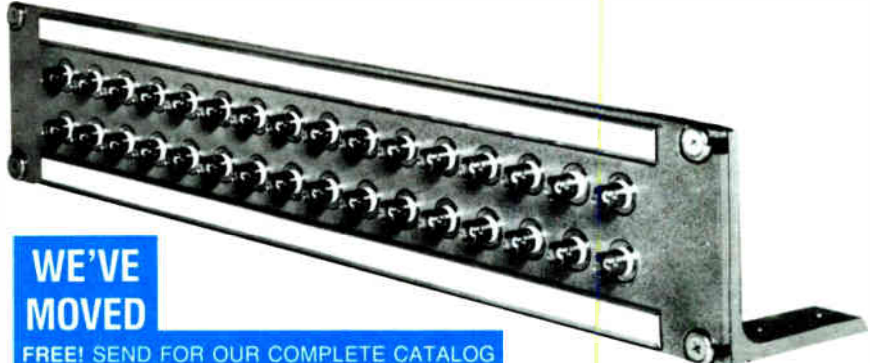
COAX DATA SWITCHES:

Designed for use up to 15 MHz. Circuits are isolated from ground with shield & center conductor switched. Switched out ports are terminated in a resistive load.



DATA DISTRIBUTION PANELS:

TEI manufactures signal distribution panels that accommodate from 12 to 52 Bulkhead Cable or Feedthru Jacks illustrated above. All panels are 19" standard rack size in insulated and non-insulated versions. Panels accommodating 24, 32, 40 or 52 lines are double row (as illustrated) and 3 1/2" high. Light gray is the standard color though other colors are available on special order.



WALL MOUNT PLATE:

Available with up to 6 BNC or TNC connectors.



WE'VE MOVED

FREE! SEND FOR OUR COMPLETE CATALOG

TROMPETER ELECTRONICS, INC.
 31186 LA BAYA DRIVE • WESTLAKE VILLAGE, CALIF. 91362
 (818) 707-2020 • TWX: 910-494-1210

ULTIMATTE CORP.

Video Matting Equipment



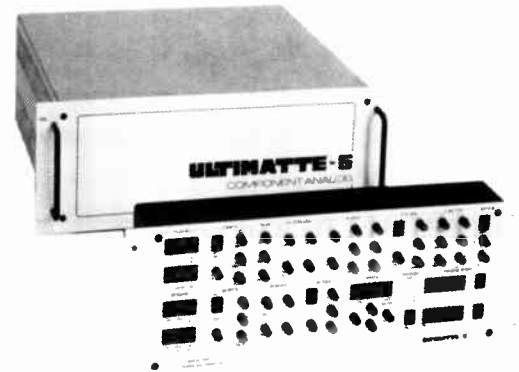
Newsmatte-2



Ultimatte-300

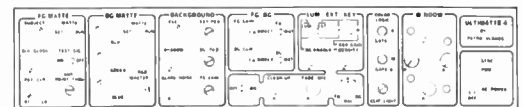
Ultimatte®/Newsmatte™ Video Matting Equipment

All Ultimattes and Newsmattes can composite transparent objects, fine detail such as hair or smoke, out of focus objects, reflections and shadows. They can all matte on blue, green or red; and all permit the foreground subject to touch the backing without causing fringing or break-up in the composite. They all remove blue spill from the foreground subject while reproducing blue foreground colors. They all have a clean up control to remove unwanted shadows or defects in the backing and a black gloss control to deal with black glossy surfaces in the foreground. All have a positive matte output. Ultimatte Corp. also manufactures the High Definition Ultimatte (not included on comparison chart) which is compatible with High Definition Standards.



Ultimatte-5

Features	Ultimatte-5	Ultimatte-4	Newsmatte-2	Newsmatte	Ultimatte-300
Automated Background Level and Background Matte Adjustment	With Manual Override		•	•	•
Background Matte Controls	•	•			
Built In Window Generator	•	•			
Soft Edge Windows	•				
Inverted Windows	•	•			
Reverse Windows	•				
External Window Input (In addition to External Matte Input)	•				
Background Defocusing Control	•				
Separate Matte Density Adjustment for Warm & Cool Colors	•				
Foreground Fade In & Fade Out	•	•			•
Foreground Contrast Adjustments	•	•			
Foreground Colorizer	•				
Background Field Colorizer	•	Internal			
White Logic (Can matte on white)	•	Optional			
Black Logic (Can matte on black)	•	•			
Remote Control	1 Furnished Can add 3 more	Optional	Kit Available		Kit Available
Glare / Noise (Shadow) Control	•	•			Automated
Negative Matte Output	•				
Digital Memory of Control Systems	32 Sets of Values		One Set of Values		One set of Values
Glw Input Circuit	•				
Flare-Suppressed Foreground Direct			•		•
Gate 3 Control to faithfully reproduce Green against Blue or Blue against Green	•				
Matte In Polarity Switch	•	•			
Ability to Isolate and Hold Blue Objects	•				
Foreground Input Requirements	RGB or Component	RGB	RGB & Encoded	RGB & Encoded	RGB & Encoded
Background Inputs	RGB, Component or Encoded	Encoded or RGB (option)	Encoded	Encoded	Encoded
Outputs	RGB & Component	RGB	Encoded	Encoded	Encoded
Requires Separate Encoder	•	•			
Requires External Black Burst	•	Only if using Matte Output			
Requires External Sync and Blanking		•		•	
Knob Adjustability	•	•			•
Micro-Processor Controlled					•



Ultimatte-4 Front Panel

- Ultimatte-5 (Includes one remote) \$26,900.00
- Additional remotes for Ultimatte-5 4,500.00
- Ultimatte-4 14,500.00
- Ultimatte-4R (Remote with 10 meters of cable) 15,500.00
- Remote Control Kit for Ultimatte-4 1,595.00
- Extra Remote Cable for Ultimatte-4 per meter/12.50
- Ultimatte-300 8,895.00
- Remote Control Panel for Ultimatte-300 375.00
- Newsmatte-2 7,850.00
- Remote Control Kit for Newsmatte-2 245.00
- Newsmatte 4,985.00
- High-Definition Ultimatte 39,850.00

45G Tower

This tower is designed in an 18" equilateral triangular pattern. The three legs of the tower are either heavy, 14 gauge, special quality steel tubing or solid steel bars. The cross bracing is the "zig-zag" design using a continuous, solid steel rod, electric welded to side rails every 15". All sections are 10' in length.

This tower is suitable for mounting communication antennas or other equipment under normal conditions for heights up to a maximum of 300'. Entire tower is accurately constructed, utilizing precision machines and then electric welded throughout.

The tower sections are completely hot dip galvanized after fabrication to give permanent protection against corrosion. Because sections are galvanized as the last operation, all points of welding and other points of construction are fully covered with molten zinc that tends to seal itself should there ever be any breakage on the surface.

Self-Supporting Heights for 45G Tower

Wind Load	Factor of Safety — 1.5		Factor of Safety — 2.3	
	No. Ant.	2 ft. ²	No. Ant.	2 Ft. ²
10.0 PSF (50 MPH)	90.6'	84.0'	72.9'	66.5'
14.4 PSF (60 MPH)	75.9'	69.1'	61.6'	54.5'
20.0 PSF (70.7 MPH)	64.2'	57.8'	51.8'	45.4'

SSV Series Self-Supporting Towers

SSV Towers are designed for a minimum wind load of 30 psf. Towers requiring higher wind or ice loads are no problem due to the tower's amazing versatility.

Standard designs available in heights to 500' depending on loading. Special towers available depending on specific requirements.

The SSV Series make use of primarily knock-down construction for on-site assembly, which reduces shipping costs. Towers for minimal loadings are available in welded construction in heights up to 60', shipped in 20' sections. All components and hardware are hot dip galvanized after fabrication with a zinc coating per EIA standards.

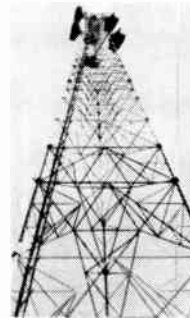
All SSV Series towers are engineered, designed and fabricated to meet or exceed latest EIA specifications.

80 Tower

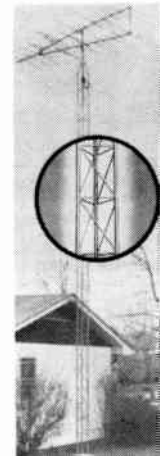
The 80 tower is constructed in an equilateral triangular pattern with either steel pipe or solid steel legs and tubular or angle steel crossbracing with bolted construction. The triangular size is 41" on leg centers and the diameter of the tower legs vary to meet the requirements of the installation. This feature permits considerable flexibility in supplying a tower tailored to specifically meet and adequately handle the equipment to be installed.

All components of this tower are completely hot dip galvanized after fabrication to protect all areas of the tower. A minimum of 2 oz. of zinc per square foot of surface is applied throughout.

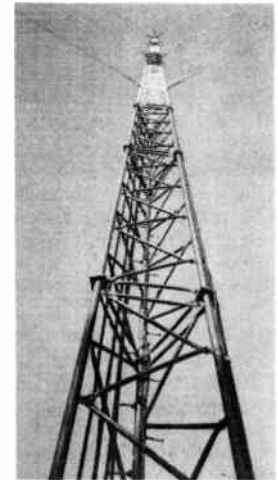
This tower is rated for installation up to 1000' using variable size and weight of tubular or solid steel components. Each tower is individually engineered to handle a particular job.



25G



SSV



80

25G Tower

The 25G is a general purpose communication or heavy-duty TV tower and will satisfy a tremendously wide range of tower needs.

The 25G is built on a 12 1/2" equilateral triangular design with continuous steel "zig-zag" cross-bracing entirely electric welded and fabricated in precision equipment. The 8 "zig-zag" braces per 10' section mean more than usual strength.

Extra heavy-duty 1 1/4" steel tubing is used for side rails, resulting in far greater strength and sturdiness than ordinarily found in this size tower.

The components are hot dip galvanized for a long-life finish, rust-proof and give an always attractive appearance. Every inch, including inside of entire tower, evenly and completely covered with zinc after fabrication.

The 25G uses double-bolted joints. The extra strength of the 25G allows it to be self-supporting provided a house bracket is used and can go 35' above this bracket under normal conditions. Under most guyed conditions the 25G is suitable to heights of 200'. Assembly bolts and nuts are located within 1 leg of each tower section.

Self-Supporting Heights for 25G Tower

Wind Load	Factor of Safety — 1.5		Factor of Safety — 2.3	
	No. Ant.	2 Ft. ²	No. Ant.	2 Ft. ²
10.0 PSF (50 MPH)	72.4'	64.8'	58.4'	50.9'
14.4 PSF (60 MPH)	60.4'	52.9'	48.7'	41.3'
20.0 PSF (70.7 MPH)	51.3'	43.8'	41.4'	34.1'

Call for Quotes

Refer to Green Section for Addresses and Telephone Numbers.

AVS-1B Routing Systems

- 60MHz Video Bandwidth—no obsolescence with conversion to MAC or HDTV video signals
- Sync-tip clamping of video inputs and outputs
- No control buffer cards used—worst-case failure is single 10 x 10 card
- Multi-sourced, discrete components—no proprietary circuits
- Fully reprogrammable with no downtime
- 10-year memory retention of reprogrammed data and matrix status
- Single or redundant power supplies with failure alarms
- Source/destination lockout capability
- Single-motherboard design for fully operational extender card servicing
- Up to eight individually-addressable levels
- 320 inputs/unlimited outputs maximum size per level
- Secondary combining matrices not required regardless of system size
- Automatic control card switchover with alarm—No undetected failure disasters
- Redundant "Plug-In" cooling fans
- Regenerative time code matrices
- Four user ports, RS-232 and RS-422
- Loophrough coax control panel interconnection via four isolated party lines
- Control panel source names assigned by customer—not by manufacturer
- BNC video and compression-type audio connectors—interface panels not required
- SALVO switching from computer terminal

Master Control Switching

The AVS-1B Routing Switcher is also used as the switching matrix for Utah Scientific Master Control Switchers. In this system, sources are selected by router crosspoints then processed as necessary by the master control mainframe. Some of the advantages of this approach to master control switching are:

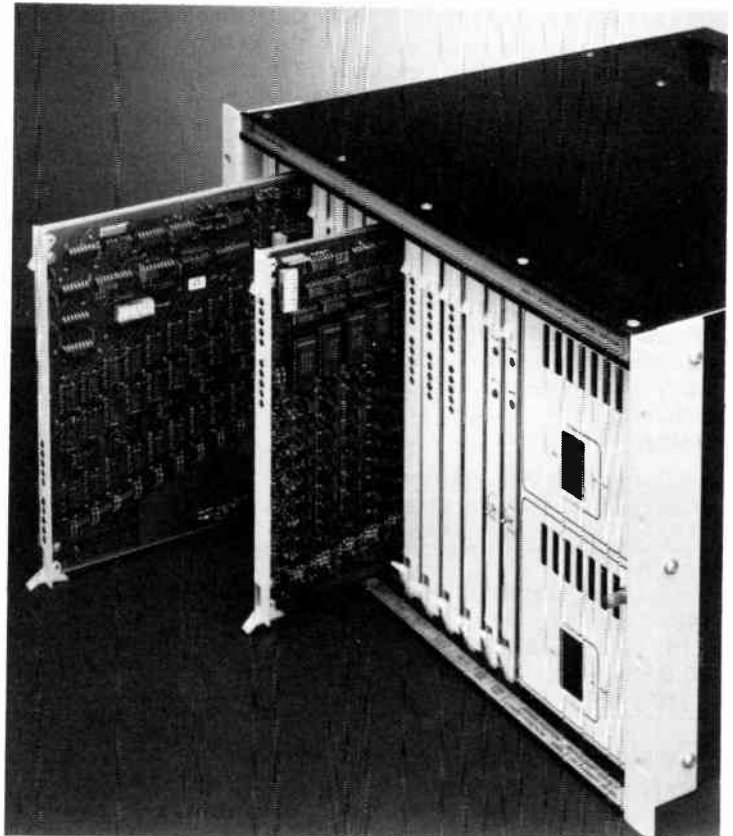
- All sources feeding the router are available to the Master Control Switcher
- System timing is greatly simplified since all sources are normally in proper time at the router inputs and the delay of a separate master control matrix needn't be accommodated
- In automated systems additional matrix buses can easily be controlled for multiple output feeds, off-line recording, etc.
- Overall system cost is significantly reduced

Integration with Machine Control

AVS-1B switching systems can be integrated with either of the two machine control systems offered by Utah Scientific. The PLMC-1 party line system can, in many instances, share the matrix party lines. Where the more sophisticated SMC-1 machine control system, with its high speed DYNABUS™ communications network, is used, interconnection with the AVS-1B party line is accomplished at the DYNABUS User Interface/Diagnostic panel. With either system, machine control assignments can either follow or be independent of A/V switches.

User Control Ports

The PL-160 Control and Memory Card furnished with each system incorporates multiple user ports to allow matrices to be controlled and/or monitored by various external devices. Two ports support RS-232 protocol and are brought out to standard RS-232 connectors on the rear panel. Another port supports RS-422 protocol while a fourth port can be internally strapped for either RS-232 or RS-422 operation.



AVS-1B

System Reprogramming

The relationship between source and destination names and their associated matrix inputs and outputs is subject to change as equipment is replaced and systems are expanded.

To alleviate this problem, Utah Scientific has incorporated reprogrammable, non-volatile memories in all its recent panel designs, with the PL-160 Control and Memory Card and the system party lines acting as the reprogramming medium.

The write-cycle time for the RAM memory used in Utah Scientific panels is typically faster, by a factor of 60,000:1, than the EPROMS used by other switcher manufacturers. This permits the reprogramming data to be interspersed with party line control commands and refreshment words. The result is system reprogramming with no downtime.

While RAM memory retention (by Lithium batteries) is typically ten years, with or without AC power applied, it is still backed up by factory-programmed PROMs that down-load into RAM if a check sum error ever occurs on panel start-up or reset.

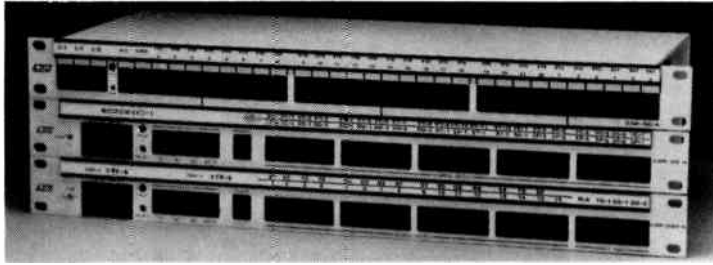
A customer-furnished "dumb" terminal is used for reprogramming. This same terminal can be used for entering and executing SALVO switch commands and source and destination lockouts.

Power Supply Systems

Two separate power supply systems may be supplied with Utah Scientific switchers. Where space permits, one or two (for optional redundancy) diode-isolated PS-1B supplies are installed in matrix card cages. In other systems the PS-2 redundant power supply system, powering an entire rack of matrix frames, is furnished. The PS-1B system has both audible and external-contact failure alarms, while the PS-2 system offers an optional scanner/alarm panel that continuously scans 36 circuit points creating both audible and external-contact alarms while identifying the trouble source upon failure detection.

UTAH SCIENTIFIC, INC.

Router Control Panels



CSP-30/4

CSP-40/4

CSP-260/4



CSPD/4

Reprogrammable Router Control Panels

- All panels are reprogrammable with no system or panel downtime
- Program-Select switch doubles bus capacity of most panels
- Sixteen group names to satisfy needs of modern TV plants
- Group names assigned by customer—not by manufacturer
- Up to 1600 possible source names provided by most panels
- Touchpad entry of source, destination or panel lockouts
- 10-year retention of user-programmed data, power on or off
- Multi-bus panels provide instantaneous status readout for each level upon selection of new bus
- Single coax party line control connection
- Industry's widest range of reprogrammable, alphanumeric, multi-level panels
- Full matrix/maintenance panel performs various system diagnostics

Reprogrammable Router Control Panels provide individual control and statusing of up to four switching levels (matrices). Designed to operate with either AVS-1 or AVS-1B Routing Switchers, these panels provide a high degree of user-defined flexibility. All panel operations are straightforward, requiring a minimum number of keystrokes to switch or status multiple levels. Other functions, such as source or destination lockouts and panel lock are also entered from the keyboard in a logical manner.

Panels may be reprogrammed as to source and destination names or output bus assignments. This is accomplished over the routing system's party lines in conjunction with the PL-160 Control and memory card. Reprogramming is achieved without interrupting system operation or removing the panel from service.

Panel memory is Lithium battery-supported RAM, typically providing 10-year memory retention with or without AC power applied. Nevertheless, factory-programmed PROMs are also incorporated which download into RAM if a check sum error occurs on panel start-up or reset. The write cycle time for the RAM is 60,000 times faster than that typical of the E²PROMs used by other manufacturers, permitting reprogramming data to be interspersed with party line control commands and refresh words.

Panels are reprogrammed using a customer supplied "dumb" terminal connected to one of the PL-160 Control and Memory card's user ports. This same terminal may also be used for entering and executing SALVO switch commands and source and destination lockouts.

Control panels range from simple, button-per-source, single bus units to a sophisticated full matrix/diagnostic unit that operates in either numeric or alphanumeric modes while performing a variety of switching system diagnostics.

- CSPD-4** Four-level deskmount controller. Full matrix (or multi-bus or single bus as programmed). 3" H x 6 1/2" W x 6" D
- CSP-30/4** Button-per-source four-level controller to select 30 randomly assigned sources. 1 1/3" rackmount
- CX-30/4** 30-button panel to expand CSP-30/4 to 60 sources. 1 3/4" rackmount
- CSP-40/4** Button-per-source four-level controller to select 20 (or 40 by means of Program Select switch) sources. Includes alphanumeric status display. 1 3/4" rackmount
- CSP-260/4** Four-level controller to select from one to sixteen sources within each of sixteen groups. Includes four direct-take buttons plus alphanumeric status display. 1 3/4" rackmount
- CSP-1601/2** Two-level controller to select up to 100 sources within each of sixteen groups. 3 1/2" rackmount
- CSP-1605/2** Two-level 5-bus controller to select up to 100 sources within each of sixteen groups. 3 1/2" rackmount
- CSP-1610/2** Two-level 10-bus (or 20-bus with Program Select switch) controller to select up to 100 sources within each of sixteen groups. 5 1/4" rackmount
- CSP-1600/4** Four-level single-bus (or 2-bus with Program Select switch) controller with separate Preset/Status displays for each level. 3 1/2" rackmount
- CSP-1601/4** Four-level single-bus controller with separate Preset/Status displays for each level. 1 3/4" rackmount
- CSP-1602/4** Single-bus four-level party line control and status panel. Includes 16 keys for input entry with a preset/status display. Four buttons for breakaway and 2 buttons for direct take sources. 1 3/4" rackmount
- CSP-1605/4** Four-level 5-bus (or 10-bus with Program Select switch) controller with separate Preset/Status displays for each level and five output bus select buttons. 3 1/2" rackmount
- CSP-1610/4** Four-level 10-bus (or 20-bus with Program Select switch) controller with separate Preset/Status displays for each level. 5 1/4" rackmount
- CSP-16160/4** Four-level full matrix (or multi-bus as programmed) controller with separate Preset/Status displays for each level plus output bus display. Specially programmed to perform system diagnostics. 3 1/2" rackmount



Numeric Control Panels

- Loophrough coax control connection
- Wide variety of panels and mounting styles
- Continuous status readout
- Single-bus, multiple-bus and full-matrix models
- Optional encoding — permits addressing sources by name
- Audio and video select buttons for separate switching and stusing
- Simultaneous audio and video switching from different inputs (CSP-300R only)
- No custom components or proprietary software
- All keycap and write-in strip graphics provided

CPD/PL Desktop Party Line Control Panel

This panel consists of an attractive enclosure mounting a pair of lever switches for input selection plus a Take button. It connects to one of the AVS-1 or AVS-1B party lines by means of a single rear-mounted connector. The CPD/DL is battery powered thus eliminating the need for an AC power cord. The CMOS and "LS" TTL circuitry consume power only when a new input selection is made. Thus, battery life of several years can be expected in normal operation.

CSP-1 and CSP-2 Lever Switch Control and Status Panels

These panels utilize lever switches for data Preset and Take buttons for switch execution. Two-digit numeric readouts indicate crosspoint status on each assigned bus on data from the matrix refresh memory. Breakaway switching is accomplished by an Audio-Only button.

CSP-10 10 or 20 — Bus Control and Status Panel

This panel provides an inexpensive means of controlling up to 20 buses. Ten two-digit numeric indicators provide continuous status information on ten randomly assigned buses while associated Take buttons permit input selection on each bus. New input data is entered by means of a ten-key touchpad which, with associated two-digit readout, sets up input selection data prior to being switched on one or more buses. As with other numeric panels, the addition of coding PROMs and relegendable keycaps permits addressing and stusing each device by its "familiar" name.

CSP-10C

This panel provides the same features as the CSP-10, but mounts as a front panel on the matrix rack frame and includes a matrix card restraint bar (not pictured). It is most often used in remote van installations

where matrices are typically smaller and rack space is at a premium. Mounting height, including 20 x 20 AV matrix or 30 x 10 AAV matrix, is 10 1/2".

CSP-100 Group/Units Control and Status Panel

This panel, in its non-encoded form, permits addressing up to 100 inputs using two groups of buttons for Tens and Units data entry. With encoding PROMs added each two-button combination addresses a randomly assigned source. This allows the Tens buttons to be assigned group names so that, in combination with the numeric Units buttons, sources can be addressed by their familiar names (VTR-8, TBC-2, etc.). New selections within the same group require only a single keystroke allowing for rapid A/B comparisons such as camera matching. Breakaway buttons provide for separate audio and video switching and stusing. Mounting height is 1 3/4".

CSP-20A/CX-20A Button-Per-Source Panels

The CSP-20A Control and Status Panel with an associated CX-20A Expansion Panel provides button-per-source selection of from 20 to 140 inputs. Each new selection requires only a single keystroke and each button is identified by the source name printed on the label strip.

SC-150 Supervisory Control Panel

The SC-150 Panel provides separate three-digit numeric displays for video and audio stusing. Data entry for up to 160 output buses and 160 sources is by lever switches. Audio and video breakaway switches plus a status-request button are also provided. The keylock switch permits disabling the panel as to switching all buses except one bus (typically a system maintenance or quality control bus) while enabling it to momentarily status any other bus. 3 1/2" rackmount.

CSP-300R Full Matrix Control and Status Panel

This panel provides touchpad data entry and Preset and Active two-digit displays for both audio and video. Input selection data entered from the ten-key touchpad is displayed by either one or both of the preset displays until the Take button is depressed. If different data is entered for audio and video, the two matrices are each switched to their respective selected inputs when the Take button is depressed.

VALLEY INTERNATIONAL, INC.

Signal Processing Equipment

400 Mike Processor

- On-board, 3-band tone control EQ section • "Smart" interactive expander • Expander section doubles as a noise gate • Adjustable Threshold and Range controls • A de-esser is incorporated in the dynamics processing • Microphone connection via a rear panel chassis mount XLR connector

The 400 offers a dramatic improvement in the audio signal chain beginning with its perennial weak link, the microphone preamplifier. Instead of complementing the low noise, low distortion performance of today's super-sophisticated microphones, the 400 provides your microphone with a preamp section superior to that found on your on-air console.

400 \$649.00

415 Dynamic Sibilance Processor

- Two channels of DSP • May be operated independently, or linked for stereo operation • Packaged in a rugged steel rackmount housing • Excellent RF suppression • Withstands rough use in mobile or on-tour applications • Electronically balanced inputs and outputs

Unlike the now outdated de-esser, the DSP can remove objectionable sibilance from vocals even in mixed program, without creating holes in the processed material, and without adversely coloring or affecting the tonal balance of the mix.

415 \$940.00

430 Dynamite™**Compressor/Limiter/Expander/Gate**

- Anticipatory release reduces fast modulation distortion effects • Four continuously variable front panel adjustments • Fully metered, with an 8 LED gain reduction array • Clip warning indicator • Custom aluminum and steel housing case • Excellent RFI rejection and the ability to withstand the punishment of on-road use • 1/4", 3-conductor (stereo) jacks are provided for all inputs and outputs • Front panel patch-through jack option is available

The Dynamite is a self-contained, multi-purpose processing device. It is capable of 18 operating modes, including the basic modes of limiting, expansion, noise gating, keying, de-essing and voice-over ("ducking").

430 \$579.00

440 Limiter/Compressor**Dynamic Sibilance Processor**

- FM pre-emphasis compensated compression and limiting • AGC/compressor operation, and an Auto mode • Complete easy-to-read metering • Symmetrical release coupling circuitry • Extremely fast attack characteristics • Continually variable threshold • Variable release time • Anticipatory Release Computer • Option: Two 440's may be linked in a master/slave configuration

The 440 Limiter/Compressor Dynamic Sibilance Processor offers the convenience of a peak limiter, a high quality compressor/expander package, and a Dynamic Sibilance Processor section, each controlling a common VCA (voltage controlled amplifier).

440 \$940.00

610 Dual Compressor/Expander

- Each of the two channels consists of a compressor and expander section • Compressor section may be configured as a voice-over device • Expander section control features continuously adjustable Threshold and Range controls • Channel VCA release time is variable • VCA mode control • LED bargraph display • Overload warning indicator

The 610 Dual Compressor/Expander offers the convenience of two high quality compressors with the flexibility of multi-function dynamics processing in an attractive, rugged 3 1/2" x 19" rack package.

610 \$1250.00

815 Dynamic Sibilance Processor

- One channel of DSP • Bandpass filter with continuously variable center frequency Q (bandwidth), and continuously variable sensitivity • Tune operational mode allows the DSP to be adjusted by listening and observing the control status indicator LEDs • Two 815 DSP modules may be linked for stereo operation

Unlike the now outdated de-esser, the DSP can remove objectionable sibilance from vocals even in mixed program, without creating holes in the processed material, and without adversely coloring or affecting the tonal balance of the mix.

815 \$420.00



415



430



440



610



Gatex

Gatex 4-Channel Noise Gate/Expander

- Eliminates track leakage when recording drum kits • Enhances dynamic range in keyboard instruments • Controls reverberation decay time • Eliminates effect feeds • Eliminates "breathing" and "lip smacks" in vocals • Eliminates buzz and hum in instrument amplifiers during recording or live performances • Controls unused open microphones during live performances or filming • Easy-to-read 3 LED display • Input impedance: 790K ohm balanced; 745K ohm unbalanced • +24dB maximum input level • +21dB into 600 ohm or greater maximum output level • Program dependent, nominally 100µs, 5ms, 10ms expander attack times

At the heart of Gatex is the TA-101 voltage controlled amplifier. By virtue of its distortion-free operation and wide dynamic range, the TA-101 allows Gatex to process audio signals without coloration.

Gatex \$599.00

810 Kepex II Keyable Program Expander/Gate

- Excellent noise gate • Five continuously variable front panel controls and release and mode switches • Increases dynamic range through active expansion mode • Prevents reproduction of "leakage" or undesirable ambient noise on recordings or in live situations • Generates numerous electronic effects when used in the "keying" mode

While the Kepex II is a logical extension to the original Kepex, it is a totally different design, providing many added features, as well as significant refinements in control functions and audio performance.

810 Kepex II \$420.00

Refer to Green Section for Addresses and Telephone Numbers.

B-1177

811 Gain Brain II Limiter/Compressor/Ducker

- Assures complete transparency, extremely low noise and distortion
- Excellent transient response and wide gain reduction range
- Useful in all applications requiring exacting control over audio levels
- Optimum settings for any type of program material

The Gain Brain II is fundamentally different from any other limiter compressor device, including the original Gain Brain. While other units struggle with peak or RMS detectors that respond to an arbitrary voltage or power level and typically squash or flatten the life out of music, Gain Brain II's response is variable and dependent upon the degree of waveform complexity.

811 Gain Brain II \$420.00

812 Maxi-Q 3-Band Parametric Equalizer

- Employs an all "feedforward" approach
- Continuous control from "infinite cut" to 14dB of boost at center frequency
- Front panel input gain control
- Overload display
- Freedom from distortion and noise in all uses
- Allows for truly meaningful A/B comparisons

The Maxi-Q parametric equalizer employs an array of unique features to deliver, as its name implies, maximum equalization capability.

812 Maxi-Q \$420.00

Comander Compressor/Expander

- Provides highly effective control over the dynamic range of audio signals
- Continuously variable threshold, attack time, ratio, and release time controls
- Interactive expander is integrated with the compressor control circuitry to reduce residual noise which would be "pumped up" or accentuated by the compression process
- Symmetrical Release Coupling circuitry makes the transition from compression to expansion imperceptible, thus eliminating the audible "turn on" noise or noise floor recovery experienced through use of less sophisticated or dedicated-function units
- Expander threshold automatically tracks its compressor threshold
- Variable range control allows the expander section to perform signal attenuation from 0 to 60dB
- Linear Integration Detection allows the unit's detector to emulate the response of the human ear in order to maintain correct musical relationships in the processed material
- Peak Reversion Correction Circuitry compensates for discrimination against low frequencies to eliminate "pumping" and "breathing"
- Anticipatory Release Computer automatically alters release time in response to program

Comander \$420.00

Leveller Audio Level Controllers

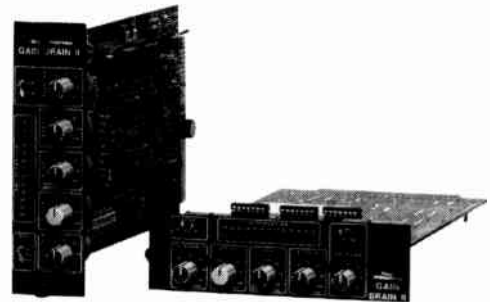
Common Features

- Linear Integration Detection enables the unit to understand loudness as perceived by the human ear
- Complex waveforms exit the leveller at slightly higher absolute levels than do simple waveforms
- Output section is differentially balanced to ensure immunity from RF pickup and hum
- Output section automatically compensates for 6dB level loss normally experienced when balanced outputs are wired in an unbalanced configuration
- Once the desired input level is set and the output gain determined, the operator decides whether more or less "levelling" action is required and operates the threshold control
- No attack time or release time controls
- Automated Program Dependency circuitry optimizes the attack and release times as the program content changes
- Continual monitoring and recalibration of the attack and release times by the APD circuitry ensures that no dynamic distortion is added to the signal

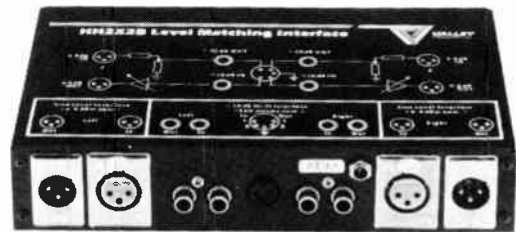
Leveller Dual Channel Limiter

- Offers two independent channels that can be coupled for processing stereo information via the front panel link switch
- In operational mode, the individual control voltages of the two channels are averaged to provide superior center image stability for critical stereo processing applications
- Balanced, differential input section of each channel of the Leveller is capable of accepting -10dB, 0dB, or +4dB levels
- Two output sections offer variable gain to accommodate all operating levels found in recording and broadcast equipment
- With variable control, the operator can readily interface the Leveller between two pieces of equipment having different operating level standards
- Two integration times are available to the operator of the Leveller: fast, slow

Dual Channel \$599.00



811



HH2 x 2B

Leveller Horizontal/Vertical Limiter

- Single channel version of the two channel rackmount audio level control device
- Balanced, differential input section accepts line level signals
- Variable output gain control is provided at the front panel

816V/H \$420.00

HH 2 x 2B Balanced Level Matching Interface

- Electronically balanced outputs
- Excellent waveform fidelity and freedom from ringing
- Balanced input sections
- Each level matching interface is a complete stereo system
- Improved transient response
- Excellent RF suppression

While the HH 2 x 2B Level Matching Interface immediately resolves the level and impedance matching problems associated with interfacing -10dB equipment to the studio and broadcast equipment standards of +4dB and +8dB, it also ensures immunity from RF pick-up and hum, thanks to electronic balancing of the +4/+8 inputs and outputs.

HH 2 x 2B \$279.00

HH 2 x 2 Rack panel for one or two HH 2 x 2B \$25.00

PR-2 Series 800 Enclosures

- Two position rack for modular audio signal processors
- Rugged steel construction
- Modules may be linked via front panel link switch
- Barrier strips on rear panel provide easy audio interface

PR-2 \$250.00

PR-10 Series 800 Enclosures

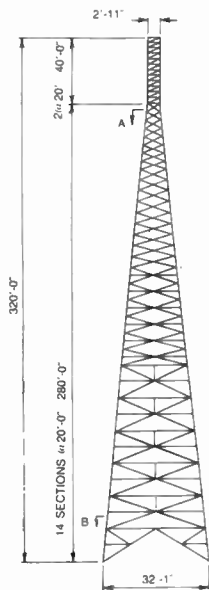
- Install any combination of up to ten 800 series signal processors
- Two section bipolar power supply
- RF filter
- Heat dissipation
- Each section of the power supply powers five 800 series modules
- Rear panel mounted barrier strips

PR-10 \$550.00

Rack Enclosures

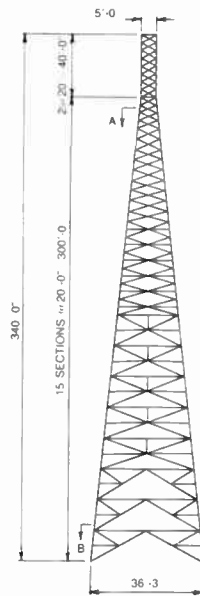
EXT/2 Extender for PR-10, PR-2 \$36.00

PR800BP Blank panel for PR-10 and PR-2 \$15.00



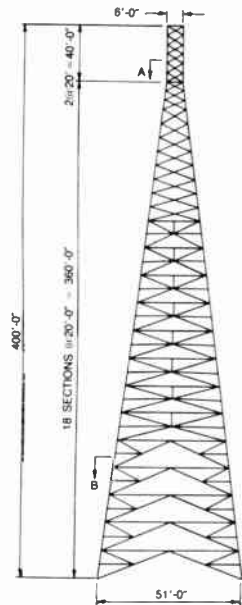
Alternate top configuration utilizing a tapered tubular steel pole installed on top of tower.

CDSFS32.1A320L



Alternate top configuration utilizing a tapered tubular steel pole installed on top of tower for improved 2-way antenna performance.

CDSFS36.3A340M



Alternate top configuration utilizing a tapered tubular steel pole installed on top of tower for reduced wind load and improved 2-way antenna performance.

CDSFS51.0A400H

CDSFS32.1A320L

320' Free Standing "Light Duty" Tower

Furnished in heights ranging from 20' to 320' utilizing standard 20' sections, plus special section lengths as needed. Tower is 3-sided, fabricated from structural steel angles, with bolted field connections. Typical applications include two-way radio, paging, cellular, and light duty microwave.

CDSFS36.3A340M

340' Free Standing "Medium Duty" Tower

Furnished in heights ranging from 20' to 340' utilizing standard 20' sections, plus special section lengths as needed. Tower is 3-sided, fabricated from structural steel angles, with bolted field connections. Typical applications include two-way radio, paging, broadcast, cellular, and microwave.

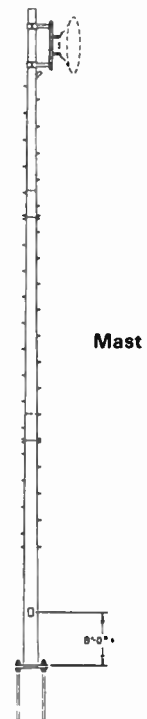
CDSFS51.0A400H

400' Free Standing "Heavy Duty" Tower

Furnished in heights ranging from 20' to 400' utilizing standard 20' sections, plus special section lengths as needed. Tower is 4-sided, fabricated from structural steel angles, with bolted field connections. Typical applications include two-way radio, paging, broadcast, and heavy duty microwave.

Microwave Antenna Mast

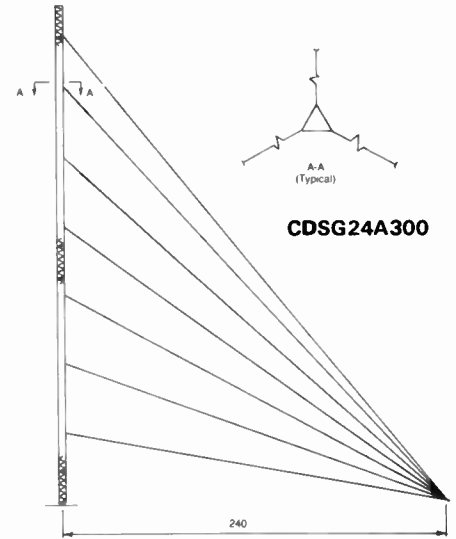
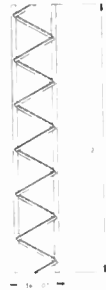
For most applications, tubular steel is an efficient alternative to lattice towers. Valmont's computer analysis generates a precise solution for dish mounting on a tubular structure based on frequency and deflection ranges.



CDSG24A300

300' Guyed 24" Face Width Tower

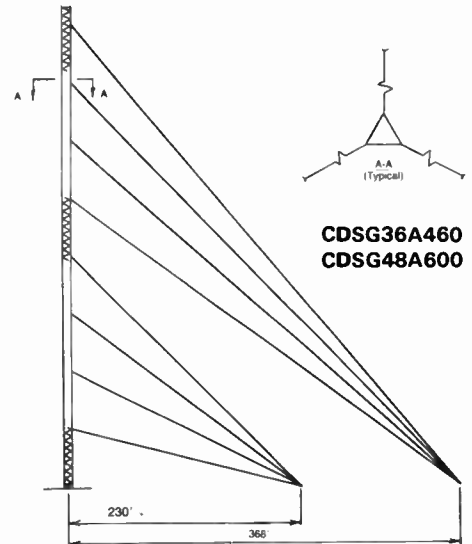
Furnished in heights ranging from 20' to 300' utilizing 20' sections with 24" face width. Tower is 3-sided, fabricated from structural steel angles, with bolted field connections. Tower is designed for standard 80% guying and a pinned base connection. Typical applications include two-way radio, paging, and AM broadcast.



CDSG36A460

460' Guyed 36" Face Width Tower

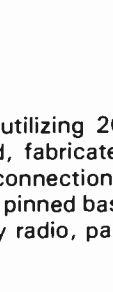
Furnished in heights ranging from 20' to 460' utilizing 20' sections with 36" face width. Tower is 3-sided, fabricated from structural steel angles, with bolted field connections. Tower is designed for standard 80% guying and a pinned base connection. Typical applications include two-way radio, paging, cellular, and light duty microwave.



CDSG48A600

600' Guyed 48" Face Width Tower

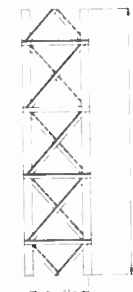
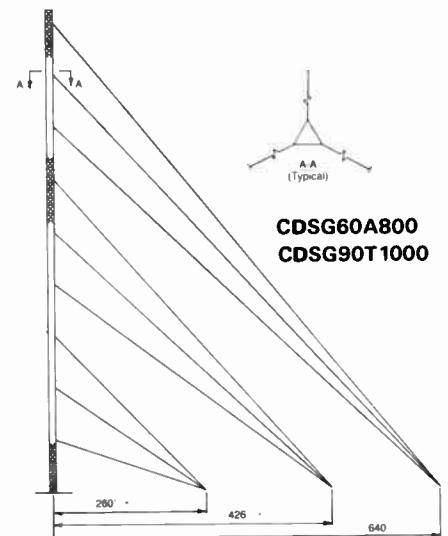
Furnished in heights ranging from 20' to 600' utilizing 20' sections with 48" face width. Tower is 3-sided, fabricated from structural steel angles, with bolted field connections. Tower is designed for standard 80% guying and a pinned base connection. Typical applications include two-way radio, paging, broadcast, and microwave.



CDSG60A800

800' Guyed 60" Face Width Tower

Furnished in heights ranging from 20' to 800' utilizing 20' sections with 60" face width. Tower is 3-sided, fabricated from structural steel angles with bolted field connections. Tower is designed for standard 80% guying and a pinned base connection. Typical applications include two-way radio, paging, broadcast, and heavy duty microwave.



CDSG90T1000

1000' Guyed 90" Face Width Tower

Furnished in heights ranging from 20' to 1000' utilizing 20' sections with 90" face width. Tower is 3-sided, fabricated from solid round or tubular steel material for legs, solid round diagonals, and angles for horizontal struts. Tower is designed for standard 80% guying and a pinned base connection. Typical applications include two-way radio, paging, broadcast, and heavy duty microwave.

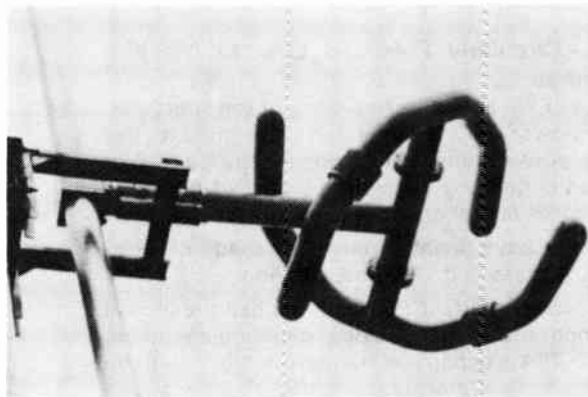


VARIAN CONTINENTAL TVT

FM Antennas

G5CPS Series — Super Power Circularly Polarized FM Antennas

The G5CPS series was designed for stations needing input powers up to 120kW. These antennas offer the broadband characteristics that are important for optimum main and sub-carrier performance, and above average immunity to the detuning caused by icing. Radomes or deicing heater elements are needed only where the most severe icing conditions are likely to occur. Typical VSWR is 1.5:1 or less with 1/2" of radial ice if the antenna has been field tuned.



Series A: 3/8" interbay line, 3/8" element stem										
No. of Bays	Power Gain	dB Gain	Type Feed	Female 50 Ohm Input	Power ³ Input Capability	Calculated Weight (lbs)	Calculated Windload ¹ (lbs)	Calculated Weight (with Radomes and Brackets) (lbs)	Calculated Windload (with Radomes and Brackets) (lbs)	Approx. Length ² (ft)
1	0.4611	-3.3623	End	3/8"	32 kW	114	137	185	354	—
2	0.9971	-0.0128	End	3/8"	32 kW	225	304	376	742	10
2	0.9971	-0.0128	Center	3/8"	39 kW	250	319	385	749	10
2	0.9971	-0.0128	Center	6/8"	64 kW	301	421	436	851	10
3	1.5588	1.9278	End	3/8"	32 kW	336	470	568	1130	20
4	2.1332	3.2903	End	3/8"	32 kW	447	637	759	1518	30
4	2.1332	3.2903	Center	3/8"	39 kW	472	652	768	1525	30
4	2.1332	3.2903	Center	6/8"	64 kW	523	758	819	1631	30
5	2.7154	4.3384	End	3/8"	32 kW	558	804	951	1905	40
6	3.3028	5.1888	End	3/8"	32 kW	669	971	1142	2294	50
6	3.3028	5.1888	Center	3/8"	39 kW	694	986	1151	2300	50
6	3.3028	5.1888	Center	6/8"	64 kW	745	1096	1202	2410	50
7	3.8935	5.9034	End	3/8"	32 kW	780	1138	1334	2682	60
8	4.4872	6.5197	End	3/8"	32 kW	891	1305	1525	3070	70
8	4.4872	6.5197	Center	3/8"	39 kW	916	1320	1534	3076	70
8	4.4872	6.5197	Center	6/8"	64 kW	967	1433	1585	3190	70
10	5.6800	7.5435	Center	3/8"	39 kW	1138	1653	1917	3852	90
10	5.6800	7.5435	Center	6/8"	64 kW	1189	1770	1968	3970	90
12	6.8781	8.3747	Center	3/8"	39 kW	1360	1987	2300	4628	110
12	6.8781	8.3747	Center	6/8"	64 kW	1411	2108	2351	4750	110
Series B: 4/8" interbay line, 4/8" element stem										
No. of Bays	Power Gain	dB Gain	Type Feed	Female 50 Ohm Input	Power ³ Input Capability	Calculated Weight (lbs)	Calculated Windload ¹ (lbs)	Calculated Weight (with Radomes and Brackets) (lbs)	Calculated Windload (with Radomes and Brackets) (lbs)	Approx. Length ² (ft)
1	0.4611	-3.3623	End	6/8"	40 kW	159	201	223	421	—
2	0.9971	-0.0128	End	6/8"	56 kW	297	407	425	847	10
2	0.9971	-0.0128	Center	6/8"	80 kW	336	468	464	908	10
3	1.5588	1.9278	End	6/8"	56 kW	435	613	627	1273	20
4	2.1332	3.2903	End	6/8"	56 kW	573	818	829	1699	30
4	2.1332	3.2903	Center	6/8"	112 kW	612	879	869	1762	30
5	2.7154	4.3384	End	6/8"	56 kW	711	1024	1031	2125	40
6	3.3028	5.1888	End	6/8"	56 kW	849	1229	1233	2551	50
6	3.3028	5.1888	Center	6/8"	112 kW	888	1290	1272	2612	50
7	3.8935	5.9034	End	6/8"	56 kW	987	1435	1435	2997	60
8	4.4872	6.5197	End	6/8"	56 kW	1125	1641	1637	3043	70
8	4.4872	6.5197	Center	6/8"	112 kW	1164	1702	1676	3462	70
10	5.6800	7.5435	Center	6/8"	112 kW	1440	2113	2080	4312	90
12	6.8781	8.3747	Center	6/8"	112 kW	1716	2524	2484	5162	110
Series C: 6/8" interbay line, 4/8" element stem										
No. of Bays	Power Gain	dB Gain	Type Feed	Female 50 Ohm Input	Power ³ Input Capability	Calculated Weight (lbs)	Calculated Windload ¹ (lbs)	Calculated Weight (with Radomes and Brackets) (lbs)	Calculated Windload (with Radomes and Brackets) (lbs)	Approx. Length ² (ft)
1	0.4611	-3.3623	End	6/8"	40 kW	205	260	269	480	—
2	0.9971	-0.0128	End	6/8"	80 kW	410	520	538	960	10
3	1.5588	1.9278	End	6/8"	120 kW	615	780	807	1440	20
4	2.1332	3.2903	End	6/8"	120 kW	820	1040	1076	1920	30
5	2.7154	4.3384	End	6/8"	120 kW	1025	1300	1345	2400	40
6	3.3028	5.1888	End	6/8"	120 kW	1230	1560	1614	2880	50

¹ Windload based on 50/33 psf.

² End-fed antenna lengths do not include the six ft. matching transformer.

³ Power input capability up to 2,000 feet above mean sea level; derating required above 2,000 feet.

Note: Brackets included in weight and windload calculations.

Refer to Green Section for Addresses and Telephone Numbers.

VARIAN CONTINENTAL TVT

FM Antennas

G5CPM Series—Circularly Polarized Low to Medium Power FM Antennas

The G5CPM series of FM antennas has many of the characteristics of the super power G5CPS series, but is designed for use by low to medium power stations. Input powers of up to 9 or 12kW can be used depending upon the number of bays and whether the antenna is center or end-fed.

All G5CPM antennas have radiating elements made of 1³/₄" diameter heavy duty brass and 1⁵/₈" interbay line.

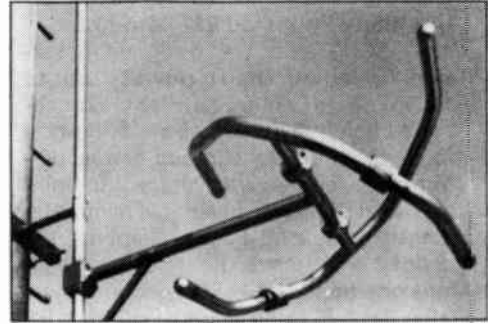
Like the G5CPM series, the G5CPS has broadband response and machine formed, rather than welded, radiating elements. As a result, the G5CPM is capable of normal operation with up to 1/3" of radial ice. While heaters and radomes are now available for the G5CPM series, they are recommended only for areas where icing conditions are likely to be severe.

The G5CPM uses a six foot transformer section for impedance matching and fine tuning after installation if the very lowest VSWR is required. VSWR without field tuning is normally 1.2:1 or less when pole mounted; 1.5:1 or less when side mounted on a tower.

A quarter-wave grounding stub which places the antenna at ground potential for additional protection against lightning is available as an option at added cost.

Freedom from deterioration caused by weather elements is assured through the use of brass, copper and stainless steel throughout the antenna.

The feed point is completely internal and includes a pressurized environment up to the feed point of each bay.



The broadband characteristics achieved by the design of the G5CPM series make these antennas well suited for optimum performance on both the main and sub-carrier channels.

Specifications

Frequency Range:	88 to 108MHz (factory tuned to one frequency)
Polarization:	Circular (clockwise)
Power Gain:	See chart
Azimuthal Pattern:	± 2dB in free space, both horizontal and vertical
Ellipticity:	± 3dB in free space
VSWR at Input (without field tuning):	1.2:1 or less for pole mounted; 1.5:1 or less, side mounted
VSWR at Input: (with field tuning):	1.07:1 or less

No. of Bays	Power Gain ¹	dB Gain ¹	Type Feed ²	Female 50 Ohm Input	Power Input Capability	Calculated Weight (lbs)	Calculated Windload ³ (lbs)	Calculated Weight (with Radomes and Brackets) (lbs)	Calculated Windload (with Radomes and Brackets) (lbs)	Approx. Length ⁴ (ft)
1	0.4611	-3.3623	End	1 ⁵ / ₈ "	9 kW	57	102	83	224	
2	0.9971	-0.0128	End	1 ⁵ / ₈ "	9 kW	114	212	166	457	10
2	0.9971	-0.0128	Center	3 ¹ / ₈ "	12 kW	147	289	199	533	10
3	1.5588	1.9278	End	1 ⁵ / ₈ "	9 kW	170	323	248	689	20
3	1.5588	1.9278	Center	3 ¹ / ₈ "	12 kW	204	399	282	766	20
4	2.1332	3.2903	End	1 ⁵ / ₈ "	9 kW	227	433	331	922	30
4	2.1332	3.2903	Center	3 ¹ / ₈ "	12 kW	260	509	364	998	30
5	2.7154	4.3384	End	1 ⁵ / ₈ "	9 kW	283	543	413	1154	40
5	2.7154	4.3384	Center	3 ¹ / ₈ "	12 kW	317	620	447	1231	40
6	3.3028	5.1888	End	1 ⁵ / ₈ "	9 kW	340	654	496	1387	50
6	3.3028	5.1888	Center	3 ¹ / ₈ "	12 kW	373	730	529	1463	50
7	3.8935	5.9034	End	1 ⁵ / ₈ "	9 kW	396	764	578	1619	60
7	3.8935	5.9034	Center	3 ¹ / ₈ "	12 kW	430	840	612	1696	60
8	4.4872	6.5197	End	1 ⁵ / ₈ "	9 kW	453	874	661	1852	70
8	4.4872	6.5197	Center	3 ¹ / ₈ "	12 kW	486	950	694	1928	70
9	5.0826	7.0608	Center	3 ¹ / ₈ "	12 kW	543	1060	777	2160	80
10	5.6800	7.5435	Center	3 ¹ / ₈ "	12 kW	599	1171	859	2393	90
11	6.2783	7.9785	Center	3 ¹ / ₈ "	12 kW	656	1281	942	2626	100
12	6.8781	8.3747	Center	3 ¹ / ₈ "	12 kW	712	1391	1024	2858	110

¹Power split is 50/50 vertical and horizontal only. Beam tilt and null fill, are available as extra cost options on center-fed antennas, but will change the gain figures given above and may reduce the power rating.

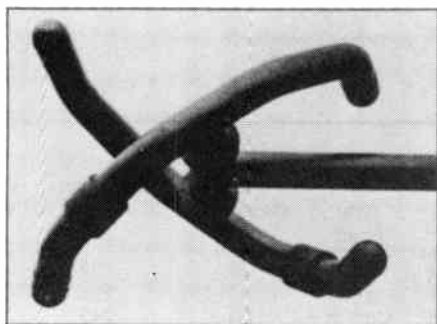
²End-feeding is done with a six ft. matching transformer section. Center-feeding of an odd number of bays is done at a point one-half bay below the center of the antenna. Six ft. matching transformer is connected to an elbow at the center-feed point and extends downward.

³Windload based on 50/33 psf. Brackets are included in weight and windload calculations.

⁴End-fed antenna lengths do not include transformer.

VARIAN CONTINENTAL TVT

FM Antennas



G8CPS Series Super Power Circularly Polarized FM Antennas

Similar to the G5CPS antenna, the G8 antenna is designed to achieve maximum circularity of coverage, especially when mounted on tower sections having a 24" face dimension.

Tables show the most popular models. Other standard models are available.

Specifications

- Frequency Range:** 88 to 108MHz (factory tuned to one frequency)
- Polarization:** Circular (clockwise)
- Power Gain:** See chart
- Azimuthal Pattern:** ± 2dB in free space, both horizontal and vertical
- Ellipticity:** ± 3dB in free space
- VSWR at Input (without field tuning):** 1.2:1 or less for pole mounted; 1.5:1 or less, side mounted
- VSWR at Input (with field tuning):** 1.1:1 or less

Series A: 3 1/8" interbay line, 3 1/8" element stem										
No. of Bays	Power Gain	dB Gain	Type Feed	Female 50 Ohm Input	Power Input ³ Capability	Calculated Weight (lbs)	Calculated Windload ¹ (lbs)	Calculated Weight (with Radomes and Brackets) (lbs)	Calculated Windload (with Radomes and Brackets) (lbs)	Approx. Length ² (ft)
1	0.4611	-3.3623	End	3-1/8"	32 kW	114	137	167.5	387	
2	0.9971	-0.0128	End	3-1/8"	32 kW	225	304	341	808	10
2	0.9971	-0.0128	Center	3-1/8"	39 kW	250	319	350	815	10
3	1.5588	1.9278	End	3-1/8"	32 kW	336	470	515.5	1228	20
4	2.1332	3.2903	End	3-1/8"	32 kW	447	637	689	1649	30
4	2.1332	3.2903	Center	3-1/8"	39 kW	472	652	698	1656	30
4	2.1332	3.2903	Center	6-1/8"	64 kW	523	758	749	1770	30
5	2.7154	4.3384	End	3-1/8"	32 kW	558	804	863.5	2069	40
6	3.3028	5.1888	End	3-1/8"	32 kW	669	971	1037	2491	50
6	3.3028	5.1888	Center	3-1/8"	39 kW	694	986	1046	2497	50
6	3.3028	5.1888	Center	6-1/8"	64 kW	745	1096	1097	2614	50
7	3.8935	5.9034	End	3-1/8"	32 kW	780	1138	1211.5	2912	60
8	4.4872	6.5197	End	3-1/8"	32 kW	891	1305	1385	3332	70
8	4.4872	6.5197	Center	3-1/8"	39 kW	916	1320	1394	3338	70
8	4.4872	6.5197	Center	6-1/8"	64 kW	967	1433	1445	3457	70
10	5.6800	7.5435	Center	3-1/8"	39 kW	1138	1653	1742	4180	90
10	5.6800	7.5435	Center	6-1/8"	64 kW	1189	1770	1793	4300	90
12	6.8781	8.3747	Center	3-1/8"	39 kW	1360	1987	2090	5022	110
12	6.8781	8.3747	Center	6-1/8"	64 kW	1411	2108	2141	5144	110
Series B: 4 1/8" interbay line, 4 1/8" element stem										
No. of Bays	Power Gain	dB Gain	Type Feed	Female 50 Ohm Input	Power Input ³ Capability	Calculated Weight (lbs)	Calculated Windload ¹ (lbs)	Calculated Weight (with Radomes and Brackets) (lbs)	Calculated Windload (with Radomes and Brackets) (lbs)	Approx. Length ² (ft)
1	0.4611	-3.3623	End	6-1/8"	40 kW	159	201	206	454	
2	0.9971	-0.0128	End	6-1/8"	56 kW	297	407	393	913	10
2	0.9971	-0.0128	Center	6-1/8"	80 kW	336	468	432	974	10
3	1.5588	1.9278	End	6-1/8"	56 kW	435	613	579	1119	20
4	2.1332	3.2903	End	6-1/8"	56 kW	573	818	765	1830	30
4	2.1332	3.2903	Center	6-1/8"	112 kW	612	879	804	1891	30
5	2.7154	4.3384	End	6-1/8"	56 kW	711	1024	951	2289	40
6	3.3028	5.1888	End	6-1/8"	56 kW	849	1229	1137	2747	50
6	3.3028	5.1888	Center	6-1/8"	112 kW	888	1290	1176	2808	50
7	3.8935	5.9034	End	6-1/8"	56 kW	987	1435	1323	3206	60
8	4.4872	6.5197	End	6-1/8"	56 kW	1125	1641	1509	3665	70
8	4.4872	6.5197	Center	6-1/8"	112 kW	1164	1702	1548	3762	70
10	5.6800	7.5435	Center	6-1/8"	112 kW	1440	2113	1920	4643	90
12	6.8781	8.3747	Center	6-1/8"	112 kW	1716	2524	2292	5560	110
Series C: 6 1/8" interbay line, 4 1/8" element stem										
No. of Bays	Power Gain	dB Gain	Type Feed	Female 50 Ohm Input	Power Input ³ Capability	Calculated Weight (lbs)	Calculated Windload ¹ (lbs)	Calculated Weight (with Radomes and Brackets) (lbs)	Calculated Windload (with Radomes and Brackets) (lbs)	Approx. Length ² (ft)
1	0.4611	-3.3623	End	6-1/8"	40 kW	205	260	253	513	
2	0.9971	-0.0128	End	6-1/8"	80 kW	410	520	506	1026	10
3	1.5588	1.9278	End	6-1/8"	120 kW	615	780	759	1539	20
4	2.1332	3.2903	End	6-1/8"	120 kW	820	1040	1012	2052	30
5	2.7154	4.3384	End	6-1/8"	120 kW	1025	1300	1265	2565	40
6	3.3028	5.1888	End	6-1/8"	120 kW	1230	1560	1518	3078	50

¹ Windload based on 50/33 psf.

² End-fed antenna lengths do not include the six ft. matching transformer.

³ Power input capability up to 2,000 feet above mean sea level; derating required above 2,000 feet.

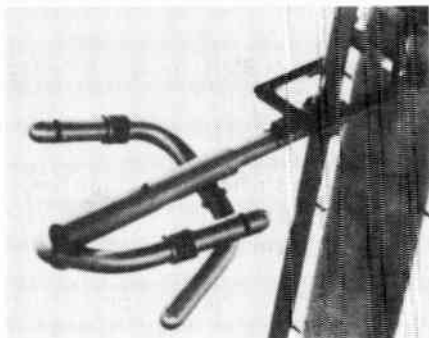
Note: Brackets included in weight and windload calculations.

Prices and Specifications Subject to Change Without Notice.

VARIAN CONTINENTAL TVT

FM Antennas

G6 Series — Fringe Area FM Antennas



The G6 Series of antennas are designed for stations requiring fringe area coverage. This is achieved due to the internal feed design and element geometry of the G6 series.

These antennas offer an exceptional axial ratio, ± 3 dB or better, and free space horizontal plane circular patterns that are $> \pm 2$ dB in both horizontal and vertical polarizations.

Antenna Type	Power Gain	dB Gain	Type Feed	Power Input Capability (kW)	Calculated Weight (lbs)	Calculated Windload ¹ (lbs)
G6-1AE	.4611	-3.3623	End	10	108	176.4
G6-2AE	.9971	-0.0128	End	20	225	382.5
G6-2AC	.9971	-0.0128	Center	20	243	405.7
G6-3AE	1.5588	1.9278	End	20	342	588.6
G6-4AE	2.1332	3.2903	End	30	459	794.7
G6-4AC	2.1332	3.2903	Center	30	477	817.9
G6-5AE	2.7154	4.3384	End	32	576	1000.8
G6-6AE	3.3028	5.1888	End	32	693	1206.9
G6-6AC	3.3028	5.1888	Center	39	711	1230.1
G6-7AE	3.8935	5.9034	End	32	810	1413.0
G6-8AE	4.4872	6.5197	End	32	927	1619.1
G6-8AC	4.4872	6.5197	Center	39	945	1642.3
G6-10AC	5.6800	7.5435	Center	39	1179	2054.5
G6-12AC	6.8781	8.3747	Center	39	1413	2466.7
G6-14AC	8.0798	9.0740	Center	39	1647	2878.9

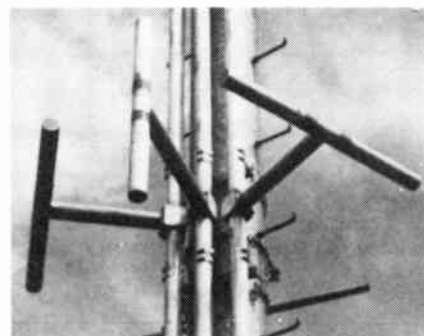
¹Windload calculated based on 50/33 psf, 112 mph actual wind velocity, no ice. Power input capability up to 2,000 ft. above mean sea level. Derating required above 2,000 ft. Note: All antenna systems have 50 ohm female inputs. Weight and windload calculations include brackets.

G4D Series — Dual Polarized Directional FM Antennas

The G4D antenna, designed to radiate power in a 180° pattern, is built primarily for FM stations located along coasts or in mountainous areas. It can also be used in areas where the licensing authority such as the FCC will allow the use of a directional antenna to meet special requirements.

The elements of the G4D antenna are pole mounted; it is also available without the pole. In that case, exact details of the customer-supplied pole will be required before fabrication begins.

The G4D consists of vertical and horizontal elements that are 3 1/8" in diameter and made of brass to resist the effects of weathering.



Type	Input Power Rating	Input ¹ Flange	Calculated Pole Length (ft)	Calculated Pole Weight (lbs)	Calculated Antenna ⁶ Weight (lbs)	Calculated Pole ² Wind Load (lbs)	Calculated Antenna ³ Wind Load (lbs)	Calculated Outer Diameter of Pole (inches)	Calculated Height ⁴ Electrical Center Above Pole Base (ft)
G4D-1A	12 kW	1-5/8"	25	1088	280	1363	418	8-5/8	22
G4D-1B	40 kW	3-1/8"	25	1088	280	1363	418	8-5/8	22
G4D-2A	12 kW	1-5/8"	35	1526	479	1955	855	8-5/8	26.4
G4D-2B	40 kW	3-1/8"	35	1526	479	1955	855	8-5/8	26.4
G4D-3A	12 kW	1-5/8"	45	1975	678	2812	1293	10-3/4	31
G4D-3B	40 kW	3-1/8"	45	1975	678	2812	1293	10-3/4	31
G4D-4A	12 kW	1-5/8"	55	3216	877	3462	1731	10-3/4	35.3
G4D-4B	40 kW	3-1/8"	55	3216	877	3462	1731	10-3/4	35.3
G4D-5A	12 kW	1-5/8"	65	4761	1076	4474	2168	12-3/4	39.7
G4D-5B	40 kW	3-1/8"	65	4761	1076	4474	2168	12-3/4	39.7
G4D-6A	12 kW	1-5/8"	75	5963	1275	5441	2606	14	44.2
G4D-6B	40 kW	3-1/8"	75	5963	1275	5441	2606	14	44.2
G4D-7A	12 kW	1-5/8"	85	7670	1474	6182	3044	14	48.6
G4D-7B	40 kW	3-1/8"	85	7670	1474	6182	3044	14	48.6
G4D-8A	12 kW	1-5/8"	95	8896	1673	6633	3481	14 ⁵	53
G4D-8B	40 kW	3-1/8"	95	8896	1673	6633	3481	14 ⁵	53

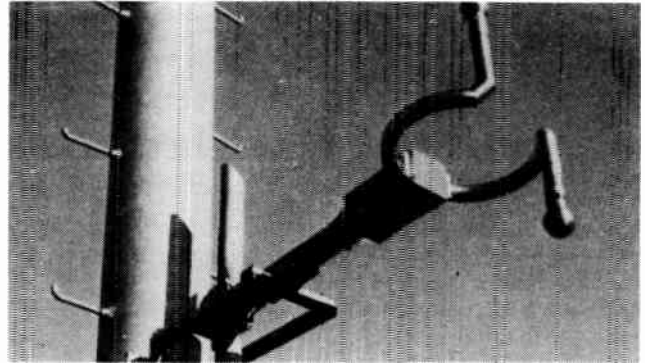
- All 1-5/8" antennas are male input and all 3-1/8" antennas are female input.
- Based on 50 lbs with 1/2" radial ice on pole
- Based on 50/33 psf. (112 mph wind); the windload with radome is 248 lbs. per level based on 50/33 psf.
- At approximately 89.0 MHz.
- Eight-bay antennas require two ft. section of 16" pole at base of pole structure.
- Additional weight with radome per level is 57 lbs.

VARIAN CONTINENTAL TVT

FM Antennas

G4CPH Series — High Power Circularly Polarized FM Antennas

The G4CPH is a rugged, heavy-duty design capable of handling powers from 5kW (single bay) to 40kW (eight or more bays). The antenna may be purchased in any number of bays from 1 to 16. The antennas are end-fed in combinations from one to eight bays. In center-fed antenna arrays, the center-fed "T" input is located one half bay spacing below the center of the array if the array consists of an odd number of bays. Antennas of one to eight bays are end-fed with a six foot matching section connected to the bottom bay.



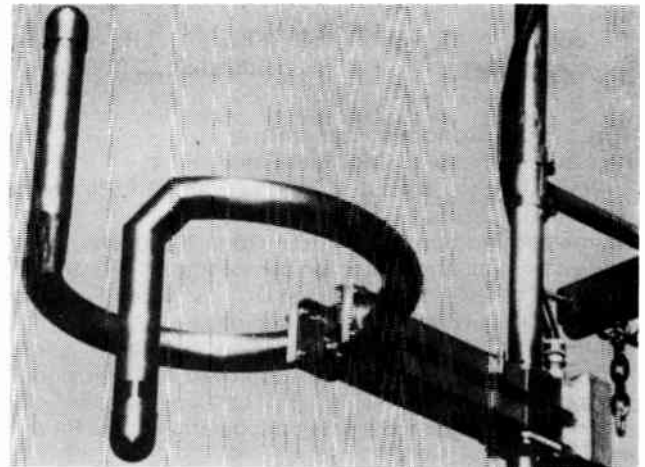
Type	Power Gain	dB Gain	Input Power Rating (kW)	Approx. Length (ft)	Calculated Weight (lbs)	Calculated Windload (lbs)	Calculated Weight (with Radomes and Brackets) (lbs)	Calculated Windload (with Radomes and Brackets) (lbs)
G4CPH-1	0.4611	-3.3623	5.0	—	84	144	104	265
G4CPH-2	0.9971	-0.0128	10	10	184	318	224	560
G4CPH-3	1.5588	1.9278	15	20	274	492	334	855
G4CPH-4	2.1332	3.2903	20	30	364	666	444	1150
G4CPH-5	2.7154	4.3384	25	40	454	840	554	1445
G4CPH-6	3.3028	5.1888	30	50	544	1014	664	1740
G4CPH-7	3.8935	5.9034	35	60	634	1187	774	2034
G4CPH-8	4.4872	6.5197	40	70	724	1361	884	2329
G4CPH-9	5.0826	7.0608	40	80	835	1608	1015	2697
G4CPH-10	5.6800	7.5435	40	90	925	1782	1125	2992
G4CPH-11	6.2783	7.9785	40	100	1015	1956	1235	3287
G4CPH-12	6.8781	8.3747	40	110	1105	2130	1345	3582
G4CPH-13	7.4785	8.7381	40	120	1195	2303	1455	3876
G4CPH-14	8.0800	9.0741	40	130	1285	2477	1565	4171
G4CPH-15	8.6818	9.3861	40	140	1375	2651	1675	4466
G4CPH-16	9.2846	9.6776	40	150	1465	2825	1785	4761

All antenna brackets are stainless steel. All weights given include brackets, interbay line, and transformer section. Factory-installed deicers are available using either 300 watts or 500 watts per bay. Specify 120 or 230 volts. Heater elements are replaceable in the field. Shielded interbay heater cable and junction boxes are supplied. Heater weight, including junction boxes and interbay cable, is six lbs. additional per bay. Windload based on 50/33 psf.

G4CPL Series — Circularly Polarized FM Antennas

The G4CPL series meets the requirements of virtually all Class A licensed stations. They are end-fed antennas which have a maximum input power of 7.5kW and power gains ranging from 0.46 for one bay up to 4.48 for the eight-bay model. A single bay of G4CPL does have an input power limitation of 3kW.

An integral part of the G4CPL design is a DC short which puts the antenna at ground potential for added protection against lightning damage to the transmitter and transmission line. Beam tilt and null fill are not available with the G4CPL series and no power splits other than 50/50 are offered with these antennas.



Type	Power Gain	dB Gain	Input Power Rating (kW)	Approx. Length (ft)	Calculated Weight (lbs)	Calculated Windload (lbs)	Calculated Weight (with Radomes and Brackets) (lbs)	Calculated Windload (with Radomes and Brackets) (lbs)
G4CPL-1	0.4611	-3.3623	3	—	36	74	54	161
G4CPL-2	0.9971	-0.0128	6	10	77	104	115	338
G4CPL-3	1.5588	1.9278	7.5	20	118	254	172	515
G4CPL-4	2.1332	3.2903	7.5	30	159	344	231	693
G4CPL-5	2.7154	4.3384	7.5	40	200	434	290	870
G4CPL-6	3.3028	5.1888	7.5	50	241	524	349	1047
G4CPL-7	3.8935	5.9034	7.5	60	282	614	408	1224
G4CPL-8	4.4872	6.5197	7.5	70	323	704	467	1402

All antenna brackets are stainless steel. All weights given include brackets, interbay line, and transformer section. Factory-installed deicers are available using either 300 watts or 500 watts per bay. Specify 120 or 230 volts. Heater elements are replaceable in the field. Shielded interbay heater cable and junction boxes are supplied. Heater weight, including junction boxes and interbay cable, is six lbs. additional per bay. Windload based on 50/33 psf.

Refer to Green Section for Addresses and Telephone Numbers.

VARIAN CONTINENTAL TVT

Broadcast Transmitters

XL-301 1kW Solid State AM Broadcast Transmitter

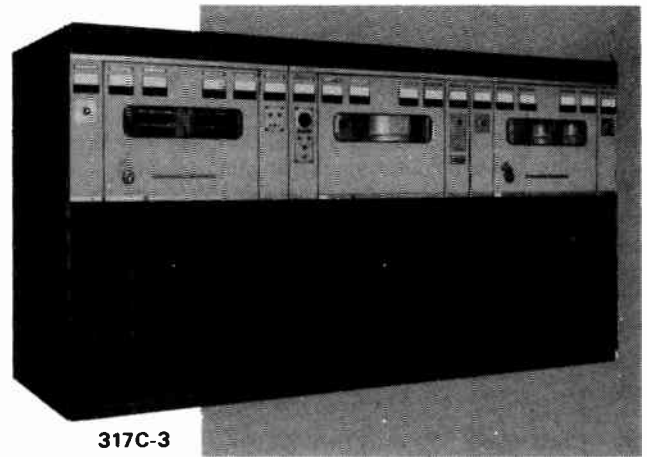
- Solid state modular design
- RFPWM (PWM at the carrier frequency)
- AM stereo compatible
- Operating from 10 to 1100W with excellent audio response
- Relative insensitivity to load fluctuations
- On-board fault protection
- Easy to maintain
- Dataflex computer control and monitoring (optional)

Specifications

RF Power Output:	1kW, nominal; 1.1kW maximum
Power Consumption:	2.6kW at 1kW, 100% modulation
RF Power Reduction:	Three power levels standard; lowest available level is 10W
RF Frequency Range:	535kHz to 1705kHz
PA Active Device:	MOSFET
Internal PA Protection:	Withstands short circuits at any point in output
Carrier Stability:	± 5Hz
Stereo Interface:	Standard
Output Impedance:	50 ohms unbalanced
VSWR:	1.2:1, maximum, full modulation; 1.5:1 maximum, full power at carrier
Output Connector:	L/C or protected terminal or type "N"
Carrier Shift:	2% maximum, (0.5% typical), at 100% modulation
Harmonics:	Meets CCIR and FCC regulations
Spurious Emissions:	Meets CCIR and FCC regulations
Audio Frequency Response:	± 1dB; 20Hz to 12kHz or better at 95% modulation, 1000Hz reference

315R-1 5kW Broadcast Transmitter

- High efficiency SwitchMod pulse modulation
- Overall efficiency exceeding 57% at 5000W, 95% sinewave modulation
- Harmonic distortion < 2.0% from 20 to 10,000Hz
- Low intermodulation distortion per standard 4:1 SMPTE
- Feedback taken from modulated DC, not from RF envelope, for reduced sensitivity to load conditions
- Bandpass "Q-Taper" output network for flatter response across the audio passband and improved adjacent signal rejection
- Lower peak voltages as a result of operation of the PA anode at DC ground
- Local and remote metering directly at ground reference
- No plate blocking capacitor or DC feed choke required
- Automatic modulation control keeps modulation sensitivity constant at all power levels and with a ± 10% line voltage variation, standard
- Built-in IPL
- + 125% modulation capability
- Built-in forward/reflected power meter
- Low power setting continuously adjustable over entire power range of the transmitter
- Use of triodes eliminates need for screen grid supply
- Overload recycle interrupts pulse train to remove high voltage in microseconds. After third overload, high voltage power supply is shut down
- Improved phase linearity in "Q-Taper" network for AM stereo



317C-3

Specifications

Transmitter:	69" H x 34 ³ / ₄ " W x 33 ³ / ₈ " D; 7.9 sq. ft.
Weight:	1050 lbs.
Tubes:	3CX3000F7 (2)
Air Flow Requirement:	500 CFM
Relative Humidity:	0 to 95%
Ambient Temperature Range:	To 0°C to +50°C (meets FCC requirements to -20°C)
Altitude:	7500' (2280m)

317C-3 50kW AM Broadcast Transmitter

- Superior audio frequency response
- Flat top response
- Extra power for high peaks
- High positive modulation
- Program peak limiter
- AM stereo compatibility
- Solid-state driver
- Long tube life
- High efficiency
- Magniphase® line protection system
- Easy to operate

Specifications

Carrier Power:	Rated 50kW; Capability 60kW; power reduction 25kW or 10kW A3
Emission:	± 5Hz
Frequency Stability:	± 0.5dB, 10Hz to 7500Hz; -1.5dB, 15,000Hz reference to 1000Hz; at 70% modulation
Audio Response:	± 0.5dB, 10Hz to 7500Hz; -1.5dB, 15,000Hz reference to 1000Hz; at 70% modulation
Phase Response:	± 2° from 10 to 1000Hz and phase linear to 30kHz with output lagging 45° at 15kHz
Audio Distortion:	< 2.5%, 20 to 10,000Hz at 95% modulation
Tilt and Overshoot	
Clipped Sinewave:	3% variation in modulation percentage using 6dB symmetrical clipping, 30 to 10,000Hz at 90% modulation
Squarewave:	5% variation in modulation percentage, squarewave frequencies from 30 to 7500Hz to 60% modulation
Noise Unweighted:	-60dB below 100% modulation
Spurious and Harmonic Emission:	-80dB
Output Impedance:	40 to 300 ohms as specified by customer

VARIAN CONTINENTAL TVT

FM Transmitters

814R-1 2.5kW FM Broadcast Transmitter

- Lowest intermodulation distortion • Highest stereo separation • Automatic power output control • Automatic overload recycling • VSWR protection • Superior frequency stability • Automatic filament voltage regulation • Overload indicator lights • Front panel pushbutton control • Superior PA stability • Proven PA design • Built-in remote control facilities • Front panel monitoring • Easy access • Compact size • Outstanding exciter

The 814R-1 is a high-performance, state-of-the-art transmitter that uses the 802A exciter to deliver a crisp, clean signal. The transmitter is solid-state except for the single 5CX1500A tube in the final amplifier. The 814R-1 uses IC logic for all control functions, and incorporates a computer-like memory to restart the transmitter after a power failure. A built-in battery supply and charger enables the logic circuits to remember their state in the event of a power interruption. The transmitter utilizes automatic filament voltage regulation and automatic power control for unattended operation. Standard features include remote control equipment and automatic overload/recycle system. Overload conditions are indicated by an LED display. The 814R-1 is completely contained in one 35" wide cabinet.

814C 3.8kW FM Broadcast Transmitter

- Broadband modular design • Transparent audio performance • No tuning • 100% solid-state • Single-phase power supply • VSWR protection circuit • 100% self-protected solid-state amplifier modules • Designed for low maintenance and long life • Built-in redundancy for reliable performance

The 814C is a compact, high performance transmitter that uses the 802A exciter to deliver a crisp, clean signal.

The transmitter design is based on a 700W broadband amplifier module and utilizes a splitter/combiner technique to achieve the rated output of 3800W.

The RF chain consists of an 802A 50W solid-state exciter driving a solid-state amplifier module which serves as the IPA. The IPA output is split to drive the PA amplifier modules. The outputs of the PA modules are combined and treated as the transmitter's final power amplifier stage.

All modules are self-protected from excessive power supply voltage, VSWR overload, excessive drive power and high temperature.

A single-phase power supply powers all of the power modules. The power supply is fed by a pair of gated SCRs to allow control of the supply output voltage.

All transmitter controls, interface circuits and metering are housed in a self-contained control module which slides out on tracks for easy access. The control module provides access for local or remote operation.

815A 5kW FM Broadcast Transmitter

- Single tube • SCR power control • Automatic power output control • Automatic VSWR protection • Automatic SWR output power fold-back • Remote control interface • Filament voltage regulator • True RMS filament voltage metering • AC power failure recycle • Two/four shot automatic overload recycle • Internal diagnostics • Solid-state IPA

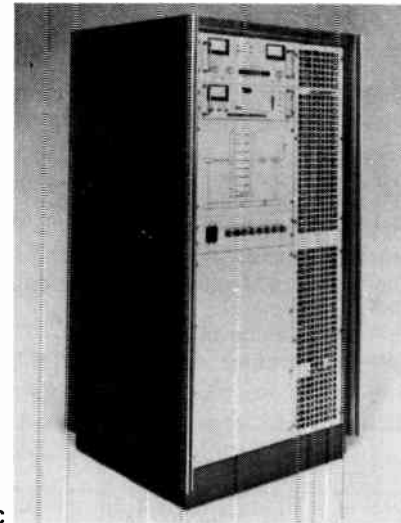
Continental's 815A is a high performance, state-of-the-art transmitter that uses the 802A exciter to deliver a crisp, clean signal.

With an output power of 5000W, it has an adequate power reserve for Class A FM operation using a two-bay antenna system.

The RF chain consists of an 802A 50W exciter and the solid-state IPA driving a 4CX3500A tetrode tube in the final amplifier.

The harmonic filter is internally mounted, providing a 1^{5/8}" EIA flange for direct mounting to the transmission line.

IC logic is used for all control functions. A computer-like memory, powered by battery back-up, restarts the transmitter after a power failure.



814C
Includes the 802A Solid-State Exciter

816R-1A 10kW FM Broadcast Transmitter

- Compact size, simple installation • Solid-state, automatic filament voltage regulation • Meters and controls are set at or near average eye level for easy reading • Exclusive "soft start" circuit and low voltage controls • 23 different circuits or indicators are used to protect the transmitter • Control circuits are conventional low voltage design (28VDC) • Tuning and loading are handled with two motors: there are no chains, gears or couplings to slip or break • 27 LED indicators, 14 indicating fuseholders and 6 front panel circuit breakers help to quickly isolate any transmitter problem • Transmitter power may be adjusted to any level between 0 and 100% without retuning, using front panel controls • If momentary power outages or overloads occur, special circuits protect the transmitter and will automatically restore it to operational status

The 816R offers high fidelity, low power consumption, very little noise or distortion, good stereo separation and excellent frequency stability.

Two independent VSWR protection circuits automatically reduce transmitter power to a safe operating level whenever abnormal antenna mismatches occur. One circuit handles severe mismatches such as lightning strikes by interrupting the RF when reflected power reaches 10%. The other circuit holds reflected power to a preset level during severe icing conditions, allowing power to be maintained at the highest "safe" level.

Specifications Using 802A Solid-State Exciter

Rated Power Output:	814R-1: 2.5kW 814C: 3.8kW 815A: 5kW 816R-1A: 10kW
Power Consumption:	814R-1: 4.9kW 815A: 9.8kW nominal 816R-1A: 18kW nominal
Frequency Control:	Phase-locked loop frequency synthesis from high stability master oscillator
Frequency Stability:	± 250Hz, 0-55°C — 814C, 815A, 816R-1A, ± 275Hz — 814R-1
Output Impedance:	50 ohms
Output Connector:	1 ^{5/8} " EIA flange — 814C, 814R-1, 815A 3 ^{1/8} " EIA flange — 816R-1A
VSWR:	2:1, maximum
Modulation Type:	Direct carrier frequency modulation
Modulation Capability:	± 150kHz deviation
Modulation Indication:	Digital LED display shows true peak level of modulation signal in 5% increments with accuracy > ± 2%
Exciter:	Solid-state unit with variable output of 5 to 50W; self-contained harmonic filter
RF Harmonic Attenuation:	-80dB, minimum
Power Supply Rectifiers:	Silicon

VARIAN CONTINENTAL TVT

FM Transmitters

816R Series FM Broadcast Transmitters—816R-5B, 35kW Broadcast Transmitter

- SCR power control
- Automatic RF power output control
- Automatic SWR circuit protection
- SWR output power foldback
- Remote control interface
- True RMS filament power regulation/metering
- AC power failure recycle
- Two/four shot automatic overload recycle
- Grounded screen amplifier
- Internal diagnostics

The 816R-5B 35kW FM transmitter is a high performance, state-of-the-art transmitter that uses the 802A exciter to deliver a crisp, clean signal.

The transmitter is solid-state except for one 9019/YC130 tetrode power amplifier operating at Class C.

The 9019/YC130 tetrode was specially designed by EIMAC to meet stringent FM service requirements at 35kW.

The 816R-5B is the latest addition to the 816R series of 11, 21.5, 25 and 27.5kW transmitters, but employs a specially designed cavity for the 9019/YC130 tetrode.

The harmonic filter is internally mounted, providing a 3¹/₈" EIA flange for direct mounting to the transmission line.

816R 21.5, 25 and 27.5kW Broadcast Transmitters

The 21.5, 25, and 27.5kW FM transmitters offer high fidelity, low power consumption, low noise or distortion and excellent stereo separation.

816R Series

Common features:

Transmitter power may be adjusted to any level between 0 and 100% with minimal retuning, by using front panel controls.

If momentary power outages or overloads occur, special circuits protect the transmitter and will automatically restore it to operational status.

Two independent VSWR protection circuits automatically reduce transmitter power to a safe operating level whenever abnormal antenna mismatches occur. One circuit handles severe mismatches such as lightning strikes by interrupting the RF when reflected power reaches 10%. The other circuit holds reflected power to a preset level during icing conditions, allowing power to be maintained at the highest safe level.

An exclusive "soft-start" circuit and low voltage controls are easy on the total system and limit current surges through the power supply components; this helps to minimize parts replacement.

Twenty-three different circuits or indicators are used to protect the transmitter and the control circuits are of the conventional 28VDC design.

The meters and controls are strategically placed at or near eye level for easy reading and accurate adjustment. All components are easily accessible.

The wide, flat bandwidth is a result of the wideband quarter-wave cavity design which optimizes performance.

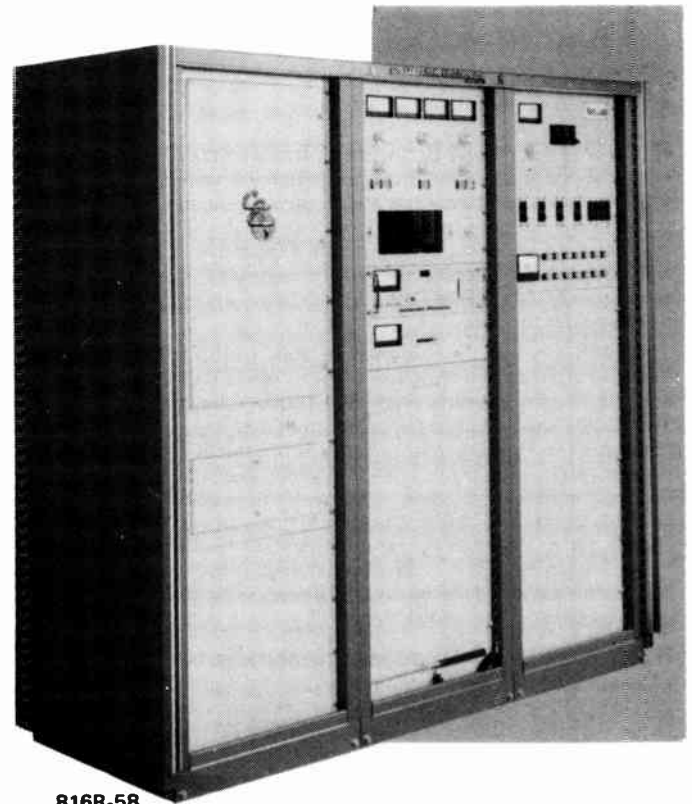
If a problem should occur, 27 LED indicators, 14 indicating fuseholders and six front panel circuit breakers assist in quickly isolating it.

The 816R-5B's control options offer operating flexibility. Its compact size and simple installation will get you air-ready with minimum time and cost.

The harmonic filter is contained within the transmitter cabinet.

8-1188

Prices and Specifications Subject to Change Without Notice.



816R-5B
Includes the 802A solid-state exciter

The 816R-5B is self-contained in one cabinet except for the high voltage power supply which may be placed up to 20' away from the transmitter.

The 816R series' control options offer operating flexibility. Its compact size and simple installation will get you air-ready with minimum time and cost.

816R Series Specifications Using 802A Solid-State Exciter

Rated Power Output:	816R-2B: 21.5kW 816R-3B: 25kW 816R-4B: 27.5kW 816R-5B: 35kW
Power Consumption:	816R-2B: 33kW nominal 816R-3B: 40kW nominal 816R-4B: 42kW nominal 816R-5B: 54kW nominal
Frequency Range:	88 to 108MHz in 10kHz steps
Frequency Control:	Phase-locked loop frequency synthesis from high stability master oscillator
Frequency Stability:	± 250Hz
Output Impedance:	50 ohms
Output Connector:	3 ¹ / ₈ " EIA flange
VSWR:	2:1 maximum
Modulation Type:	Direct carrier frequency modulation
Modulation Capability:	± 150kHz deviation
Modulation Indication:	Digital LED display shows true peak level of modulating signal in 5% increments with accuracy > ± 2%
Exciter:	Solid state unit with variable output of 5 to 50W; self-contained harmonic filter
RF Harmonic Attenuation:	-80dB, minimum
Power Supply Rectifiers:	Silicon

VARIAN CONTINENTAL TVT

FM Transmitters

817 Series FM Broadcast Transmitters

- 817R series 40, 50, and 55kW
- Broadcast transmitters
- Solid-state driver
- FM exciter
- Refined linearity
- Digital frequency selection
- 50W output broadband amplifier
- Automatic power level control
- Modular construction
- Optional automatic exciter control
- Optional automatic combiner control

The 40, 50 and 55kW FM transmitters offer high fidelity, low power consumption, very little noise or distortion, good stereo separation and excellent frequency stability.

The 817R-2B, 817R-1B and 817-4B models each consist of two transmitters whose inputs are combined in a 90° hybrid: two 21.5kW transmitters combine to achieve 40kW output; two 25kW transmitters combine to achieve 50kW output; and two 27.5kW transmitters combine to achieve 55kW output.

Transmitter power may be adjusted to any level between 0 and 100%, without retuning, using front panel controls.

If momentary power outages or overloads occur, special circuits protect the transmitter and will automatically restore it to operational status.

Two independent VSWR protection circuits automatically reduce transmitter power to a safe operating level whenever abnormal antenna mismatches occur. One circuit handles severe mismatches such as lightning strikes by interrupting the RF when reflected power reaches 10%. The other circuit holds reflected power to a preset level during severe icing conditions, allowing power to be maintained at the highest "safe" level.

An exclusive "soft start" circuit and low voltage controls are easy on the total system and limit current surges through the power supply components; this helps to minimize parts replacement.

Twenty-three different circuits or indicators are used to protect the transmitter and the control circuits are of the conventional 28VDC design.

The meters and controls are strategically placed at or near eye level for easy reading and accurate adjustment. All components are easily accessible.

The wide, flat bandwidth is a result of the wideband quarter-wave cavity design which optimizes performance.

If a problem should occur, 27 LED indicators, 14 indicating fuseholders and six front panel circuit breakers assist in quickly isolating it.

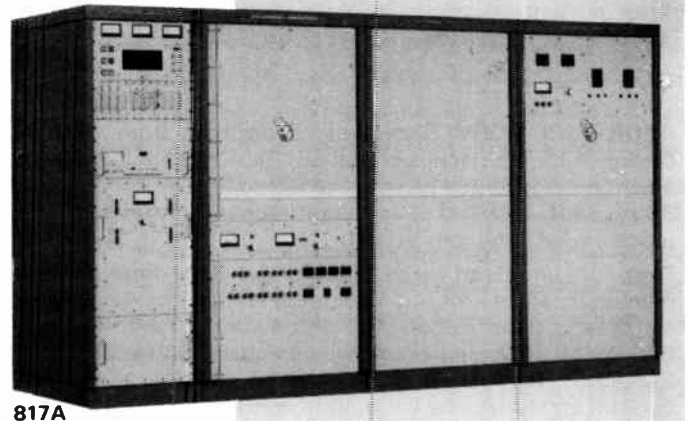
Options

The 377C-1A Automatic Exciter Control Unit provides monitoring and control for two 802A or similar exciters. If one exciter fails, the standby exciter is automatically put on line. Indicator lamps show which exciter is operating.

The 377D-1 Combiner Control provides automatic or manual control of two parallel FM transmitters and automatically assures maximum available power to the antenna at all times.

817A 60kW FM Broadcast Transmitter

- Simple installation
- Only one tube
- Completely self-contained including internal harmonic filter
- Solid-state driver
- SCR power control
- Filament voltage regulation
- Automatic SWR power control



817A
Includes the 802A Exciter

- Conventional remote control interface
- Internal diagnostics

The transmitter achieves its high levels of performance with low power consumption.

It has excellent stereo separation and frequency stability; operates with minimal noise and distortion; uses the 802A Exciter to deliver a crisp clean signal.

The transmitter is solid-state up to the power amplifier which uses one tube: a husky EIMAC 4CX40,000G Tetrode operating in Class C.

Operating over the frequency range from 88 to 108MHz, the 817A can be operated at power outputs from 30,000 to 60,000W.

The transmitter control system uses an 8-bit microprocessor for certain internal and external control and status reporting. Additionally, full hands-on local control of the transmitter is provided by front panel controls, meters and indicators, as well as the plasma operational display.

817 Series Specifications Using 802A

Solid-State Exciter

Rated Power Output:

817R-2B: 40kW
817R-1B: 50kW
817R-4B: 55kW
817A: 30, 40, 50, 60kW

Power Consumption:

817R-2B: 62kW nominal
817R-1B: 80kW nominal
817R-4B: 84kW nominal
817A: 53, 65.6, 80.8, 94.4kW nominal

Frequency Range:

88 to 108mHz, in 10kHz steps

Frequency Control:

Phase-locked loop frequency synthesis from high stability master oscillator

Frequency Stability:

± 250Hz

Output Impedance:

50 ohms

Output Connector:

6 1/8" EIA flange

VSWR:

2:1, maximum

Modulation Type:

Direct carrier frequency modulation

Modulation Capability:

± 150kHz deviation

Modulation Indication:

Digital LED display shows true peak level of modulated signal in 5% increments with accuracy > ± 2%

Exciter:

Solid-state unit with variable output of 5 to 50W; self-contained harmonic filter

RF Harmonic Attenuation:

-80dB, minimum

Power Supply Rectifiers:

Silicon

Refer to Green Section for Addresses and Telephone Numbers.

B-1 189

VARIAN CONTINENTAL TVT

Shortwave Broadcast Transmitter

420B—500,000W Shortwave Broadcast Transmitter

Designed for continuous operation, the 420B can be tuned to any frequency within its range of 3.9 to 26.1MHz in less than 30 seconds. Changes to adjacent frequencies can be accomplished in less than one second.

From its centralized master control panel, or from a remote computerized control and monitoring station, the 420B can be set up and either pretuned or automatically tuned to deliver 500,000W of carrier power on any frequency between 3.9 and 26.1MHz. The transmitter can also be manually tuned using controls located on the centralized control panel.

The transmitter uses advanced, but readily available, state-of-the-art components. Multi-phase cooled 4CM400,000 tetrode tubes are used in the power amplifier and modulator sections of the transmitter.

All critical components, including vacuum tubes and capacitors, tuning indicators and the solid-state broadband RF driver amplifier, are water or water-vapor cooled. The backswing diode is cooled and protected with insulation fluid. Other components are cooled by forced air.

The transmitter employs a very simple and reliable three-stage RF amplifier chain which uses only 9 tuning controls, including an optional, tuned balun, to develop 500,000W of carrier power.

The three-stage RF amplifier consists of a broadband solid-state amplifier, grounded-grid 3CW20,000A7 triode, and a 4CM400,000 tetrode final power amplifier.

The modulator is a series hard tube floating deck pulse-width modulator consisting of a single 4CM400,000 tetrode driven by a solid-state MOSFET driver.

Excellent noise immunity is obtained by feeding all low level signals to the floating deck and back to ground via fiberoptic cables.

Modern switching techniques, combined with a highly efficient tetrode tube, give the modulator an efficiency of better than 90%.

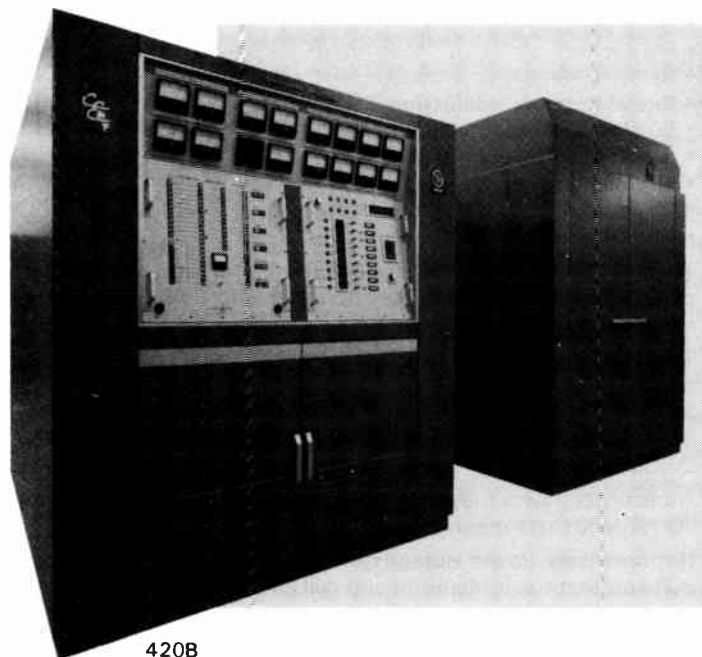
Overall transmitter efficiency can range from 65% to 72% depending upon the ambient temperature and operating frequency; typical efficiency is 70%.

The transmitter is relatively small and easy to operate and maintain. Operators can become proficient on the type 420B with a minimum of on-site training. Personnel who have operated the Type 420B consider it to be very "user-friendly."

Optional peripherals allow complete tuning and operation of the transmitter outside of an existing network or system.

Specifications

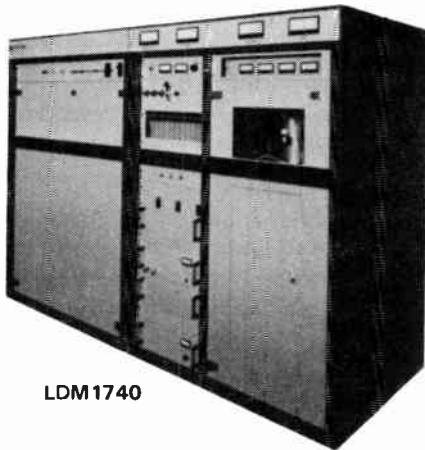
Carrier Output:	500,000W, min.
Modulation:	Pulse-width modulator
Emission:	A3E, J3E, R3E, on-off keying, A1A or A1B
Frequency Range:	3.9 to 26.1MHz
AF Input Impedance:	600/150 ohms, balanced or unbalanced
AF Input Level for 100% Sinewave Modulation:	-5dBm to +10dBm
AF Response:	± 1dB 50Hz to 7.5kHz
AF Distortion:	< 4% THD 50Hz to 7.5kHz at 95% modulation



Carrier Shift:	< 3% excluding line variations
Modulation Capability:	100% positive and negative peaks 50Hz to 7.5kHz sinewave for 10 minutes per hour; up to 80% modulation continuously
Residual Carrier Noise:	60dB unweighted below 100% modulation at 1kHz or better
RF Harmonic Output and Spurious Response:	Below 75dB
Output Impedance:	50 or 75 ohms unbalanced, 300 ohms balanced (optional)
Maximum VSWR:	1.7:1
Power Source:	4160VAC, 3 phase, 50/60Hz (other on special order)
Power Factor:	0.9 or better
Power Consumption:	Carrier, unmodulated: 770KVA, max. Carrier, modulated: 100% sinewave, 1150KVA, max.
Efficiency:	65% to 72% depending upon the ambient temperature and operating frequency; typical efficiency is 70%
Exciter:	Any suitable exciter with 0.5W output, 3.9 to 26.10MHz
Operating Environment Altitude:	Sea level up to 6000'
Ambient Temperature:	+32°F to +122°F (0°C to +50°C)
Relative Humidity:	Up to 95%
Size and Weight:	Transmitter's main cabinet group and power vault area require approximately 4,300 cubic feet including doorways and walk space, but not including outside heat exchanger. Shipping weight, packed for export, is approximately 47,300 lbs.

VARIAN CONTINENTAL TVT

UHF Transmitters



LDM 1740

Klystron UHF Transmitters: 10-60kW

- Systems from 10-60kW
- Available on all TV systems worldwide
- Low cost of ownership
- Beam modulation/pulsing on LDM 1741/1742 amplifiers
- External or internal drives/excitors
- Compact design with integral high voltage supply
- Simple and efficient cooling systems
- Remote or local operation
- Solid state up to Klystron tube
- Full (IEC215) international safety standards

LDM 1740

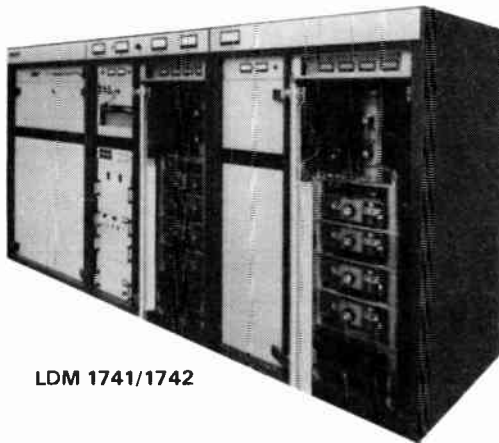
- 30kW vision output power
- Up to 18kW sound output power
- 10kW combined output power
- Combined or single carrier amplification
- Single Klystron tube
- Vapor cooled Klystron

LDM 1741/1742

- 10-30kW output power
- Dual Klystron
- Beam modulation
- Separate amplification of vision and sound carriers
- Vapor cooled Klystrons
- Versions with integral or external vision/sound combiner

LDM 1742 System

- 60kW parallel operation or 30kW main/standby



LDM 1741/1742

Television systems	CCIR G, H, I, K, K ¹ , M, N
Modulation	Vision: Negative Amplitude C3F (A5C). Colour: PAL, NTSC or SECAM. Sound: Frequency F3E (F3).
Frequency range	470-860MHz set at factory to specified channel.
Klystron tubes	Compatible klystron tubes: TEV: PT5050 ACE/PT 5080 ACE VALVO: YK1223/YK1233 EEV: K3270BCD/K3271BCD
Power supplies	380/220 or 415/240V ±1.0% 3 phase, 4 wire For operation on other voltages consult Varian TVT.
Supply frequency	47-63Hz.
Power factor	Better than 0.9.

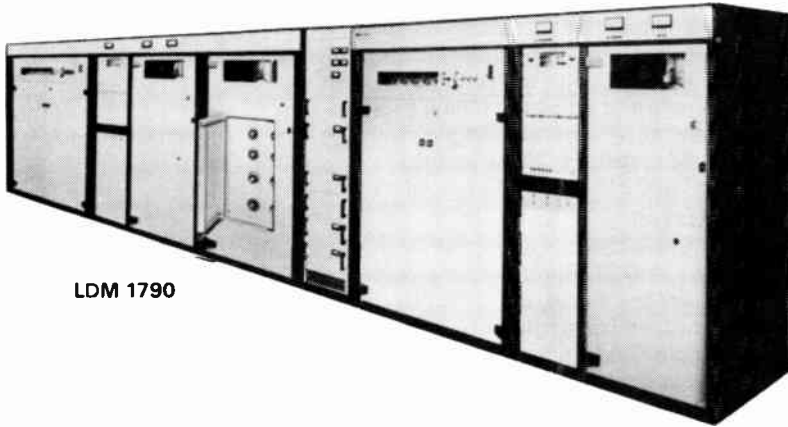


LDM 1742 System

Type number	LDM 1740	LDM 1741	LDM 1742
Dimensions	Width: 102.4 inches (2600mm) Height: 76.0 inches (1930mm) Depth: 44.2 inches (1125mm)	Width: 153.5 inches (3900mm) Height: 76.0 inches (1930mm) Depth: 44.2 inches (1125mm)	Width: 153.5 inches (3900mm) Height: 76.0 inches (1930mm) Depth: 44.2 inches (1125mm)
Output power	Up to 30kW vision only. Up to 18kW sound only. Up to 10kW combined.	10-15kW peak sync.	20-25kW peak sync. (470-860MHz) 30kW peak sync. (470-700MHz)
Typical power consumption	Vision only. 15kW output: 50kW 30kW output: 70kW Combined. 5kW output: 43kW 10kW output: 65kW	10kW peak sync: 28kW 15kW peak sync: 48kW	20kW peak sync: 49kW 25kW peak sync: 60kW 30kW peak sync: 70kW
R.F. output Load impedance	50 ohms unbalanced. 3/8 or 5/8 inch sleeve connectors depending on channel or system used EIA connectors optionally available.		

VARIAN CONTINENTAL TVT

UHF Transmitters



LDM 1790

Klystron UHF Transmitters 30-240kW

- Systems from 30-240kW
- Available on all TV systems worldwide
- Low cost of ownership
- Beam modulation/pulsing on visual amplifiers
- External or internal drives/exciter
- Compact design with integral high voltage supply
- Simple and efficient cooling systems
- Remote or local operation
- Solid state up to Klystron tube
- Full (IEC215) international safety standards

LDM 1790

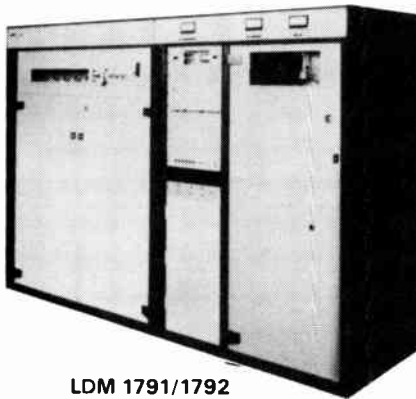
- 60kW visual output power
- Up to 24kW aural output power
- 30kW combined output power
- Combined or single carrier amplification
- Single Klystron tube
- Vapor cooled Klystron

LDM 1791/1790

- 120kW system. 3 Klystron

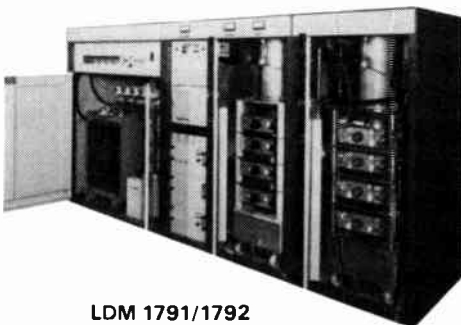
LDM 1791/1792

- 30-60kW output power
- Dual Klystron
- Beam modulation
- Separate amplification of visual and aural carriers
- Vapor cooled Klystrons



LDM 1791/1792

Television systems	CCIR G, H, I, K, K', M, N
Modulation	Vision: Negative Amplitude C3F (A5C). Colour: PAL, NTSC or SECAM. Sound: Frequency F3E (F3).
Frequency range	470-860MHz set at factory to specified channel.
Klystron tubes	Compatible klystron tubes: TEV: PT 5090 ACE Valvo: YK 1263/1265 EEV: K 3672 BCD
Power supplies	380/220 or 415/240V - for LDM 1792 operation. 460/266 or 480/277V - for LDM 1790/1791/1792 operation. ±1.0% 3 phase, 4 wire. For operation on other voltages consult Varian TVT.
Supply frequency	47-63Hz.
Power factor	Better than 0.9.



LDM 1791/1792

Type number	LDM 1790	LDM 1791	LDM 1792
Dimensions	Width: 118.5 inches (3010mm) Height: 76.0 inches (1930mm) Depth: 44.2 inches (1125mm)	Width: 153.5 inches (3900mm) Height: 76.0 inches (1930mm) Depth: 44.2 inches (1125mm)	Width: 153.5 inches (3900mm) Height: 76.0 inches (1930mm) Depth: 44.2 inches (1125mm)
Output power	Visual 60kW peak sync. or Aural up to 24kW f.m. Combined 30kW	Visual 60kW peak sync. Aural up to 12kW f.m.	Visual 30 or 40kW peak sync. Aural up to 6 or 8kW f.m.
	LDM 1791/1790: Visual 120kW peak sync. Aural 12kW f.m.		
Typical power consumption	For single carrier: 117kW. For combined: 170kW.	For 60kW peak sync. and 6.0kW aural: 135kW.	For 30kW peak sync. and 3.0kW aural: 74.5kW. For 40kW peak sync. and 4.0kW aural: 100.0kW.
	LDM 1791/1790: For 120kW black and peak sync. visual and 12kW aural: 273kW.		
R.F. output Load impedance	50 ohms unbalanced. 6 1/8 inch EIA connectors.		50 ohms unbalanced. 5 1/8 inch Sleeve connectors. EIA connectors optionally available.

VIDEO ACCESSORY CORP.

Switches/Alarms/Distribution Amplifiers

VPS-1P Video Activated Power Switch

When this failsafe unit senses a signal, it provides AC power to any device plugged into it. It is useful in remote applications, inaccessible units, and many other applications. Available as a kit for installations in existing equipment or as a complete self contained unit.

VPS-1P Assembled and tested PC board \$ 108.00
 VPS-1PC With cabinet 170.00



VPS-1P

APS-1P Audio Activated Power Switch

When this failsafe unit senses a signal, it provides AC power to any device plugged into it. It is useful in remote applications, inaccessible units, and many other applications. Available as a kit for installations in existing equipment or as a complete self contained unit.

APS-1P Assembled and tested PC board \$ 108.00
 APS-1PC With cabinet 170.00



AA-1P

AA-1P Audio Alarm

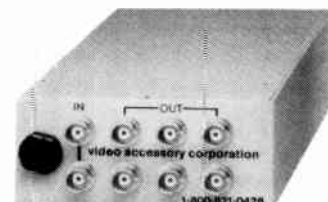
This failsafe unit automatically monitors an audio signal. It will sound a clearly audible alarm upon any loss of audio for more than 12 seconds. Available as a kit for installations in existing equipment or as a complete self contained unit.

AA-1P Assembled and tested PC board \$ 108.00
 AA-1PC With cabinet 170.00

VA-1P Video Alarm

This failsafe unit automatically monitors a video signal. It will sound a clearly audible alarm upon any loss of video for more than one second. Available as a kit for installations in existing equipment or as a complete self contained unit.

VA-1P Assembled and tested PC board \$ 108.00
 VA-1PC With cabinet 170.00



VDA-1

VDA-1/VDA-2P Video Distribution Amplifiers

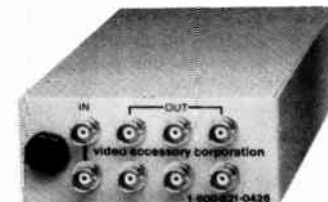
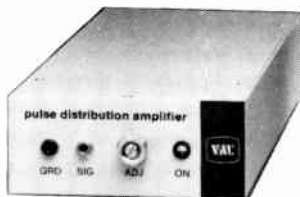
These distribution amplifiers provide a loopthrough input, 6 outputs, adjustable -3 to +3dB gain, and 20MHz bandwidth for reliably distributing video to a number of devices. The VDA-2PC is a 117VAC unit in a cabinet. Input and outputs are rear panel BNC connectors. Test points, power indicator and gain control are located on the front panel. The VDA-2P is the 117VAC unit without a cabinet. The VAD-1 is a 12VDC unit without a cabinet.

VDA-1 Assembled and tested PC board for 12VDC \$ 182.00
 VDA-2P Assembled and tested PC board for 117VAC 206.00
 VDA-2PC With cabinet 300.00

PDA-2P Pulse Distribution Amplifier

A 1 in 6 out pulse distribution amplifier with loopthrough input, and 75 ohm outputs adjustable from -3.5V to -4.5V. These output pulses are regenerated by the amplifier so that dirty input signals are actually cleaned up.

PDA-2P Assembled and tested PC board \$ 206.00
 PDA-2PC With cabinet 300.00

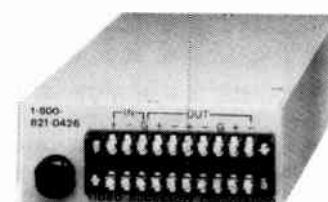
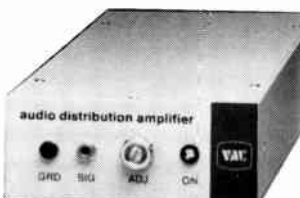


PDA-2P

ADA-2P Audio Stereo Distribution Amplifier

A 1 in 6 out audio distribution amplifier with loopthrough input, 600 ohm isolated balanced or unbalanced outputs, 20Hz to 20kHz bandwidth, and up to +15dB output.

ADA-2P Assembled and tested PC board \$ 206.00
 ADA-2PC With cabinet 300.00



ADA-2P

DA 10-2PC Distribution Amplifier Assembly

Four or five of any combination of our VDA-2P, PDA-2P or ADA-2P distribution amplifiers may be ordered in one full rack width cabinet.

DA 10-2PC With four distribution amplifiers \$ 1030.00
 DA 10-2PC With five distribution amplifiers 1288.00

NOTE: All VAC equipment is rackmountable for \$30.00 per 1 3/4" high rack width.

Refer to Green Section for Addresses and Telephone Numbers.

B-1193

VIDEO ACCESSORY CORP.

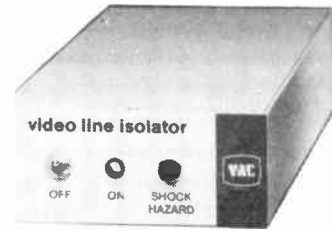
Video Processing/Distribution

VL-1PC Video Line Isolator

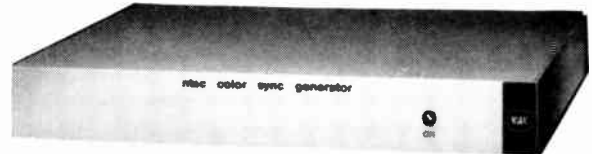
The unique "opto-coupled" video line isolator improves the overall performance of your video system by providing 80dB of isolation between input and output grounds.

Common-mode ground loop problems caused by different AC power ground potentials are eliminated. Video input and output are rear panel insulated BNC connectors. A hazard lamp on the front panel indicates dangerous ground potential voltages. Balanced audio isolation with a rear panel barrier strip is optional.

- VL-1PC\$278.00
- VL-1APC With audio option\$345.00



VL-1PC



100-2PC

100 NTSC Color Sync Generator

The 100 Color Sync Generator provides subcarrier, sync, blanking, burst flag, horizontal drive, vertical drive, and black burst outputs. This NTSC unit insures that all genlockable cameras, monitors, VCRs, character generators, editing, and duplicating equipment are locked on exactly the same frequency. For increased capability a built-in VDA-2P distribution amplifier is optional (100DA). The VAC color sync generator is a 117VAC unit in a cabinet. Input and outputs are BNC connectors on the rear panel. A power indicator is located on the front panel.

- 100-2PC Sync generator with black burst\$706.00
- 100DA-2PC As above with 1 in 6 out VDA\$870.00

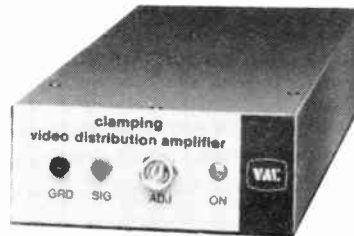


200-2PC

200-2PC rs-170A Color Sync Generator

The 200 rs-170A genlockable color sync generator provides black burst, sync, subcarrier, blanking, burst flag, horizontal drive, and vertical drive outputs. This NTSC unit insures that all video equipment is perfectly synchronized. Input and outputs are rear panel BNCs. Power and genlock indicators are located on the front panel. Frequency trim, subcarrier phase, and horizontal phase adjustments are accessible through the front panel.

- 200-2PC\$745.00



VDA-3PC

PG-3PC Color Bar/Blackburst Generator

The PG-3PC rs-170A, genlockable, color bar and black burst generator provides SMPTE color bar and black burst outputs. This NTSC unit is useful for both equipment setup and synchronization. Input and outputs are rear panel BNCs. Power and genlock indicators are located on the front panel. Frequency trim, subcarrier phase, and horizontal phase adjustments are accessible through the front panel.

- PG-3PC\$1095.00

PG-2PC Color Pattern Generator

The PG-2PC provides 5 test patterns: Full Field Color Bars, Split Field Color Bars, Full Field Blue Gun, Cross-Hatch, and Black Burst. Up to 64 customer specified alphanumeric characters can be switched on to any test pattern. It is genlockable and will run on 117VAC or 12VDC. It can also provide a 1000Hz audio test tone and a field 1 ID flag. Its subcarrier phase is adjustable. Options include: up to 11 additional customer specified test patterns, an additional customer specified alphanumeric screen, and an additional multi-burst or black burst output.

- PG-2PC\$1130.00

VDA-3PC Clamping Video Distribution Amplifier

The VDA-3PC provides a loopthrough input, six outputs, adjustable gain, wide bandwidth, and clamping for reliably distributing video to a number of devices. The clamping feature improves hum and noise rejection and black level retention. Input and outputs are rear panel BNCs. Test points, power indicator, and gain control are located on the front panel.

- VDA-3PC\$340.00



VS-2PC Video Squelch

The Video Squelch is an automatic two input, one output video switch. If the quality of the main input signal falls below the user predefined setting on the front panel dial, the output is switched from the main input to the alternate input, a power relay trips, and a defeatable audible alarm sounds.

- VS-2PC With mono audio follow video\$1030.00

Any or all of the following may be added to the VS-2PC:

- SA Stereo audio\$206.00
- AT Terminated audio103.00
- XLR XLR audio connectors (3 or 4-pin)\$2.00
- RC Remote control\$206.00

NOTE: All VAC equipment is rackmountable for \$30.00 per 1 3/4" high rack width.

VIDEOMEDIA, INC.

Editing Systems



Eagle

- Eagle I** 2 machine, 250 event, animation, printer output. Unit has built in sync generator with sync, 3.58 and two black burst outputs **\$8,250.00**
- Eagle II** All the features of the Eagle I plus full list management functions including: Insert Event, Delete Event, Move Event, Index, Ripple, Auto-Clean and Slide **\$9,500.00**
- Eagle III** A/B roll system includes all the features of the Eagle II plus a third TCP module, Z6006 multi-level transition switcher control, and Z6007 monitor switcher and GPSI unit. (Specify switcher to be used.) **\$16,500.00**
- Eagle 900** Special edition includes 250 events, A/B roll, Z6006 switcher driver, 3 TCP modules, printer port, basic slow motion control, and list management **\$13,750.00**
- Magnum** A/B roll, rackmount electronics, 250 event, 8" dual disk operating system, software assignable transports, CMX disk translator, expanded list management, printer output, 5 general purpose contact closures, animation, sync roll, diagnostics. Slow motion control is included, if transports specified are capable. Basic system includes serial switcher interface for all popular switchers and 3 transport control processors (serial or parallel, specify transports). System can handle up to six transports by adding additional TCP modules **\$23,500.00**

Eagle I, II and III Editors

Standard Features for all Eagle Editors:

- 250 event memory
- Auto-Edit
- Auto-Tag
- Multi-Split Edits
- Frame Accurate (Micro-Loc or SMPTE)
- Upgradeable
- Control up to 6 transports (optional)
- Printer output
- Status display generator
- On-line "Help" Functions
- Distributed Intelligence
- Animation
- Transitional data entry

Eagle System Specifications

System Configuration: Distributed intelligence using independent transport control processors. Electronics, rack-mount

Central Processor: Z80A 8-bit microprocessor
Transport Control Processor: Z80A 8-bit microprocessor
Software Programs: Contained in EPROMs (non-volatile) or optional disk operating system

Communication Format: RS232C/serial printer; parallel to Transport Control Processor

Edit List Output: Serial printer

Maximum Number of Devices Controllable: 5 source. 1 record

Edit Accuracy: Frame accurate, color framed with SMPTE or Micro-Loc; machine dependent with control track

Time Code Standards: SMPTE drop/non-drop frame, EBU

Television Standards: NTSC/PAL/SECAM/PAL-M

Keyboard: Remote, dedicated

Motion Control: Dual proportional shuttle arms

Chassis: 5 1/4" H x 19" W x 22 1/4" D

Weight: 32 lbs.

Keyboard: 4" H x 21" W x 11 7/8" D

Power: 110/220/240VAC; 48 to 62Hz

Disk Package: (optional) 3 1/2" H x 19" x 13 1/4" D

Weight: 25 lbs.

Eagle/Magnum Editing Options and Accessories

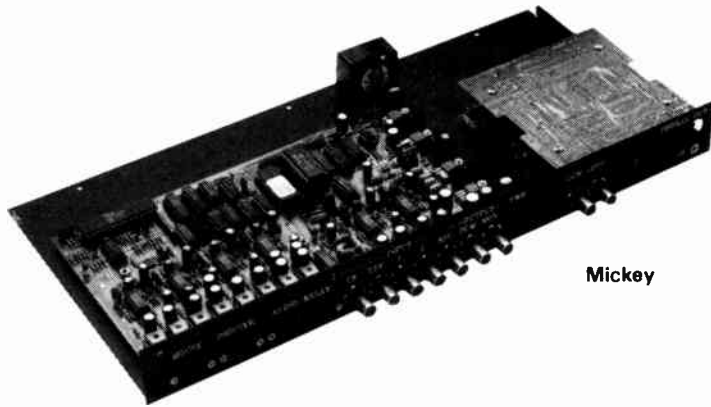
- Micro-Loc II** Intelligent Micro-Loc reader generator. Specify VTR type. **\$825.00**
- TCP-3** Complete set of hardware and software for serial interface of additional transports to the Magnum. (Specify type transports) **\$2,750.00**
- TCP-SM** SMPTE/EBU time code reader option for use with TCP-3 on parallel type VTRs **\$500.00**
- EA100** Single 5 1/4" disk file storage and retrieval system. Includes one 5 1/4" drive, rackmount chassis, disk controller card and software. (not for the 900) **\$1,995.00**
- EDOS-1** Dual 5 1/4" disk operating system. Includes 2 each 5 1/4" drives, rackmount chassis, disk controller board and operating software. System also includes Version 2.00 enhanced list management, assignable VTRs, slow motion control. (Eagle II or III only) . . . **\$5,000.00**
- ZDOS-1** Dual 8" disk operating system. Includes 2 each 8" drives, rackmount chassis, disk controller board and operating software. System also includes Version 2.00 enhanced list management, assignable VTRs, slow motion control and translator to CMX compatible disk. (Eagle II or III only) **\$7,500.00**
- Z6007** Contact closure and general purpose interface. Includes audio and video monitor switcher and software control of 5 separate contact closures for use with external devices. (This unit is standard with Eagle III and 900) **\$1,000.00**

Upgrade or Changeout Charges

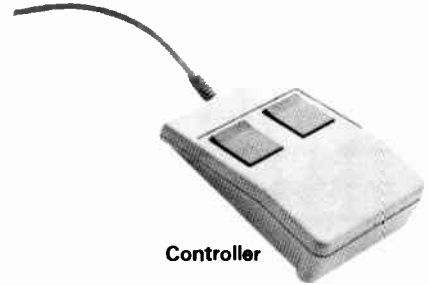
- TCP Changeout (VTR Change)** Includes software and cable swap for one VTR. If second half of TCP-3 board is ordered active, add \$900.00. **\$1,000.00**
- EA-DOS to EDOS-1 upgrade** **1,000.00**
- Z6004 to ZDOS-1 upgrade** **1,250.00**
- Eagle 900 to any higher model** Plus price difference in models . . **1,000.00**

VIDEOMEDIA, INC.

Editing Controllers



Mickey



Controller

Mickey 1 and 2 Editing Controllers

- "Mouse" input control • Frame accurate (using SMPTE time code)
- 50 event internal memory • 2 VTR control • Built-in video mixer with 2 channel audio follow mixer • Multiple split edit capability • Automatic external trigger for additional effects devices • Printer output port (RS-232) • Interfaces to most popular VHS, U-Matic, 1/2" and 1" type "C" VTRs • Upgradeable to Mickey 2

Standard Features of Mickey 2

- Mickey 2 includes all of the features mentioned for Mickey 1 plus:
- 3 VTR A/B roll capability • Full auto-drive of internal audio/video mixer

All editing operations on Mickey are achieved by movement of an opto-mechanical "mouse" which will highlight various squares presented on a data display monitor.

The left-hand button of the two button "mouse" activates the function highlighted on the monitor. The right-hand button controls VTR motion (Play, Pause, Variable Speed, Jog, Shuttle, etc.)

Distributed Intelligence

Mickey uses distributed intelligence. That means each VTR has its own dedicated computer (VSIO unit) controlling it. Distributed intelligence is the only method by which consistent frame accuracy of a system can be maintained. Mickey provides protection against obsolescence since expandability is assured by the fact that distributed intelligence is used.

High Speed LAN

The VTRs require no modifications. Mickey's main computer communicates to all VSIO units in the system via a single BNC coax cable. A defective VTR or VSIO unit can be located, isolated and replaced or removed literally within seconds. This high speed Local Area Network (LAN) is a remarkable technological breakthrough.

Mickey's software is just as impeccably designed as its hardware. This mouse driven system is easily the fastest editor to use. Mickey can automatically find a match cut point, extend an edit and clean the edit list with one single stroke, procedures that take any other editing system countless keystrokes.

Specifications

- System Configuration:** Distributed intelligence using independent Transport Control Processors. (VSIO Units)
- Central Processor:** Z80A 8-bit microprocessor
- Transport Control Processor:** Z80A 8-bit microprocessor
- Software Programs:** Contained in EPROMS (non-volatile)
- Communication Format:** RS232C/serial printer; Co-ax LAN Loop to Transport Control Processors
- Edit List Output:** Serial printer

- Inputs:** Mouse, Audio (2 channel, 2 source, 1 record), REF (black burst or composite sync), CF (color frame ID pulse, required only for certain VTRs), Video (2 source, 1 record)
- Maximum Number of Devices Controllable:** 2 source, 1 record
- Edit Accuracy:** Frame accurate, color framed w/SMPTE or Micro-Loc; machine dependent w/control track
- Time Code Standards:** SMPTE drop/non-drop frame, EBU
- Television Standards:** NTSC/PAL/SECAM/PAL-M
- Input Control Device:** Opto-mechanical Mouse
- Motion Control:** Full proportional speed using Mouse
- Video Dissolve:** Selectable rate 5 to 120 frames
- Audio Mix:** 2 channel stereo, same rate as Video
- Outputs:** Printer-DB9, Audio (2 channel) monitor and program, Video (monitor and program), Display 1V p-p composite

Mickey 1 2 machine cuts only editor with GPSI interface for external devices. Includes 50 event memory, mouse control operating system, printer port, 2 channel video dissolve and 2 channel stereo audio follow video dissolve. 2 VSIO-M distributed intelligence interface modules for serial control VTRs are included. (Specify VTR) . . . **\$4,500.00**

Mickey 2 3 machine A/B roll editing system with all features of Mickey 1 plus sync roll and A/B roll software, plus one additional VSIO-M distributed intelligence interface for serial control VTRs. (Specify VTR) . . . **\$5,500.00**

VSIO-PS Option This option must be ordered (one per VTR) for control of parallel VTRs i.e. type 5 U-Matics, JVC CR series. This option includes a SMPTE time code reader. This option may also be used with serial VTRs i.e. JVC 850s, BVUs to provide time code without the necessity of the optional VTRs internal time code boards . . . **\$500.00**

PC-Link Option PC board and software for adding any IBM (PC, XT or AT) computer to the Mickey LAN system. This allows edit list storage and retrieval to floppy disk or hard disk and direct keyboard data entry for the Mickey editing systems. This option is mandatory for use with the Mickey LM list management system . . . **\$1,850.00**

LM Option List management and EDL data basing software package for Mickey editing systems equipped with the PC-Link option. . . . **\$950.00**

VIDEOMEDIA, INC.

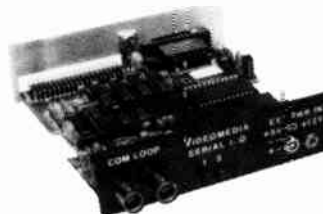
Automation/Animation Systems

AUTOMATION SYSTEMS

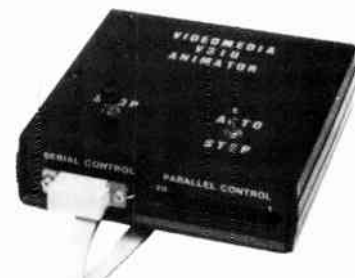
- Q-STAR II/A** Computer based 900 event, random access and/or sequential automated playback system. Includes 4 VSIO and VTR interfaces. Additional VTRs may be added by ordering additional VSIO units. Up to 20 devices may be controlled. Multiple keyboards may be added. Switcher included with system is a 10 X 1 AFV dual audio channel unit. (Call factory for other switcher possibilities). System also includes real-time clock/date generator, keyboard, electronics, serial printer port and control cables **\$ 9,250.00**
- VMC-2000** Master control system includes IBM-AT compatible computer with EGA color card and color monitor, serial and parallel control ports, 20M hard disk, UPS battery backup, and high speed printer. Accepts logs from the VMC-3000. LAN software to control up to 20 Q-STARs and the VSIO master buffer. System includes 1 Q-STAR 4 machine channel. **29,000.00**
- VMC-2000-2** As above but complete setup for two channel operation. Includes 2 Q-STAR 4 machine channels **37,000.00**
- VMC-2000-4** As above but complete setup for four channel operation. Includes 4 Q-STAR 4 machine channels **49,000.00**
- VMC-2000-8** As above but complete setup for eight channel operation. Includes 8 Q-STAR 4 machine channels **78,000.00**
- VMC-3000** Multi-user station management and traffic control center. Features contract generator, billing software, cuts sheet generator, log generator, sales tracking and report generator, and word processor. Maintains all data for up to 20 channels of operation. LAN System allows for up to 32 additional IBM compatible user stations. Center includes IBM AT compatible computer, EGA color card, color monitor, 20M hard disk, LAN server card and 1 LAN slave card, high speed printer, and UPS battery backup power supply **28,500.00**
- Options**
- VMC-260A** FSK integrated operational software package. Stand-alone FSK encoding and verification station includes terminal, VTR interface, computer and software **\$3,000.00**
- FSK-1** FSK data decoder (requires VSIO-1) . . . **500.00**
- FSK-2** FSK CRT data display generator . . . **1,200.00**
- SM-4** SMPTE time code reader (requires VSIO-1) **500.00**
- MDM-1** Modem and communications software. (VMC-2000, VMC-3000) **1,695.00**
- VSIO-1** Intelligent transport control interface module **750.00**



Q-Star II/A



ANI-MATE



- VMC-101V** Tone encoder for Q-STAR II or VMC-2000 systems. (Not used if FSK or SMPTE are used) **\$900.00**
- LAN-1** Plug in slave card for placing any IBM compatible computer on VMC-3000 LAN network. **750.00**
- Control cable and connector for any U-matic or 1/2" VTR. For use with VSIO units or Q-STAR or VMC-2000 systems **75.00**

ANIMATION SYSTEMS

- VS-5** 3/4" U-matic frame accurate animation system. Can be used stand-alone or controlled from an external computer via RS-232 interface. System includes Sony VO-5850 VTR with modifications, MICRO-LOC reader-generator, special VSIO and operating software **\$10,000.00**
- ANI-MATE** Animation system for frame accurate edits on any Sony BVU, Betacam or BVH 2000 VTRs. Uses the 9-pin remote. VTR must be equipped with SMPTE time code reader **850.00**

VIDEOTEK, INC.**Production Switcher****Prodigy-Production Switcher**

A reliable video switching and effects system follows the multi-level effects with a Look Ahead Preview.

An integral stereo audio-follow-video system provides the critical link between your audio console and editing system and can even be used for master control applications. Three standard RS-422 serial ports link Prodigy to most popular editing controllers and other intelligent devices.

Eight Primary Video Inputs, Black and Color Background • Input 1 is the blackburst reference for genlock plus black • Inputs 2-9 are primary video inputs • Input 10 is the internal color background generator

Multi-level Effects System • Background transitions—cut, mix, wipe • Key transitions—cut, mix, wipe • Combined background and key transitions—provides the power of a two-mix/effect switcher

Look Ahead Preview • Displays the exact result of the next transition

Integrated Stereo Audio-Follow-Video System • Two bus system—preset and program cut or fade between audio sources • Editor control of audio transitions • Audio hold—inhibits AFV operation

Fade-To/Through-Black • Integrated with transition system

Blackburst System Timing Reference • System genlocks to blackburst reference signal on input 1

Blanking Processor • Provides high stability video output and masks minor timing errors between primary inputs

Variable Gain Keying System • Allows the keyer to be adjusted to match the rise time of the key source for high quality keying

Key Memory • Automatically remembers the Key Clip and Key Gain settings for each input in both Self Key and Auto External Key modes

Three External Key Inputs • Can integrate a "wide key" character generator, digital effects system and graphics camera

Auto External Key Follow • Automatically selects External Key when primary input for which it is programmed is selected • Selects Self Key for primary inputs which do not have an External Key programmed to follow

Extensive Wipe Pattern Selection and Modifiers • 24 wipe patterns standard • Hard, soft and hard or soft bordered wipe edges • Rate controlled joystick for positioning and pattern modification • Pattern Memory System—allows editing system to select a pattern with all modifiers through standard editor interface

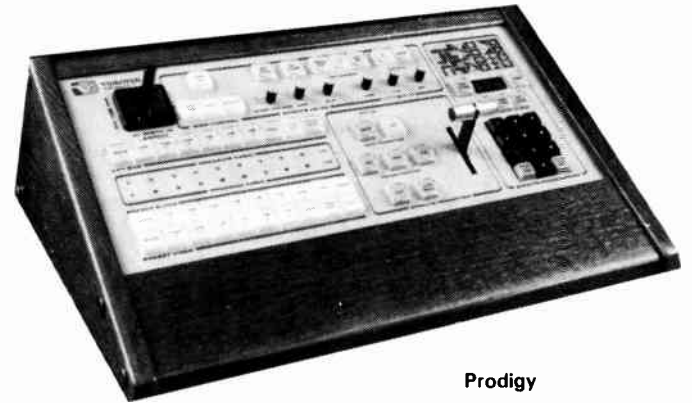
Programmable Effects Transition System • 100 on-line events with battery backup • Recall pre-programmed effects at the touch of a button • Effects transitions smoothly change analog control settings between the values stored in two ET events • Instant Replay allows Prodigy to learn the operator's actions against a real time clock • Programmed sequences for repeatability without setting the effect up in real time

Serial Editor Interface for Video and Audio • RS-422 port interfaces with most available editing systems

General Purpose Interface (GPI) • Integrates Prodigy with other devices through contact closure interface • Prodigy may be controlled from inexpensive "cuts only" editing systems • Can access memory recall • Allows external device with GPI input to be triggered by Prodigy

Specifications**VIDEO**

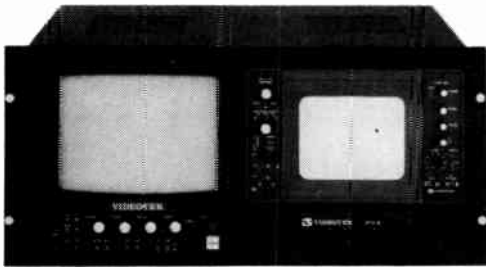
Inputs:	8 loopthrough video (inputs 2-9) 1 loopthrough blackburst external reference (input 1) 3 external key; 1V p-p, composite or 0.7V p-p non-composite
Crosstalk:	> -54dB DC to 4.43MHz
Frequency Response:	± 0.10dB at 5.5MHz ± 0.10dB to -1.0dB at 20MHz Smooth roll off at 20MHz

**Prodigy**

Outputs:	Two program outputs Two look ahead preview outputs
Outputs Impedance:	75 ohms, ± 1% source terminated
Tilt:	< 0.5%
K Factor, 2T Pulse:	≤ 1.0%Kp
Differential Phase:	≤ 1.0° at 1V p-p, 10-90% APL
Differential Gain:	≤ 1.0% at 1V p-p, 10-90% APL
Chrominance/Luminance Inequalities:	Delay ≤ 10nS Gain ≤ 0.1dB
S/N Ratio:	> 65dB signal/RMS noise to 5MHz
Path Length Deviation:	(Between any two inputs) ≤ 1.5° (NTSC or PAL)
Mix/Effects Characteristics:	Luminance linearity: ≤ 1.0% gain; ≤ 10mV DC; Chrominance linearity: ≤ 1.0% Amplitude; ≤ 1.0° Phase
Connectors:	BNC connectors
AUDIO Inputs:	Two audio inputs (left and right) per video input (inputs 2-10) + 24dBm maximum 600 ohms balanced
Input Level:	+ 24dBm maximum
Input Impedance:	600 ohms balanced
Outputs:	Two audio outputs (left and right) on program out + 24dBm maximum
Output Level:	+ 24dBm maximum
Output Impedance:	Output source impedance 600 ohms balanced
Crosstalk:	≤ -70dB at 15kHz referenced to + 24dBm
Frequency Response:	30Hz to 15kHz ± 0.2dB (Referenced to 1kHz)
S/N Ratio:	> 70dB (Referenced to + 24dBm)
Harmonic Distortion:	≤ 0.15%, 30Hz to 15kHz (0dBm to + 20dBm out) ≤ 0.5%, 30Hz to 15kHz (+ 20dBm to + 24dBm out)
Common Mode Rejection:	≥ 60dB from 30Hz to 15kHz
Connectors:	Quick disconnect terminal strips
GENERAL RS-422 Serial Ports:	Three 9-pin D connectors are provided on the Electronics Frame for: Control Panel port, Editor port; External CPU port
Control Panel Cable:	10 meter (34.2') cable standard 9-pin D connectors wired straight through to pins 1, 2, 3, 7, 8
MECHANICAL Dimensions:	Control Panel—8.75" H x 19" W x 4.5" D Electronics Frame—5.25" H x 19" W x 17.5" D
Weight:	Control Panel—12.5 lbs. Electronics Frame—30 lbs.
Prodigy	\$9995.00
OPTIONS	
EX-P: Extender cards for servicing Electronics Frame circuit boards	\$200.00
CTC-1: Console for counter top installation of Prodigy. Solid oak construction	100.00

VIDEOTEK, INC.

Professional Rackmount Color Monitors



SYSTEM 8

8" Broadcast Rackmount AC/DC Color Monitor With Comb Filter and Glare Shield. Includes TSM-60 Waveform Monitor and PVS-6 Switcher

Features Include: Raster size regulation, de-gauss, keyed back porch clamping, A-B inputs, RGB gun switches, RGB background and drive controls, tally light, medium resolution 350 lines, comb filter, internal/external sync, anti-glare shield, rackmount accessories, selectable ACC defeat, and Service manual

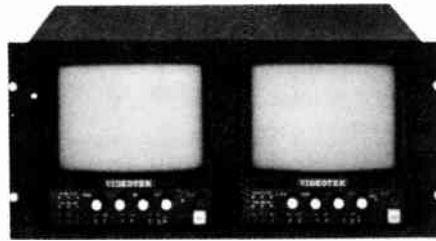
Options: Pulse Cross, Underscan
Dimensions: 8³/₄" H x 19" W x 18¹/₂" D
Weight: 40 lbs.

Power Consumption: 40W AC, 33W DC
Power Consumption/Entire System: 95W

System 8 with TSM-60 and PVS-6 Switcher \$3595.00

System 8 with VSM-60 and PVS-6 Switcher \$3595.00

System 8 with TVM-620 Combination Waveform Monitor/ Vectorscope \$5525.00



VM-8PRD

Dual 8" Professional Rackmount AC/DC Color Monitor

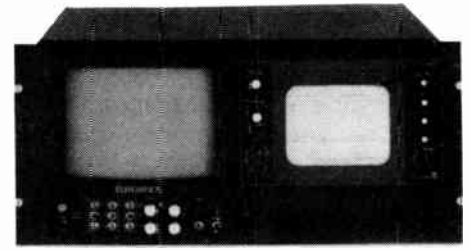
Features Include: Raster size regulation, de-gauss, keyed back porch clamping, A-B inputs, RGB gun switches, RGB background and drive controls, tally light, internal/external sync, selectable ACC defeat, rackmount accessories and service manual

Options: Pulse Cross, Underscan
Dimensions: 8¹/₄" H x 19" W x 15³/₄" D
Weight: 57 lbs.

Power Requirements: 120VAC, 60Hz, 12 or 24VDC

Power Consumption: 40W AC, 33W DC (ea. unit)

VM-8PRD \$2365.00



VM-8PRW

8" Professional Rackmount AC/DC Color Monitor with Space Provided for Videotek TSM-60 with Standard Case or VSM-60 with Standard Case, or TVM-620 with Standard Case

Features Include: Raster size regulation, de-gauss, keyed back porch clamping, A-B inputs, RGB gun switches, RGB background and drive controls, tally light, internal/external sync, rackmount accessories, selectable ACC defeat, and service manual

Options: Pulse Cross, Underscan
Dimensions: 8³/₄" H x 19" W x 15³/₄" D
Weight: 32 lbs.

Power Requirements: 120VAC, 60Hz 12 or 24VDC

Power Consumption: 40W AC, 33W DC

VM-8PRW \$1250.00

VM-8PRW-1 Same as VM-8PRW but with space provided for PVS-6 Switcher \$1260.00



VM-8PT

8" Professional Portable AC/DC Color Monitor

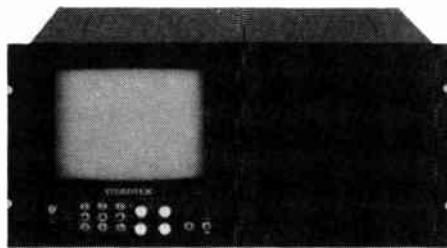
Features Include: Raster size regulation, de-gauss, keyed back porch clamping, A-B inputs, RGB gun switches, RGB background and drive controls, tally light, internal/external sync, selectable ACC defeat, and service manual

Options: Pulse Cross, Underscan
Dimensions: 9¹/₄" H x 8¹/₂" W x 16¹/₄" D
Weight: 25 lbs.

Power Requirements: 120VAC, 60Hz, 12 or 24VDC

Power Consumption: 40W AC, 33W DC

VM-8PT \$1265.00



VM-8PR

8" Professional Rackmount AC/DC Color Monitor

Features Include: Raster size regulation, de-gauss, keyed back porch clamping, A-B inputs, RGB gun switches, RGB background and drive controls, tally light, internal/external sync, selectable ACC defeat, rackmount accessories and service manual

Options: Pulse Cross, Underscan
Dimensions: 8³/₄" H x 19" W x 15³/₄" D
Weight: 30 lbs.

Power Requirements: 120VAC, 60Hz, 12 or 24VDC

Power Consumption: 40W AC, 33W DC

VM-8PR \$1195.00



VM-8PRA

8" Professional Rackmount AC/DC Color Monitor w/Speaker Cabinet

Features Include: Raster size regulation, de-gauss, keyed back porch clamping, A-B inputs, dual audio inputs, RGB gun switches, RGB background and drive controls, tally light, internal/external sync, rackmount accessories, selectable ACC defeat, and service manual

Options: Pulse Cross, Underscan
Dimensions: 8³/₄" H x 19" W x 15³/₄" D
Weight: 32 lbs.

Power Requirements: 120VAC, 60Hz, 12 or 24VDC

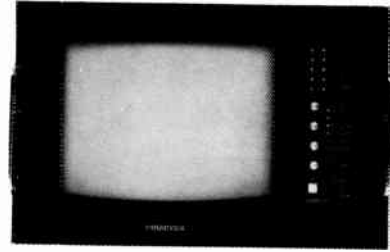
Power Consumption: 40W AC, 33W DC

VM-8PRA \$1450.00

Studio-13 Professional Rackmount Color Monitor

- 13" Trinitron® Plus color picture tube • 380 lines resolution • Selectable comb and notch filters • High voltage regulation • Separate H & V delay front panel adjustable • Split mode A-B display (front panel adjustable) • Automatic sync switchover to internal if external sync is lost, external sync indicator • Automatic degauss • Keyed back porch clamping • A-B-C looping video inputs • RGB video inputs • RGB gun switches • RGB background and drive controls • Tally light • Underscan • Presets — Chroma / Phase / Brightness / Contrast • ACC defeat (switchable) • Selectable time constant (H. AFC) • Monochrome select • Setup select • Aperture control • Rackmount slides • BNC connectors • Service manual • Dimensions: 10 1/2" H x 19" W x 19" D • Weight: 52 lbs. • Power requirements: 120VAC, 60Hz ± 10% • Power consumption: 85W (Avg.), 120W (Max.)

Studio-13 \$2495.00

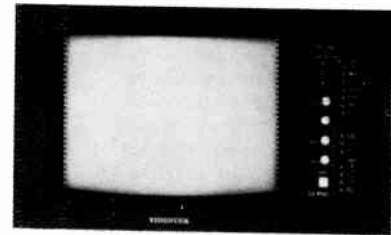


Studio-13

VM-13PRO 13" Professional Rackmount Color Monitor

- Raster size regulation • 260 lines resolution • Automatic degauss • Keyed back porch clamping • A-B-C inputs • RGB gun switches • RGB background and drive controls • Tally light, internal-external sync • Pulse cross • Underscan • Presets • Selectable automatic chroma control (ACC) defeat for detection of chroma loss • Monochrome-color select • Set-up switch • Selectable horizontal time constant (H. AFC) • Aperture control • BNC connectors • Rackmount slides • Dimensions: 10 1/2" H x 19" W x 19" D • Weight: 48 lbs. • Power requirements: 120VAC, 60Hz ± 10% • Power consumption: 55W (Avg.), 80W (Max.)

VM-13PRO \$1695.00



VM-13PRO

AVM-19s (19") and AVM-13s (13") Color Monitors with Audio

- Slot mask in-line, 90° deflection CRT • Automatic degauss • Keyed back porch clamping • A-B-VTR inputs • Blue gun • Tally light • Internal-external sync selectable • Pulse cross • Underscan • External demodulator input • Internal audio speaker • 8-pin VTR cable (6") • Service manual (Switchable comb-notch filter) • Power isolation transformer • B & W color switch • Sharpness control; AVM-19s only

Connectors: Video, external sync — BNC; Audio — RCA; VTR — 8-pin; External demodulator — 6-pin DIN (Direct interface with Sony TU-1110 tuner)

Dimensions: 12 1/4" H x 14 1/2" W x 15" D (AVM-13s)
17 1/2" H x 19" W x 19" D (AVM-19s)

Weight: 32 lbs. (AVM-13s)
60 lbs. (AVM-19s)

AVM-19s \$825.00

AVM-13s 650.00

RB-013 Rackmount kit for AVM-13s 45.00

RB-019 Rackmount slides for AVM-19s 60.00



AVM-19s



AVM-13s

VIDEOTEK, INC.

Color Monitors/Receivers

RM-8A 8" AC/DC Portable Color Receiver/Monitor

Dimensions: 9³/₈" H x 10¹/₄" W x 13³/₄" D
 Weight: 20 lbs.
 Power Requirements: 120VAC 60Hz, 12 or 24VDC
 Power Consumption: 49W AC (max.), 40W (12VDC), 33W (24VDC)

RM-8A\$957.00

VM-8A 8" AC/DC Portable Color Monitor

Dimensions: 9" H x 10¹/₄" W x 13³/₄" D
 Weight: 18 lbs.
 Power Requirements: 120VAC 60Hz, 12 or 24VDC
 Power Consumption: 49W AC (max.), 40W (12VDC), 33W (24VDC)

VM-8A\$855.00

RM-13T 13" Cable Ready Portable Color Receiver/Monitor

Dimensions: 14" H x 15¹/₂" W x 16¹/₂" D
 Weight: 33 lbs.
 Power Requirements: 120VAC 60Hz
 Power Consumption: 55W (avg.), 80W (max.)

RM-13T\$795.00

VM-13T 13" Portable Color Monitor

Dimensions: 14" H x 15¹/₂" W x 16¹/₂" D
 Weight: 33 lbs.
 Power Requirements: 120VAC 60Hz
 Power Consumption: 55W (avg.), 80W (max.)

VM-13T\$725.00

RM-13TR 13" Cable Ready Rackmount Color Receiver/Monitor

Dimensions: 15³/₄" H x 19" W x 16¹/₂" D
 Weight: 38 lbs.
 Power Requirements: 120VAC 60Hz
 Power Consumption: 55W (avg.), 80W (max.)

RM-13TR\$895.00

VM-13TR 13" Rackmount Color Monitor

Dimensions: 15³/₄" H x 19" W x 16¹/₂" D
 Weight: 38 lbs.
 Power Requirements: 120VAC 60Hz
 Power Consumption: 55W (avg.), 80W (max.)

VM-13TR\$820.00

RM-19 19" Cable-Ready Color Receiver/Monitor

Dimensions: 19" H x 26¹/₂" W x 18⁵/₈" D
 Weight: 63 lbs.
 Power Requirements: 120VAC, 60Hz
 Power Consumption: 73W (avg.), 115W (max.)

RM-19\$985.00

RM-19B 19" Color Receiver/Monitor

Dimensions: 17¹/₈" H x 23¹/₄" W x 18¹/₂" D
 Weight: 60 lbs.
 Power Requirements: 120VAC, 60Hz
 Power Consumption: 83W

RM-19B\$795.00

VM-19 19" Color Monitor

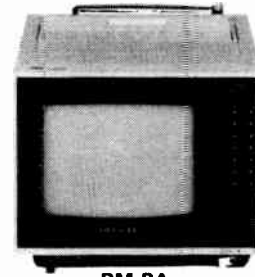
Dimensions: 19" H x 26¹/₂" W x 18⁵/₈" D
 Weight: 61 lbs.
 Power Requirements: 120VAC, 60Hz
 Power Consumption: 73W (avg.), 115W (max.)

VM-19\$899.00

RM-25 25" Color Receiver/Monitor

Dimensions: 21¹/₄" H x 30¹/₄" W x 22¹/₄" D
 Weight: 92 lbs.
 Power Requirements: 120VAC 60Hz
 Power Consumption: 93W

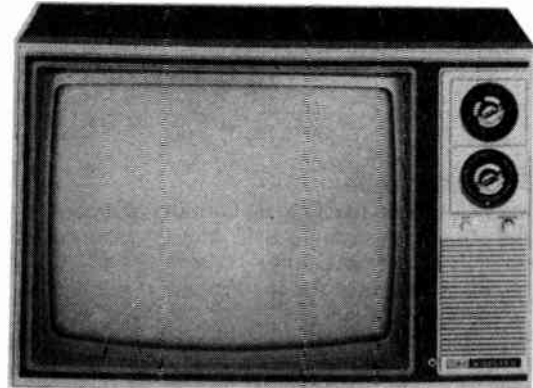
RM-25\$1070.00



RM-8A



RM-13TR



RM-19B

RM-27RC 27" Cable-Ready Color Receiver/Monitor

• Remote controlled • 24³/₈" H x 33" W x 22¹/₂" D

RM-27RC\$1850.00

VM-27RC 27" Color Monitor

• 24³/₈" H x 33" W x 22¹/₂" D

VM-27RC\$1795.00

Options

- PC-1 Pulse Cross\$175.00
- US-1 Underscan99.00
- AB-1 A-B Inputs125.00
- DCC-1 DCC-15AW 12V Adaptor for 8" into car lighter27.00
- CS-1 Carrying case for 8"200.00
- 8P-1 8-pin VTR cable (8')20.00
- HG-1 Hospital grade AC cord45.00

VIDEOTEK, INC.

Test Equipment

**TSM-60/TSM-50 Waveform Monitors/
VSM-60 Vectorscope**

Common Features

- Mounts in 5 1/4" of vertical rackspace/1/2 standard rack
- Standard NTSC, 525 lines, 30 frame (60Hz field rate) scan
- Standard PAL, 625 lines, 25 frame (50Hz field rate) scan
- Standard PAL-M, 525 lines, 30 frame (60Hz field rate) scan
- Internal illuminated graticule; eliminates parallax errors
- High brightness CRT non-glare contrast filter
- NTSC/PAL/PAL-M standards available

TSM-60 Waveform Monitor

- 10MHz vertical frequency response
- Selectable A/B video looping BNC inputs
- Separately buffered video out 1V p-p into 75 ohms
- Selectable internal/external input sync
- Flat, IRE, chroma or differential gain filters
- Time base: 2 line, 1 line expanded 2 line, expanded 1 line, 2 field or expanded 2 field
- Selects lines 14 thru 21 of field selected
- YRGB/RGB: 9 pin access connector for monitoring color processing amplifier waveforms
- Selectable DC restoration

TSM-60 NTSC \$2065.00

TSM-50 Waveform Monitor

- Vertical frequency response: 6MHz
- Flat, IRE, or chroma filters
- Time base: 2 line, expanded 2 line, 2 field or expanded 2 field

TSM-50 NTSC \$1598.00

VSM-60 Vectorscope

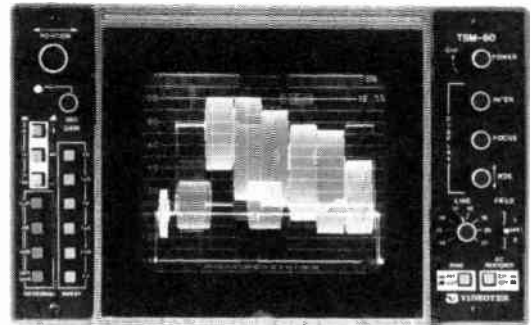
- Selectable A/B video looping BNC inputs, subcarrier A select, external subcarrier looping BNC inputs, external PAL pulse looping BNC inputs (PAL only)
- REF NTSC: selectable A/B and external subcarrier looping inputs
- REF PAL: selectable A or B external subcarrier looping inputs
- Test NTSC: normal/alternate line/test circle pushbutton selectable
- Test PAL: normal/NTSC display/test circle pushbutton selectable

VSM-60 NTSC \$2065.00

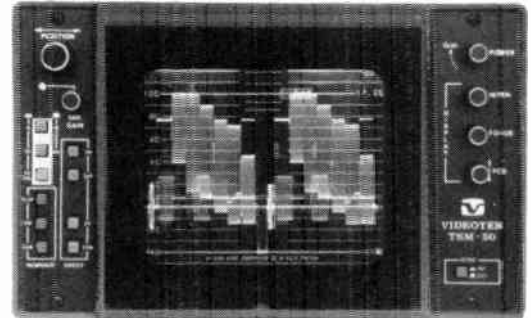
TVM-620 Combination Waveform Monitor/Vectorscope

- Tactile membrane panels
- One, two or three video signals may be observed individually or in any combination of 3 inputs
- Four user-defined memories
- R-Y mode displays the demodulated chrominance with horizontal sweep
- Graticule scale to aid in measuring differential phase
- Display sync can be made relative to any of the 3 video inputs or an external reference
- Automatically selects reference, in order of priority External A-B-C
- Vector displays can be overlaid

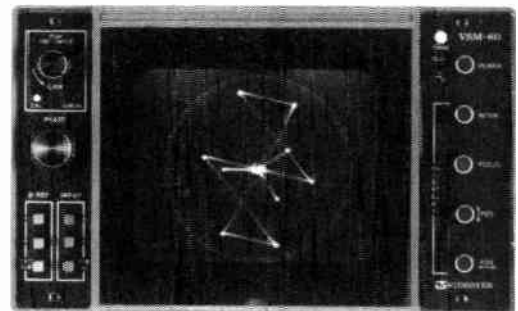
TVM-620 NTSC \$3995.00



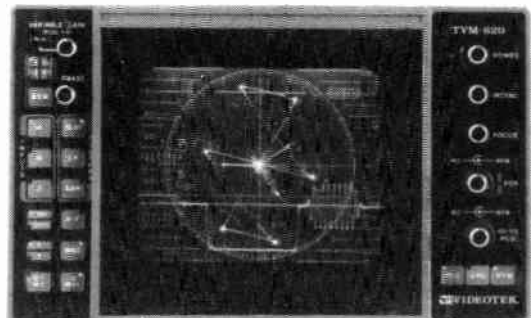
TSM-60



TSM-50



VSM-60



TVM-620

Options

- SSC-1** Single Standard Case \$ 39.00
- PTC-1** Portable Case with Handle and Sunshield . . 135.00
- DRC-1** Double Rackmount Case 200.00
- DAT-3** Half Rack Tray for DRC-1 to mount:
PVS-6, PVS-6A, or Self-Contained Series
Distribution Amplifiers 99.00
- BLK-1** Blank Panel 30.00
- ADC-1** AC/DC Power Supply for TVM-620.
(Must be factory installed during
manufacture.) 200.00
- OPT-A** Remote Change Over for TSM-60. 135.00

VIDEOTEK, INC.

**Test Equipment/Sync Generator
Timing Equipment**

DM-140S 140-Channel Stereo Tuner/Demodulator

- Varacter tuning/frequency synthesized channel selection
- Switchable BTSC (MTS) Stereo/SAP decoder output with LED pilot indicators
- dbx processing of stereo signals
- Built-in stereo amplifier with full range speakers
- Balanced and unbalanced stereo and monaural outputs (Rear panel phono and XLR connectors)
- Internal audio monitoring — 3" speaker
- Random access or up/down channel selection
- Front panel LED channel display
- Unlimited favored channel programming (skips unused channels)
- Tactile feel membrane front panel keyboard with LED feedback
- Front panel antenna/cable select
- Access to gain controls for video, monaural and stereo audio on front panel
- Short-term front panel memory maintained during power loss (1 hour)
- 75 ohm "F" connectors for antenna/cable inputs
- 3 1/2" high, rackmountable

DM-140S \$1995.00

APM-2RS Stereo Rackmount Audio Program Monitor

- Requires only 3 1/2" of vertical rack space
- Stereo inputs — balanced/unbalanced
- Instant verification of stereo phase
- 3-pin male XLR/RCA phono jack input connections
- Internal 3" x 5" speaker
- Two display sensitivity ranges
- Hi/Low input impedance select
- Stereo headphone jack with speaker defeat
- 105VAC—132VAC RMS, 48Hz-66Hz
- Low power consumption makes the APM-2RS ideal for mobile applications

APM-2RS \$493.00

APM-8RS

8 Input Rackmount Audio Program Monitor with 4 Stereo Inputs

- Requires only 3 1/2" of vertical rack space
- 8 inputs — balanced/unbalanced
- Barrier strip input/output connections
- Internal 3" x 5" speaker
- 10W amplifier
- 5m sensitivity ranges
- OdBm, 600 ohm line output
- Calibrated tone output
- Hi/Low input impedance select
- +12VDC battery operation
- Connector removable PC board for serviceability

APM-8RS \$895.00

VSG-201 Color Sync Generator

- RS-170A specifications
- Genlock
- Genlock input subcarrier loss/presence indication on front panel
- Genlock input sync loss/presence indication on front panel
- Six isolated blackburst outputs
- SMPTE color bars—dual outputs
- Color field 1 ID pulse output
- Front panel adjustments for H phase and SC phase
- Selectable vertical blanking width (lines 16-21 internal)
- +4dBm 1kHz tone output, balanced or unbalanced outputs into 600 ohms
- 1 3/4" high, rackmountable

VSG-201 \$1995.00

Times Six/Times Six Plus

Black Burst Generators

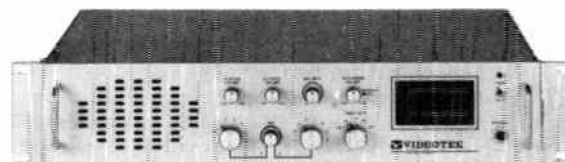
- 6 individual composite blackburst outputs
- 6 horizontal and subcarrier phase timing adjustments
- Stand alone or genlock operation. (Automatically switches to internal if external reference signal is lost)
- Genlock input loss/presence indication on front panel
- Compensates for up to 1000' of cable
- Automatically compensates for cable length and equipment drift (Times Six Plus)
- 1 3/4" high, rackmountable

Times Six (Manual) \$1795.00

Times Six Plus (Manual/Automatic) 2660.00



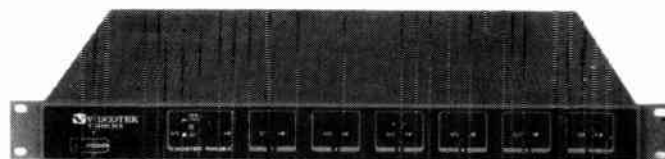
DM-140S



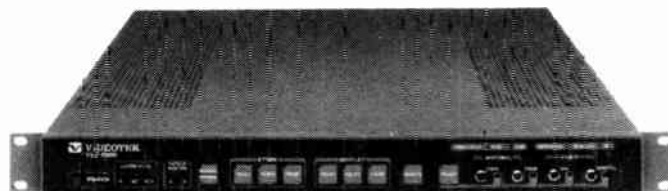
APM-8RS



VSG-201



Times Six



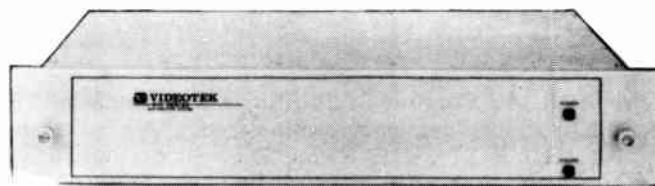
VDP-8000

VDP-8000 Frame Store/Synchronizer

- Synchronizes noisy feeds from satellite, microwave, ENG, remote broadcasts and other non-synchronous sources
- Proc amp controls with presets for video gain, pedestal, chroma gain and chroma phase
- Full proc amp controls in Freeze mode
- Freeze enable/disable allows constant processing of the input regardless of signal quality
- Two video outputs
- Selectable vertical blanking width
- Individual adjustments for H phase, SC phase and SC/H phase
- Horizontal and vertical picture position controls
- Selectable normal/bypass operation
- Remote connector
- Audio steering signal to control an audio synchronizer
- Can insert burst in monochrome signals
- Blackburst output for standalone operation
- Genlock
- 1 3/4", rackmountable

The VDP-8000 Frame Store/Synchronizer provides transparent signal processing in addition to stable, jitter-free lockup of high noise video signals. Unique independent Freeze Field capability permits the storage of two different fields or one field without interruption of live video synchronizing. Stored images remain clear and sharp through the use of a three line digital comb filter.

VDP-8000 \$4695.00



800 Series

MODULAR SERIES

800 Series Distribution Amplifiers

The 800 Series Distribution Amplifiers are engineered to meet critical video distribution needs in all types of applications. The 800 Series is based on the TR-800 eight bay modular tray and PS-800 power supply. Up to eight distribution amplifier modules may be mounted in the TR-800 tray, in addition to a second PS-800 power supply for backup in case of primary supply failure.

The VDA-816S is a standard video DA with one looping single ended input and six outputs. Up to 300' of Belden 8281 may be equalized via a front card equalizer adjustment.

The VDA-816 is a precision video clamping DA with one looping differential or single ended input and six outputs. An optional EQ-800 card may be added to the VDA-816 to allow front panel adjustment of equalization up to 1000' of Belden 8281.

TR-800 Modular DA Tray

- Eight bay modular two rackmount high tray
- Will accept any combination of VDA-816 precision DAs or VDA-816S standard DAs
- Also permits the use of a redundant back-up PS-800 supply
- Comes standard with a single PS-800 supply

TR-800 \$850.00

PS-800 Redundant Power Supply

- Provides unregulated ± 16VDC to the TR-800 rack tray
- An additional PS-800 can be installed as a back-up supply in case of primary supply failure

PS-800 \$199.00

EQ-800 Equalizing Module for VDA-816. Equalizes up to 1000' of Belden 8281 65.00

EX-800 Extender Card for Servicing DA Modules 90.00

VDA-816 Precision Video Clamping DA Module

- Front card output level adjustment
- Front card equalizer adjustment when optional EQ-800 equalizer card is employed
- Can equalize up to 1000' of Belden 8281
- Switchable clamping or DC restoration
- Modular plug-in card
- One looping differential or single ended input and six outputs

VDA-816 \$375.00

VDA-816S Standard Video DA Module

- Front card output level adjustment
- Front card equalizer adjustment can equalize 300' of Belden 8281 cable
- Modular plug-in card
- One looping single ended input and six outputs

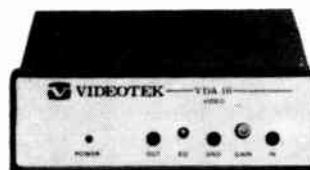
VDA-816S \$250.00

SELF-CONTAINED SERIES

VDA-16 Video Distribution Amplifier

- One looping video input
- Six isolated video outputs
- Front panel output level adjustment
- Cable equalizer front panel adjustment (300' Belden 8281)
- Front panel input/output test points
- Front panel LED power indicator
- BNC input/output connectors
- Rackmountable

VDA-16 \$325.00



VDA-16



PDA-16



ADA-16



SDA-14

VDA-16WB Wide Band Video Distribution Amplifier

- 40MHz video bandwidth
- One looping video input
- Six isolated video outputs
- Front panel output level adjustments
- Wide band cable equalization from panel to adjustment
- Front panel LED power indicator
- BNC input/output connectors
- Rackmountable

VDA-16WB \$425.00

ADA-16 Audio Distribution Amplifier

- One balanced/unbalanced audio input
- Six balanced audio outputs
- Front panel output level adjustment
- Front panel input/output test points
- Front panel LED power indicator
- Barrier strip input/output connectors
- Rackmountable

ADA-16 \$325.00

PDA-16 Pulse Distribution Amplifier

- One looping pulse input
- Six pulse outputs
- Front panel input/output test points
- Front panel LED power indicator
- BNC input/output connectors
- Rackmountable

PDA-16 \$325.00

SDA-14 Subcarrier Distribution Amplifier

- One looping subcarrier input
- Four isolated subcarrier outputs
- Regeneration technique removes noise & distortion from input signal
- Available for NTSC, PAL, PAL-M
- Front panel 0°-360° output phase adjust w/0° preset
- Front panel input/output test points
- Front panel LED power indicator
- BNC input/output connectors
- Rackmountable

SDA-14 \$450.00

Options

For all self contained distribution amplifiers

DAT-1 Rackmount frame accommodates (3) DA's. . . . \$ 79.00

DAT-2 Blank panel 25.00

DAT-3 Half rack tray for DRC-1 to mount: PVS-6, PVS-6A or self-contained series distribution amplifier 99.00

DRC-1 Double rackmount case 200.00

PVS-6A 6X1

Audio Follow Video Passive Switcher

• 100% passive—no power requirements • Low insertion loss • Low video/audio crosstalk • Six video/audio (unbalanced) inputs • One video/audio (unbalanced) output • BNC video connectors • Barrier strip audio connection • 1³/₄" rackmount height • Can mount three units side by side using a Videotek DAT-1 rackmount tray

PVS-6A \$190.00



PVS-6A

PVS-6 6X1

Passive Video Switcher

• 100% passive—no power requirements • Low insertion loss • Low video crosstalk • Six video inputs/one video output • 1³/₄" rackmount height • Can mount three units side by side using a Videotek DAT-1 rackmount tray

PVS-6 \$140.00

10X1 Routing Switcher Series with RS-422 Interface

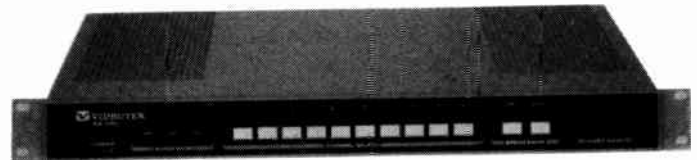
• Wide bandwidth for high resolution applications (1.0dB at 40MHz) • DC restored output amplifier • High speed clamping provides excellent hum rejection • Low return loss > 55dB at 5MHz • +24dBm audio headroom • 3 audio channels per input, balanced or unbalanced • Transformer coupled audio outputs, balanced or unbalanced • Two channel audio breakaway. Auxiliary channel can be programmed to follow video or audio breakaway • Microprocessor control with battery backup • Serial data bus for communication within the system and remote control • Data bus interconnection via RJ11C telephone connectors • System expandable horizontally to 40X1 and vertically to 30X10 • 1³/₄" rackmountable

RS-103A 10 x 1 vertical interval switcher with three audio channels and audio or video breakaway feature. RS-422 computer control interface \$1850.00

RS-103AL Same as RS-103A but without switches. May be controlled by computer or optional RSP-4 remote switching panel 1695.00

RS-103 10 x 1 vertical interval switcher, video only. RS-422 computer control interface 1325.00

RS-103L Same as RS-103 but without switches. May be controlled by computer or optional RSP-4 remote switching panel 1195.00



RS-103A

RSP-4 10 x 1 remote switching panel for RS-103A, RS-103AL, RS-103, RS-103L. RS-422 computer control interface \$789.00

RSP-5 10 x 1 expansion remote switching panel for RSP-4. Permits remote switching from two locations 299.00

ABP-3 Audio breakout panel for RS-103A, RS-103AL. Converts audio I/O 37 pin D connectors to latching terminal blocks. Includes three 18" 37 pin to 37 pin interconnect cables 320.00

RS-10A 10X1 Routing Switcher Series

Audio Follow Video with Breakaway Feature

• Ten video inputs, bridging two video outputs • Two audio inputs for each video channel • Video/audio latching breakaway control • Balanced/unbalanced audio inputs or outputs • Overnight channel memory • Vertical interval switching/momentary contact pushbuttons with changeable legends and "LED" audio/video indicators • 1³/₄" rackmount or free standing with rubber feet

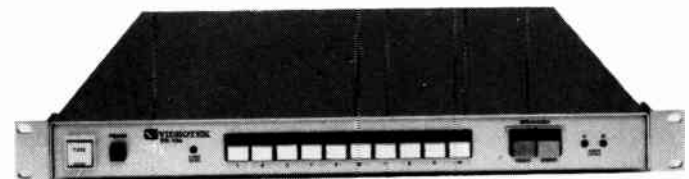
RS-10A 10 x 1 vertical interval switcher with two audio channels and audio (or) video breakaway feature. \$1285.00

RS-10ARC Remote 10 x 1 vertical interval switcher with two audio channels and audio (or) video breakaway feature, includes RCT-1 remote connector kit 1885.00

RS-10ARC-L Local portion of RS-10ARC only, includes RCT-1 remote connector kit 1457.00

RS-10ARC-LS Same as RS-10ARC, but with switching capability at the local and remote locations, includes RCT-1 remote connector kit. 2100.00

RS-10ARC-L-SW Local portion of RS-10ARC-LS only includes RCT-1 remote connector kit 1528.00



RS-10A

Options (RS-10ARC, RS-10ARC-LS)

RSP-1 10 x 1 remote switching panel (may be added to RS-10ARC or RS-10ARC-LS to provide a second remote switching location) \$675.00

RCT-1 Remote connector kit 36.00

CR-1 Cable for remote. ft./99

RSCC-1 Contact closure interface. 250.00

VIDEOTEK, INC.

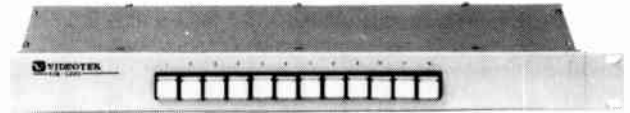
Routing Switchers

VIS-1201

12x1 Video Only Routing Switcher

- 12 video inputs, bridging/2 isolated video outputs • 24 hour channel memory • Vertical interval switching • Momentary contact illuminated pushbuttons with changeable legends
- 1 3/4" rackmount

VIS-1201 **\$395.00**



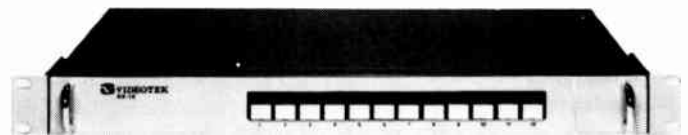
VIS-1201

RS-12 12x1 Routing Switcher Series

Video Only Routing Switcher

- Video inputs, bridging/two video outputs • Overnight channel memory • Vertical interval switching/momentary contact pushbuttons with changeable legends and "LED" video indicators • 1 3/4" rackmount or free standing with rubber feet

- | | |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| RS-12 | 12x1 Vertical Interval Switcher, Video Only
..... \$ 995.00 |
| RS-12RC | Remote 12x1 Vertical Interval Switcher, Video Only, includes RCT-2 Remote Connector Kit 1263.00 |
| RS-12RC-LS | Same as RS-12RC, but with Switching Capability at the Local and Remote Locations, includes RCT-2 Remote Connector Kit 1332.00 |
| RS-12RC-L | Local portion of RS-12RC only, includes RCT-2 Remote Connector Kit 959.00 |



RS-12

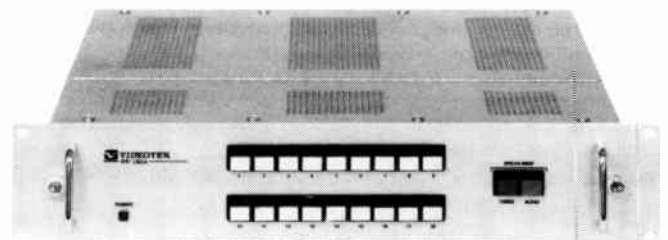
Options (RS-12, RS-12RC, RS-12RC-LS)

- | | |
|--------------|------------------------------------------------------------------------------------|
| RSP-2 | 12x1 Video Switching Panel with Remote Rackmount Kit (RRK-2) \$395.00 |
| RRK-2 | Remote Rackmount Kit 172.00 |
| BLK-2 | Blank Panel 95.00 |
| RCT-2 | Additional Remote Connector Kit 39.00 |
| CR-2 | Cable for Remote ..... .ft./1.22 |

RS-183A 18x1 AFV Routing Switcher With Breakaway and Computer Interface

- 18 loop thru video inputs • 18 stereo and data channel audio inputs (balanced/unbalanced) • +24dBm audio headroom • Vertical interval line 10 switching • Edit pulse for user controlled switching times • RS-422 computer control interface • Optional RS-232 computer control interface • Computer control, menu driven for ease of operation • 15 selectable communication baud rates • Single line coax remote bus control • Multi-local addressing for remote selection of different locals • FCC approved EMI filtering

- | | |
|--------------------|----------------------------------------------------------------------------------------------|
| RS-183A | Includes audio I/O and computer connectors \$3045.00 |
| RS-183ARC | Remote Control RS-183A, includes Audio I/O and Computer Connectors 3820.00 |
| RS-183ARC-L | Additional Local for RS-183ARC, includes Audio I/O and Computer Connectors. . 2965.00 |



RS-183A

- | | |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| RS-183ARC-LS | Same as RS-183ARC with switching at both the Remote and Local Locations, includes Audio I/O and Computer Connectors. \$3897.00 |
| RSP-3 | 18x1 Remote Switching Panel (may be added to RS-183A or RS-133ARC-LS to provide a Second Remote Switching Location) 899.00 |

VINTEN EQUIPMENT, INC.

Fluid Heads/Link/Post

PAN AND TILT HEADS

MK3A Cam Head

- ± 50° tilt
- Capacity: 400 lbs.
- Weight: 44 lbs.
- 7" H x 14" W x 12" D
- 3717-3** \$4400.00
- 3506-6A** Optional female wedge adaptor 675.00



MK3A
Shown with optional female wedge adaptor



Vision 20

MK7 Fluid Cam Head

- ± 60° tilt
- Capacity: 200 lbs.
- Weight: 35 lbs.
- 9 1/2" H x 11 1/2" W x 11 1/2" D
- 3084** \$4810.00
- 3084-14** Optional female wedge adaptor 675.00



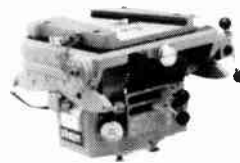
MK5
Shown with optional female wedge adaptor



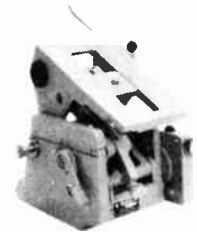
Vision 30

MK5 Cam Head

- ± 60° tilt
- Capacity: 180 lbs.
- Weight: 24 lbs.
- 7" H x 15" W x 9" D
- 3716-3** \$3550.00
- 3716-13** Optional female wedge adaptor 675.00



MK7
Shown with optional female wedge adaptor



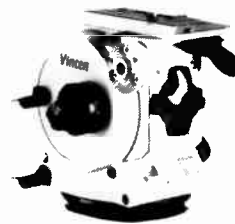
Petrel MKII

Petrel MKII Fluid Link

- 40° tilt in either direction
- Weight: 15 1/4 lbs.
- 7" H x 9" W x 6 1/2" D
- Load capacity: 100 lbs.
- Pan range: full 360° arc
- 3076-3** \$2575.00

MKII Swan Fluid Post

- Weight: 20 lbs.
- Load capacity: 50 lbs.
- Tilt range: 360° depending on size of camera and lens envelope
- Pan range: full 360° arc
- 3078-3B** \$4725.00



Vision 10



MKII Swan

Vin-5A Fluid Pan and Tilt Head System

- Single pan bar and clamp assembly
- 100mm ball base
- 3311 single-stage tripod with 3313 lightweight calibrated low-level spreader
- 3334-3 soft/foam filled carrying case
- Fluid pan and tilt head also sold separately
- Capacity: 18 lbs.
- Vin-5A** \$2250.00

Vision 10 ENG Fluid Pan and Tilt Head

- Full 180° of tilt
- Weight: 6 3/4 lbs.
- Pan range: 360°
- 6" H x 5 3/4" W x 7 1/4" D
- 3321-3S** \$3100.00
- 3321-3N** Same as above but with flat base to accept intermediate adaptor 3200.00

Vision 20 ENG/EFP Fluid Pan and Tilt Head

- Full 180° of tilt
- Dual 100/150mm ball base
- 6 3/4" H x 6 1/2" W x 10" D
- Weight: 12 lbs.
- Pan range: 360°
- 3322-3S** \$4465.00
- 3322-3N** Same as above but with flat base to accept intermediate adaptor 4585.00

Vision 30 Cormorant EFP Fluid Pan and Tilt Head

- Full 180° of tilt
- Weight: 22 lbs.
- Pan range: 360°
- 8 1/4" H x 7 1/4" W x 9 1/2" D
- 3259** \$6375.00
- 3259-3B** Same as above but with flat base to accept intermediate adaptor 6495.00

VINTEN EQUIPMENT, INC.

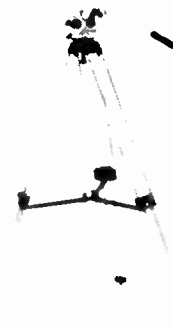
Tripods Pedestal/Dolly

Vision Single Stage ENG Tripod

- Minimum height: 25"
 - Maximum height: 57 1/2"
 - Load capacity: 45 lbs.
 - Strong anodized tubular alloy, thermoplastic moldings and diecasting construction
 - Weight: 6 1/2 lbs.
 - Spreaders are not included in price
- 3311-3** \$695.00



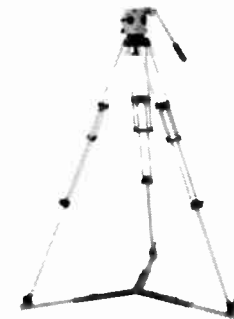
3311-3



3316-3

Vision Two Stage ENG Tripod

- Minimum height: 16 1/2"
 - Maximum height: 62"
 - Load capacity: 45 lbs.
 - Overall weight: 6 3/4 lbs.
 - Folds down to a compact 27"
 - Spreaders are not included in price
- 3310-3** \$855.00



3310-3



3207-3B

Vision Two Stage EFP Tripod

- Minimum height: 19 3/4"
 - Maximum height: 61 3/4"
 - Load capacity: 100 lbs.
 - Overall weight: 12 lbs.
 - Spreaders are not included in price
- 3312-3** \$1065.00

Vision Single Stage ENG Tripod with Integral Mid-Level Spreader

- Complete with integral mid-level spreader, carpet spreader feet and 100mm bowl
 - Minimum height: 25 1/4"
 - Maximum height: 54 1/4"
 - Load capacity: 45 lbs.
 - Overall weight: 6 1/2 lbs.
- 3316-3** \$1050.00

Heavy-Duty Tripod with Stabilizer

- Suitable for loads up to 230 lbs.
 - Low angle mounting on dolly
- 3207-3B** \$2075.00
3206-3B Short heavy-duty tripod with stabilizer 2075.00
3719-3 Heavy-duty dolly 1595.00
3719-3A Heavy-duty dolly with cable guards for 3206/3207 1740.00



3312-3



3056-3E

PortaPed Self-Leveling Portable Pedestal

- Self pumping action
 - Lightweight, portable, easy fold units
 - Weight: 35 lbs.
 - Capacity: 90 lbs.
 - Height range: 24" to 56"
- 3056-3E** \$5825.00
3071-3 Portaskid folding/castering dolly 850.00
3071-3A Portaskid folding/castering dolly with cable guards 995.00

TriTrack Dolly

- Combined unit with tiller control
 - 8" wheels with rubber tires and individual brakes
 - Legs can be adjusted to reduce track width
- 3064-3** \$5925.00
3178-3 TriTrack Dolly with twin wheels 6850.00



3064-3



3160-3B

Betacam Mounting Bracket

- True quick release
 - Easy installation
 - Totally rigid
 - Optimum balance on pan and tilt heads by providing alternate 3/8" and 1/4" mounting holes
 - Complete with combination male/female wedge adaptor and screws which fit into existing tapped holes on bottom of camera
- 3160-3B** \$365.00

Shown with PortaPed Option

VINTEN EQUIPMENT, INC.

Pedestals/Cranes

Fulmar Extended Range Pneumatic Pedestal

- Height range: 21 1/2" to 59"
 - Suitable for loads up to 350 lbs.
 - Width at base: minimum—34", maximum—39"
- 3702**\$24,500.00



Fulmar



Teal

Hawk Extended Range Pneumatic Pedestal

- Suitable for loads up to 150 lbs.
 - Height range: 24" to 59"
 - Width at base: minimum—36", maximum—38"
- 3267**\$18,750.00



Hawk



Tern

Teal Standard Range Pneumatic Pedestal

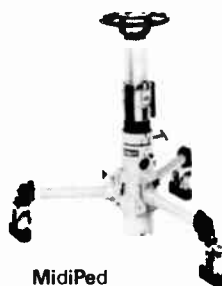
- Suitable for loads up to 140 lbs.
 - Height range: 30" to 51"
 - Width at base: minimum—30", maximum—35 1/2"
- 3197**\$10,750.00

Tern Standard Range Pneumatic Pedestal

- Width at base: minimum—29", maximum—36"
 - Height range: 33" to 54"
 - Suitable for loads up to 290 lbs.
- 3741**\$12,000.00

MidiPed 2-Piece Lightweight Pneumatic Pedestal

- Height range: 28 1/2" to 58"
 - Suitable for loads up to 90 lbs.
 - Width at base: minimum—34 1/2", maximum—42"
 - Weight: 56 lbs.
- 3286**\$5,350.00



MidiPed



Short
Dolphin

Merlin Camera Arm

- Exceptional height ranges
 - Fits all pedestals and tripods
 - Positive camera control with precision viewfinder bracket
 - Weight (not including balance weights, viewfinder and camera): 121 lbs.
 - Capacity: 40 lbs.
- 3257**\$25,565.00



Merlin

Short Dolphin Crane Arm

- Can be carried by one person
 - Simplified trim weight
 - Detachable camera support beam provides alternative low angle gooseneck fitting
 - Suitable for loads up to 55 lbs.
 - Will fit TriTrack, tripods or pedestals
- 3167**\$8,050.00

Long Dolphin Crane Arm

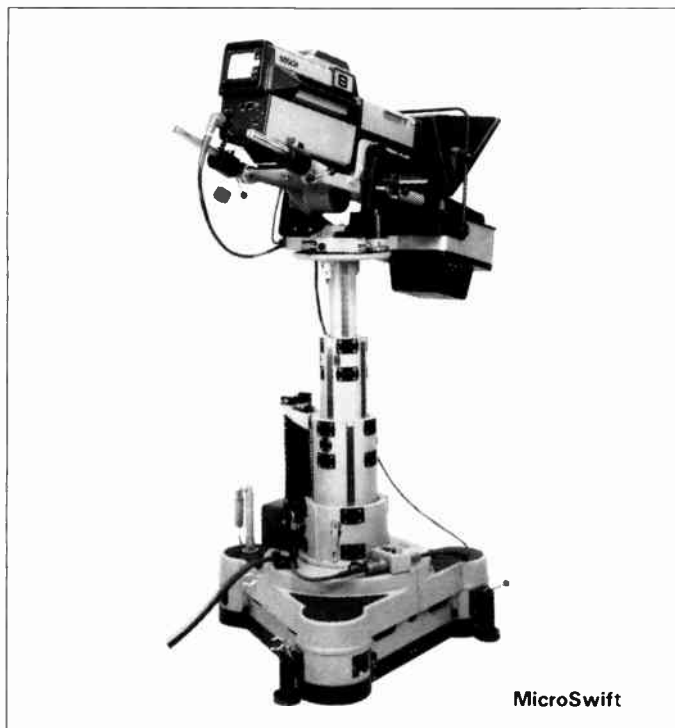
- Suitable for loads up to 55 lbs.
 - Camera arm traverse 90° each side of arm axis
 - Will fit TriTrack, tripods or pedestals
- 3067**\$8,050.00

Kestrel OB Camera Crane

- Fold-over camera platform for shorter chassis storage—77 1/4"
 - 360° seat and camera mounting rotation
 - Either manual or powered jib
 - Pivoted wheel assemblies for width reduction to 28 1/2"
- 3743** Crane with manual jib arm.\$34,295.00
3754 Crane with powered jib arm.40,395.00

VINTEN EQUIPMENT, INC.

Remote Control Camera System



MicroSwift

MicroSwift Digital Remote Camera Control Systems

- Proven in use
- Flexible in action
- Allows for custom-designed arrangements
- Machine control interface
- Full back driveability-allows for manual control when necessary
- 2 alternative types of joysticks
- Expandable
- Remote controllable, via modems
- Controls have an exceptionally wide dynamic range
- Choice of controls
- Shot storage with a capacity of up to 1500 individual shots
- Stored parameters include pan, tilt, zoom, focus, pedestal height and CCU functions
- Shot linking
- Shot replay
- No movement on power-up
- User-defined movement limits
- Pedestal profiling
- Soft start and stops

MicroSwift is an advanced and flexible servo control system, designed for remote positioning and control of television cameras. It embodies the very latest techniques of control processing and communications to provide on-air quality movements, and to enable control of virtually any arrangement of cameras over any distance.

Note: All pricing is for use as a **guide only** as system pricing varies according to exact customer specifications.

A. Typical Single-Channel Remote Control System**1. Mark 3 Post Head for ENG Camera without Prompting System (Capacity 77 lbs.)**

Mark 3 Servo Pan and Tilt Head	\$19,100.00
Servo Control Module with Pan, Tilt, Zoom, Focus (supplied in slim-line wall mounting case)	10,025.00
Panel Electronics Module	9,180.00
Operator Panel with up to 99 preset shots per page (max. 15 pages). Fitted with keypad and shot displays	3,390.00
Replacement Lens Drive for customer supplied zoom and focus ENG servo modules	6,230.00
Single-Channel ENG System Package Price	\$45,925.00

2. Mark 2 Spring Balanced Head for Studio Camera with Prompter (Capacity 240 lbs.)

Mark 2 Servo Pan and Tilt Head	\$29,940.00
Servo Control Module (as above)	10,025.00
Panel Electronics Module	7,730.00
Operator Panel (as above)	3,390.00
Replacement Lens Drive	6,230.00
Single-Channel Studio System Package Price	\$56,965.00

3. Mark 2 Spring Balanced Head (as above) with Servo Pedestal

Mark 2 Servo Pan and Tilt Head	\$29,940.00
Servo Pedestal (Modified 3702 Fulmar)	43,450.00
Servo Control Module with Pan, Tilt, Zoom, Focus and Pedestal Height (Supplied in slim-line wall mounting case)	10,025.00
Panel Electronics Module	7,730.00
Operator Panel (as above)	3,390.00
Replacement Lens Drive	6,230.00
Single-Channel Studio System Package Price	\$100,215.00

B. Typical Double-Channel Remote Control Systems**1. Mark 3 Post Heads (see A. 1.)**

(2) Mark 3 Servo Pan and Tilt Heads	\$38,200.00
(2) Servo Control Modules	20,050.00
(1) Panel Electronics Module	7,730.00
(1) Operator Panel	4,075.00
(2) Replacement Lens Drive	12,460.00
Double-Channel ENG System Package Price	\$82,515.00

2. Mark 2 Spring Balanced Heads (see A. 2.)

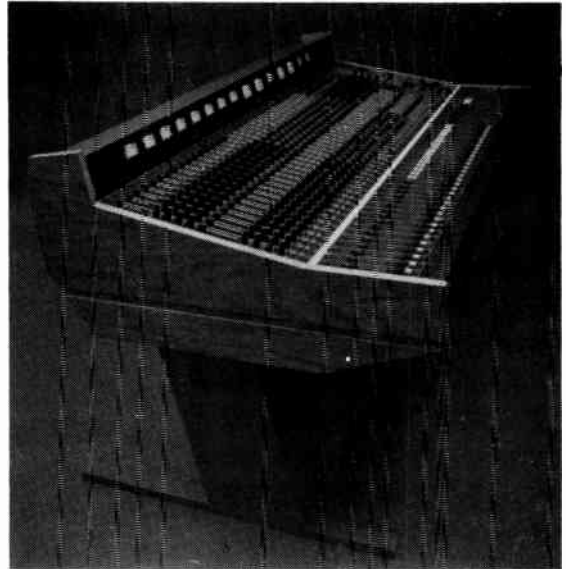
(2) Mark 2 Servo Pan and Tilt Heads	\$59,880.00
(2) Servo Control Modules	20,050.00
(1) Panel Electronics Module	7,730.00
(1) Operator Panel	4,075.00
(2) Replacement Lens Drive	12,460.00
Double-Channel Studio System Package Price	\$104,195.00

3. Mark 2 Spring Balanced Heads with Servo Pedestals

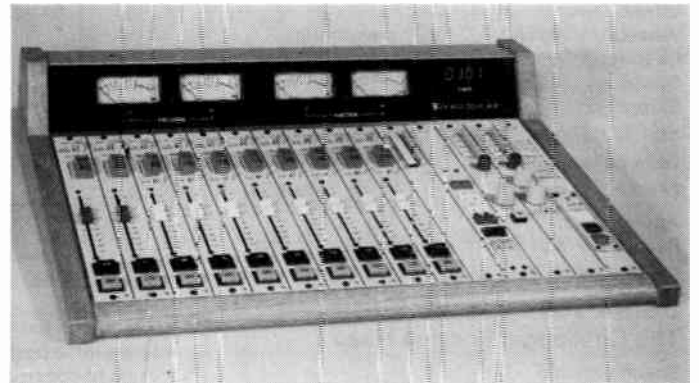
(2) Mark 2 Servo Pan and Tilt Heads	\$59,880.00
(2) Servo Pedestals	89,900.00
(2) Servo Control Modules	20,050.00
(1) Panel Electronics Module	7,730.00
(1) Operator Panel	4,075.00
(2) Replacement Lens Drives	12,460.00
Double-Channel Studio System Package Price	\$191,095.00

WHEATSTONE CORP.*Audio Consoles***TV-500 MTS Master Control Console**

• Designed to address stereo routing requirements for television • Four stereo subgroup buses • Two separate stereo master buses • Mono bus for SAP as well as mono sum outputs • Four fully stereo auxiliary buses for fold back • Mix minus • Special effects • Each control with a pre/post fader switch and an on/off switch • Mono input modules include source selection between two mike inputs and a third line input • Stereo line inputs can select any one of four stereo sources, as well as full mode and balance control • Input modules include semi-parametric equalization, stereo solo/que functions, and insert point by-pass switch • Console comes with comprehensive control room and multiple studio communication and muting systems • Available with VCA subgroup functions as well as external VCA control ports for editor control • Mainframes are available in 16 through 56 input configurations

**A-20 On-Air Radio Console**

• Designed for smaller radio stations and News/Production Carousels • Available in a 10-input console with module construction • Available modules include mono/mike, stereo line, control room, studio and full function machine modules • Program and audition meters • Digital timer • Remote starts • External input controls

**SP-6 Stereo Production Console**

• Stereo line input channels feature full machine control and remote module status ports • Mike channels include tally and remote on/off ports, as well as full control of multiple studio and control room mutes, interrupts, tally and talkback functions • Automatic and manual timer modes • Clocks • Full function tape remotes • Each input channel employs a comprehensive equalizer circuit, four auxiliary send controls, as well as stereo send capability • Available in either 8 bus multi-track format for radio applications or 4 stereo sub-group format for television installations • Sonic performance • Sophisticated logic functions • Component quality



WHEELIT, INC.

Video Equipment Carts

**EFP-17
Folding All-Terrain Field
Production Cart**

The EFP-17 folding camera cart is the big brother to ENG-1. The EFP-17 is a larger, smoother folding vehicle designed to assemble all of the necessary portable video equipment required for field production. It features a separate shelf to support a monitor for playback or viewing as the action happens. The monitor platform is positioned forward to place the recorder controls at the fingertips of the operator. With optional elevator column and head, taping may be accomplished directly from the cart. Large 12" inflatable pneumatic wheels dampen vibration and allow basic dolly moves over general terrain. The EFP-17 folds to 15 1/2" and only the camera and monitor need be removed for storage. The equipment board is predrilled in 1" increments for quick adjustment.

Specifications

- Equipment Platform:** 17" x 29"
- Monitor Platform:** 41"H x 15" x 21"
- Camera Platform*:** 37"H x 6" x 17"
- Folded Size:** 42" x 28" x 15"
- Load Capacity:** 175 lbs.
- Wheel Base:** 16"
- Wheels (inflatable):** 12" pneumatic
- Casters:** 5" swivel with lock
- Straps:** 1 ea. 8', 2 ea. 5'
- Shipping:** Assm. 57 lbs. truck

*Note: Camera platform is predrilled for elevator column
EFP-17 \$400.00

Accessories:

Receptacle and Cord Reel, Elevator Column, Friction Head, or Fluid Head

**DG/H4/TM
The Challenger Friction Head**

Specifications

- Load Capacity:** 25 lbs.
- Minimum Height:** 34"
- Maximum Height:** 70"
- Elevation Adjustment:** 16"
- Geared Center Post:** 1 3/8" dia.
- Leg Diameters:** 1 1/8" - 1 1/4"
- Head Tilt Angles:** 60° up, 90° down
- Spring Loaded Head:** 2 springs
- Head Pan Rotation:** 360°
- Weight:** 8 lbs.

Material & Finish: Clear and Black anodized aluminum

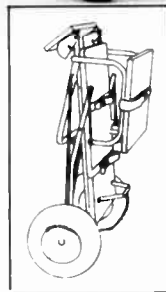
Self-Locking Gear Mechanism

DG/H4/TM \$170.00

DG/TM/FM-15 Fluid Head

Specifications

- Camera platform 4" x 4 1/4"
- Accommodates cameras up to 25 lbs.
- Dual handle capability
- Positive tilt lock and pan lock
- Leakproof and dustproof sealing
- Easily visible bubble level gauge



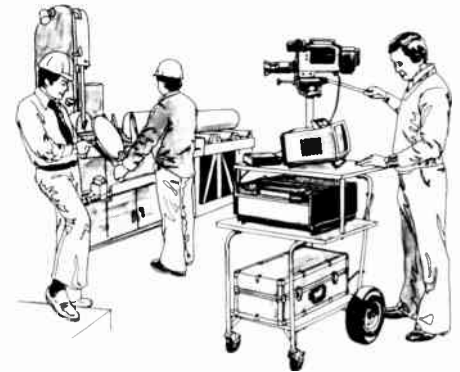
**EFP-17
with Column and Head**

- Extremely smooth pan and tilt movements
- Weight: 5 lbs.
- Height: 5"
- Fits ball on flat top tripod
- Low profile design
- Rugged construction
- Reliable operation
- Compatible with European standards
- Unique quick release camera mounting screw with slot to allow camera balancing
- Tilt: +90°

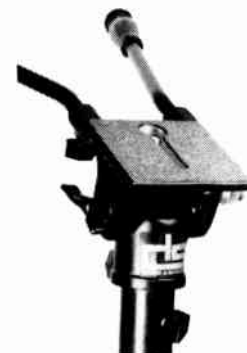
DG/TM/FM-15 (Includes Head and Elevator Assig) \$400.00

**IFP-20
(Non-Folding) Industrial Field
Production Cart**

The IFP-20 is a heavy-duty industrial, non-folding camera cart designed to assemble all of the necessary video equipment required for quality industrial video production. This vehicle will accommodate camera, videocassette recorder with electric editing, monitor, camera control unit, AC adaptors, batteries and/or battery packs. Taping can be accomplished directly from the vehicle with the addition of an optional elevator column and head. The large inflatable pneumatic tires offer smooth transportation over rough terrain.



IFP-20



DG/TM/FM-15



DG/H4/TM

Specifications

- Upper Platform*:** 40"H x 29" x 19"
- Center Platform:** 28"H x 29" x 19"
- Lower Platform:** 10"H x 18" x 24"
- Load Capacity:** 200 lbs.
- Wheel Base:** 21"
- Wheels (inflatable):** 12" pneumatic
- Casters:** 5" swivel with lock
- Straps:** 3 ea. 8'
- Shipping (3 crt.):** K/D, 75 lbs. UPS

*Note: Upper platform is pre-drilled for elevator column.

IFP-20 \$345.00

Accessories

Receptacle and Cord Reel, Elevator Column, Friction Head, or Fluid Head

WHEELIT, INC.

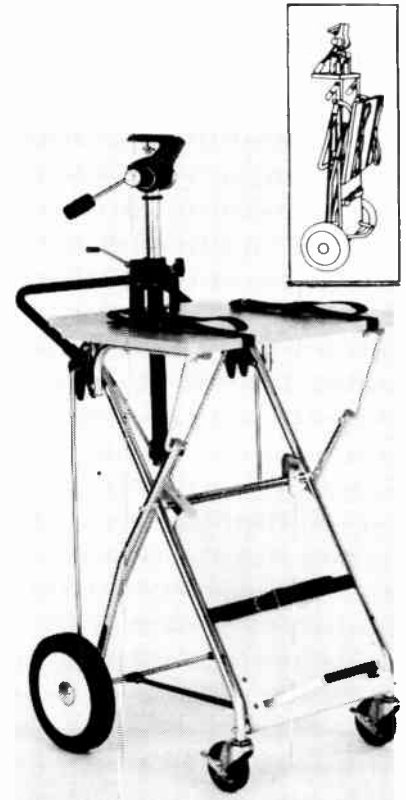
Video Equipment Carts



ENG-1
With Column



GR-3



CAM-10

ENG-1 Mobile Camera Cart

The ENG-1 mobile camera cart was developed for the video industry as the ideal vehicle for transporting and employing portable video recording equipment. The unit accommodates most VTR and camera CCU's as well as their AC adaptors and battery packs. Addition of the optional elevator column and friction or cam link head converts the ENG-1 into one of the most versatile production tools available. ENG-1 folds to a slim 12" for transportation and storage. The equipment board is pre-drilled in 1" increments for rapid adjustment.

Specifications

- Equipment Platform:** 14" x 29"
- Camera Platform:** 6" x 14" x 35" H
- Wheel Base:** 16"
- Wheels:** 12"
- Casters:** 4" swivel
- Load Capacity:** 150 lbs.
- Straps:** 2 ea. 4'
- Folded Size:** 23" x 42" x 12"
- Shipping:** Assm. 45 lbs. UPS

*Note: Camera platform is pre-drilled for optional column.

ENG-1 \$280.00

Accessories

Receptacle and Cord Reel, Elevator Column, Friction Head, or Cam Head

GR-3 Video Cart

The GR-3 is the smaller offspring of the ENG-1. This folding cart is designed to store, transport, and operate your portable 1/2" VCR equipment. This lightweight, affordable cart is ruggedly built with 8" semi-pneumatic wheels and 4" front swivel casters. The GR-3 is standard with spring head and telescoping column which will accommodate cameras up to 7 lbs. With the GR-3, there is no need to carry or set-up equipment on location; it's all there on your cart when you are ready to shoot. The cart can be folded with your equipment in place.

Specifications

- Equipment Platform:** 13" x 33"
- Wheel Base:** 16"
- Wheels:** 8"
- Casters:** 4" swivel
- Load Capacity:** 100 lbs.
- Straps:** 3 ea. 5'
- Folded Size:** 21" x 41" x 10"
- Column Height:** 43" min., 82" max.
- Shipping:** Assm. 39 lbs. UPS

GR-3 \$370.00

Accessories

Receptacle and Cord Reel

CAM-10 Videocassette Cart

CAM-10 is designed to accept all 1/2" and 1/4" portable VCR equipment as well as their AC adaptors and battery packs. The upper shelf of the CAM-10 is parallel to the ground and is large enough to accept a full size monitor or a small VCR and monitor combination. The lower shelf can be placed in a horizontal position or can be firmly locked into a slanted position to hold a recorder and/or battery pack. The CAM-10 comes complete with elevator column and anti-dumping spring head and will handle TV cameras up to 15 lbs.

Specifications

- Top Platform:** 16" x 24" x 36" H
- Bottom Platform:** 15" x 18" x 6" H
- Wheel Base:** 16"
- Wheels:** 10"
- Casters:** 4"
- Load Capacity:** 150 lbs.
- Straps:** 2 ea., 6'; 1 ea., 5'
- Column Height:** 45" min., 60" max.
- Folded Size:** 25" x 40" x 12"
- Shipping:** Assm. 58 lbs. truck

CAM-10 \$500.00

Accessories

Receptacle and Cord Reel

Telescoping Masts



Non-locking collars or locking collars with spring loaded bolt latches can be specified for rotatable or non-rotatable Masts. Locking collars latch automatically when the sections are extended and are recommended for all field installations.

Modular design means that Masts can be constructed in different heights by shortening or substituting Mast sections. TMD will work with you to design and manufacture the best Mast for your mobile unit or ground installation.

Remote Rotation

An electric driven Mast rotator is also offered as an option. The unit, mounted at the Mast base, provides ± 180° azimuth control from a remote desk-mounted control box. Used with a pan and tilt unit the rotator is an excellent tool for signal relay. 115VAC is required.

Specifications

	Model 7-42	Model 6-27	Model 7-30
Height Extended	42'	27'	30'
Top Load (Max.)	150 lbs.	40 lbs.	150 lbs.
PSF (Area)	12 sq. ft.	4 sq. ft.	10 sq. ft.
Nested Height	7'	6'	7'
Extended Height	42'	27'	30'
Mast Weight	230 lbs.	48 lbs.	110 lbs.
Rotation (Manual)	360° (Optional)	Yes	Yes
Remote Control	Option Available	Yes	Yes
Collars Non-Locking	Standard	Standard	Standard
Collars Locking	Optional		Optional
Material (Mast Sections)	6061-T6 Alum.	6061-T6 Alum.	6061-T6 Alum.
Material (Collars)	Cast Alum.	Cast Alum.	Cast Alum.
Bearing Material	Delrin	Delrin	Delrin
Shock Absorption	Rubber Bumpers	Rubber	Rubber
Finish (Steel Parts)	Cad. Plate	Cad. Plate	Cad. Plate
Finish (Alum.)	Anodized	Anodized	Anodized
Max. Wind Load (Unguyed)	50MPH	50MPH	50MPH
Wall Thickness	5/32"	3/32"	5/32"
Base Tube Diameter	9"	5"	6.75"
Method of Operation	Air Pressure	Same	Same
Max. Pressure Required	35 PSI	20 PSI	35 PSI

Standard Mast Models

TMD-7-42-367	(Heavy top load) closed vehicle – internal non-rotatable	\$6500.00
TMD-7-42-357	(Heavy top load) closed vehicle – internal rotatable	6500.00
TMD-6-27-157	(Light top load) closed vehicle – internal rotatable	3200.00
TMD-6-27-167	(Light top load) closed vehicle – internal non-rotatable	3200.00
TMD-7-30-357/367	Closed vehicle – internal rotatable 150# top load.	4200.00
Mast Rotator Options	Electric Driven, 115VAC	650.00

Pneumatic Systems – Complete Systems

TMD-C-271	Pneumatic system assembly 12VDC 12 gal. compressor, receiver, regulator controls	\$1200.00
TMD-B-267	Pneumatic system assembly 115VAC 12 gal. compressor, receiver, regulator controls	1200.00

Slight variation in nested and extended heights are due to rotator and locking collar options.

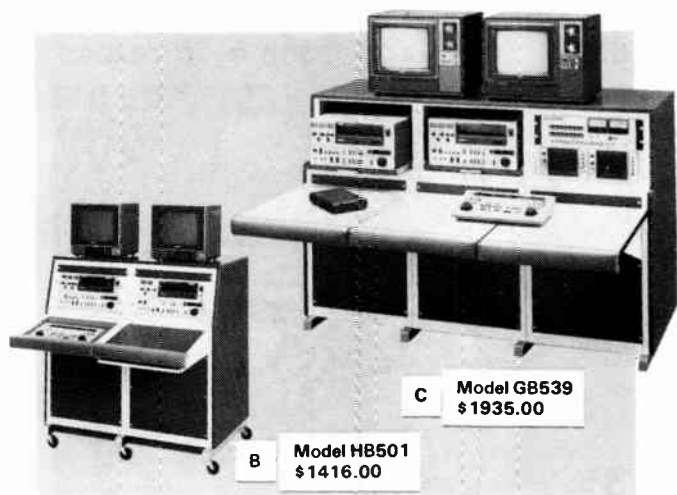
Telescoping Masts

Portable, temporary communication is almost instantaneous with TMD Telescoping Masts wherever you want to take them. The Mast is completely self-contained with a pneumatic system which lifts the Mast and communications assembly from a ground installation or from any mobile unit.

The precision-engineered Masts are constructed of overlapping tubes of extruded aircraft type aluminum. Full length keyways provide azimuth integrity and the Mast can be rotated through 360° in most applications. Masts have been built to reach up to 150' (54m) for trailer or field installation.



A Model HB502
\$1653.00



B Model HB501
\$1416.00

C Model GB539
\$1935.00

SYSTEM/85 MODULAR VIDEO CONSOLES

A generation of modular video furniture for use with Sony's front loading video machines, new 3/4" editing systems and other studio equipment.

These standard 19" EIA modular units are constructed of strong, welded and bolted heavy-gauge steel. All units assemble quickly and easily in any configuration to suit your individual needs. The basic module is expandable to any size system with add-on units. Textured baked on enamel finish in Beige and Gray.

A complete line of console accessories are available to complement the System/85 console — with rackmounting kits for both series of VTRs, panel kits for editors, heavy-duty swivel casters for mobility, multiple outlet electrical assemblies, an oversize shelf for large controllers, and blank panels.

A. Model HB502. For use with Sony's "Type 5" VTRs and RM-440 Controllers. Overall dimensions 41" H x 61" W x 42 1/2" D. System includes:

1 ea. G8502	Basic console — 19"	\$515.00
2 ea. G8500	Add-on console — 19" (\$319.00 ea.)	638.00
2 ea. 85041	Interchangeable top — 19" (\$33.00 ea.)	66.00
1 ea. 85040	Intermediate top — 19"	32.00
2 ea. 85080	Sloped editor shelf — 19" (\$96.00 ea.)	192.00
1 ea. 85180	RM-440 editor panel	45.00
1 ea. 85147	14" Blank panel — 19"	25.00
3 ea. 85140	1 3/4" Blank panel — 19" (\$8.00 ea.)	24.00
3 ea. 85149	19 1/4" Blank panel — 19" (\$32.00 ea.)	96.00
1 ea. 85141	3 1/2" Blank panel — 19"	9.00
1 ea. 85142	5 1/4" Blank panel — 19"	11.00

Model HB502 Complete Shpg. Wt. 348 lbs. Total \$1653.00

Model HB802 (Not shown). Same as HB502 set up for Sony's 800 Series VTRs and 801 Edit Controller.

Model HB802 Shpg. Wt. 348 lbs. \$1629.00

B. Model HB501. For use with Sony's "Type 5" VTRs and RM-440 controller. Overall dimensions 44" H x 43" W x 42 1/2" D. System includes:

1 ea. G8502	Basic console — 19"	\$515.00
1 ea. G8500	Add-on console — 19"	319.00
2 ea. 85041	Interchangeable top — 19" (\$33.00 ea.)	66.00
2 ea. 85080	Sloped editor shelf — 19" (\$96.00 ea.)	192.00
1 ea. 85180	RM-440 Editing panel	45.00
1 ea. 85141	3 1/2" Blank panel — 19"	9.00
1 ea. 85147	14" Blank panel — 19"	25.00
1 ea. 85580	Pull-out shelf — 19"	69.00
2 ea. 85149	19 1/4" Blank panel — 19" (\$32.00 ea.)	64.00
2 ea. 85140	1 3/4" Blank panel — 19" (\$8.00 ea.)	16.00
3 pr. 85781	3" Industrial casters (\$32.00 pr.)	96.00

Model HB501 Complete Shpg. Wt. 255 lbs. Total \$1416.00

Model HB801. (Now shown). Same as HB501 set up for Sony's 800 Series VTRs and 801 Controller.

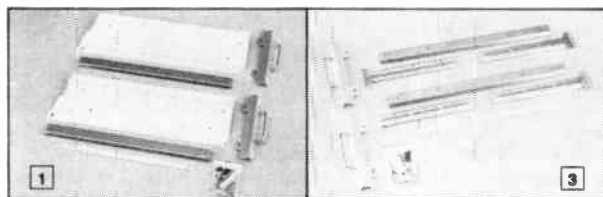
Model HB801. Shpg. Wt. 255 lbs. \$1400.00

C. Model GB539. Video console with pull-out trays for your video equipment. Overall dimensions: 41" H x 61" W x 42 1/2" D. System includes:

1 ea. G8501	Base module — 19"	\$323.00
2 ea. 85000	Add-on module — 19" (\$198.00)	396.00
2 ea. G8590	Cabinet with pull-out shelf — 19" (\$215.00 ea.)	430.00
1 ea. 85002	10 1/2" Top module — 19"	114.00
1 ea. 85164	Filler panel	18.00
1 pr. 85122	10 1/2" Side panels	64.00
2 ea. 85041	Interchangeable top — 19" (\$33.00 ea.)	66.00
1 ea. 85040	Intermediate top — 19"	32.00
3 ea. G8540	Flat editor shelf — 19" (\$120.00 ea.)	360.00
3 ea. 85148	1 5/8" Blank panel — 19" (\$28.00 ea.)	84.00
6 ea. 85140	1 3/4" Blank panel — 19" (\$8.00)	48.00

Model GB539 Complete Shpg. Wt. 398 lbs. Total \$1935.00

Model GB535. (Not shown). Same as Model GB539 except set up with 20" pull-out shelves. Wt. 398 lbs. \$2279.00



RACK SLIDE KITS

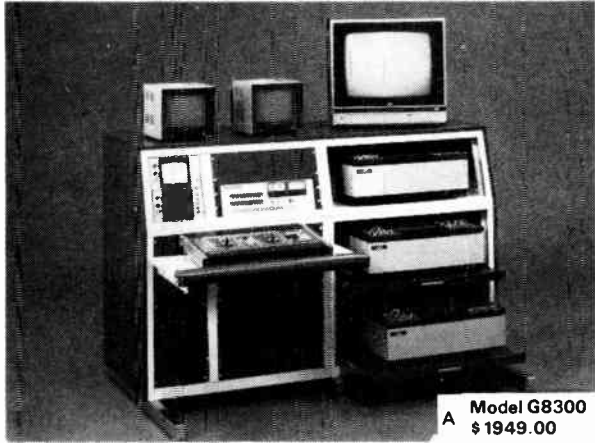
Order separately. Not included in console prices.

Model F8501. Rack slide kit for Sony's Type 5 VTRs. Wt. 8 lbs. \$235.00

Model F8801. (Not shown) Rack slide kit for Sony's 800 Series VTRs. Wt. 8 lbs. \$235.00

DESIGN CONSOLES

Perfect for top-loading VTR's and to rack mount your video electronics

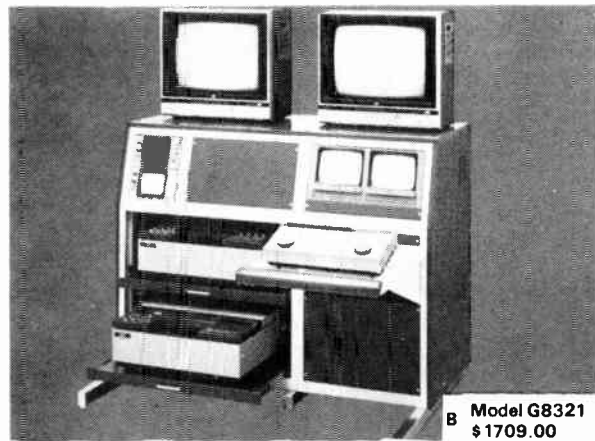


A Model G8300
\$1949.00

A. Model G8300. Ideal "A/B Roll" console. Overall dimensions: 42"H x 66"W x 54"D. System includes:

1 ea.	G8311	Add-on console—30"	\$446.00
1 ea.	G3000	Base module—30"	229.00
1 pr.	85120	Base side panels	85.00
1 ea.	G3001	Add-on slope module	177.00
1 pr.	85121	10 1/2" Slope side panels	71.00
1 ea.	G3252	Bracket for 1/2" rackmounting	38.00
1 pr.	83208	10 1/2" Divider rail	56.00
2 ea.	G3041	Interchangeable top—30" (\$46.00 ea.)	92.00
2 ea.	G3087	Pull-out shelf—30" (\$198.00 ea.)	396.00
1 ea.	G3081	Stationary shelf—30"	75.00
1 ea.	G8340	Wood editor shelf—30"	153.00
1 ea.	85142	5 1/4" Blank panel—19"	11.00
1 ea.	G3158	15 3/4" Blank panel—30"	29.00
1 ea.	G3151	3 1/2" Blank panel—30"	11.00
1 pr.	83200	Stabilizer leg	80.00

Model G8300 Complete Shpg. Wt. 320 lbs. Total \$1949.00



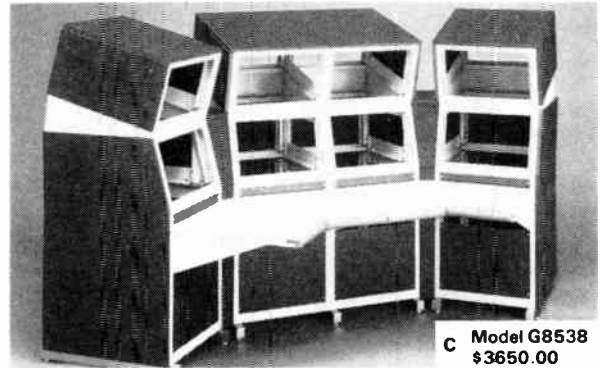
B Model G8321
\$1709.00

B. Model G8321. Top loading VTR console with 19" rack space for additional electronics. Overall dimensions: 41"H x 54 5/8"W x 42 1/2"D. System includes:

1 ea.	G8312	Basic console—30"	\$642.00
1 ea.	G8500	Add-on console—19"	319.00
1 pr.	83208	10 1/2" Divider rail	56.00
1 ea.	G5041	Interchangeable top—19"	33.00
1 ea.	G3041	Interchangeable top—30"	46.00
1 ea.	G5082	Flat editor shelf—19"	117.00
2 ea.	G3087	Full extension shelf—30" (\$198.00 ea.)	396.00
1 ea.	85148	15 3/4" Blank panel—19"	28.00
1 ea.	85145	10 1/2" Blank panel—19"	18.00
2 ea.	85140	15 3/4" Blank panel—19" (\$8.00 ea.)	16.00
1 pr.	83200	Stabilizer legs	80.00

Model G8321 Complete Shpg. Wt. 302 lbs. Total \$1709.00

CUSTOM CORNER AND WOOD CONSOLES



C Model G8538
\$3650.00

Corner Console Wrap-around design saves space

C. Model G8538. Corner consoles with 24" deep work surface. System includes:

1 ea.	G8502	Basic console—19"	\$515.00
3 ea.	G8500	Add-on console—19" (\$319.00)	957.00
4 ea.	85002	10 1/2" Top modules—19" (\$114.00)	456.00
3 pr.	85122	10 1/2" Side panels (\$64.00 ea.)	192.00
4 ea.	85161	Wedges—19" (\$75.00 ea.)	300.00
2 ea.	85042	Single tops—19" (\$34.00 ea.)	68.00
2 ea.	85041	Interchangeable tops—19" (\$33.00 ea.)	66.00
1 ea.	85202	Corner kit	398.00
2 ea.	G8541	Corner shelves (\$223.00 ea.)	446.00
2 ea.	85200	Chrome legs (\$40.00 ea.)	80.00
4 ea.	85148	15 3/4" Blank panel—19" (\$28.00 ea.)	112.00
8 ea.	85140	1 3/4" Blank panel—19" (\$8.00 ea.)	64.00

Model G8538 Complete. Shpg. Wt. 610 lbs. \$3654.00



D Model G8524
\$1707.00

Wood Console Gives your electronics an attractive new look

D. Model G8524. Two-bay JVC wood console. Overall dimensions are 53 1/4"H x 44 5/8"W x 44"D. System includes:

2 ea.	85000	Base module—19" (\$198.00)	\$396.00
2 ea.	85010	19 1/4" Slope rack (\$198.00 ea.)	396.00
2 ea.	85085	Flat extended editor shelf (\$122.00 ea.)	244.00
1 ea.	85190	JVC RM-86U controller panel	49.00
1 ea.	85200	Chrome leg	40.00
1 pr.	85520	Base wood side panels	175.00
1 pr.	85528	9 1/4" Slope wood side panels	156.00
1 ea.	85542	Wood top for 2-bay console	155.00
3 pr.	85781	3" Industrial casters (\$32.00 pr.)	96.00

Model G8524 Complete Shpg. Wt. 315 lbs. Total \$1707.00

MOBILE EDITING CONSOLES

A Model E9303. Caster mounted console for complete mobility in your teleproduction studio. Overall dimensions: 56"Hx28"Dx60"W. System includes:

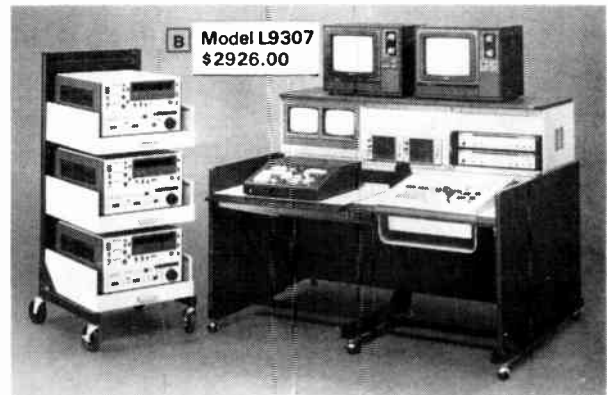
2 ea. C9300 Basic frame—30" (\$329.00 ea.)	.....	\$658.00
2 ea. C9310 VTR drawer—30" (\$193.00 ea.)	.....	386.00
3 ea. 93580 Monitor shelf—30" (\$95.00 ea.)	.....	285.00
1 ea. 93582 Editor shelf—30"	.....	183.00
1 ea. 93084 Mini monitor-shelf—30"	.....	39.00
Model E9303 complete. Shpg. wt. 300 lbs.	.....	Total \$1551.00



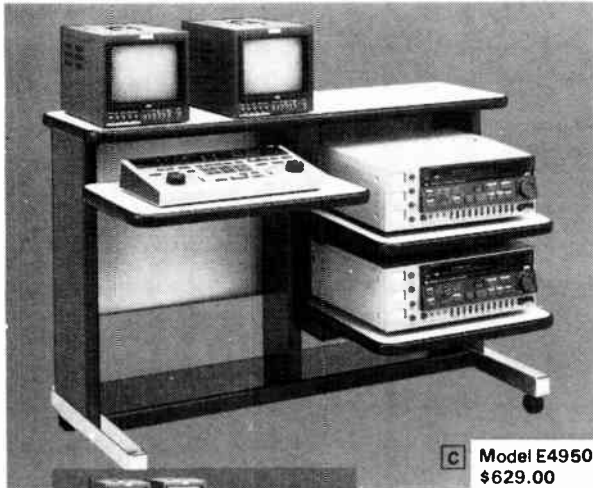
A Model E9303
\$1551.00

B Model L9307. Production console set up for front loading VTRs. Dimensions of VTR console are 56"Hx26"Dx22"W. Dimensions of editing console are 45"Hx45"Dx62"W. System includes:

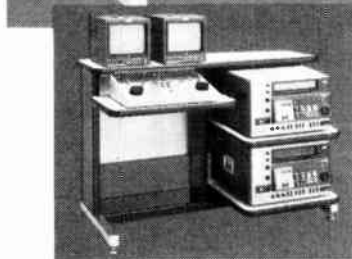
2 ea. 93021 Mini frames—30" (\$165.00 ea.)	.....	\$330.00
2 ea. 93100 Back panels—30" (\$40.00 ea.)	.....	80.00
1 ea. C9200 Basic frame—22"	.....	319.00
1 pr. 93200 Leg extensions	.....	51.00
3 ea. C9210 Pull-out VTR drawer—22" (\$176.00 ea.)	.....	528.00
1 ea. C9311 Pull-out editor shelf—30"	.....	286.00
1 ea. C9312 Pull-out switcher shelf—30"	.....	405.00
2 ea. 93081 Rackmount shelves—30" (\$93.00 ea.)	.....	186.00
3 ea. 98002 10 1/2" Rack cabinets (\$152.00 ea.)	.....	456.00
1 ea. 93540 Wood top	.....	98.00
1 pr. 93521 Wood side panels	.....	163.00
12 ea. 98243 Cabinet hold down (\$2.00 ea.)	.....	24.00
Model L9307 complete. Shpg. wt. 588 lbs.	.....	Total \$2926.00



B Model L9307
\$2926.00



C Model E4950
\$629.00



C Model E4950. The latest in design for editing and post production rooms. A basic two machine editing console or a sophisticated A/B roll setup. The uniquely designed mini console is only 28" deep and easily rolls through doorways. Top monitor shelf measures 16"D x 48"W. VCR shelves are 23 1/2"D x 20"W, edit shelf is 15"D x 23"W—adjust in 1-inch increments. Call your dealer for additional models. Includes glides and casters for optional mobility. Baked-on enamel finish in Beige and Gray. Overall 34"H x 28"D x 48"W.

Model E4950 complete. Shpg. wt. 146 lbs. **\$629.00**

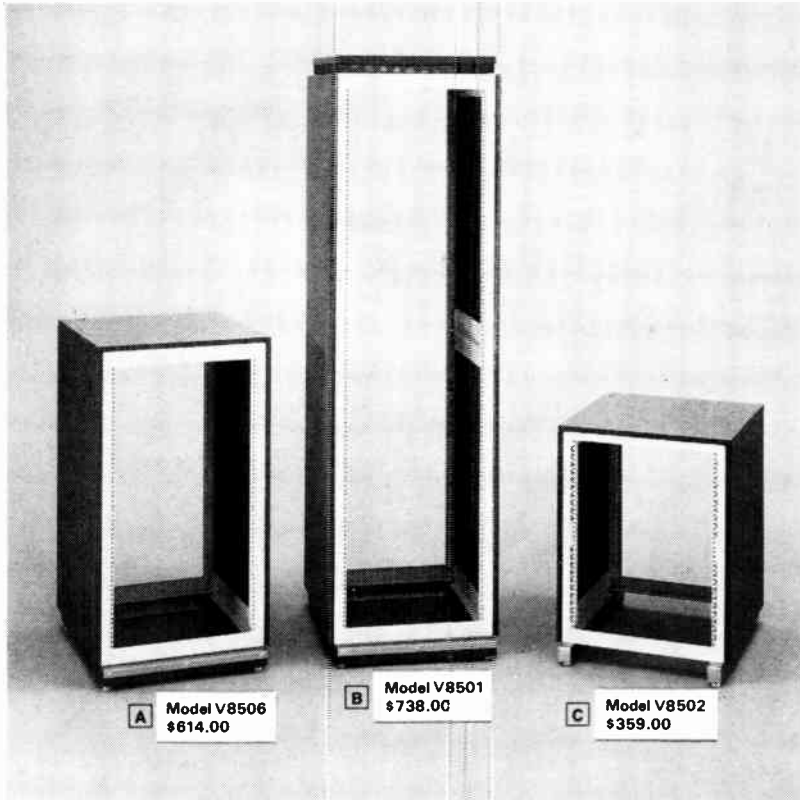


D Model R3802
\$992.00

D Model R3802. Compact editing console with locking doors. Overall dimensions: 56"H x 26"D x 24 1/2"W. System includes:

1 ea. 38000 Base console	.....	\$775.00
1 ea. 38080 Upper shelf and posts	.....	217.00
Model R3802 complete. Shpg. wt. 204 lbs.	.....	Total \$992.00

VERTICAL EQUIPMENT CABINETS...with removable side panels for installation of electronics and servicing convenience.



A Model V8506
\$614.00

B Model V8501
\$738.00

C Model V8502
\$359.00

Ruggedly constructed, totally adaptable electronic equipment cabinets. Designed to the industry standard of 19"W x 26"D. Large holes in base for cabling. Removable panels. Ventilating louvers on top and base to keep electronics cool. Enamel finish compatible with all other System/85 consoles. Optional rear door available for 35" and 70" models.

A Model V8506. Vertical rack cabinet has 35" of usable rack space. Gray and Beige baked enamel finish, with vented sides and base for cabling. 42"H x 26"D x 22"W. Wt. 90 lbs. **\$614.00**

Rear Door for Model V8506. Wt. 25 lbs.
Model 85301 **\$118.00**

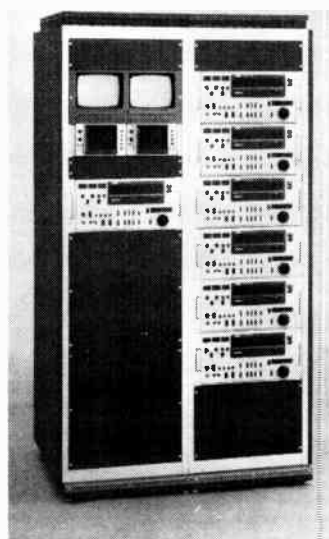
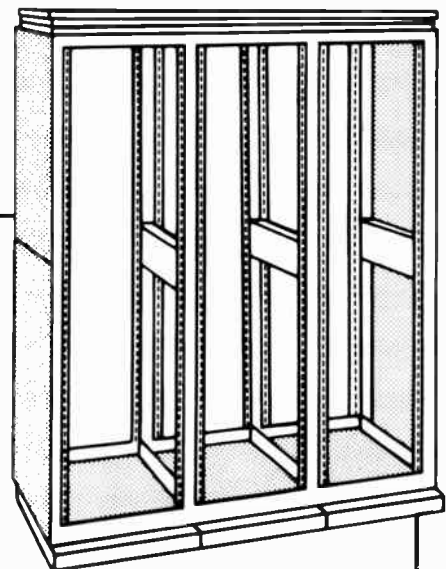
B Model V8501. Vertical rack cabinet with 70" of rack space. Vented top and bottom. 79"H x 26"D x 22"W. Wt. 160 lbs. **\$738.00**

Rear Door for Model V8501. Wt. 31 lbs.
Model 85300 **\$142.00**

C Model V8502. Vertical rack cabinet with 24 1/2" of rack space. Open bottom and vented sides for cool air flow. 30"H x 26"D x 22"W. Wt. 81 lbs. **\$359.00**

Back Panel for V8502 rack cabinet. Wt. 10 lbs.
Model 85100 **\$59.00**

D Model V8510. Gives you a compact duplication console by combining two 70" cabinets into a double width equipment rack. Offers 140" of rack space. Ideal for cable TV and hotel playback systems. May also be used as a production console editing from 3/4" machines. Wt. 265 lbs. **\$1308.00**



D Model V8510
\$1308.00

ADD-A-RACK

70" Basic Rack. Without sides or base. Wt. 102 lbs.

Model V8520 **\$436.00**

Standard Base. With cooling vents and cable access ports. Wt. 31 lbs.

Model 85060 **\$134.00**

Anti-Tip Base. Use with full-suspension shelves and drawers. Wt. 38 lbs.

Model 85062 **\$185.00**

Side Panels. (Pair) Wt. 59 lbs.

Model 85124 **\$168.00/pr.**

Stationary Shelf. Wt. 10 lbs.

Model 85088 **\$35.00**

13" Pull-Out Shelf. Wt. 12 lbs.

Model 85091 **\$119.00**

20" Full-Suspension Shelf. Wt. 12 lbs.

Model 85083 **\$179.00**

Optional 2 1/2" Casters. Set of 4. Wt. 3 lbs.

Model 85782 **\$28.00**

STATIONARY & MOVABLE DUBBING RACKS FOR 1/2" & 3/4" FORMATS

A Model D4500. Stationary type with five walnut woodgrain pull-out VTR shelves. Shelves are mounted on ball-bearing rollers for easy pull-out. Overall dimensions: 72"H x 20"D x 32"W. Includes:
 1 ea. D4501 Basic rack \$302.00
 1 pr. 45121 Side panels 85.00
 5 ea. 45580 Pull-out shelves (\$98.00 ea.) 490.00
Model D4500 complete. Shpg. wt. 194 lbs. Total \$877.00

Model 4500 (Not shown). Caster base for models D4500 and D4502. Overall dimensions: 4"H x 28"D x 32"W.
 Wt. 32 lbs. \$208.00

B Model D9300. Mobile duplication console with all steel pullout shelves. Overall dimensions: 71"H x 26"D x 30"W. System includes:
 1 ea. C9302 Extended basic frame—30" \$406.00
 4 ea. C9310 Pull-out drawers—30" (\$193.00 ea.) 772.00
 1 ea. 93580 Monitor shelf—30" 95.00
 2 ea. 93786 Heavy-duty 4" caster (\$6.50 ea.) 13.00
 2 ea. 93787 Heavy-duty locking caster (\$7.50 ea.) 15.00
Model D9300 complete. Shpg. wt. 337 lbs. Total \$1301.00



A Model D4500
\$877.00

B Model D9300
\$1301.00

C Model D8911. Single bay duplicating rack with seven shelves. Overall dimensions: 78"H x 26"D x 23 1/8"W. System includes:
 1 ea. D8900 Basic rack \$316.00
 1 pr. 89120 Side panels 119.00
 7 ea. 85088 Stationary shelf (\$35.00 ea.) 245.00
Model D8911 complete. Shpg. wt. 180 lbs. Total \$680.00

D Model D8913. Compact dubbing console with 14 inches of rack mount capacity. Overall dimensions: 78"H x 26"D x 46 1/4"W. System includes:
 2 ea. D8900 Basic racks (\$316.00 ea.) \$ 638.00
 1 pr. 89120 Side panels 119.00
 12 ea. 85091 13" Pull-out shelves (\$119.00) 1428.00
 2 ea. 89061 Anti-tip base (\$63.00 ea.) 126.00
 1 pr. 89243 14" Rack rail 18.00
Model D8913 complete. Shpg. wt. 347 lbs. Total \$2326.00

Model 85300 (Not shown). Rear door for Model D8900.
 Wt. 25 lbs. \$142.00

ADD-A-RACK

Basic rack frames can be bolted together without side panels to form an economical "in line" duplicating center. Side panels are installed at each end. Shelves can be installed at 1" increments to fit exact equipment needs.

Model D4501. Basic rack without side panels.
 Wt. 89 lbs. \$302.00

Model 45121. Side panels (Pr.)
 Wt. 55 lbs. \$85.00

Model 45580. Pull-out shelves.
 Wt. 18 lbs. \$98.00



C Model D8911
\$680.00

D Model D8913
\$2326.00

ADD-A-RACK

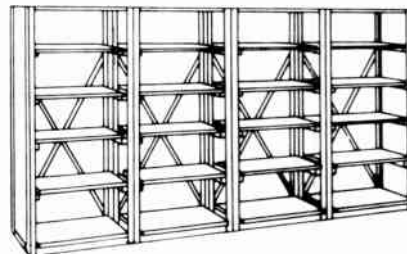
Basic rack frames can be bolted together without side panels to form an economical "in line" duplicating center. Side panels and shelves may be added to complete your duplicating center.

Model D8900. Basic rack without sides or shelves.
 Wt. 62 lbs. \$316.00

Model 85088. Stationary shelf.
 Wt. 10 lbs. \$35.00

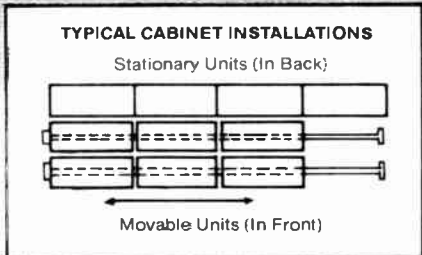
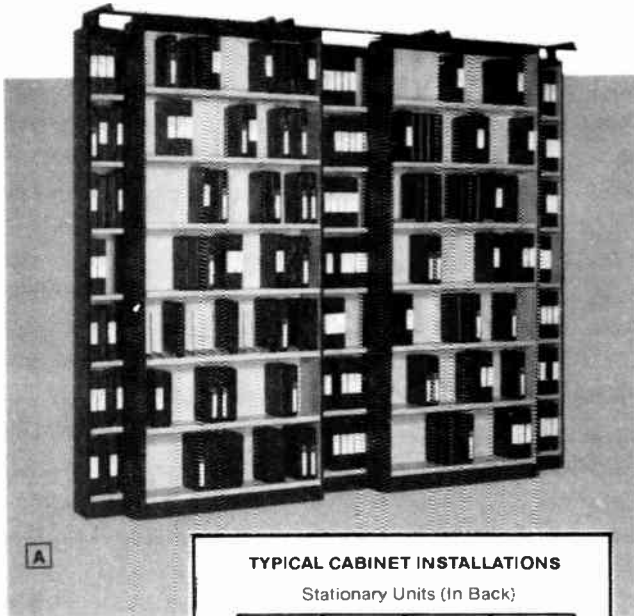
Model 89120. Side panels (Pair)
 Wt. 49 lbs. \$119.00

Model 85091. 13" Pull-out shelf.
 Wt. 12 lbs. \$119.00



THE WINSTED CORP.

Movable Storage Systems



MOVABLE STORAGE SYSTEMS

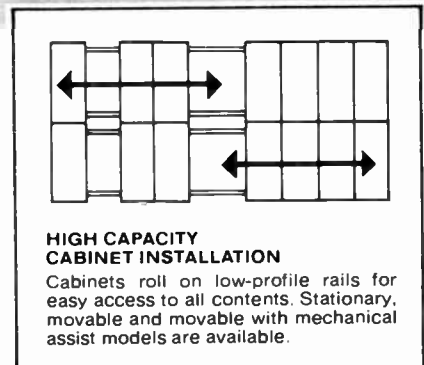
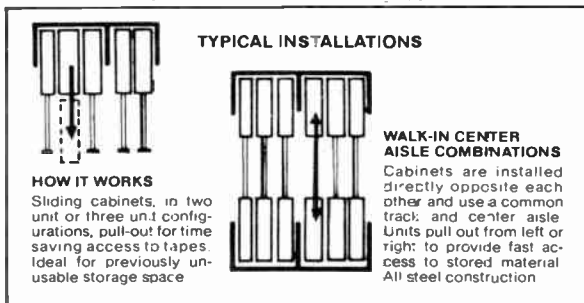
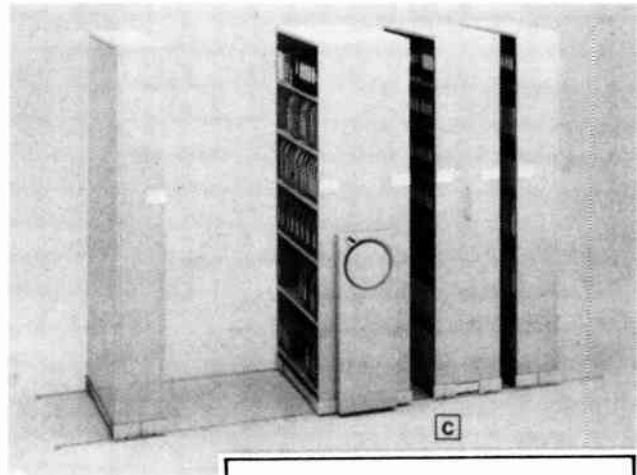
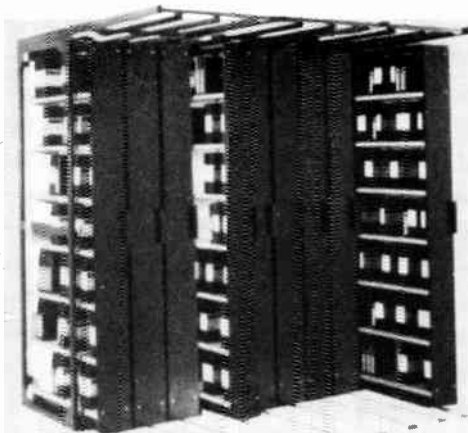
In a variety of designs and 5" to 36" depths to serve your special storage needs.

Winsted Shelf Storage System. Offer organization and storage for most any tape or film storage system. Choose from stock or custom shelving at affordable prices. All designs are completely flexible—can be adapted to a variety of configurations and setups to serve your special storage needs. What's more, Winsted shelving grows as your needs grow. Both stock and custom installations can be expanded, or relocated as your needs change.

A "Super Density" Movable Cabinets. Offered in a range of cabinet depths for maximum storage in a limited space. Front row cabinets move side to side on floor tracks for easy access to rear storage. Ideal for "VHS," "BETA," U-matic and broadcast tape storage.

B Space-Saving Pull-Out Cabinets. Ideal for "high access" tape storage. May be installed in room alcoves or set-backs. Save floor space, too, by eliminating unnecessary aisles. Gives you 100% storage space efficiency. Units bolt together for any length system. Cabinets pull-out effortlessly on a low-profile track.

C High Capacity Tape Storage System. Affords compact storage in a limited space. Offered in a full range of cabinet depths to meet every storage need. Cabinets move laterally on low-profile rails for easy access to all records instantly, effortlessly.



OPEN SHELF TAPE CABINETS

For the organization & storage of all tape formats

A Model T7400. Ideal videotape storage system for 3/4" U-Matic videocassettes. Eight inch deep cabinet holds 161 videocassettes. Order molded plastic dividers for videocassettes separately (Model 70983—see Optional Accessories). Seven shelves. Overall: 88"H x 8"D x 36"W. (Inside dimensions: 34 1/2"W x 83"H).
Wt. 120 lbs. **\$439.00**

Add-on Unit. Model T7403. For side-to-side installation.
Wt. 105 lbs. **\$409.00**

Model 74080. Extra Shelf.
Wt. 4 lbs. **\$26.00**

B Model T7700. Video tape storage system holds 102 1" video tapes. Deeper 12" cabinet depth takes 1" broadcast tapes, 7"-10 1/2" quad tapes and 3/4" U-Matic videocassettes. Order molded plastic dividers for videocassettes separately. Six shelves overall: 88"H x 12"D x 36"W. (Inside dimensions: 34 1/2"W x 83"H).
Wt. 125 lbs. **\$464.00**

Add-On Unit. Model T7703. For side-to-side installation.
Wt. 110 lbs. **\$426.00**

Model 77080. Extra Shelf
Wt. 5 lbs. **\$29.00**

C Model T7600. "Super Pak" videocassette tape storage system. Holds 207 3/4" videocassettes. For maximum capacity tapes are stored and labeled on end. Nine shelves. Overall: 88"H x 10"D x 36"W. (Inside dimensions: 34 1/2"W x 83"H).
Wt. 139 lbs. **\$459.00**

Add-on Unit. Model T7603. For side-to-side installation.
Wt. 118 lbs. **\$421.00**

D Model T7800. Quad Tape Storage System. A 16" deep cabinet that is perfect for 2" quad and holds 55 tapes. Five shelves. Overall: 88"H x 16"D x 36"W. (Inside dimensions: 34 1/2"W x 83"H).
Wt. 165 lbs. **\$519.00**

Add-On Unit. Model T7803. For side-to-side installation.
Wt. 150 lbs. **\$479.00**

Model 78080. Extra Shelf.
Wt. 6 lbs. **\$31.00**

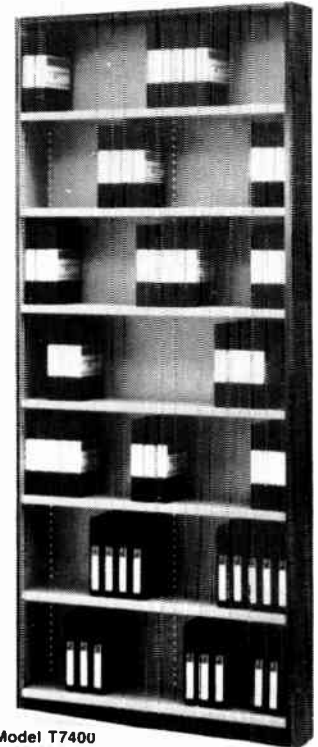
E Model 70300. Locking cabinet doors provide security for valuable master tapes. Doors fit all of the Winsted "T" series tape cabinets (except T7200 and T7500 models) and can be added to any existing "T" unit. Full length door hinge and two-point locking system. NOTE: Install cabinet doors only on cabinets that are securely fastened to a wall. Dimensions: 84 1/2"H x 1 1/4"D x 34 1/2"W. Beige baked enamel finish.
Wt. 61 lbs. **\$235.00**

F Model T7104. Beta or VHS Storage. Holds 270 Beta tapes or 240 VHS. Ideal for 1/2" videocassette storage. Order molded plastic dividers for videocassettes separately (Model 70986). Overall: 88"H x 4 1/2"D x 36"W. (Inside dimensions: 34 1/2"W x 83"H).
Wt. 137 lbs. (BETA) **\$419.00**

Model T7100. (Not shown.)
Wt. 135 lbs. (VHS) **\$398.00**

Add-On Unit. Model T7107. For side-to-side installation.
Wt. 127 lbs. (BETA) **\$399.00**

Add-On Unit. Model T7103. For side-to-side installation.
Wt. 120 lbs. (VHS) **\$378.00**



A Model T7400
\$439.00

OPTIONAL ACCESSORIES

1 Model 70983. Molded plastic divider insert (3/4" tapes) for use in T7400, T7600, or T7700.

#70983 Individual Dividers.
Wt. 3 lbs. **\$14.00**

2 Model 70986. Plastic cassette holder (1/2" tapes) for use in T7100 or T7104 cabinets.

#70986 Individual Dividers.
Wt. 2 lbs. **\$13.00**



1 Model 70983
\$14.00 in qty



2 Model 70986
\$13.00 in qty



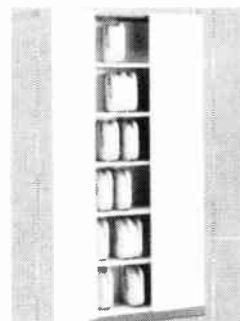
B Model T7700
\$464.00



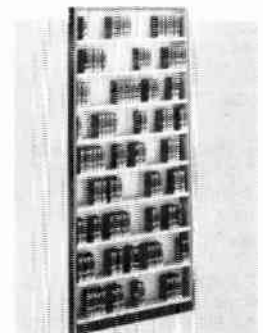
C Model T7600
\$459.00



D Model T7800
\$519.00



E Model 70300
\$235.00



F Model T7104
\$419.00

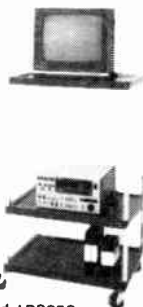
THE WINSTED CORP.

Mobile Video Centers

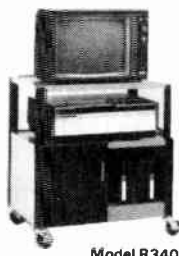
Model R3303
\$147.00



Model R3353
\$155.00



Model R3400
\$327.00



Model R3601
\$749.00



Model 37509
\$1475.00



Model R3720
\$598.00



Model R374C
\$981.00



MOBILE VIDEO CENTERS

Mobile carts and consoles to organize and store your video equipment

Four new economy A/V carts with the same built-in quality you've learned to expect from all Winsted products. Choose from 34" or 54" heights. Shelves are 28 5/8" W x 18 5/8" D to fit most any electronics. Sturdy, strong, formed and welded steel construction for years of service. Four-inch swivel casters (two locking) for mobility. Textured baked on enamel gray finish with chrome post accents.

A 34" High Video Stand. Features three shelves to fit all of your electronics. Twelve inch clearance between shelves leaves plenty of room for equipment access. Measures 34"H x 22"D x 32"W. Shpg. wt. 43 lbs.

Model R3303 \$147.00

Two Shelf Video Stand. (Not shown.) Top shelf accommodates up to a 25" monitor. Shelf measures 28 5/8" W x 18 5/8" D. Stand is 34"H x 22"D x 32"W. Shpg. wt. 34 lbs.

Model R3302 \$125.00

B Portable Video Stand. Ideal for setup anywhere. Three shelves makes a space for your monitor, VCR and accessories. Measures 54"H x 22"D x 32"W. Shpg. wt. 47 lbs.

Model R3353 \$155.00

54" Video Stand. (Not shown.) Gives you four shelves to hold all of your A/V equipment. Measures 54"H x 22"D x 32"W. Shpg. wt. 54 lbs.

Model R3354 \$177.00

Beautifully styled, decorator consoles in a selection of attractive finishes. Ball bearing casters for total mobility on any surface. Fine furniture for your conference room, office, studio, show-room...and point of purchase displays.

C Low-Profile Video Center. Designed for smaller groups and individual use. Monitor shelf is set back slightly to permit easy access to VTR shelf. Top shelf is 15"D x 32"W. Cabinet is 34"H x 22"D x 32"W. Wt. 68 lbs.

Model R3400 \$327.00

Full Shelf Low-Profile Video Center. (Not shown.) Same as R3400. Top shelf is a full 22"D x 32"W. Lockable base cabinet is 17 1/2"H x 22"D x 32"W. Overall dimensions: 34"H x 22"D x 32"W. Wt. 72 lbs.

Model R3401 \$327.00

D Compact Portable Video Center. Provides complete mobility, ease of operation, and key-lock security. Top section takes most 19" (some 21") monitors and VTR units. Locking swing-away doors. Ventilated locking rear panel for full access to video equipment. Bottom section provides safe storage for your expensive video accessories. 60"H x 22"D x 32"W. Wt. 195 lbs.

Model R3601 \$749.00

Executive Conference Room Consoles

E Hand Rubbed Oak VCR Cabinet. For the VCR center where only the nicest furniture will do. An elegant VCR cabinet sculpted of oak solids with matching oak wood veneers. The look is expensive. The rolled edge design comfortable and clean. Satin smooth hand rubbed finish with uncommon attention to detail.

Offer a pull-out VCR shelf, an adjustable shelf in the lower storage area (30"W x 23 3/4"D) and a spacious compartment (30"W x 23 3/4"D x 25"H) for your TV monitor. Locking doors swing out of the way a full 270°. Cut-outs in rear for cableing. Rolls where you want it on hidden heavy duty casters. Inside dimensions are 57 1/2"H x 30"W x 23 3/4"D. Outside dimensions are 62 1/2"H x 31 1/2"W x 25 5/8"D. Natural oak finish. Shpg. wt. 140 lbs.

Model 37509 \$1475.00

F Executive Video Console. Rich medium oak woodgrain. Holds any 3/4" or 1/2" VTR machine and monitor of up to 25". Convenient shelf stores tapes and other video accessories. VTR shelf pulls out for easy access to controls. Accessory equipment shelf adjusts up or down. Locking cabinet doors for extra security—swing back out of the way. Rear opening provides access to cords, cables and control adjustments. Swivel casters make moving easy. 31 1/2"W x 33"H x 28 1/2"D. Wt. 110 lbs.

Model R3720 \$598.00

Model R3724. (Not shown.) Same features as our Model R3720 with two pull-out shelves. Shpg. wt. 110 lbs.

Model R3724 \$627.00

Model R3722. (Not shown.) Same features as our Model R3720 with storage drawer. Shpg. wt. 110 lbs.

Model R3722 \$648.00

G Large Security Cabinet. With full length locking doors. Provides ample storage space for 25" monitors as well as front loading VTRs. Plate casters for total mobility. Pull-out shelf for accessibility to top, sides and back of your installed equipment. Adjustments and settings may be made without removal. Base compartment offers storage for extra cassettes and video accessories. Measures 63 3/4" x 31 1/2"W x 28 1/2"D. Wt. 198 lbs.

Model R3740 \$981.00

Model R3742. (Not shown.) Same features as our Model R3740 with two pull-out shelves. Shpg. wt. 198 lbs.

Model R3742 \$1010.00

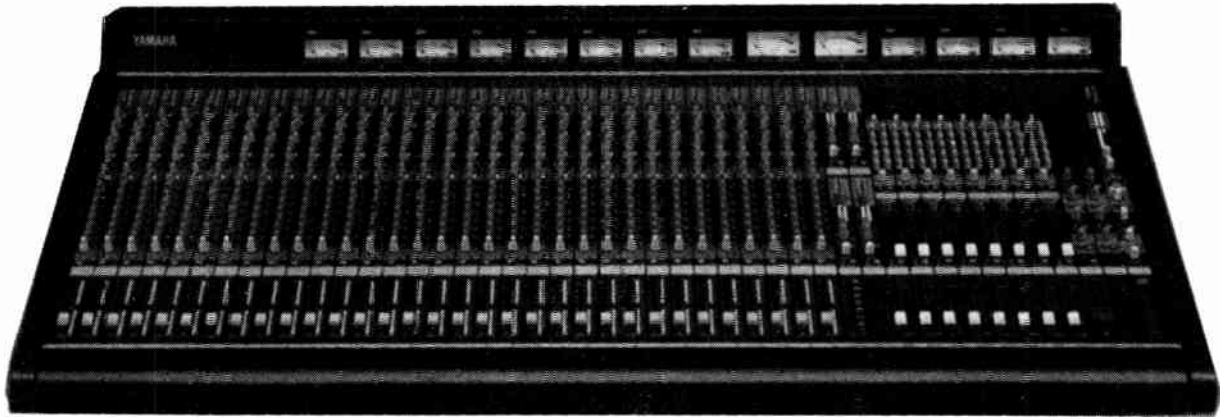
Model R3744. (Not shown.) Same features as our Model R3740 with storage drawer. Shpg. wt. 198 lbs.

Model R3744 \$1031.00

Refer to Green Section for Addresses and Telephone Numbers.

YAMAHA INTERNATIONAL CORP.

Mixing Consoles



PM3000

PM3000 Professional Audio Mixing Console

- 24, 32, or 40 Input channel mainframes (Center Master configuration on 40-channel version)
- 8 Auxiliary mixing bus sends on each input channel, each with its own pre/off/post assign switch
- 8 Group mixing buses, each with its own Master Fader, On/Off switch and Cue switch; assignable to matrix, stereo bus, and rear panel XLR outputs
- 8 VCA (Voltage Controlled Amplifier) groups, with external interface capability
- 8 Master mute groups, with 8 mute assign switches on each input channel, for instant "scene" changes
- Stereo mixing bus, which can be "direct assigned" from input channels, or "Grand Master" assigned from groups
- Mix matrix: like having a separate 11 x 8 mixer within the console
- 4 Aux (effect) returns, each with 2-band EQ and each switchable for use with stereo or mono sources
- Balanced differential XLR inputs; optional input transformers may be internally installed
- Electronically balanced XLR outputs; optional output transformers available
- Optimum input gain structure with 5-position input attenuator switch plus continuous gain trim control
- Multi-point signal monitoring LEDs in each channel guide precise input trim and EQ adjustments without risk of inadvertent clipping
- Extensive input-priority, "in-place" CUE system, plus SOLO mode (which mutes other channels)
- Extensive talkback and communications capability; easily interfaces with most popular intercom systems
- Built-in fixed and variable frequency test oscillator/pink noise source for setup or troubleshooting
- 14 VU meters with peak LEDs, switchable to monitor every bus in the console
- Numerous LEDs indicate status, display clip levels, and illuminate switches with minimal maintenance; only the VU meters have lamps
- Low noise, low distortion, wide bandwidth circuitry delivers "audiophile" quality in a professional mixing console
- Low profile, extruded aluminum chassis affords a clear view of the stage; rugged enough for touring or mobile remote truck applications

Specifications

Total Harmonic Distortion

Less than 0.1%, 20Hz-20kHz, at + 14 dBm output into 600 ohms.

Frequency Response

+1, -3 dB, 20Hz-20kHz, at + 4 dBm output into 600 ohms.

Hum & Noise

(20Hz-20kHz, $R_s = 150$ ohms, Input Gain at maximum, Input Pad at 20 dB)

Input Channel Gain Control

34 dB variation in gain stop-to-stop.

Input Channel Pad Switch

0, 10, 20, 30 or 40 dB of attenuation.

Input Channel Equalization

15 dB maximum boost or cut in each of four bands.

HIGH: 1.6kHz-16kHz (peaking or shelving).

HI-MID: 800Hz-8kHz (peaking, variable Q from 0.5 to 3.0).

LO-MID: 160Hz-1.6kHz (peaking, variable Q from 0.5 to 3.0).

LOW: 40Hz-400Hz (peaking or shelving).

Input Channel High Pass Filter

12 dB/octave roll off below 20Hz to 400Hz (adjustable -3 dB point).

Crosstalk

-60 dB at 1kHz, adjacent input channels.

-60 dB at 1kHz, input to output.

Oscillator/Noise Generator

Switchable sine wave at 100Hz, 1kHz, or 10kHz (less than 0.1%

T.H.D. at +4 dBu output level), or pink noise.

VU Meters (0 VU = +4 dBu, or 1.23 V RMS output level)

STEREO L & R: 2 large, illuminated meters. 12 smaller, illuminated meters, each switchable to monitor multiple circuits.

Peak Indicators

LED (red) built into each VU meter turns on when post-Master fader level reaches 10 dB below clipping.

Signal/Clip Indicators

3 LEDs built into each input module monitor levels in the module: SIGNAL (green) turns on when pre-EQ signal is 10 dB below nominal level. CLIP (red) turns on when pre-EQ signal is 3 dB below clipping. EQ CLIP (red) turns on when post-EQ level is 3 dB below clipping.

Phantom Power

48 DC is applied to electronically balanced inputs or optional transformer-isolated inputs (via 6.8 kohm current limiting/isolation resistors) for powering condenser microphones. May be turned on or off via rear-panel phantom master switch; when on, individual channels may be turned off via +48 V switch on each input module.

Console Dimensions:

24 channel: 12"H x 37.8"D x 53.8"W

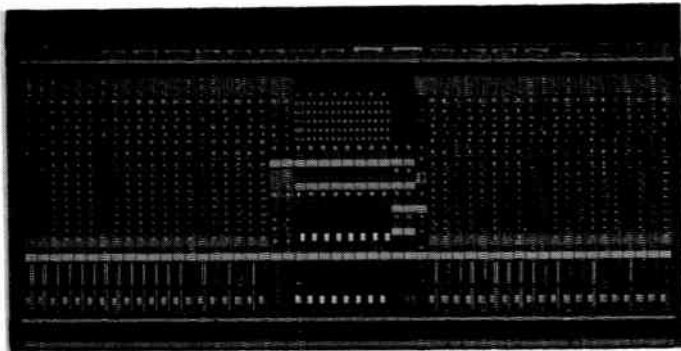
32 channel: 12"H x 37.8"D x 64.7"W

40 channel: 12"H x 37.8"D x 75.6"W

PM300040C	(center output)	\$44,500.00
PM300032R	(32 channel)	38,500.00
PM300024R	(24 channel)	33,500.00
PW3000	Spare power supply	1,195.00

Prices and Specifications Subject to Change Without Notice.

B-1223



PM1800-40C

PM1800 Series Audio Mixing Consoles

- 16-, 24-, 32-, or 40-input channel mainframes (Center Master configuration on 40-channel version)
- Stable, wide-range, non-saturating input circuitry
- Master mute function permits instantaneous punch-ins/outs
- Versatile and precise 4-band sweepable equalization and high pass filters on each channel
- Exceptionally low noise, low distortion, wide bandwidth circuitry furnishes truly audiophile quality in a professional mixing console
- Extensive input-priority, cue system, as well as a solo mode that mutes all other input channels
- 8 group mixing buses, each with its own master fader, on/off switch and cue switch; assignable to matrix, stereo bus, and rear panel XLR outputs
- 8 master mute groups, with 8 mute assign switches on each input channel, permitting multiple channels to be silenced or activated all at once
- Mix matrix offers a separate 8 x 4 mixer within the console
- Stereo mixing bus, assigned from groups, plus Group 7/8 stereo assign for an additional stereo mix
- 4 Stereo Aux (effect) returns, each switchable for use with stereo or mono sources
- Extremely flexible input gain structure with 3-position input attenuator switch plus continuous gain trim control
- Multi-point signal monitoring LEDs in each channel aid in making precise input trim and EQ adjustments while protecting against inadvertent clipping
- Balanced differential XLR inputs; optional input transformers may be internally installed
- Electronically balanced XLR outputs; optional (external) output transformers available
- Complete talkback and communications capabilities; easily interfaces with most popular intercom systems
- Built-in multi-frequency test oscillator/pink noise source for setup or troubleshooting
- 13 VU meters (10 meters in 16-channel version) switchable to monitor every bus in the console
- Numerous LEDs indicate status, clip levels, and illuminate switches with minimal maintenance; only the VU meters have lamps
- Low profile chassis affords a clear view of the stage; rugged, yet light aluminum construction suits the console for touring, mobile truck, and other applications

SPECIFICATIONS

Total Harmonic Distortion

Less than 0.1%, 20Hz ~ 20kHz, at +14dBm output into 600Ω

Frequency Response

+1, -3dB, 20Hz ~ 20kHz, at +4dBm output into 600Ω

Hum & Noise

(20Hz ~ 20kHz * R_n = 150Ω, Input Pad = 0dB, Input sensitivity = -60dB, except as noted)

- 12dBm equivalent input noise
- 92dBu residual output noise (balanced outputs)
- 72dBu at GROUP OUT with Master fader at nominal level and all channel assign switches off
- 54dBu (58dB S/N) at GROUP OUT with Master fader and one channel fader at nominal level, and channel assigned to the group bus
- 82dBu at STEREO OUT with Stereo Master Stereo Master fader at nominal level and all channel assign switches off
- 74dBu (78dB S/N) at STEREO OUT with Stereo Master fader and one channel fader at nominal level
- 84dBu at MTRX OUT with MTRX Master and all matrix mix controls at maximum level, all GROUP-TO-MTRX switches off
- 70dBu (74dB S/N) at MTRX OUT with MTRX Master and one Matrix Mix control at maximum level, one channel fader at nominal level, and the corresponding assigned group fader at nominal level
- 64dBu at AUX OUT with Aux Master level control at nominal, all channel AUX mix controls at minimum level (Pre/Off/Post switches Off)
- 54dBu (58dB S/N) at AUX OUT with Aux Master level and one channel AUX mix control at nominal level

Maximum Voltage Gain

- 84dB CH IN to GROUP OUT
- 94dB CH IN to STEREO OUT
- 84dB CH IN to MTRX OUT
- 94dB CH IN to AUX OUT
- 84dB CH IN to CUE OUT
- 20dB AUX RTN to GROUP OUT
- 10dB SUB IN to GROUP OUT
- 10dB SUB IN to AUX OUT

Input Channel Gain Control

34dB variation in gain stop-to-stop

Input Channel Ped Switch

0, 20, 40 dB of attenuation

Input Channel Equalization

15dB maximum boost or cut in the each of 4 bands

- HIGH 1 6kHz - 16kHz (shelving)
- H1-MID 800Hz - 8kHz (peaking)
- LO-MID 160Hz - 1.6kHz (peaking)
- LOW 40Hz - 400Hz (shelving)

Input Channel High Pass Filter

12dB/oct roll off below 20Hz ~ 400Hz (adjustable -3dB point)

Crosstalk

-60dB at 1kHz

Oscillator/Noise Generator

Switchable sine wave at 100Hz, 1kHz, or 10kHz (less than 0.1% THD) at +4dBu output level, or pink noise

VU Meters

STEREO L & R: 2 large, illuminated meters with Peak LEDs. Other meters are smaller size without Peak LEDs. All meters calibrated for 0VU = +4dBu = 1.23Vrms output, Peak LEDs turn on 10dB before clipping.

24, 32 or 40 channel consoles:

- Meters 1 - 4 GROUP/MTRX
- Meter 5 GROUP 5/AUX 1
- Meter 6 GROUP 6/AUX 2
- Meter 7 GROUP 7/AUX 3
- Meter 8 GROUP 8/AUX 4
- Meter 9 CUE 1/AUX 5
- Meter 10 CUE 4/AUX 6
- Meter 11 OSC
- Meter 12 STEREO L
- Meter 13 STEREO R

16 channel console:

- Meters 1 - 4 GROUP/MTRX/AUX
- Meter 5 GROUP 5/CUE 1/AUX 5
- Meter 6 GROUP 6/CUE 4/AUX 6
- Meter 7 GROUP 7/OSC
- Meter 8 GROUP 8
- Meter 9 STEREO L
- Meter 10 STEREO R

Signal/Clip Indicators

2 LEDs built into each input module monitor levels in the module. CLIP (red) turns on when pre-EQ signal is 3dB below clipping. EQ CLIP (red) turns on when post-EQ level is 3dB below clipping.

Phantom Power

48 V DC is applied to electronically balanced inputs or optional transformer-isolated inputs (via 6.8kΩ current limiting/isolation resistors) for powering condenser microphones. May be turned on or off via rear-panel phantom master switch; when on, individual channels may be turned off via +48 V switch on each input module.

Power Requirements

Requires Yamaha PW1800 power supply

Console Dimensions (W x H x D)

- PM1800-40C: 73" x 12 1/8" x 34" (1,854mm x 308mm x 866mm)
- PM1800-32: 62 1/8" x 12 1/8" x 34" (1,578mm x 308mm x 866mm)
- PM1800-24: 50 3/4" x 12 1/8" x 34" (1,290mm x 308mm x 866mm)
- PM1800-16: 39 1/2" x 12 1/8" x 34" (1,003mm x 308mm x 866mm)

Net Weight (excluding power supply)

- PM1800-40C: 220 1/2 lbs. (100kg)
- PM1800-24: 176 3/8 lbs. (80kg)
- PM1300-32: 198 3/8 lbs. (90kg)
- PM1800-16: 154 3/8 lbs. (70kg)

NOTE: 0 dBu is referenced to 0.775 Vrms. 0 dBm is referenced to 1 mW. * "Brick wall" 20kHz bandwidth equivalent filter obtained by using 6dB/oct. low pass filter at 12.7kHz

- PM1800-40C \$23,900.00
- PM1800-32 19,900.00
- PM1800-24 16,900.00
- PM1800-16 13,900.00

YAMAHA INTERNATIONAL CORP.

Mixing Consoles

M916/512/508 Compact Professional Audio Mixing Consoles

M916

- 16 input channels, each with two balanced, switch selectable XLR connectors usable with mike or line level sources, and interstage patch points (EQ Out/Fader In jacks)
- 11 mixing buses (including a 5 x 4 matrix), 19 outputs, and 22 patch In/Out points utilizing standard unbalanced phone jacks
- Gain for the overall program, echo and/or foldback outputs can be increased by 10dB with a simple jumper, ideal for distantly placed mikes or low level sources
- Phantom power applies DC voltage to pins 2 and 3 of active channel input jacks via pair of isolated/current-limiting resistors for remote powering of condenser mikes
- Cue/Solo system allows operator to monitor via headphones individual channels, or groups of channels or outputs, without altering or interrupting mix
- Extensive talkback system with microphone and line inputs provides complete communication with performers and crew; permits recorded background music or test program without "using up" an input channel
- 18dB per octave high pass filter at 80Hz is useful for eliminating unwanted low-frequency sounds such as wind, vocal pops, stage rumble and low-frequency leakage from adjacent instruments
- Channel equalizers offer 15dB of boost or cut at any of 9 different frequency ranges; controls calibrated in dB for fast setups; detent ensures flat audio response at "0" setting
- 2 effects input channels can be panned between program buses, and their sensitivity increased from +4dB to -20dB, via internal jumpers, for optimum versatility
- Echo and foldback sends are pre-post selectable on each channel and easily modified to pre-fader/post-EQ or pre-fader and EQ for maximum versatility
- 2 peak LED's on each input channel monitor nominal level and near-clipping level so optimum headroom can be maintained
- 5 illuminated precision VU meters switchable to monitor stereo program, matrix, foldback, echo, or cue levels
- LED's built into each VU meter indicate high level peaks to avoid even momentary distortion
- Modular plug-in circuitry for optimum convenience
- Remote bipolar 25V power supply for minimum hum, maximum reliability and minimum downtime in the event of a difficulty
- 2 identical mike/line inputs per channel, switchable, saving tremendously on re-patching time

M512/508

- 8- or 12-input channels each with balanced XLR connectors
- 4 mixing buses—2 program buses, a foldback bus and an echo bus—and 5 outputs
- 3 effects and 4 sub inputs, each with standard unbalanced phone jacks
- Effect inputs each have a level control and a pan pot for assignment to left and right program buses
- Sub inputs permit signals to be applied directly to program, echo or foldback buses
- Phantom power switch for remote powering of condenser mikes
- 2 illuminated precision VU meters switchable to monitor stereo program, foldback, or echo output
- LED's built into each VU meter indicate high-level peaks
- Peak LED's on each input channel monitor near-clipping level so optimum headroom can be maintained
- Input switchable sensitivity ensures optimum signal-to-noise ratio and headroom with any source
- Integrated, 25V bipolar power supply
- Modular plug-in circuitry for optimum convenience
- Robust construction, handsome rosewood veneer cabinet, and the finest components throughout for consoles as durable and attractive as they are impressive in performance

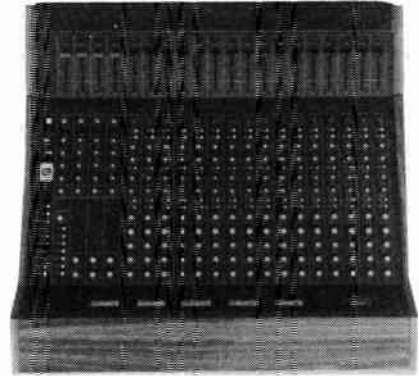
General Specifications

Frequency Response:

M916	+0, -3dB, 20Hz, +0, -0.5dB, 30Hz to 15kHz
M512/508	+1, -3dB, 20Hz to 20kHz, +0, -0.5dB, 50Hz to 10kHz
THD*:	<0.5% at +10dB, 20Hz to 20kHz, <0.1% at +20dB, 70Hz to 20kHz

Hum and Noise* (20Hz to 20kHz, 150 ohm source) (Input Selector Set at "-60")

-127dBm equivalent input noise (EIN)
-95dB residual output noise with all faders down
-78dB Program Out (82dB S/N): Master fader at nominal level and all input faders down
-72dB Program Out, Master fader at nominal level and all input faders down. (M512/508)
-63dB Program Out (67dB S/N); Master fader and one input fader at nominal level



M916

-73dB Echo, FB (77dB S/N); Master fader and all FB, Echo or at min. level
-63dB Echo, FB or Matrix Out (67dB S/N); Master fader and one FB, Echo or Matrix Mix control at nominal level

Max. Voltage Gain
(Input Selectors
set at "-60" dB
where applicable)

M916 Program, FB, Matrix, and Echo **, 84dB, Channel in to the corresponding output
Effects, 20dB; Effects In to PGM Out. Sub In and Matrix Aux. 10dB, input to output
M512/508 Program 84dB; Channel In to PGM Out, FB 84dB; Channel In to FB Out
Echo ** 94dB; channel in to Echo out. Sub In 10dB; Sub In to respective Out. Effects 20dB

Equalization
(± 15dB Max.)

M916 Low; 100 or 250Hz (shelving); MID, 500, 700, 1k, 1.6k, 2.5k or 3.5kHz (peaking); High: 10kHz (shelving)
M512/508 Low: 100Hz (shelving); Mid; 2kHz (peaking); High; 10kHz (shelving)

High Pass Filter:
Talkback:

18dB/oct, roll-off below 80Hz
Mike or line input XLR, preamp, level control, push-to-talk, and assign buttons for PGM, MTRX, FB and Echo buses

Input to Console:

M508 8 x input channels
M512 12 x input channels
M508/M512 2 x Sub In (Submixer input to PGM buses)
1 x Sub In (Submixer input to FB bus). 1 x Sub In (Submixer input to Echo bus).
3 x Effects In (auxiliary program input and effect return)
M916 32 x input channels (16M1, 16M2), 2 x Sub In (to PGM)

Mixing Buses:

2 x Sub In (to FB), 2 x Sub In (to Echo)
2 x Effects In, 2 x Matrix Aux In, 1 x Talk Back In
16 x Inter-stage Patch (Fader In), 6 x Master In
M512/508 2 x Main Program (L and R), 1 x Foldback, 1 x Echo

Console Outputs:

M916 2 x Main Program (L&R), 4 x Matrix, 2 x FB, 2 x Echo, 1 x Cue (preview)
M512/508 2 x Program, 1 x Foldback, 1 x Echo, 1 x Headphone

Crosstalk:

M916 2 x Program, 2 x Foldback, 2 x Echo, 2 x Headphone (1 2-channel jack), 4 x Matrix, 6 x Master Out, 16 x Inter-stage Patch (EQ out)
-60dB at 1kHz, adjacent inputs, -60dB at 1kHz, input to output

Finish:

Black painted panels, rosewood veneer cabinet, color-coded knobs

Dimensions:

M916 11 1/4" H x 32 3/16" W x 29 3/4" D
M508 7 1/2" H x 20 1/4" W x 19 1/2" D
M512 7 1/2" H x 25 7/8" W x 19 1/2" D

Weight:

M916 94.8 lbs., M508 34 lbs., M512 43.6 lbs.

* Measured with a 6dB/oct. filter at 12.47kHz; equivalent to a 20kHz filter with infinite dB/oct. attenuation

** Maximum voltage gain (Echo, FB) measured with channel fader at nominal level

M916

16 inputs; two main mixing buses; 4 matrices; mixing console \$6595.00

M512

12 inputs with phantom power; 4 outputs; mixing console \$2825.00

M508

8 inputs with phantom power; 4 outputs; mixing console \$2045.00

MZ Series Professional Dynamic Microphones

Common Features:

- Triple laminated pure beryllium diaphragm • 40Hz-18kHz frequency response • Precision photo-silkscreen process acoustic damping system • Three-point floating suspension system • Diecast zinc body with extra-durable wire mesh windscreen • Cardioid pattern • 250 ohms, balanced nominal impedance • Professional XLR connector

MZ 203Be Professional Vocal Microphones

Shares common features except: • 200 ohms balanced, nominal impedance • 500 ohms minimum load impedance • -76dB/μbar at 1kHz output level • 24dB/mOe SPL equivalent at 50Hz • Professional gold-plated 3-pin locking XLR output connector • Metallic dark gray finish • MCH-2 stand adaptor and microphone case included • Superb, smooth response for clear, warm vocal reproduction

MZ 203Be \$315.00

MZ 205Be Professional Percussion Microphone

• Shares common features except: • 650 ohms minimum load impedance • 77dB/μbar at 1 kHz output level • 29dB/mOe SPL equivalent at 50Hz professional gold-plated 3-pin locking XLR output connector • Metallic dark gray finish • MCH 3 microphone holder and case • Specifically designed for pickup of higher-pitched drums, such as snares and tom-toms smaller than 14" • Unique and compact with side-mounted connector design for ease of placement in confined areas and over a wide range of angles

MZ 205Be \$295.00

MZ 103Be Professional Vocal Microphone

Shares common features except: • -76dB/μbar at 1kHz output level • Metallic gray finish • MCH-2 stand adaptor included • Perfectly balanced response for powerful vocal reproduction

MZ 103Be \$235.00

MZ 105Be Professional Musical Microphones

Shares common features except: • -77dB/μbar at 1kHz output level • Metallic gray finish • MCH-2 stand adaptor included • Ultimate accuracy for musical instrument pickup

MZ 105Be \$200.00

MZ 102Be Professional Vocal Microphone

Shares common features except: • -76dB/μbar at 1kHz output level • Metallic brown finish • MCH-1 stand adaptor included • Response is ideally tailored for smooth, clear vocal reproduction

MZ 102Be \$190.00

MC 204 Professional Percussion Microphone

Shares common features except: • Double laminated polyester film diaphragm • 20Hz-18kHz frequency response • 650 ohm minimum load impedance • -77dB/μbar at 1kHz output level • 29dB/mOe SPL equivalent at 50kHz • Metallic dark gray finish • Professional gold plated 3-pin locking XLR output connector • MCH-3 microphone holder and case included • Deep, powerful response tailored especially for floor tom and bass drum pickup • Unique and compact with side mounted connector design for ease of placement in confined areas and over a wide area of angles

MZ 204 \$295.00

MZ 104 Professional Musical Microphone

Shares common features except: • Double laminated polyester film diaphragm • 30Hz-17kHz frequency response • 77dB/μbar at 1kHz output level • Metallic brown finish • MCH-1 stand adaptor included • Broad, flat response for precision musical instrument reproduction

MZ 104 \$145.00



MZ203Be



MZ205Be



MZ103Be



MZ204



MZ105Be



MZ102Be



MZ104



MZ106S



MZ101

MZ 106S Professional Vocal Microphone

Shares common features except: • Double laminated polyester film diaphragm • 800 ohm minimum load impedance • -77dB/μbar at 1kHz output level • On/off switch • Metallic gray finish • Microphone stand adaptor (5/8"), threaded brass adaptor (3/8"), 16 1/2' cable (XLR type, phone type) and case are included • Provides broad, flat response for vocal pickup

MZ 106S \$140.00

MZ 101 Professional Vocal Microphone

Shares common features except: • Double laminated polyester film diaphragm • 40Hz-17kHz frequency response • -76dB/μbar at 1kHz output level • Metallic brown finish • MCH-1 stand adaptor included • Provides rich lows and crisp highs for all types of vocal pickup

MZ 101 \$135.00

YAMAHA INTERNATIONAL CORP.

Audio Digital Effects/Reverberation



SPX90II

SPX90II Digital Multi-Effect Processor

- A wide selection of professional-quality digital effects in a single, compact rackmount unit
- A full two seconds of sampling time available in the freeze programs, two seconds of delay time in the delay programs, and one second of initial delay time in the reverb programs
- 30 preset effects in ROM, 60 user-stored RAM locations for custom-edited programs
- MIDI control of remote preset changes

Reverb: Four distinct reverb programs provide rich, lifelike recreations of the ambience of various acoustic environments.

Early Reflection: The first discrete reflections of a sound before reverb begins. This effect helps bring punch and presence to vocals and instruments.

Delay: Independent delay settings for both right and left channels expand the range of delay effects. Maximum delay time is 2 seconds.

Echo: The gradual decay of discrete reflections. Right and left channels are also independently programmable for complex echo effects.

Modulation: Professional-quality modulation effects (Stereo Flange, Chorus, Stereo Phasing, Tremolo, Vibrato, and Symphonic) enrich the sound.

Auto Panning: An automatic pan (with programmable direction, speed, and depth) of the sound between right and left channels.

Reverb and Gate: A programmable gate controls the envelope of the reverb sound, creating a wide range of unique and unusual sonic possibilities.

Pitch Change: Varies the pitch of an input signal over a two-octave range. Both fine (one cent) and coarse (one semitone) adjustments enable chorus and harmonizer effects. Harmonies can be played by keyboard or sequencer through MIDI control.

Freeze: Records, up to two seconds of sound for complete or partial playback at any pitch. Playback can be triggered from the front panel, a MIDI instrument, a footswitch, or by any input signal.

Compressor: An extremely effective yet subtle way to smooth out the dynamics of a sound.

ADR/Noise Gate: This program uses an envelope or gate to control the volume contour of any input signal, for gating sounds or creating reverse gate effects. The program can be triggered by the incoming signal or by footswitch.

Parametric EQ: Programmable 2-band parametric equalization plus variable Hi-pass/Low-pass filters.

Remote Control Unit (Optional): Permits instant recall of preset effects from any location.

SPX90II \$895.00



REV5

REV5 Digital Reverberator

- A premier professional-quality digital stereo reverberator/effects unit
- Increased sampling frequency, delay time
- Extensive preset program selection; and expanded control over effect parameters
- Improved sound quality with a 20Hz to 20kHz frequency response
- Comprehensive, programmable digital 3-band parametric EQ system in addition to a master 3-band parametric EQ section
- Studio-quality modulation effects, such as stereo flange, stereo phasing, and tremolo
- Independent control of delay, reverb, and diffusion parameters in reverb programs
- Separate 1st reflection right-, left-, and center-delay/level parameters
- Secondary reverb time, delay, and level controls enable production of a second layer of reverberation to augment the primary reverberation

- Space modulation parameter creates periodic variation in reverberation program to recreate actual interference between reflections in a live acoustic environment
- Custom reverberation programs designed by professional sound engineers to enhance the sounds of specific sources
- Reverb and Gate programs, a pan program, and several pitch change programs (with MIDI control) for stunning harmonizer and chorus effects
- 30 main effect programs, and 60 user-programmable memory locations
- 9 unique combination programs, such as chorus/reverb/gate, for professional multi-effect processing

REV5 \$1995.00

YAMAHA INTERNATIONAL CORP.

Compressor Limiter/Graphic Equalizer



GC2020B

GC2020B Dual Channel Compressor Limiter

- Link switch permits operation as two independent channels or in linked mode to prevent loss of stereo perspective
- Independent controls for each channel
- Range of compression ratios are from 1:1 (no compression) to ∞:1
- Attack time from .2 to 20ms
- Release time from 50ms to 2 seconds
- Bypass switch with LED indicator
- Five segment LED display indicates the amount of gain reduction in dB on each channel
- Each channel has a variable expander gate (also called a noise gate) permitting noise during no-signal portions of the program to be eliminated
- Detector in and out jacks that allow the compressor to control or be controlled by external audio signals

The GC2020B is a high-performance two channel compressor limiter noise-gate. With a full 20Hz to 20kHz frequency range, the GC2020B handles a wide range of limiting, compression and noise gate functions.

Extremely compact, the GC2020B fits into one EIA rack space. Total harmonic distortion is less than .03% and the noise level is -87dB. Input and output connections are parallel 1/4" phone and RCA type jacks.



GQ1031

GQ1031 1/3 Octave Graphic Equalizer

The GQ1031 is a moderately priced, single channel, 1/3 octave band graphic equalizer occupying one standard EIA rack space. The GQ1031 features 31 bands of equalization each of which may be cut or boosted by as much as 12dB. An input level control permits level matching with a wide range of audio sources and a peak LED lights at +17dB to indicate that the equalizers +20dB maximum output level is being approached. The front panel EQ In/Out switch by-passes the equalizer circuitry, connecting the input directly to the output.

A standard 1/4" phone jack and an RCA pin jack are provided for both inputs and outputs facilitating connection to a wide range of audio equipment. The unbalanced input presents a load impedance of 22K ohms while the output has a source impedance of 600 ohms.

Possible applications include room equalization, feedback control, stage monitor equalization and use as a creative tool for recording or live performance.

GQ2020 SPECIFICATIONS

CHANNEL	2-channel
MODE	STEREO Mode/DUAL MONO Mode
FREQUENCY RESPONSE	+2dB, -2dB, 20Hz ~ 20kHz
TOTAL HARMONIC DISTORTION	Less than 0.03%
NOISE LEVEL	Less than -87 dB (IHF-A)
INPUT	Unbalanced (RCA pin jack, 1/4" mono phone jack)
INPUT IMPEDANCE	30k ohms
NOMINAL INPUT LEVEL	-10dB
MAXIMUM INPUT LEVEL	+32dB (INPUT Level Control at minimum)
OUTPUT	Unbalanced (RCA pin jack, 1/4" mono phone jack)
OUTPUT IMPEDANCE	600 ohms
NOMINAL OUTPUT LEVEL	-10dB
MAXIMUM OUTPUT LEVEL	+20dB
DETECTOR INPUT	Unbalanced RCA pin jack
INPUT IMPEDANCE	30k ohms
MAXIMUM INPUT LEVEL	+20dB
DETECTOR OUTPUT	Unbalanced RCA pin jack
OUTPUT IMPEDANCE	600 ohms
MAXIMUM OUTPUT LEVEL	+20dB
RATIO CONTROL	1 : 1 ~ ∞ : 1
MAXIMUM LIMITING	32dB
GAIN REDUCTION INDICATOR	5-segment LED
COMPRESSOR/LIMITER THRESHOLD LEVEL CONTROL	
INPUT CONTROL at 0 position	+32dB ~ +5dB
INPUT CONTROL at Center position	+20dB ~ -20dB
INPUT CONTROL at 10 position	+5dB ~ -35dB
EXPAND NOISE GATE THRESHOLD LEVEL CONTROL	
INPUT CONTROL at 0 position	0dB ~ -40dB
INPUT CONTROL at Center position	-25dB ~ -65dB
INPUT CONTROL at 10 position	-40dB ~ -80dB
ATTACK TIME CONTROL	0.2msec ~ 20msec
RELEASE TIME CONTROL	50msec ~ 2 sec
POWER REQUIREMENTS	
U.S. & Canadian models	120V, 60Hz
General model	110-120/220-240, 50/60Hz
DIMENSIONS (W x H x D)	480mm x 44mm x 235mm (18-7/8" x 1-3/4" x 9-1/4")
WEIGHT	3 kg (6.6 lbs.)

GC2020B.....\$395.00

GQ1031 SPECIFICATIONS

FREQUENCY RESPONSE	+1dB, -1dB, 20Hz ~ 20kHz @ -10dB (all Equalization Controls at flat)
TOTAL HARMONIC DISTORTION	Less than 0.005% @ 1kHz, 0dB (all Equalization Controls at flat)
NOISE LEVEL	Less than -100dB @ IHF-A, 0dB (all Equalization Controls at flat)
GAIN	0dB (INPUT LEVEL Control at maximum and all Equalization Controls at flat)
MAXIMUM OUTPUT LEVEL	More than 20dB @ 1kHz, 0.01% THD
INPUT IMPEDANCE	22k ohms
OUTPUT IMPEDANCE	600 ohms
EQUALIZATION CONTROL	
Center Frequencies	31 band (1/3 octave) 20, 25, 31.5, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1k, 1.25k, 1.6k, 2k, 2.5k, 3.15k, 4k, 5k, 6.3k, 8k, 10k, 12.5k, 16k, 20kHz
Range of Boost/Cut	0 ~ +12dB / 0 ~ -12dB
PEAK INDICATOR	Turn ON when the output level reaches 3dB below 20dB clipping level.
POWER REQUIREMENTS	
U.S. & Canadian models	120V, 60Hz
POWER CONSUMPTION	
U.S. & Canadian models	10W
DIMENSIONS (W x H x D)	480mm x 44mm x 222mm (18-7/8" x 1-3/4" x 8-3/4")
WEIGHT	2.9 kg (6.4 lbs.)

GQ1031.....\$345.00

YAMAHA INTERNATIONAL CORP.

Audio Monitors

NS-10M Monitor Speakers

- Sealed enclosure promotes solid bass
- High efficiency and power-handling capacity
- Low distortion, silky-smooth response
- Professional left-right symmetrical design

Specifications

Type: 2-way, bookshelf acoustic suspension
Music Input Power: 100W
Nominal Input Power: 50W
Sound Pressure Level: 90dB/W/m
Frequency Response: 60-20,000Hz
Nominal Impedance: 8 ohms
Woofer: 7" white cone
Tweeter: 1 3/8" soft dome
Crossover Frequency: 2kHz (12dB/oct)
Dimensions: 15" H x 8 1/2" W x 7 7/8" D
Weight: 13 lbs. 3 oz.
Finish: Real wood, black

NS-10Mea./\$212.50

NS-10M

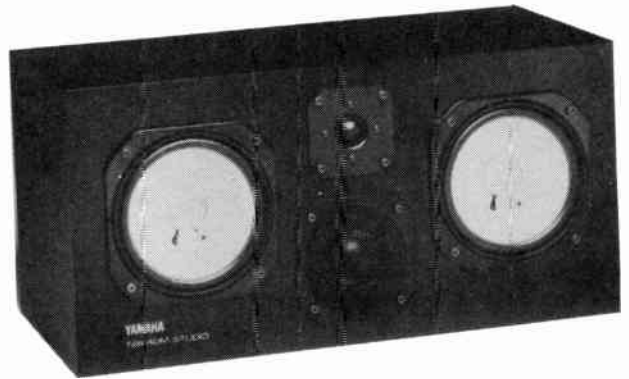


NS-40M Studio Monitor Speakers

The NS-40M Studio is a 3-way acoustic-suspension bookshelf system with a frequency range of 50 to 20kHz, and has a rated power capacity of 100W of program material. Sensitivity is 90dB SPL at 1W, at 1 meter, on axis. The crossover frequencies for the low-loss, low-distortion crossover are 1.2kHz (12dB/octave), 5kHz (mid: 12dB/octave and tweeter: 18dB/octave).

The woofers are each 7" long excursion drivers, the mid-range is a 2.4" soft-dome driver, and the tweeter is a 1.2" soft-dome tweeter. The NS40M Studio is in a compact, black finished, real wood cabinet, and is 23 1/2" x 11.5" x 12" and weighs 7 3/4 lbs. Connection is by heavy-duty binding post cable connectors.

NS-40M Studio\$465.00



NS-40M Studio

S10X/S20X Compact Speaker Systems

- Program input capacity of 75W RMS at 8 ohms and maximum handling capacity of 150W (S10X)
- Program input capacity of 150W RMS at 8 ohms and maximum handling capacity of 300W (S20X)
- Audio visual and video control room monitoring
- Conference room and tele-conferencing installations
- Distributed sound systems
- Low-level foldback systems
- Close-in mike stand mounted monitoring

The S10X and S20X are ultra-compact speaker systems suitable for a variety of uses. Both speakers are of rugged, injection molded construction. The S10X contains one 3 7/8" carbon fiber cone transducer while the slightly larger S20X contains two. Input connections include both push terminals and 1/4" jacks. The two 1/4" jacks on the S20X are mounted to plates that cover holes designed to accommodate one male and one female XLR connector for those applications that require locking speaker connections. The S10X is magnetically shielded, making it especially useful in video applications.

Specifications

Frequency Range: 65Hz to 20kHz
Nominal Impedance: 6 ohms
Dimensions: 6 1/8" H x 9 1/2" W x 6 1/2" D (S10X)
 7 1/2" H x 11 5/8" W x 7 3/4" D (S20X)
Weight: 6.2 lbs. (S10X), 10.1 lbs. (S20X)

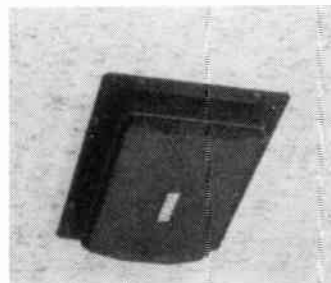
S10X\$145.00
S20X210.00
BAS10 Free-angle clamp40.00
BCS10 Ceiling bracket9.00
BMS10S Mike stand adaptor19.00
BWS10 Wall-mount bracket27.00



S10X



S20X



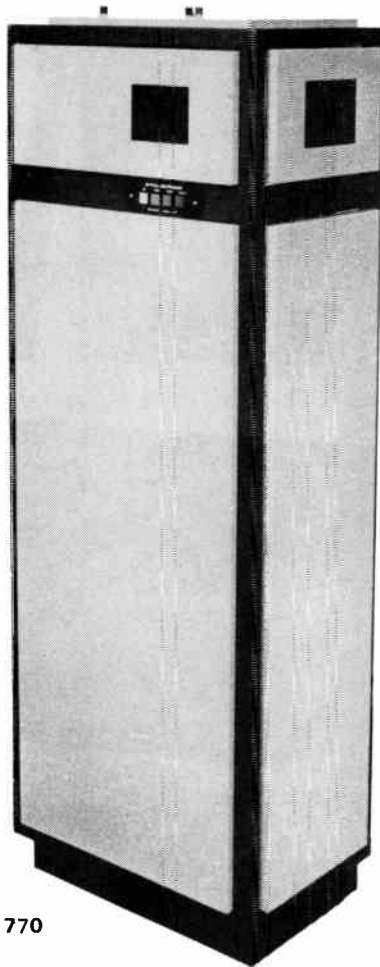
BCS-10 Ceiling Bracket



BWS-10 Wall Mounting Bracket

THE ZEI-MARK CORP.

Broadcast Large Image Optical Multiplexer



770

770 Optical Multiplexer

- Color or monochrome
- Instant image transfer
- Self-dousing
- Audio with optical switching
- Remote control option
- Precision optical assembly
- Rigid construction

The 770 is designed to meet full broadcast requirements for a large image optical multiplexer. The optical system will accept up to three film inputs, usually one slide projector and two motion picture projectors. Optical switching between film inputs is dynamic at < 100Ms and occurs as a vertical wipe off two DC motor driven first surfaced mirrors. The DC motors provide a positive bi-directional drive which is DC braked for instant stopping without any bounce. The mirror arrangement provides a self-dousing system which permits only the selected input to reach the TV camera, even if the remaining projectors are "on". The 770 is primarily designed to work with broadcast TV cameras which include an integral field lens, but can be equipped with a field lens when applied for use with TV cameras with an objective "taking" lens.

The top cover includes dome lamps which indicate the mode of multiplexer at all times. Local controls are illuminated in colors to match the dome lamps and include power on, select Film 1, Slide or Film 2. Remote control of the multiplexer mode selection is available as an option. Follow lighting is used throughout to indicate the multiplexer mode at all control points. Operation of the multiplexer and remote control is entirely DC derived from an integral DC power supply.

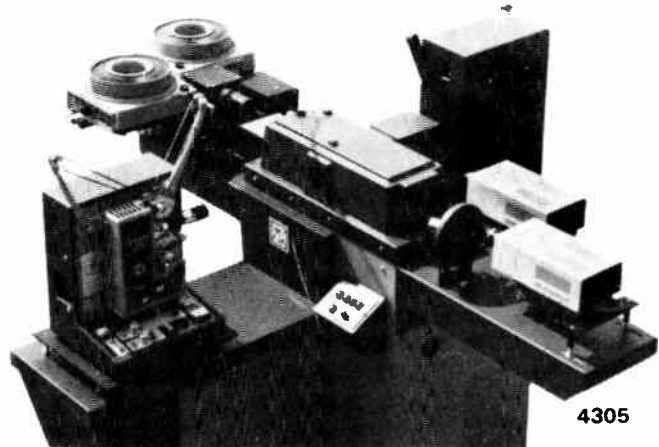
Specifications

- Number of Mirrors:** Two
- Image Size:** Up to 3.38 x 4.50"
- Mirror Action:** Vertical wipe
- Mirror Height:** 3.25"
- Actuation:** Positive bi-directional DC motor drive
- Image Transfer Time:** < 100Ms
- Optical Centerline:** 48" ± 1/2"
- Mirror Surface:** First surfaced aluminum silicon monoxide
- Film Inputs:** Three
- Outputs:** One
- Dimensions:** 53"H x 19"L x 13"W
- Weight:** 150 lbs., uncrated. 200 lbs., crated
- Color:** Two-tone gray
- Finish:** Baked epoxy paint
- Power Requirements:** 115VAC 50/60Hz or 230VAC 50/60Hz
- Power Consumption:** 100W

- 770** Optical multiplexer, large image. 3 inputs and one output. Illuminated dome lamps and local control switches. Select Film 1, Slide or Film 2. Includes level. No field lens **\$3995.00**
- 770-L** Same as above, except left-hand model. Use with left hand film projectors **4295.00**
- RC770** Remote control for 770 series select Film 1, Slide or Film 2. 1.75 x 19" rackmounted panel **250.00**
- C3** Remote control cable for 770 series multiplexer. Add cable length as dash number. (e.g., C3-50) **ft/1.50**
- FL770** Field lens assembly. Mounts to camera end of 770 multiplexer. Includes 6" diameter field lens, mount, mounting brackets, cover and guides for FL770-T and FL770-SM **1295.00**
- FL770-T** Alignment target, used to size and focus images. Fits FL770 assembly **.60.00**
- FL770-SM** Slide mount for Eastman Kodak cross step gray scale slide. Fits FL770 assembly **175.00**
- KTS-1** Eastman Kodak Inconel cross step gray scale slide with instructions. Used to calibrate TV camera **795.00**
- 732A** Pedestal, styled to match 770 multiplexer accommodates slide projectors with max. 10" optical centerline (e.g., RCA TP7 and SS-32 series) **795.00**

THE ZEI-MARK CORP.

Multiplexers



4305

4305 Optical Multiplexer

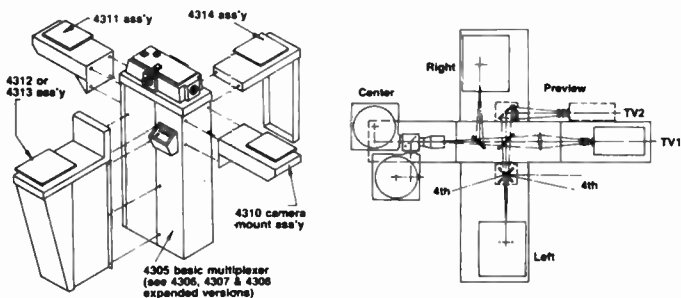
The 4305 consists of a pedestal mounted optical transfer assembly designed to the industry standard 48" optical centerline. The basic unit includes local control, neutral density filter mounts for each input, three duplex AC outlets (6) for equipment, attached 3-wire AC power cable and complete set-up and operating instructions. All options are at added cost.

TV camera and center input projector supports as well as projector side mounts include all necessary adjustable mounting hardware for item to be used. Where remote control is specified, please indicate cable footage required. Projectors include the necessary projection lenses. Remote control is 24VDC operation.

The Preview option, 2nd TV camera output provides a back-up TV camera in the event of prime output camera failure and to minimize "on-air" errors, e.g., wrong slide, improper start or restart of motion picture film, etc., since Preview enables the operator to verify subsequent inputs while "on-air" from the second TV camera which may be a relatively inexpensive monochrome camera.

Since the 4305 is in itself a fully functional and operational system, the unit may be directly applied for use with floor mounted TV cameras and pedestal mounted film projectors.

Where floor mounted TV cameras have a built-in field lens designed to suit the internal camera optical system, the 4305 field lens can simply be removed to permit direct projection through the 4305 optical transfer and onto the TV camera field lens.



Notes:

1. For the 4307 and 4308, 4th Input source must be reversible format film, e.g., 2 x 2 slides, 35mm filmstrip, and "live" Tel-Op input.
2. For 1" format Vidicon TV cameras, use 50mm "C" mount lens. For 2 2/3" format Vidicon TV cameras, use 35mm lens.
3. At time of order, please specify TV camera and projector models to be used at each input station.
4. For TV cameras, which due to their design require special lenses (other than 35mm or 50mm focal lengths), Zei-Mark can supply special field lenses to work with such TV camera at added cost (usually nominal).

Series 4300 Optical Multiplexer and Accessories

4305	Optical multiplexer, 3 inputs and 1 output. Custom model. Expandable to add Preview and 4 th options. Features custom molded top cover, illuminated dome lamps w/matching colored switches at local control console	\$1995.00
4306	Custom optical multiplexer, 3 inputs and 2 outputs. Expanded model 4305. 2 nd output Preview	2795.00
4307	Custom optical multiplexer, 4 inputs and 1 output. Expanded model 4305. See notes	2995.00
4308	Custom optical multiplexer, 4 inputs and 2 outputs. Expanded model 4305, combination model 4306 and 4307	3495.00

TV Camera and Projector Supports

4310	TV camera support and adjustable mount. Fits all models . . .	\$215.00
4310-SP	Same as 4310, but for TV cameras in excess of 30 lbs.	250.00
4311	Center input projector support	150.00
4312	Custom fully skirted side mount for Left and Right film projectors. Fits all models	295.00
4313	Custom side mount for Left and Right film projectors, less skirts. Fits all models	250.00

Projector Pedestal

KG	Custom pedestal for film projectors. Supplied to accommodate optical centerline heights ranging from 7 to 11 1/2". Equipped with adjustable mounting plate and AC outlets with attached power cable.	\$350.00
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Multiplexer Remote Controls

RC4305	4305 remote control Select Left, Center or Right input. Console styled 19" rackmount for either flat or vertical mounting. 3 1/2" H. Illuminated to match 4305 dome lamp colors	275.00
RC4306	4306 remote control. Same as RC4305 except includes Preview select switches	275.00
RC4307	4307 remote control. Same as RC4305 except includes 4 th Input mode select switches.	300.00
RC4308	4308 remote control. Same as RC4305 except includes both Preview and 4 th Input switches.	300.00

Projector RC Mounting Panels

PRC-3	3 1/2" x 19" rack panel for mounting up to three RC modules listed below	\$90.00
PRC-4	3 1/2" x 19" rack panel for mounting four projector remote controls listed below. Custom designed to suit system requirements	300.00

Projector Remote Control Modules

RC-2	Slide projector remote control. Works with Ektagraphic or Ekt. Series III models. Provides lamp on/off, forward and reverse.	\$140.00
RC-2LDX	LD-4250 remote control. Includes change, rate, individual E-2 controls for forward and reverse and "hold" to repeat slides. LEDs indicate "on" projector	200.00
RC-8EL	ELMO GS-1200 TC Remote Control. Provides fwd/lamp, rev/lamp and stop	200.00
RC-16E	Eiki NT-0 Series remote control provides forward, forward w/ lamp, reverse, reverse w/lamp and stop	200.00
RC-16EL	ELMO model 16FTC remote control. Projector must be factory supplied to provide for remote control functions, forward, lamp, reverse and stop.	200.00
RC-16S	Remote control for Telex 2230 16mm TV projector. Provides forward, lamp and stop.	200.00
RC-16	Remote control for 16mm projectors not listed above. Can accommodate up to 5 switches (momentary and/or p-p) Specify projector	250.00

Automatic Light Control Remote Modules

RC-ND510	Remote control for ND10 auto light control. AGC and manual control	\$100.00
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Remote Control Cables

C1	Multiplexer remote control cable	ft./\$1.00
C2	Projector remote control cable.	ft./1.00

ND Filters

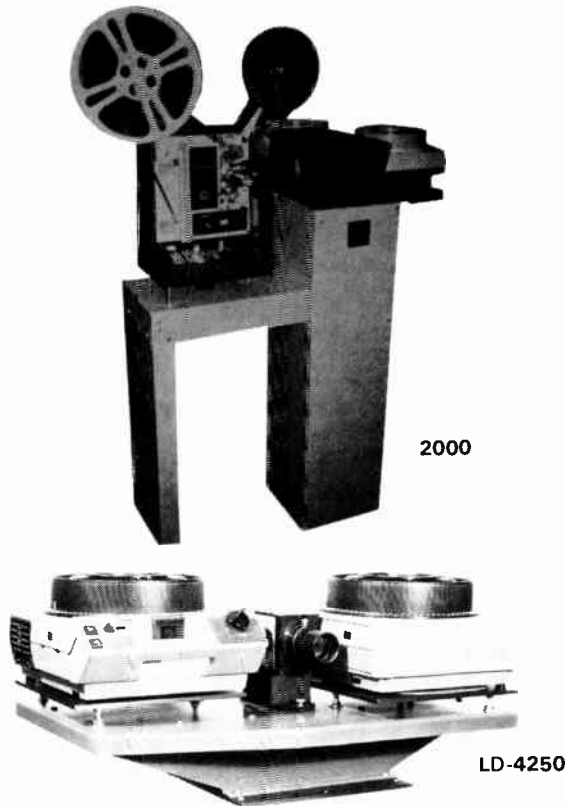
FK-6	Filter kit. Set of six (6) 3" x 3" Kodak gelatin ND filters w/values 0.1, 0.2, 0.5, 1.0, 2.0 and 3.0. Up to six may be ordered in any combination. Filter mounts and glass supplied as standard on all 4300 and 2000 series multiplexers	\$110.00
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Miscellaneous

A43	Audio-follow control PC board assy. For use with 4300 series multiplexers. Audio switches according to the multiplexer mode. Accepts up to 3 wires from 3 separate sources to a 3 wire output. Operates automatically from mult. control electronics	\$140.00
SL-1	Slot-Lok quick disconnect. One TV camera adaptor and one baseplate	175.00
SL-2	Slot-Lok quick disconnect. One TV camera adaptor and two baseplates. Order when studio camera is used on the film chain	235.00
SLA	Slot-Lok TV camera adaptor only.	125.00
SLB	Slot-Lok baseplate only.	70.00

THE ZEI-MARK CORP.

Slide Projectors/Multiplexer



2000 Optical Multiplexer and Accessories

The 2000 is a mobile, free-standing and self-contained system having a three input and one output capability for either color or monochrome systems. Two inputs are designed for Eastman Kodak Ektagraphic or Carousel 2 x 2 slide projectors and the third input is open for the addition of either 16mm or Super 8mm film projectors.

The optical system consists of beam-splitting mirrors and a large field lens onto which the projected images are focused at the final 3" x 4" image size which the TV camera views, free of screen grain or texture and with high contrast ratios.

- 2000** Optical multiplexer, 3 inputs and 1 output. Uses beam-splitting mirrors. Includes pedestal, optical assembly and provisions for mounting two Kodak slide projectors plus AC outlet and power cable. **\$1050.00**
- 2000-3P** Same as 2000, but includes pellicle beam-splitters in lieu of glass. One film and two slide projectors. **\$1575.00**
- 2000-2E** Same as 2000-3P but with only one pellicle for use with two Kodak slide projectors only. **\$1275.00**
- 2000-2EP** Same as 2000-3P but with only one pellicle for use with one film and one Kodak slide projector. **\$1395.00**
- ZM-20** Bench assembly for film input to 2000 series multiplexer. Includes adjustable projector mounting plate and leveling legs. **\$250.00**
- ZM-20C** Bench assembly for TV camera. Includes adjustable mounting plate and leveling legs. **\$250.00**
- DC-24** Power Supply, 24VDC. Required for RC-16 and RC-2 projector remote controls when used with all 2000 series multiplexers. **\$125.00**
- LD4** Lap-dissolve unit for two Kodak Ektagraphic or Ektagraphic Series III slide projectors. Variable dissolve rate from quick-cut to 10 secs. Includes filament GLO circuits, built-in power supply, tone generator/responder with complete program record and playback capability. Microprocessor. Order RC-2LDX or DSPI-2LDX remote control. Order C2 cable separately. **\$595.00**

LD4250 Dual Drum Slide Projector

The LD4250 includes two Eastman Kodak Ektagraphic Series III Model E slide projectors which feature improved optics and quick lamp change module which pulls out from the rear. Both projectors load identically and slide orientation is the same as for audio visual front projection to facilitate set-up of slide programs to be transferred to video tape or "aired" off the film chain. Projectors face into an optical assembly which includes a first surfaced mirror, pellicle beam-splitter and projection lens.

The mechanical mounting plate assembly includes the LD4 lap-dissolve which utilizes CMoss electronics and includes a microprocessor to provide a programmable dissolve system. The LD4 is a variable dissolve which can be adjusted from a quick-cut up to 10 secs. The unit includes a tone control generator and responder network which permits both the recording and playback of programs using the LD4 lap-dissolve. A unique feature of the LD4 provides playback with varied dissolve rates according to how the program was recorded. When the alternate cycle is started, the position of the rate control is recorded on tape. During playback, whatever dissolve rate was set at that particular alternate cycle will replay exactly as recorded.

Each projector is mounted to an adjustable base-plate to facilitate the set-up and alignment to achieve the desired superimposition at the field lens.

The LD4 is provided with full remote control capabilities.

- LD4250** **\$2995.00**
- E31-20** Ektagraphic III Model E slide projector with horizontal registration. Includes special mounting plate for mounting to 2000 series multiplexer. No lens **\$475.00**
- E31-43** Ektagraphic III Model E slide projector with horizontal slide registration. Modified for Telecine use with 4300 series multiplexers. Includes mounting plate and LK-7A lens support. No lens **\$475.00**
- UN1000** Uniplexer, 1 input and 1 output, for 16mm or Super 8mm projectors. Includes optical assembly main chassis, adjustable TV camera mount, "C" mount lens extender and stand-offs. **\$575.00**

Lens Selection Chart

Projector Mfr.	Model	Multiplexer 4300	Series 2000	Uniplexer UN-1000
Singer	2230N	LG-4A	LG-2A	LG-65A
Eiki	ENT-2T	LE-4	LE-2	LE-65
ELMO	16CL-TC	LE-4L	LE-2L	LE-63L
ELMO	GS-1200TC	LE-63L8	LE-38L8	LE-38L8
Eastman	Model III E	LK-7A	LK-125	
Eastman	B2/AR	LK-7A	LK-125	

Lens Prices

Part No.	Price	Part No.	Price
LG-2A	\$160.00	LE-38L8	\$225.00
LE-2	160.00	LK-200	185.00
LE-2L	185.00	LG-65A	225.00
LG-4A	225.00	LE-65	225.00
LE-4	225.00	LE-63L	225.00
LE-4L	225.00	LE-63L8	225.00
LK-7A	125.00	LK-125	100.00
LE-38L	225.00		

Lenses can be ordered for projectors not shown, but must be quoted separately.

TELEPHONE DIRECTORY

Aarmor Case
2100 Lapo Rd.
Lake Odessa MI 48849(616) 374-5651

Aatronics, Inc.
5903 Franklin Rd.
Boise ID 83709(208) 343-0900

Abbot & Co.
1611 Cascade Dr.
Marion OH 43302(614) 382-8212

A.B. Co.
209 South Oregon St.
El Paso TX 79901(915) 532-2411

Abekas Video Systems, Inc.
101 Galveston Drive
Redwood City CA 94063(415) 369-5111

Accent Audio-Video
13619 Inwood Rd. Suite 380
Dallas TX 75244(214) 458-0501

ACCOM, Inc.
2 Blue Jay Way
Woodside CA 94062(415) 851-0755

Accurate Sound Corp.
3515 Edison Way
Menlo Park CA 94025(415) 365-2843

Accu-Weather, Inc.
619 West College Ave.
State College PA 16801(814) 237-0309

A-Com., Inc.
14004 K Willard Rd.
Chantilly VA 22021(703) 620-2737

Acous-tech
8254 Ames Way
Arvada CO 80003(303) 429-4912

Acoustic Systems
415 East St. Elmo Rd.
Austin TX 78745(512) 444-1961

Acoustilog, Inc.
19 Mercer Street
New York NY 10013(212) 925-1365

Acrodyne Industries, Inc.
516 Township Line Road
Blue Bell PA 19422(215) 542-7000

Acts Audio Systems
70 West Illiana Ave.
Orlando FL 32806(305) 423-0338

ADA Signal Processors, Inc.
7303D Edgewater Drive
Oakland CA 94621(415) 632-1323

Qu
Imaginative Marketing Group (IMG)
44 Hymus Blvd.
Dorval H9P 1J6 Canada(514) 685-2046
Klondyke Trading Co.
Unit 3B, 8 Cowley Rd.
Nuffield I.E., Dorset BH17 7UJ En-
gland(0202) 670299
Sound Service, GmbH
Fasanenstrasse 45
1000 Berlin 15 West Germany
.....(030)8-8430-346

Adcom
11 Elkins Road
East Brunswick NJ 08816(201) 390-1130

ADC Telecommunications, Inc.
4900 West 78th Street
Minneapolis MN 55435(612) 835-6800

Adelphon, Inc.
100 Covello Ave.
Ft. Worth TX 76111(817) 335-8666

ADM Technology, Inc.
1626 E. Big Beaver Rd.
Troy MI 48084(313) 524-2100

Adray's
1701 West Chapman Ave.
Orange CA 92668(714) 633-2074

Adrienne Electronics Corp.
11994 Marjon Dr.
Nevada City CA 95959(916) 265-8288

AD Tech, Inc.
701 S. Lincoln Ave.
Park Ridge IL 60068(312) 692-7320

Advanced Designs
924 West 17th St.
Bloomington IN 47401(812) 333-1922

Advanced Media Service
30591 Schoolcraft
Livonia MI 48150(313) 522-2385

Advanced Micro-Dynamics, Inc.
7 Lomar Dr.
Pepperell MA 01463(617) 433-8877

Advanced Music Systems
5724 W. 3rd St., Ste. 303
Los Angeles CA 90036(213) 469-3500

Advanced Video Communications
49 S. Washington St.
Hinsdale IL 60521(312) 323-7664

Advent Communications Ltd.
Little Britain House, Alma Rd.
Chesham Bucks HP5 3HE England ... (494)
774-400

AdVentures International
1540 Market St. Ste. 440
San Francisco CA 94102(415) 864-2244

Adwar Video Corp.
2370 Mereck Rd.
Bellmore NY 11710(516) 785-1200

Adwell Audio Visual Co., Inc.
158 Main, P.O. Box 67
Hempstead L.I. NY 11551(212) 343-4462

AEG Bayly, Inc.
167 Hunt St.
Ajax On L1S 1P6 Canada ... (416) 683-8200

Aerospatiale Helicopter Corp.
2701 Forum Dr.
Grand Prairie TX 75053(214) 641-3710

A. F. Associates, Inc.
100 Stonehurst Court
Northvale NJ 07647(201) 767-1000

A & G Associates
433 Fairview Ave. N.
Seattle WA 98109(206) 621-9222

Agfa-Gevaert, Inc.
100 Challenger Rd.
Ridgefield Park NJ 07660(201) 440-2500

CA
Agfa-Gevaert, Inc./Pacific Region
1801 Century Park East
Los Angeles 90067(213) 552-9622

CA
Agfa-Gevaert, Inc./Pacific Region
601 Gateway Blvd., Suite 500
South San Francisco 94080 ... (415) 589-0700

GA
Agfa-Gevaert, Inc./Atlantic Region
380 Interstate North, Suite 200
Atlanta 30339(404) 955-4326

IL
Agfa-Gevaert, Inc./Central Region
2803 Butterfield Road, Suite 200
Oak Brook 60521(312) 242-1951

NJ
Agfa-Gevaert, Inc./Atlantic Region
100 Challenger Road
Ridgefield Park 07660(201) 440-2662

TX
Agfa-Gevaert, Inc./Central Region
4251 West Highway 114
Irving 75063(214) 258-1441

Aircraft Digital Music Library
77 North Washington
Boston MA 02114(617) 367-0510

AKAI Professional
1316 E. Lancaster
Fort Worth TX 76102(817) 336-5114

AKG Acoustics, Inc.
77 Selleck St.
Stamford CT 06902(203) 348-2121

Akron Music, Inc.
270 S. Main Street
Akron OH 44308(216) 376-6189

Alamar Electronics USA, Inc.
36 Railway Avenue
Campbell CA 95008(408) 866-9373

AK
Midwest Communications
4632 Business Park Blvd.
Anchorage 99503(907) 563-2784

AL
Midwest Communications
3035 13th Ave. South
Birmingham 35205(302) 324-8585

AZ
B&B Video
1806 W. Grant Rd., Ste. 104
Tucson 85745(602) 623-8201

CA
Broadcast Marketing Associates
2211-C Fortune Dr.
San Jose 95131(408) 433-5544

CA
Image Electronics
18430 Ward St.
Fountain Valley 92708(213) 641-7733

CA
Midwest Communications
324 Martin Ave.
Santa Clara 95050(408) 988-2968

CA
Midwest Communications
2514 Ontario St.
Burbank 91504(818) 954-0150

CA
Midwest Communications
5715 Kearny Villa Rd.
San Diego 92123(619) 541-2770

CA
Midwest Communications
741 E. Ball Rd., Ste. 100
Anaheim 92805(714) 956-4211

CO
Midwest Communications
7334 South Alton Way, Ste. A
Englewood 80112(303) 773-9499

FL
Midwest Communications
8875 N.W. 23rd St.
Miami 33172(305) 592-5355

FL
Midwest Communications
6302 Benjamin Rd., Ste. 403
Tampa 33634(813) 885-9308

FL
Midwest Communications
3305 Bartlett Blvd.
Orlando 32811(305) 841-0602

FL
Midwest Communications
5450 NW 33rd Ave., Ste. 110
Ft. Lauderdale 91054(305) 735-8333

FL
Midwest Communications
8917 Western Way, Ste. 120
Jacksonville 32216(904) 363-0001

FL
Midwest Communications
802 Rio Vista Dr.
Pensacola Beach 32561 ... (904) 934-1122

GA
Midwest Communications
522 Armour Circle
Atlanta 30324(404) 875-3753

HI
Midwest Communications
1020 Auahi St., Bldg. 7, Bay 3A
Honolulu 96814

ALAMAR ELECTRONICS—ALLEN & HEATH BRENELL

- L** Roscor Corp.
1061 Feehanville Dr.
Mount Prospect 60056(312) 539-7700
- N** Midwest Communications
4105 Vincennes Rd.
Indianapolis 46268(317) 872-2327
- N** Midwest Communications
2004 Ironwood Circle, Ste. F
South Bend 46635(219) 277-6710
- KS** Midwest Communications
14006 West 107th St.
Shawnee Mission 66215(913) 469-6810
- CY** Midwest Communications
One Spertl Dr.
Edgewood 41017(606) 331-8990
- CY** Midwest Communications
1804 Cargo Ct.
Louisville 40299(502) 491-2888
- CY** Midwest Communications
2220 Nicholasville Rd., Ste. 5
Lexington 40503(606) 277-4994
- MD** Midwest Communications
4720 D Boston Way
Lanham 20706(301) 577-5409
- MD** Midwest Communications
3701 Old Court Rd., Ste. 14
Baltimore 21208(301) 484-0131
- MI** Midwest Communications
21683 Melrose Ave.
Southfield 48075(313) 350-3038
- MI** Midwest Communications
7271 Ryan Court, S.W.
Hudsonville 49426(616) 669-2807
- WO** Lines Video Systems
219 S. Jefferson
Springfield 65806(417) 862-5533
- WO** Midwest Communications
11642 Lilburn Park Rd.
St. Louis 63146(314) 569-2240
- NC** Midwest Communications
2848 I 85 South, Ste. E
Charlotte 28208(704) 399-6336
- NC** Midwest Communications
3033-2 Stonybrook Dr.
Raleigh 37604(919) 850-9811
- NC** Technical Video Systems
215 N. Broad St.
Winston-Salem 27102(919) 748-0916
- NM** DYMA Engineering
367 Main S. E.
Los Lunas 87031(505) 865-6700
- DH** Midwest Communications
843 E. Congress Park Dr.
Centerville 45459(513) 435-3246
- DH** Midwest Communications
631 North Reynolds Rd.
Toledo 46315(419) 536-0514
- DH** Midwest Communications
7500 Wall St.
Cleveland 44125(216) 447-9745
- DH** Midwest Communications
6630 Busch Blvd.
Columbus 43229(614) 846-5552
- Dn** Video Design Systems, Inc.
1625 Trinity Dr.
Mississauga L5T 1K4 Canada(416) 677-5272
- DR** Midwest Communications
9705 S.W. Sunshine Ct., Ste. 1000
Beaverton 97005(503) 644-7149
- PA** Lerro Electrical
3125 Broad St.
Philadelphia 19121(215) 223-8200
- PA** Midwest Communications
535 Rochester Rd.
Pittsburgh 15237(412) 364-6780
- SC** Midwest Communications
200 Woodoak Dr.
Anderson 29621(803) 226-9259
- TN** Midwest Communications
740 Freeland Station Rd.
Nashville 37228(615) 225-2801
- TN** Midwest Communications
5634 Clinton Hwy.
Knoxville 37912(615) 687-9515
- TN** Midwest Communications
7900 Hickory Hollow Lane
Chattanooga 37421(615) 899-9823
- TN** Midwest Communications
17 West Pontotoc, Ste. 212
Memphis 38103(901) 526-8831
- B-1234**
- TX** Midwest Communications
371 Oakview Dr.
Lewisville 75067(817) 430-3838
- TX** Video Unlimited
10727 Plano Rd., Ste. 100
Dallas 75238(214) 340-5986
- UT** Midwest Communications
7127 S. 400 W., # 8
Midvale 84047
- UT** RIA Corp.
50 E. Maivern Ave.
Salt Lake City 84115(801) 486-8822
- VA** Midwest Communications
2730 Ayliff Rd.
Norfolk 23513(804) 853-2600
- VA** Midwest Communications
4129 Q. Townhouse Rd.
Richmond 23228(804) 262-5788
- VA** Midwest Communications
2209-1 Montauk Rd.
Roanoke 24017(703) 265-0108
- WA** Midwest Communications
1331 118th Ave., S.E.
Bellevue 98005(206) 455-2331
- WV** Midwest Communications
1020 Grosscroup Ave.
Dunbar 25064(304) 768-1252
- Alden Electronics**
40 Washington St.
Westboro MA 01581(617) 366-8851
- Alexander Batteries**
1151 South Garfield Place
Mason City IA 50401(515) 423-8955
- AI** Allcan Electronics
12618 124th. St.
Edmonton T5L 0N7 Canada(403) 451-2355
- B.** Traeger Distributors, Ltd.
#3 7550 River Rd.
Delta V4G 2C8 Canada(604) 946-0818
- CA** Alexander Battery Co. West
P.O. Box 28880
San Diego 92128(619) 480-4806
- CO** Aurora Marketing Co.
2020 S. Onelda St. #204
Denver 80233(303) 758-3051
- FL** Alexander Manufacturing Co.-G.S.A.
P.O. Box 10225
Pompano Beach 33601(800) 624-5734
- GA** Alexander Battery Co. S.E.
P.O. Box 870607
Morrow 30287-0607(404) 968-4087
- IL** Alexander Battery Co. Midwest
P.O. Box 365
McHenry 60050(815) 344-0666
- MN** Alexander Battery Co. North
P.O. Box 35603
Minneapolis 55436(612) 941-7697
- NJ** Alexander Battery Co. East
P.O. Box 347
Middlesex 08846(201) 271-5880
- NY** IMI Sales, Inc.
5421 Pallsade Ave.
Riverdale 10471(212) 344-5800
- OH** Alexander Battery Co. Mid-east
7879 Sable Court
Dublin 43017(614) 764-8771
- On** Kilpatrick Comm. & Controls
3640 Weston Rd. # 3
Toronto M9L 1W2 Canada(416) 743-6945
- TX** Alexander Battery Co. South
Arlington(800) 323-3813
- WA** APRAC Ltd.
P.O. Box 1746
Bellevue 98009(206) 453-2132
- VICOM Australia Pty. Ltd.**
4 Meaden St.
S. Melbourne, Victoria 3205 Australia61-3-690-9399
- M.K. Willmot**
61 Rosedale Gardens, Thatchem
Newbury, Berks RG13 4LF England0734 64608
- Perl Communications Service**
137 Rue de Paris
92100 Boulogne France33-1-46-043333
- K. Karayannis S.A.**
8 Omilom St.
G-10564 Athens Greece
- K & M Electronics**
37 Java Rd. 2nd Floor
North Point Hong Kong57897135
- VAPS International**
A-100 Sector XI Noida-201301
Ghaziabad-UP India
- IL Gyun Co.**
C.P.O. Box 8787
Seoul Korea 100553-0231-3
- Baterias Recargables de Mexico**
Aven. Nuevo Leon #253-202
Colon. Escandon 11800 Mexico F277-8619
- Pacific Communications Systems, Ltd.**
P.O. Box 33-169
Takapuna Auckland 9 New Zealand09-498-073
- Suhail & Saud Bahwan**
P.O. Box 169
Muscat Sult. of Oman
- Logitronica Lda.**
Av Da Republica 1661 ESQ.
8000 Faro Portugal0103518921413
- Accumulatoren-Fabrik**
Oerlikon AG Binzmuhlestrasse 86
8050 Zurich Switzerland01-311-8484
- Alexander Batteries-Asia**
1 Rochor Rd.
#02-604 Rochor Centre Singapore 07182952938
- Aplicaciones Tec. Vama S.A**
Dr. Ferran 7 ES 083339 VI. De Dalt
Barcelona Spain93 753 0412
- Celltech AB**
Thure Carlssons vag 4
S-29400 Solvesborg Sweden0456-10925
- Saudi High Tech Corps**
P.O. Box 8309
Riyadh 11482 Saudi Arabia
- Sigmatech Gulf**
P.O. Box 591119, Sigmatech Bldg.
Sharjah U.A.E.
- Alexander Batteries GmbH**
Schorlemestrasse 68
D-4000 Dusseldorf 11 West Germany0211-589049
- Alex Music, Inc.**
165 West 48th Street
New York NY 10036(212) 765-7738
- Alias Research, Inc.**
110 Richmond St. East, Ste. 500
Toronto On M5C 1P1 Canada(416) 362-9181
- Allegheny Electronics, Inc.**
800 Chestnut, P.O. Box 1963
Altoona PA 16601(814) 946-0871
- Allen & Heath Brenell Ltd.**
5 Connair Road
Orange CT 06477(203) 795-3594
- CA A.M.H.Sales**
2532 Via Anite
Palos Verdes Estates 90274(213) 373-2034
- FL Ron Tunks Sales**
7041 W. Commercial Blvd.
Tamarac 33319(305) 722-2803
- IL Jamm Dist.**
21470 Main St., Suite 106
Matteson 60443(312) 747-6363
- MA GMI/New England**
65 Macquire Ave.
Avon 02322(617) 588-8043
- MD Audio Associates**
14609 MacClintock Drive
Glenwood 21738(301) 854-6122
- MO Centurian Marketing**
1139 Ossenfort Rd.
Glenco 63038(314) 227-7229
- NJ Metropolis Marketing**
1199 Amboy Ave.
Edison 08837(201) 225-0085
- NY Upstate Marketing**
129 Lakehill Rd.
Burnt Hills 12027(518) 399-6311
- OH Cambridge Marketing**
24451 Lakeshore Blvd., Suite 1200
Euclid 44123(216) 289-7275

TX JMS Marketing
15502 Rock Creek
Austin 78734(512) 266-1113

WA Loppnow & Associates
16541 Redmond Way, Suite 137
Redmond 98073(206) 883-3205

Allen Avionics, Inc.
224 E. Second St.
Mineola NY 11501(516) 248-8080

William B. Allen Supply Co., Inc.
300 Block N. Rampart St.
New Orleans LA 70112(504) 525-8252

Allen Visual Systems, Inc.
824 Sunset Ridge
Northbrook IL 60062(312) 498-9220

Allied Audio Tech
4417 - 15 Blenville Ave.
New Orleans LA 70119(504) 482-7916

Allied Broadcast West
3712 National Rd. West
Richmond IN 47374(317) 962-8596

Allied Broadcast Systems
3901 MacArthur Boulevard
Newport Beach CA 92660(714) 752-6664

Allied National
13270 Capital Avenue
Oak Park MI 48237(313) 543-1232

Allied Tower Co., Inc.
12450 Old Galveston Rd.
Webster TX 77598(713) 486-7691

All-Mode Communications, Inc.
1725 Dryden Rd.
Freeville NY 13068(607) 347-4164

All-Pro Sound
601 Michigan Ave.
Pensacola FL 35203(904) 432-5780

All Safe Video Suppliers Corp.
F.D. Roosevelt Ave. & Ensenada S
Caparra Heights PR 00922(809) 793-5555

Allsop, Inc.
4201 Meridian
Bellingham WA 98227(206) 734-9090

All Systems
5807 Merriam Dr.
Shawnee Mission KS 66203(913) 221-3475

A L & M (Audio Light And Music)
3301 N. Military
Norfolk VA 23518(804) 853-2424

Alpha Audio
2049 W. Broad St.
Richmond VA 23220(804) 358-3852

Alpha Omega Electronics, Inc.
1010 Yuma
Denver CO 80204(303) 571-1111

Alpha Sound & Lighting
25570-K Rye Canyon Rd.
Valencia CA 91355(805) 257-3593

Alpha Video & Audio
2100 West 98th St.
Minneapolis MN 55431(612) 881-2055

Alpha Video & Electronics Co.
200 Keystone Drive
Carnegie PA 15106(412) 429-2000

ALTA Group, Inc.
535 Race St., Suite 230
San Jose CA 95126(408) 297-2582

Altronic Research, Inc.
P.O. Box 249
Yellville AR 72687(501) 449-4093

Amber Electro Design, Inc.
3391 Griffith St.
St. Laurent PQ H4T 1W5 Canada(514) 735-4105

AL Southern Marketing Associates
Huntsville(205) 534-6020

AI Allan Crawford Associates Ltd.
Calgary Canada(403) 295-0822

AI Allan Crawford Associates Ltd.
Edmonton Canada(403) 451-4893

AZ Zeus Electronics, Inc.
1428 E. Pierson
Phoenix 85014(602) 263-6022

BC Allan Crawford Associates Ltd.
North Vancouver Canada(604) 988-2195

CA Amasco
1307 S. Mary Avenue, Suite 104
Sunnyvale 94087(408) 733-8690

CA Amasco
Carson(213) 516-8561

CO Zeus Electronics, Inc.
Denver(303) 477-5234

CT Pat Jenks Associates
Wallingford(203) 265-9939

FL Southern Marketing Associates
Longwood(305) 682-7317

FL Southern Marketing Associates
Satellite Beach(305) 777-3587

GA Southern Marketing Associates
Marietta(404) 565-0603

IL Comtel Midwest Inc.
3535 West Peterson Ave.
Chicago 60659(312) 539-4838

IN Comtel Midwest Inc.
Indianapolis(317) 253-1681

KS Comtel Midwest Inc.
Shawnee Mission(913) 268-0762

LA Data Marketing Associates
Metairie(504) 833-3655

MA Pat Jenks Associates, Inc.
70 Ferncroft Rd., Suite 300
Danvers 01923(617) 777-5600

MD Creative Marketing Associates
Twelve Taft Court
Rockville 20850(301) 251-4100

MI WKM Associates, Inc.
Madison Heights(313) 588-2300

MN Comtel Midwest Inc.
Wayzata(612) 476-1551

MO Comtel Midwest Inc.
St. Louis(314) 991-5363

NC Southern Marketing Associates
Greensboro(919) 282-6001

NM Zeus Electronics, Inc.
Albuquerque(505) 842-6633

NS Allan Crawford Associates Ltd.
Dartmouth Canada(902) 463-8640

NY RTI
1010 Northern Blvd., Suite 208
Great Neck 11021(516) 829-3804

OH WKM Associates, Inc.
Independence(216) 524-5930

OH WKM Associates, Inc.
88 Westpark Road
Dayton 45459(503) 434-7500

On Allan Crawford Associates Ltd.
5835 Coopers Ave.
Mississauga L4Z 1Y2 Canada(416) 890-2010

On Allan Crawford Associates Ltd.
Ottawa Canada(613) 596-9300

PA Eastern Instrumentation
101 Lakeside Office Drive
Southampton 18966(215) 355-7700

PA WKM Associates, Inc.
Pittsburg(412) 892-2953

Qu Allan Crawford Associates Ltd.
St. Laurent Canada(514) 747-7878

TX Data Marketing Associates
Houston(713) 780-2511

TX Data Marketing Associates
Austin(512) 443-7722

TX Data Marketing Associates
San Antonio(512) 342-3031

TX Data Marketing Associates Inc.
14235 Proton Road
Dallas 75244(214) 661-0300

UT Zeus Electronics, Inc.
Salt Lake City(801) 487-9402

WI Comtel Midwest Inc.
New Berlin(414) 544-6042

Amco Engineering Co.
3801 N. Rose St.
Schiller Park IL 60176-2190(312) 671-6670

Amek/TAC U.S. Operations
10815 Burbank Blvd.
North Hollywood CA 91601(818) 508-9788

American Medical Association
535 North Dearborn
Chicago IL 60610(312) 645-4430

American Sound & Electronics
1800 Russell Street
Covington KY 41014(606) 261-9024

American Studio Equipment
8922 Norris Ave.
Sun Valley CA 91352(818) 768-8922

American Theatre Products, Inc.
6650 Lexington Ave.
Hollywood CA 90038(213) 462-7750

American Video Factory
450 Glencoe Ave.
Marina del Ray CA 90929(213) 823-8622

American Video Products
615 S. State College Blvd.
Fullerton CA 92631(714) 525-5772

Ametron
1200 North Vine
Hollywood CA 90038(213) 464-1144

Amherst Electronic Instruments, Inc.
P.O. Box 201
Haydenville MA 01039(413) 268-7204

Amperex Electronic Co.
One Providence Pike
Slatersville RI 02876(401) 762-3800

CA Amperex Electronic Corp.
4281 Katella Ave., Ste. 211
Los Alamitos 90720(714) 220-0999

CA Amperex Electronic Corp.
3000 Scott Blvd., Suite 107
Santa Clara 95054(408) 727-6132

GA Amperex Electronic Corp.
6251 Smithpointe Dr., Suite 410
Norcross 30092(404) 368-2405

IL Amperex Electronic Corp.
360 Belvoir Dr.
Wood Dale 60191(312) 860-7373

NY Amperex Electronic Corp.
230 Duffy Avenue
Hicksville 11802(516) 931-6200

TX Amperex Electronic Corp.
13773 N. Central Expressway, #1228
Dallas 75243(214) 231-3481

Amplex Corp.
401 Broadway
Redwood City CA 94063(415) 367-2011

AL Gray Communications Consultants
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Mobile 36606(205) 476-2051

CA American Video Products
615 S. State College Blvd.
Fullerton 92631(714) 525-5772

CA Ampex Corp.
340 Parkside Dr.
San Fernando 91340(818) 365-8627

AMPEX CORP.—A & S FLIGHT

CA Ampex Corp.
401 Broadway
Redwood City 94063(415) 267-2202

CA BTS/California Video Sales
80 Carolina St. # 1
San Francisco 94103(415) 626-8300

CA BTS/California Video Sales
11261 Sunrise Park Drive
Rancho Cordova 95742(916) 638-4400

CA CMTV, Inc.
1900 W. Burbank Blvd.
Burbank 91506(818) 843-6644

CA Midwest Communications Southwest
2514 Ontario St.
Burbank 91504(818) 954-0150

CO Ampex Corp.
10604 W. 48th Ave.
Wheat Ridge 80033-2293 ... (303) 423-1300

CO Midwest Communications West Central
7334 S. Alton Way # A
Englewood 80112(303) 773-9499

FL Midwest Communications South
8875 NW 23rd. St.
Miami 33172(305) 592-5355

GA Ampex Corp.
1872 Montreal Rd.
Tucker 30084(404) 491-7112

IL Ampex Corp.
719 W. Algonquin Rd.
Arlington Heights 60005 ... (312) 593-6000

IL Roscor Corp.
1061 Feehanville Dr.
Mt. Prospect 60056(312) 539-7700

KY Midwest Communications Central
1804 Cargo Court
Louisville 40299(502) 491-2888

KY Midwest Communications North
One Sperti Dr.
Edgewood 41017(606) 331-8990

MA Landy Associates
330 Bear Hill Rd.
Waltham 02154(617) 890-6325

MN Todd Communications
6545 Cecilia Circle
Minneapolis 55435(612) 941-0556

NJ AF Associates
100 Stonehurst Court
Northvale 07647(201) 767-1000

NJ Ampex Corp.
5 Pearl Ct., Allendale Ind. Pk.
Allendale 07401(201) 825-9600

NJ Turner Engineering
325 Division St.
Boonton 07005(201) 263-1000

NY Audio-Video Corp.
213 Broadway
Menands 12204(518) 449-7213

NY Miller Associates
48 W. 21st St.
New York 10010(212) 741-8011

OH Midwest Communications Northeast
7500 Wall St.
Cleveland 44125(216) 447-9745

PA Alpha Video & Electronics
28 East Mall Plaza
Carnegie 15106(412) 923-1070

PA Lerro Electrical Corp.
3125 N. Broad St.
Philadelphia 19132(215) 223-8200

TX Ampex Corp.
3353 Earhart Dr.
Carrollton 75006(214) 960-1162

TX MZB & Associates
6221 N. O'Connor # 110
Irving 75039(214) 869-4500

VA Midwest Communications East
2730 Ayliff Rd.
Norfolk 23513(804) 853-2600

WA Ampex Corp.
6627 S. 191st Pl., Ste. F-101
Kent 98032(206) 251-8682

WA Midwest Communications Northwest
1331 118th Ave. SE
Bellevue 98004(206) 455-2331

AMP Video

4110 East Broadway Suite 150
Phoenix AZ 85040(602) 437-1620

Amtel Systems, Inc.

33 Main Street, Suite 303
Nashua NH 03060(603) 880-9011

B-1236

AMX Corp.

12056 Forestgate Drive
Dallas TX 75243(214) 644-3048

CA Lichtenauer Associates

624 Faria St.
Antioch 94504(415) 757-1200

CA Westech Marketing

8548 Washington Blvd.
Culver City 90232(213) 870-9286

FL Bencsik Associates

3730 NE 42nd Lane
Ocala 32670(904) 732-9775

GA Jim Freeman & Associates

670 Hillcrest, Suite 400
Lilburn 30247(404) 921-8687

IL Visitec Marketing Associates

1538 Banbury Ave.
St. Charles 60174(312) 584-9090

MN Visitec Marketing Associates

3924 Lynn Ave.
Minneapolis 55416(612) 925-2691

On Ken Lewis AV Systems

#20, 95 West Beaver Creek
Richmond Hill L4B 1H2 Canada(416) 889-1370

PA Franklin Communications

P.O. Box 356
Maple Glen 19002(215) 643-3031

PA KBZ Communications

529 St. Laurence Way
Furlong 18925(215) 348-9481

TX Audio Visual Marketing

817 Panay Way
Fort Worth 76108(817) 246-7166

UT Pro Tech Marketing

7105 South Highland Dr. Ste. 103
Salt Lake City 84121(801) 943-8331

WA Roger Ponto Associates, Inc.

12816 Northeast 125th Way
Kirkland 98034(206) 821-2996

Ancha Electronics, Inc.

189 Gordon St.
Elk Grove Village IL 60007 ... (312) 437-7712

Anchor Audio, Inc.

913 W. 223rd St.
Torrance CA 90502(213) 533-5984

Anderson's TV

1826 Industrial Way
Redwood City CA 94063 ... (415) 367-7520

Andrew Corp.

10500 W. 153rd Street
Orland Park IL 60462(312) 349-3300

Angenieux Corp. of America

7700 N. Kendall Drive, Suite 503
Miami FL 33156(305) 595-1144

Angie Electronics Supply

2300 Chenevert
Houston TX 77004(713) 659-8386

R.B. Annis Co.

1101 N. Delaware St.
Indianapolis IN 46202(317) 637-9282

Anritsu

15 Thornton Rd.
Oakland NJ 07436(201) 337-1111

Antech Labs

1118 Olive Rd.
St. Louis MO 63141(314) 997-5666

Anton/Bauer, Inc.

One Controls Drive
Shelton CT 06484(203) 929-1100

Anvil Cases, Inc.

4128 Temple City Blvd.
Rosemead CA 91770(818) 575-8614

A-1 Communications

441 Cerrillos
Santa Fe NM 87501(505) 982-4488

A. P. Enterprises

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Long Island City NY 11101 ... (718) 482-7777

Aphex Systems Ltd.

13340 Sattcoy St.
North Hollywood CA 91605 ... (818) 765-2212

Apollo Audio Visual

60 Trade Zone Court
Ronkonkoma NY 11779 ... (516) 467-8033

Applied Technology, Inc.

11 North Highway 89
N. Salt Lake City UT 84054 ... (801) 292-0075

Applied Video Systems, Inc.

5816-C Shakespeare
Columbia SC 29223(803) 735-1120

Arben Design

600 West Roosevelt Rd.
West Chicago IL 60185(312) 231-5077

Arbitron Ratings Co.

142 W. 57th St.
New York NY 10019(212) 887-1300

Arbor Video Group

9541 N. Telegraph Rd.
Redford MI 48239(313) 537-5900

Aries America

2720 Monterey St., Suite 403
Torrance CA 90503(213) 533-7072

Aries Antennas, Inc.

3857 Birch St., Ste. 417
Newport Beach CA 92660 ... (714) 641-9430

Armato's Photo Services, Inc.

87-29 Myrtle Ave
Glendale NY 11385(718) 441-4412

Army Broadcasting Service

601 North Fairfax, Rm. 340
Alexandria VA 22314-2040 ... (703) 274-4800

Toby Arnold and Associates, Inc.

3234 Commander Dr.
Carrollton TX 75006(214) 661-8201

Arrakis Systems, Inc.

2609 Riverbend Court
Fort Collins CO 80525(303) 224-2248

Arriflex Corp.

500 Route 303
Blauvelt NY 10913(914) 353-1400

Artel Communications Corp.

P.O. Box 100, West Side Station
Worcester MA 01602(617) 752-5690

Asaca/Shibasoku Corp. of America

12509 Beatrice Street
Los Angeles CA 90066(213) 827-7144

ASC Video Corp.

3816 Burbank Blvd.
Burbank CA 91505(828) 843-7004

A & S Flight & Road Case Co.

1111 N. Gordon Street
Hollywood CA 90038(213) 466-6181

Ask For It

115 Longmeadow Dr.
Los Gatos CA 95032(408) 358-1178

Associated Computer Services

1306 E. Sunshine
Springfield MO 65804(417) 887-9923

Associated Press Broadcast Services

1825 K St. N.W., Ste. 615
Washington DC 20006(202) 955-7243

Associated Production Music

6255 Sunset Blvd., Ste. 724
Hollywood CA 90028(213) 461-3211

Aston Electronics, Inc.

346 N. Lindenwood Drive
Olathe KS 66062(913) 782-4007
NJ Joseph Nigro Associates, Inc.
25 Patton Court
Wayne 07470(201) 790-1415

Astro Audio Video & Lighting

2205 West 6th Street
Los Angeles CA 90057(213) 380-6090

Astro Audio Visual

1336 W. Clay
Houston TX 77019(713) 528-7119

Atlantic Research Corp.

5390 Cherokee Ave.
Alexandria VA 22312-2302 ..(703) 642-4000

Atlantic Video Corp.

2501 Third Ave. South
Birmingham AL 35233(205) 322-2501

Atlas/Soundolier

1859 Intertech Drive
Fenton MO 63026(314) 349-3110
NJ Atlas/Soundolier
10 Pomeroy Road
Parsippany 07054(201) 887-7800

AT&T

55 Corporate Dr. # 14M10
Bridgewater NJ 08807(201) 658-6351

Auction Audio, Inc.

275 Windsor Hwy.
Newburgh NY 12250(914) 565-8740

Audico, Inc.

219 Crossen Ave.
Elk Grove IL 60007(312) 640-1030

Audi-Cord Corp.

1845 W. Hovey Ave.
Normal IL 61761(309) 452-9461

Audio Accessories, Inc.

Mill Street
Marlow NH 03456(603) 446-3335

Audio Associates

2913 N.W. 64th St.
Oklahoma City OK 73116 ..(405) 840-3636

Audio Broadcast Group, Inc.

2342 S. Division Ave.
Grand Rapids MI 49507(616) 452-1596

Audio Communications Corp.

P. O. Box 924109
Houston TX 77292(713) 868-2555

Audio Concepts

14362 Marsh Lane
Dallas TX 75234(214) 243-0644

Audio Developments Ltd.

1790 Broadway
New York NY 10019-1412 ... (212) 765-3410

Audio Digital, Inc.

1000 S. Bertelsen Rd., Suite 4
Eugene OR 97402(503) 687-8412

Audio Electronics

46 Abbeywood Drive
Romeoville IL 60441(815) 886-5155

Audio Engineering Associates

1029 N. Allen Ave.
Pasadena CA 91104(818) 798-9127

Audio Excellence

343 Manville Rd.
Pleasantville NY 10570(914) 747-1411

Audio Experts Int'L

407 E. Center Road
Kokomo IL 46902(317) 455-1575

Audio Genesis

51 Quaker Rd.
Glen Falls NY 12801(518) 793-0016

Audio Graphic Systems, Inc.

P.O. Box 1060
San Bernardino CA 92402 ... (714) 824-8000

Audio Group, Inc.

200 South Orcas St.
Seattle WA 98108(206) 285-3700

Audio Images Corp.

70 Oak Grove St.
San Francisco CA 94107(415) 686-6493

Audio Kinetics, Inc.

1650 Highway 35, Suite 5
Middletown NJ 07748(914) 225-0380

NY Audio Kinetics USA Sales

P.O. Box 1260
Carmel 10512(914) 225-0380

Audio Kinetics Ltd.
Kinetic Center, Theobald St.
Borhamwood Hertfordshire WD6 4PJ Unit.
Kingdom01 953-8118

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3725 Esperanza Drive
Sacramento CA 95864(916) 485-0500

AudioLine, Inc.

2323C Bluemound Rd.
Waukesha WI 53186(414) 785-9166

Audio Ltd.

21-36 33rd Rd.
Long Island City NY 11106 ... (718) 728-2654

Audio Media

P.O. Box 29264
New Orleans LA 70189(504) 242-8014

Audiopak, Inc.

P.O. Box 3100
Winchester VA 22601(703) 667-8125

Audio Precision, Inc.

P.O. Box 2209
Beaverton OR 97075(800) 231-7350

Audio Services Corp.

10639 Riversides
North Hollywood CA 91602 ..(818) 980-9891

Audio Services Corp.

10639 Riversides
North Hollywood CA 91602 ..(818) 980-9891

Audio Services, Inc.

326 W. 48th St.
New York NY 10036(212) 977-5157

Audio Speaker Techtronics

250 W. Broadway
New York NY 10013(212) 226-7781

Audio Stuff

12115 A Woodruff Ave.
Downey CA 90241(213) 803-1037

Audio Technica US, Inc.

1221 Commerce Drive
Stow OH 44224(216) 686-2600

Audiotechniques

1619 Broadway
New York NY 10019(212) 586-5989

Audio Technologies, Inc.

328 W. Maple Avenue
Horsham PA 19044(215) 443-0330

Audio Tek

2025 N. Lincoln Street
Burbank CA 91504(818) 842-9147

Audio Unlimited

P.O. Box 9225
Greensboro NC 27408(919) 274-4687

Audio Video Concepts

560 Whalley Ave.
New Haven CT 06511(203) 932-5558

Audio Video Contracting

433 Allied Drive
Nashville TN 37211(615) 833-5337

Audio Video Corp.

213 Broadway
Menands NY 12204(518) 449-7217

Audio Video Designs

4904 S. Staples
Corpus Christi TX 78411(512) 992-3207

Audio Video Option

141 West Jackson
Chicago IL 60604(312) 663-6600

Audio Video Recorder

3830 N. 7th St.
Phoenix AZ 85014(602) 277-4727

Audio Video Sciences Co.

1880 Embarcadero Road
Palo Alto CA 94303(415) 493-3817

Audio Video Supply, Inc.

4674 Cardin St., Ste. D
San Diego CA 92111(619) 565-1107

Audio Visual Educational Syst., Inc.

6117 Skyline Dr.
Houston TX 77274(713) 783-3440

Audio Visual, Inc.

1818 E. Broadway
Bismarck ND 58502(701) 258-6361

Audio Visual Innovations, Inc.

6313 Benjamin Rd. Ste. 110
Tampa FL 33614(813) 884-7161

Audio Visual Productions, Inc.

P.O. Box 12024
Pensacola FL 32589(904) 438-3467

AUDIO VISUAL RESOURCES—BELDEN WIRE

- Audio Visual Resources, Inc.**
9 B Mall Terr.
Savannah GA 31406(912) 355-2020
- Audio Visual Sales & Service**
1664-1666 Western Ave.
Albany NY 12203(518) 456-5060
- Audio-Visual Specialists**
3753 Northrop St.
Fort Wayne IN 46805(219) 483-0528
- Audio Visual Wholesalers**
15395 31st Avenue North
Plymouth MN 55447(612) 559-9666
- Audio Visual Workshop, Inc.**
333 W. 52nd St.
New York NY 10019(212) 397-5020
- Audissey**
1020 Auahi St.
Honolulu HI 96814(808) 521-6791
- Auditronics, Inc.**
3750 Old Getwell Road
Memphis TN 38118(901) 362-1350
- Audix Corp. of America**
5635 W. Las Positas #405
Pleasanton CA 94566(415) 463-1112
- August Systems**
222 South David
Sidney IL 61877(217) 688-2222
- Aumick's Sales & Service**
7 Center Ave.
Plymouth PA 18651(717) 779-4903
- Auratone Corp.**
P. O. Box 698
Coronado CA 92118(619) 297-2820
- Aurora Systems**
311 Penobscot Dr.
Redwood City CA 94063(415) 369-9400
- Autogram Corp.**
1500 Capital Ave.
Plano TX 75074(214) 424-8585
- Automated Business Concepts**
10650 Treena St., Ste. 201
San Diego CA 92131(619) 566-8920
- Automatic Devices Co.**
2121 S. 12th St.
Allentown PA 18103(215) 797-6000
- AVC Corp.**
2702 Applegate St.
Indianapolis IN 46203(317) 783-6167
- Avcom, Inc.**
919 12th St. N.W.
Washington DC 20005(202) 638-1513
- Avcom of VA, Inc.**
500 Southlake Blvd.
Midlothian VA 23236(804) 794-2500
- Avec Electronics Corp.**
2002 Staples Mill Rd.
Richmond VA 23230(804) 359-6071
- Avico**
1480 S. Delsa Dr.
Vineland NJ 08360(609) 691-8027
- A-Vidd Electronics Co.**
3920 Gillman St
Long Beach CA 90815(213) 498-7776
- Avonix Video Systems, Inc.**
P. O. Box 505
Brookfield WI 53008(414) 783-6050
- Avtec Industries, Inc.**
5 Audrey Place
Fairfield NJ 07006(201) 882-9460
- A/V Texas Inc.**
4715 Main
Houston TX 77002(713) 526-3687
- AVW Audio Visual, Inc.**
2254 Valdina
Dallas TX 75207(214) 634-9060
- Awesome Audio, Video & Satellite Corp.**
Rt. 9W, Barclay Heights
Saugerties NY 12477(914) 246-2777
- Billy Azbell's Radio Center**
1813 Speight Street
Waco TX 76706(817) 754-4689
- B & A Electronics**
666 Walnut St.
Terre Haute IN 47808(812) 232-1061
- BAF Communication Corp.**
17 Everberg Rd.
Woburn MA 01801(617) 744-3738
- Bal Components Ltd.**
Bermuda Rd., Nuneaton
Warwickshire U. Kingdom
- William Bal Corp.**
947 Newark Ave.
Elizabeth NJ 07207(201) 354-9625
- Bald Mountain Lab**
230 Belevue Rd.
Troy NY 12180(518) 279-9753
- IL Broadcast Electronics, Inc.**
4100 N 24th St.
Quincy 62301(217) 224-9600
- NY Northeast Broadcast Labs, Inc.**
10373 Saratoga Rd.
Glens Falls 12801(518) 793-2181
- Ballentine Communications**
328 Manchester Road
Poughkeepsie NY 12603(914) 471-5087
- Band Pro Film/Video**
2912 W. Magnolia Blvd.
Burbank CA 91505(818) 841-9655
- Barath Acoustics, Inc.**
7800 E. I Liff Ave. Ste F
Denver CO 80231(303) 750-6474
- Barco Electronics, Inc.**
1500 Wilson Way, Suite 250
Smyrna GA 30082(404) 432-2346
- Barco Industries, Inc.**
170 Knowles Drive, Suite 212
Los Gatos CA 95030(408) 370-3721
- Bardwell & McAlister, Inc.**
2621 Empire Avenue
Burbank CA 91504(213) 849-5533
- Barrett Associates, Inc.**
3205 Production Ave.
Oceanside CA 92054(619) 433-5600
- Barsky & Associates**
60 East 13th St.
New York NY 10003(212) 475-1500
- Bartha Visual Education Service, Inc.**
1404 Holly Ave.
Columbus OH 43212(614) 291-4585
- Basys, Inc.**
900 SterlIn Rd.
Mountain View CA 94043(415) 969-9810
- Bauer Audio Video, Inc.**
1607 W. Mockingbird Lane
Dallas TX 75235(214) 630-6700
- Bay's TV and Electronics**
1011 North Roan Street
Johnson City TN 37601(615) 929-2171
- B & B Electronics**
2731-8 Montana
El Paso TX 79903(915) 562-4261
- B & B Systems, Inc.**
28111 Avenue Stanford
Valencia CA 91355(805) 257-4853
- BCD Associates, Inc.**
7510 N. Broadway Extension, #205
Oklahoma City OK 73116(405) 843-4574
- B.C., Inc.**
2302 E 38th St.
Los Angeles CA 90058-9990(213) 589-5215
- BCS-The Broadcast Store**
439 South Victory Blvd.
Burbank CA 91502(818) 845-1999
- Beatty Televisual, Inc.**
1287 Wabash at Park
Springfield IL 62704(217) 787-4855
- Beaveronics, Inc.**
8 Haven Ave.
Port Washington NY 11050(516) 883-4414
- B & E Communications**
P.O. Box 20071
Jackson MS 39202(601) 922-6031
- Bel Air Camera**
1025 Westwood Blvd.
Los Angeles CA 90024(213) 208-5150
- Belar Electronics Laboratory, Inc.**
Lancaster Ave. at Dorset
Devon PA 19333(215) 687-5550
- Belden Wire and Cable**
P. O. Box 1980
Richmond IN 47375(317) 983-5200
- CA Belden Wire and Cable**
2955 E. Main Ste., Ste. 300
Irvine 92714(714) 474-1200
- GA Belden Wire and Cable**
2175 Parklake Dr., Ste. 120
Atlanta 30345(404) 934-6767
- IL Belden Wire and Cable**
2000 S. Batavia Ave.
Geneva 60134(312) 232-8900
- MA Belden Wire and Cable**
530 Boston Turnpike
Shrewsbury 01545(617) 845-5000
- On Belden Wire and Cable**
130 Willmott St.
Cobourg K9A 4M3 Canada(416) 372-8713
- TX Belden Wire and Cable**
14651 N. Dallas Pkwy., Ste. 144
Dallas 75240(214) 788-4300

Bell Electronics
2870 North Main St.
Paris TX 75460(214) 784-3215

Bencher, Inc.
333 W. Lake St.
Chicago IL 60606(312) 263-1808

Benchmark Media Systems, Inc.
3817 Brewerton Rd.
North Syracuse NY 13212 ... (315) 452-0400

Bennett Engineering Assoc.
1331 118th Avenue SE
Bellevue WA 98005(206) 455-2331

Berc
4545 Chermak
Burbank CA 91505(818) 841-3000

Henry O. Berman Co.
924 West Patapsco
Baltimore MD 21230(301) 355-7550

Berney, Inc.
2200 Madlson
Montgomery AL 36107(205) 269-4375

Bertram Studios
Rt. # 1
Adell WI 53001(414) 354-1500

BEXT, Inc.
739 5th Ave., Ste. 7A
San Diego CA 92101(619) 239-8462

Beyer Dynamic, Inc.
5-05 Burns Ave.
Hicksville NY 11801(516) 935-8000

B.F.M.A. & B.C.A.
701 Lee St., Ste. 1010
Des Plaines IL 60016(312) 396-0200

BHP, Inc.
1800 Winnemac Ave.
Chicago IL 60640(312) 989-2140

Biamp Systems, Inc.
14270 N.W. Science Park Dr.
Portland OR 97229(503) 641-7287

CA Westech Marketing
8548 Washington Blvd.
Culver City 90232(213) 870-9286

NY Reflex Marketing
230 Hilton Ave., Ste. 11
Hempsted 11550(516) 565-2323

WI Ludwig Marketing
8406 110th Ave.
Kenosha 53142(414) 697-9355

Bibbins & Rice Electronics
1008 Clothilde Street
Morgan City LA 70380(504) 384-2456

Birch/Scarborough Research Corp.
Colonial Plaza, 44 Sylvan Ave. #2D
Englewood Cliffs NJ 07632 ..(201) 585-7667

Bird Electronic Corp.
30303 Aurora Road
Solon OH 44139-2794(216) 248-1200

CA Bird Electronic Corp.
621 Ojai Ave. #F
Ojai 93023(805) 646-7255

Birns & Sawyer, Inc.
1026 N. Highland Ave.
Hollywood CA 90038(213) 466-8211

B & J Photo, Inc.
525 North Main St.
Findlay OH 45840(419) 424-0903

Blands Audio-Visual Service
P.O. Box 13456
Savannah GA 31406(912) 355-2020

Bluff City Electronics
3339 Fontaine
Memphis TN 38116(901) 345-9500

Blumberg Communications, Inc.
525 North Washington Ave.
Minneapolis MN 55401(612) 333-1271

BMI
320 W 57th St.
New York NY 10019(212) 586-2000

Bogen Photo Corp.
17-20 Willow St.
Fair Lawn NJ 07410(201) 794-6500

Bogner Broadcast Equipment Corp.
603 Cantlague Rock Rd.
Westbury NY 11590(516) 997-7800

Boland Communications
24386 Totuava Circle
Mission Viejo CA 92691(714) 951-7557

Bondurant Bros. Co.
906 Sevier Rd.
Knoxville TN 37901(615) 573-9151

Boonton Electronics Corp.
791 Route 10
Randolph NJ 07869(201) 582-1077

Bowen Broadcast Service Co., Inc.
8343 Lynn Haven Ave.
El Paso TX 79907(915) 598-5556

Bowers Electronics
4243 Perkins Road
Baton Rouge LA 70821(504) 387-0056

Bowie Audio Visual Enterprises
P.O. Box 867
Ridgeland MS 39158(601) 856-2232

Boynton Studio, Inc.
Melody Pines Farm
Morris NY 13808(607) 263-5695

B.P.M.E.
6255 Sunset Blvd., Ste. 624
Los Angeles CA 90028(213) 469-9559

Brabury Ltd.
P.O. Box 38945
Los Angeles CA 90038(213) 461-3561

Bradley Broadcast Sales
8101 Cessna Ave.
Galtersburg MD 20879(301) 948-0650

Brandon's, Inc.
P.O. Box 5519
Jacksonville FL 32207(904) 398-1591

Brands Mart USA
4900 N.W. 167th St.
Miami FL 33014(305) 624-5400

BrandsMart Video
9700 Santa Fe
Overland Park KS 66212(913) 642-8100

Ron Braunstein Video Systems
8600 La Sabre Drive
Maineville OH 45039(513) 683-6500

Bremson Data Systems, Inc.
11691 W. 85th St.
Lenexa KS 66214(913) 492-8900

Walter S. Brewer Co., Inc.
5200 So. Yale, Suite 501
Tulsa OK 74135(918) 493-7320

AL Landy Associates, Inc.
P.O. Box 179
Cropwell 35054-0179(205) 525-5660

AL Townsend Broadcast Systems, Inc.
403 Sharpsburg Circle
Birmingham 35213(205) 956-1970

AZ Total Assets Protection, Inc.
9033 N. 24th Ave.
Phoenix 85021(602) 861-3661

AZ Vaughn Communications/Video Midwest
2929 N. 44th St., Ste. 400
Phoenix 85018(602) 840-1310

CA Camera Mart, Inc.
1900 West Burbank Ave.
Burbank 91506(818) 843-6644

CA Townsend Broadcast Systems, Inc.
12612 Arabian Way
Poway 92064(619) 748-4834

CA Video Communication Corp./Midwest
2514 Ontario St.
Burbank 91504(818) 954-0150

CA Video Communication Corp./Midwest
324 Martin Ave.
Santa Clara 85050(408) 988-2968

CA Western Broadcast System, Inc.
3350 Scott Blvd., Bldg. 5
Santa Clara 95054(408) 727-9898

CO RIA Corp.
3440 South Brady Ct.
Englewood 80110(303) 789-3611

CO Video Teknix, Inc.
109 Inverness Dr. East
Englewood 80112(303) 792-0101

CT HB Communications, Inc.
P.O. Box 689
North Haven 06473(203) 234-9248

CT Landy Associates, Inc.
P.O. Box 152
Pleasant Valley 06063(203) 379-5678

FL Custom Electronics Corp.
207 Robertson St., Ste. D
Brandon 33511(813) 685-2938

HI DLB Design Systems
P.O. Box 1800
Monakaa 96727(808) 775-9258

IA Audiovisual, Inc.
415 S W. 8th St.
Des Moines 50309(515) 282-4800

IA Vaughn Communications, Inc.
2906 Brady St.
Davenport 52803-1617(319) 322-1525

IL Image Marketing Associates
119 East Palatine Rd., Ste. 210
Palatine 60067(312) 359-8050

IL Roscor
1061 Fechanville Dr.
Mt. Prospect 60056(312) 539-7700

IN Broadcast Video Corp.
8015 Castleton Rd.
Indianapolis 46250(317) 845-7750

IN Camera Mart, Inc.
825 Royal Ave.
Evansville 47715(812) 476-6327

IN Roscor
10411 White Oak
Carmel 46032(317) 843-1551

KS Centrex Audio Visual System, Inc.
126 Northwest Jackson
Topeka 66603(913) 232-7701

KY Broadcast Plus, Inc.
Cent. American Term., Bowman Field
Louisville 40205(502) 452-2777

MA HB Communications, Inc.
80 Elizabeth Ave.
Westfield 01086(413) 562-4955

MA HB Communications, Inc.
#2 Summit Dr., # 36
Reading 01867(617) 942-0735

MA Landy Associates, Inc.
330 Bear Hill Rd.
Waltham 02154(617) 890-6325

WALTER S. BREWER—BROADCAST ELECTRONICS

MA Townsend Broadcast Systems, Inc.
14 Heath Wood Lane
Chestnut Hill 02167-2685 . . . (617) 277-4866

MI Roscor
15574 George Washington
Southfield 48025 . . . (313) 489-0090

MN Vaughn Communications
7951 Computer Ave. South
Minneapolis 55435 . . . (612) 831-2248

MO Centrex Audio Visual System, Inc.
320 Brookes Dr., Ste. 113
Hazelwood 63042-2731 . . . (314) 731-1620

MO Electronic Video Systems
1856 South Stewart
Springfield 65804 . . . (417) 881-4677

MO Video Masters, Inc.
1616 Broadway
Kansas City 64108 . . . (816) 474-8530

MO VMI Co. of St. Louis
2368 Schuetz Rd.
St. Louis 63146 . . . (314) 569-1334

MS Centec
P.O. Box 54366
Jackson 39208 . . . (601) 932-1901

MS Delta Media Sales
1406 Terry Rd.
Jackson 39204 . . . (601) 969-2929

MT Audiovisual, Inc.
1422 West Ramshorn Dr.
Laurel 59044 . . . (406) 628-2116

NC EME, Inc.
410 North Main St.
High Point 27260 . . . (919) 869-3335

ND Audiovisual, Inc.
1818 E. Broadway
Bismarck 58502 . . . (701) 258-6360

NE Audiovisual, Inc.
8025 Maple St.
Omaha 68124 . . . (402) 393-9911

NH Landy Associates, Inc.
54 Old Stage Rd.
Madbury 03820 . . . (603) 742-8799

NJ Landy Associates, Inc.
1890 East Marlton Pike
Cherry Hill 08003 . . . (617) 890-6325

NJ Tele-Measurements, Inc.
145 Main Ave.
Clifton 07014 . . . (201) 473-8822

NM DYMA Engineering, Inc.
367 Main Southeast
Las Lunas 87031 . . . (505) 865-6700

NY Audio-Video Corp.
213 Broadway
Menands 12204-2770 . . . (518) 449-7213

NY Audio-Video Corp.
41 Parkside Crescent
Rochester 14617 . . . (716) 266-1169

NY Audio-Video Corp.
6493 Ridings Rd.
Syracuse 13206 . . . (315) 463-9730

NY Audio-Video Corp.
8050 Wehrle Dr.
Buffalo 14221 . . . (716) 634-8621

NY Camera Mart, Inc.
305 Vine St.
Liverpool 13088 . . . (315) 457-3703

NY Camera Mart, Inc.
456 West 55th St.
New York 10019 . . . (212) 757-6977

NY Temtron Electronics, Ltd.
15 Main St.
East Rockway 11518-0170 . . . (516) 599-6400

OH Broadcast Plus, Inc.
P.O. Box 1194
Mt Vernon 43050 . . . (614) 392-2470

OH Broadcast Video Corp.
1851 South High St.
Columbus 43207 . . . (614) 445-8800

OH Broadcast Video Corp.
2055 Reading Rd., Ste. 120
Cincinnati 45202 . . . (513) 621-8080

OH Broadcast Video Corp.
6569 Cochran
Cleveland 44139 . . . (216) 349-3710

OK Fairview/AFX Broadcast
3162 North Portland
Oklahoma City 73112 . . . (405) 947-6711

OK Fairview/AFX Broadcast
4932 South 83rd East Ave.
Tulsa 74145 . . . (918) 664-8020

OK TESI
5909 N.W. Expressway, Ste. 214
Oklahoma City 73132 . . . (405) 728-1516

OK Tulsa Electronic Systems
4727 S. Memorial Dr. # A
Tulsa 74145 . . . (918) 665-7020

OR CAVCO Services, Inc.
1222 S.E. 7th Ave.
Portland 97214 . . . (503) 233-9200

PR Audio Specialties, Inc.
1425 Fernandez Juncos Ave.
Santurce 00909 . . . (809) 721-3085

PR Juan Suarez, Inc.
1762 Ponce De Leon Ave.
Santurce 00909 . . . (809) 727-1686

SD Audiovisual, Inc.
1809 Cambridge
Sioux Falls 57106 . . . (605) 361-7460

TX Accent Audio Visual
13619 Inwood Rd., Ste. 380
Dallas 75244-4622 . . . (214) 458-0501

TX DYMA Engineering, Inc.
152 La Mirada Circle
El Paso 79932 . . . (915) 833-2206

TX Industrial Audio/Video, Inc.
P.O. Box 25127
Houston 77265-5127 . . . (713) 524-1956

TX Magnetic Media, Inc.
3440 Sojourn Dr., Ste. 200
Carrollton 75006 . . . (214) 931-0404

TX Magnetic Media, Inc.
2413 Hobbs, # 8
Amarillo 79109-1504 . . . (806) 358-2468

TX Magnetic Media, Inc.
4807 Spicewood Spgs. Rd. B1, #1160
Austin 78759 . . . (512) 338-4272

TX Magnetic Media, Inc.
5600 Bintliff, Ste. 101
Houston 77036 . . . (713) 780-7303

TX RIA Corp.
5406 Alba Rd.
Houston 77091 . . . (713) 681-9625

TX Total Assets Protection, Inc.
500 Brookhollow 1, 2301 East Lamar
Arlington 76011 . . . (817) 640-8800

TX Townsend Broadcast Systems, Inc.
8222 Jamestown Dr., C-131
Austin 78758-7396 . . . (512) 836-6011

UT RIA Corp.
P.O. Box 15786
Salt Lake City 84115-0786 . . . (801) 486-8822

WA Midwest Corp./dba Bennett Engineering
1331 1018th Ave., S.E.
Bellview 98005 . . . (206) 455-2331

WA Northwest Electronics, Inc.
17660 West Valley Hwy., Ste. N
Tukwila 98188 . . . (206) 251-8424

WA Northwest Electronics, Inc.
730 E. 1st St.
Spokane 99202 . . . (509) 535-7651

WI Roscor
4701 W. Schroeder Dr., Ste. 110
Milwaukee 53223 . . . (414) 357-8000

Dimerson S.A.C.I.
Ibera 1747
Buenos Aires 1429 Argentina 011-541-7083-20

Bridal Fair, Inc.
8901 Indian Hills Dr.
Omaha NE 68114 . . . (402) 397-8902

Bridges Audio Video
P.O. Box 3041
Corpus Christi TX 78404 . . . (512) 883-6688

Bridgewater Custom Sound
P.O. Box 135
South Holland IL 60473 . . . (312) 596-0309

Brite Voice Systems, Inc.
555 N. Woodlawn, Ste. 1-209
Wichita KS 67208 . . . (316) 687-4444

Broadcast Audio Corp.
11306 Sunco Drive
Rancho Cordova CA 95670 . . . (916) 635-1048

Broadcast Automation, Inc.
4125 Keller Springs, # 122
Dallas TX 75244 . . . (214) 380-6800

Broadcast Cartridge Service
15131 Triton Lane #108
Huntington Beach CA 92649 . . . (714) 898-7224

Broadcast Distributors
3800 Keith Street NW
Cleveland TN 37311 . . . (615) 472-8200

Broadcast Electronics, Inc.
4100 N. 24th St.
Quincy IL 62305 . . . (217) 224-9600

AL Gray Communications
P.O. Box 590069
Birmingham 35259-0069 . . . (205) 942-2824

AL Gray Communications
2866 Dauphin St. Ste. F & G
Mobile 36006 . . . (205) 476-2051

AL Sonics Associates, Inc.
237 Oxmoor Circle
Birmingham 35209 . . . (205) 942-9631

AI Nortec West Ltd.
1106 39th Ave., S.W.
Calgary T2T 2K5 Canada . . . (403) 243-5525

AR Custom Products
107 Calhoun St.
Magnolia 71753 . . . (501) 234-7399

AR Gray Communications
5105 McClanahan Dr., Ste. J-1
North Little Rock 72115 . . . (501) 758-3234

AZ RIA Corp.
P.O. Box 1678
Cottonwood 86326 . . . (602) 634-8065

AZ Spencer Broadcast
7003 W. Union Hills Dr.
Peoria 85345 . . . (602) 242-2211

AZ Western Wireless Works
P.O. Box 2203
Apache Junction 85220 . . . (602) 835-2078

B. Nortec West Ltd.
325 W. Fifth Ave.
Vancouver V5Y 1J6 Canada . . . (604) 872-8525

CA Allied Broadcast Equipment
3808 Riverside Dr., Ste. 303
Burbank 91505 . . . (818) 843-5052

CA Barrett Associates
3205 Production Ave.
Oceanside 92054 . . . (619) 433-5600

CA Coast Recording Equipment Supply
6223 Santa Monica Blvd.
Hollywood 90038 . . . (213) 462-6058

CA Marcom
P.O. Box 828
Hollywood 90078 . . . (818) 703-0381

CA Marcom
5524 Scotts Valley Dr.
Scotts Valley 95066 . . . (408) 438-4273

CA QRK Electronics
1151 South 7th St.
San Jose 95112 . . . (408) 971-7977

CA RF Specialties of California
3463 State St., # 229
Santa Barbara 93105 . . . (805) 682-9429

CA Riggins Electronic Sales
3272 E. Willow St.
Long Beach 90806 . . . (213) 598-7007

CA Sequoia Electronics
209 Lester Lane
Los Gatos 95032 . . . (408) 356-3232

CA Western Broadcast Systems
3350 Scott Blvd., Bldg. 5
Santa Clara 95054 . . . (408) 727-9898

CT North Star Audio-Video
1367 High Ridge Rd.
Stamford 06903 . . . (203) 968-2323

FL Broadcasters General Store
2480 S.E. 52nd St.
Ocala 32671 . . . (904) 622-9058

FL Control Technology
2950 S.W. Second Ave.
Ft. Lauderdale 33315 . . . (305) 761-1106

FL Gray Communications
7819 NW 15th St.
Miami 33126 . . . (305) 591-3637

FL Gray Communications
1605 South Bumby Ave.
Orlando 32806 . . . (305) 896-7414

FL Gray Communications
5401 Southern Comfort Lane
Tampa 33614 . . . (813) 885-1411

FL	Lauderdale Electronic Labs 16 S.W. 13th St. Ft. Lauderdale 33315(305) 764-7755	MA	Landy Associates 330 Bear Hill Rd. Waltham 02154(617) 890-6325	NY	MPCS Video Industries, Inc. 514 W. 57th New York 10019(212) 586-3690
FL	Midwest Communications Corp. 8875 NW 23rd St. Miami 33172(305) 592-5355	MD	Bradley Broadcast Sales 8101 Cessna Ave. Galthersburg 20879(301) 948-0650	NY	Northeast Broadcast Lab, Inc. P.O. Box 1179 South Glens Falls 12801(518) 793-2181
FL	Midwest Communications Corp. 6302 Benjamin Rd. Tampa 33164(813) 885-9308	MD	Midwest Communications Corp. 4720-B Boston Way Lanham 20706(301) 577-4903	NY	Ram Broadcast Systems, Inc. 425 Merrick Ave. Westbury 11590(516) 832-8080
FL	RF Specialties of Florida P.O. Box 397 Niceville 32578(904) 678-8943	MD	Pierce-Phelps, Inc. 12288 Wilkins Ave. Rockville 20852(301) 984-7979	OH	Midwest Communications Corp. 7500 Wall St. Cleveland 44125(216) 447-9745
FL	Southeast Electronics P.O. Box 41308 Jacksonville 32204(904) 356-3007	MD	Professional Products, Inc. 4965 Fairmont Ave. Bethesda 20814(301) 657-2141	OH	Midwest Communications Corp. 6630 Bush Blvd. Columbus 43229(614) 846-5552
FL	Southeast Electronics 1500 N. Pace Blvd. Pensacola 32505(904) 434-0079	MD	Radio Resources 7483 Candlewood Rd. Hanover 21076(301) 859-1500	OH	Vii-Tek 719 Lower Bellbrook Rd. Xenia 45385(513) 274-2003
GA	Allied Broadcast Equipment Shannon Twrs, 4405 Mall Blvd. #314 Union City 30291(404) 964-1464	MD	RCI 8550 2nd Ave. Silver Spring 20910(301) 587-1800	OK	Ford Audio Video Systems 4800 W. Interstate 40 Oklahoma 73128(405) 946-9966
GA	Broadcasters General Store 1805 Kimberly Dr. Marietta 30060(404) 425-0630	MI	Arnoldt/Sound Solutions 3401 Canton Center Rd. Canton 48187(313) 455-5557	OK	Ford Audio-Video Systems 5362 South 129th East Ave. Tulsa 74134(918) 252-9581
GA	Gray Communications P.O. Box 3229 Albany 31708(912) 883-2121	MI	Audio Broadcast Group 2342 Division Ave. South Grand Rapids 49507(616) 452-1596	On	AVC Communications, Ltd. 595 Middlefield Rd., Unit 8 Scarborough M1V 3S2 Canada(416) 297-9377
GA	Gray Communications 2254 Northwest Parkway, Ste. C Marietta 30067(404) 956-7725	MI	Cruse Communications Co. 4903 B Dawn Ave. East Lansing 48823(517) 332-3579	On	Comad Communications 1435 Bonhill Rd., Unit 34 Mississauga L5T 1M1 Canada(416) 676-9171
GA	Midwest Communications Corp. 522 Armour Circle Atlanta 30324(404) 875-3753	MI	East Lansing 48823(517) 332-3579	On	J-Mar Electronics Ltd. 6 Banigan Dr. Toronto M4H 1E9 Canada(416) 421-9080
GA	Radford Associates 3203 Lanier Dr. Atlanta 30319(404) 237-6097	MN	Hy James 24166 Haggerty Rd. Farmington Hills 48018(313) 994-0934	On	MSC Electronics 147 West Beaver Creek Rd. Richmond Hill L4B 1C6 Canada(416) 731-9500
HI	Broadcast Services, Inc. 2877 Kalakaua Ave. Honolulu 96815(808) 524-2522	MN	AVR Systems 2709 East 25th St. Minneapolis 55407(612) 729-8305	On	Pineway Electronics 1875 Leslie St., Unit 7 Don Mills M4B 2M5 Canada(416) 449-1345
HI	Caughill-Palitz 1750 Kalakaua Ave., Ste. 3-120 Honolulu 96826(808) 941-3618	MN	TDM Engineering 9800 69th Ave. North, # 205 Maple Grove 55369(612) 533-4038	OR	Norcom 21885 Lewellen Rd. Beavercreek 97004(503) 632-7486
HI	John J. Harding 2825 Ualena St. Honolulu 96819(808) 836-0941	MN	Todd Communications 6545 Cecilia Dr. Minneapolis 55435(612) 941-0556	P.	J.M. Soto P.O. Box 487 Caguas 80625(809) 744-3131
HI	Jim Walters Co. 5017 Kalaniana Ole Way Honolulu 96821(808) 373-2701	MO	Lines Video Systems 219 S. Jefferson Springfield 65806(417) 862-5533	PA	Barker Electronics 360 Lightner St. State College 16801(814) 238-5334
IL	Allied Broadcast Equipment 5215 Old Orchard Rd. # 970 Skokie 60077-1035(312) 470-0303	MO	Midwest Communications Corp. 11642 Lilburn Park Rd. St. Louis 63146(314) 569-2240	PA	Midwest Communications Corp. 535 Rochester Rd. Pittsburgh 15237(412) 364-6780
IL	Broadcast Electronics, Inc. 4100 North 24th St. Quincy 62305(217) 224-9600	MO	Video Masters, Inc. P.O. Box 1963 Kansas City 64141(816) 474-8530	PA	Midwest Broadcast Lab, Inc. P.O. Box 565 Southampton 18966(215) 322-2227
IL	Broadcasters General Store 746 Cypress Lane Carol Stream 61125(312) 231-7120	NC	Broadcast Services Co. Route # 3, Box 45E Four Oaks 27524(919) 934-6869	PA	Pierce-Phelps, Inc. 2000 N. 59th St. Philadelphia 19131(215) 879-7236
IL	Ram Broadcast Systems, Inc. 346 West Colfax St. Palatine 60067(312) 358-3330	NC	Midwest Communications Corp. 2848 I-85/South, Ste. E Charlotte 28208(704) 399-6336	PA	Radio Systems P.O. Box 356 Edgemont 19028(215) 356-4700
IL	Roscor 1061 Feehanville Dr. Mount Prospect 60056(312) 539-7700	NC	SCMS, Inc. 10201 Rodney Blvd. Pineville 28134(704) 889-4509	PA	Transcom Corp. P.O. Box 26744 Elkins Park 19117(215) 379-6585
IL	Video Images 890 Cambridge Dr. Elk Grove Village 60007(312) 640-7111	ND	Audio Visual, Inc. 1818 Broadway Bismark 58501(701) 258-6360	PR	Electronica Fernandez 208 Eleanor Roosevelt St. Hato Rey 00918(809) 767-3500
IN	Allied Broadcast Equipment 3712 National Rd. West Richmond 47375(317) 962-8596	NE	Broadcast Rentals & Sales, Inc. 2912 N. 108th St. Omaha 68164(402) 493-1051	Qu	Marketing Marc Vallee Ltd. 1063 St-Lambert St-Sauver-des-Mont J0R 1R0 Canada(514) 227-5110
IN	Midwest Communications Corp. 4105 Vincennes Indianapolis 46268(317) 872-2327	NE	Denco 2003 Brewer Rd. Bellevue 68005(402) 734-5521	Qu	MSC Electronics 1525 Mazurette-Ste 4 & 6 Montreal J4N 1G8(514) 387-7346
KS	Midwest Communications Corp. 14006 West 107th St. Shawnee Mission 66215(913) 469-6810	NJ	H.M. Holzberg Assoc. P.O. Box 323 Sea Bright 07760(201) 530-8555	TN	Broadcast Distributors Bible Place, 3800 Keith St. Cleveland 37311(615) 472-8200
KY	Midwest Communications Corp. One Spertl Dr. Edgewood 41017(606) 331-8990	NJ	Landy Associates 1890 E. Marlton Pike Rt. 70 Cherry Hill 08003(609) 424-4660	TN	Broadcast Equipment & Supply Rt. 1, Weaver Pike Bluff City 37618(615) 878-2531
KY	Midwest Communications Corp. 1804 Cargo Court Louisville 40299(502) 491-2888	NJ	Townsend Broadcast Systems, Inc. P.O. Box 716 Mount Laurel 08504(609) 234-1040	TN	Gray Communications 618 Tupper Dr. Gallatin 37066(615) 883-9175
LA	Audiomedica Associates P.O. Box 29264 New Orleans 70189(504) 586-0140	NM	Dyma Engineering 367 Main St., SE Los Lunas 87031(505) 865-6700	TN	Midwest Communications Corp. 740 Freeland Station Rd. Nashville 37228(615) 255-2801
LA	Gray Communications 5441 Pepsi St. New Orleans 70123(504) 733-7265	NS	Atlantic Sound RR # 2, Pictou County New Glasgow B2H 5C5 Canada(902) 752-8527	TN	Radford Associates 1331 Otter Creek Rd. Nashville 37215(615) 373-0231
MA	Lake Systems Corp. 287 Grove St. Newton 02166(617) 244-6881	NY	David Bain Associates 11 Orchard Farm Rd. Port Washington 11050(516) 883-4818	TX	Allied Broadcast Equipment Richardson CUB, 1101 E. Plano, #B Plano 75074-8521(214) 423-8667
		NY	Boynton Studios Melody Pines Farm Morris 13808(607) 263-5695		
		NY	Martin Audio 423 W. 55th New York 10019(212) 541-5900		

BROADCAST ELECTRONICS—CABLEVISION

- X** Crouse-Klmzey
3507 W. Vickery
Ft. Worth 76107(817) 737-9911
- X** Dyma Engineering
152 La Miraa Circle
El Paso 79932(915) 833-2206
- X** Giesler Broadcast
5914 Maple
Houston 77074(713) 774-3314
- X** MZB & Associates
DCC #6, Ste. 110, 6221 N. O'Connor
Irving 75039(214) 869-4500
- X** Professional Audio Supply
5700 East Loop, 820 South
Ft. Worth 76119-7050(817) 483-7474
- X** RF Specialties of Texas
P.O. Box 8316
Amarillo 79114(806) 372-4518
- X** RIA Corp.
4721 Spring Creek Rd.
Arlington 76017(817) 478-6762
- X** Townsend Broadcast Systems, Inc.
8222 Jamestown Dr., Ste. C-131
Austin 78758(512) 836-6014
- T** RIA Corp.
50 East Malvern Ave.
Salt Lake City 84115(801) 486-8822
- A** Broadcast Services Co.
P.O. Box 309
Front Royal 22630(730) 635-1413
- A** Old Dominion Broadcasting Co.
1101 Front St.
Richmond 23222(804) 321-4506
- A** SCMS, Inc.
4214 Jolor Way
Virginia Beach 23462(804) 495-7149
- VA** Allied Broadcast Equipment
33430 13th Place South, Ste. 120
Federal Way 98003(206) 838-2705
- VA** Broadcast Supply West
7012 27th St. West
Tacoma 98466(206) 565-2301
- VA** RF Specialties of Washington
11721 15th Ave., NE
Seattle 98125(206) 363-7730
- VI** Electronic Industries
P.O. Box 266
Oshkosh 54902(414) 235-8930
- VI** Todd Communications
4613 Hamlet Place
Madison 53714(608) 249-7080
- VI** Todd Communications, Inc.
1122 West Queensway
Nekoosa 54457(715) 325-2573
- VI** Video Images
285 N. Janacek Rd.
Waukesha 53186-1924(414) 785-1414
- VI** Windcomm
3320 Ivy Lane
Racine 53402(414) 639-4576
- VI** Roberts Broadcast Equipment
301 S. Wolcott St.
Casper 82601(307) 235-1800
- Herb Schoenbohm
P.O. Box 2570
Christiansted 00820 Virgin Is.(809) 772-4546
- roadcast Electronic Services**
4668 Monument Point
Jacksonville FL 32225(904) 646-1630
- roadcast Equipment & Sales**
P.O. Box 3141
Bristol TN 37625(615) 878-2531
- roadcast Equipment Sales**
P. O. Box 20331
Jackson MS 39209(601) 857-8573
- roadcasters General Store**
2480 S. E. 52nd St.
Ocala FL 32671(904) 622-9058
- roadcast Financial
anagement Association**
701 Lee St., Ste. 1010
Des Plaines IL 60016(312) 296-0200
- Broadcast Investment Analysts, Inc.**
P.O. Box 17307
Washington DC 20041(703) 478-5800
- Broadcast Mailing Service**
P.O. Box 8086
Lakeland FL 33802(800) 338-3264
- Broadcast Management Plus**
1451 California Ave.
Palo Alto CA 94304(415) 494-3900
- Broadcast Marketing Associates**
2211 C. Fortune Dr.
San Jose CA 95131(408) 433-5544
- Broadcast Microwave Systems, Inc.**
7322 Convoy St.
San Diego CA 92111(619) 560-8601
- Broadcast Plus**
Central American Terminal
Louisville KY 40205(502) 452-2777
- Broadcast Programming, Inc.**
2211 5th Ave.
Seattle WA 98121(800) 426-9082
- Broadcast Rentals & Sales, Inc.**
1321 Valwood Parkway, Ste. 420
Carrollton TX 75006(214) 241-1381
- Broadcast Services**
Route 3, Box 45E
Four Oaks NC 27524(919) 754-6869
- The Broad Cast Store**
4525 Valerio Street
Burbank CA 91505(818) 845-1999
- Broadcast Supply West**
7012 27th St. West
Tacoma WA 98466(206) 565-2301
- Broadcast Technology Society/IEEE**
9 Quail Hill Court
Parkton MD 21120(301) 357-5498
- Broadcast Video Systems Ltd.**
40 West Wilmot St.
Richmond Hill On L4B 1H8 Canada(416) 764-1584
- Broadcast Video Corp.**
1851 S. High St.
Columbus OH 43207(614) 445-8800
- Brooke Distributors, Inc.**
2100 Marietta Blvd., NW
Atlanta GA 30318(404) 351-9816
- Brownell Sound & Hi Fi, Inc.**
2500 SE Hawthorne
Portland OR 97214(503) 231-7866
- Brown Enterprises, Inc.**
3311 South Yale
Tulsa OK 74135(918) 747-5045
- Browning Labs, Inc.**
8151 N.W. 74th Ave.
Miami FL 33166(305) 885-3356
- Ted Brown Music Co.**
1121 Broadway Plaza
Tacoma WA 98402(206) 272-3211
- Brown Sound Equipment**
701 Erie Blvd. East
Syracuse NY 13210(315) 475-5161
- Bryce Appliance & Audio Video Co.**
115 W. 40th St.
New York NY 10018(212) 575-8600
- Bry's, Inc.**
80th and State
Marysville MA 98270(206) 659-8533
- Bryston Limited**
RFD #4, Box 2255
Montpelier VT 05602(802) 223-6159
- BSM Broadcast Systems, Inc.**
7106 W. Will D. Alton Dr. #106
Spokane WA 99204(509) 838-0110
- BTS Broadcast Television Systems,
Inc.**
2300 S. 2300 West
Salt Lake City UT 84119(801) 972-8000
- CA** BTS Broadcast Television Systems, Inc.
3760 Cahuenga Blvd. West
North Hollywood 91604-3597 ... (818) 766-8184
- CT** BTS Broadcast Television Systems, Inc.
1281 East Main St., Holly Pond Pz.
Stamford 06902-3544(203) 348-4112
- FL** BTS Broadcast Television Systems, Inc.
5778 Grande Lagoon Blvd.
Pensacola 32507(904) 492-1600
- IL** BTS Broadcast Television Systems, Inc.
3436 N. Kennicott Dr., Ste. 110
Arlington Heights 60004 ... (312) 577-9780
- ME** BTS Broadcast Television Systems, Inc.
537 Ferry Rd.
Saco 04072(207) 283-0777
- MN** BTS Broadcast Television Systems, Inc.
21644 Evans Trail
Faribault 55021(507) 334-1891
- NJ** BTS Broadcast Television Systems, Inc.
900 Corporate Dr.
Mahwah 07430(201) 529-1550
- On** BTS Broadcast Television Systems, Inc.
6811 Century Ave.
Mississauga L5N 1R1 Canada ... (416) 826-6060
- RI** BTS Broadcast Television Systems, Inc.
628 Wood St.
Bristol 02809(401) 253-9327
- TX** BTS Broadcast Television Systems, Inc.
10612 Glass Mountain Trail
Austin 78750(512) 335-1482
- UT** BTS Broadcast Television Systems, Inc.
2300 South 2300 West
Salt Lake City 84119(801) 972-8000
- VA** BTS Broadcast Television Systems, Inc.
5410 Baychester Court
Alexandria 22310-4201(703) 461-0188
- Building Automation**
1425 Pearl St.
Boulder CO 80302(303) 444-2160
- Burke Technologies, Inc.**
2207 S. Michigan st.
South Bend IN 46680(219) 232-6958
- Burns Audio**
11174 Penrose Unit 6
Sun Valley CA 91352(818) 768-2370
- Cablecom Corp.**
3825 N. Elston
Chicago IL 60618
- Cable Services Co., Inc.**
2113 Marydale Avenue
Williamsport PA 17701(717) 323-8518
- Cable TV Supply Co.**
5933 Bowcraft St.
Los Angeles CA 90016(213) 202-2742
- Cablevision Equipment Co.**
3838 Cavalier Dr.
Garland TX 75042(214) 272-8551

Cablewave Systems, Inc.
60 Dodge Avenue
North Haven CT 06473(203) 239-3311

CA **Cablewave Systems, Inc.**
P.O. Box 2965
Saratoga 95070(408) 253-0401

CA **Cablewave Systems, Inc.**
P.O. Box 345
Claremont 91711(714) 625-2988

CT **Cablewave Systems, Inc.**
60 Dodge Ave.
North Haven 06473(203) 239-3311

KS **Cablewave Systems, Inc.**
P.O. Box 7344
Shawnee Mission 66207(913) 642-6323

NC **Cablewave Systems, Inc.**
P.O. Box 310
Claremont 28610(704) 459-9762

On **LeBlanc & Royle Telcom, Inc.**
P.O. Box 880
Oakville L6J 5C5 Canada(416) 844-1242

Cadena Radio Centro
1425 Greenway Dr., Ste. 210
Irving TX 75038(214) 580-1223

Calaway Engineering
49 South Baldwin Avenue
Sierra Madre CA 91024(818) 355-2094

Calibration Standard Instruments
P.O. Box 2727
Oakland CA 94602(415) 531-8725

California Video Sales, Inc.
11261 Sunrise Park Dr.
Rancho Cordova CA 95742 ..(916) 638-4400

Calrec by AMS
3827 Stone Way North
Seattle WA 98103(206) 633-1956

Cal Switch
13717 South Normandie Ave.
Gardena CA 90249(213) 770-2330

Calvin Cinequip, Inc.
P.O. Box 15607
Kansas City MO 64106(816) 471-7800

Calzone Case Co.
225 Black Rock Ave.
Bridgeport CT 06605-1204 ..(203) 367-5766

TX **Calzone Case Co.**
2919 Ladybird Ln.
Dallas 75220(214) 956-8558

Cambridge Products Corp.
244 Woodland Avenue
Bloomfield CT 06002(203) 243-1761

CA **Solomon Technical Sales Inc.**
41-995 Boardwalk # A-3
Palm Desert 92260(619) 568-6760

CO **R.F. Mayo Associates**
3450 Penrose Place # 110
Boulder 80301(303) 442-2155

DE **Electrical Equipment Co.**
3411 Silverside Rd. # 101 Bancroft
Wilmington 19810(302) 478-9455

GA **Southern States Wire**
3851 Green Industrial Blvd.
Atlanta 30341(404) 455-4075

IL **Momak Sales**
2852 Hitchcock Ave.
Donners Grove 60515(312) 963-6400

MD **Macrotech Associates Ltd.**
P.O. Box 1261
Glen Burnie 21061-1261(301) 766-1111

MN **North Central Sales**
3601 82nd Ave. N
Brooklyn Park 55443(612) 561-5004

MO **Seltronix Inc.**
6617 Clayton Rd. # 106
Clayton 63117(314) 862-0100

NJ **John Ryan Sales**
248 N. Franklin Turnpike
Ho Ho Kus 07428(201) 652-1178

NY **Kirby Marketing**
29 La Salle Pkwy.
Victor 14564(716) 248-8750

OH **C. J. Voneman Co.**
18624 Detroit Ave.
Cleveland 44107(216) 226-8000

OR **Electronic Engineering Sales**
17020 SW Upper Boonesferry # 3C1
Portland 97224(503) 639-3978

TX **Design Marketing and Associates**
4070 Sandshell Dr.
Fort Worth 76136(817) 232-3155

Camera Corner, Inc.
P. O. Box 218
Green Bay WI 54305(414) 435-5353

The Camera Mart, Inc.
456 West 55th St.
New York NY 10019-4495(212) 757-6977

Camera Service Center
625 West 54th Street
New York NY 10019(212) 757-0906

Cam-Lok, Inc.
10540 Chester Rd.
Cincinnati OH 45215(513) 771-3171

Canare Cable, Inc.
832 N. Victory Blvd.
Burbank CA 91502(818) 840-0993

Canon U.S.A., Inc.
One Canon Plaza
Lake Success NY 11042(516) 488-6700

CA **Canon U.S.A., Inc.**
123 Paularino Ave. East
Costa Mesa 92696(714) 432-6951

IL **Canon U.S.A., Inc.**
100 Park Blvd.
Itasca 60143

TX **Canon U.S.A., Inc.**
3200 Regent Blvd.
Dallas 75063(214) 830-9600

Capital Audio Electronics
120 Duane St.
New York NY 10007(212) 233-5460

Capitol Communications Industries
P.O. Box 481
Olympia WA 98507(206) 943-5378

Capitol Records
6902 Sunset Blvd.
Hollywood CA 90028(213) 461-2701

Capitol Video Center
8455 F Tyco Rd.
Vienna VA 22180(703) 893-4664

Cardinal Systems Corp.
2426 Linden Lane
Silver Springs MD 20910(301) 589-3700

Carpel Video, Inc.
429 E. Patrick St.
Fredrick MD 21701(301) 845-8888

Carver Sound Equipment Co.
2280 Vantage
Dallas TX 75207(214) 631-3420

Cascom, Inc.
707 18th Ave. S.
Nashville TN 37203(615) 329-4112

Catel Telecommunications, Inc.
4050 Technology Place
Fremont CA 94537-5122(415) 659-8988

CAT Systems, Inc.
401 East 74th St.
New York NY 10021(212) 988-0290

Dwight Cavendish Co.
2117 Chestnut Avenue
Wilmette IL 60091(312) 256-0930

IL **Dwight Cavendish Co.**
6444 N. Ridgeway Ave.
Chicago 60645(312) 673-0930

C.D., Inc.
4895 Joliet St., Unit C
Denver CO 80239(303) 371-8160

CEAVCO Audio Visual Co., Inc.
1650 Webster St.
Denver CO 80215(303) 238-6490

CeCo Communications, Inc.
2115 Ave. X
Brooklyn NY 11235(718) 646-6300

Celebration Computer Systems
9207 Country Creek Dr., # 140
Houston TX 77036(713) 439-1840

CEL Electronics Ltd.
5925 Beverly
Mission KS 66202(913) 831-0180

Centec Video Systems
P.O. Box 54366
Jackson MS 39208(601) 932-1900

Center Video Industrial Co., Inc.
5615 W. Howard St.
Niles IL 60648(312) 647-8700

Central Audio Visual, Inc.
1212 S. Andrews Ave.
Ft. Lauderdale FL 33316(305) 522-3790

Central Dynamics, Ltd.
147 Hymus Boulevard
Pointe Claire Qu H9R 1G1 Canada(514) 697-0810

CA **Techna Resources Corp.**
8590 Venice Blvd.
Los Angeles 90034(213) 204-1050

FL **R & H Associates**
2060 N.E. Coachman Road
Clearwater 34625(813) 442-7500

IL **Image Marketing Associates**
P.O. Box 68996
Schaumburg 60168(312) 359-8050

IL **Broadcast Plus, Inc.**
C. American Terminal Bowman Field
Louisville 40205(502) 452-2770

MA **Beers Associates, Inc.**
112 Turnpike Rd., Ste. 302
Westborough 01581(617) 898-3200

MD **Wiltronix, Inc.**
P.O. Box 364
Washington Grove 20880(301) 258-7670

MO **Electronic Video Systems**
1856 S. Stewart
Springfield 65804(417) 881-4670

MT **Audiovisual, Inc.**
1422 West Ramshorn
Laurel 59044(406) 628-2110

ND **Audiovisual, Inc.**
P.O. Box 2239
Bismark 58502(701) 258-6360

NE **Audiovisual, Inc.**
8025 Maple Street
Omaha 68134(402) 393-9910

TX **Gene Sudduth Co. Inc.**
P.O. Box 518
Paris 75460(214) 785-5760

CENTRAL SCHOOL—COAXIAL

Central School Supply Co.
4100 Eastmoon Rd.
Louisville KY 40232(502) 459-8500

Central Tower, Inc.
P.O. Box 530
Newburgh IN 47630(812) 853-0595

Centrex Audio Visual Systems, Inc.
126 North Jackson
Topeka KS 66603(913) 232-7701

Centro Corp.
369 Billy Mitchell Rd.
Salt Lake City UT 84116(801) 537-1427

Century 21 Programming
4340 Beltwood Parkway
Dallas TX 775244

Century Precision Optics
10713 Burbank Blvd.
Canyon Country CA 91351 ... (818) 766-3715
NY Bern Levy Associates
17 Tarleton Lane
Northport 11768-2532(516) 269-2870

Cetec Vega
9900 Baldwin Place
El Monte CA 91731(818) 442-0782
On J-Mar (Canadian Service Center)
6 Banigan Dr.
Toronto M4H 1E9 Canada ... (416) 421-9080
VA Systems Wireless (East Coast Svc. Center)
465 Herndon Pkwy.
Herndon 22070(703) 471-1230

Cetin Enterprises, Inc.
7128 Edinger Ave.
Huntington Bch CA 92647 ... (714) 848-0110

C & G Video Systems
503 North Section
Fairhope AL 36532(205) 928-1971

Channelmatic, Inc.
821 Tavern Road
Alpine CA 92001(619) 445-2691

Channel One Lighting Systems, Inc.
5806 S. 129 E. Ave.
Tulsa OK 74134(918) 252-2663

Chester Cable
P.O. Drawer D
Chester NY 10918(914) 469-2141

China Basin Video Works
185 Berry Street
San Francisco CA 94107 ... (415) 495-5727

Christian Duplications, Inc.
1710 Lee Rd.
Orlando FL 32810(305) 299-7363

Christie Electric Corp.
18120 South Broadway
Carson CA 90745(213) 320-0808

Don Christ Visual Center
267 Haddon Ave.
Collingswood NJ 08108 ... (609) 854-7050

A. Chrosziel Film Technik GmbH
Regerstrasse 27
D-8000 Muenchen 90 W. Germany

Chyron Corp.
265 Spagnoli Road
Melville NY 11747(516) 845-2000

B. Vid Com Ltd.
3636 E 4th Ave.
Vancouver V5M 1M3 Canada ... (604) 291-6061

CA Chyron West Coast
20469 Valley Blvd.
Walnut 91789(714) 598-4111

CA R.E. Snader & Associates
150 Gate Five Road
Sausalito 94965(415) 332-7070

CA Video Communications Corp.
2514 Ontario Street
Burbank 91504(818) 954-0150

CO Burst/Midwest Communications
7334 South Alton Way, Suite A
Englewood 80112(303) 773-9499

FL Midwest Communications
8875 N.W. 23rd Street
Miami 33172(305) 592-5355

IL Roscor Corporation
1061 Feehanville Drive
Mount Prospect 60056 ... (312) 539-7700

KY Midwest Communications
One Sperti Drive
Edgewood 41017(606) 331-8990

MA Beers Associates
112 Turnpike Rd. #302
Westboro 61581(617) 898-3200

MD Professional Products, Inc.
4964 Fairmont Ave.
Bethesda 20814(301) 657-2141

MN Todd Communications
6545 Cecilia Circle
Minneapolis 55435(612) 941-0556

MO Chyron/Midwest
13009 Twin Meadows Ct.
St. Louis 63146(314) 469-3455

N. Network
1335 Barrington St.
Halifax B3J 1Y9 Canada ... (902) 421-1101

Ne Chyron/New York(516) 845-2041
NY MPCS Video Industries, Inc.
514 West 57th Street
New York 10019(212) 586-3690

On United Video
22 O'Meara St.
Ottawa K1Y 4N6 Canada ... (613) 728-1527

On Video Design Systems, Inc.
1625 Trinity Dr. Unit 3
Mississauga L5T 1K4 Canada ... (416) 677-5272

PA Lerro Electrical
3125 N. Broad St.
Philadelphia 19132(215) 223-8200

Qu Mediatech, Inc.
1010 de la Gauchetiere, est.
Montreal H2L 2N5 Canada ... (514) 499-0331

Qu Tele-Syn Video, Inc.
C.P. 389
Ste-Marte-sur-le-Lac J0N 1P0 Canada ... (514) 472-7231

TX MZB & Associates
6221 No. O'Connor, Suite 110
Irving 75039(214) 869-4500

VA Midwest Communications
2730 Aylitt Road
Norfolk 23513(804) 853-2600

WA Midwest Communications/
Bennett Engineering
1331 118th Avenue, S.E.
Bellevue 98005(206) 455-2331

Chyron/U.K. Ltd.
Dancon House, N. Circular Rd.
Stonebridge Pk
London NW10 75S England ... 44-1-965-6599

Cinecraft, Inc.
215-B Central Avenue
Farmingdale NY 11735 ... (212) 686-6740

Cinedco, Inc.
1225 Grand Central Ave.
Glendale CA 91201-2425 ... (818) 502-9100

Cinemascorp
11496 Luna Rd.
Dallas TX 75234(214) 869-1269

Cinema Products Corp.
3211 South La Cienega Blvd.
Los Angeles CA 90016-3112 ... (213) 836-7991

NY Bern Levy and Associates
17 Tarleton St.
Northport 11768(516) 269-2870

Cinemills Corp.
3500 West Magnolia Blvd.
Burbank CA 91505(818) 843-4560

Cinequip
856 Raymond Avenue
St. Paul MN 55114(612) 646-1780

Cine Rent West/Stage A
991 Tennessee Street
San Francisco CA 94107 ... (415) 864-4644

Cine 60, Inc.
630 9th Avenue
New York NY 10036(212) 586-8782

CA Cine 60, Inc.
1050 Cahuenga Blvd.
Hollywood 90038(213) 461-3046

Cinetronics
8610 Oakdale Ave.
Canoga Park CA 91306(818) 709-4694

Cine Video
948 North Cahuenga
Hollywood CA 90038(213) 464-6200

Cine Video Tech
7330 NE 4th Ct.
Miami FL 33138(305) 754-2611

Cinevision
1771 Tully Circle NE
Atlanta GA 30329(404) 321-6333

Cipher Digital, Inc.
5734 Industry Lane
Frederick MD 21701(301) 695-0200

Circuit Research Labs, Inc.
2522 W. Geneva Drive
Tempe AZ 85282(602) 438-0888

Circuit Studios, Inc.
5420 Butler Rd.
Bethesda MD 20816(301) 656-5918

City Animation Co.
57 Park St.
Troy MI 48084(313) 589-0600

Clairmont Camera
4040 Vineland
Studio City CA 91604(818) 761-4440

Clear-Com Intercom Systems
945 Camella St.
Berkeley CA 94710(415) 527-6666

CMC Technology
2650 Lafayette St.
Santa Clara CA 95050(408) 980-9800

CMI Electronics
436 F. Jackel Drive
Montgomery AL 36117(205) 272-5630

CMX Corp.
2230 Martin Avenue
Santa Clara CA 95050(408) 988-2000

CNA Insurance Companies
333 S. Wabash Ave., 36 South
Chicago IL 60685(312) 822-7137

Coast Recording Equipment & Supplies
6223 Santa Monica Blvd.
Hollywood CA 90038(213) 462-6058

Coaxial Dynamics, Inc.
15210 Industrial Parkway
Cleveland OH 44135(216) 267-2233

Coherent Communications, Inc.
13756 Glenoaks Blvd.
Sylmar CA 91342(818) 362-2566

Collins Auto Tape Joiners Ltd.
40 Triton Square
London NW1 3HG England

Colorado Video, Inc.
P.O. Box 928
Boulder CO 80306(303) 530-9580
MA Colorado Video, Inc.
17 Amble Road
Chelmsford 01824(617) 256-3381

ColorGraphics Systems, Inc.
6400 Enterprise Lane
Madison WI 53719(608) 274-5786

Color Leasing, Inc.
330 Route 46 E
Fairfield NJ 07006(201) 575-1118

Columbia Audio/Video
1741 Second St.
Highland Park IL 60035(312) 433-6010

Columbine Systems, Inc.
1707 Cole Blvd.
Golden CO 80401(303) 279-4000

Columbus Tape and Video
1931 Auburn Ave.
Columbus GA 31906

Comad Communications Limited
1435 Bonhill Rd. Unit #34
Mississauga On L5T 1M1 Canada
.....(416) 676-9171

Comark Communications, Inc.
P.O. Box 229
Southwick MA 01077-0229(413) 569-0116

Comcast Sound Communications, Inc.
15 Andover
West Hartford CT 06110(203) 527-9105

Comex Corp.
1645 N.W. 79th Ave.
Miami FL 33126(305) 594-0850

Commercial Audio Associates
122 Lafayette Rd.
North Hampton NH 03862(603) 964-6002

Commercial Electronics Systems
465 Ruby Street
Joliet IL 60435(815) 726-3366

Commercial Video Systems
900 Old Koenig Lane, Ste. 118
Austin TX 78756(512) 452-1482

Comm Sound, Inc.
P.O. Box 37129
Charlotte NC 28237(704) 375-2424

Communication Graphics, Inc.
P.O. Box 54110
Tulsa OK 75155(918) 258-6502

Communications Systems Co.
956 Wyoming St.
Allentown PA 18103(215) 439-4063

Communications Equip. Co., Inc.
P. O. Box 6634
Greenville SC 29606(803) 288-0000

Communitronics Corp.
1907 S. Kings Highway
St. Louis MO 63110(314) 771-7160

Community Camera & TV, Inc.
506 Main Street
LaCrosse WI 54601(608) 782-1565

Component Video
16134 Ledwell
Van Nuys CA 91406(818) 997-6463

Comprehensive Video Supply Corp.
148 Veterans Drive
Northvale NJ 07647(201) 767-7990

Comprompter, Inc.
141 South 6th St.
La Crosse WI 54601(608) 785-7766

Compu-Cable USA, Inc.
121 So. Witchduck Rd.
Virginia Beach VA 23462(804) 456-5048

CompuSonics
2345 Yale St.
Palo Alto CA 94306(415) 494-1184

Computer Concepts Corp.
8375 Melrose Dr.
Lenexa KS 66214(913) 541-0900

Computer Prompting Corp.
1511 K Street, N.W., Suite 831
Washington DC 20005(202) 783-2051

Compu-Prompt
746 North Cahuenga Blvd.
Los Angeles CA 90038(213) 461-3113

Comrex Corp.
65 Nonset Path
Acton MA 01720(617) 263-1800

Comsat General & Comsat International Commun.
950 L'Enfant Plaza, S.W.
Washington DC 20034(202) 863-6114

Comtech Antenna Corp.
3100 Communications Rd.
St. Cloud FL 32769(305) 892-6111

Comtek Communications Technology, Inc.
357 West 2700 South
Salt Lake City UT 84115(801) 466-3463

COMWAVE
P.O. Box 69
Mountaintop PA 18707(919) 474-6751

Concept Productions
1224 Coloma Way
Roseville CA 95661(916) 782-7754

Concord Communications
26 Denise Place
Stamford CT 06905(203) 322-9322

Conifer Corp.
1400 N. Roosevelt
Burlington IA 52601(319) 752-3607

Connectronics Corp.
652 Glenbrook Road
Stamford CT 06906(203) 324-2889

Connolly Systems Ltd.
Unit 7, Intec 2, Wade Rd.
Basingstoke Hampshire RG24 0NE
England(025) 647-0474

Conrac Display Products Group
1724 South Mountain Ave.
Duarte CA 91010(818) 303-0095

Consolidated Media Systems
1004 Old Tree Court
Nashville TN 37210(615) 244-3933

Contel A.S.C.
1801 Research Blvd. Rm. 323
Rockville MD 20850(301) 251-8300

Continental Camera
7240 Valjean Ave.
Van Nuys CA 91406(818) 989-5222

Control Concepts Corp.
P.O. Box 1380
Binghamton NY 13902-1380(607) 724-2484

Control Technology, Inc.
2950 SW 2nd Avenue
Ft. Lauderdale FL 33315(305) 761-1106

Cool-Lux Lighting Industries, Inc.
5723 Auckland Ave.
N. Hollywood CA 91601-2207(818) 761-8181

Copp Systems
123 South Keowee St.
Dayton OH 45402(513) 228-4188

Corplex, Inc.
6444 N. Ridgeway
Chicago IL 60645(312) 673-5400

Corporate Comm. Consultants
64 Clinton Rd.
Fairfield NJ 07006(201) 226-5938

Corporate Video Services
25 Commerce Industrial Park
Valley Park MO 63088(314) 225-8500

Cortana Corp.
4001 La Plata Hgwy.
Farmington NM 87401(505) 325-5336

Countryman Associates, Inc.
417 Stanford Ave.
Redwood City CA 94063(415) 364-9988

Michael Cox Electronics Ltd.
40 W. Willmot St.
Richmond Hill On L4B 1H8 Canada
.....(416) 764-1584

Cracker Jack Video
1210-C1 West Middle Turnpike
Manchester CT 06040(203) 289-2028

Craftsman / Globe
141 East Merrick Rd.
Freeport NY 11520(516) 868-4455

Cramer Video, Inc.
120 Hampton Ave.
Needham MA 02194(617) 449-2100

Crimson Video Systems
325 Vassar St.
Cambridge MA 02139(617) 868-5150

Crosspoint Latch Corp.
95 Progress Street
Union NJ 07083(201) 688-1510

CA The Enright Co.
3965 Walnut Ave.
Long Beach 90807(213) 595-4624

GA Jim Freeman Associates, Inc.
670 Hillcrest
Lilburn 30247(404) 921-8687

IL James McKay Sales & Marketing
35 Foss Drive RR6
Springfield 62707(217) 787-5742

Crossroads Audio, Inc.
2623 Myrtle Springs Ave.
Dallas TX 75220(214) 358-2623

Crouse-Kimzey
3507 W. Vickery
Fort Worth TX 76107(817) 737-9911

CROWN—DIGITAL SERVICES

Crown Audio

2810 Eugenia Dr.
Longview TX 75608(214) 297-0500

Crown International, Inc.

1718 W. Mishawaka Road
Elkhart IN 46517(219) 294-8000

Cruse Communications Co.

4903 B. Dawn Ave.
East Lansing MI 48823(517) 332-3579

C & S Distributors

1700 Hummel Ave.
Camphill PA 17011(717) 737-4585

CTL Electronics, Inc.

116 West Broadway
New York NY 10013(212) 233-0754

CTL Video Center

9301 Georgia Ave.
Silver Springs MD 20910(301) 585-6311

Cubicomp Corp.

21325 Cabot Blvd.
Hayward CA 94545(415) 887-1300

Current Technology, Inc.

1400 South Sherman, # 202
Richardson TX 75081(214) 238-5300

Currie Sound Systems

990 Barret Ave.
Louisville KY 40204(502) 583-1833

Curtis Co.

P.O. Box 210215
Montgomery AL 36121(205) 279-7127

Custom Audio Distributors

4725 Atlanta Highway
Beaumont GA 30622(404) 353-1380

Custom Business Systems, Inc./CBSI

P.O. Box 67
Reedsport OR 97467(503) 471-3681

Custom Electronics

207 East Robertson St.
Brandon FL 33511(813) 685-2938

Custom Products

107 E. Calhoun
Magnolia AK 71753(501) 234-7399

Custom Recording & Sound, Inc.

P.O. Box 7647
Greenville SC 29610(803) 269-5018

Custom Stereo Electronics

1391 S. Hamilton Rd.
Columbus OH 43227(614) 235-3531

Custom Video Systems

17521 15th Ave. NE
Seattle WA 98155(206) 365-5400

Cycle Sat, Inc.

119 Willowglen Dr.
Forest City IA 50436(515) 582-6814

Dage-MTI, Inc.

208 Wabash St.
Michigan City IN 46360(219) 872-5514

CA

401 Broadway
Redwood City 94063(415) 367-2202

CA

Ampex Corp.
340 Parkside Dr.
San Fernando 91340(818) 365-8627

CO

Ampex Corp.
10604 W. 48th Ave
Wheat Ridge 80033-2293 ... (303) 423-1300

B-1246

GA Ampex Corp.
1872 Montreal Rd.
Tucker 30084(404) 491-7112

IL

Ampex Corp.
719 W. Algonquin Rd.
Arlington Heights 60005 ... (312) 593-6000

MD

Ampex Corp.
10215 Fernwood Rd.
Bethesda 20817(301) 530-8800

NJ

Ampex Corp.
5 Pearl Court
Allendale 07401(201) 825-9600

TX

Ampex Corp.
3353 Earhart Dr.
Carrollton 75006(214) 960-1162

WA

Ampex Corp.
6627 S. 191st Pl., Suite F-101
Kent 98032(206) 251-8682

Peter W. Dahl Co., Inc.

5869 Waycross Ave.
El Paso TX 79924(915) 751-2300

Dale Electronic Corp.

7 East 20th St.
New York NY 10003(212) 255-3660

H.L. Dalis, Inc.

35-35 24th St.
Long Island City NY 11106 ... (718) 361-1100

Dalsat, Inc.

1701 Summit Ave.
Plano TX 75074(214) 578-7561

Bill Daniels Company, Inc.

P.O. Box 2056, 9101 Bond
Shawnee Mission KS 66214 ... (913) 492-9900

Data Center Management

1017 Kenilworth
Charlotte NC 28204(704) 377-1496

Datacount, Inc.

P.O. Box 3078
Opelika AL 36803-3078 ... (205) 749-5641

Datatek Corp.

1121 Bristol Rd.
Mountainside NJ 07092 ... (201) 654-8100

Datavid Corp.

1220 West 6th St. #801
Cleveland OH 44113(216) 781-6300

Dataworld

4827 Rugby Ave. Ste. 200
Bethesda MD 20814(301) 652-8822

Datum, Inc.

1363 S. State College Blvd.
Anahelm CA 92806-5790 ... (714) 533-6333

Davis Audio-Visual, Inc.

1801 N Federal Blvd.
Denver CO 80204(303) 455-1122

Walt Davis Enterprises, Inc.

931 N. Cole Ave.
Hollywood CA 90038(213) 461-0700

Davis & Sanford Co., Inc.

24 Pleasant St.
New Rochelle NY 10802 ... (914) 632-1636

dbx, Inc.

71 Chapel Street
Newton MA 02195(617) 964-3210

De Lourdes Corp.

235 W. 46th St.
New York NY 10036(212) 719-4192

Delta Electronics, Inc.

P.O. Box 11268
Alexandria VA 22312(703) 354-3350

Deltalab

One Progress Way
Wilmington MA 01887(617) 658-5100

Dempsey Electronics, Inc.

14810 Route 30
N. Huntingdon PA 15642 ... (412) 864-0300

Denco

2003 Brewster Rd.
Bellevue NE 68005(402) 734-5521

Denecke, Inc.

5417 Cahuenga Blvd. #B
North Hollywood CA 91601 ... (818) 766-3525

Design Audio Visual

195 H. Central Ave.
Farmingdale NY 11735 ... (516) 694-3334

DeSisti Lighting

1109 Grand Avenue
No. Bergen NJ 07047(201) 319-1100

De Wolfe Music Library, Inc.

25 West 45th St.
New York NY 10036(212) 382-0220

Dielectric Communications

Tower Hill Road
Raymond ME 04071(207) 655-4555

NJ

Dielectric Communications Antennas
P.O. Box 7
Gibbsboro 04062(609) 435-3200

Digital Arts

7370-Q Opportunity Rd.
San Diego CA 92111-2225 ... (619) 541-2055

Digital Audio Research

P.O. Box 275
Rheem Valley CA 94570 ... (415) 376-2760

Digital Audio & Video Systems

P.O. Box 1986
West Covina CA 91793(714) 599-6131

Digital Creations Corp.

50 Werman Court
Plainville NY 11803(516) 756-9620

Digital Equipment Corp.

Continental Boulevard
Merrimack NH 03054(603) 884-3706

Digital F/X

3255-4A Scott Boulevard
Santa Clara CA 95054(408) 727-8181

Digital Processing Systems, Inc.

55 Nugget Ave., Unit # 10
Scarborough On M1S 3L1 Canada(416) 754-8090

KY

Midwest Communications Corp.
One Sperti Dr.
Edgewood 41017(606) 331-8090

Digital Services Corp.

3622 N.E. 4th Street
Gainesville FL 32609(904) 377-8013

CA

Digital Services Corp.
17206 Pinot Place
Poway 92064(619) 485-1156

GA

Digital Services Corp.
P.O. Box 4042
Albany 31706(912) 888-2142

IN

Digital Services Corp.
Route 1 Box 46
Trafalgar 46181(317) 738-3219

MN

Digital Services Corp.
24500 Cedar Point Road
New Prague 56071(612) 758-3036

NY

Digital Services Corp.
325 Central Avenue
White Plains 10606(914) 761-7928

TX

Digital Services Corp.
P.O. Box 293
Flint 75762(214) 894-6303

DSC International Ltd.
Dancon House, N. Circular Rd.
Stonebridge Pk.
London NW10 7SS England. . 44-1-965-6599

- Dimension**
P.O. Box 1561
Jupiter FL 33468(305) 746-2222
- Display Products Group**
1724 So. Mountain Ave.
Duarte CA 91010(818) 303-0095
- Di-Tech, Inc.**
48 Jefryn Blvd.
Deer Park NY 11729(516) 667-6300
- Diversified Concepts, Inc.**
3929 New Seneca Turnpike
Marcellus NY 13108(315) 673-2088
- Diversified Industries, Inc.**
12890 Berea Rd.
Cleveland OH 44111(216) 671-6900
- Dixie Educational Systems**
1900 Barnwell St.
Columbia SC 29202(803) 779-5332
- D.J. Systems**
P.O. Box 1925
Winter Park FL 32790(305) 644-2766
- DKW Systems, Inc.**
730, 9919-105 Street
Edmonton AI T5K 1B1 Canada
.....(403) 426-1551
- DLE, Inc.**
5 Vernon St.
Middleboro MA 02346(617) 947-6801
- Dolby Laboratories, Inc.**
100 Potrero Ave.
San Francisco CA 94103-4813 . .(415) 558-0200
- AZ E.A.R.**
2641 East McDowell Road
Phoenix 85008(602) 267-0600
- CA Audio Images Corp.**
70 Oak Grove St.
San Francisco 94107(415) 957-9131
- CA Coast Recording**
6223 Santa Monica Boulevard
Los Angeles 90038(213) 462-6058
- CA Everything Audio**
2721 West Burbank Blvd.
Burbank 91504(818) 842-4175
- CA Pro Media**
185 Berry St. Ste. 358
San Francisco 94107(415) 957-1383
- CA Westlake Audio Corp.**
7265 Santa Monica Blvd.
Los Angeles 90046(213) 851-9800
- FL Harris Audio Systems**
1962 NE 149th St.
North Miami 33181(305) 944-4448
- IL Mliam Audio Corp.**
1470 Valle Vista Blvd.
Pekin 61554(309) 346-3161
- IL Douglas Ordon & Co.**
230 East Ohio St. Ste. L-02
Chicago 60611(312) 440-0500
- MA Lake Systems Corp.**
287 Grove St.
Newton 02166(619) 244-6881
- MD Washington Professional Systems**
11157 Veirs Mill Road
Wheaton 20202(301) 942-6800
- MI Hy James**
24166 Haggerty Rd.
Farmington Hills 48004(313) 471-0027
- MN AVC Systems, Inc.**
7951 Computer Ave. South
Bloomington 55435(612) 831-3435
- NY Audiotekniques, Inc.**
1619 Broadway
New York 10019(212) 586-5989
- NY Martin Audio/Video Corp.**
423 West 55th St.
New York 10019(212) 541-5900
- On J-Mar Electronics Ltd.**
6 Banigan Dr.
Toronto M4H 1E9 Canada . . .(416) 421-9080
- On Studer Revox Canada**
14 Branigan Dr.
Toronto M4H 1E9 Canada . . .(416) 423-2831
- OR RMS Sound**
3235 39th Ave. S.E.
Portland 97202(503) 239-0352
- PA Tekcom Corp.**
1020 North Delaware Ave.
Philadelphia 19125(215) 426-6700
- Qu Sonotechnique P.J.L, Inc.**
2585 Bates, Ste. 304
Montreal H3S 1A9 Canada. . .(514) 739-3368
- TN Studio Supply Corp.**
1717 Elm Hill Pike, Ste. B9
Nashville 37210(615) 391-0050
- TX Midcom, Inc.**
6311 N. O'Connor Rd., LB-50 S# 108
Irving 75039-3510(214) 869-2144
- WA RMS Sound**
17517 15th Ave. N.E.
Seattle 98155(206) 362-0491
- Dolby Laboratories, Inc.**
346 Clapham Rd.
London SW9 9AP England01-720-1111
- Dorrough Electronics**
5221 Collier Place
Woodland Hills CA 91364 . . .(818) 999-1132
- Douglas Communications**
300 North St.
Chagrin Falls OH 44022 . . .(216) 247-6008
- The David Douglas Corp.**
906 Dalton Ave.
Cincinnati OH 45202(513) 721-7444
- Douglas Electronics, Inc.**
650 Baxter Ave.
Louisville KY 40204(502) 895-3500
- Doya Video Systems, Inc.**
21520 Waterloo Rd.
Chelsea MI 48118(313) 475-3720
- DSC Laboratories**
3610 Nashua Dr.
Mississauga On L4V 1L2 Canada
.....(416) 673-3211
- Dubner Computer Systems, Inc.**
6 Forest Ave.
Paramus NJ 07652(201) 845-8900
- CA Grass Valley Group Sales**
1032 Elwell Ct. # 243
Palo Alto 94303(415) 968-6680
- CA Grass Valley Sales Group**
21243 Ventura Blvd. # 143
Woodland Hills 91364(818) 999-2303
- GA Grass Valley Sales Group**
3554 Habersham at Northlake
Tucker 30084(404) 493-1255
- IN Grass Valley Group Sales**
P.O. Box 4609
Elkhart 46514(219) 264-0931
- MD Grass Valley Group Sales**
12520 Prosperity Drive # 110
Silver Spring 20904(301) 622-6313
- MN Grass Valley Group Sales**
3585 N. Lexington Ave. # 339
Arden Hills 55126(612) 483-2594
- TX Grass Valley Sales Group**
5628 Green Oaks Blvd. S.W. # A
Arlington 76017(817) 483-7447
- Grass Valley Sales Group**
St. Thomas House, 7 St. Thomas St.
Winchester, Hampshire S023 9HE U.K.
- Duggan Manufacturing Co.**
2570 E. Mira Loma Way
Anaheim CA 92806(714) 630-6611
- Duncan Video, Inc.**
3105 W. Albright Court
Indianapolis IN 46268(317) 872-0727
- DX Communications, Inc.**
10 Skyline Dr.
Hawthorne NY 10532(914) 347-4040
- H. M. Dyer Electronics, Inc.**
48647 Twelve Mile Rd.
Novi MI 48050(313) 349-7910
- Dyma Engineering**
P.O. Box 1535
Los Lunas NM 87031(505) 865-6700
- TX Dyma Engineering Inc.**
152 La Mirada Circle
El Paso 79932(915) 833-2200
- Dynair Electronics, Inc.**
5275 Market Street
San Diego CA 92114-2298 . . .(619) 263-7711
- Dynamic Technology Ltd.**
13 Cumberland Ave., Park Royal
London NW10 7RH England . . .(216) 267-7700
- Dynatech Corp.**
6400 Enterprise Lane
Madison WI 53719(608) 273-5820
- DZ Video**
10138 Topanga Canyon Blvd.
Chatsworth CA 91311(818) 882-7797
- EAR Craft**
14 Fourth St.
Dover NH 03820(603) 749-3130
- E.A.R. Professional Audio**
2641 E. McDowell
Phoenix AZ 85008(602) 217-0600
- Ears Nova**
P.O. Box 1167
Great Neck NY 11024(516) 466-5674
- East Coast Sound, Inc.**
40 Main St.
Danley CT 06810(203) 748-2261
- Eastern Video Systems, Inc.**
2 Sterling Rd.
Billerica MA 01862(617) 667-0000
- East Texas Electronics**
119 S. Glenwood
Tyler TX 75712(214) 593-8250
- ECHOlab, Inc.**
175 Bedford Rd.
Burlington MA 01803(617) 273-1510
- CA ECHOlab, Inc.**
2269 Chestnut St., Ste. 520
San Francisco 94123(415) 931-0490
- ERCOlab, Inc.**
Postfach 390
CH 8034 Zurich Switzerland . .41-1-47-17-00
- ECI Video**
2809 Ross Ave.
Dallas TX 75201(214) 745-1290
- Econco Broadcast Service**
1318 Commerce Ave.
Woodland CA 95695(916) 662-7550
- Eddcor**
1948 East Pomona
Santa Ana CA 92705(714) 648-0290
- Editron U.S.A., Inc.**
748 Seward Street
Hollywood CA 90038(213) 464-8720
- EDR Systems**
10250 Brecksville Rd.
Brecksville OH 44141(216) 838-5007
- Educational Electronics Corp.**
213 North Cedar Ave.
Ingelwood CA 90301(213) 677-8167
- Educational Equipment Co.**
4006 Live Oak St.
Dallas TX 75204(214) 821-1480

EDUCATIONAL INDUSTRIAL—FIELD ENGINEERING

Educational Industrial Sales, Inc.

2225 Grant Rd., Ste. # 3
Los Altos CA 94022(415) 969-5212

Edwards Technologies, Inc.

122 Arena St.
El Segundo CA 90245(213) 322-8830

EEOC, Inc./Convergence Corp.

1601 E. Chestnut Ave.
Santa Ana CA 92702-0659 ..(714) 835-6000

EEG Enterprises, Inc.

One Rome St.
Farmingdale NY 11735(516) 293-7472

EEV, Inc.

7 Westchester Plaza
Elmsford NY 10523(914) 592-6050

EG&G, Inc.

35 Congress St.
Salem MA 01970(617) 745-3200

Egripment

7240 Valjean Ave.
Van Nuys CA 91406(818) 994-8405

Elcom Bauer

6199 Warehouse Way
Sacramento CA 95826(916) 381-3750

Elcon

P.O. Box 393
South Salem NY 10590-0393 ..(914) 763-8893

Electra Distributing Co.

401 Spence Lane
Nashville TN 37210(615) 256-0800

Electrex Co.

18680 N.E. 2nd Ave.
Miami FL 33179(305) 651-5752

Electro Controls, Inc.

2975 South 300 West
Salt Lake City UT 84115(801) 487-9861

Electro Impulse Laboratory, Inc.

116 Chestnut Street
Red Bank NJ 07701(201) 741-0404

Electronic Contracting Co.

3061-63 Merriam Dr.
Kansas City KS 66106(913) 262-2805

Electronic Design & Service

6922 San Fernando Rd.
Glendale CA 91201(818) 843-6199

Electronic Industries

19 E. Irving Ave.
Oshkosh WI 54902(414) 235-8930

Electronics Media Consultants

1208 U.S. Highway # 1
N. Palm Beach FL 33408(305) 626-3774

Electronic Sound

2249 S. Division Ave.
Grand Rapids MI 49507(616) 241-3425

Electronic Specialty Co.

Box 400
Dunbar WV 25064(304) 766-6277

Electronics Research, Inc.

108 Market St.
Newburgh IN 47630(812) 853-3318

IL Broadcasting Electronics

4100 N. 24th St.
Quincy 62305(217) 224-9600

IL Harris Corp.

3200 Wisnann Lane
Quincy 62305(217) 222-8200

TX Continental Electronics

P.O. Box 270879
Dallas 75227(214) 381-7161

3-1248

Electronic Systems Products, Inc.

1301 Armstrong Drive
Titusville FL 32780-7999(407) 269-6680

Electro-Voice, Inc.

600 Cecil Street
Buchanan MI 49107(616) 695-6831

Elicon

940 S. Leslie St.
La Habra CA 90631(714) 870-6647

Emcee Broadcast Products

P.O. Box 68
White Haven PA 18661(717) 443-9575

EMCO, Inc.

9234 Gaither Rd.
Gaithersburg MD 20877(301) 921-4000

Emcor Products

1600 4th Ave. Northwest
Rochester MN 55901(507) 289-3371

EME, Inc.

4110 North Main
High Point NC 27260(919) 869-3335

Emergency Alert Receiver, Inc.

P.O. Box 20629
New York NY 10025(212) 695-4767

EMT

1790 Broadway
New York NY 10019-1412(212) 765-3410

E-mu Systems

1450 O'Connor Dr.
Toronto On M4B 2T8 Canada... (408) 438-1921

Endreson Sound Co.

4 West 8th St. (Meseda at La)
Duluth MN 55806(218) 727-3267

Energex Systems Corp.

416 Benedict Ave., Ste. 2H
Tarrytown NY 10591

Energy-Onix Broadcast Equipment Co.

41 N. 7th St.
Hudson NY 12534(518) 828-1690

Enhanced Communications Corp.

5645-F General Washington Dr.
Alexandria VA 22312(703) 642-5461

Enterprise Electronics Corp.

1115 Morningside Place
Atlanta GA 30306(404) 874-4774

Enterprise Systems Group, Inc.

2790 N. Academy Blvd., Ste. 210
Colorado Springs CO 80917 ... (303) 637-1717

EPA Audio Visual, Inc.

8200 Bridge St.
Rockford MN 55373(612) 477-6931

ESD, Inc.

5200 Auth Rd., World Weather Bldg.
Suitland MD 20746(301) 423-2113

ESE

142 Sierra St.
El Segundo CA 90245(213) 322-2136

ESL

120 SW 21 Terrace, C104
Ft. Lauderdale FL 33312(305) 791-1501

Eventide, Inc.

One Alsan Way
Little Ferry NJ 07643(201) 641-1200

Evertz Microsystems Ltd.

3465 Mainway
Burlington On L7M 1A9 Canada(416) 335-3700

Everything Audio

10055 Ventura Blvd
Encino CA 91436(818) 842-4175

Everything Video

2021 Monroe St.
Tallahassee FL 32303(904) 386-5735

EVS-Electronic Video Systems

1856 S. Stewart
Springfield MO 65804(417) 881-4677

Excalibur Industries

12427 Foothill Blvd.
Lake View Terrace CA 91342 ... (818) 899-2547

Exceland Services

304 Howard
Des Plaines IL 60018(312) 699-0050

Exodus Sound & Light Video

8169 Arroyo Dr.
San Gabriel CA 91770(818) 307-1866

Express Tower

P.O. Box 37
Locust Grove OK 74352(918) 479-6484

Factbook Research, Inc.

1836 Jefferson Place, N.W.
Washington DC 20036(202) 872-9200

Fairlight Instruments, Inc.

2945 Westwood Blvd.
Los Angeles CA 90064(213) 470-6280

Fairview-AFX

4932 S. 83rd E. Ave.
Tulsa OK 74145(918) 664-8020

Faroudja Laboratories, Inc.

946 Benicia Ave.
Sunnyvale CA 94086(408) 245-1492

Farrtronics Ltd.

45 Campbell Ave.
Kitchener On N2H 4X8 Canada... (519) 741-1010

Federal Communications Commission

1919 M St. N.W.
Washington DC 20554(202) 632-3906

Feldmar Watch Co.

9000 W. Pico Blvd.
Los Angeles CA 90035(213) 272-1196

Ferco

707 11th Ave.
New York NY 10019(212) 245-4800

Ferno-Washington Inc.

70 Weil Way Ave.
Wilmington OH 45177(513) 382-1451

FGV Panther Corp. Of America

3360 Adina Dr.
Los Angeles CA 90068(213) 850-0246

Fiberbilt Cases, Inc.

601 W. 26th St.
New York NY 10001-1199(212) 675-5820

Fidelipac Corp.

97 Foster Rd.
Moorestown NJ 08057(609) 235-3900

Field Engineering

P.O. Box 663
Malibu CA 90265(213) 457-4511

Fife-Pearce Electric Co.
17141 Ryan Rd.
Detroit MI 48212(313) 369-2560

Filament Pro Audio
143 E. Arrow Highway
San Dimas CA 91773(714) 592-2848

Filmagic Products, Inc.
1439 Beattie Ave.
Atlanta GA 30310(404) 758-6432

Film House, Inc.
230 Cumberland Bend
Nashville TN 37228(615) 255-4000

Fimlab System Intl. Ltd.
Robert House, Station Rd.
Chlnnor Oxon OX9 4PU England

Film Processing Corp.
3602 Crenshaw Blvd.
Los Angeles CA 90016(213) 737-8273

Film/Video Equipment Services
1875 S. Pearl St.
Denver CO 80210(303) 778-8616

First Com
13747 Monfort Dr., # 220
Dallas TX 75240(214) 934-2222

Fitzco
912 Midkiff
Midland TX 79701(915) 684-0861

Flash Technology
55 Lake St.
Nashua NH 03060(603) 883-6500

Flessing, Pirtle & Associates
6049 Douglas Blvd. Suite #11
Roseville CA 95678(916) 791-3003

FloriCal Systems, Inc.
2201 NW 24th Ave.
Gainesville FL 32605(914) 372-8326

Florida State AV & Communication
P.O. Box 23308
Ft. Lauderdale FL 33307(305) 564-8471

Focal Press
80 Montvale Ave.
Stoneham MA 02180(617) 438-8464

FOR-A Corp. of America
320 Nevada Street
Newton MA 02160(617) 244-3223

CA **FOR-A Corp. of America**
11095 Knott Ave., Ste. A,B
Cypress 90630

IL **For-A Corp. of America**
450 E. Devon Avenue, Suite 185
Itasca 60143(312) 250-8833

Ford Audio
4800 West I-40
Oklahoma City OK 73128(405) 946-9966

Fortel, Inc.
6420 Atlantic Boulevard, Suite 100
Norcross GA 30071(404) 449-4343

Ft. Worth Tower Co., Inc.
1901 East Loop 820 South
Ft. Worth TX 76112(817) 457-3060

Fostex Corp. of America
15431 Blackburn Ave.
Norwalk CA 90650(213) 921-1112

Four State Radio Supply Co., Inc.
402 Wall St.
Joplin MO 64801(417) 624-0368

Fox Electronics Co., Inc.
711 So. 9th St.
Richmond IN 47374

Frezzolini Electronics, Inc.
5 Valley Street
Hawthorne NJ 07506(201) 427-1160

FL **Frezzolini South**
767 John Ringling Blvd.
Sarasota 34236(813) 366-3021

Frezzolini Electronics, Inc./PAG
5 Valley Street
Hawthorne NJ 07506(201) 427-1160

FL **Frezzolini South**
767 John Ringling Blvd.
Sarasota 34236(813) 366-3021

Fries Engineering, Inc.
12032 Vose St.
N. Hollywood CA 91605(818) 465-3600

Fujinon, Inc.
10 Highpoint Drive
Wayne NJ 07470-7431(201) 633-5600

Fuji Photo Film U.S.A., Inc.
555 Taxter Road
Elmsford NY 10523(914) 789-8100

Full Compass Systems
6729 Seybold Rd.
Madison WI 53719(608) 271-1100

Fumeo S.P.A.
Via Teocrito 47
Milano 20128 Italy

Future Productions, Inc.
630 9th Ave., Ste. 403
New York NY 10036(212) 333-3606

Galaxy Audio Entertainment Services
703 Grant Ave.
Altoona PA 16602(814) 944-4596

Gamble Music
312 S. Wabash
Chicago IL 60604(312) 427-5652

Garner Industries, Inc.
4200 N. 48th Street
Lincoln NE 68504(402) 464-5911

CA **Garner Industries, Inc.**
5810 Gold Hill Road
Placerville 95667(916) 626-9363

Adolph Gasser, Inc.
P.O. Box 420
San Francisco CA 94104(415) 495-3852

Gaucht Electronics
782 S. Valencia St.
Los Angeles CA 90017(213) 484-0046

G C Video
64 Ericson Rd.
Sandia Park NM 87047(505) 281-1303

GE American Communications, Inc.
4 Research Way
Princeton NJ 08540(609) 987-4230

Gelb Music, Inc.
722 El Camino Real
Redwood City CA 94063(415) 365-8878

Claus Gelotte, Inc.
411 Waverly Oaks Road
Waltham MA 02154(617) 868-2366

General Electric Co.
4164 Neia Park
Cleveland OH 44112(216) 266-2121

General Electric Comband Products
One College Boulevard
Portsmouth VA 23705(804) 483-5773

General Electric Co.
Electronics Park 6-205
Syracuse NY 13221(315) 456-3304

General Electronics Systems (GESI)
1440 San Pablo Ave.
Berkeley CA 94702(415) 427-7700

General Television Network
13225 Capitol Ave.
Oak Park MI 48237(313) 548-2500

Genigraphics
P.O. Box 408
South Plainfield NJ 07080

Gentner Engineering Co., Inc.
540 W. 3560 South
Salt Lake City UT 84115(801) 268-1117

Gentner RF Products
P.O. Box 32550
San Jose CA 95152(408) 926-3400

Geocam Corp.
P.O. Box 704
Orange NJ 07050(201) 672-2223

Giesler Broadcasting Supply
5914 Maple
Houston TX 77074(713) 774-3314

Gitzo
34-11 62nd Street
Woodside NY 11377(718) 565-0004

GKC Research & Development
4935 Ellery Lane
Colorado Springs CO 80919(303) 548-8300

Glen Industrial Communications
979 Rollins Ave.
Rockville MD 02852(301) 231-8750

GML Grove
8547 Grovemont Circle
Gaithersburg MD 20877(301) 670-9690

CA **Innovative Concepts, Inc.**
575 Esplanade, Unit 102
Redondo Beach 90277(213) 540-2550

GA **Marketline, Inc.**
2541 Poplar St.
Snellville 30278(404) 972-9040

IL **Go Video Sales**
1195 S. Wilson Dr.
Lake Forest 60045(312) 295-6720

KS **R.L. Graham & Associates**
9201 Bellinder Rd.
Leawood 66206(913) 383-3470

KY **Bruce Dawson & Associates**
Central Amer. Term., Bowman Field
Louisville 40205(502) 456-6660

NH **Associated Systems**
38 Nathan Cutler Dr.
Bedford 03102(603) 472-2290

NJ **Symco**
26 Lurline Dr.
Basking Ridge 07920(201) 674-6260

TX **Active Marketing, Inc.**
2815 Valley View, Suite 125
Dallas 75234(214) 243-2564

G & M Power Products, Inc.
943 N. Orange Dr.
Los Angeles CA 90038(213) 850-6800

Gohmert Sound Services
Route # 1, Box 166
Yorktown TX 78164(512) 564-2450

Alan Gordon Enterprises, Inc.
1430 Cahuenga Blvd.
Hollywood CA 90028(213) 466-3560

Gorman-Redlich Mfg. Co.
257 W. Union St.
Athens OH 45701(614) 593-3150

Gotham Audio Corp.
1790 Broadway
New York NY 10019-1412(212) 765-3410
CA Gotham Audio Corp.
7445 Orion Ave.
Van Nuys 91406(818) 785-2211
MA Gotham Audio Corp.
12 Broad St.
Salem 01970(617) 745-8522

Graham-Patten Systems, Inc.
P.O. Box 1960
Grass Valley CA 95945(916) 273-8412

The Grass Valley Group, Inc.
P.O. Box 1114
Grass Valley CA 95945(916) 478-3000

Graves & Graves Construction Co.
P.O. Box 369, Highway 20 West
Parsons TN 38363(901) 847-6391

Gray Communications Consultants
P.O. Box 3229
Albany GA 31708(912) 883-2121

Gray Engineering Laboratories, Inc.
504 W. Chapman Ave., Suite P
Orange CA 92668(714) 997-4151

The Great American Market
826 N. Cole Ave.
Hollywood CA 90038(213) 461-0200

Great Northern Video
31 Industrial Park Dr.
Concord NH 03301(603) 228-0412

Great Northern Wire and Cable, Inc.
1401 Brook Dr.
Downers Grove IL 60515(312) 827-1700

**L. Greenberg Electronic
Teleprompting**
24506 Thistle Ct.
Newhall CA 91321(805) 253-1987

David Green Broadcast, Inc.
P.O. Box 8782
BWI Airport MD 21240(301) 796-1500

Grumman Aerospace Corp.
Sunrise Highway
Great River NY 11739(516) 575-0574

James Grunder & Associates
5925 Beverly
Mission KS 66202(913) 831-0188

GTE Spacenet Corp.
1700 Old Meadow Rd.
McLean VA 22101(703) 848-1000

GTE/Sylvania Lighting
100 Endicott St.
Danvers MA 01923(617) 777-1900

Guarantee Radio Supply
1314 Iturbide St.
Laredo TX 78040(512) 723-6913

Guitar Showcase
1360-41st Ave.
Capitola CA 95010(408) 377-5864

Guzzardo Music
3010 Charles St.
Rockford IL 61108(815) 229-5020

**Haerland A-V and
Telecommunications**
1065 N. 33rd St.
Lincoln NE 68503(402) 467-3558

Hallikainen & Friends, Inc.
141 Suburban Road, Bldg. E4
San Luis Obispo CA 93401-7590
.....(805) 541-0200

CA Allied Broadcast Equipment
3808 Riverside Dr., Ste. 303
Burbank 91505

CA Kidd Communications
4096 Bridge St., Ste. 4
Fair Oaks 95628(916) 961-6411

CA Pacific Coast Marketing
14125 Capri Dr.
Los Gatos 95030(408) 370-3505

GA Allied Broadcast Equipment
4405 Mall Blvd., Ste. 314
Union City 30291(404) 964-1464

IL Allied Broadcast Equipment
5097 N. Elston Ave., Ste. 303
Chicago 60630(312) 794-0224

IL Harris Corp.
P.O. Box 4290
Quincy 62305(217) 222-8200

IL RAM Broadcast Systems, Inc.
346 W. Colfax St.
Palatine 60067(312) 358-3330

IN Allied Broadcast Equipment
P.O. Box 1487
Richmond 74374-8487(317) 962-8596

NY Northeast Broadcast Lab, Inc.
P.O. Box 1176
South Glens Falls 12801-0028 ... (518) 793-2181

TX Allied Broadcast Equipment
1101 E. Plano Parkway, Ste. B
Plano 75074(214) 423-8667

WA Allied Broadcast Equipment
33430 13th Place South, Ste. 120
Federal Way 98003(206) 838-2705

Handy TV, Inc.
601 Graymont Ave.
Birmingham AL 35203(205) 251-9725

Clifford B. Hannay and Son, Inc.
600 East Main St.
Westerlo NY 12193(518) 797-3791

Harmon Industries
14330 Cleveland Ave. South
Fort Myers FL 33912(813) 482-7220

Harris Audio Systems
1962 N.E. 149th St.
N. Miami FL 33181

Harris Corp.
P.O. Box 4290
Quincy IL 62305-4290(217) 222-8200

Harrison Systems, Inc.
P.O. Box 290157
Nashville TN 37229-0157 ... (615) 834-1184

CA Harrison Systems, Inc.
4721 Laurel Canyon Blvd., Ste. 209
North Hollywood 91604(818) 763-2349

Harris Sound, Inc.
6640 Sunset Blvd., Ste. 110
Hollywood CA 90028(213) 469-3500

Lee Hartman & Sons, Inc.
3236 Cove Rd, NW
Roanoke VA 24033(703) 366-3493

H.A. Solutec Ltd.
4360 D'Iberville St.
Montreal Qu H2H 2L8 Canada ... (514) 522-8960

H.B. Communications, Inc.
15 Corporate Dr.
North Haven CT 06473(203) 234-9246

Heart Of Texas Music, Inc.
1002 South Lamar
Austin TX 78704(512) 444-9750

Held Pro Audio
701 Washington Rd.
Pittsburgh PA 15228(412) 561-3399

Karl Heltz, Inc.
34-11 62nd St.
Woodside NY 11377(718) 565-0004

Henri's Music, Inc.
P.O. Box 3589
Greenbay WI 54303(414) 494-4716

Henry Engineering
503 Key Vista Dr.
Sierra Madre CA 91024(818) 355-3656

IN Allied Broadcast Equipment, Inc.
3712 National Road West
Richmond 47375(317) 962-8596

MD Bradley Broadcast Sales
8101 Cessna Drive
Gaithersburg 20879(301) 948-0650

WA Broadcast Supply West
7012 27th Street West
Tacoma 98466(206) 565-2301

Henry Radio
2050 S. Bundy Dr.
Los Angeles CA 90025(714) 772-9200

High Fidelity House
1001 Sussex Blvd.
Broomall PA 19008(215) 544-4420

Hill Radio Equipment
203 Alawhe Rd. Rte. 8
Claremore OK 74017(918) 341-5240

J. Hines Cases Co., Inc.
6301 J. Richard Dr.
Raleigh NC 27612(919) 783-9077

Hipotronics, Inc.
Route 22
Brewster NY 10509(914) 279-8091

Hitachi Denshi, Ltd.
175 Crossways Park West
Woodbury NY 11797(516) 921-7200

CA Hitachi Denshi America Ltd.
371 Van Ness Way, Ste. 120
Torrance 90501(213) 328-6116

GA Hitachi Denshi America Ltd
3610 Clearview Parkway
Doraville 30340(404) 451-9453

IL Hitachi Denshi America Ltd.
250 East Devon Ave., Ste. 115
Itasca 60143(312) 250-8050

TX Hitachi Denshi America Ltd.
14169 Proton Road
Dallas 75244

HM Electronics, Inc.
6675 Mesa Ridge Road
San Diego CA 92121(619) 535-6060

CO Silver Peak Marketing
6280 W. 38th Avenue
Wheat Ridge 80033(303) 467-9042

CT John B. Anthony Co.
992 High Ridge Road
Stamford 06905(203) 322-9202

FL World Wide Electronics
P.O. Box 840207
Pembroke Pines 33084(305) 584-7024

IN AV Marketing
597 Industrial Drive
Carmel 46032(317) 846-1034

KS R.L. Graham Associates
P.O. Box 6464
Leawood 66206(913) 383-3475

MA New Resource
28 Mount Blue Street
Norwell 02061(617) 659-1463

MD David H. Brothers Co., Inc.
P.O. Box 689
Finksburg 21048(301) 833-0920

MI MDR Sales
28575 Greenfield, Ste. 202
Southfield 48076(313) 443-2270

MN Kodo Associates, Inc.
8314 Pillsbury Ave., South
Minneapolis 55520(612) 881-1255

NC Applied Audio Marketing
9 Elk Mountain
Asheville 28804-2105(704) 252-9313

NY Bernard Darmstedter Associates
8282 Willett Parkway
Baldwinsville 13027(315) 638-1261

PA George M. Conneen Co., Inc.
P.O. Box 251
Springfield 19064(215) 544-5884

TX Dobbs-Stanford
2715 Electronics Lane
Dallas 75220(214) 358-0800

WA Loppnow & Associates
16541 Redmond Way, Suite 137
Redmond 98052-4463(206) 883-3205

Hnat Hinds, Inc.
42 Elaine Street, RR 1
Thompson CT 06277(203) 935-9066

Hoffend & Sons, Inc.
34 East Main St.
Honeoye NY 14471(716) 229-5998

Hoffman Music Co.
N. 1430 Monroe
Spokane WA 99201(509) 328-3888

Hoffman Video Systems
1945 South Figueroa St.
Los Angeles CA 90007(213) 749-3311

Holiday Industries, Inc.
14825 Martin Dr.
Eden Prairie MN 55344(612) 934-4920

Hollywood Sound
7237 Santa Monica Blvd
West Hollywood CA 90046(213) 466-2416

Holm-James Distributors
P.O. Box 2487
Great Falls MT 59403(406) 761-2420

Holt Audio Visual & Video
401 S. 28th St.
Birmingham AL 32533(205) 328-5231

H. M. Holzberg Assoc.
Box 323
Seabright NJ 07760(201) 530-8555

Home Shopping Network, Inc.
1529 U.S. 19 South
Clearwater FL 33546(813) 572-8585

Hoodman Corp.
122 Neptune Ave.
Hermosa Beach CA 90254(213) 379-6391

Hooper Electronic Supply
1917 6th St.
Meridian MS 39301(601) 693-2668

Hoover Brothers
2050 Postal Way
Dallas TX 75212(214) 634-8474

Hoppmann Corp.
14560 Lee Rd.
Chantilly VA 22021(703) 631-2700

Hotronc, Inc.
1875 South Winchester Blvd.
Campbell CA 95008-1110(408) 378-3883

Howe Technologies Corp.
2300 Central Ave., Suite E
Boulder CO 80301(303) 444-4693

Hubbard Communications, Inc.
12495 34th St., North
St. Petersburg FL 33716(813) 577-7759

Hudson Audio Video Enterprises, Inc.
309 Power Ave.
Hudson NY 12534-2448(518) 828-2000

Hughey & Phillips
2162 Union Place
Simi Valley CA 93065(805) 581-5591

W. B. Hunt Co., Inc.
500 Main St.
Malden MA 02148(617) 324-1040

Hy James
24166 Haggerty Rd.
Farmington Hills MI 48018(313) 471-0027

IAN Communications Group, Inc.
10 Upton Dr.
Wilmington MA 01887(617) 658-3700

ICB Audio Co.
1349 E. McMillan
Cincinnati OH 45206(513) 281-5535

ICOM, Inc.
278 North Fifth St.
Columbus OH 43215(614) 224-4400

IGM Communications, Inc.
282 W. Kellogg Rd.
Bellingham WA 98226(206) 733-4567

Ikegami Electronics (USA), Inc.
37 Brook Ave.
Maywood NJ 07607(201) 368-9171

CA Ikegami Electronics (USA), Inc.
23105 Kashiwa Court
Torrance 90505(213) 534-0050

FL Ikegami Electronics (USA), Inc.
6201 Johns Road, Suite #5
Tampa 33634(813) 884-2046

HI Ikegami Electronics (USA), Inc.
1020 Auahi Street, Bldg. 7 Bay 3A
Honolulu 96814(808) 946-5955

IL Ikegami Electronics (USA), Inc.
747 Church, Units C4 & C5
Elmhurst 80126(312) 834-9774

NJ Ikegami Electronics (USA), Inc.
29 Brook Avenue
Maywood 07607(201) 368-9171

NJ Ikegami Electronics (USA), Inc.
37 Brook Ave.
Maywood 07607(201) 368-9171

TX Ikegami Electronics (USA), Inc.
6311 N. O'Connor Rd., Suite 100
Irving 75039-3510(214) 869-2363

ILC Technology
399 Java Dr.
Sunnyvale CA 94089(408) 745-7900

Image Media, Inc.
P.O. Box 640
Candler NC 28715(704) 667-2545

Image Video, Ltd.
705 Progress Ave., Unit 46
Scarborough On M1H 2X1 Canada(416) 438-3940

IMIG Video Supply Co.
650 West 20th
Anchorage AK 99503(907) 274-2161

Immedia Sound
11 Catherine St.
Worcester MA 01605(617) 791-3366

Imperial Sound
4324 S. Mingo
Tulsa OK 74145(918) 622-6111

Industrial Components North
54 Perry Rd.
Bangor ME 04401(207) 942-2600

Industrial Acoustics Co.
1160 Commerce Ave.
Bronx NY 10462(212) 931-8000

Industrial Audio/Video, Inc.
2617 Bissonet
Houston TX 77005(713) 524-1956

Industrial Communications
21470 Coolidge Hwy.
Oak Park MI 48237(313) 399-4900

Industrial Components Corp.
2551 Boston Rd.
Wilbraham MA 01095(413) 596-3854

Industrial Electronic Supply, Inc.
2321 Texas Ave.
Shreveport LA 71103(318) 222-9455

Industrial Processor Controls
4726-C Peck Road
El Monte CA 91732(818) 443-2737

Industrial Training Aids, Inc.
Dana Ave. & I-71
Cincinnati OH 45207(513) 631-7000

Industrial Video
19 N.W. 23rd
Oklahoma City OK 73103(405) 521-8282

Industrial Video Co., Inc.
1601 N. Ridge Road
Lorain OH 44055(216) 277-1218

Information Display Systems
17 Smith St.
Englewood NJ 07631(201) 567-2010

Innovative Automation
3316 19th Ave. SE
Rio Rancho NM 87124(505) 891-0501

Innovative Television Equipment
6445 De Soto Ave.
Woodland Hills CA 91367(818) 888-9421

CA Innovative Television Equipment
6445 De Soto Ave.
Woodland Hills 91367(818) 889-9421

NJ Innovative Television Equipment
250 Gorge Rd., #6E
Cliffside Park 07010(201) 943-7476

Innovision Optics, Inc.
1318 Second St., # 27
Santa Monica CA 90401(213) 394-5510

Inovonics, Inc.
1305 Fair Ave.
Santa Cruz CA 95060(408) 458-0552

Intectra
2629 Terminal Blvd.
Mountain View CA 94043(415) 967-8818

Intec Video Systems, Inc.
23301 Vista Grande
Laguna Hills CA 92653(714) 859-3800

Integrated Media Systems
1552 Laurel St.
San Carlos CA 94070(415) 592-8055

Intelligent Light, Inc.
P.O. Box 65
Fair Lawn NJ 07410(201) 794-7550

Intelvideo, Inc.
42 Arrow Head Dr.
Stamford CT 06903(203) 322-1605

Inten Corp.
7100 Biscayne Blvd.
Miami FL 33138(305) 758-5800

Interactive Motion Control
8671 Hayden Place
Culver City CA 90232(213) 559-6146

INTERCONTINENTAL—KNOX VIDEO

Intercontinental Televideo, Inc.

29 W. 38th Street
New York NY 10018(212) 947-9097

Interface Avideo Systems, Inc.

1333 New Hampshire N.W., LL200
Washington DC 20036(202) 861-0500

Intergroup Technologies

2040 N.W. 67 Place
Gainesville FL 32606(904) 335-0901

Intermountain Video Systems

1599 W. 2100 South
Salt Lake City UT 84119(801) 972-8830

International Electro-Magnetics, Inc.

350 N. Eric
Palatine IL 60067(312) 358-4622

International Music Co.

P.O. Box 2344
Ft. Worth TX 76102(817) 336-5114

International Sound, Inc.

339 Main St.
Orange NJ 07050(201) 673-0666

International Tapetronics

2425 South Main Street
Bloomington IL 61701(309) 828-1381

International Video Inc.

124 W. McDowell
Phoenix AZ 85003(602) 254-7967

IRC Audio

8112 Castleway Court West
Indianapolis IN 46250(317) 849-6887

Islip Video & Electronics

126 F.E. Main St.
East Islip NY 11730(516) 277-5434

ITELCO USA

1620 West 32nd Place
Hialeah FL 33012(305) 822-1421

ITS Concor

2143 E. 5th
Tempe AZ 85281(602) 968-8523

ITS Corp.

375 Valley Brook Rd.
McMurray PA 15317(412) 941-1500

IVS, Inc.

7925 Auburn Blvd
Citrus Heights CA 95610(916) 725-6600

Jampro

6939 Power Inn Road
Sacramento CA 95828(916) 383-1177

Jampro Antennas, Inc.

6939 Power Inn Rd.
Sacramento CA 95828(916) 383-1177

Jaunus Systems Corp.

Huntington Plaza, Suite 108
Huntington Valle PA 19006(215) 947-3050

JBL Professional

P.O. Box 2200
Northridge CA 91329(818) 893-8411

Jefferson Audio Video Systems

11001 Bluegrass Parkway
Louisville KY 40299(502) 267-9658

Jefferson-Pilot Data Systems

501 Archdale Dr.
Charlotte NC 28210(704) 529-3901

Jem-Fab Corp.

574 Sunrise Highway
Baldwin NY 11510

Jensen Tools, Inc.

7815 South 46th St.
Phoenix AZ 85044(602) 968-6241

J & J Television & Electronics, Inc.

5908 Johnson St.
Hollywood CA 33021(305) 989-7111

The J-Lab Co.

P.O. Box 6530
Malibu CA 90264(213) 457-4090

Johnson Electronics, Inc.

4301 Metric Dr.
Winter Park FL 32792(305) 677-4030

JRF Magnetic Sciences

249 Kennedy Road
Greendell NJ 07839(201) 579-5773

J & R Music World

23 Park Row
New York NY 10038(212) 732-8600

J & S Audio Visual Communications Co.

4407 Beltwood Pkwy N. Ste. 1
Dallas TX 75244(214) 239-9133

JVC Professional Products Company

41 Slater Drive
Elmwood Park NJ 07407(201) 794-3900
CA JVC West Coast Branch
1111 West Artesia Blvd.
Compton 90220(213) 537-6020
IL JVC Midwest Branch
2250 Lively Blvd.
Elk Grove 60007(312) 364-9300
NJ JVC East Coast Branch
I-80 at New Maple Ave.
Pinebrook 07058(201) 882-0900
TX JVC Southwest Branch
407 Garden Oaks Blvd.
Houston 77018(713) 694-0666

Kadair's, Inc.

6864 Florida Ave.
Baton Rouge LA 70806(504) 927-5402

Kadet Photo, Inc.

1004 5th Ave.
Pittsburgh PA 15219(412) 261-7258

Kahn Communications, Inc.

425 Merrick Ave.
Westbury NY 11590(516) 222-2221

Kalamusic

4200 West Main Street
Kalamazoo MI 49007(616) 385-5110

Kangaroo Video Products, Inc.

10845 Wheatlands Ave., Suite C
Santee CA 92071-2856(619) 562-9696
KVP, Ltd.
Elite House, 113/115 Queen's Rd.
Reading RG1 4DA England...0734 508478

Kansas City Data, Inc.

1900 Erie St. Ste. 307
N. Kansas City MO 64116(816) 221-4597

Kavouras, Inc.

6301 34th Ave., South
Minneapolis MN 55450(612) 726-9515

Kay Industries, Inc.

604 North Hill Street
South Bend IN 46617(219) 234-0171

Keltec Florida Microwave Products

50 Second St.
Shallmar FL 32579(904) 651-9749

Keylite PSI

333 South Front St.
Burbank CA 91502(818) 841-5483

K & H Products, Ltd.

BCIC Building Water Street
N. Bennington VT 05257(802) 442-8171

Kidd Communications

4096 Bridge St., Ste. 4
Fairoaks CA 95628(916) 961-6411

Kinematics/Truetime

3243 Santa Rosa Ave.
Santa Rosa CA 95407(707) 528-1230

Kings Electronics Co.

40 Marbledale Rd.
Tuckahoe NY 10707(914) 793-5000

Kinotone, Inc.

P.O. Box 508
Paterson NJ 07544(201) 279-9700

Kintek, Inc.

224 Calvary St.
Waltham MA 02154(617) 894-6111

Kintronic Labs, Inc.

P.O. Box 845
Bristol TN 37621-0845(615) 878-2141

Kipp & Son

1605 Eastern Avenue
Baltimore MD 21231(801) 732-5870

Kirkman Electronics, Inc.

Drawer K-Salem Station
Winston-Salem NC 27108(919) 722-9131

Klaus Radio, Inc.

8400 N. Allen Road
Peoria IL 61615(309) 691-4840

Kliegl Brothers Lighting, Inc.

5 Aerial Way
Syosset NY 11791(516) 937-3900

Kline Iron & Steel Co., Inc.

1225 Huger St.
Columbia SC 29201(803) 251-8000

Knox Video Products

8547 Grovemont Circle
Galtersburg MD 20877(301) 840-5805
CA Progressive Marketing Products, Inc.
1521 N. Placentia Ave.
Anaheim 92806(714) 774-4820
CA SCH Video
320 Harding Avenue
Los Gatos 95032(408) 356-1286
GA Marketline, Inc.
2541 Poplar Street
Snellville 30278(404) 972-9048
IL Go Video Sales
1195 South Wilson Drive
Lake Forest 60045(312) 295-6726
IN George Constantine Associates
9928 Culpepper Dr.
Carmel 46032(317) 844-2001
MO Midwest Video Sales Co.
P.O. Box 121
Ballwin 63021(314) 394-7796
NH Associated Systems
P.O. Box 5211
Manchester 03180(603) 472-2297
NY Leon Pomerantz Associates
52 Chateau Square
Rochester 14618(800) 824-7888
NY J.L. Schaffer Associates
16-44 202nd St.
Bayside 11360(718) 352-8838
OH LMS Marketing
11465 Windridge Dr., NW
Pickerington 43147(614) 837-7900
OH LMS Marketing
1565 Bethel Rd.
Columbus 43220(614) 457-2288

FX Audio Video Marketing
817 Panay Way
Ft. Worth 76108(817) 246-7166

Eastman Kodak Company
343 State Street
Rochester NY 14650(716) 724-4000

Gunz, Inc.
207-209 E. Patapsco Ave.
Baltimore MD 21225(301) 355-7220

G-Video
124141 N. 29th Place
Phoenix AZ 85032(602) 992-4443

Lafayette Instrument Co., Inc.
P.O. Box 5729
Lafayette IN 47902(317) 423-1505

Laird Telemedia, Inc.
2424 South 2570 West
Salt Lake City UT 84119(801) 972-5900

LA Laird Telemedia, Inc.
1 Perimeter Park South
Birmingham 35243(205) 870-0967

CA Laird Telemedia, Inc.
136A No. Grand # 126
West Covina 91791(714) 599-7763

N Laird Telemedia, Inc.
P.O. Box 571
Carmel 46032(317) 848-5780

FX Laird Telemedia, Inc.
6311 N O'Connor, Ste.N-38, Lb 160
Irving 75039(214) 869-7693

Lake Compuframes, Inc.
P.O. Box 890
Briarcliff Manor NY 10510 ... (914) 941-1998

Lake Systems Corp.
287 Grove St.
Newton MA 02166(617) 244-6881

La Mesa Camera Sound Center
8285 La Mesa Blvd.
La Mesa CA 92041

Landy Associates, Inc.
1890 East Marlton Pike
Cherry Hill NJ 08003(609) 424-4660

La Salle Music Shop, Inc.
27 LaSalle Road
West Hartford CT 06107(203) 236-5401

Laumic Co., Inc.
306 East 39th Street
New York NY 10016(212) 889-3300

LCI/Sync, Inc.
931 N. Gardner St.
Hollywood CA 90046

LDL Communications
14440 Cherry Lane Ct. Ste. 201
Laurel MD 20707(301) 498-2200

L.D. Systems, Inc.
467 West 38th Street
Houston TX 77018(713) 695-9400

Leader Instruments Corp.
380 Oser Avenue
Hauppauge NY 11788(516) 231-6900

L.E.A. Dynatech Inc.
12516 Lakeland Rd.
Santa Fe Springs CA 90670 ... (213) 944-0916

Lectrosonics, Inc.
2100 Atrisco Dr., NW
Albuquerque NM 87120(505) 831-1010

LEE Colortran, Inc.
1015 Chestnut Street
Burbank CA 91506-9983 ... (818) 843-1200

CT LEE Colortran, Inc.
114A Washington St.
Norwalk 06854(203) 852-9080

NY LEE Colortran, Inc.
23 East 22nd St., 4th Floor
New York 10010-5304(212) 995-9200

TX LEE Colortran, Inc.
603 Babcock, Suite # 130
San Antonio 78229(512) 344-5533

Leitch Video of America, Inc.
825K Greenbrier Circle
Chesapeake VA 23320(804) 424-7920

On Leitch Video International, Inc.
10 Dyas Road
Don Mills M3B 1V5 Canada ..(800) 387-0233

LEMO USA, Inc.
335 Tesconl Circle
Santa Rosa CA 95401(707) 578-8811

Lenco, Inc.
300 North Maryland St.
Jackson MO 63755(314) 243-3147

Lenrose Electronic
442 Breesport
San Antonio TX 78216(512) 342-8849

Leonetti Cine Rentals
5609 Sunset Blvd.
Hollywood CA 90028(213) 469-2987

Lerro Electrical Corp.
3125 North Broad St.
Philadelphia PA 19132(215) 223-8200

Lexicon, Inc.
100 Beaver St.
Waltham MA 02154-8425 ... (617) 891-6790

CA Lexicon Inc., Western Sales Office
2323 Corinth Ave., Ste. 201
West Los Angeles 90064(213) 479-2771

Liberty Audio & Film Service
824 W. Broad St.
Richmond VA 23220(804) 231-7379

Lighting Eliminators & Consultants, Inc.
13007 Lakeland Rd.
Santa Fe Springs CA 90670 ... (213) 946-6886

Lighting Methods, Inc.
1099 Jay St.
Rochester NY 14611(716) 328-1020

Light Wave Systems
7760 Burnett Ave.
Van Nuys CA 91405(818) 780-3002

Lines Video Systems
Jefferson at McDaniel
Springfield MO 64806(417) 862-5533

Peter Lisand Machine Corp.
352 River Road
Edgewater NJ 07020(201) 943-5600

Listec Video Corp.
30 Oser Ave
Hauppauge NY 11788(516) 273-3020

Listen Up Audio Systems
999 S. Logan
Denver CO 80209(303) 778-0949

Lita Broadcasting Distributors
7154 NW 72nd Avenue
Miami FL 33166(305) 887-1223

Lites, Inc.
7022 Sunset Blvd.
Hollywood CA 90028(213) 463-8866

Littlite
10087 Industrial Dr.
Hamburg MI 48139(313) 231-9373

LMG Peterson
9520 Owensmouth Ave.
Chatsworth CA 91311(818) 718-8100

LNR Communications, Inc.
180 Marcus Blvd.
Hauppauge NY 11788(516) 273-7111

Lofstrom Electronic, Inc.
Empire Bldg.
Glassport PA 15045(412) 461-2116

Logical Video Systems
2403 Dutch Valley Rd.
Knoxville TN 37918(615) 688-3532

Logitek Electronic Systems, Inc.
3320 Bering Dr.
Houston TX 77057(713) 782-4592

Long's Electronics
2700 Crestwood Blvd.
Birmingham AL 35234(205) 956-6767

Lowel-Light Mfg., Inc.
475 Tenth Ave.
New York NY 10018-1197 ... (212) 947-0950

LPB, Inc.
28 Bacton Hill Road
Frazer PA 19355(215) 644-1123

**L & S Publishing/
Broadcasting and the Law**
3050 Biscayne Blvd. # 501
Miami FL 33137(305) 576-4743

LTM Corp. of America
11646 Pendleton St.
Sun Valley CA 91352(818) 767-1313

FL LTM Corp. of America
909 N.W. 10th Terrace
Ft. Lauderdale 33311(305) 522-1070

MI LTM Corp. of America
36875 Schoolcraft Road
Livonia 48150(313) 464-1103

NY LTM Corp. of America
437 W. 16th Street
New York 10011-5835(212) 243-9288

Lubbock Audio Visual Co.
P.O. Box 1935
Lubbock TX 79408(806) 744-2559

Lucasey Mfg. Corp.
P.O. Box 7255
Oakland CA 94601(415) 534-1435

Luxo Lamp Corp.
36 Midland Ave.
Port Chester NY 10573(914) 937-4433

Luxor Corp.
2245 Delany Road
Waukegan IL 60085(312) 244-1800

TX Zeeco Sales & Marketing Inc.
729 Bedford-Eules Rd. # 106
Hurst 76053

L-W Athena, Inc.
50 West Easy Street
Simi Valley CA 93065(805) 522-3284

**Lyon Lamb Video Animations
Systems, Inc.**
4531 Empire Ave.
Burbank CA 91505(818) 843-4831

CA Western Datagraphics
14 Hughes St # 106
Irvine 92718(714) 768-3345

NM BFA
P.O. Box 10300
Albuquerque 87184(505) 828-9100

OK BHC
9717 E. 42nd, # 22
Tulsa 74146(918) 627-0037

LYON LAMB—MICRON AUDIO

3M Company

3M Center 223-5N
St. Paul MN 55144(612) 733-1110

M/A-Com MAC, Inc.

5 Omni Way
Chelmsford MA 01824(617) 272-3100

CA M/A-Com MAC, Inc.

1494 Hamilton Ave., # 204
San Jose 95125(408) 978-8611

GA M/A-Com MAC, Inc.

3761 Venture Dr. #100
Duluth 30136(404) 476-4405

IL M/A-Com MAC, Inc.

3158 Des Plaines St., # 106
Des Plaines 60018(312) 635-3030

MA M/A-Com MAC, Inc.

22 Union Ave. # 3
Sodbury 01776(617) 443-5139

Magna-Tech Electronic Co., Inc.

630 North Ave.
New York NY 10036(212) 586-7240

Magnetic Media Corp. Of Houston

3440 Sojourn Drive, Ste. 200
Carrollton TX 75006(214) 931-0404

Magni Systems, Inc.

9500 S.W. Gemini Dr.
Beaverton OR 97005(503) 626-8400

Magnum Towers, Inc.

9370 Elder Creek Rd.
Sacramento CA 95829(916) 381-5053

Maine Video Systems, Inc.

495 Forest Ave.
Portland ME 04101(207) 773-2355

Malco Electronics

5 Wolcott Ave.
Lawrence MA 01843(677) 685-4383

Manhattan Production Music

P.O. Box 1268 Radio City Station
New York NY 10101(800) 227-1954

Marantz Co., Inc.

20525 Nordhoff St.
Chatsworth CA 91311(818) 998-9333

Marathon Products Corp.

334 West Boylston Street
West Boylston MA 01583(617) 853-0988

Marconi Instruments, Inc.

3 Pearl Ct.
Allendale NJ 07401(201) 934-9050

Mark Antenna Products, Inc.

2180 S. Wolf Road
Des Plaines IL 60018(312) 298-9420

CA Radiation Systems, Inc.

4332 Morning Brook Ct.
Stockton 95207(209) 477-5261

CO Telcom Marketing, Ltd.

2700 S. Shoshone
Englewood 80112(303) 789-1670

FL Brennan Associates

P.O. Box 5006
Clearwater 33518(813) 446-5006

GA Radiation Systems, Inc.

4825 River Green Pkwy.
Duluth 30136(404) 497-0829

MO Comm. Systems, Associates

P.O. Box 191
Cameron 64429(816) 632-7616

NJ Mark Antenna Products, Inc.

62 Burki Place
Freehold 07728(201) 462-0053

NM Mayco, Inc.

11910 Central S.E.
Albuquerque 87123(505) 299-4002

TX Hite Electronic Sales

2691 Dick Price Rd.
Mansfield 76063(817) 483-7077

TX Radiation Systems, Inc.

909 East Collins Blvd.
Richardson 75081(214) 690-8865

VA Radiation Systems, Inc.

1501 Moran Rd.
Sterling 22170(703) 450-5680

WA Arva-Hudson

1416 130th Ave. N.E.
Bellevue 98005(206) 455-0773

Mark of the Unicorn, Inc.

222 Thrd St.
Cambridge MA 02142(617) 576-2760

Marshall Electronic

P.O. Box 438
Brooklandville MD 21022(301) 484-2220

Marshall Products, Inc.

3 Golf Center, Suite 312
Hoffman Estates IL 60195(312) 310-0951

Marti Electronics, Inc.

1501 N. Main
Cleburne TX 76031-0661(817) 645-9163

Martin Audio Video Corp.

423 W. 55th St.
New York NY 10019(212) 541-5900

Maryland Video Systems

216 W. Saratoga St.
Baltimore MD 21201(301) 528-9001

Mason Audio Corp.

360 Penn Rd.
Wynnewood PA 19096(215) 642-2744

Matco, Inc.

427 Perrymont Ave.
San Jose CA 95125(408) 998-1655

Matthews Studio Equipment, Inc.

2405 Empire Ave.
Burbank CA 91504(818) 843-6715

Matthey

P.O. Box 393
South Salem NY 10590(914) 763-8893

Maxell Corp. of America

60 Oxford Dr.
Moonachie NJ 07074(201) 641-8600

Maze Broadcast, Inc.

P.O. Box 6968
Birmingham AL 35210(205) 956-2227

McCune Audio-Visual-Video

951 Howard Street
San Francisco CA 94103(415) 777-2700

McCurdy Radio Industries Ltd.

346 W. Colfax St.
Palatine IL 60067(312) 358-3330

MCL, Inc.

501 S. Woodcreek Road
Bolingbrook IL 60439-4999(312) 759-9500

GA MCL, Inc.

2320 Weems Road
Locust Grove 30248(404) 957-3413

Leatham Electronics (Aust.) Pty. Ltd.
8 Brody St., P.O. Box 371
Rydalmere, NSW 2116 Australia61-2-6842477

Advent Communications Ltd.
Little Britain House, Alma Road,
Chesham, Bucks HP5 3HB England44-494-774400

Tekelec-Airtronic
Cite D. Bruyeres, Rue Carle-Vernet
92315 Sevres, Cedex France33-1-45347535

Elenova S.R.L.
Via Pisa, 200, 20099 Sesto San
Giovanni (MI) Italy39-2-2405512

P.T. Centronix
36 Jalan Matraman Raya
Jakarta Timur Indonesia62-21-884187

R.D.T. Electronics Eng. Pty. Ltd.

"ATIDIM", Advanced Technologies Pk
Neve Sharet, Tel Aviv Israel

Rikel Corp.

S Nomura Bldg 1-26-2 Nishishinjuku
Shinjuku-Ku, Tokyo 160 Japan ...81-3-3451411

Eurocom Telecommunication AS

OVRE Langgate 50
Tonsberg Norway47-33-17936

F.A. Consultores Electronicos, S.A.

No. 23, Edificio Consul
Madrid-10 Spain34-1-4101021

Hiltron GMBH

Lochhouser Strasse 4
8039 Puchheim W. Germany ...49-89-806616

McMartin Industries, Inc.

201 35th Avenue
Council Bluffs IA 51501(712) 366-1300

MCM Productions, Inc.

5677A Westcreek Drive
Fort Worth TX 76133(817) 294-9494

Media Computing, Inc.

13951 North Scottsdale Rd. # 222
Scottsdale AZ 85260(602) 483-9045

Media Concepts

1412 Clubview Rd.
Rocky Mount NC 27804(919) 977-3600

Media Fabricators

5071 W. Washington Blvd.
Los Angeles CA 90016(213) 937-3344

Media General Broadcast Services, Inc.

2714 Union Ave., Extended
Memphis TN 38112(901) 320-4212

Media Pack

120 Hartway Terr.
Clarksburg WV 26301(304) 622-2211

Media Touch Systems, Inc.

68 Stiles Rd., Ste. A
Salem NH 03079(603) 893-5104

Media Travel

29566 Northwestern Hgwy.
Southfield MI 48086

Meltons Pro Sound

468 Ponce De Leon Avenue NE
Atlanta GA 30308(404) 873-4494

Memphis Communications Corp.

1381 Madison
Memphis TN 38104(901) 725-9271

Memtek Products

P.O. Box 58118
Santa Clara CA 95052-8118(408) 559-2900

Merlin Engineering Works

2440 Embarcadero Way
Palo Alto CA 94303(415) 856-0900

Micro Communications, Inc.

P.O. Box 4365
Manchester NH 03108(603) 624-4351

Micro Controls, Inc.

P.O. Box 728, Hwy 174 S.
Burleson TX 76028(817) 295-0965

Microdyne Corp.

P.O. Box 7213
Ocala FL 32672(904) 687-4633

Micron Audio Products, Ltd.

210 Westlake Drive
Valhalla NY 10595(914) 761-6520

Microset
9 Dearham Wood
West Hill On M1E 1R7 Canada... (416) 738-6396

Microsonics
60 Winter St.
Weymouth MA 02188-3336... (617) 337-4200

Microtime, Inc.
1280 Blue Hills Ave.
Bloomfield CT 06002... (203) 242-4242

CA Microtime, Inc. (805) 297-1060

GA Microtime, Inc. (404) 979-4437

NJ Microtime, Inc. (609) 896-3716

TX Microtime, Inc. (214) 644-0232

WI Microtime, Inc. (608) 493-2619

MAL, Ltd.
Dancon House, N. Circular Rd.
Stonebridge Pk.
Park London NW10 7SS England... 441-965-9575

Micro-Trak Corp.
165 Front Street
Chicopee MA 01013... (413) 594-8501

Microtran Co., Inc.
P.O. Box 236
Valley Stream NY 11582-0236... (516) 561-6050

Microwave Radio
847 Rogers St.
Lowell MA 01852... (617) 459-7655

Micworks, Inc.
7398 Center Avenue
Huntington Bch CA 92647... (714) 898-7373

Midwest Communications Corp.
One Sperti Drive
Edgewood KY 41017... (606) 331-8990

Milam Audio Co.
1470 Valle Vista Blvd.
Perkin IL 61554... (309) 346-3161

L. Matthew Miller Assoc.
48 W. 21st Street
New York NY 10010... (212) 741-8011

Miller Fluid Heads (USA), Inc.
2819 W. Olive Avenue
Burbank CA 91505... (818) 841-6262

NJ Miller Fluid Heads (USA) Inc.
410 Garibaldi Ave.
Lodi 07644... (201) 473-9592

Mill-Tronics, Inc.
P.O. Box 340028
Dallas TX 75234... (214) 661-5002

Mlnolta Corp.
101 Williams Dr.
Ramsey NJ 07446... (201) 825-4000

Mission Service Supply
Route 4, Box 384
Fayetteville AR 72701... (501) 521-1750

Mission Electronics
9301 W 74
Shawnee Mission KS 66204... (913) 341-8370

Mitchell Camera Corp.
11630 Tuxford St.
Sun Valley CA 91352... (818) 768-6400

Miteq
100 Davids Dr.
Hauppauge NY 11788... (516) 436-7400

Mitsubishi Electric Sales America, Inc.
110 New England
Pliscataway NJ 08854... (201) 981-1414

Mitsubishi Pro Audio Group
225 Parkside Dr.
San Fernando CA 91340... (818) 898-2341

The Mixing Board
P.O. Box 1488
Burlington CT 05402... (802) 658-4793

M & M Video
4401 So. Main St.
Houston TX 77002... (713) 523-6369

Modern Mass Media, Inc.
P.O. Box 950
Chatham NJ 07948... (201) 635-6000

Modulation Sciences, Inc.
115 Myrtle Ave.
Brooklyn NY 11201... (718) 625-7333

Mole Richardson Co.
937 North Sycamore Ave.
Hollywood CA 90038-2384... (213) 851-0111

Keith Monks Professional Sound Prod.
3712 National Road West
Richmond IN 47374... (317) 962-8596

Montage Group Ltd.
1 W. 85th St. Ste 3A
New York NY 10024... (212) 362-0892

Morefield Communications
35 N. 35th St.
Camp Hill PA 17011... (717) 761-6170

Morgan Sound, Inc.
2004 196th Street, SW #2
Lynnwood WA 98036... (206) 771-7257

Morton Hi-Tek Furnishings
950 W. Central Ave., Unit A
Brea CA 92621... (714) 529-4007

Moseley Associates, Inc.
111 Castilian Drive
Santa Barbara CA 93117-3093... (805) 968-9621

AI Applied Electronics, Ltd.
299 Evans Ave.
Calgary T3A 1L3 Canada... (403) 288-8055

B. Applied Electronics, Ltd.
201-993 West 8th Ave.
Vancouver V5Z 1E4 Canada... (604) 738-0058

CA Allied Broadcast
3808 Riverside Dr., Ste. 303
Burbank 91505... (818) 843-5052

CA Marcom/The Scotts Valley Group
5524 Scotts Valley Drive
Scotts Valley 95066... (408) 438-4273

FL Broadcasters General Store
2480 S.E. 52nd Street
Ocala 32671... (904) 622-9058

GA Allied Broadcast Equipment
Shannon Twrs, 4405 Mall Blvd. #125
Union City 30291... (404) 964-1464

IL Allied Broadcast Equipment
5215 Old Orchard Rd., Ste. 970
Skokie 60077... (312) 470-0303

IN Allied Broadcast Equipment
3712 National Road West
Richmond 47374... (317) 962-8596

MI Audio Broadcast Group
2342 South Division Ave.
Grand Rapids 49507... (616) 452-1596

NC S.C.M.S., Inc.
10201 Rodney Blvd.
Pineville 28134... (704) 889-4508

NY Northeast Broadcast Lab
10373 Saratoga Road
South Glens Falls 12801... (518) 793-2181

On Applied Electronics, Ltd.
6007 Dalford Rd. N.W.
Toronto M8Z 1K2 Canada... (416) 252-3761

PR Electronica Fernandez
P.O. Box R
Hato Rey 00919... (809) 767-3500

Qu Applied Electronics, Ltd.
892 O. Cremazie
Montreal H3N 1A4 Canada... (514) 277-1316

TX Allied Broadcast Equipment
1101 E. Plano Pkwy., Ste. B
Plano 75074... (214) 423-8667

TX Giesler Broadcast Supply
5914 Maple Ave.
Houston 77074... (713) 774-3314

TX National Television Systems Co.
2113 Wells Branch Pkwy Bldg 6 #100
Austin 78728... (512) 251-1392

WA Allied Broadcast Equipment
33430 13th Place South, Ste. 120
Federal Way 98003... (206) 838-2705

WA Broadcast Supply West
7012 27th St., West
Tacoma 98466... (206) 565-2301

WA Lines & Associates
14801 119th Ave. N.E.
Kirkland 98034... (206) 488-3653

WA RF Specialties of Washington
11721 15th Ave.
Seattle 98125... (206) 363-7730

Arturo Arends
P.O. Box 19, Newton St. #2
Netherland Antilles Aruba... 21-339

Quinto Communications
260 Auburn Rd.
Hawthorne, Vic. 3122 Australia... 819-6675

Quinto Communications
2nd Fl. 48 Hatham Parade
Artarmon, NSW 2064 Australia... 437-4772

Tramec Electronica
San Lorenzo 2646, (1636) Olivos
Buenos Aires Argentina... 797-9287

Eletro Equip
Rua Avanhandava, 583
Sao Paulo Brazil... 255-3266

Savana Comunicacoes Ltda.
Rua Visconde Do Pirajá, 547
Ipanema Rio de Janeiro Brazil... 274-5009

Campla International
Casilla 16090
Santiago-9 Chile... 223-0404

Electronica de la Sabana Ltda.
Carrera 11a No 89-34 Of. 305
Apartado Aereo 14371 Bogota Colombia... 257-2404

Industrial Electronics
Centro Comercial Antilles 1
Netherland Antilles Curacao... 372-01

Jutel Oy
PL 412
Oulu 90101 Finland... 223-611

Telmaco Ltd.
2, Semitelou Street
115 28 Athens Greece... 775-5642

ACE/(International) Co.
15 Cheung Yue St., Cheung Sha Wan
Kowloon Hong Kong... (374) 523-43-4

Armonic Overseas
C2/323 Janakpuri
New Delhi 110058 India... 351-640

Rapac Electronics Ltd.
P.O. Box 18053
Tel Aviv 61180 Israel... 477-115

Michael A. Tampier
V. le S. Gimignano, 22
20146 Milano Italy... 415-0818

Shamco
P.O. Box 2043
Amman Jordan... (645) 651-2-3

Korea Electric
Box 116, Kwang Wha Moon
Seoul Korea... (73) 999-91/7

Navcom Limited
P.O. Box 30782
Nairobi Kenya... 334-494

Empresas JL
Orizaba No. 43, Col. Rama
Mexico 7, DF... 525-7036

Ercotron AS
Wald. Thranesg. 84B
N-0175 Oslo 1 Norway... 351-520

Leatham Electronics Ltd.
P.O. Box 1284
Wellington New Zealand... 859-409

Ditel S.A.
P.O. Box 3542
Lima 1 Peru... 36-2015

Empire Electronics
197 Salcedo St., #400, Legaspi VI.
Makati, Metro Manila Philippines... 853-211

Rigoberto Rodriguez
P.C. Box 8690
Panama 5 Panama... 600-874

Telectra
P.O. Box 2531a, 103
1113 Lesboia Codex Portugal... (686) 072-3-4

Crow Broadcast Equipment
1302 Lorong 1, TOA Payoh
#06-13 Siong Hoe IB 1231 Singapore 259-9216

Ercotron AB
Box 47, S-183 21
Taby-Stockholm Sweden 756-7355

Eurotronica
D. Ramon de la Cruz, 90
Madrid 6 Spain 401-5200

Telesource A.G.
Postfach, 3770 Zweisimmen
Stettlen (Bern) Switzerland 242-52

Oceanic Trading Corp.
P.O. Box 891
Taipei Taiwan, ROC (270) 771-11-4

YIP In Tsoi & Jacks Ltd.
G.P.O. Box 2611
Bangkok Thailand 236-5730

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Reading, Berkshire RG2 0TB United
King (073) 431-3828

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Apartado 4075 Carmelitas
Caracas, 101 Venezuela 728-837

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P.O. Box 2084
Port-au-Prince, Haiti West Indies .. 2-0722

Indocom Ltd.
P.O. Box 408, Port-of-Spain
Trinidad West Indies 313-77

Elektrometal
Vlajkovicva 12
Beograd Yugoslavia 338-521

Motorola Comm. & Electronics, Inc.
1301 E. Algonquin Rd.
Schaumburg IL 60196 (312) 397-1000

Moviecam F.G. Bauer Filmtechnik GmbH
Auhofstrasse 254, A-1130 Wien
Vienna 1130 Austria

Moviola
6820 Romaine St.
Hollywood CA 90038 (213) 467-3107

Ernest F. Moy, Ltd.
5 Brunswick Park, Ind. Estate
London N11 1JF England

MPCS Video Industries
514 W. 57th St.
New York NY 10019 (212) 586-3690

MPO Videotronics Corp.
2580 Turquoise Circle
Newbury Park CA 91320 (805) 499-8513

M.P. Video, Inc.
65 South St.
Hopkinton MA 01748 (617) 435-2131

MRL/Magnetic Reference Laboratory
229 Polaris Ave., Suite 4
Mountainview CA 94043 (415) 965-8187

Multi-Track Magnetics
115 Roosevelt Ave.
Belleville NJ 07109 (201) 751-6833

Muntz Electronics
7700 Densmore Ave.
Van Nuys CA 91409 (818) 782-7511

MUSCO Lighting
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Oskaloosa IA 52577 (515) 673-0491

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Birmingham MI 48011 (313) 540-4155

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Mansfield OH 44906 (419) 529-5900

MZB & Associates
6221 No. O'Connor
Irving TX 75039 (214) 869-4500

MZS Ltd.
111 Dean Dr.
Tenafly NJ 07670 (201) 569-9062

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1145 65th Street
Oakland CA 94608 (415) 652-2411

Nagra Magnetic Recorders, Inc.
19 W. 44th Street, Room 715
New York NY 10036-6075 .. (212) 840-0999

Nakamichi U.S.A. Corp.
19701 South Vermont Ave.
Torrance CA 90502 (213) 538-8150

CA L.P. Marketing, Inc.
2036 Livingston St., #5
Oakland 94606 (415) 532-5600

CA Western Audio Sales
1535 Riverside Drive
Glendale 91201 (818) 246-3806

FL Bencsik Associates, Inc.
3730 N.E. 42nd Lane
Ocala 32670 (904) 732-9775

IL Audio Resources, Inc.
778 Burr Oak Drive
Westmont 60559 (312) 655-1180

MA Professional Audio Associates
170 Cambridge St.
Burlington 01803 (617) 229-6050

MI CM Sales
31700 W. 12 Mile Road, #206
Farmington Hills 48018 (313) 553-8070

MO Rancillo Associates
P.O. Box 28869
St. Louis 63123 (314) 631-3326

NC Applied Audio
9 Elk Mountain Road
Asheville 28804 (704) 252-9313

NJ Audio Associates Corp
166 Bloomfield Ave.
Verona 07044 (201) 239-3727

OH J.B. Parent Company
3530 Snouffer, Suite 202
Worthington 43085 (614) 764-0064

PA Sigmec Corp.
V.F. Office Colony, #2-130
Valley Forge 19481 (215) 783-6666

TX Tenickl & Associates
2600 Southwest Freeway
Houston 77098 (713) 528-2005

UT Keiser & Associates
P.O. Box 676
Bountiful 84010 (801) 298-8902

WA Northshore Marketing
16 W. Harrison, #205
Seattle 98119 (206) 284-9699

Nalpak Video Sales, Inc.
1937 C Friendship Dr., # 4280-82
El Cajon CA 92020 (619) 258-1200

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435 Moreland Rd.
Hauppauge NY 11788-3994 .. (516) 231-1700

National Guard Bureau
Support Center, Mallstop 18
Andrews AFB MD 20331-6008 .. (301) 981-6382

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2419 Rutland
Austin TX 78758 (512) 837-1769

National Video Services
Commerce Park - Finance Dr.
Danbury CT 06810 (203) 792-3862

National Weather Association
4400 Stamp Rd., Rm. 404
Temple Hills MD 20748 (301) 931-1644

Nautel Maine, Inc.
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Bangor ME 04401 (207) 947-8200

AR Thomas S. Butler and Associates
P.O. Box 372
Eureka Springs 72632 (501) 253-6009

CA R.F. Specialties of California
3463 State St., Ste. 229
Santa Barbara 93105 (805) 682-9429

FL R.F. Specialties of Florida
P.O. Box 397
Niceville 32578 (904) 678-8943

IN MidAmerica Electronics Services, Inc.
410 Mt. Tabor Rd.
New Albany 47150 (812) 945-1209

LA Audiomedia Associates
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New Orleans 70189 (504) 242-8014

Ma M.S.C. Electronics Ltd.
730 Buckingham Rd.
Winnipeg R3R 1R4 Canada .. (204) 885-5471

MI The Audio Broadcast Group, Inc.
2342 S. Division Ave.
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MI Hy James
24166 Haggerty Rd.
Farmington Hills 48024 (313) 471-0027

MN TDM Engineering and Sales
9800 69th Ave. N., Ste. 205
Maple Grove 55369 (612) 533-4038

No Nautical Electronic Laboratories, Ltd.
RR 1 Tantallon, Hackett's Cove
Halifax County B0J 3J0 Canada (902) 823-2233

NY Northeast Broadcast Lab, Inc.
10373 Saratoga Rd.
South Glens Falls 12801 ... (518) 793-2181

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P.O. Box 565
Southampton 18966 (215) 322-2227

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121 Conneaut Dr.
Pittsburgh 15239 (412) 733-1994

Qu M.S.C. Electronics Ltd.
1525 Mazurette, Ste. 6
Montreal H4N 1G8 Canada .. (514) 387-7348

SC Broadcast Associates
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Rock Hill 29730 (803) 366-8830

TX R.F. Specialties of Texas
P.O. Box 8316
Amarillo 79109 (806) 372-4518

WA R.F. Specialties of Washington
11721 15th Ave. N.E.
Seattle 98125 (206) 363-7730

WY Roberts Broadcast Equipment
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Casper 82601 (307) 235-1800

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Hackett's Cove, R.R. 1
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Wood Dale IL 60191-1094 .. (312) 860-9500

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1154 West Belmont Avenue
Chicago IL 60657 (312) 929-6699

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San Diego CA 92127 (619) 451-6400

Georg Neumann GmbH
1790 Broadway
New York NY 10019-1412 ... (212) 765-3410

Neutrik U.S.A., Inc.
1600 Malone St.
Millville NJ 08332 (609) 327-3113

Rupert Neve, Inc.
Berkshire Industrial Park
Bethel CT 06801 (203) 744-6230

New England Digital
49 North Main St.
White River Junction VT 05001 (802) 295-5800

New England Home Video
Millpond Plaza
Westerly RI 02891(401) 466-2040

New Horizons Electronic Marketing
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Bannockburn IL 60015(312) 234-5911

New World Audio
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San Diego CA 92117(619) 569-1944

New York Music
7144 Market St., Route #7
Boardman OH 44512(216) 758-4705

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32825 Northwestern Hwy
Farmington Hill MI 48018(313) 855-5555

A. C. Nielsen
Nielsen Plaza
Northbrook IL 60062(312) 498-6300

Nikon, Inc.
623 Stewart Ave.
Garden City NY 11530(516) 222-0200

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Montgomery AL 36194(205) 284-3366

NORPAK Corp.
10 Hearst Way
Kanata On K2L 2P4 Canada ..(613) 592-4164

Northeast Broadcast Lab, Inc.
P.O. Box 1176
South Glens Falls NY 12801 ..(518) 793-2121

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Industrial Airport KS 66031(913) 791-7000

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Minneapolis MN 55427(612) 545-0401

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Canton CT 06019(203) 693-0238

CA The Enright Company
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Long Beach 90807(213) 595-4624

GA JFA Associates
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Lilburn 30247(404) 921-8687

IL Applied Technologies Marketing
3975 Suffolk Lane
Hoffman Estate 60195(312) 934-6262

MI G.B. Morrison, Inc.
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Fenton 48430(313) 632-5847

MO Midwest Video Marketing
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Ballwin 63022(314) 394-7796

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274 Madison Avenue, Suite 1406
New York 10016(212) 532-5576

TX Active Marketing
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Dallas 75234(214) 243-2564

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Fredricksburg 22405(703) 371-2621

WA S & F Northwest, Inc.
5210-C Roosevelt Way N.E.
Seattle 98105(206) 525-5203

NPR Satellite Service
2025 M St., N.W.
Washington DC 20036(202) 822-2629

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P.O. Box 493
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2165 Druid Park Dr.
Baltimore MD 21211(301) 462-1700

Nytone Electronics Corp.
2424 South 900 West
Salt Lake City UT 84119(801) 973-4090

OAP Audio & Lighting Products
310 Peachtree Industrial Blvd.
Buford GA 30518(404) 945-1028

O'Connor Engineering Labs
100 Kalmus Drive
Costa Mesa CA 92626(714) 979-3993

On Cinequip, Inc.
275 MacPherson Ave.
Toronto M4V 1A4 Canada

O'Connor Engineering Ltd.
14 Av. Industrielle, 1227 Carouge
Geneva Switzerland

Odetics, Inc.
1515 South Manchester Ave.
Anahelm CA 92802(714) 774-5000

Ohio AV & Video
149 South Ridge East
Geneva OH 44041

OKI Electric Industry Co. Ltd.
10-3, Shibaura 4-Chrome, Minato-ku
Tokyo Japan 108(034) 542-1111

Old Dominion Broadcast Engineering Service
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Richmond VA 23222(804) 321-4506

Olesen
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Hollywood CA 90028(213) 461-4631

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Lawndale CA 90260(213) 643-9021

Omicron Video
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Chatsworth CA 91311(818) 700-0742

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Port Washington NY 11050 ..(516) 883-0121

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Cupertino CA 95014(408) 973-9000

On Video
10110 Monroe
Dallas TX 75229(214) 352-9600

Oostyk & Wilke
2040 North Ave.
Sheboygan WI 53081(414) 458-2163

Oots Media System
6587 Broadacres Dr.
San Jose CA 95120(408) 268-3172

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Cerritos CA 90701(714) 522-2370

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Chicago IL 60611(312) 321-0880

Opus Equipment & Supply
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Cleveland OH 44135(216) 267-7700

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Dexter MI 48130(313) 426-4646

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Foster City CA 94404(415) 341-5900

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Philadelphia PA 19149(215) 745-8964

Pacific Radio Electronics
1351 Cahuenga Blvd.
Hollywood CA 90028(213) 462-1393

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Carlsbad CA 92009(619) 438-3911

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Anaheim CA 92805(714) 634-8585

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Los Angeles CA 90071(213) 617-9323

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Tustin CA 92680(714) 838-8833

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Brentford, Middlesex TW8 9ES England.44-1-847-5011

Paltex Europe
Wilhelmmapark 22
2012 KB Haarlem Holland ...311-23-328679

Pan Am Weather Systems
6300 34th Ave., South
Minneapolis MN 55450(612) 727-1084

Panasonic Broadcast Systems Co.
One Panasonic Way
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Cypress 90630(714) 895-7209

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1854 Shackelford Ct., Ste. 250
Norcross 30093(404) 925-6772

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425 East Algonquin Rd.
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TX Panasonic Broadcast Systems Co.
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Decatur GA 30033(404) 325-0165

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PAS
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Ft. Worth TX 76119-7050(817) 483-7474

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Penny & Giles

2716 Ocean Park Blvd.
Santa Monica CA 90405(213) 393-0014

Pep, Inc.

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New York NY 10019(212) 246-2490

Performance Audio, Inc.

2358 S. Main
Salt Lake City UT 84115(801) 355-8890

Perma Power Electronics, Inc.

5601 West Howard Ave.
Chicago IL 60648(312) 647-9414

CA FutureTech

3230 Knightswood Way
San Jose 95148(408) 274-2229

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1516 S. Bundy Dr., Suite 220
Los Angeles 90025(213) 826-3711

CA Technical Sales Associates

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Hayward 94544(415) 887-6616

CA Teqni-Rep

7664 San Fernando Road
Sun Valley 91352(818) 768-4223

CO K-C Marketers

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Denver 80223(800) 525-8407

CT The Smith Company

85 Prospect Ave.
Hartford 06106(203) 523-0512

IL G/B Marketing Inc.

1495 Busch Parkway
Buffalo Grove 60015(312) 520-4008

IL Don Roth

106 North Willmot
Deerfield 60015(312) 940-0010

IN Green Wissler Sales Co., Inc.

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Indianapolis 46268(317) 872-9981

MA C.P. Marketing, Inc.

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MN R.W. Sales, Inc.

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St. Paul 55108(612) 646-2710

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Jefferson City 65101(314) 636-3121

NC Adams & Associates, Inc.

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Greensboro 27408(919) 272-6838

NJ Fahy Marketing

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Medford 08055(609) 654-1022

NJ MGB Marketing

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Pennington 08534(609) 466-4000

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29 Cain Drive
Plainview 11803(516) 293-3310

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Phelps 14532(315) 548-4891

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TX Dick Bellew Sales Co.

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Dallas 75234(214) 644-7881

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Dallas 75228(214) 328-0067

TX Hamilton & Associates

P.O. Box 2077
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Falls Church VA 22046(703) 532-0700

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6073 N.W. 167th St., Ste. C4
Miami FL 33015(305) 556-9638

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P.O. Box C9090, M/S 250C
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1910 W. Fairmont
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Photokina

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Photo Sound, Inc.

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Santa Clara CA 95051(408) 970-9787

FL Pinnacle Systems, Inc.

2904 Brey Ct.
Tallahassee 32308(904) 893-5950

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203 Broughton Dr.
Beverly 01915(617) 922-3394

Pinzone Communications

14850 Cross Creek Park
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Plasmec System Limited

Mosses & Mitchell, Weydon Lane
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.....(025) 272-1236

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Brisbin Ave
Lyndhurst NJ 07071(201) 933-5100

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2301 S. Prairie Ave.
Chicago IL 60616-9990(312) 225-6670

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2303 Distribution St.
Charlotte NC 28203(704) 332-9053

PLL Video Systems

6702 D South Lewis
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Polaroid Corp.

575 Technology Square
Cambridge MA 02139(617) 577-2000

Poll Sound

4026 South Main
Murray UT 84107(801) 261-2500

Polycom Video

201 East Erie St.
Chicago IL 60611(312) 337-6000

Polyline Corp.

1233 Rand Rd.
Des Plaines IL 60017(312) 298-5300

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Holland MI 49423(616) 396-5291

Brabury/Porta-Pattern, Inc.

P.O. Box 38945
Los Angeles CA 90038(213) 461-3561

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Silver Spring MD 20910(301) 589-2662

Clark Powell Associates, Inc.

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Winston-Salem NC 27106(919) 727-0481

Powell Electronics, Inc.

3906 Jackson Highway
Sheffield AL 35660(205) 383-3330

Pratt Audio Visual & Video

200 Third Ave. SW
Cedar Rapids IA 52404(319) 363-8144

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Grand Rapids MI 49508(616) 452-3457

Premier Film & Recording Corp.

3033 Locust
St. Louis MO 63103(314) 531-3555

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381 Canal Place
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Honolulu HI 96813(803) 528-2400

Prime Image, Inc.

19543 Via Escuela
Saratoga CA 95070(408) 867-6519

CA SCH Video
320 Harding Ave.
Los Gatos 95030(408) 356-1286

IL James E. McKay
Manufacturing Representative
35 Ross Dr.
Springfield 62707(217) 787-5742

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P.O. Box 5211
Manchester 03108(603) 472-2297

Pro Audio
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Sioux Falls SD 57117(605) 336-1466

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383 40th St.
Oakland CA 94067(415) 654-6630

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3941 Oakcliff Industrial Ct.
Atlanta GA 30340(800) 451-7171

Production Assistance, Inc.
756 N. La Cienega Blvd.
Los Angeles CA 90069(213) 657-2322

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West Allis WI 53227(414) 327-5330

Professional Audio Services
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Ft. Worth TX 76119(817) 483-7474

Professional Communications Systems, Inc.
5426 Beaumont Center Blvd.
Tampa FL 33614(813) 888-5353

Professional Electronics Co.
2469 Albany St.
Schenectady NY 12304(518) 374-1515

Professional Products, Inc.
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Bethesda MD 20014(301) 657-2141

Professional Studio Distributors
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Groton CT 06340(203) 449-1483

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Columbia SC 29201(803) 799-1884

Progressive Computer Products
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760 S. 23rd St.
Arlington VA 22202(703) 684-8900

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New Orleans LA 70156(504) 528-9268

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11730 N.E. 12th
Bellevue WA 98005(206) 451-1999

Pro Media
185 Berry St., Ste. 3865
San Francisco CA 94107(415) 957-1383

Provideo, Inc.
Div. of Video Products Dist.
Sacramento CA 95825(916) 971-3411

Pro Video Systems, Inc.
169 Oxmoor Rd.
Birmingham AL 35209(205) 942-7904

QEI Corp.
One Airport Drive
Williamstown NJ 08094(609) 728-2020

QSI Systems, Inc.
12 Linscott Road
Woburn MA 01801(617) 938-1403

Q-Tv
104 E. 25th Street
New York NY 10010(212) 460-9050

CA Q-Tv
7350 Beverly Blvd.
Los Angeles 90036(212) 936-6195

Quality Education Data
1580 Logan St. # 340
Denver CO 80203(303) 572-8692

Quality Video Supply Corp.
P.O. Box 1007
Hackensack NJ 07602(201) 488-8336

Quanta Corp.
2440 South Progress Drive
Salt Lake City UT 84119(801) 974-0992

CA Quanta Corp., Midwest
49 South Baldwin Avenue
Sierra Madre 91024(818) 355-8224

CT Quanta Corp., Northeast
57 North Street, Suite 207
Danbury 06810(203) 797-1179

TN Quanta Corp., Southeast
1833 Auburndale Dr.
Chattanooga 37405-1403(615) 266-6937

UT Quanta Corp., West
3417 A Honeycut Rd.
Salt Lake City 84106(801) 485-1913

Quantel
655 Washington Blvd, Suite 602
Stamford CT 06901(203) 348-4104

Quantum Audio Labs, Inc.
2752 Walnut Ave.
Tustin CA 92680(714) 838-8833

QuickSet International, Inc.
3650 Woodhead Drive
Northbrook IL 60062(312) 498-0700

R.F. Specialties
267 S. Bayshore Drive
Niceville FL 32578(904) 678-8943

Racal
P.O. Box 393
South Salem NY 10590-0393(914) 763-8893

R.a.C. Corp.
31 W. 037 North Ave.
W. Chicago IL 60185(312) 293-0661

Radex Stereo Electronics
890 W. Galena
Freeport IL 60032(815) 235-9797

Radiation Systems, Inc.
1501 Moran Rd.
Sterling VA 22170(703) 450-5680

CA Radiation Systems, Inc.
4332 Morning Brook Ct.
Stockton 95207(209) 477-5261

CO Tecom Marketing, Ltd.
2700 S. Shoshone
Englewood 80112(303) 789-1670

FL Brennan Associates
P.O. Box 5006
Clearwater 33518(813) 446-5006

GA Radiation Systems, Inc.
4825 River Green Pkwy.
Duluth 30136(404) 497-8800

MO Communication Systems & Associates
P.O. Box 191
Cameron 64429(816) 632-7616

NJ Mark Antenna Products
62 Burkl Place
Freehold 07728(201) 462-0053

NM Mayco, Inc.
11910 Central S.E.
Albuquerque 87123(505) 299-4002

TX Hite Electronic Sales
Hite Ind. C., 2691 Dick Price Rd.
Mansfield 76063(817) 483-7077

TX Radiation Systems, Inc.
909 East Collins Blvd.
Richardson 75081(214) 690-8865

VA Radiation Systems, Inc.
1501 Moran Rd.
Sterling 22170(703) 450-5680

WA Arva-Hudson
1416 130th Ave. N.E.
Bellevue 98005(206) 455-0773

Radio Advertising Bureau
304 Park Ave. South
New York NY 10010(212) 254-4800

Radio Design Labs
P.O. Box 1286
Carpenteria Beach CA 93013(805) 684-5415

Radio Equipment
972 N. Vermont Ave.
Los Angeles CA 90029(714) 670-0181

Radio Equipment Corp.
3240 Sheridan Drive
Amherst NY 14226(716) 835-2250

Radio Equipment Corp.
196 Vulcan St.
Buffalo NY 14207(716) 874-2690

Radio Resources, Inc.
7483 Candlewood Rd.
Hanover MD 21240(301) 859-1500

Radio Systems, Inc.
5113 West Chester Pike
Edgemont PA 19028(215) 356-4700

Radioexpress
P.O. Box 35219
Phoenix AZ 85069(602) 866-0566

Rainbow Sound & Lighting
114 Cummings
Woburn Park MA 01801(617) 938-6850

RAM Broadcast
346 West Colfax St.
Palatine IL 60067(312) 358-3330

Ramko Equipment
207 3rd Avenue
Hattiesburg MS 39401(601) 544-6654

Ramko Research, Inc.
3501 #4 Sunrise Blvd.
Rancho Cordova CA 95742(916) 635-3600

Rampart Cases, Inc.
701 Charles Street
Gloucester NJ 08030(609) 456-0101

RAMSA/Panasonic Industrial Company
6550 Katella Ave.
Cypress CA 90630(714) 895-7200

CA Panasonic/Western Region
6550 Katella Ave.
Cypress 90630(714) 895-7389

GA Panasonic/Eastern Region
1854 Shackelford Ct., Ste. 115
Norcross 30093(404) 925-6631

IL Panasonic/Central Region
425 E. Algonquin Road
Arlington Heights 60005(312) 981-7329

Randolph, Hale, & Matthews, Inc.
P.C. Box 828
Clarksville TN 37040(615) 647-2325

RANGERTONE—S.B.E.

Rangertone Research, Inc.

115 Roosevelt Ave.
Belleville NJ 07109(201) 751-6833

Rank Cintel, Ltd.

704 Executive Blvd.
Valley Cottage NY 10989(914) 268-8911

Rank Precision Industries, Inc.

13340 Satcom St., Unit #F
N. Hollywood CA 91605(213) 765-7265

Rapid Deployment Towers

7832 Skylake Dr.
Fort Worth TX 76179(817) 236-7112

RCA Closed Circuit Video Eqpt./Burle Industry

1000 New Holland Ave.
Lancaster PA 17601-5688(717) 295-6000

R-Columbia Products Co., Inc.

2008 St. Johns Avenue
Highland Park IL 60035-2499(312) 432-7915

Reach Electronics, Inc.

1600 West 13th St.
Lexington NE 68850-0308 ..(308) 324-6661

Real Radio Supply

P.O. Box 1808
McAllen TX 78501(512) 682-5224

Real Time Audio

3025 Central NE
Albuquerque NM 87106(505) 256-7766

Recording & Broadcast Supply

802 Fourth Street
San Rafael CA 94901(415) 457-7566

Recording Consultants, Inc.

8550 Second Avenue
Silver Spring MD 20910(301) 587-1800

Recording Studio

P. O. Drawer P
N. Miami Beach FL 33160(305) 945-9774

Recortec, Inc.

275 Santa Ana Ct.
Sunnyvale CA 94086(408) 737-8441

Phil Reddish Sound

6234 Pearl Road
Parma Heights OH 44130(216) 885-1222

Redwood Electronics Supply, Inc.

711 Summer St.
Eureka CA 95501(707) 443-3107

Reel Time Clocks

P.O. Box 126
Houston TX 77001-0126(713) 827-2563

Rees Associates, Inc.

4200 Perimeter Center Dr., # 245
Oklahoma City OK 73112(405) 946-9800

Register Data Systems

P.O. Box 1246
Perry GA 31069(912) 987-2501

Reliable Music

1001 S. Independence
Charlotte NC 28202(704) 375-8662

Religious Broadcasters Association

P.O. Box 1926
Morristown NJ 07960(201) 428-5400

Remaq International

10505 S.W. 146th Ave.
Miami FL 33186(305) 387-3985

Rent Com, Inc.

3900 N. River Rd.
Schiller Park IL 60176(312) 678-7000

Research Associates, Inc.

4445 Northpark Drive
Colorado Springs CO 80907 ..(303) 594-9464

Research Technology International

4700 Chase Ave.
Lincolnwood IL 60466-1689(312) 677-3000

R. F. Specialties of Washington

1718 N.E. 98th Street
Seattle WA 98115(206) 525-6974

RF Technology, Inc.

16 Testa Place
Norwalk CT 06854-4613(203) 866-4283

RIA Corp.

50 East Malvern St.
Salt Lake City UT 84115(801) 486-8822

Richardson Electronics

3030 N. River Rd.
Franklin Park IL 60131(312) 456-0600

Rio Radio Supply, Inc.

515 So. 12th St
McAllen TX 78502(512) 682-5224

RMS Sound

17517 15th Avenue NE
Seattle WA 98155(206) 326-0491

Rocel Electronics

731 Butler St.
Pittsburgh PA 15223(412) 781-2326

Rockwell International

P.O. Box 10462
Dallas TX 75207(214) 996-5417

Roehm Radlo And Sound, Inc.

2018 Webster St.
Fort Wayne IN 46804(219) 744-9250

Rohde & Schwarz

4425 Nicole Dr.
Lanham MD 20706(301) 459-8800

Roh's, Inc.

4553 E. Broadway
Tucson AZ 85711(602) 795-8573

Rosco Laboratories, Inc.

36 Bush Ave.
Port Chester NY 10573(914) 937-1300

Roscor Corp.

1061 Feehanville Dr.
Mt. Prospect IL 60056(312) 539-7700

Gil Rose Electronics

28301 Industrial #M
Haywood CA 94545(415) 786-3030

Rosner Custom Sound

11-38 31st Avenue
Long Island City NY 11106 ..(718) 726-5600

Ross Systems

P.O. Box 2344
Fort Worth TX 76113(817) 336-5114

Ross Video Ltd.

P.O. Box 220
Inquois On K0E 1K0 Canada ... (613) 652-4886

R.P.C. Video, Inc.

620 Alpha Dr.
Pittsburg PA 15238(412) 963-8000

RPG Diffusor Systems, Inc.

12003 Wimbledon St.
Largo MD 20772(301) 249-5647

R-Scan

511 11th Ave. S. Ste. 220A
Minneapolis MN 55415(612) 333-1424

RSC Electronics, Inc.

131 Laura
Wichita KS 67201(316) 267-5213

RSE Music

151 Belmont Street
Belmont MA 02178(617) 489-4864

R.T. Industrial Video

3601 W. Magnolia Blvd.
Burbank CA 91505(818) 842-9136

RTNDA

1140 Empire Central Dr., # 240
Dallas TX 75247(214) 631-1278

RTS Systems, Inc.

1100 West Chestnut Street
Burbank CA 91506(818) 840-7119

Ruslang Corp.

320 Dewey St.
Bridgeport CT 06605(203) 384-1266

Russco Electronics, Inc.

5690 E. Shields Ave.
Fresno CA 93727(209) 291-5591

J. R. Russell Systems

1045 E. Camelback
Phoenix AZ 85014(602) 266-6918

Sabre Communications Corp.

3400 Hwy. 75 North
Sloux City IA 51105(712) 258-6690

Sachtler Corp. of America

55 North Main St.
Freeport NY 11520(516) 867-4900

CA Sachtler Corporation of America

3316 W. Victory Blvd.
Burbank 91505(818) 845-4446

Saginaw Photo Supply Co.

515 E. Genessee Ave.
Saginaw MI 48607(517) 753-5481

Saki Magnetics, Inc.

26600 Agoura Rd.
Calabasas CA 91302(818) 880-4054

Samson Technologies Corp.

485-19 S. Broadway
Hicksville NY 11801(516) 932-3810

Sanken Microphone Co. Ltd.

1032 North Sycamore
Los Angeles CA 90038(213) 469-4773

Sat Com Technologies, Inc.

2912 Pacific Drive
Norcross GA 30071(404) 448-2116

Satellite Music Network

12655 N. Central Expressway, # 600
Dallas TX 75243(214) 991-9200

Save On Video

6736 Laurel Canyon Blvd.
N. Hollywood CA 91606(213) 875-1235

Sawyer Taylor Video

1200 Isabel St.
Burbank CA 91506(818) 843-1781

S.B.E. Inc.

7002 Graham Rd., Ste. 118
Indianapolis IN 46220(312) 842-0836

- Scala Electronic Corp.**
P.O. Box 4580
Medford OR 97501(503) 779-6500
- Schafer World Communications Corp.**
P.O. Box 31
Marion VA 24354(703) 783-2001
- W. Schiller & Co., Inc.**
9240 Manchester Rd.
St. Louis MO 63144(314) 968-3650
- Schmid Telecommunication**
Relfterstrasse 6
CH-8002 Zurich Switzerland... (411) 201-2353
- Schmitt Audio Visual**
11003 Bluegrass Pkwy, Ste. 420
Louisville KY 40299(502) 267-2378
- Schmitt Audio Visual**
516 W. Franklin St.
Evansville IN 47710(812) 424-8203
- Schneider Corp. of America**
400 Crossways Park Drive
Woodbury NY 11797(516) 496-8500
- Schwem Technology**
3305 Vincent Road
Pleasant Hill CA 94523(415) 935-1226
- Schwendiman**
910 Lincoln Rd.
Idaho Falls ID 83401(208) 522-2492
- Scientific-Atlanta, Inc.**
P.O. Box 105600
Atlanta GA 30348(404) 441-4613
- Scientific Audio Electronics, Inc.**
1502 Gage Rd.
Los Angeles CA 90640(213) 726-9999
- Scott's Piano & Sound**
155 Columbia Mall
Grand Forks ND 58201(701) 775-6265
- SD Systems**
8525 Arjons Dr. Suite J
San Diego CA 92126(619) 271-9720
- Seawind Audio Engineering**
2861
Bea CA 92621(714) 961-8870
- Seck**
852 Glenbrook Road
Stamford CT 06906(203) 324-2889
- Seco Labs**
1014 S. 37th Street
Omaha NE 68105(402) 345-2663
- Security Resources**
21 Castle Ave.
Fairfield CT 06430(203) 334-3233
- Seeburg Corp.**
1105 Westwood Ave.
Addison IL 60101(312) 543-1270
- Selco**
7580 Stage Rd.
Buena Park CA 90621(714) 521-8673
- Selective Service System**
1023 31st St. N.W.
Washington DC 20435(202) 724-0138
- Sennheiser Electronic Corp.**
6 Vista Drive
Old Lyme CT 06371(203) 434-9190
- Sensory Lighting & Sound**
P.O. Box 70
Huntington Sta NY 11746(516) 673-5440
- Sescom, Inc.**
2100 Ward Dr.
Henderson NV 89015-9998 ..(702) 565-3400
- SG Communications**
3444 N. Dodge Blvd.
Tucson AZ 85716(800) 824-7865
- Sharp Electronics Corp.**
Sharp Plaza
Mahwah NJ 07430(201) 529-8731
- CA Sharp Electronics Corp., Western Region
20600 South Alameda St., Sharp Pz.
Carson 90810(213) 637-9488
- GA Sharp Electronics Corp., Southern Region
725 Old Norcross Rd.
Lawrenceville 30245(404) 995-0717
- IL Sharp Electronics Corp., Midwest Region
1300 Naperville Drive
Romeoville 60441(312) 759-8555
- NJ Sharp Electronics Corp., Eastern Region
P.O. Box 650
Mahwah 07430(201) 529-8734
- Sherman Electronics Supply**
702 San Pedro Ave.
San Antonio TX 78212(512) 224-1001
- Shima Seiki U.S.A., Inc.**
440 Forsgate Dr.
Cranbury NJ 08512(609) 655-4788
- Shintron Co., Inc.**
144 Rogers St.
Cambridge MA 02142(617) 491-8700
- Shively Labs, Inc.**
P.O. Box 389
Bridgeton ME 04009(207) 647-3327
- Shook Brothers, Inc.**
6630 Topper Parkway
San Antonio TX 78233(512) 653-6761
- Shoreline Ltd. Teleproductions Syst.**
1622 North Highland Ave.
Hollywood CA 90028(213) 461-9800
- Showcase Photographics**
2323 Cheshire Bridge Rd.
Atlanta GA 30324(404) 325-7676
- Shure Brothers, Inc.**
222 Hartrey Avenue
Evanston IL 60202-3696 ... (312) 866-2200
- CA Gravley & Associates, Inc.
18021-A Sky Park Circle
Irvine 92714(714) 852-9994
- CA L.P. Marketing
2036 Livingston # 5
Oakland 94606(415) 532-5600
- CA Olsheski & Associates, Inc.
1506-C Dell Ave.
Campbell 95008(408) 378-6003
- CO Mountain Representatives, Inc.
1301 West Third Ave.
Denver 80223(303) 623-0972
- FL Hutto Hawkins Associates, Inc.
139 Candace Dr.
Maitland 32751-3396(305) 831-2474
- GA Millar Electronics, Inc.
P.O. Box 13486
Atlanta 30324(404) 634-3350
- HI L.H. Sales, Inc.
96-1173 Waiholona St. # A-5
Pearl City 96782(808) 455-8861
- IL Steffey Marketing
1955 Raymond Dr. #103
Northbrook 60062(312) 480-3571
- KS Eakins/Bernstein & Associates
P.O. Box 3251
Shawnee Mission 66203 ... (913) 631-7601
- MA Richard Dean Associates, Inc.
1 Harris St.
Newburyport 01950(617) 462-1151
- MI Key Marketing
44808 Helm St.
Plymouth 48170(313) 459-6041
- MN Mel Foster Technical Sales, Inc.
P.O. Box 35216
Edina 55435(612) 941-9801
- NJ Peter E. Schmitt Co. Inc.
240 Grand Ave.
Leonia 07605(201) 944-2801
- NJ SSAI, Inc.
P.O. Box 1466
Union 07083-1466(201) 687-6361
- OH McFadden Sales, Inc.
2939 Donnylane Blvd.
Columbus 43220(614) 761-3171
- On A.C. Simmonds & Sons, Ltd.
975 Dillingham Rd.
Pickering L1W 3B2 Canada ..(416) 839-8041
- PA S.K. McDonald, Inc.
Mayland Rd. Suite 417
Willow Grove 19090(215) 659-4414
- TX Rep Tech, Inc.
Rt. 4, Box 326
Terrell 75160(214) 222-2131
- UT Pro Tech Marketing
7105 South Highland Dr. # 103
Salt Lake City 84121(801) 943-8331
- WA Roger Ponto Associates, Inc.
P.O. Box 3365
Bellevue 98009(206) 821-2991
- Sierra Video Systems, Inc.**
P.O. Box 2462
Grass Valley CA 95945(916) 273-9331
- Sight & Sound Entertainment**
915 Yale Ave. N. Suite #100
Seattle WA 98109(206) 343-0111
- Sigma Electronics, Inc.**
P.O. Box 448
E. Petersberg PA 17520-0448 ..(717) 569-2681
- Edward Simon Co.**
5718 Northumberland Street
Pittsburg PA 14217(412) 263-2101
- Sim-O-Rama Sound**
527 Union Blvd.
Totowa NJ 07512(201) 790-6771
- Singer Products, Inc.**
1840 West 49th St.
Hialeah FL 33138(305) 558-3001
- Sirtage, Inc.**
P.O. Box 617
Raleigh NC 27628(919) 781-3401
- SISCOM, Inc.**
100 Arapahoe Ave., Suite 1
Boulder CO 80302(303) 449-0441
- SJB Distributors, Inc.**
10520 Plano Road, Ste. 206
Dallas TX 75238(214) 494-3581
- Skotel Corp.**
1445 Provencher
Brossard Qu J4W 1Z3 Canada ..(514) 465-8991
- SMAVSCO**
12 Idlewild Dr.
Poughkeepsie NY 12601(914) 229-5681
- Smithall Electronics**
2001 Vine St.
Cincinnati OH 45210(513) 381-2821

SMPTÉ—STAGE LIGHTING

SMPTÉ

595 W. Hartsdale Ave.
White Plains NY 10607(914) 761-1100

R.E. Snader & Associates

150 Gate Five Rd.
Sausalito CA 94965(415) 332-7070

Society of Broadcast Engineers

7002 Graham Rd., Ste. 118
Indianapolis IN 46220(317) 842-0836

Solid State Logic

320 W. 46th St.
New York NY 10036(212) 315-1111

Sonics Associates, Inc.

237 Oxmoor Circle
Birmingham AL 35209(205) 942-9631

Sonocraft Corp.

360 West 31st St.
New York NY 10001(212) 736-2683

Sono-Mag Corp.

1833 W. Hovey Ave.
Normal IL 61761(309) 452-5313

Sony Corp. of America

1600 Queen Anne Rd.
Teaneck NJ 07666(201) 833-5200

CA Sony Corp. of America
655 River Oaks Parkway
San Jose 95134(408) 432-9191

CA Sony Corp. of America
2820 West Olive Ave., Ste. A
Burbank 91505(818) 841-8711

GA Sony Corp. of America
3175A Northwoods Parkway
Norcross 30071(404) 263-8015

IL Sony Corp. of America
500 Park Blvd., Hamilton Lakes
Itasca 60143(312) 773-6046

MD Sony Corp. of America
5001 Forbes Blvd.
Lanham 20706(301) 577-9080

NJ Sony Corp. of America
15 Essex Rd.
Paramus 07652(201) 368-5111

TX Sony Corp. of America
3201 Premier Dr., Ste. 100
Irving 75063-2658(214) 550-5303

Sound Board Music, Inc.

3059 E. Graham Road
Stow OH 44224(216) 673-5807

Sound Center And Computer Center

Westgate Shopping Center
Clarksdale MS 38614(601) 627-2256

Sound City

11712 Florida Blvd.
Baton Rouge LA 70815(504) 272-1460

Sound Com Corp.

227 Depot Street
Berea OH 44017(216) 234-2604

Soundcraft USA

P.O. Box 2200, 8500 Balboa Blvd.
Northridge CA 91329(818) 893-4351

Sound Design And Engineering

6539-1 Powers Avenue
Jacksonville FL 32217(904) 731-7420

Sound Electronics

103 Arnould Blvd.
Lafayette LA 70506(318) 984-4096

Sound Engineering

12933 Farmington Road
Livonia MI 48150(313) 522-2910

Sound Good Audio

410 East Grand River
Lansing MI 48906(517) 372-5278

Sound Ideas

86 McGill St.
Toronto On M5B 1H2 Canada... (416) 977-0512

Sound Investment

P.O. Box 4139
Thousand Oaks CA 91359 ... (213) 991-3400

Soundmaster International, Inc.

306 Rexdale Blvd., Unit 5
Toronto On M9W 1R6 Canada ... (416) 741-1894

Sound Recording Co.

W. 503 Indiana Ave.
Spokane WA 99205(509) 326-0222

Sound & Stagecraft, Inc.

2410 S. Des Plaines Ave.
Des Plaines IL 60016(312) 699-9080

Sound Systems, Inc.

Box A
Flourtown PA 19031(215) 242-3500

Sound Tech

7841 12th Avenue
Bloomington MN 55420(612) 854-8731

Sound Technology, Inc.

1400 Dell Avenue
Campbell CA 95008(408) 378-6540

CA Dave Daniels Sales
11371 Harkers Ct.
Cypress 90630(714) 891-5048

CA Funke & Associates
908 Marilyn Dr.
Campbell 95008

IL Sound Technology Midwest
1733 Zeppelin Dr.
Hanover Park 60103(312) 289-8419

NC Atlantic Marketing Services
3619 Rea Rd.
Matthews 28105(704) 542-3380

NJ Hartmann Associates
5 Nestling Wood Dr.
Long Valley 07853(201) 850-3750

TX Charles Lucas Sales Co.
P.O. Box 763743
Dallas 75376-3743(214) 330-8181

UT Keiser & Associates
P.O. Box 676
Bountiful 84010(801) 298-8902

WA Henry Jancas Co.
12058 Lake City Way N.E.
Seattle 98125(206) 363-9200

Soundtracs plc

77 Selleck St.
Stamford CT 06902(203) 348-2121

Sound Workshop

50 Werman Ct.
Plainville NY 11803(516) 756-0140

Southeast Audio

6316 Brynmawr Lane
Virginia Beach VA 23464 ... (804) 424-7777

Southeast Electronics, Inc.

1125 Rosselle St.
Jacksonville FL 32203(904) 356-3007

Southeastern Sight & Sound

415 Hillsborough Street
Raleigh NC 27611(919) 828-2311

Southern Business Communications

3175 Corners North Court
Norcross GA 30071(404) 449-4088

Southern Electronics Corp.

P.O. Box 447
Opelika AL 36801(205) 745-5298

Southern Photo And News, Inc.

1515 Marion Street
Tampa FL 33602(813) 228-8594

Southern Radio Supply

1909 Tulvane Ave
New Orleans LA 70112(504) 524-2343

Southern Tier Electronics

3135 Lake Road
Horseheads NY 14845(607) 733-413

Southern Video Systems

1016 South Church St.
Charlotte NC 28203(704) 333-5453

Southland Sound

1145 S. Ford Blvd.
Los Angeles CA 90022(213) 266-4575

Southwest Communications

250 S. Stemmons Frwy
Lewisville TX 75067(214) 221-4617

Southwest International Enterprises

2328 W. Mulberry
San Antonio TX 78201(512) 733-9403

Southwest Sound & Electronics

2323 Loop 410 W.
San Antonio TX 78230(512) 341-4411

Southworth Music Systems, Inc.

91 Ann Lee Road
Harvard MA 01451

Specialized Audio, Inc.

Rd 5 Rte. 50 and Hutchins Rd.
Saratoga Spring NY 12866... (518) 885-8966

Specialized Video Systems

2000 Garfield
Bartonville IL 61607(309) 697-9321

Specialty Sound Co.

P.O. Box 4139
Monroe LA 71211(318) 387-3628

Spectra Image, Inc.

2040 N. Lincoln St.
Burbank CA 91504(818) 842-1111

Spectrum Video Ltd.

1 Main St.
Winooski VT 05404(802) 655-9600

Spencer Broadcast Inc.

8642 No. 78th Ave., Ste. #2
Peoria AZ 85345(602) 242-2211

Sprague Magnetics, Inc.

15720 Stagg St.
Van Nuys CA 91406(818) 994-6602

Springfield Audio & Electronics, Inc.

755 Worthington Street
Springfield MA 01105(413) 736-7209

Stage Lighting Distributors

Holt Drive
Stony Point NY 10980(914) 947-3034

Stage Sound
103 Elgth St., SE
Roanoke VA 24013(703) 981-0565

Stage Sound, Inc.
4708 E. Van Buren
Phoenix AZ 85008(602) 275-6060

Stageworks Productions Supply
1224 So Main st.
Little Rock AR 72202(501) 375-2243

Stainless, Inc.
Third St. & Montgomery Ave.
North Wales PA 19454(215) 699-4871

Stanal Sound
816 E.25th Street
Kearney NE 68847(308) 237-2207

Standard Communications Corp.
P.O. Box 92151
Los Angeles CA 90009-2151 . . .(213) 532-5300

Standard Theatre Supply Co.
125 Higgins Street
Greensboro NC 27406(919) 272-6165

Stanley Communications Co.
3600 W. 69th st.
Little Rock AR 72209(501) 562-9200

Stantel Components, Inc.
636 Remington Rd.
Schaumburg IL 60173(312) 490-7150

Stanton Magnetics, Inc.
200 Terminal Drive
Plainview NY 11803(516) 349-0235

CA **Riggins Electronic Sales**
3272 East Willow
Long Beach 90806(213) 598-7007

FL **Lauderdale Electronic Labs**
16 S.W. 13th Street
Ft. Lauderdale 33315(305) 764-7755

IN **Allied Broadcast Equipment**
635 South E. Street
Richmond 47374(317) 962-8596

MA **Industrial Components Corp.**
2551 Boston Road
North Wilbraham 01067 . . .(413) 596-3854

NC **Southern Coastal Marketing Services**
10201 Rodney Blvd.
Pineville 28134(704) 889-4508

NY **Boynton Studio**
Melody Pines Farm
Morris 13808(607) 263-5695

NY **Martin Audio/Video**
423 West 55th St. 6th Fl.
New York 10019(212) 541-5900

NY **Northeast Broadcast Lab**
10373 Saratoga Road
S. Glens Falls 12801(518) 793-2181

OK **Hill Radio Equipment Co.**
203 Alawhe Road, Route 8
Claremore 74017(918) 341-5240

TN **Broadcast Equipment & Supply Co.**
Rt. 1, Weaver Pike
Bluff City 37618(615) 878-2531

TX **Crouse-Klimzey Co.**
P.O. Box 9830
Fort Worth 76107(817) 737-9911

TX **Gelsler Broadcasting Supply**
5914 Maple St.
Houston 77074(713) 774-3314

TX **Professional Audio Supply**
5700 East Loop 820 South
Fort Worth 76119(817) 483-7474

WA **Broadcast Supply West**
7012 27th Street West
Tacoma 98466(206) 565-2301

Star Case Mfg. Co., Inc.
648 Superior Ave.
Munster IN 46321(219) 922-4440

Star Cinema Supply
217 W. 21st Street
New York NY 10011(211) 675-3515

Starsound & Audio, Inc.
2679 Oddie Blvd.
Reno NV 89512(702) 331-1010

Star Systems
462 Merrimack Street
Methuen MA 01844(617) 794-9399

Status Cabinetry
615 South State College Blvd.
Fullerton CA 92631(714) 525-4400

Steady-Film Corp.
707 18th Ave. S
Nashville TN 37203(615) 329-2073

Steenbeck, Inc.
9554 Vassar Ave.
Chatsworth CA 91311(818) 998-4033

Stelger, Hurray & Associates, Inc.
6816 Westview Dr.
Cleveland OH 44141(216) 526-7187

Stereotronics Industries, Inc.
Wadsworth Rd & North Ave.
Zion IL 60099(312) 746-1600

Storeel Corp.
3337 W. Hospital Ave.
Atlanta GA 30341(404) 458-3280

Strand Lighting
18111 So. Santa Fe Avenue
Rancho Dominguez CA 90221
.....(213) 637-7500

AK **Wes-Sales Co.**
3400 Spenard Rd., #1
Anchorage 99509-2555 . . .(907) 276-2552

AI **Alpha Lighting Agency, Ltd.**
251 Midpark Blvd. S.E. # 145
Calgary T2X 1S3 Canada . . .(403) 256-1055

AI **Jayross Agencies Ltd.**
8440 45th St.
Edmonton T6B 2N6 Canada . . .(403) 468-4581

AR **R.T. Electrical Sales**
4602 Cedar St.
N. Little Rock 72116(501) 771-0267

AZ **John Smithbaker Agency, Inc.**
4202 E. Elwood, # 28
Phoenix 85040(602) 437-3993

AZ **John Smithbaker Agency, Inc.**
19 North Norris-Bld. C
Tucson 85719(602) 624-2850

B. **Bernard Entertainment Design, Inc.**
108 Garden Ave.
N. Vancouver V7P 3H2 Canada
.....(604) 984-3241

CA **Forman & Associates**
636 Acanto St., #102
Los Angeles 90049(213) 471-4473

CA **Forman & Associates**
10560 Wilshire Blvd
Los Angeles 90024(213) 475-5558

CA **Lighting Systems**
P.O. Box 7525
San Francisco 94107-0525 . . .(415) 495-0222

CA **Lighting Systems**
950 S. Bascom Ave., # 119
San Jose 95128(408) 280-0100

CA **Lighting Systems**
23043 Evergreen Lane
Los Gatos 95030(408) 353-1181

CA **Lighting Systems**
4700 Northgate Blvd., # 120
Sacramento 95834(916) 920-8102

CA **Lighting Systems**
3263 West Ashcroft
Fresno 93722(209) 225-8990

CA **MarJoy Lighting**
10834 Burbank Blvd. #B-101
North Hollywood 91601(818) 760-7500

CA **Moodle, Pincu & Assoc.**
10301 Viretta Lane
Los Angeles 90077(213) 474-8480

CA **Moodle, Pincu & Assoc.**
10415 Yolanda
Northridge 91326(818) 363-1950

CA **Pacific Illumination, Inc.**
117 E. 8th St., # 812
Long Beach 90813(213) 432-1040

CA **San Diego Lighting Assoc., Inc.**
6222 Ferris Square
San Diego 92121(619) 452-3230

CA **Strand Lighting**
3754 Cody Rd.
Sherman Oaks 91403(818) 789-4211

CA **Strand Lighting**
9725 Hillhaven Ave.
Tujunga 91042(818) 353-4531

CO **Illumination Systems**
1537 Washington St.
Denver 80203(303) 830-1500

CT **Erwin Steward Associates**
11 Bethany Wood Rd.
Bethany 06525(203) 393-2725

FL **Murphy Associates**
853 E. Semoran Blvd. # 250
Casselberry 32707(305) 831-3927

GA **Blackburn & Associates**
4562 Forsyth Rd.
Macon 31210(912) 477-7000

GA **Lighting Associates, Inc.**
P. O. Box 48406
Doraville 30340(404) 455-9383

GA **Murphy Associates**
770 Old Roswell Rd., # B 300
Roswell 30076(404) 992-7500

GA **Strand Lighting**
2510 Cedar Forks Trll N.E.
Marietta 30062-2591(404) 578-0758

HI **Sunburst Designs, Inc.**
P.O. Box 31209
Honolulu 96820-1209(808) 847-1960

ID **J. R. Christensen & Associates**
4015 Kilarney Dr.
Boise 83704(208) 377-0111

IL **Power Lighting**
4234 Warren Ave.
Hillside 60162(312) 544-0707

IL **Strand Lighting**
3320 Culver St.
Evanston 60201(312) 864-2368

KS **Mercer-Zimmerman, Inc.**
1024 Hoel Parkway
Kansas City 66102(913) 921-5405

KS **Mercer-Zimmerman, Inc.**
P.O. Box 293
Sedgwick 67135(316) 772-5540

KY **Vincent Lighting Systems**
654 Highland Ave., # 15
Ft. Thomas 41075(606) 781-7500

LA **W. D. Faust Associates, Inc.**
1328 Dante St.
New Orleans 70118(504) 861-3656

MA **Boston Light Source**
63-1 Commercial Wharf
Boston 02110(617) 367-0910

Ma **Darwin Sales, Ltd.**
1666 Dublin Ave.
Winnipeg R3H 0H1 Canada . .(204) 694-1339

Ma **Westsun Lighting**
120 James Ave.
Winnipeg R3B 0N8 Canada . .(204) 943-1690

MI **Wolf Associates**
17200 W. 10 Mile Rd., Ste. 221
Southfield 48076(313) 552-8595

MN **Luma Sales Associates**
3313 North Highway 100
Minneapolis 55422(612) 533-8600

MO **Mercer-Zimmerman, Inc.**
1680 East Meadowmere
Springfield 65804(417) 882-3046

MO **Three Phase Partnership**
9200 Litzsinger Rd.
St. Louis 63144(314) 961-9200

MT **Wages Agency**
313 S.W. Higgins Ave.
Missoula 59801(406) 721-4815

STRAND LIGHTING—SWITCHCRAFT

AT Wages Agency
1411 4th Ave. North
Billings 59101(406) 245-8118

VA Carrtech Sales Ltd.
6450 Young St.
Halifax B3L 2A3 Canada ... (902) 453-5001

NC United Assoc. Lighting Corp. of North Caro
1300 Baxter St. One C. Center #283
Charlotte 28204(704) 334-4776

NC United Assoc. Lighting Corp. of North Caro
P.O. Box 31586
Raleigh 27622-1586(919) 782-4936

NC United Assoc. Lighting Corp. of North Caro
1207 West Bessemer Ave. # 202
Greensboro 27408(919) 373-8530

VA Vigilant Technical Sales, Ltd.
28 Symonds Ave.
St. John's A1E 5B1 Canada ... (709) 753-6685

VA Performance Lighting
12 Burton Ave.
Hopewell 08525(609) 466-9631

VA L. E. Nelson Corp.
5451 Uklah Circle
Las Vegas 89118(702) 368-0661

VA Lawrence Kellermann Associates, Inc.
P.O. Box 268
Dobbs Ferry 10522(914) 693-8880

VA Lawrence Kellermann Associates, Inc.
P.O. Box 613M
Bay Shore 11706(516) 666-3099

VA Lawrence Kellermann Associates, Inc.
75 West Main Street
East Bloomfield 14443(716) 657-6145

OH Vincent Lighting Systems
20810 Miles Parkway
Cleveland 44128(216) 475-7600

VA Sevenspec Systems, Inc.
9005 Leslie St.
Richmond Hill L4B 1G7 Canada(416) 764-0200

VA Strand Lighting Ltd.
6490 Viscourt
Mississauga L4V 1H3 Canada ... (416) 677-7130

OR Stagecraft Industries
P.O. Box 4442
Portland 97208(503) 226-7351

PA Performance Lighting Products, Inc.
2741 Noblestown Rd.
Pittsburgh 15206(412) 922-0900

PA Strand Lighting
781 Bryant St.
Stroudsburg 18360(717) 421-8637

VA Servispec-Prolux
6775 Bombardier
St. Leonard H1P 2W2 Canada ... (514) 328-2668

SA Darwin Sales, Ltd.
206 336 105th St. East
Saskatoon S7N 1Z3 Canada ... (306) 373-3215

SC United Assoc. Lighting Corp. of
North Carolina
17 Poinsett Ave.
Greenville 29601(803) 232-2313

TN Commercial Sales
532 8th Ave. South
Nashville 37203(615) 255-2747

TN Commercial Sales
9040 Executive Park Dr., Ste. 227
Knoxville 37923(615) 693-0108

TN Commercial Sales
679 Dallas Rd.
Chattanooga 37405(615) 265-8360

TN R. T. Electrical Sales
P. O. Box 12251
Memphis 38182(901) 525-4550

TX Tom Jensen
2629-C Enclina
Irving 75038(214) 256-2580

TX Nolan Murdock
2031 Verlane Dr.
Carrollton 75007(214) 492-8883

TX Strand Lighting
1849 Yorkshire Circle
Lewisville 75067(214) 221-9094

UT J. R. Christensen & Associates
851 W. 17th South
Salt Lake City 84104(801) 972-3970

VA Thomas Harris & Co., Inc.
P.O. Box 9195
Richmond 23227(804) 264-2851

VA Thomas Harris & Co., Inc.
P.O. Box 8478
Roanoke 24016(703) 343-7959

VA Andrew Ratcliffe, Ltd.
298 Barnes Blvd.
Colonial Beach 22443-0058 ... (804) 224-9818

VA Thomas Harris & Co., Inc.
228 N. Lynhaven Rd. #112
Virginia Beach 23452(804) 340-1621

WA Stagecraft Industries
P. O. Box 660
Bellevue 98009(206) 454-3089

WI Enterprise Lighting
7112 West Fond Du Lac Ave.
Milwaukee 53218(414) 462-5257

Strata Marketing
540 N. Lake Shore Dr.
Chicago IL 60611(312) 222-1555

Strong Communications
120 E. Lancaster Ave.
Wayne PA 19087(215) 254-8200

Studer Revox America, Inc.
1425 Elm Hill Pike
Nashville TN 37210(615) 254-5651

CA Studer Revox America
954 Hawthorne Dr.
Walnut Creek 94596(415) 930-9866

CA Studer Revox America
14046 Burbank Blvd.
Van Nuys 91401(818) 780-4234

IL Studer Revox America
111 South Dr., Tower Lake
Barrington 60010(312) 526-1660

NY Studer Revox America
161 Ave. of the Americas, Ste. 901
New York 10013(212) 255-4462

TX Studer Revox America
831 Woodlawn Ave.
Dallas 75208(214) 943-2239

Studio Film & Tape, Inc.
6670 Santa Monica Blvd.
Hollywood CA 90038(213) 466-8101

Studio Spectrum, Inc.
1056 N. Lake St.
Burbank CA 91502(818) 843-1610

Studio Technologies, Inc.
5520 West Touhy Avenue
Skokie IL 60077(312) 676-9177

Success Broadcast Marketing
1196 Hampshire St.
San Francisco CA 94110(415) 550-8285

Such A Deal
2700 So. Virginia St.
Reno NV 89502(702) 827-8500

Sunburst Lighting, Inc.
P.O. Box 9313
Phoenix AZ 85068(602) 991-5042

Sunshine Productions
2015 6th Ave. North
Great Falls MT 59401(406) 452-0307

Sun Sound Systems
4846 Main Street
Skokie IL 60077(312) 679-1150

Sunspot
2440 San Mateo Place, N.E.
Albuquerque NM 87110(505) 881-1444

Sunstate Electronics
127 South Charles Street
Daytona Beach FL 32014 ... (904) 255-5678

Sun Valley Audio, Inc.
808 Warm Springs Rd
Sun Valley ID 83353(208) 726-3476

Sun Video Communications & Productions
8100 Old Almerston Rd.
Largo FL 33541(813) 886-6651

Superedit Ltd.
2645 Paulus St.
Montreal Qu H4S 1E9 Canada

Superior Electric
383 Middle St.
Bristol CT 06010(203) 582-9561

Superior Sound
625 E. Pawnee
Wichita KS 67211(316) 263-4444

Super Roving Radio, Inc.
2915 Maples Rd.
Fort Wayne IN 46816(219) 447-0412

Supersonic Electronics
317 St. Paul Avenue
Jersey City NJ 07386(201) 963-8624

Sure Shot Satellite Network
12450 Harmon Rd.
New Springfield OH 44442 ... (216) 542-9820

S.W. Cassette
700 South Milam
Amarillo TX 79111(806) 376-4343

The Sweet Library of Tapes
Route 2, Box 122-B
Cabot AR 72023(501) 843-2694

Swiderski Electronics Inc.
1200 Greenleaf
Elk Grove Village IL 60007 ... (312) 364-1900

Swintek Enterprises, Inc.
587 Division St.
Campbell CA 95008(408) 378-8091

Switchcraft, Inc.
5555 N. Elston Ave.
Chicago IL 60630(312) 792-2700

AL DHR Marketing Inc.
904 Bob Wallace Ave. S.W. # 222
Huntsville 35801(205) 533-5165

AZ Moss Marketing
2102 E. Osborn Rd.
Phoenix 85016-6618(602) 957-2065

CA Ross Marketing Associates
3350 Scott Blvd. Bldg. 51
Santa Clara 95054(408) 988-8111

CA Wiley Co.
1632 Silverlake Blvd. Box 26187
Los Angeles 90026(213) 666-1611

CA Wiley Co.
10150 Sorrento Valley Rd., # 203
San Diego 92121(619) 453-9018

CO Moss Marketing
2231 Federal Blvd.
Denver 80211(303) 455-7205

CT Unesco/Genex, Inc.
2471 Long Ridge Rd.
Stamford 06903(203) 322-9308

FL HAI Electronics
10212 West Sample Rd.
Coral Springs 33065(305) 752-7520

FL HAI Electronics
3811 Shoreside Circle
Tampa 33624(813) 963-0743

FL HAI Electronics
9037 G York Lake
Melbourne 32901(305) 676-1639

GA DHR Marketing, Inc.
3300 NE Expressway, # 8W
Atlanta 30341(404) 451-9848

IL Switchcraft, Inc.
5555 North Elston Ave.
Chicago 60630(312) 792-2700

IN Marketing Engineers, Inc.
8770 C Commerce Park Place
Indianapolis 46268(317) 872-5665

CS Thomas L. Dowell & Associates, Inc.
8001 Conser Dr., # 260
Overland Park 66204(913) 648-7373

AA Unesco/Genex, Inc.
235 Bear Hill Rd.
Waltham 02154(617) 890-1535

AI R.C. Merchant & Co., Inc.
23735 Research Dr.
Farmington Hills 48024(313) 476-4600

AI R.C. Merchant & Co., Inc.
P.O. Box 152
St. Joseph 49085(616) 983-7378

AN Mel Foster Technical Sales, Inc.
7611 Washington Ave. So.
Edina 55435(612) 941-9790

AO Thomas L. Dowell & Associates, Inc.
8460 Watson Rd. Ste. 141
St. Louis 63119(314) 849-4234

AS Doby Associates, Inc.
1437 Old Square Rd., Ste. 204
Jackson 39211(601) 981-1138

AS Doby Associates, Inc.
1437 Old Square Rd., Suite 204
Jackson 39211(601) 981-1138

IC DHR Marketing, Inc.
4016 Barrett Dr., # 201
Raleigh 27609(919) 781-1961

IJ Masin-ESCO, Inc.
111 Charlotte Pl.
Englewood Cliffs 07632(201) 569-8868

IJ Trinkle Sales, Inc.
1010 Haddonfield-Berlin Rd.
Cherry Hill 08034(609) 795-4200

IM Moss Marketing
9004 Menaul, N.E.
Albuquerque 87112(505) 292-7505

IY APEX Associates, Inc.
1133 Mt. Read Blvd.
Rochester 14606(716) 254-6050

IY Masin-ESCO, Inc.
330 Motor Parkway, # 303
Hauppauge 11787(516) 273-3500

JH J.C. Hofstetter Co.
7014 River Styx Rd.
Medina 44256(216) 241-4880

JH J.C. Hofstetter Co.
5244 Springboro Pike
Dayton 45439(513) 296-1010

Jn Atlas Electronics Ltd.
50 Wingold Ave.
Toronto M6B 1P7 Canada(416) 789-7761

JR Comtec
4365 S.E. Chelsea
Milwaukie 97222(503) 654-6626

IC DHR Marketing, Inc.
37 Villa Rd. # 409
Greenville 29615(803) 235-3594

X J.Y. Schoonmaker Co., Inc.
10710 Sand Hill Rd.
Dallas 75238(214) 349-1650

JT Moss Marketing
669 South 2nd East
Salt Lake City 84111-3801(801) 363-5875

VA Comtec
1715 114th Ave., S.E. # 219
Bellevue 98004(206) 453-1188

Bel Components
Rm. 1814-15 StarHs. 3 Salisbury Rd
Kowloon Hong Kong852-3-697478

Duckwo International Co., Ltd.
Shinhan Bldg. 805-4T-11 Yeouido-Dong
Young Dngpo Ku, Seoul Korea783-1936-8

Seamax Engr. Private, Ltd.
80 Genting Ln. 03-07 Genting Block
Ruby Ind. Cmplx. Singapore 133465-7476155

J.C. Tally Trading Co., Lt
3rd Fl. #123, Sec 1, NEI Hu Rd.
Taipei Taiwan, ROC02-79614206

C.I.E
Bass Bldg, Widdowson W United King44-602-770075

Data Modul
Landsberger S 320
8000 Munchen 21 West Germany49-089-560170

S.W.R., Inc.
Rd 3, Rt. 77
Weare NH 03281(603) 529-2500

Symbolics, Inc.
1401 Westwood Blvd., 3rd Floor
Los Angeles CA 90024(213) 478-0681

Symetrix, Inc.
4211 24th Ave. West
Seattle WA 98199(206) 282-2555

CA Trankle & Associates
1504 Industrial Way # 4
Belmont 94002(415) 595-4005

CA Western Audio Sales
1535 RIVERSIDE DR.
Glendale 91201(818) 246-3806

CO Torbett Associates
225 SE 42nd St.
Loveland 80537(303) 669-1008

FL Michael Chafee Enterprise
5690 Derek Ave.
Sarasota 33583(813) 921-4294

IL JAMM Distributing
21470 Main St. # 106
Matteson 60553(312) 747-6363

MD Audio Associates
14609 MacClintock Dr.
Glenwood 21738(301) 854-6122

NC Applied Audio
9 Elk Mountain Rd.
Asheville 28804(704) 658-2291

NJ On the Road Marketing
3 Seneca
Upper Montclair 07043(201) 746-0501

NY Darmstedter Associates
8282 Willett Parkway
Baldwinsville 13027(315) 638-1261

NY Metropolis Audio
70 Bogart Ave.
Port Washington 11050(516) 767-2903

OH Cambridge Marketing
24451 Lakeshore Blvd. # 1200 West
Euclid 44123(216) 289-7275

Qu SF Marketing
3524 Griffith St.
St. Laurent H4T 1A7 Canada(514) 733-5344

TX Tenicki & Associates
2600 SW Freeway #814
Houston 77098(713) 528-2005

WA Loppnow & Associates
16541 Redmond Way # 137
Redmond 98052(206) 883-3205

Synergistic Batteries, Inc.
3760 Lower Roswell Rd.
Marietta GA 30068(404) 973-2220

System Associates
5801 Uplonden Way
Culver City CA 90230(213) 641-2042

Systemation Corp.
351 N. Water St.
Decatur IL 62523(217) 428-7101

Take One, Television Productions
6926 Lehring Road
Bancroft WI 48414(517) 634-9179

Tamron Industries, Inc.
24 Valley Road
Port Washington NY 11050(516) 883-8800

Tannoy North America, Inc.
300 Gage Ave., Unit 1
Kitchener On N2M 2C8 Canada(519) 745-1158

Tapemailer
3798 Watman Ave.
Memphis TN 38118(901) 794-6937

Tape City
300-1 RT. 17 South
Lodi NJ 07644(201) 777-4700

Tapscan, Inc.
3000 Riverchase Galleria, # 1111
Birmingham AL 35244(205) 987-7456

Target Tuning
6 Caesar Place
Moonachie NJ 07074(201) 935-8880

Tascam/TEAC Corp. of America
7733 Telegraph Road
Montebello CA 90604(213) 726-0300

TDK Electronics Corp.
12 Harbor Park Drive
Port Washington NY 11050(516) 625-0100

Teatronics, Inc.
3100 McMillan Road
San Luis Obispo CA 93401(805) 544-3550

TECCOM
265 Otis St.
West Newton MA 02165(617) 527-7330

Tecon Enterprises Ltd.
686 Cliffside Dr.
San Dimas CA 91773(714) 599-0810

Technical Film Systems, Inc.
9205 Alabama Ave., Unit # D
Chatsworth CA 91311(818) 709-0510

Technicalities
2086 Faulkner Road
Atlanta GA 30324(404) 633-5010

Technical Video Systems
215 N. Broad St.
Winston-Salem NC 27101(919) 748-0910

Technics
One Panasonic Way
Secaucus NJ 07094(201) 348-7000

Techniform
127 Rue de la Republique
Montigny 95370 France

Technisphere Corp.
29 East 19th Street
New York NY 10003(212) 777-5100

Techni-Tool, Inc.
5 Apollo Rd.
Plymouth Meeting PA 19462(215) 825-4990

Technology Partners
2809 Boardwalk
Ann Arbor MI 48104(313) 761-5760

Technov Industries, Ltd.
514 West 57th Street
New York NY 10019(212) 586-3690

Tekno, Inc.
100 W. Erie St.
Chicago IL 60610(312) 787-8920

Tekom, Inc.
408 Vine Street
Philadelphia PA 19106(215) 627-6700

Tekskil Industries, Inc.
#108, 15290 103A Avenue
Surrey BC V3R 7A2 Canada(604) 589-1100

CA Innovative Concepts Int.
575 Esplanade, Apt. #102
Redondo Beach 90277(213) 540-2550

FL Mort Press Video Inc.
1800 San Souci Boulevard, #305
North Miami 33181(305) 895-2260

IL Go Video Sales
1195 S. Wilson Dr.
Lake Forest 60045(312) 295-6720

IN George Constantine & Assoc.
9928 Culpepper Dr.
Carmel 46032(317) 844-2000

TEKSKIL—TELEMET

- KS** R.L. Graham & Associates
P.O. Box 6464
Leawood 66206(913) 383-3475
- KY** Bruce Dawson & Associates Field
Louisville 40205(502) 456-6666
- LA** Michael Dollacker & Associates
5831 S. Robertson St.
New Orleans 70115(504) 861-4513
- MD** Sales & Marketing Group
P.O. Box 7115
Silver Spring 20907(301) 942-2092
- NC** C.E. Cook Company
P.O. Box 1385
Salisbury 28145(704) 636-2825
- NH** Associated Systems
P.O. Box 5211
Manchester 03108(603) 472-2297
- NJ** Symco Inc.
P.O. Box 373
Millington 07946(201) 642-6262
- NY** Jack Schaffer
1095 Tulip Ave.
Franklin Square 11010(718) 352-8838
- Tektronix, Inc.**
P.O. Box 500
Beaverton OR 97077(503) 627-1555
- AL** Pro Video Systems, Inc.
169 Oxmoor Rd.
Birmingham 35209(205) 942-7904
- AZ** Audio-Video Recorders of Arizona
3830 N. 7th St.
Phoenix 85014(602) 277-4723
- CA** B&B Systems, Inc.
28111 N. Avenue Stanford
Valencia 91355(805) 257-4853
- CA** CBX, Inc.
147 E. Olive Ave.
Monrovia 91016(818) 357-8878
- CA** California Video Sales, Inc.
11261 Sunrise Park Dr.
Rancho Cordova 95742(916) 638-4400
- CA** Capps Electronics, Inc.
1399 Arundell
Ventura 93003(805) 642-0241
- CA** Hoffman Video Systems
1945 South Figueroa St.
Los Angeles 90015(213) 749-3311
- CA** National TeleConsultants, Inc.
1651 Gardena Ave.
Glendale 91204(213) 245-8000
- CA** Omega Video, Inc.
14326 Isis Ave.
Lawndale 90260(213) 679-9021
- CA** Shoreline, Ltd.
3459 Cahuenga Blvd.
Hollywood 90060(213) 851-1236
- CA** R.E. Snader and Associates
150 Gate Five Rd.
Sausalito 94965(415) 332-7070
- CA** TeleVideo San Diego
8360 Clairmont Mesa Blvd., # 101
San Diego 92111(619) 268-1100
- CA** Television Associates
2410 Charleston Rd.
Mountain View 94043(415) 967-6040
- CA** Videotape Products, Inc.
320 North Madison Ave.
Los Angeles 90004(213) 664-1144
- CO** Video Teknix, Inc.
633 South Federal Blvd.
Denver 80219(303) 922-5564
- FL** Florida Video Systems, Inc.
14422 N.W. 7th Ave.
Miami 33168(305) 688-6618
- FL** Hubbard Communications, Inc.
12495 34th St. N.
St. Petersburg 33702(813) 577-7759
- FL** Southeast Electronics, Inc.
1125 Rosselle St.
Jacksonville 32203(904) 356-3000
- GA** Gray Communications Consultants, Inc.
U.S. 19 South at Glendale Rd.
Leesburg 31763(912) 883-2121
- GA** Technical Industries, Inc. of Georgia
6000 Peachtree Rd. N.E.
Atlanta 30341(404) 455-7610
- HI** EMC Corp.
550 Paiea St. # 103
Honolulu 96819(808) 836-1138
- IL** Harris Corp.
2700 Ellington Rd.
Quincy 62301(217) 222-8200
- IL** Joseph Electronics, Inc.
8830 N. Milwaukee Ave.
Niles 60648(312) 297-4200
- IL** NEC America, Inc.
1255 Michael Dr.
Wood Dale 60191(312) 860-7600
- IL** Roscor Corp.
1061 Feehanville Rd.
Mt. Prospect 60056(312) 229-8080
- IL** Swlderski Electronics, Inc.
1200 Greenleaf Ave.
Elk Grove Village 60007(312) 364-1900
- KS** Smith Audio Visual, Inc.
2615 S.W. 21st
Topeka 66604(913) 235-3481
- KY** Midwest Communications Corp.
One Sperti Dr.
Edgewood 41017(606) 331-8990
- MA** BAF Communications Corp.
228 Essex St.
Salem 01970(617) 744-1505
- MA** Lake Systems Corp.
55 Chapel St.
Newton 02160(617) 244-6881
- MD** Harrison Systems Ltd.
7515 Annapolis Rd., Ste. 411
Hyattsville 70784(301) 731-5677
- MD** Professional Products, Inc.
4964 Fairmont Ave.
Bethesda 20814(301) 657-2141
- ME** Maine Video Systems
495 Forest Ave.
Portland 04101(207) 773-2355
- MI** General Television Network
13225 Capital Ave.
Oak Park 48237(313) 548-2500
- MI** Thalner Electronic Laboratories, Inc.
7235 Jackson Rd.
Ann Arbor 48103(313) 761-4506
- MN** Emmons Associates, Inc.
1121 Riverside Dr.
Burnsville 55337(612) 890-8920
- MN** Todd Communications, Inc.
6545 Cecilia Circle
Minneapolis 55435(612) 941-0556
- MO** Video Masters, Inc.
1616 Broadway
Kansas City 64108(816) 236-5595
- MO** VMI Company of St. Louis
2368 Schuetz Rd.
St. Louis 63141(314) 569-1334
- MS** Central School Supply Co.
310 Airport Rd.
Jackson 39208(601) 932-1901
- NC** Electronic Merch. Enterprises
112 Buena Vista
High Point 27260(919) 869-3335
- NC** Technical Video Systems, Inc.
215 North Broad St.
Winston-Salem 27101(919) 748-0916
- ND** Audio Visual, Inc.
1818 East Broadway
Bismark 58501(701) 258-6360
- NJ** A. F. Associates, Inc.
100 Stonehurst Court
Northvale 07647(201) 767-1000
- NJ** AVTEC Industries, Inc.
5 Audrey Place
Fairfield 07006(201) 882-9460
- NJ** Landy Associates, Inc.
1890 E. Marlton Pike
Cherry Hill 08034(609) 424-4660
- NJ** Panasonic, A-V Systems Division
One Panasonic Way
Secaucus 07094(201) 348-7685
- NJ** Philips Television Systems, Inc.
900 Corporate Dr.
Mahwah 07430(201) 529-1550
- NJ** Sony Broadcast Co.
1600 Queen Anne Rd.
Teaneck 07666(201) 833-4300
- NJ** Sony Corp. of America
Sony Drive
Park Ridge 07656(201) 930-1000
- NJ** Turner Engineering, Inc.
325 Division St.
Boonton 07005(201) 263-0023
- NM** Dyma Engineering
367 Main S.E.
Los Lunas 87031(505) 865-6700
- NY** Audio-Video Corp.
213 Broadway
Menands (Albany) 12204(518) 449-7213
- NY** The Camera Mart, Inc.
456 West 55th St.
New York 10019(212) 757-6977
- NY** FERCO
707 11th Ave.
New York 10019(212) 245-4800
- NY** MPSC Video Industries, Inc.
514 West 57th St.
New York 10019(212) 586-3690
- NY** Reeves AV Systems, Inc.
227 East 45th St.
New York 10017(212) 573-8652
- OH** Broadcast Video Corp.
1851 South High St.
Columbus 43207(614) 445-8800
- OK** DELCOM
6019 S. 66th Ave.
Tulsa 74145(918) 494-9500
- OR** Custom Video Systems, Inc.
1963 NE Kearney
Portland 97209(503) 295-6963
- PA** Alpha Video & Electronics Co.
28 East Mall Plaza
Carnegie 15106(412) 923-2070
- PA** Lerro Electrical Corp.
3125 N. Broad St.
Philadelphia 19132(215) 223-8200
- PA** Peirce-Phelps, Inc.
2000 N. 59th St.
Philadelphia 19131(215) 879-7171
- TN** Consolidated Media Systems, Inc.
1004 Old Tree Ct.
Nashville 37210(615) 244-3933
- TX** Broadcast Systems, Inc.
8222 Jamestown Dr.
Austin 78758(512) 836-6011
- TX** Magnetic Media Corp.
3440 Sojourn Dr., Ste. 200
Carrollton 75006(214) 931-0404
- TX** MZB & Associates
4203 Beltway Dr.
Dallas 75234(214) 223-5535
- TX** National Television Systems Co.
2419 Rutland
Austin 78758(512) 837-1769
- TX** Video Systems, Inc.
1189 Brittmore Rd.
Houston 77043(713) 932-9779
- UT** Visual Technology, Inc.
2141 South Main
Salt Lake City 84115(801) 355-7481
- WA** Bennett Engineering Associates, Inc.
P.O. Box 76
Mercer Island 98040(206) 232-3550
- WA** Custom Video Systems, Inc.
17521 15th Ave. N.E.
Seattle 98155(206) 365-5400
- WA** Northwest Electronics, Inc.
730 1st Ave. East
Spokane 99220(509) 535-7651
- WA** Proline Industries, Inc.
13241 Northup Way
Bellevue 98005(206) 644-1999
- Telaudio Centre**
P.O. Box 921
Beverly Hills CA 90213(213) 276-2726
- Telaudio, Inc.**
1010 W. Hillcrest Blvd.
Inglewood CA 90301(213) 651-5563
- Telcom Research**
1163 King Road
Burlington On L7R 3X5 Canada
.....(419) 681-2450
- Tele-Measurement**
145 Main Avenue
Clifton NJ 07014(201) 473-8822
- Telemet**
25 Davids Dr.
Hauppauge NY 11788(516) 436-7260
- AZ** Spencer Broadcast
316 E. El Camino Dr., N.E.
Phoenix 95020(602) 242-2211

- CA Funke & Associates
908 Marilyn Dr.
Campbell 95008(408) 866-0648
- CA Hoffman Video Systems
1945 South Figueroa St.
Los Angeles 90007(213) 749-3311
- CA RT Industrial Video
3601 W. Magnolia Blvd.
Burbank 91505(818) 842-9136
- CA Shore Line Ltd.
3459 Cahuenga Blvd., West
Hollywood 90068(213) 851-1236
- CA VCC Video Communications Corp.
2415 Ontario St.
Burbank 91504(818) 954-0150
- DC Comex Corp.
P.O. Box 17011 Dulles Int'l Airt.
Washington 20041(202) 471-4215
- FL Barron Associates
7844 Broken Arrow Trail
Winter Park 32792(305) 677-1608
- FL Daystrong International
P.O. Box 261897
Tampa 33685-1897(813) 884-7778
- FL Florida Video Systems
33350 Ulmerton Rd., Ste. # 7
Clearwater 33520(813) 576-8482
- FL Gendra International, Inc.
35 N.E. 17th St., Ste. 131
Miami 33132(305) 372-8845
- FL R & H Associates
2060 N.E. Coachman Rd.
Clearwater 34625(813) 442-7505
- GA Gray Communications Consultants
P.O. Box 3229
Albany 31708(912) 883-2121
- HI E.M.C. Corp.
550 Paiea St.
Honolulu 96819(808) 836-1138
- HI Martin Electronics
1754 Koikoi St.
Honolulu 96786(808) 543-0888
- HI Omega Pacific
222 Kaelepulu Dr.
Kailua 96734(808) 263-4212
- IL Broadcast Electronics, Inc.
4100 N. 24th St.
Quincy 62305(217) 224-9600
- IL Harris Corp. Broadcast Group
P.O. Box 4290
Quincy 62305(217) 222-8200
- IL NEC America
130 Martin Lane
Elk Grove Village 60007(312) 640-3750
- IN Electro Communications Systems
5410 Rock Hampton Ct.
Indianapolis 46268(317) 876-2551
- KY Midwest Corp.
One Sperti Dr.
Edgewood 41017(606) 331-8990
- MA Lake Systems
55 Chapel St.
Newton 02160(617) 244-6881
- MD LDL Communications, Inc.
14440 Cherry Lane Ct.
Laurel 20707(301) 498-2200
- MD Professional Products
4964 Fairmont Ave.
Bethesda 20814(301) 657-2141
- MI H.M. Dyer Electronics, Inc.
48647 Twelve Mile Rd.
Novi 48050(313) 349-7910
- MO International Broadcast Co.
1738 Lakeshore Dr.
Cape Girardeau 63701(314) 334-9449
- MO Lines Video
219 S. Jefferson
Springfield 64806(417) 862-5533
- MS Mississippi School Supply Co.
P.O. Box 1059
Jackson 39205(601) 948-2521
- NJ BTS, Inc.
900 Corporate Dr.
Mahwah 07430(201) 529-1550
- NJ Eldix International, Inc.
891 Pallsades Ave.
Fort Lee 07024(201) 461-5010
- NJ Holzberg, Inc.
P.O. Box 323
Sea Bright 07760(201) 256-0455
- NJ Landy Associates
1890 E. Marlton Pike
Cherry Hill 07003(609) 424-4660
- NM Dyma Engineering
367 Main S.E.
Los Lunas 87031(505) 865-6700
- NY Broadcast Equipment
10-30 44th Dr.
Long Island City 11101(718) 784-5545
- NY The Camera Mart, Inc.
456 W. 55th St.
New York 10019(212) 757-6977
- NY Kelper International Corp.
28 West 44th St., Ste. 222
New York 10036(212) 921-4271
- NY L. Matthew Miller Associates
48 W. 21st St.
New York 10010(212) 741-8011
- On Comad Communications Ltd.
1435 Bonhill Rd., Unit 34
Mississauga L5T 1M1 Canada . . .(416) 676-9171
- OR Northwest Communications Systems
21885 S. Lewellen Rd.
Beavercreek 97004(503) 623-7488
- PA Acrodyne Industries
516 Township Line Rd.
Blue Bell 19422(215) 542-7000
- PA Alpha Video Exporters, Inc.
28 East Mall Plaza
Carnegie 15106(412) 923-2070
- PA EMCEE Broadcast Products
Susquehanna St.
White Haven 18661(714) 443-9575
- PA Lerro Electrical
3125 N. Broad St.
Philadelphia 19132(215) 223-8200
- Qu Texcan Communications, Inc.
6019 Chemin St. Francois Rd.
St. Laurent H4S 1B6 Canada . . .(514) 335-0152
- TX Gilram Supply, Inc.
16630 Imperial Valley
Houston 77060(713) 820-0437
- TX Townsend Broadcast Systems
8222 Jamestown Dr.
Austin 78758(512) 836-6011
- TX Varian/TVT
4212 S. Buckner Blvd.
Dallas 75227(214) 381-7161
- WA Bennett Engineering Assoc.
1331 118th Ave., S.E.
Bellevue 98004(206) 232-3550
- JE-EL Corp.
KPO Box 1922
Seoul Korea
Mexitek, S.A.
Apdo. 12-1012
Mexico, D.F.
Adtronics, Inc.
819 Ortigas Bldg., Ste. 819
Ortig. Ave., Pasig MM Philippines
Oceanic Trading Corp.
P.O. Box 891
Taipei Taiwan R.O.C.
- Telemetrics, Inc.**
7 Valley St.
Hawthorne NJ 07506(201) 423-0347
- Telepak**
4783 Ruffner St.
San Diego CA 92111(619) 268-8559
- Tel-Equipment Co.**
11573 Frankstown Rd.
Pittsburgh PA 15235(412) 731-8850
- Telescript, Inc.**
445 Livingston St.
Norwood NJ 07648(201) 767-6733
- Telesource Communication Services**
740 E. Highland Ave., Ste. 107
Phoenix AZ 85011(602) 265-1232
- Tele-Time Systems**
553 W. Golf
Arlington Hgts IL 60005(312) 640-1420
- Televideo**
4783 Ruffner St.
San Diego CA 92111(619) 268-8559
- Tele Video Systems**
755 Williams Road
Palm Springs CA 92264(619) 323-4206
- Television Associates**
2410 Charleston Rd.
Mountain View CA 94043 . . .(415) 967-6040
- Television Engineering Corp.**
580 Goddard Ave.
Chesterfield MO 63017 . . .(314) 532-4700
- Television Equipment Assoc.**
P.O. Box 393
South Salem NY 10590 . . .(914) 763-8893
- Television Production Service**
3514 Chamblee-Dunwoody Rd.
Atlanta GA 30341(404) 452-8700
- Television Systems Co.**
7101 France Ave. So.
Edina MN 55435(612) 929-1197
- Television Technology Co.**
650 S. Taylor Ave., Suite 4
Louisville CO 80027(303) 665-8000
- TN Television Technology Corp.
106 La Vista
Henderson 37075(615) 824-5845
- Televisual**
1287 Wabash Avenue
Springfield IL 62704(217) 787-4855
- Telex Communications, Inc.**
9600 Aldrich Ave. South
Minneapolis MN 55420. . . .(612) 884-4051
- Telfax Communications**
502 Bark St.
Webster City IA 50595(515) 832-1263
- IN Allied Broadcast Equipment
P.O. Box 1487
Richmond 47375(800) 428-6954
- TX Crouse-Kimzey Co.
P.O. Box 9830
Ft. Worth 76107(800) 433-2105
- TX Professional Audio Services
5700 East Loop 820 South
Ft. Worth 76119.(817) 451-7643
- WA Broadcast Supply West
7012 27th St. West
Tacoma 98466
- Telmark Pty. Ltd**
12/126 Queens Rd. Five Dock
Sydney NS 2046 Australia745-3466
- Telnox**
55 Montepeller Blvd.
St. Laurent Qu H4N 2G3 Canada
.....(514) 744-1785
- Tennaplex Systems Ltd.**
452 Five Farms Lane
Timonium MD 21093.(301) 561-1999
- TENTEL**
1506 Dell Ave.
Campbell CA 95008(408) 379-1881
- Tesseract, Inc.**
2030 Century Center Blvd.
Irving TX 75062(214) 579-0108
- Texar, Inc.**
616 Beatty Road
Monroeville PA 15146-1502 . .(412) 856-4276

TEXAS TELE—TROMPETER

Texas Tele Systems

5025 Burnet Road
Austin TX 78756(512) 458-8104

Texas Video Systems, Inc.

5810 Rittiman Plaza
San Antonio TX 78218(512) 341-1317

T & F Camera And Video

11 West Landis Ave.
Vineland NJ 08360(609) 691-5328

T.F.I., Inc.

3090 Oakmead Village Drive
Santa Clara CA 95051(408) 727-7272

TFT, Inc.

3090 Oakmead Village Dr.
Santa Clara CA 95051(408) 727-7272

Thalner Electronics Labs

7235 Jackson Road
Ann Arbor MI 48103(313) 761-4506

Theatre Service & Supply Corp.

1792 Union Ave.
Baltimore MD 21211(301) 467-1225

Theatre Vision, Inc.

5426 Fair Ave.
North Hollywood CA 91601 ..(818) 769-0928

Thermodyne International Ltd.

20850 S. Alameda St.
Long Beach CA 90810(213) 603-1976

James Thomas Engineering, Ltd.

122 Sherlake Road
Knoxville TN 37922(615) 690-5397

Thompson Electronics Co.

905 S. Bosch Rd.
Peoria IL 61607(309) 637-2277

Thomson-CSF

50, Rue J.P. Timbaud
Courbevoie F 92400 France..(134) 207-072

Thomson Electron Tubes And Devices Corp.

550 Mt. Pleasant Ave.
Dover NJ 07801(201) 328-1400

Thorne Electronics

3130-34 S. 14th St.
Abilene TX 79605(915) 692-9598

Thorn EMI

5451 Ukiah Cr.
Las Vegas NV 89118(702) 367-3656

CA L. E. Nelson Sales Corp.
10834 Burbank Blvd. # B101
No. Hollywood 91601(818) 760-7502

NJ L. E. Nelson Sales Corp.
20 Bushes Lane
Elmwood Park 07407(201) 794-6700

J. H. Three

2916 Centenary
Shreveport LA 71104((311))-2-1-71

TIC General

302 E. 3rd
Thief River Falls MN 56701 ..(218) 681-1291

Tiffen Mfg. Corp.

90 Oser Ave.
Hauppauge NY 11788(516) 273-2500

Time Arts, Inc.

3436 Mendocino Ave.
Santa Rosa CA 95401(707) 576-7722

Time Line, Inc.

270 Lafayette St., Room 1300
New York NY 10012(212) 431-0330

Titan Electronics Pty. Ltd.

Unit 3, 35 Jacosen Crescent
Holden Hill So 5088 Australia ..(082) 663-4331

Titus Technological Laboratories

1134 Neipsic Rd.
Glastonbury CT 06033(203) 633-5472

TNT

3404 Dantes Court
Mobile AL 36609(205) 661-7288

Todd Communications

6545 Cecilia Circle
Minneapolis MN 55435(612) 941-0556

Torpey Controls

98-2220 Midland Ave.
Scarborough On M1P 3E6 Canada
.....(416) 298-7788

Toshiba America

2441 Michelle Dr.
Tustin CA 92680(714) 669-5260

Total Communication Systems, Inc.

1218 Pulaski Hwy Rt 40
Bear DE 19701(302) 834-0239

Total Spectrum Mfg., Inc.

20 Virginia Ave.
West Nyack NY 10994(914) 358-8820

Total Vision, Inc.

6503 Mapleridge Suite D
Houston TX 77081(713) 789-3816

Townsend Broadcast Systems, Inc.

8222 Jamestown Dr.
Austin TX 78758(512) 836-6014

Townsend Broadcast Systems, Inc.

79 Mainline Dr.
Westfield MA 01085(413) 586-9581

TPC Communications, Inc./ Channel One, Ltd.

Production Plaza
Sewickley PA 15143-2399... (412) 741-4000

Transimage International Ltd.

Transimage Hs., 245 Hansworth Road
Hounslow, Middlesex TW3 3UA
England(441) 572-0109

Transmission Structures

P.O. Box 315
Vinita OK 74301(918) 256-7883

Trans Sierra Communications

155 Glendale Ste.#12
Sparks NV 89431(702) 356-8477

TRF Production Music Libraries

40 East 49th St.
New York NY 10017(212) 753-3234

Triad Electronics

2828 Battleground Ave.
Greensboro NC 27408(919) 288-6600

Triad Productions, Inc.

1910 Ingersoll Avenue
Des Moines IA 50309(515) 243-2125

Triangle AV & Video

Div. of Chris Cam Corp.
Sioux Falls SD 57104(605) 336-3777

Triconcept

2670 Sabourin
St. Laurent Qu H4S 1M2 Canada

Trident Audio USA

2720 Monterey St., Suite 403
Torrance CA 90503(213) 533-8900

Trimm, Inc.

400 West Lake St.
Libertyville IL 60048(312) 362-3700

TRI-States Distributing, Inc.

1107 Burt
Shreveport LA 71166(318) 221-4234

Tri-State Video Services, Inc.

Box 97A
Valencia PA 16059(412) 898-1630

TRI-Tronics

2921 W. Alameda Avenue
Burbank CA 91505(213) 843-2170

Trompeter Electronics, Inc.

31186 La Baya Drive
Westlake Village CA 91362 ..(818) 707-2020

AL Currie, Peak & Frazier
2317 Starmount Cr.
Huntsville 35801(205) 536-1506

AZ Aztec Enterprises
1944 W. North Lane, # 1
Phoenix 85021(602) 944-9185

CA ISG
1600 Wyatt Dr., # 15
Santa Clara 95054(408) 980-1166

CA Knight Co.
6733 S. Sepulveda Blvd., #K
Los Angeles 90045(213) 670-2833

CA Knight Co.
P.O. Box 28997
San Diego 92128(619) 571-7903

CO Aztec Enterprises
9145 E. Kenyon Ave., # 101
Denver 80237(303) 779-5285

CT Underwood Sales
124 Rutledge Rd.
Wethersfield 06109(203) 563-3046

FL Currie, Peak & Frazier
7335 Lake Ellenor Dr.
Orlando 32809(305) 855-0843

FL Currie, Peak & Frazier
8000 Sugar Pine Dr.
W. Melbourne 32905(305) 724-6795

FL Currie, Peak & Frazier
P.O. Box 272025
Tampa 33688(813) 963-1076

GA Currie, Peak & Frazier
5664 Peachtree Parkway, # J
Norcross 30092(404) 449-7662

IL Berndt Associates
6200 N. Hiawatha Ave.
Chicago 60646(312) 283-0713

IN Berndt Associates
1089 Third Ave., SW
Carmel 46032(317) 844-0114

KS BAKA
7620 E. Osie
Wichita 67207(316) 682-8411

MA Underwood Sales
694 Chelmsford St.
Lowell 01851(617) 256-8191

MD Sel-Tronics
9311 Annapolis Rd.
Lanham 20706(301) 731-8080

MN Engineering Products Associates
7625 Bush Lake Rd., # 19
Edina 55435(612) 835-9022

MO BAKA
1069 Rue La Chelle St.
Creve Coeur 63141(314) 878-4224

NC Currie, Peak & Frazier
1214 Grove St.
Greensboro 27403(919) 373-0380

- NC** Curre, Peak & Frazier
9830 Fairway Ridge Rd.
Mathews 28105(704) 846-1702
- NJ** L&M Associates
37 Midland Ave.
Elmwood Park 07407(201) 797-0441
- NM** Aztec Enterprises
5000 Copper N.E.
Albuquerque 87108(505) 262-1688
- NY** L&M Associates
175 West 12th St.
New York 10011(212) 243-6155
- NY** T.A.E. Representatives
Corner Main & Collins Sts.
Whitney Point 13862(607) 692-3705
- NY** T.A.E. Representatives
320 N. Washington
Rochester 14625(716) 586-8710
- OH** Geotronics
3554 Brecksville Rd.
Richfield 44286(216) 659-6100
- OH** Geotronics
5020 Laguna Rd.
Trotwood 45426(513) 252-6700
- On** Componetics, Ltd.
210 Cochrane Dr., # 8
Markham L3R 6B6 Canada ..(416) 479-7200
- OR** Evergreen Marketing Group
4095 S.W. 144th St.
Beaverton 97005(503) 643-8020
- PA** Geotronics
4361 Route 8
Allison Park 15101(412) 487-1770
- PA** L&M Associates
965A Bristol Pike
Andalusia 19020(215) 245-6658
- Qu** Componetics, Ltd.
3540 Ashby Ave.
St. Laurent H4R 2C1 Canada ..(514) 331-9930
- TN** Curre, Peak & Frazier
112 Raspberry Lane
Smyrna 37167(615) 459-0743
- TX** Milestek
1 Lake Trail Dr.
Argyle 76226(817) 455-7444
- UT** Aztec Enterprises
860 Riverdale Rd., # D6
Ogden 84405(801) 621-1655
- MA** Evergreen Marketing Group
711 N. North Lake Way
Seattle 98103(206) 633-3160
- MI** Berndt Associates
9431 W. Beloit Rd.
Milwaukee 53227(414) 545-8400
- Troxell Communications**
4830 S. 38th St
Phoenix AZ 85040(602) 968-8516
- TSK Electronics**
564 Young St.
Tonawanda NY 14150(716) 693-3916
- TSM**
709 Executive Blvd.
Valley Cottage NY 10989(914) 268-0100
- Tulsa Electronic Systems, Inc.**
4727A South Memorial
Tulsa OK 74145(918) 665-7020
- Turner Engineering, Inc.**
325 Division St.
Boonton NJ 07005(201) 263-0023
- TV Specialists, Inc.**
180 East 21st Street South
Salt Lake City UT 84115(801) 486-5757
- Twentier Systems, Inc.**
2200 Powell St. Ste. 625
Emeryville CA 94608(415) 654-1168
- Two Brothers Sound & Light**
7005 So. Pulaski
Chicago IL 60629(312) 581-5053
- TWR Lighting, Inc.**
1630 Elmview
Houston TX 77080(713) 973-6904
- Ultimate Corp.**
18607 Topham St.
Reseda CA 91335(818) 345-5525
- Underground Camera**
369 Central
Foxboro MA 02035(617) 769-7810
- Union Connector Co., Inc.**
300 Babylon Turnpike
Roosevelt NY 11575(516) 623-7461
- Uni-Set Corp.**
449 Avenue A.
Rochester NY 14621(716) 554-3820
- United Radio Supply**
123 N.E. 7th Ave.
Portland OR 97232(503) 233-7151
- United Ad Label Co., Inc.**
P.O. Box 2165
Whittier CA 90610(714) 990-2700
- United Audio Recording**
8535 Fairhaven
San Antonio TX 78229(512) 690-8888
- United Media Inc.**
4075 Leaverton Court
Anaheim CA 92807(714) 630-8020
- United Missionary Aviation, Inc.**
Rt.4, Box 384 off Hwy 6
Fayetteville AR 72701(501) 521-1758
- United Press International**
1400 Eye St., N.W.
Washington DC 20005(202) 898-8200
- United Ropeworks U.S.A., Inc.**
P.O. Box 306
Montgomeryville PA 18936 ..(215) 368-6611
- U.S. Department of Commerce**
Office of Legislative Affairs
Rockville MD 20852(301) 443-8031
- United Visual Aids**
905 Fairway Drive
Bensenville IL 60106(312) 595-3544
- Universal Corp.**
4482 Ft. Jackson Blvd.
Columbia SC 29209(803) 787-5714
- Univisions Video Systems, Inc.**
2011 Teall Ave.
Syracuse NY 13206(315) 437-0301
- UNR-Rohn**
P.O. Box 2000
Peoria IL 61656(309) 697-4400
- UREI**
8500 Balboa Blvd.
Northridge CA 91329(818) 893-8411
- U.S. Army**
ATXY-TV
Ft. Irwin GA 92310(619) 386-5090
- U.S. Army Reserve**
HQDA, Public Affairs Office
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INDEX

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Brooks Mfg. Co. See Advertisement

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Advertising and Promotional Services

Broadcast Mailing Service
. See Advertisement
Success Broadcast Marketing
. See Advertisement On Next Page

Airborne Systems

Microwave Radio B-865

Animation Systems

(see Graphics Systems)

Antenna and Tower Installation Services

Aries Antennas, Inc. See Advertisement



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3857 Birch Street
Suite 417
Newport Beach, CA 92660
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Antenna Monitors

Delta Electronics, Inc. B-463
Gorman-Redlich Mfg. Co. B-589
Potomac Instruments, Inc. B-944

Antennas and Accessories

Bogner Broadcast Equipment Corp.
. B-250-253
Cablewave Systems, Inc. B-313-315
Comark Communications, Inc. B-424
Dielectric Communications B-475-478
Electronics Research, Inc. B-506
Jampro Antennas, Inc. B-702-708
Microwave Radio B-862-866
Potomac Instruments, Inc. B-945
Radiation Systems, Inc. B-979-981
Scala Electronic Corp. B-1016-1019
Shively Labs, Inc. B-1035-1037
Varian Continental TVT B-1181-1185

Audio Amplifiers

Audio Technologies, Inc. B-183
Benchmark Media Systems, Inc. B-232
Broadcast Audio Corp. B-281
GKC Research & Development B-582, 583
JBL Professional B-712
Lenco, Inc. B-766
Logitek Electronic Systems, Inc. B-781
Micro-Trak Corp. B-858
Ramko Research, Inc. B-984-986
RAMSA/Panasonic Industrial Company
. B-988
RTS Systems, Inc. B-1006
Russco Electronics, Inc. B-1009
Sescom, Inc. B-1028
Shure Brothers, Inc. B-1041
Symetrix, Inc. B-1111, 1112

Audio Cartridge Players/Recorders

Audi-Cord Corp. B-164, 165
Broadcast Electronics, Inc. B-282-285
Fidelipac Corp. B-538
Otari Corp. B-918
Ramko Research, Inc. B-986
Tapecaster B-1114
Television Technology Co. B-1154

Audio Cassette Recorders/Players

Fostex Corp. of America B-548
Inovonics, Inc. B-693
Marantz Co., Inc. B-821
Nakamichi U.S.A. Corp. B-891
Tascam/TEAC Corp. of America B-1121

Audio Delay Lines, Cartridges, Filters, Networks and Transformers

Advanced Music Systems B-46
Amek/TAC U.S. Operations B-80
Circuit Research Labs, Inc. B-414
Deltalab B-469
EMT B-519
Eventide, Inc. B-528
Lexicon, Inc. B-767, 769
Merlin Engineering Works B-851
Sescom, Inc. B-1029

Audio Digital Players/Recorders and Processors

Audio Services Corp.
. See Advertisement On Next Page
EMT B-523
Otari Corp. B-920
Sony Corp. of America B-1063-1068
Tascam/TEAC Corp. of America B-1121
Technics B-1124

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INDEX (cont'd)

Audio Distribution Amplifiers

ADM Technology, Inc.	B-44
Audio Technologies, Inc.	B-184, 185
Benchmark Media Systems, Inc.	B-232
Brabury Ltd.	B-254, 255
Broadcast Audio Corp.	B-281
Broadcast Electronics, Inc.	B-287
BSM Broadcast Systems, Inc.	B-293
BTS Broadcast Television Systems, Inc.	B-304
Dwight Cavendish Co.	B-362
Datatek Corp.	B-450
dbx, Inc.	B-452
Dynair Electronics, Inc.	B-494
GKC Research & Development	B-582
The Grass Valley Group, Inc.	B-602
HEDCO	B-634-636
Hnat Hindes, Inc.	B-654
Laird Telemedia, Inc.	B-734
Leitch Video of America, Inc.	B-755
Lenco, Inc.	B-758, 766
Logitek Electronic Systems, Inc.	B-779, 780
LPB, Inc.	B-791
Micro-Trak Corp.	B-858
Radio Systems, Inc.	B-982
Ramko Research, Inc.	B-985, 986
RTS Systems, Inc.	B-1006
Russco Electronics, Inc.	B-1009
Sescom, Inc.	B-1026
Shintron Co., Inc.	B-1033, 1034
Shure Brothers, Inc.	B-1041
Sierra Video Systems, Inc.	B-1044
Telemet	B-1145
Video Accessory Corp.	B-1193
Videotek, Inc.	B-1204

Audio Effects Systems

Eventide, Inc.	B-528, 529
Lexicon, Inc.	B-768, 769
Yamaha International Corp.	B-1227

Audio Equalizers

Amek/TAC U.S. Operations	B-80
dbx, Inc.	B-452, 454
JBL Professional	B-710
Orban Associates, Inc.	B-915
Symetrix, Inc.	B-1112
Valley International, Inc.	B-1178
Yamaha International Corp.	B-1228

Audio Mixers and Consoles

ADM Technology, Inc.	B-33-43
Allen & Heath Brenell Ltd.	B-60-65
Amek/TAC U.S. Operations	B-81-91
Aries America	B-147
Arrakis Systems, Inc.	B-148-150
Audio Kinetics, Inc.	B-174
Audio Technica US, Inc.	B-181
Audio Technologies, Inc.	B-186
Auditronics, Inc.	B-188-192
Autogram Corp.	B-194-196
Biamp Systems, Inc.	B-240
Broadcast Audio Corp.	B-279, 280
Broadcast Electronics, Inc.	B-286
Calrec by AMS	B-343-345
Cinetronics	B-408
Coherent Communications, Inc.	B-422
Dorrrough Electronics	B-491
Electro-Voice, Inc.	B-514
GKC Research & Development	B-582
The Grass Valley Group, Inc.	B-597
Hallikainen & Friends, Inc.	B-618
Harrison Systems, Inc.	B-625-630
Howe Technologies Corp.	B-656-658
JBL Professional	B-709, 711
Logitek Electronic Systems, Inc.	B-776-778
LPB, Inc.	B-792, 793

B-1274

Audio Mixers and Consoles (cont'd)

Micro-Trak Corp.	B-857, 858, 860
Moseley Associates, Inc.	B-883
Neotek Corp.	B-900-902
Panasonic Broadcast Systems Co.	B-930
Quantum Audio Labs, Inc.	B-965
	See Advertisement



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Radio Systems, Inc.	B-982, 983
Ramko Research, Inc.	B-985, 986
RAMSA/Panasonic Industrial Company	B-987
Russco Electronics, Inc.	B-1009
Seck	B-1021
Shure Brothers, Inc.	B-1041
Sony Corp. of America	B-1069-1071
Soundcraft USA	B-1074-1079
Soundtracs plc	B-1085
Sound Workshop	B-1086
Tascam/TEAC Corp. of America	B-1119
	1120
Television Technology Co.	B-1153
Trident Audio USA	B-1168, 1169
Wheatstone Corp.	B-1211
Yamaha International Corp.	B-1223-1225

Audio Monitor/Program Amplifiers and Accessories

Dwight Cavendish Co.	B-363
Dolby Laboratories, Inc.	B-490
Henry Engineering	See Advertisement On Next Page
Videotek, Inc.	B-1203

Audio Preamplifiers

Audio Technologies, Inc.	B-185
GKC Research & Development	B-584
Orban Associates, Inc.	B-915
Radio Systems, Inc.	B-983
RTS Systems, Inc.	B-1006
Russco Electronics, Inc.	B-1009
Sescom, Inc.	B-1027
Shure Brothers, Inc.	B-1041
Studio Technologies, Inc.	B-1105
Symetrix, Inc.	B-1112

Audio Processors - Compressor/Limiter/Expander/Noise Gates

Advanced Music Systems	B-46
Amek/TAC U.S. Operations	B-80
Aphex Systems Ltd.	B-145, 146
Audio Digital, Inc.	B-166
Audio Engineering Associates	B-167
Audio Technologies, Inc.	B-185
Circuit Research Labs, Inc.	B-413, 414
dbx, Inc.	B-452-456
Delta Electronics, Inc.	B-460
Dorrrough Electronics	B-491
E.M.T.	B-520
Eventide, Inc.	B-529



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INDEX (cont'd)

Audio Processors-Compressor/ Limiter/Expander/Noise Gates (cont'd)

Hnat Hindes, Inc.	B-653
Howe Technologies Corp.	B-659
Inovonics, Inc.	B-693-695
JBL Professional.	B-710
Kahn Communications, Inc.	B-719
Lexicon, Inc.	B-767, 769
LPB, Inc.	B-791
Modulation Sciences, Inc.	B-875
Orban Associates, Inc.	B-914, 915
Ramko Research, Inc.	B-984
Sescom, Inc.	B-1027
Sony Corp. of America	B-1067
Symetrix, Inc.	B-1111, 1112
Texar, Inc.	B-1158, See Advertisement
Titus Technological Laboratories	B-1167
Valley International, Inc.	B-1177, 1178
Yamaha International Corp.	B-1228

Audio Recognition/Simulator Systems

Studio Technologies, Inc.	B-1104, 1105
-----------------------------------	--------------

Audio Recorder Mixers

Fostex Corp. of America	B-548
-----------------------------------	-------

Audio Synthesizers

dbx, Inc.	B-456
Orban Associates, Inc.	B-914

Audio Tape Editing, Synchronizers and Time Code Equipment

Audio Kinetics, Inc.	B-168, 170
Cipher Digital, Inc.	B-412
Evertz Microsystems Ltd.	B-533, 534
. See Advertisement	



3465 Mainway
Burlington, Ontario L7M 1A9
(416) 335-3700
Telex: 06-18784
FAX: (416) 335-3573

NEC America, Inc.	B-897
Sony Corp. of America	B-1051, 1066, 1067
Sound Workshop	B-1086

Audio Tape Recorders/Players, Open Reel

Fostex Corp. of America	B-547
Inovonics, Inc.	B-696
Merlin Engineering Works	B-852
Nagra Magnetic Recorders, Inc.	B-888-890
Otari Corp.	B-916-920
Sony Corp. of America	B-1062
Studer Revox America, Inc.	B-1100-1102
Tascam/TEAC Corp. of America	B-1115-1118
Television Technology Co.	B-1148-1152

Audio Tape, Reels, Leader and Accessories

Agfa-Gevaert	B-47
Ampex Corp.	B-96, 97
Audiopak, Inc.	B-177
Fidelipac Corp.	B-539, 540
Image Media, Inc.	See Advertisement
3M Company	B-812, 813
Marathon Products Corp.	B-822
Maxell Corp. of America	B-846
Memtek Products.	B-850
TDK Electronics Corp.	B-1122

Automation, Logging and Control Systems

Alamar Electronics USA, Inc.	B-57
Audico, Inc.	B-162
BTS Broadcast Television Systems, Inc.	B-306
Channematic, Inc.	B-382, 383
Lake Systems Corp.	B-736
. See Advertisement On Next Page	

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INDEX (cont'd)

Automation, Logging and Control Systems (cont'd)

LAKE SYSTEMS CORP.

287 Grove Street
Newton, MA 02166
(617) 244-6881

Panasonic Broadcast Systems Co. B-934
Sound Workshop B-1086
Tascam/TEAC Corp. of America. B-1115

Batteries, Belts, Packs, Chargers and Power Supplies

Alexander Batteries B-58, 59
Anton/Bauer, Inc. B-140-142
. See Advertisement



One Controls Drive
Shelton, CT 06484
(203) 929-1100

Walter S. Brewer Co., Inc. B-264, 265
Christie Electric Corp. B-384
Cine 60, Inc. B-389-395, 398-403
Cool-Lux Lighting Industries, Inc. B-439
Frezzolini Electronics, Inc. B-551-554, 560
Frezzolini Electronics, Inc./PAG B-561-564
Paco Electronics USA, Inc. B-923, 924
Perrott Engineering Labs, Inc. B-935
Sony Corp. of America. B-1061

Black Burst Generators

(See Generators, Black Burst, Color Back-
ground, Chroma Key, Safe Area, Character, Ef-
fects, Sync and Time and Date)

Books, Publications

Bill Daniels Company, Inc. B-619, 620, 936
. 1164, See Advertisement

BILL DANIELS COMPANY, INC.

9101 Bond
Overland Park, KS 66214
(913) 492-9900 (800) 255-6038
FAX: (913) 492-2085
Publisher of the Illustrated Trade References

Success Broadcast Marketing
. See Advertisement

Cabinets, Consoles, Racks and Accessories

Premier Metal Products Co.
. See Advertisement



PREMIER METAL PRODUCTS CO.

381 Canal Place
Bronx, NY 10451
(212) 993-9200

R.a.C. Corp.
. See Advertisement On Next Page
The Winsted Corp. B-1215-1219

B-1276

Cable and Wire

Belden Wire and Cable B-218-230
Cablewave Systems, Inc. B-317-325
Canare Cable, Inc. B-352
Comprehensive Video Supply Corp. B-428

Cable Reels and Trailers

Canare Cable, Inc. B-350
Clifford B. Hannay and Son, Inc.
. See Advertisement On Next Page

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INDEX (cont'd)



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Cables, Assembled Audio

Audio Technica US, Inc. B-182
Canare Cable, Inc. B-350, 351
Comprehensive Video Supply Corp. . . B-425
Wireworks Corp. See Advertisement

wireworks

WIREWORKS CORPORATION

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Hillside, NJ 07205
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Cables, Assembled Video/Camera

Canare Cable, Inc. B-352
Comprehensive Video Supply Corp. . . B-427

Camera Pickup Tubes

Amperex Electronic Co. B-93-95
. See Advertisement

Amperex®

ELECTRONIC CORPORATION

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Slatersville, RI 02876
(401) 762-3800

Camera Remote Controls

Vinten Equipment, Inc. B-1210

Camera Stabilizing System

Cinema Products Corp. B-406
. See Advertisement

cinema products

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Los Angeles, CA 90016
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Camera Support Systems

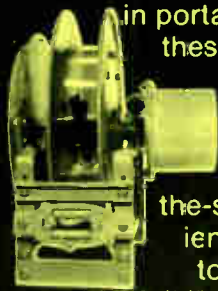
Bencher, Inc. B-231
Bogen Photo Corp. B-248
Canon U.S.A., Inc. B-353
Comprehensive Video Supply Corp. . . B-429
Gitzo B-579-581
Innovative Television Equipment . . . B-687-692
Peter Lisand Machine Corp. . . . B-771, 772
Matthews Studio Equipment, Inc.
. B-840, 841
Miller Fluid Heads (USA), Inc. . . . B-872, 873
O'Connor Engineering Labs. . . . B-909-911
. See Advertisement

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B-1277

INDEX (cont'd)

Camera Support Systems (cont'd)

QuickSet International, Inc.B-966-970
 Sachtler Corp. of America.B-1012-1014
 Vinten Equipment, Inc.B-1207-1209

Cameras, Color Telecine

Ikegami Electronics (USA), Inc.B-670
671, 675

Cameras, Color Video

Ampex Corp.B-116-120
 BTS Broadcast Television Systems, Inc.
B-294-298, 308
 Hitachi Denshi, Ltd.B-641-646
See Advertisement



HITACHI

175 Crossways Park West
 Woodbury, NY 11797
 (800) 645-7288

Ikegami Electronics (USA), Inc.B-661-669
673, 674
 JVC Professional Products CompanyB-718
 NEC America, Inc.B-895
 Panasonic Broadcast Systems Co.B-928
 Sharp Electronics Corp.B-1030, 1031
 Sony Corp. of America.B-1052, 1053
1056-1058

Cameras, Monochrome Video

Hitachi Denshi, Ltd.See Advertisement



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175 Crossways Park West
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 (800) 645-7288

Cartridge Racks

Broadcast Electronics, Inc.B-285
 Fidelipac Corp.B-541
 Micro-Trak Corp.B-860

Carts, Video and Mobile Equipment

Innovative Television EquipmentB-692
 K & H Products, Ltd.B-723
 Nalpak Video Sales, Inc.B-893
 Wheelit, Inc.B-1212, 1213

Cases and Bags, Carrying/ Shipping/Storage

Excalibur IndustriesSee Advertisement
 Kangaroo Video Products, Inc.B-720, 721
 K & H Products, Ltd.B-723, 724
 Nalpak Video Sales, Inc.B-894
 Plastic Reel Corp. of America.B-941
 TelepakSee Advertisement



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See Advertisement

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Character Generators

(see Generators, Black Burst, Color Back-
 ground, Chroma Key, Safe Area, Character, Ef-
 fects, Sync and Time and Date)

Chroma Key Generators

(see Generators, Black Burst, Color Back-
 ground, Chroma Key, Safe Area, Character, Ef-
 fects, Sync and Time and Date)

Clap Boards/Sticks

Coherent Communications, Inc.B-422
 Alan Gordon Enterprises, Inc.B-588

Cleaning and Maintenance Products, Recorder

Allsop, Inc.B-71, 72
 Marathon Products Corp.B-822

Clocks, Timers and Counters

Autogram Corp.B-196
 Beaveronics, Inc.B-215

Clocks, Timers and Counters (cont'd)

ESEB-524-526
 Evertz Microsystems Ltd.B-532
 Leitch Video of America, Inc.B-756
 Logitek Electronic Systems, Inc.B-782
 Radio Systems, Inc.B-982

Commerical Insertion Equipment and Systems

Channelmatic, Inc.B-381, 382

Compressor/Limiters

(see Audio Processors - Compressor/Limiter/
 Expander/Noise Gates)

Connectors and Adaptors

Cablewave Systems, Inc.B-317-325
 Cambridge Products Corp.B-348
 Canare Cable, Inc.B-350, 352
 Comprehensive Video Supply Corp.
B-425-428
 Switchcraft, Inc.B-1110
 Trompeter Electronics, Inc.B-1170, 1171
See Advertisement

Consultants, Broadcast and RF Systems, Design and Planning

Atlantic Research Corp.
See Advertisement On Next Page
 Steiger, Hurray & Associates, Inc.
See Advertisement On Next Page

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INDEX (cont'd)

Consultants, Broadcast and RF Systems, Design and Planning (cont'd)

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Cue Systems

Comtek Communications Technology, Inc. B-435

Curtains, Track and Accessories

(see Studio Sets, Props, Curtains and Supplies)

Dealers/Distributors, Studio and Broadcast Equipment/Supplies

AK

Custom Products
IMIG Video Supply Co.

Dealers/Distributors, Studio and Broadcast Equipment/Supplies (cont'd)

AL

Atlantic Video Corp.
Berney, Inc.
C & G Video Systems
CMI Electronics
Curtis Co.
Handy TV, Inc.
Holt Audio Visual & Video
Long's Electronics
Norment Industries, Inc.
Photo Sound, Inc.
Powell Electronics, Inc.
Pro Video Systems, Inc.
Sonic Associates, Inc.
Sound Engineering
Southern Electronics Corp.
TNT

AR

Mission Service Supply
Stageworks Productions Supply
Stanley Communications Co.
The Sweet Library of Tapes
United Missionary Aviation, Inc.

AZ

AMP Video
Audio Video Recorder
E. A. R. Professional Audio
International Video, Inc.
ITS Concor
K-Video
Phoenix Music
Roh's, Inc.
J.R. Russell Systems
Spencer Broadcast, Inc.
Stage Sound, Inc.
Troxell Communications
Video West, Inc.

Dealers/Distributors, Studio and Broadcast Equipment/Supplies (cont'd)

CA

Adrays
Alpha Sound & Lighting
American Video Products
Ametron
Anderson's TV
ASC Video Corp.
Astro Audio Video & Lighting
Audio Engineering Assoc.
Audio Graphic Systems, Inc.
Audio Images Corp.
Audio Services Corp.
Audio Stuff
Audio Tek
Audio Video Supply, Inc.
A-Vidd Electronics Co.
Band Pro Film/Video
Barrett Associates, Inc.,
See Advertisement On Next Page
Bel Air Camera
Berc
Broadcast Cartridge Service
Broadcast Marketing Associates,
See Advertisement



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INDEX (cont'd)

Dealers/Distributors, Studio and Broadcast Equipment/Supplies

CA (cont'd)

California Video Sales, Inc.
 Cetin Enterprises, Inc.
 China Basin Video Works
 Cine Rent West/Stage A
 Cine Video
 Clairmont Camera
 Coast Recording Equipment & Supplies
 Component Video
 Walt Davis Enterprises, Inc.
 DZ Video
 Educational Electronics Corp.
 Educational Industrial Sales, Inc.
 Edwards Technologies, Inc.
 Electronic Design & Service
 Everything Audio
 Exodus Sound & Light Video
 Filament Pro Audio
 Flessing, Pirtle & Associates
 Adolph Gasser, Inc.
 Gaucho Electronics
 Gelb Music, Inc.
 General Electronics Systems (GESI)
 Alan Gordon Enterprises, Inc.
 Guitar Showcase
 Henry Radio
 Hoffman Video Systems
 Hollywood Sound
 Intectra
 Intec Video Systems, Inc.
 IVS, Inc.
 Jampro
 J & J Television & Electronics, Inc.
 Kidd Communications,
 See Ad On Previous Page
 La Mesa Camera Sound Center
 McCune Audio-Visual-Video
 Media Fabricators
 Micworks, Inc.
 Muntz Electronics
 New World Audio
 Omega Video, Inc.
 Oots Media Systems
 Pacific Video Products, Inc.
 Pro Audio Electronics
 Production Assistance, Inc.
 Professional Audio Services
 Pro Media
 Provideo, Inc.
 Radio Equipment
 Recording & Broadcast Supply
 Redwood Electronics Supply, Inc.
 Gil Rose Electronics
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 Save On Video
 Sawyer Taylor Video
 Scientific Audio Electronics, Inc.
 SD Systems
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 Shoreline Ltd. Teleproductions Syst.
 R. E. Snader & Associates
 Sound Investment
 Southland Sound
 Studio Spectrum, Inc.
 Telsudio Centre
 Televideo
 Tele Video Systems
 Television Associates
 T.F.I., Inc.
 TRI-Tronics
 Valley Arts Guitar
 Ventura TV & Appliance Center
 Video Mart, Inc.
 Videomedia
 Video Resources
 Videotape Products, Inc.
 Voice & Video, Inc.

Dealers/Distributors, Studio and Broadcast Equipment/Supplies (cont'd)

CA (cont'd)

Wah Systems
 Wavelength, Inc.
 Western Broadcast Services

CO

Acous-tech
 Alpha Omega Electronics, Inc.
 Barath Acoustics, Inc.
 C.D., Inc.
 CEAVCO Audio Visual Co., Inc.
 Davis Audio-Visual, Inc.
 Film/Video Equipment Services
 Listen Up Audio Systems
 Research Associates, Inc.
 Video Teknix, Inc.
 Robert Waxman, Inc.

CT

Audio Video Concepts
 Comcast Sound Communications, Inc.
 Concord Communications
 Cracker Jack Video
 East Coast Sound, Inc.
 H.B. Communications, Inc.
 La Salle Music Shop, Inc.
 The Mixing Board
 National Video Services
 Parke Business System
 Professional Video Associates
 Security Resources
 Videcam Presentations, Inc.
 Videoplay Industries, Inc.

DC

Avcom, Inc.
 Interface Avideo Systems, Inc.

Dealers/Distributors, Studio and Broadcast Equipment/Supplies (cont'd)

DE

Total Communication Systems, Inc.

FL

Acts Audio Systems
 All-Pro Sound
 Audio Visual Innovations, Inc.
 Brandon's, Inc.
 Brands Mart USA
 Broadcasters General Store,
 See Advertisement
 Central Audio Visual, Inc.
 Christian Duplications, Inc.
 Cine Video Tech
 Comex Corp.
 Control Technology, Inc.
 Custom Electronics
 D. J. Systems
 Electrex Co.
 ESL
 Everything Video
 Florida State AV & Communications
 Harmon Industries
 Harris Audio Systems
 Inten Corp.
 Lita Broadcasting Distributors
 Photosound Of Orlando
 Professional Communications Systems, Inc.
 R. F. Specialties
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INDEX (cont'd)

Dealers/Distributors, Studio and Broadcast Equipment/Supplies (cont'd)

GA

Audio Visual Resources, Inc.
Blands Audio-Visual Service
Brooke Distributors, Inc.
Cinevision
Columbus Tape and Video
Custom Audio Distributors
Meltons Pro Sound
OAP Audio & Lighting Products
Pantarra Sales, Inc.
Showcase Photographics
Southern Business Communications
Technicalities
Television Production Service
Vashaw Scientific, Inc.
Video Star Connections
Visual Systems Co.
Wolf Camera, Inc.

HI

Audissey
The Presentation Co.

IA

Pratt Audio Visual & Video
Triad Productions, Inc.
Video Midwest

ID

Aatronics, Inc.
Schwendiman
Sun Valley Audio, Inc.

IL

AD Tech, Inc.
Advanced Video Communications
Allen Visual Systems, Inc.
Ancha Electronics, Inc.
Audio Electronics
Audio Experts Int'l
Audio Video Option
August Systems
Beatty Televisual, Inc.
Bridgewater Custom Sound
Cablecom Corp.
Center Video Industrial Co., Inc.
Columbia Audio/Video
Commercial Electronics Systems
Complex, Inc.
Excelandt Services
Gamble Music
Guzzardo Music
Klaus Radio, Inc.
Milam Audio Co.
New Horizons Electronic Marketing
Opus Equipment & Supply
Polycom Video
Polyline Corp.
Radex Stereo Electronics
Rent Com, Inc.
Richardson Electronics
Roscor
Sound & Stagecraft, Inc.
Specialized Video Systems
Stereotronics Industries, Inc.
Sun Sound Systems
Swiderski Electronics, Inc.
Tele-Time Systems
Televisual
Thompson Electronics Co.
Two Brothers Sound & Light
United Visual Aids
Video Master, Inc.
Video Replay

Dealers/Distributors, Studio and Broadcast Equipment/Supplies (cont'd)

IL (cont'd)

Video & Sound Service
V-Tip, Inc.
Warner Sound Co.

IN

Allied Broadcast Equipment
Audio-Visual Specialists
AVC Corp.
B & A Electronics
Burke Technologies, Inc.
Duncan Video, Inc.
Fox Electronics Co., Inc.
IRC Audio
Lafayette Instrument Co., Inc.
Roehm Radio And Sound, Inc.
Schmitt Audio Visual

KS

All Systems
BrandsMart Video
Centrex Audio Visual Systems, Inc.
Electronic Contracting Co.
Mission Electronics
North Supply Co.
Professional Studio Distributors
RSC Electronics, Inc.
Superior Sound

KY

American Sound & Electronics
Broadcast Plus
Central School Supply Co.
Currie Sound Systems
Douglas Electronics, Inc.
Jefferson Audio Video Systems
Midwest Communications Corp.
Schmitt Audio Visual

LA

William B. Allen Supply Co., Inc.
Allied Audio Tech
Audio Media
Bibbins & Rice Electronics
Bowers Electronics
Industrial Electronic Supply, Inc.
Kadair's, Inc.
Mission Service Supply
Projection Video Supply
Sound City
Sound Electronics
Southern Radio Supply
Specialty Sound Co.
J. H. Three
Tri-States Distributing, Inc.

MA

Bry's, Inc.
Cramer Video, Inc.
Crimson Video Systems
DLE, Inc.
Eastern Video Systems, Inc.
Claus Gelotte, Inc.
W. B. Hunt Co., Inc.
IAN Communications Group, Inc.
Immedia Sound
Industrial Components Corp.
Lake Systems Corp.
Malco Electronics
M.P. Video, Inc.
PDM Service Co.
Rainbow Sound & Lighting
RSE Music

Dealers/Distributors, Studio and Broadcast Equipment/Supplies (cont'd)

MA (cont'd)

Springfield Audio & Electronics, Inc.
Star Systems
Underground Camera
Valley Cinema/Sound, Inc.
Video/Visual, Inc.

MD

Henry O. Berman Co.
Bradley Broadcast Sales
Cardinal Systems Corp.
CTL Video Center
EMCO, Inc.
Glen Industrial Communications
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Kunz, Inc.
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Wilkins Electronics

ME

Industrial Components North
Maine Video Systems, Inc.

MI

Advanced Media Service
Allied National
Arbor Video Group
Audio Broadcast Group
Bell Electronics
City Animation Co.
Cruse Communications Co.
Doya Video Systems, Inc.
H. M. Dyer Co.
Electronic Sound
General Television Network
Hy James
Industrial Communications
Musical Oasis, Inc.
New York Video World, Inc.
Planet Video Electronics, Inc.
Portable Recording Ministries
Precision Data Products
Saginaw Photo Supply Co.
Sound Engineering
Sound Good Audio
Technology Partners
Thalner Electronics Labs
Video Alternatives, Inc.
Video Concepts

MN

Alpha Video & Audio
Audio Visual Wholesalers
Blumberg Communications, Inc.
Cinequip
Endresen Sound Co.
EPA Audio Visual, Inc.
T.R. Pitts Co.
Sound Tech
Television Systems Co.
Todd Communications
Video Midwest

MO

Antech Labs
Calvin Cinequip, Inc.
Communitronics Corp.
Corporate Video Services

INDEX (cont'd)

Dealers/Distributors, Studio and Broadcast Equipment/Supplies (cont'd)

MO (cont'd)

EVS-Electronic Video Systems
Four State Radio Supply Co., Inc.
Kansas City Data, Inc.
Lines Video Systems
Premier Film & Recording Corp.
W. Schiller & Co., Inc.
Video Masters
Video Plus, Inc.
VMI Co. of St. Louis

MS

B & E Communications
Bowie Audio Visual Enterprises
Broadcast Equipment Sales
Centec Video Systems
Hooper Electronic Supply
Ramko Equipment
Sound Center And Computer Center
Walters Audio & Electronics

MT

Holm-James Distributors
Sunshine Productions

NC

Audio Unlimited
Broadcast Services
Comm Sound, Inc.
EME, Inc.
Kirkman Electronics, Inc.
W.H. Platts Co.
Clark Powell Associates, Inc.
Reliable Music
Sirtage, Inc.
Sound Engineering
Southeastern Sight & Sound
Southern Video Systems
Standard Theatre Supply Co.
Technical Video Systems, Inc.
Triad Electronics

ND

Audio Visual, Inc.
Scott's Piano & Sound

NE

Denco
Haerland A-V and Telecommunications
Seco Labs
Stanal Sound
Video Service Of America
Video Services Unlimited

NH

Commercial Audio Associates
EAR Craft
Great Northern Video
Music Workshop
Video Lab

NJ

Avico
Avtec Industries, Inc.
Don Christ Visual Center
Color Leasing, Inc.
H. M. Holzberg Assoc.
International Sound, Inc.
Landy Associates
Modern Mass Media, Inc.
MZS Ltd.
Sim-O-Rama Sound
Supersonic Electronics

Dealers/Distributors, Studio and Broadcast Equipment/Supplies (cont'd)

NJ (cont'd)

Tape City
Tele-Measurement
T & F Camera And Video
U. S. Sound
Valiant Universal Video
Victor's House of Music
Video Corp. of America
VIP Electronics
Visual Methods

NM

A-1 Communications
Dyma Engineering
G C Video
Professional Communications, Inc.
Real Time Audio

NV

Starsound & Audio, Inc.
Such A Deal
Trans Sierra Communications

NY

Acoustilog, Inc.
Adwar Video Corp.
Adwell Audio Visual Co., Inc.
Alex Music, Inc.
All-Mode Communications, Inc.
A. P. Enterprises
Armato's Photo Services, Inc.
Auction Audio, Inc.
Audio Excellence
Audio Genesis
Audio Services, Inc.
Audio Speaker Techtronics
Audiotechniques
Audio Video Corp.
Audio Visual Sales & Service
Audio Visual Workshop, Inc.
Awesome Audio, Video & Satellite Corp.
Ballentine Communications
Barsky & Associates
Boynton Studio, Inc.
Brown Sound Equipment
Bryce Professional Video/Audio
Camera Mart, Inc.
Camera Service Center
Capital Audio Electronics
Cinecraft, Inc.
Craftsman / Globe
CTL Electronics, Inc.
Dale Electronic Corp.
De Lourdes Corp.
Design Audio Visual

Dealers/Distributors, Studio and Broadcast Equipment/Supplies (cont'd)

NY (cont'd)

Diversified Concepts, Inc.
Ears Nova
Ferro
Hudson Audio Video Enterprises, Inc.,
See Advertisement
Intercontinental Televideo, Inc.
Islip Video & Electronics
J & R Music World
Laumic Co., Inc.
Martin Audio Video Corp.
L. Matthew Miller Assoc.
MPCS Video Industries
Northeast Broadcast Lab, Inc.
Parameters Unlimited
Professional Electronics Co.
Radio Equipment Corp.
Rosner Custom Sound
Sensory Lighting & Sound
SMAVSCO
Sonocraft Corp.
Southern Tier Electronics
Specialized Audio, Inc.
Star Cinema Supply
Technisphere Corp.
TSK Electronics
Univisions Video Systems, Inc.
Video Automation Systems, Inc.
Video Central, Inc.
Video Concepts
Video Projects
Video Sound of Ithaca, Inc.
Video Techniques
The Videotime Corp.
Visual Word Systems
Vue-Com, Inc.
Warren Processing Labs, Ltd.
Waybrook Industries
Westchester Audio & Visual Center
Whirlwind Audio, Inc.
Y K Video

OH

Akron Music, Inc.
Bartha Visual Education Service, Inc.
B & J Photo, Inc.
Ron Braunstein Video Systems
Broadcast Video Corp.
Copp Systems
Custom Stereo Electronics
Datavid Corp.
Diversified Industries, Inc.
Douglas Communications
The David Douglas Corp.
EDR Systems
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INDEX (cont'd)

Dealers/Distributors, Studio and Broadcast Equipment/Supplies (cont'd)

OH (cont'd)

ICOM, Inc.
Industrial Training Aids, Inc.
Industrial Video Co., Inc.
Musi-Tronix Services, Inc.
New York Music
Ohio AV & Video
Pi Keyboards & Audio
Phil Reddish Sound
Smithall Electronics
Sound Board Music, Inc.
Sound Com Corp.
Video Mart
Video Systems
Visualon, Inc.
Vitek
Y Camera And Video

OK

Audio Associates
Brown Enterprises, Inc.
Fairview-AFX
Ford Audio
Hill Radio Equipment
Imperial Sound
Industrial Video
PLL Video Systems
Tulsa Electronic Systems, Inc.

OR

Brownell Sound & Hi Fi, Inc.
United Radio Supply

PA

Allegheny Electronics, Inc.
Alpha Video & Electronics Co.
Aumick's Sales & Service
Cable Services Co., Inc.
Communications Systems Co.
C & S Distributors
Dempsey Electronics
Galaxy Audio Entertainment Services
Heid Pro Audio
High Fidelity House
Jaunus Systems Corp.
Kadet Photo, Inc.
Lerro Electrical Corp.
Lofstrom Electronic, Inc.
Mason Audio Corp.
Morefield Communications
Joseph Ott Co.
Peirce-Phelps, Inc.
Rocel Electronics
R.P.C. Video, Inc.
Edward Simon Co.
Sound Systems, Inc.
Strong Communications
Tekcom, Inc.
Tel-Equipment Co.
Tri-State Video Services, Inc.
Val Tronics, Inc.
Visual Sound
Wespen Audio Visual Co.

PR

All Safe Video Suppliers Corp.
Video Industrial Products

RI

New England Home Video

Dealers/Distributors, Studio and Broadcast Equipment/Supplies (cont'd)

SC

Applied Video Systems, Inc.
Communications Equip. Co., Inc.
Custom Recording & Sound, Inc.
Dixie Educational Systems
Professional Video Systems, Inc.
Universal Corp.
Wholesale Industrial Electronics, Inc.

SD

Pro Audio
Triangle AV & Video

TN

Audio Video Contracting
Bay's TV and Electronics
Bluff City Electronics
Bondurant Bros. Co.
Broadcast Distributors
Broadcast Equipment & Sales
Consolidated Media Systems
Electra Distributing Co.
Logical Video Systems
Memphis Communications Corp.
Opus Two
Randolph, Hale, & Matthews, Inc.

TX

A. B. Co.
Accent Audio-Video
Angie Electronics Supply
Astro Audio Visual
Audio Communications Corp.
Audio Concepts
Audio Video Designs
Audio Visual Educational Syst., Inc.
A/V Texas, Inc.
AVW Audio Visual, Inc.
Billy Azbell's Radio Center
Bauer Audio Video, Inc.
B & B Electronics
Bell Electronics
Bridges Audio Video
Broadcast Rentals & Sales, Inc.
Cablevision Equipment Co.
Carver Sound Equipment Co.
Cinmacorp
Commercial Video Systems
Crossroads Audio, Inc.
Crouse-Kimzey
Crown Audio
East Texas Electronics
ECI Video
Educational Equipment Co.
Fitzco
Giesler Broadcasting Supply
Gohmert Sound Services
Guarantee Radio Supply
Heart Of Texas Music, Inc.
Hoover Brothers
Industrial Audio/Video, Inc.
J & S Audio Visual Communications Co.
L.D. Systems, Inc.
Lenrose Electronic
Lubbock Audio Visual Co.
Magnetic Media Corp. Of Houston
MCM Productions, Inc.
Mill-Tronics, Inc.
M & M Video
MZB & Associates
National Television Systems Corp.
On Video
Tom Pagitt Co., Inc.
Professional Audio Services
Real Radio Supply

Dealers/Distributors, Studio and Broadcast Equipment/Supplies (cont'd)

TX (cont'd)

Rio Radio Supply, Inc.
Sherman Electronics Supply
SJB Distributors, Inc.
Southwest Communications
Southwest International Enterprises
Southwest Sound & Electronics
S.W. Cassette
Tesseract, Inc.
Texas Tele Systems
Texas Video Systems, Inc.
Thorne Electronics
Total Vision, Inc.
Townsend Broadcast Systems, Inc.
United Audio Recording
Vidcom
Video Etc., Inc.
Video Gallery
Videoland, Inc.
Video Mart
Video Products
Video Sales, Inc.
The Video Store, Inc.
Video Systems, Inc.
Visual Techniques, Inc.
Yocums 8-16mm Film Headquarters

UT

Applied Technology, Inc.
Intermountain Video Systems
Performance Audio, Inc.
Poll Sound
RIA Corp.
TV Specialists, Inc.
Visual Technology, Inc.

VA

A-Com., Inc.
A L & M (Audio Light And Music)
Alpha Audio
Avec Electronics Corp.
Capitol Video Center
Enhanced Communications Corp.
Lee Hartman & Sons, Inc.
Hoppmann Corp.
Liberty Audio & Film Service
Old Dominion Broadcast Engineering Service
Projection, Inc.
Southeast Audio
Stage Sound

VT

Spectrum Video Ltd.

WA

A & G Associates
Audio Group, Inc.
Bennett Engineering Assoc.
Broadcast Supply West
Ted Brown Music Co.
Capitol Communications Industries
Custom Video Systems
Hoffman Music Co.
Morgan Sound, Inc.
Proline
R. F. Specialties of Washington
RMS Sound
Sight & Sound Entertainment
Sound Recording Co.
Video Depot Ltd.
Video Scan
Videospace, Inc.

INDEX (cont'd)

Dealers/Distributors, Studio and Broadcast Equipment/Supplies (cont'd)

WI

AudioLine, Inc.
 Avonix Video Systems, Inc.
 Camera Corner, Inc.
 Community Camera & TV, Inc.
 Electronic Industries
 Full Compass Systems
 Henri's Music, Inc.
 Oostyk & Wilke
 Professional Audio And Design
 Take One, Television Productions
 Valley School & Office Suppliers, Inc.
 Video Images
 Video Stations, Inc.

WV

Electronic Specialty Co.
 Media Pack

WY

Wyoming Video Systems

Degaussers/Erasers

R.B. Annis Co.B-138, 139
See Advertisement

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Degaussers/Erasers (cont'd)

Audiolab Electronics, Inc.B-175
 Audio Video Sciences Co.B-187
 Fidelipac Corp.B-538, 541
 Garner Industries, Inc.B-570
 Microtran Co., Inc.B-861
 Research Technology InternationalSee Advertisement
 Studio Film & Tape Inc.See Advertisement



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 New York, NY 10036
 212-977-9330
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Delay Lines, Filters, Video and Pulse

Allen Avionics, Inc.
See Advertisement On Page B-1286
 Broadcast Video Systems Ltd.B-292
 MattheyB-844

Demodulators/Modulators/Signal Processors

Barco Industries, Inc.B-199
 Catel Telecommunications, Inc.B-358-361
 Coherent Communications, Inc.B-423
 TelemetB-1144
 TFT, Inc.B-1160
 Videotek, Inc.B-1203

Duplicators/Copiers, Audio Tape

Inovonics, Inc.B-693

Duplicators/Dubbing Systems, Videotape

Dwight Cavendish Co.B-365-369
 Otari Corp.B-921

Earth Station/Satellite Antennas, Control Systems, Receivers and Accessories

Radiation Systems, Inc.B-974-978
 VideoStar Connections, Inc.
See Advertisement On Next Page

EBS Systems and Equipment

Bald Mountain LabB-197
 Gorman-Redlich Mfg. Co.B-589
 TFT, Inc.B-1161

Encoders/Decoders, Color

BTS Broadcast Television Systems, Inc.
B-304, 305
 Michael Cox Electronics Ltd.B-440
 Crosspoint Latch Corp.B-443
 Faroudja Laboratories, Inc.B-536, 537
 The Grass Valley Group, Inc.B-601
 Laird Telemedia, Inc.B-734
 Lenco, Inc.B-764
 Lyon Lamb Video Animations Systems, Inc.B-800
 Shintron Co., Inc.B-1033

Evaluators/Profilers, Video Tape

R.B. Annis Co.See Advertisement

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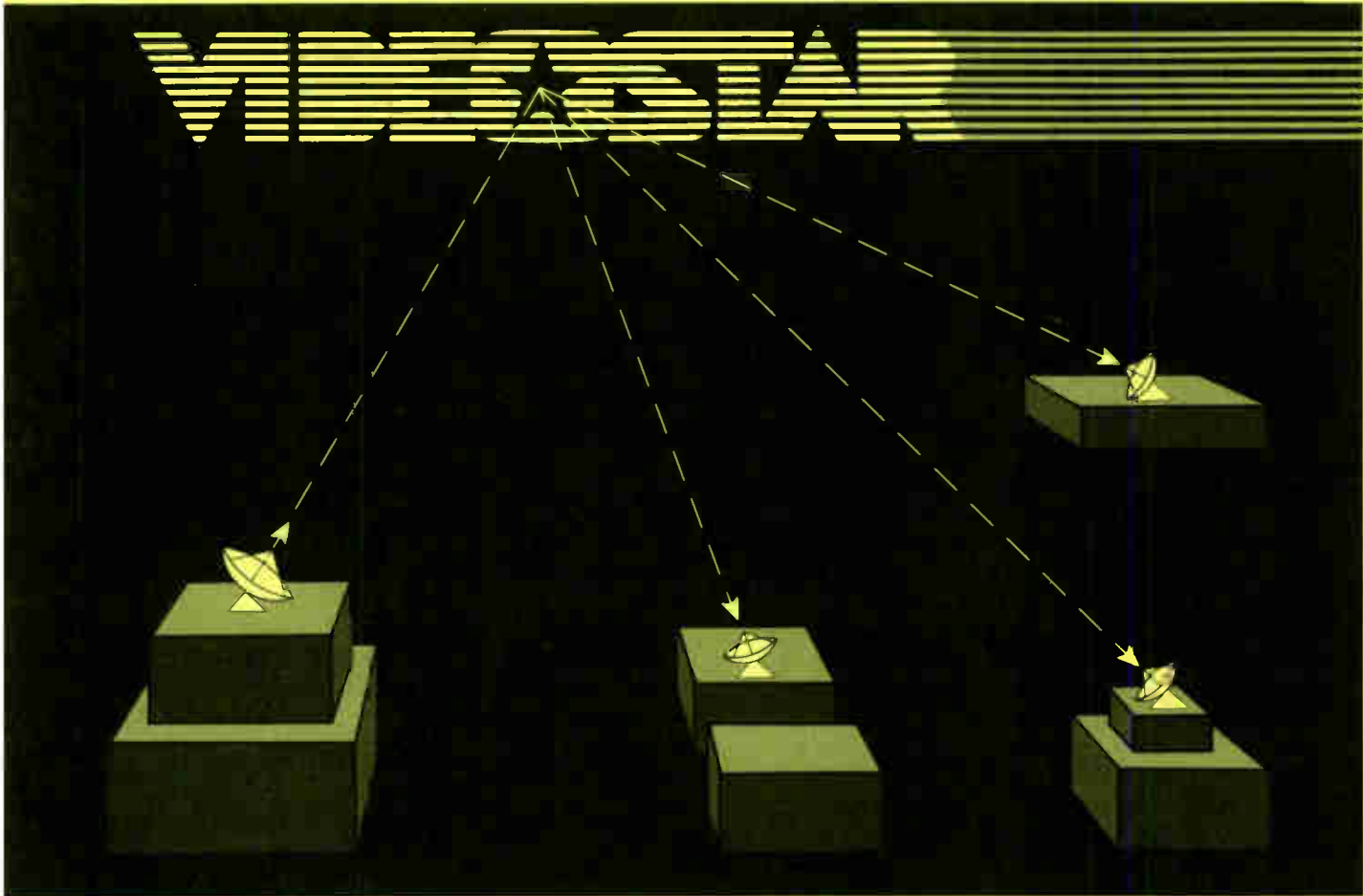


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INDEX (cont'd)

Fiber Optic Transmission Systems
 Artel Communications Corp. B-154
 The Grass Valley Group, Inc. B-607-609
 Holaday Industries, Inc.
 See Advertisement On Next Page

Film Cleaners/Conditioners
 Filmagic Products, Inc. See Advertisement

Film Enhancement
 Piclear, Inc. See Advertisement

Film-to-Tape Transfer
 BTS Broadcast Television Systems, Inc.
 B-310

Filters, Audio
 (see Audio Delay Lines, Filters, Networks and Transformers)

Frame Synchronizers
 (see Video Processing, Frame Synchronizers, Effects, Colorizers, Time Base Correctors and Image Enhancers)

Frequency/Modulation Monitors, AM/FM/TV
 Belar Electronics Laboratory, Inc. B-216, 217
 Broadcast Electronics, Inc. B-288
 Delta Electronics, Inc. B-458, 464, 465
 Motorola Comm. & Electronics, Inc. B-885
 Potomac Instruments, Inc. B-945
 TFT, Inc. B-1160, 1161

Furniture, Studio, Consoles, Carts, Tables and Cabinets
 Arrakis Systems, Inc. B-152
 Dwight Cavendish Co. B-370

Furniture, Studio, Consoles, Carts, Tables and Cabinets (cont'd)
 LPB, Inc. B-791
 Luxor Corp. B-799
 Marshall Products, Inc. B-823
 Micro-Trak Corp. B-859
 Ruslang Corp. B-1007, 1008
 Turner Engineering, Inc. See Advertisement



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ENGINEERING, INC.

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The Winsted Corp. B-1220-1222

Generators, Black Burst, Color Background, Color Bar, Chroma Key, Safe Area, Character, Effects, Sync and Time and Date

Abekas Video Systems, Inc. B-19
 Aston Electronics, Inc. B-156
 Boland Communications. after page 240
 Broadcast Video Systems Ltd. B-290, 291
 BTS Broadcast Television Systems, Inc.
 B-299, 304
 Channematic, Inc. B-383
 Chyron Corp. B-385-388
 Crosspoint Latch Corp. B-443
 Dubner Computer Systems, Inc. B-492, 493
 ESE B-527

Generators, Black Burst, Color Background, Color Bar, Chroma Key, Safe Area, Character, Effects, Sync and Time and Date (cont'd)

The Grass Valley Group, Inc. B-598
 599, 601
 Gray Engineering Laboratories, Inc. B-610
 HEDCO B-637
 Intergroup Technologies B-699
 Knox Video Products B-727, 728
 Laird Telemedia, Inc. B-730, 731
 Leitch Video of America, Inc. B-752, 753
 Lenco, Inc. B-759-762, 764
 Lyon Lamb Video Animations Systems, Inc. B-800
 3M Company. B-804
 Pesa America, Inc. B-937
 QSI Systems, Inc. B-950, 951
 Quanta Corp. B-955-960
 Shintron Co., Inc. B-1033
 Sierra Video Systems, Inc. B-1043
 Sigma Electronics, Inc. B-1045, 1046
 Tektronix, Inc. B-1134, 1135, 1137, 1138
 Video Accessory Corp. B-1194
 Videotek, Inc. B-1203

Graphics Systems

Ampex Corp. B-100
 BTS Broadcast Television Systems, Inc.
 B-299-301
 Chyron Corp. B-385-388
 Dubner Computer Systems, Inc. B-493
 Fairlight Instruments, Inc. B-535
 Lyon Lamb Video Animations Systems, Inc. B-801-803
 3M Company. B-805

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VRM0255	0-255	1.0	Slide Switch	.40	.4	20
VRM0637	0-637.5	2.5	Slide Switch	*1.00	.4	28
VRM1275	0-1275	5.0	Slide Switch	*3.00	.4	33
VRM2270	0-2270	10.0	Slide Switch	*3.00	.5	40
VRS0317	0-317.5	2.5	Strap	.40	.5	26
VRS0635	0-635	5.0	Strap	.75	.5	35
VRS1270	0-1270	10.0	Strap	1.50	.5	37
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INDEX (cont'd)

Graphics Systems (cont'd)

Magni Systems, Inc. B-819
 Microtime, Inc. B-856
 Pinnacle Systems, Inc. B-940
 Quanta Corp. B-961, 962
 Quantel. B-963
 Videomedia, Inc. B-1197

Head Refurbishing Services

International Electro-Magnetics, Inc.
 See Advertisement



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 ELECTRO-MAGNETICS, INC.**
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JRF Magnetic Sciences See Advertisement



MAGNETIC SCIENCES
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Headphones/Headsets

AKG Acoustics, Inc. B-55
 Beyer Dynamic, Inc. B-238, 239
 Clear-Com Intercom Systems B-417
 Racal B-971-973
 R-Columbia Products Co., Inc. . . . B-990-994

Headphones/Headsets (cont'd)

RTS Systems, Inc. B-1005
 Sennheiser Electronic Corp. B-1025
 Telex Communications, Inc. B-1155

Hum Eliminators

Broadcast Video Systems Ltd. B-290
 BTS Broadcast Television Systems, Inc.
 B-304

Impedance Interfaces

(see Interfaces, Level/Impedance)

Intercom Systems

Clear-Com Intercom Systems B-415-417
 HM Electronics, Inc. B-650, 651
 Pesa America, Inc. B-939
 RTS Systems, Inc. B-1000-1005

Interfaces, Level/Impedance

Henry Engineering B-638
 Lenco, Inc. B-766
 Logitek Electronic Systems, Inc. . . . B-780
 RTS Systems, Inc. B-1006
 Russco Electronics, Inc. B-1011
 Sescor, Inc. B-1026
 Valley International, Inc. B-1178

Lamps, Replacement

Walter S. Brewer Co., Inc. B-271, 272
 General Electric Co. B-571
 Thorn EMI. B-1163

Lenses, Extenders and Adaptors

Angenieux Corp. of America B-134-137
 Canon U.S.A., Inc. B-354-357

Lenses, Extenders and Adaptors (cont'd)

Century Precision Optics B-373
 Cinema Products Corp. B-405, 407
 Fujinon, Inc. B-565, 566
 Schwem Technology B-1020

Light Control Media/Patterns

Bardwell & McAlister, Inc. B-205, 207
 208, 210
 Walter S. Brewer Co., Inc. B-273
 The Great American Market B-613
 Lowel-Light Mfg., Inc. B-786, 787
 Matthews Studio Equipment, Inc. . . . B-840

Light Stands, Hangers, Ladders and Gaffers Miscellaneous Equipment

Bardwell & McAlister, Inc. B-205, 206, 209
 Bogen Photo Corp. B-249
 Walter S. Brewer Co., Inc. B-258, 269, 275
 Luxo Lamp Corp. B-798
 Matthews Studio Equipment, Inc. . . . B-839
 842, 843
 Strand Lighting B-1098

Lighting Controls/Dimmers and Power Distribution Accessories

Walter S. Brewer Co., Inc. B-270, 271
 274-278
 Cam-Lok, Inc. B-349
 LEE Colortran, Inc. B-747-750
 Strand Lighting B-1096, 1097, 1099
 Teatronics, Inc.
 See Advertisement On Next Page

Lighting Fixtures, Kits and Studio Systems

Anton/Bauer, Inc. B-143, 144
 Arriflex Corp. B-153
 Bardwell & McAlister, Inc. B-201-204
 211, 212
 Walter S. Brewer Co., Inc. B-256-269
 Cine 60, Inc. B-396, 397
 Comprehensive Video Supply Corp. . . B-429
 Cool-Lux Lighting Industries, Inc. . . B-438, 439
 DeSisti Lighting B-470-474
 Frezzolini Electronics, Inc. B-553-559
 Frezzolini Electronics, Inc./PAG B-564
 The Great American Market B-612-616
 LEE Colortran, Inc. B-742-746, 751
 Littlelite B-774
 Lowel-Light Mfg., Inc. B-783-789
 LTM Corp. of America B-794-797
 See Advertisement



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Strand Lighting B-1088-1095

Logging Recorders

(see Automation, Logging and Control Systems)

Machine Control Systems/Synchronizers

Amherst Electronic Instruments, Inc. . . B-92
 AMX Corp. B-128
 Audio Kinetics, Inc. B-168, 169, 171-173



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INDEX (cont'd)

Machine Control Systems/Synchronizers

BCD Associates, Inc. B-214
 BTS Broadcast Television Systems, Inc. B-311
 Dwight Cavendish Co. B-363, 364
 Channelmatic, Inc. B-380, 383
 Cipher Digital, Inc. B-410-412
 Evertz Microsystems Ltd. B-530, 533
 534, See Advertisement



3465 Mainway
 Burlington, Ontario L7M 1A9
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 Telex: 06-18784
 FAX: (416) 335-3573

Fostex Corp. of America B-549
 Harris Corp. B-624
 Image Video, Ltd. B-682
 3M Company B-809
 NEC America, Inc. B-897
 M.W. Persons and Associates B-936

Mailing Services

Bill Daniels Company, Inc.
 See Advertisement On Next Page

Marketing Services

Bill Daniels Company, Inc.
 See Advertisement

Marketing Services (cont'd)

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 Publisher of the Illustrated Trade References

Success Broadcast Marketing
 See Advertisement On Next Page

Master Control Switchers

BTS Broadcast Television Systems, Inc. B-306
 Image Video, Ltd. B-683
 Intergroup Technologies B-698

Masts, Pneumatic Telescoping

The Will-Burt Co. B-1214

MIDI Synchronizer/Autolocators

Fostex Corp. of America B-549

Microphones, Stands, Clamps and Accessories

AKG Acoustics, Inc. B-49-54
 Atlas/Soundolier B-157-159
 See Advertisement

Microphones, Stands, Clamps and Accessories (cont'd)



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Audio Services Corp.
 See Advertisement On Page B-1290
 Audio Technica US, Inc. B-178-180
 Beyer Dynamic, Inc. B-233-237
 Calrec by AMS B-346, 347
 Crown International, Inc. B-444
 Electro-Voice, Inc. B-509-513
 Fostex Corp. of America B-550
 GKC Research & Development B-584, 585
 HM Electronics, Inc. B-649
 Light Wave Systems B-770
 LTM Corp. of America B-797
 Luxo Lamp Corp. B-798
 Marantz Co., Inc. B-821
 Georg Neumann GmbH B-903-907
 RAMSA/Panasonic Industrial Company B-988
 Sennheiser Electronic Corp. B-1022, 1023
 Shure Brothers, Inc. B-1038, 1040
 Sony Corp. of America B-1072
 Yamaha International Corp. B-1226



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INDEX (cont'd)

Microwave Transmitting and Receiving Equipment and Accessories

Andrew Corp. B-132, 133
 Cablewave Systems, Inc. B-316
 Comex Corp. See Advertisement
 Emcee Broadcast Products B-517
 Ikegami Electronics (USA), Inc. B-660
 LNR Communications, Inc. B-775
 M/A-Com MAC, Inc. B-814-818
 MCL, Inc. B-847-849
 Microwave Radio B-867-871
 Miteq B-874
 NEC America, Inc. B-898
 RF Technology, Inc. B-995

Multiplexers, Uniplexers and Accessories

Ikegami Electronics (USA), Inc. B-672
 Laird Telemedia, Inc. B-732
 Rangertone Research, Inc. B-989
 The Zei-Mark Corp. B-1230-1232

Noise Gates

(see Audio Processors - Compressor/Limiter/Expander/Noise Gates)

Noise Reduction Systems

Circuit Research Labs, Inc. B-414
 dbx, Inc. B-452, 453

Noise Reduction Systems (cont'd)

Dolby Laboratories, Inc. B-487-490
 Symetrix, Inc. B-1112

Patching Systems/Jackfields

ADC Telecommunications, Inc. B-30-32
 See Advertisement



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Canare Cable, Inc. B-351
 Dielectric Communications B-481
 Gentner Engineering Co., Inc. B-574, 576
 Sescom, Inc. B-1028
 Switchcraft, Inc. B-1109
 Symetrix, Inc. B-1111
 Trompeter Electronics, Inc. B-1170, 1171

Phase and Power Converters, Monitors

Kay Industries, Inc. B-722

Phono Cartridges

(see Turntables, Phono Cartridges, Preamps, Tonearms and Associated Equipment)

Post Production Services

Optimus, Inc.
 See Advertisement On Next Page



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INDEX (cont'd)

Post Production Services (cont'd)



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Pressurization Equipment and Accessories

Cablewave Systems, Inc.B-338, 339

Printing and Production Services

Bill Daniels Company, Inc.
.....See Advertisement

Program Automation and Control

(see Automation, Logging and
Control Systems)

Programmers/Machine Controllers/ Random Access and Sequencing

(see Machine Control Systems/Synchronizers)

Projection Systems, Video/Data

Electronic Systems Products, Inc. . . .B-507
General Electric Co.B-572
Ikegami Electronics (USA), Inc.B-676

Projectors, TV Film

Ikegami Electronics (USA), Inc.B-672
Kinetone, Inc.B-725, 726
Laird Telemedia, Inc.B-733
Rangertone Research, Inc.B-989
The Zei-Mark Corp.B-1232

Prompting Systems

Brabury Ltd.B-255
Cinema Products Corp.B-404
Computer Prompting Corp.B-431
Listec Video Corp.B-773
.....See Advertisement On Next Page
Q-TVB-952-954
Tekskil Industries, Inc.B-1125
Telescript, Inc.B-1146

Receivers, AM/FM/ Communications

(see Tuners/Receivers)

Record Cleaning Systems, Kits and Supplies

Allsop, Inc.B-71

Recorder Care Products

(see Cleaning and Maintenance Products, Re-
corder)

Rental Equipment

Audio Services Corp.
.....See Advertisement On Next Page

Reverberation Equipment

Advanced Music SystemsB-46
EMTB-518
Lexicon, Inc.B-768
Orban Associates, Inc.B-914
Yamaha International Corp.B-1227

B-1290



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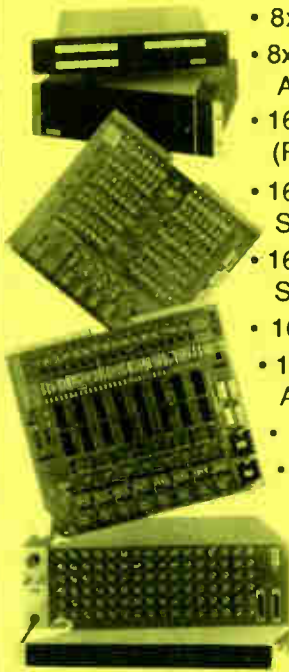


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INDEX (cont'd)

RF Coaxial Loads, Combiners, Couplers, Detectors and Monitors

Altronic Research, Inc. B-75
Bird Electronic Corp. B-246, 247
Dielectric Communications B-479, 480
Electro Impulse Laboratory, Inc. B-505

Routing Systems

AMX Corp. B-127
Arrakis Systems, Inc. B-151
BSM Broadcast Systems, Inc. B-293
BTS Broadcast Television Systems, Inc.
..... B-302, 303
Dwight Cavendish Co. B-362
CEL Electronics Ltd. B-372
Comprehensive Video Supply Corp. B-426
Datatek Corp. B-445-449
dbx, Inc. B-456
Di-Tech, Inc. See Advertisement

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H.M. Dyer Electronics, Inc.
..... See Advertisement On Next Page
Dynair Electronics, Inc. B-495
ECHOlab, Inc. B-496
Electronic Systems Products, Inc. B-508
FOR-A Corp. of America B-543
Gentner Engineering Co., Inc. B-575
The Grass Valley Group, Inc. B-603-606
Hallikainen & Friends, Inc. B-618
HEDCO B-631-635, 637
Image Video, Ltd. B-684-686
Intergroup Technologies B-698, 699
Laird Telemedia, Inc. B-735
Leitch Video of America, Inc. B-754
Lenco, Inc. B-759, 763, 764
Logitek Electronic Systems, Inc. B-777
3M Company B-806-808
Moseley Associates, Inc. B-883
Panasonic Broadcast Systems Co. B-933
Ramko Research, Inc. B-986
Shintron Co., Inc. B-1032
Sierra Video Systems, Inc. B-1043, 1044
..... See Advertisement
Sigma Electronics, Inc. B-1045
Telemet B-1144
Titus Technological Laboratories B-1166
Utah Scientific, Inc. B-1174-1176
Videotek, Inc. B-1205, 1206

Safe Area Generators

(see Generators, Black Burst, Color Back-
ground, Chroma Key, Safe Area, Character, Ef-
fects, Sync and Time and Date)

Satellite Equipment/Systems

(see Earth Station/Satellite Antennas, Control
Systems, Receivers and Accessories)

SCA Equipment

Broadcast Electronics, Inc. B-288
Circuit Research Labs, Inc. B-414
Modulation Sciences, Inc. B-875
Moseley Associates, Inc. B-878

Scramblers/Encoders

Microtime, Inc. B-854

B-1291

INDEX (cont'd)

Sound Systems

Atlas/Soundolier See Advertisement



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Merlin Engineering Works B-851

Speakers, Baffles, Crossovers, Horns, Stands and Accessories

Atlas/Soundolier B-160. See Advertisement



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Auratone Corp. B-193
Calibration Standard Instruments B-342
Electro-Voice, Inc. B-514, 515
GKC Research & Development B-583
JBL Professional B-713, 714
Logitek Electronic Systems, Inc. B-782
RAMSA/Panasonic Industrial Company B-988
Yamaha International Corp. B-1229

Splicing Equipment and Supplies

Audico, Inc. B-163
Fidelipac Corp. B-541

Standards/Format Converters

Brabury Ltd. B-255
CEL Electronics Ltd. B-372
Faroudja Laboratories, Inc. B-536
The Grass Valley Group, Inc. B-600, 601
Magni Systems, Inc. B-820
Merlin Engineering Works B-851

Standards/Format Converters (cont'd)

Paltex Corp. B-925
Panasonic Broadcast Systems Co. B-933
Quantel. B-964
Shintron Co., Inc. B-1032, 1033

Stands, Carts, Tables, Cabinets, TV

(see Furniture, Studio, Consoles, Carts, Tables
and Cabinets)

Studio Sets, Props, Curtains and Supplies

Walter S. Brewer Co., Inc. B-273, 274

Studio Transmitter Links and Accessories

Marti Electronics, Inc. B-824-831
Modulation Sciences, Inc. B-875
Moseley Associates, Inc. B-878, 880-882
TFT, Inc. B-1159

Switchers

(see Routing Systems)

Switchers, Master Control

(see Master Control Switchers)

Switchers, Transmission Line

(see Switches, Coaxial)

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INDEX (cont'd)

Switchers, Video Production

Abekas Video Systems, Inc. B-20, 21
 ALTA Group, Inc. B-73, 74
 Ampex Corp. B-110-112
 Crosspoint Latch Corp. B-441, 442
 ECHOLab, Inc. B-496, 497
 FOR-A Corp. of America B-542
 The Grass Valley Group, Inc. B-590-593, 596
 Intergroup Technologies B-698, 701
 QSI Systems, Inc. B-951
 Ross Video Ltd. B-996-999
 Videotek, Inc. B-1198

Switchers, Coaxial

Delta Electronics, Inc. B-465
 Dielectric Communications B-481
 Trompeter Electronics, Inc. B-1171

Sync Generators

(see Generators, Black Burst, Color Background, Chroma Key, Safe Area, Character, Effects, Sync and Time and Date)

Synchronizers, Audio

(see Audio Tape Editing, Synchronizers and Time Code Equipment)

Tape Duplicators/Copiers

(see Duplicators...)

Tape Winders/Loaders

Audico, Inc. B-161-163

Telemetry and Transmitter Remote Control Equipment

Advanced Micro-Dynamics, Inc. B-45
 Delta Electronics, Inc. B-462



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Telemetry and Transmitter Remote Control Equipment (cont'd)

Hallikainen & Friends, Inc. B-617, 618
 Marti Electronics, Inc. B-832-838
 Miteq B-874
 Moseley Associates, Inc. B-876, 877
 879, 884
 Potomac Instruments, Inc. B-944
 TFT, Inc. B-1162

Telephone Line

Transmission Equipment

ESE B-527
 Gentner Engineering Co., Inc. B-573, 577
 Gentner RF Products B-578
 Hnat Hindes, Inc. B-654
 Russco Electronics, Inc. B-1011
 Studer Revox America, Inc. B-1103
 Symetrix, Inc. B-1113
 Telfax Communications B-1157

Test Charts, Films, Slides and Transparencies

Nalpak Video Sales, Inc. B-892
 Brabury/Porta-Pattern, Inc. B-942, 943

Test Tapes, Records and Gauges

Fidelipac Corp. B-541
 Marathon Products Corp. B-822
 MRL/Magnetic Reference Laboratory B-886

Test, Measuring and Monitoring Equipment

Amber Electro Design, Inc. B-76-79
 R.B. Annis Co. B-138, 139
 Anton/Bauer, Inc. B-144
 Audio Technologies, Inc. B-185
 Bald Mountain Lab B-197
 B & B Systems, Inc. B-213
 Benchmark Media Systems, Inc. B-232
 Bird Electronic Corp. B-241-245, 247
 Boland Communications B-after page 240
 Walter S. Brewer Co., Inc. B-270
 Broadcast Video Systems Ltd. B-290
 BTS Broadcast Television Systems, Inc. B-305
 Comprehensive Video Supply Corp. B-425
 dbx, Inc. B-457
 Delta Electronics, Inc. B-459, 461, 464-468
 Digital Processing Systems, Inc. B-484
 Dorrough Electronics B-491
 ESE B-527
 The Grass Valley Group, Inc. B-599
 Hitachi Denshi, Ltd. B-647
 See Advertisement



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Hnat Hindes, Inc. B-654
 Holaday Industries, Inc.
 See Advertisement On Preceding Page
 Leader Instruments Corp. B-737-740
 Leitch Video of America, Inc. B-752-754
 Lenco, Inc. B-758, 759, 761-764
 766, See Advertisement
 Logitek Electronic Systems, Inc. B-777, 782
 Magni Systems, Inc. B-819, 820
 Pesa America, Inc. B-938
 Potomac Instruments, Inc. B-946, 947
 QEI Corp. B-949

Test, Measuring and Monitoring Equipment (cont'd)



ELECTRONICS DIVISION

**300 North Maryland St.
 P.O. Box 348
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Radio Systems, Inc. B-983
 Ramko Research, Inc. B-984
 Sescom, Inc. B-1027, 1028
 Sigma Electronics, Inc. B-1045, 1046
 Sony Corp. of America B-1066, 1067
 Sound Technology, Inc. B-1080-1084
 Tektronix, Inc. B-1126-1133, 1136-1139
 1142, 1143
 Telemet B-1144, 1145
 Video Accessory Corp. B-1194
 Videotek, Inc. B-1202, 1203

Time Base Correctors

(see Video Processing, Frame Synchronizers, Effects, Coorizers, Time Base Correctors and Image Enhancers)

Time Code Equipment, Audio

(see Audio Tape Editing, Synchronizers and Time Code Equipment)

Time Code Equipment, Video

(see Video Editing Systems, Time Code and Associated Equipment)

Towers, Lighting, Guy Systems and Accessories

UNR-Rohn B-1173
 Valmont Industries, Inc. B-1179, 1178

Transformers, Audio

(see Audio Delay Lines, Filters, Networks and Transformers)

Translators, TV/FM

Acrodyne Industries, Inc. B-24, 25
 Emcee Broadcast Products B-516, 517
 Television Technology Co. B-1147

Transmission Lines, Coaxial and Wave Guides

Andrew Corp. B-129-131
 Cablewave Systems, Inc. B-326-337
 Dielectric Communications B-482, 483

Transmitter Remote Controls

(see Telemetry and Transmitter Remote Control Equipment)

Transmitters and Accessories, AM

Broadcast Electronics, Inc. B-288
 Elcom Bauer See Advertisement



**6199 Warehouse Way
 Sacramento, CA 95826**

INDEX (cont'd)

Transmitters and Accessories, AM (cont'd)

- Kahn Communications, Inc.B-719
- LPB, Inc.B-790
- Nautical Electronic Laboratories, Ltd.
See Advertisement On Preceding Page
- Orban Associates, Inc.B-913
- Potomac Instruments, Inc.B-945
- Varian Continental TVTB-1186, 1190

Transmitters and Accessories, FM

- Broadcast Electronics, Inc.B-288, 289
- Inovonics, Inc.B-697
- Orban Associates, Inc.B-913
- QEI Corp.B-949
- Varian Continental TVTB-1187-1189

Transmitters and Accessories, Microwave

(see Microwave Transmitting and Receiving Equipment and Accessories)

Transmitters and Accessories, TV

- Acrodyne Industries, Inc.B-22-28
- Broadcast Electronics, Inc.B-288
- Emcee Broadcast ProductsB-517
- NEC America, Inc.B-899
- Orban Associates, Inc.B-912, 913
- Varian Continental TVTB-1191, 1192

Transmitting Tubes and Broadcast Electronic Tubes, Capacitors, Transformers and Accessories

Amperex Electronic Co.See Advertisement

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- CeCo Communications, Inc.
See Advertisement
- Varian AssociatesSee Advertisement



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Tuners/Receivers

- Videotek, Inc.B-1203

Turntables, Phono Cartridges, Preamps, Tonearms and Associated Equipment

- AdcomB-29
- AKG Acoustics, Inc.B-56
- Audio Technica US, Inc.B-182
- Audio Technologies, Inc.B-183, 185
- Broadcast Audio Corp.B-281
- Broadcast Electronics, Inc.B-287
- EMTB-521, 522
- Henry EngineeringB-638, 639
- Logitek Electronic Systems, Inc.B-782
- LPB, Inc.B-791

Turntables, Phono Cartridges, Preamps, Tonearms and Associated Equipment (cont'd)

- Micro-Trak Corp.B-858, 860
- Radio Systems, Inc.B-982
- Ramko Research, Inc.B-984
- RTS Systems, Inc.B-1006
- Russco Electronics, Inc.B-1009, 1010
- Sescom, Inc.B-1026
- Shure Brothers, Inc.B-1042
- Stanton Magnetics, Inc.B-1087
- TechnicsB-1123

Used Equipment

- Barrett Associates, Inc.See Advertisement

Video Animation

(see Graphics Systems)

Video Cartridges

(see Videotape, Reels and Accessories)

Video Character/Titling Systems

(see Generators, Black Burst, Color Background, Chroma Key, Safe Area, Character, Effects, Sync and Time and Date)

Video Colorizers

(see Video Processing, Frame Synchronizers, Effects, Colorizers, Time Base Correctors and Image Enhancers)

Video Digital Disk Recorders

- Abekas Video Systems, Inc.B-14-18

Video Distribution Amplifiers

- Brabury Ltd.B-254, 255
- BSM Broadcast Systems, Inc.B-293
- BTS Broadcast Television Systems, Inc.
B-304
- Dwight Cavendish Co.B-362
- Comprehensive Video Supply Corp.B-426
- Datatek Corp.B-451
- Dynair Electronics, Inc.B-494
- ESEB-527
- The Grass Valley Group, Inc.B-600, 602
- HEDCOB-634, 636
- Intergroup TechnologiesB-700
- Laird Telemedia, Inc.B-734



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Video Distribution Amplifiers (cont'd)

- Leitch Video of America, Inc.B-755
- Lenco, Inc.B-758, 759, 762
-See Advertisement



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- Shintron Co., Inc.B-1033, 1034
- Sierra Video Systems, Inc.B-1044
- Sigma Electronics, Inc.B-1045, 1046
- Video Accessory Corp.B-1193, 1194
- Videotek, Inc.B-1204

Video Duplication Systems

(see Duplicators/Dubbing Systems, Videotape)

Video Editing Systems, Time Code and Associated Equipment

- Ampex Corp.B-113-115
- Amtel Systems, Inc.B-124-126
- BTS Broadcast Television Systems, Inc.
B-307
- Calaway EngineeringB-340, 341
- CEL Electronics Ltd.B-371
- Cipher Digital, Inc.B-409-412
- CMX Corp.B-418-421
- Coherent Communications, Inc.B-423
- Comprehensive Video Supply Corp.B-430
- ECCO, Inc./Convergence Corp.B-498-504



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INDEX (cont'd)

Video Editing Systems, Time Code and Associated Equipment (cont'd)

ESE B-526, 527
 Evertz Microsystems Ltd. B-530-534
 See Advertisement

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Fostex Corp. of America B-549
 The Grass Valley Group, Inc. B-595, 596
 Gray Engineering Laboratories, Inc. B-610
 611
 Harris Corp. B-624
 Otari Corp. B-922
 Paitex Corp. B-925-927, See Advertisement

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Panasonic Broadcast Systems Co. B-930
 933
 Shintron Co., Inc. B-1032
 Sony Corp. of America B-1060
 Time Line, Inc. B-1165
 Videomedia, Inc. B-1195, 1196

Video Effects Systems

(see Video Processing, Frame Synchronizers, Effects, Colorizers, Time Base Correctors and Image Enhancers)

Video Enhancers

(see Video Processing, Frame Synchronizers, Effects, Colorizers, Time Base Correctors and Image Enhancers)

Video Graphics

(see Graphics Systems)

Video Monitors and Monitor/Receivers

Asaca/Shibasoku Corp. of America. B-155
 Barco Industries, Inc. B-198-200
 BTS Broadcast Television Systems, Inc.
 B-312
 Conrac Display Products Group B-436, 437
 Ikegami Electronics (USA), Inc. B-674
 677-681
 Panasonic Broadcast Systems Co. B-934
 Pesa America, Inc. B-937
 Sony Corp. of America B-1059
 Tektronix, Inc. B-1140
 Videotek, Inc. B-1199-1201

Video Noise Meters

(see Test, Measuring and Monitoring Equipment)

Video Processing, Frame Synchronizers, Effects, Colorizers, Time Base Correctors and Image Enhancers

Abekas Video Systems, Inc. B-7-13
 See Advertisement

Video Processing, Frame Synchronizers, Effects, Colorizers, Time Base Correctors and Image Enhancers (cont'd)

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ALTA Group, Inc. B-73, 74
 Ampex Corp. B-107-109
 AMX Corp. B-127
 BTS Broadcast Television Systems, Inc.
 B-305
 CEL Electronics Ltd. B-371, 372
 Michael Cox Electronics Ltd. B-440
 Crosspoint Latch Corp. B-443
 Digital Processing Systems, Inc. B-484
 Digital Services Corp. B-485, 486
 Fairlight Instruments, Inc. B-535
 Faroudja Laboratories, Inc. B-536, 537
 FOR-A Corp. of America B-543, 544
 See Advertisement

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INDEX (cont'd)

Video Processing, Frame Synchronizers, Effects, Colorizers, Time Base Correctors and Image Enhancers (cont'd)

Fortel, Inc.	B-545, 546
GML Grove	B-586
Graham-Patten Systems, Inc.	See Advertisement
The Grass Valley Group, Inc.	B-594, 599
Harris Corp.	B-621-624
Hotronic, Inc.	B-655
Intergroup Technologies	B-699
Laird Telemedia, Inc.	B-735
Leitch Video of America, Inc.	B-754
	755, 757
Lenco, Inc.	B-758, 759, 763, 764
Merlin Engineering Works	B-851
Microtime, Inc.	B-854, 855
NEC America, Inc.	B-896, 897
Nova Systems, Inc.	B-908
Panasonic Broadcast Systems Co.	B-929
Pinnacle Systems, Inc.	B-940
Prime Image, Inc.	B-948
Quantel	B-963, 964
Sigma Electronics, Inc.	B-1045
Tektronix, Inc.	B-1141
Ultimatte Corp.	B-1172
Videotek, Inc.	B-1203

Video Source Identifiers, Presence Detectors

Leitch Video of America, Inc.	B-754
QSI Systems, Inc.	B-950, 951

Video Tape Recorders/Players, Open Reel

Ampex Corp.	B-102-106
Hitachi Denshi, Ltd.	B-640
	See Advertisement



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Sony Corp. of America	B-1047-1049
-----------------------	-------------

Videocassette Recorders/Players

Ampex Corp.	B-101, 121-123
BTS Broadcast Television Systems, Inc.	B-305, 308, 309
JVC Professional Products Company	B-715-717
Panasonic Broadcast Systems Co.	B-928-932
Sony Corp. of America	B-1050, 1054, 1055

Videotape, Reels and Accessories

Agfa-Gevaert	B-48
Ampex Corp.	B-98, 99
Fuji Photo Film U.S.A., Inc.	B-567-569
Image Media, Inc.	See Advertisement
Eastman Kodak Company	B-729
3M Company	B-810, 811
Maxell Corp. of America	B-845
Memtek Products	B-850
Panasonic Broadcast Systems Co.	B-930
Plastic Reel Corp. of America	B-941
Sony Corp. of America	B-1051
TDK Electronics Corp.	B-1122

Voltage Regulators

Superior Electric	B-1106
-------------------	--------

Warning Lights, Studio

Evertz Microsystems Ltd.	B-532
Fidelipac Corp.	B-541
Titus Technological Laboratories	B-1167

Weather Monitoring and Display Systems

Gorman-Redlich Mfg. Co.	B-589
-------------------------	-------

Wire and Cable

(see Cable and Wire)

Wireless Intercom and Microphone Systems

Audio Ltd.	B-176
Cetec Vega	B-374-379
Comtek Communications Technology, Inc.	B-432-434
HM Electronics, Inc.	B-648, 652
Lectrosionics, Inc.	B-741
Micron Audio Products, Ltd.	B-853
Nady Systems, Inc.	B-887
Samson Technologies Corp.	B-1015
Sennheiser Electronic Corp.	B-1024
Shure Brothers, Inc.	B-1039
Sony Corp. of America	B-1073
Swintek Enterprises, Inc.	B-1107, 1108
	See Advertisement
Telex Communications, Inc.	B-1156

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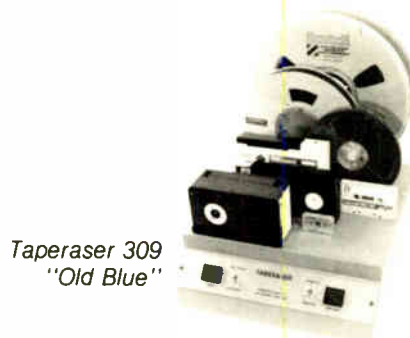
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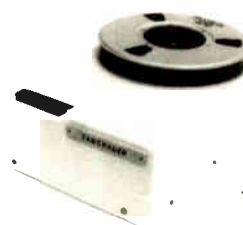
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- **Energy efficiency:** nominal 20 Amps at 110 VAC
- **Better erasure:**
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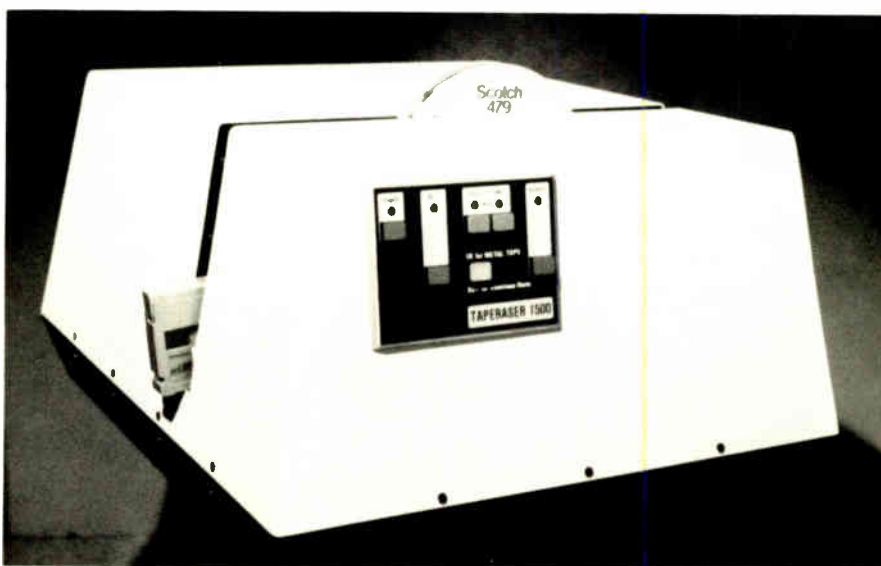
For specifications and more information, please see page 187.



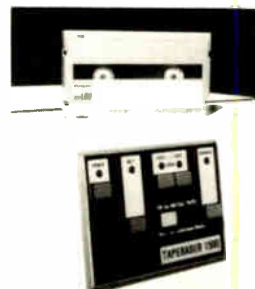
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